Chapter One

Introduction

1.1 Background to the Study

A noticeable development in the Nigerian economy is that over the years, economic growth does not always convert into equal advantages for the populace. Economic expansion has frequently been accompanied by rising economic disparity. This disparity between rich and poor results in imbalanced development, which obliterates the benefits of economic expansion. As a result, reducing inequality has been a primary objective of development initiatives, giving rise to the notion of inclusive growth.

Inclusive growth has become a foremost concept in the socio-economic agendas of developing countries worldwide. The objective of inclusive growth is to prioritize equity over economic outcomes, as economic growth does. Existing literature demonstrates that inclusive growth entails economic growth that generates jobs and contributes to poverty reduction[1]. According to the Asian Development Bank (ADB), inclusive growth implies having access to financial resources, expertise strategies, transfer of technology, and institutional capacity, with a particular emphasis on infrastructure development, provision of essential public services, as well as establishing and nurturing financial intermediation with enhanced food security[2].

Although the theoretical literature supports the use of GDP as the primary measure of economic growth, development economists started to question its appropriateness after identifying various shortcomings in the way it measures the reduction of poverty. Economists initially believed that the use of GDP and its variations as indicators of welfare and economic progress was a simple and straightforward trickle-down theory. However, they discovered that

this idea is not absolute. Instead, they proposed a concept of well-being that focuses on the pro-poor growth. Contrary to popular belief, economic progress does not always translate into broadly shared benefits. For instance, the goal of growth is to alleviate poverty, but it is not always possible to achieve this through the implementation of programs and spending instruments designed to lift the poor out of poverty.

The rapid emergence and evolution of new economies has raised the expectations of both the developed and developing countries. Various factors such as macroeconomic stability, capital, and financial development are expected to contribute to the growth of inclusive economies[3,4,5,6,7]. Various studies have shown that implementing well-designed fiscal policies can stimulate growth and address the needs of the poor. It can also help improve the quality of life for the people by increasing their human capital and infrastructure. However, some argue that financial development is not necessary for attaining inclusive growth. Financial development is a process that aims to improve the efficiency of financial institutions and the financial markets. It involves developing policies and procedures that can help improve the efficiency of financial firms. Efficient financial systems can also help boost economic growth by allocating scarce resources more efficiently[8].

Theoretical literature also demonstrates that financial development can promote economic growth and also make growth inclusive by pooling savings, reducing risk and managing risk, facilitating exchange through lower transaction costs, sharing information about investment opportunities, optimizing capital allocation, and increasing investor willingness to finance new projects through corporate governance monitoring[9]. Empirical evidence also lay credence to the fact that financial development enhances economic growth, the function of financial development in promoting inclusive growth has not been properly examined[10].

Meanwhile, previous experimental studies examining the relationship between financial development and economic growth have produced ambiguous findings and can be described as inclusive. According to economic theory, financial development would enable socially and economically excluded persons to enter the formal financial system by better integrating them into the economy and development stream. Assuring an inclusive financial system is critical to achieving a more inclusive, equal, and peaceful society. Also, financial development comprises the formation and growth of financial institutions.

It is imperative to note the relationship between financial development and inclusive growth may not be direct as theories speculated but mediate through intermediating links. One of the mediating channels this research study considered is quality of institutional settings. Traditionally, high-quality institutions are critical for financial system functioning and inclusive growth. The literature suggests that institutional quality contributes to the elements that drive economic growth and should therefore be regarded a factor of production[11,12,13]. It contributes significantly by eliminating uncertainty and fostering the development of a robust economics and public order. Institutions generate additional capital, additional labour, and more efficient use of extant capital or labour. It is assumed that a healthy and well-organized financial industry seems to have the potential to foster the economy as well as render financial services to everybody, including the poor, in order to help them improve their living standards. According to empirical research, the quality of institutions can have a significant impact on financial development. They can also help individuals and businesses develop their financial capabilities[14,15,16,17,18]. The foregoing suggests that the quality of institutions and the regulatory framework will go a long way in determining the effectiveness and growth-promoting capacity of the financial system.

Furthermore, recognizing the importance of institutions in fostering inclusive growth in some of the economies mostly the developing countries, however, remains a difficulty[19,20]. While industrialized economies like the United States and Europe, and Asia recognize the importance of institutions, more than 75 percent of their respective populations have access to financial services for productive activities[21,22]. Countries with stronger institutions have higher levels of financial development and more equitable growth than those that do not[23] . It is noted that the nations that took off and caught up with sophisticated economies were mostly East Asian economies with a lot of labour but robust institutions. In comparison to the rest of the world, the population of many low- and middle-income developing countries in general, and Nigeria in particular, has limited access to formal financial services. Today, 42 percent of Nigeria's adult population, or over 42 million individuals, are financially excluded[24]. Significantly, knowing Nigeria's unbroken democratic government from 1999, it is vital to assess how the country's existing institutional frameworks have helped to ensure equitable growth and inclusive growth. As a result, the research on the financial development-inclusive growth nexus, as well as the implication that the quality of institutions underpinning the interplay between financial development and inclusive growth, serve as the motive for this study.

1.2 Statement of Problem

From theoretical standpoint, financial policy measures (expansionary or contractionary) backed up by a strong institution could significantly influence inclusive growth. By implications, institutional development matters for inclusive growth. It has been argued in the literature that contractual monetary policy measures tend to reduce inclusive growth in countries with low institutional quality than countries with high institutions; and expansionary monetary would tend to increase inclusive growth but not as much as those of countries with high institutional quality.

While the literature of the finance-growth nexus has acknowledged the role of financial development in sustaining the inclusive growth, evidence suggests that a well-developed financial system mobilizes savings from various depositors and allocates a proportion of resources into the most productive investment, resulting in increased growth. As a result, without a well-functioning financial system, these resources cannot be leveraged for long-term economic growth, and consequently inclusive growth. The greater the magnitude of financial development, the greater the access to financial services, which makes it possible for portfolio diversification, and such diversification enhances a country's long-term steady growth and, subsequently strengthens the social assistance and opportunities of consumers and producers who have access to banking services.

Over the years, the Nigerian government has taken measures to reform the financial systems with the aim of reviving financial activity to include the disadvantage citizens. However, the results of these reforms have not met expectations and consequently, gains from inclusiveness have been limited. Various arguments have been given to justify the failures of these financial development policies. Some studies argue that the credit market is subject to knowledge asymmetries and transaction costs, which render adjustments ineffective. While

scholars argue that a liberalization program cannot be executed without taking into account the unauthorized financial industry. Furthermore, other studies assert that the operation of the financial system is influenced by social and environmental factors, notably the quality of institutions[25,26]. The quality of institutions is a vital component of financial development in Nigeria.

Since extant literature emphasize the interactive role of quality of institution with the financial development on inclusive growth, and empirical evidence from Nigeria has produced mixed results on the role of institutional quality play in mediating the relationship between financial development and inclusive growth, there is a need, therefore, for further studies to examine this phenomenon This study intends to bridge this gap.

Also, literature demonstrates that a certain financial development threshold must be reached before financial development translates to inclusive growth[27,28]. It also provided that huge finances may improve or mar growth; suggesting that financial development is only ideal to a certain point, thereafter worse-off the output growth and growth inclusiveness[29,30]. There is, however, lack of consensus in the literature on what this threshold should be. Thus, it becomes imperative, given the critical role financial development play in achieving inclusive growth, to further examine the issue of the threshold.

1.3 Research Questions

Given the above problems, the following research questions were addressed in this study.

a. What is the effect of financial sector development on inclusive growth in Nigeria?

b. What is the financial development threshold that will stimulate inclusive growth in Nigeria?

c. How does institutional quality affect inclusive growth in Nigeria?

d. What is the effect of interaction between institutional quality and financial development on inclusive growth in Nigeria?

1.4 Objectives of the Study

The broad objective of this study is to examine the relationship among institutional quality, financial development and inclusive growth in Nigeria. The specific objectives are to:

a. determine the effect of financial development on inclusive growth in Nigeria;

b. investigate the threshold at which financial development stimulate inclusive growth in Nigeria;

c. evaluate the effect of institutional quality on inclusive growth in Nigeria; and

d. evaluate the effect of the interaction between institutional quality and financial development on inclusive growth in Nigeria

1.5 Hypotheses

The hypothetical statements formulated for this research are as follows:

$H_0$1: Financial development does not have significant impact on inclusive growth in Nigeria.

$H_0$2: The threshold at which financial development stimulates inclusive growth is not statistically significant.

$H_0$3: There is no significant relationship between institutional quality and inclusive growth in Nigeria.

$H_0$4: The interaction between institutional quality and financial development does not impact on inclusive growth in Nigeria significantly.

1.6 Significance of the Study

The significance of examining the interrelation between financial development and institutional quality in Nigeria lies in the fact that the literatures have not been able to establish a certain threshold which either improve or retard the empirical outcome. Despite the liberal economies' insistence on promoting inclusive growth and development in developing countries, such as Nigeria, the implementation of this strategy has been largely unsuccessful. This is because the market's inherent exclusivity has not been able to achieve the necessary development. Besides, there is also a wide range of empirical literature on the interrelation between financial development and institutional quality, but it does not appear to have a sufficient evidence base on the link between these three factors. For instance, there is a dearth of literature that shows that the finance-inclusive growth nexus is an analytical outcome of institutional quality.

Furthermore, the need to examine the link between the institutional quality and the broad-based employment growth in Nigeria has been acknowledged as one of the most critical factors that can help solve the country's socio-economic problems. This study will provide a valuable insight into the interrelationship between the political and economic variables. It will also help in formulating effective strategies and programs aimed at addressing the country's various socio-economic challenges. This study will also provide governments with valuable benchmarks that can be used to evaluate their responsiveness to the needs of their citizens. It will also help in developing effective strategies and programs aimed at addressing the country's various socio-economic challenges. As a consequent, it will help in developing effective strategies and programs aimed at addressing the country's various socio-economic challenges. Having the necessary institutional quality will allow governments to formulate robust policies and programs that can effectively translate the country’s potentials into productive growth.

The outcomes of this study will serve as a valuable guide for policymakers and the global development community on how to implement policies and programs that are aimed at improving the institutional quality of a country. It will also help in discouraging the use of irrelevant development strategies and programs that can stunt the development process in developing countries. The foregoing suggests that the study will provide a comprehensive analysis of the various factors that influence the institutional quality of a country, which will also help in developing policies and programs that are aimed at improving the country's overall economic performance as well as promoting an environment that is inclusive of all sectors.

1.7 Scope of the Study

This study analyzed the growth of the Nigerian economy from 1985 to 2020. It takes into account the country's structural adjustment program which was introduced in 1986 as an alternative to the previous planning efforts that were not designed to address the country's weaknesses. The period also marked the emergence of the global financial crisis and the recession in 2020, which was triggered by the decline in the oil prices. Besides, the rationale, as to the best of my knowledge, the effects of institutional quality on financial development and inclusive growth had not been systematically investigated in Nigeria using robust and efficient estimators. Given this period under concern, the macroeconomic performance of mostly all the economies was affected, and this introduced remarkable fluctuations in macroeconomic indicators and the poverty index. Thus, this study suggests that the data and the methodology can create further and treasure empirical outcomes on the impact of institutional quality on financial development and inclusive growth in Nigeria. This sample period is due to the availability of data obtained from the Central Bank of Nigeria Statistics Bulletins, IMF's International Financial

Statistics and other reliable Statistical Database. However, this study tends to shift from the previous measurement of growth by exploring inclusive growth.

1.8 Operational Definition of Terms

Inclusive growth: This lay emphasis on the pace and distribution of economic growth. It hypotheses the need for an economy to effectively and efficiently sustain its economic growth in reducing poverty, such growth needs to be inclusive.

Inclusiveness: This entails fairness, equality of opportunity, equity, market protection and transitions of employment which are a vital ingredient of any successful growth strategy.

Inclusive Growth Framework: This integrates equity and growth by using a utilitarian social welfare function drawn from consumer choice literature, as inclusive growth relies on two factors: income growth; and income distribution.

Institutional Quality: Institutions are important in defining game rules for society because they provide formal and informal restrictions on the interactions between political, social, and economic systems. Institutional quality is defined as the overall conditions for investment and growth and institutions are seen as supporting a country's economic development (i.e., private property rights protection, the rule of law operation, low level of corruption, and private interaction rather than small elite protection). It is a simple weighted average of the institutional quality indices is political risk factor of government stability, control of corruption, law and order and bureaucracy quality.

Financial Sector Development: This is defined as the growth and development of the financial institutions towards ensuring equitable provision of credit to the people of a society, most

especially the less privileges as well as the total amount of money supply to ensure smooth running of economic activities towards achieving development.

Endnotes

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Chapter Two

Literature Review

This chapter reviews the literature that relates to the nexus among institutional quality, financial development and inclusive growth. It presents the conceptual review, theoretical review, empirical review and further identifies the gaps in methodology and literature.

2.1 Conceptual Review

2.1.1 Institutional Quality

Law, and high-quality government regulation and services are all part of institutional quality. Institutions, according to North are "humanly constructed limitations that affect human interaction"[1,2]. Essentially, in North's theory, executive power is limited, which increases institutional quality. The strength of such limits is formed by the qualities of enforcing them, which might be explicit regulations or informal restraints. In their paper, three notable scholars argued that a more complex institutional framework is needed to ensure that a balance of power is maintained between those involved in the economic system and those who are not[3]. This framework should enable participants and business owners to enjoy de facto control over their ventures and investments. A renowned author argues that the person has the right to develop and implement his or her own ideas and capabilities[4]. They also believe that an investment in education or new technology is usually sunk. This means that one has the opportunity to follow a certain career path and manage a facility that has significant physical investments.

It is clear from the preceding that institutions affect the costs of financial relationships: they promote growth through agreements and enforcement mechanisms, uniform business codes, and improved data availability, all of which lower transaction costs, risk, and uncertainty.

Institutions are societal systems that meet societal demands. They are not only necessary for society's requirements, but they also contribute to the society's construction. Institutions have had a significant impact on people's attitudes about labour, as well as their willingness and efficiency for economic progress. They will be growth-oriented if they can motivate others to work hard and take chances. They will be development stifling if they do not. This means that institutions either encourage or limit growth to the degree that they safeguard effort. The institutional framework of a country has a significant impact on a country's willingness and ability to save, as well as capital accumulation. The protection of the right to property should be a central component of any legislation that aims to encourage the private sector to develop. This can be done through the establishment of legal security measures that safeguard both the private and public sectors[2]. If institutions treat physical capital with respect, investors will be motivated to invest their capital. As a result, society will save more, and the rate of capital formation will increase. As a result, people's sense of conduct, behaviour, and habits vary in line with the regulatory arrangements of the society, and social institutions have a decisive impact on saving and human capital development[1].

2.1.2. Financial Development

A financial system is a network of financial institutions that can be used to make financial transactions and manage the risks associated with its operations. Efficient use of resources can stimulate economic growth. The efficiency of the financial system is related to the country's economic growth. A sound financial system can be achieved through the healthy operations of financial institutions. Aside from having a sound financial system, the equity and bond markets also have the necessary tools and resources to manage the risks associated with their operations. According to some studies, the activities of financial institutions can be

influenced by the government's restraints on their operations. These include the interest rate and credit programs. These restraints can also affect the quality of investment and the quantity of financial transactions. The authors of these studies claim that interest rate controls can distort the country's economy by discouraging investors from taking on high-risk projects and by making financial intermediaries more reluctant to lend to established borrowers. They also believe that financial liberalization policies can help stimulate the country's financial development by allowing more people to borrow at low costs. For instance, they claim that those who can afford to borrow at low interest rates can actually invest in capital-intensive projects[5]. They analysed the various financial restraints that the Central Bank of the Philippines has implemented through its annual reports. They then came up with two quantitative measures that they can use to investigate the country's financial development. These researchers then used an economic model known as the exponential convergence method to study the effects of financial policies.

The role of trade openness in financial development has been studied[6]. The authors highlight the various interests of supply-side groups, such as financial intermediaries and industrialists, in preventing financial development. They believe that incumbents are more likely to resist financial development due to the threat of new entrants. The lack of incentives for financial development is caused by the increasing availability of capital and foreign competition. This undermines the incentives for the country to develop financial systems that are more open. A cross-country study conducted from 1980 to 2000 analysed the relationship between financial development and trade openness. It used dynamic panel data techniques to study the relationship between financial and trade openness[7].Two groups of indicators were then used to measure the relationship between financial and trade openness. The results of the study support the controversial theory that the simultaneous opening of trade and capital flows can stimulate

financial development. They also suggest that the quality of institutional institutions can also be an independent factor that influences financial development.

Scholars have argued that the various constraints that economic actors have to face are influenced by the decisions made by the institutions that they rely on[8].They also believe that political power is determined by the allocation of resources and the political institutions. Despite the various constraints that political institutions can impose on the development of financial markets, countries with weak political institutions are more prone to experiencing financial instability. Other authors have also studied the link between financial and trade openness in the Middle East and North Africa (MENA) region[9]. The study revealed that the quality of institutional institutions plays a significant role in the development of financial markets. It also supports the idea that the allocation of economic rights is important for markets to function properly. The results of the study also indicated that the level of openness and infrastructure development are the most important factors that contribute to the development of financial markets in the Middle East and North Africa region[10].The author of the study argued that the government can start economic and financial development through the establishment of financial institutions. Authors noted that the country's industrial banks have a relatively positive effect on the country's economic development. However, he noted that the political view of the government's participation in finance is more focused on its political objectives. Proponents of the political view argue that governments control banks and enterprises in order to provide subsidies and employment to their supporters. This viewpoint holds more weight in developing countries due to the lack of protection for property rights and financial systems[11]. Another study conducted on the effects of state-owned banks on the country's economic development revealed that they have a negative effect on the country's growth. They found that these banks have lower

profitability than their private counterparts[12]. Despite the positive effects of state-owned banks on the country's economic development, the study found that they have a negative effect on the country's financial development. This suggests that the presence of government-owned banks leads to a slower growth rate. This conclusion supports the idea that the ownership of banks at an earlier stage may have contributed to a slower growth rate.

There are conflicting predictions about the relationship between financial development and bank concentration. One view suggests that the concentration of commercial banks will negatively affect the efficiency of the financial sector, while the other suggests that the relationship between financial development and bank concentration is positive[13]. The study analysed data sets from over 90 countries covering various aspects of the financial development and institutional environment. It also used a combination of factors to determine the concentration of banks in each region. The study found that bank concentration does not significantly affect the stock market development, financial development, or bank efficiency. In fact, its findings contradict the conventional view that bank concentration is associated with various factors such as financial stability and banking sector efficiency.

2.1.3 Inclusive Growth

Despite the various efforts being made by various government agencies and institutions to attain inclusive growth, there is still a lot of doubt as to what exactly this term means. The concept of inclusive growth has been around for quite some time, and it was first used to describe the benefits of pro-poor growth to the poor[14]. Inclusive growth is a process that involves reducing inequality and poverty while increasing the social opportunity function for the population. It is defined as a process that involves varying the opportunities available to the individual. Various factors such as productivity, employment, and human capabilities are

considered when it comes to implementing this concept[15]. One author states that inclusive growth is a process that can lead to significant poverty reduction. It can be achieved through the expansion of the country's economic scope and the expansion of its equity opportunities[16]. The concept of inclusive growth states that it allows people to contribute to the growth process by increasing their income and improving their quality of life. According to the authors, rapid growth is needed to reduce poverty, but it should also be accompanied by broad and inclusive growth[17].

Inclusive growth refers to the achievement of sustainable economic growth that is inclusive of all its various dimensions. It involves ensuring that all individuals and groups have equal access to the opportunities that are generated by the growth[18]. Although there is no clear definition of inclusive growth, the concept is understood to refer to growth that is inclusive of all its various dimensions. According to the authors, inclusive growth is associated with lower income inequality, which means that the increase in income that the lower-income individuals receive is disproportionately distributed. This concept of poverty reduction is the main objective of any policy debate[19].The key factors that influence the development of a country are the policies and programs that promote economic growth, job creation, and social protection. The goal of inclusive growth is to create a conducive environment for sustainable development by developing a road map and strategies that can guide the implementation of these goals in Nigeria.

A country's quality of institutions will determine if it will be able to grow. There has been a lot of evidence indicating that high levels of quality institutions can lower poverty and inequality. Some of the indicators that have been identified as indicators of good institutions include the control of corruption, the rule of law, and the absence of violence. High levels of quality institutions are known to promote inclusive growth. This is because they require the

participation of all groups in the decision-making process[20,21]. To achieve this, the government should ensure that its policies are focused on upholding the rights and privileges of all its citizens[22]. This is because they require the participation of all groups in the decision-making process. Having a credible and capable government is also known to promote inclusive growth. It will fight corruption, which is a major impediment to the country's economic development.

One of the most significant factors that can help achieve inclusive growth in Nigeria is investing in human capital. According to an author, this can help lower the inequality gap and increase the participation of the common man in the growth process[23]. Human capital is also beneficial for the development of rural areas, as it allows them to access quality education. It is argued that the development of human capital should include the enhancement of vocational skills of citizens so that they can earn their income. This is because the effects of health inequality can have a significant impact on economic growth. Getting good health care facilities and services to the people of the country will not only strengthen the active work force of the citizens, but it will also enable them to participate in the growth of the economy. According to the saying, "Health is wealth," investing in these facilities will allow the citizens to share in the benefits of the country's economic development. Human capital is an essential component of any nation's strategy to grow. It should be built on a robust and balanced human resource base to enable all those who are engaged in the growth process to fully realize their potential[24].

The number of available jobs is one of the most important factors that will determine if growth will be inclusive in Nigeria. It doesn't matter if the job types that are created are temporary or permanent. In order for growth to be inclusive, all workers must be engaged in the process of contributing to the country's growth. The creation of jobs will greatly enhance the income earning capacities of workers in the country. It will also help reduce the level of poverty

in the country. According to literature, jobs are transformative in terms of providing a better quality of life for the people[25]. Studies have shown that the creation of jobs can help countries exit from poverty. These studies also indicated that increasing salaries or the number of jobs can help lift workers out of poverty[26].

Developing countries need to move away from their dependence on subsistence and crude oil production to become more productive and sustainable. This will help them achieve their goals of becoming more inclusive and reducing their over-dependence on certain sectors. It will also help boost their economic stability and create more jobs[27]. This is very important for Nigeria as it will ensure that the attention of the poor is not diverted to low-return activities. Unfortunately, this debate about the best way to transform the economy has not been resolved. There are conflicting evidences supporting the conventional wisdom that trade openness and investment liberalization can help lift the living standards of the poor[28]. However, there are also cases where these prescriptions have failed to improve the performance of the poor. The Nigerian government should adopt policies that are not discriminatory in approach in order to achieve inclusive growth. This can help minimize the effects of discrimination on the country's development. If the goal of inclusive growth is to benefit all groups in a country, then policies should be designed to address the various discrimination and marginalization issues faced by certain segments of the population. Doing so will ensure that these are not left behind and are carried out in the country's efforts to eradicate poverty. The marginalization of certain groups has been observed to have a negative impact on their access to essential services and education[29]. Women are the most affected by this issue as it affects their participation in the workforce and in the ownership of assets in Africa.

2.2 Institutional Quality, Financial development and Inclusive Growth: Conceptual Link

Instead of using relative terms, pro-poor growth and inclusive growth are measured in terms of their contribution to the overall economy[30]. Inclusive growth is a type of growth that aims to reduce poverty and improve the lives of the people who are affected by it. This type of growth is also beneficial for the environment by increasing the productivity of the workforce. Instead of focusing on income distribution, inclusive growth aims to create productive employment. This concept has emerged as a paradigm shift in the literature, yet it is not widely studied. Aside from income, inclusive growth also takes into account the various dimensions of human well-being[31]. The benefits of inclusive growth are numerous, such as the reduction of poverty and improving the lives of the people who are affected by it. Although various countries have tried to address the issue of income inequality, such as China and India, the situation continues to worsen. The core objective of inclusive growth is to create an environment that is conducive to the employment of the poor. The concept of inclusive growth has gained immense popularity in the past few decades. It has been shown that it can help lift the lives of the people by reducing poverty and improving their quality of life. It also aims to create an environment that's conducive to the creation of productive employment. Through inclusive growth, individuals can become part of the productive process and help reduce the unemployment rate[32]. This can also contribute to the reduction of poverty. Figure 2.1 provides a conceptual illustration on how in institutional quality intermediate between financial development and inclusive growth.

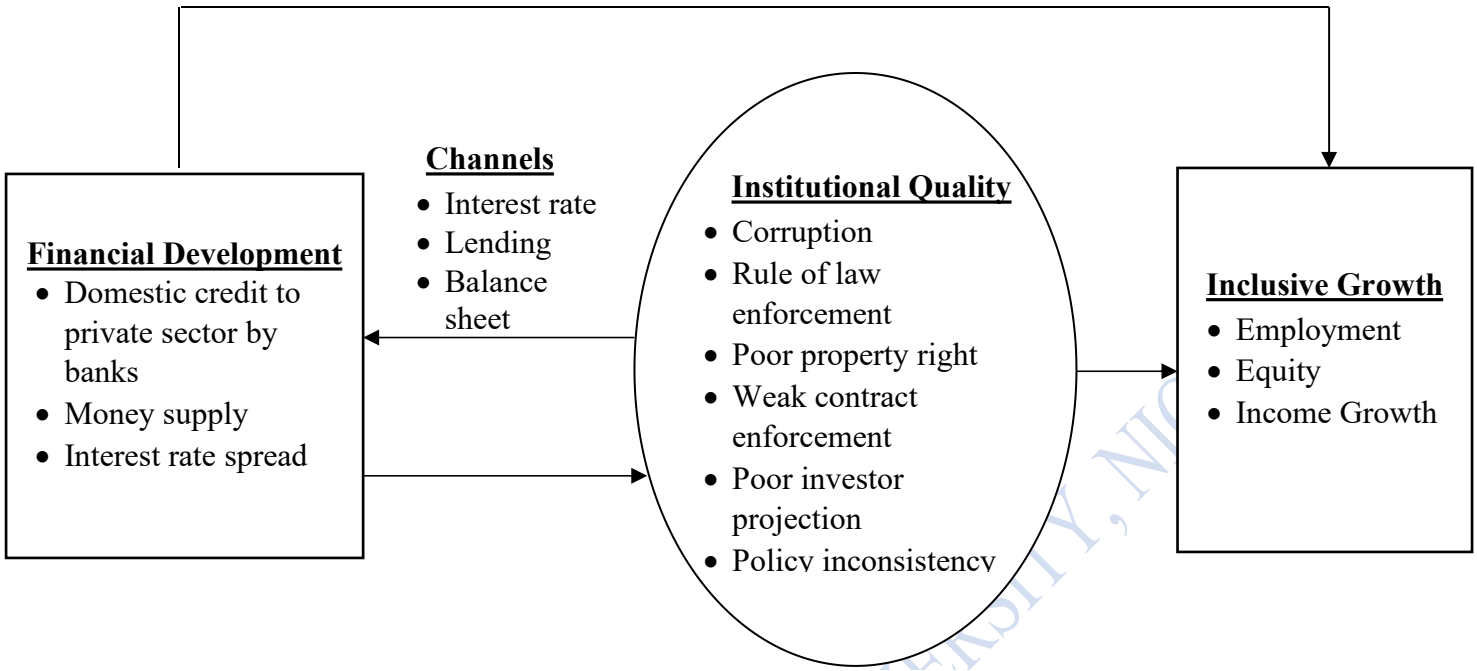

Figure 2.1: Conceptual links of institutional quality, financial development and inclusive growth
Source: Author's conceptualization

The role of financial development in achieving an inclusive growth is shown in Figure 2.1. It makes people more productive by allowing them to choose their jobs at competitive wages. However, it remains to be seen how the development of financial services can be influenced by various factors such as formal rules and norms[31]. The various social and cultural traits that influence people's behaviour and attitudes towards growth are also related to the development of inclusive growth[2]. This concept has been supported by various studies that claim that the role of political institutions in promoting economic welfare has become significant[33]. The need for inclusive growth is realized due to the lack of social and economic opportunities for the poor. This issue can also be caused by the weak institutional structure.

Despite the various factors that can affect the development of financial institutions, such as government policies and the implementation of economic systems, they are still important factors that contribute to inclusive growth[34]. Institutions are regarded as social and legal norms

that govern the allocation of resources and the promotion of growth. The quality of institutions plays a significant role in the efficiency and volume of investment. This is because they restrain the interactions between people and promote the development of an environment that is conducive to economic and social growth. Institutions are also designed to limit the incentives for economic and political exchange[34]. It is suggested that a full market-based economy should have institutions that are designed to protect property rights, enforce the rule of law, and prevent corruption. Also, support macroeconomic stability by ensuring that the value of money is protected and that the government maintains a sustainable fiscal stance[35]. The goal of financial markets and institutions is to respond to informational and technological constraints in a way that is optimal for their respective roles. This is done through the establishment of rules-of-the-game and the allocation of capital. Unfortunately, there are many factors that can affect the accumulation and allocation of capital[36]. The rise of asymmetric information costs is largely linked to the lack of development in financial institutions. This is why it is important that they are well-equipped to handle this type of environment.

Institutions can play a vital role in the development of inclusive growth by influencing the policies and procedures that affect financial development. These include the enforcement of contracts and property rights[36]. Well-developed institutions can protect the disadvantaged by enforcing the terms of their contracts and providing them with property rights[37]. They can also help minority shareholders by protecting them from the powerful elite. This concept can also protect creditors against the risk of asymmetric information[38]. It can also help prevent individuals from sabotaging their contractual obligations. Institutions can also help prevent people from going bankrupt by establishing commitment mechanisms and third-party arbitrators. Quality institutions can help reduce the cost of these services due to the complexity of their operations

and the lack of effective regulation[4]. The role of institutions in shaping the finance-growth nexus is a critical channel through which policymakers can influence the policies that affect the economy. Institutions can also shape these policies through their involvement in the budgeting process. The role of institutions in shaping the finance-growth nexus is a critical channel through which policymakers can influence the policies that affect the economy[39]. This can be done through the establishment of a policy mix that includes regulation, financial openness, and macroeconomic policies.

2.3 Theoretical Review

2.3.1 Growth Theories

The goal of economic growth theories is to explain the various factors that determine the success of a project. They try to identify the most critical conditions that can trigger development. Neo-classical, classical, and even endogenous growth theories all attempt to find a model that can be applied to various issues. However, many of the standard growth theories ignore the role of quality institutions.

2.3.1.1 Classical Theory

The classical growth theory states that markets regulate themselves. The theory states that the increase in wealth of people is linked to the improvement in the output of factor inputs, which in turn increases the size of the functioning capital. Adam Smith argues that population growth is a function of the substance available to the individual. The concept of investment is also considered as an asset that can be produced as a result of savings. The rise in land productivity was attributed to technological advancements and geographical discoveries. The main factor that drives productivity growth is the division of labour. The theory of competition

states that technological advancements can lead to rapid growth. However, it warns that a sudden increase in real output per person could cause a population explosion that would reduce real gross domestic product. This concept is based on Thomas Malthus's theory of agriculture. Thomas Malthus' examples show that the number of seeds harvested from a plot of land is related to the number of workers employed on it[40].

2.3.1.2 Neoclassical Growth Model

The concept of the neoclassical growth model was developed by Trevor Swan and Robert Solow in the 1960s[41]. It states that the rate of growth of the gross domestic product is increased by the higher share of investment and the decrease by the rate of depreciation of the physical capital stock.The model assumes that the labour force growth is constant, and all saving is equal, and that the output is dependent on the interaction between labour and capital. It also states that the production function Y = F (K, L) shows constant returns, and that other factors such as the variable factor, also hold constant[42]. According to the neoclassical growth theory, the continuous increase of the labour force is required to boost productivity. This is done through the build-up of various resources, such as human capital and physical capital. It also states that the accumulation of these factors is stimulated by the private sector. The idea that government can only affect economic growth by investing in education and research was suggested by the neoclassical growth model. The literature also stated that an increase in the total factor productivity of the country would compel an increase in the output per worker[43]. The school of thought explained that the effect of a decrease or increase in the national product on the growth rate of the worker would depend on the share of capital that is owned by the owners of the country's economy. The marginal product of capital is computed by taking into account the share of capital that is equal to the total output.

The neoclassical growth model states that technological progress is determined by the level of competition in a country. The inclusion of this assumption in the model was necessary to ensure that all the resources are properly allocated[44]. The criticism levelled against the model has led to the development of the endogenous growth theory[45]. The ideal competition theory states that the optimal allocation of resources is achieved through the proper allocation of capital. This ensures that markets are open and that investors are able to make informed decisions. Unfortunately, when markets fail to clear, investors' expectations are disrupted and the information becomes inaccurate. The effects of changes in investment plans on economic growth are typically the main factors that affect the country's long-term growth rate. The failure of the neo-classical model to take into account the various factors that affect the country's long-term growth rate is a major weakness.

2.3.1.3 Endogenous Growth Theory

Before the emergence of the endogenous growth models, various attempts to endogenize technology were made. The classical model of external factors failed to explain how economic growth can be sustained[46]. According to the theory of the endogenous growth, the factors that contribute to economic growth are the investments in capital, knowledge, and innovation. The long-run growth rate of an economy is a function of its total factor productivity. In the case of the neoclassical view, the long-run rate of technological progress is mainly influenced by external factors. The goal of the endogenous growth theory is to explain how technological progress can be influenced by factors outside the control of the government. According to a noted author, technological progress is made through the invention of new products and processes, which are often the result of economic activities[47]. Learning by doing is not restricted to the firms that produced the goods and services, but also to the firms that acquired them.

Thus,in a competitive equilibrium, technological progress would not be compensated for by the additional capital that would be received by the labour and capital.

The growth of technological progress is dependent on the increase in saving propensity. This is why the Arrow model was only used in the case of fixed capital requirements and fixed labour requirements. It shows that the long-run growth of output was limited by the growth in labour. The accumulation of capital is a crucial factor that limits the growth of an economy. In a neoclassical model, the other factors that affect the output, such as the employment of workers and technological progress, are also taken into account. In a different type of model, the other determinants are taken into account, and the growth of one of these factors is assumed to automatically increase the output in proportion to capital. This method allows the output to grow in line with the increase in capital. The AK model was the first major innovation in the field of economics. It predicted that a country's long-run growth rate would be dependent on various factors such as the efficiency of the country's resource allocation. The first analytic models of AK were traced to prominent authors[48]. Some of them developed models with fixed coefficients and others with substitutable factors and market clearing features. The latter model was designed to reconcile the positive long-term growth result of Harrod-Domar with the neoclassical model's constraints[49]. The Solow model is a constant savings rate, while the Frankel model proposes a learning-by-doing approach that can increase productivity. According to the author, capital is the determining factor of capital, but not employment[50]. He noted that the similarities between capital and knowledge can lead to the elimination of the Harrod-Domar model's fixed coefficients. A new approach to the AK model was presented by two researchers[51]. They argued that knowledge could be profitable to the explorer, but it could also lead to technological spill-

over and make it more accessible to others. Their model was based on a combination of social learning and the trade-off between consumption and capital.

The development of new economic theories has been linked to the effects of policies that support research and education. This is because these policies could have a significant impact on the long-term growth of the economy. New institutional economics has also been developed, which suggests that the role of institutions in the market economy is becoming more apparent. For instance, according to the author, factors such as technological and institutional conditions can affect the sustainability of an economy[52]. In another perspective, this suggests that the quality of institutions is also linked to the capital and resources that they produce. The sustainability of an economy can be achieved through the various institutional settings that are designed to improve the efficiency of the financial system. According to literature, good institutions can help boost the efficiency of the financial system by investing in areas that are expected to stimulate growth, while weak institutions can allow their activities to divert credit to unproductive and inefficient activities[53,54]. The relationship between financial development and institutional quality can also be affected by the substitution of various inputs with technological change. For instance, technological change can affect the composition and quality of the institutional output. In his paper, Solow criticized the limits of the theory on technological progress as a way of mitigating the effects of the scarcity of resources.

2.3.1.4 Inclusive Growth Theory

While inclusive growth is still in its infancy, it stands in stark contrast to traditional pro-poor growth, which excludes those at the bottom of the income/wealth divide from revenue accumulation processes. Through two compelling pillars: labour-absorbing growth and rising productivity among the employed, the idea of inclusive growth suggests a more active role for

the poor. Apart from the fact that the whole conceptualization and modelling framework has not yet been defined, few empirical researches have been conducted to determine the extent to which the economy's growth fluctuations are inclusive. Inclusive growth places a premium on economic growth, which is both required and critical for poverty reduction. Inclusive growth takes a long-term view and is concerned with both the rate of growth and the pattern of growth. Additionally, Kuznets's and Solow's studies have dominated growth theories, and these researches account for the fact that economic growth, inequalities, and poverty are all related[55,56]. These inequities remain notwithstanding considerable growth in the economy, which culminates in individual isolation. Such income disparities foster instability and social activist groups, which have a detrimental influence on investment. As this was the case, and particularly since the early 1990s, arguments have concentrated on finding solutions to inequities that provide a fresh perspective on the concept of inclusive growth[57]. The concept of inclusive growth has become a primary goal for these academics and authors. According to the research, inclusive growth enables all parts of society to contribute to economic progress while also ensuring equitable opportunity, access to economic possibilities, and job creation.

A sustained rate of growth is necessary and frequently the primary determinant in poverty reduction, as demonstrated by a substantial body of literature and have argued that the poorer a country is, the more critical the growth component is in explaining poverty reduction. Sustaining high growth rates and poverty reduction, however, require expanding the sources of growth and efficiently integrating an increasing share of the labour force into the economic process. Often, the transformation is followed by a large redistribution of labour from agricultural to industrial and services, referred to as structural change and labour force enhancements. Studies have argued that growth encompasses the conditions that help the poorest[58,59]. This methodology has

been gaining increasing traction. Generally, two methods to inclusive growth have been used: a so-called relative strategy that aims to diminish inequities in favour of the poor. A second method, dubbed absolute, deems growth to be pro-poor when it results in an absolute decrease in the poverty incidence. Given the range of players who use the word inclusive growth, the notion remains ambiguous and lacks a consensus definition among relevant stakeholders. Inclusive growth occurs when productivity is increased and employment possibilities are provided.

Some scholars devised a systematic framework for identifying the most constraining limitation on growth, that is, the limitation with the biggest shadow price, in order to maximize the probability of a positive welfare effect[60]. The model presupposes that families have perfect foresight and must select how much labour and capital to rent to enterprises and how much to save or spend in order to maximize their individual utility within a budget constraint. At each point in time, firms maximize profits and generate a single good. Technology, complementary inputs of production, and the index of externality are all exogenous in their production functions. Several critics of this approach emphasize the impossibility of estimating shadow pricing in reality; the difficulty of rejecting limits as non-binding; and the methodology is oriented around the short term, ignoring aspects critical for sustained growth such as human capital accumulation.

Additionally, the analysis was conducted at an aggregate level, providing no insight into the limits affecting various sectors, business types, or the long-term impediments to economic development. Furthermore, as previously said, economic transformation is critical for sustained, broad-based growth because it enables economies to catch up and maintain high growth rates for extended periods of time[61]. Without structural transformation and economic diversity, empirical evidence indicates that no country has been able to achieve meaningful income growth and poverty reduction[62]. For low-income nations and those with small domestic markets, structural

change implies export diversification, as access to overseas markets enables economies of scale to be realized[63]. Despite the importance of structural transformation, it is not enough to simply replace the current structure with a new one. Doing so will not only prevent new industries from being able to compete, but it will also limit the country's growth potential. The three authors[64] of this study presented a paradigm that focuses on the factors that prevent individuals from contributing to economic transformation. However, it does not address the question of whether these factors can be prevented or restricted by human capital. For instance, it does not consider the skills of women and the poor in a particular region when it comes to assessing the capacity of market players.

2.3.2 Theoretical linkage between finance and growth

This section presents the early literature on the finance-growth nexus, which includes works by Shaw and McKinnon, as well as Neo-structuralism's critiques. It also explores the literature on endogenous and finance growth. For a long time, economists have been debating the various roles of the financial sector in the development of the economy. There has been a lot of empirical and theoretical evidence supporting the various aspects of its contribution[65]. Some of the early literatures on the subject focused on the question of whether the financial sector can play a role in the development of the economy or if it merely originated from rapid industrialization. Some authors noted that the financial sector can play a crucial role in the restoration of economic development[66]. A study conducted on the relationship between finance and growth revealed two patterns of development. One of these is the demand following and the other is the supply leading. In the former, the demand for financial services is satisfied by the growth of the financial sector[67]. The rapid growth of the economy has increased the demand for external funds. If the various sectors or industries experience great growth, then the demand for

financial services will increase. In the second pattern, financial intermediation helps channel savings to investors. The financial sector is a vital part of the country's economy, as it provides a variety of services to the modern and traditional sectors. It also promotes entrepreneurship. The link between finance and growth is expected to be established in developing countries, as the demand-following pattern will establish causality between finance and growth. The financial sector can also contribute to growth[68]. Through financial intermediation, it is possible to channel small funds to individuals with entrepreneurial skills, which in turn increases the availability of funds for those with less risk-averse backgrounds. Another benefit of this type of financial service is that the lower costs of borrowing can encourage investors to make larger investments. Due to the lack of sufficient empirical evidence supporting the link between finance and growth, the debate over the link between finance and growth has persisted in developed and developing countries.

Some authors criticized the policies of financial repression. They argued that the financial sector can help increase the volume of savings by creating incentives. They also suggested that governments should stop raising interest rates and should instead focus on increasing the investment rates. The authors of the models suggest that higher real interest rates can increase the volume of savings[69]. The authors of the models also noted that financial repression is caused by high inflation and the lack of interest rate ceilings. It can also be triggered by the high reserve requirements. They found the theoretical basis for this phenomenon related to the liquidity preference theory. In order to avoid a fall in income, the interest rate had to be lowered. According to the model developed by John Tobin, financial repression affects the distribution of wealth among households. It reduces the demand for money and increases the productive capital ratio. This can lead to faster economic growth.Economists believe that high interest rates can

cause inflation and slow down the economic growth by reducing the real credit volume. However, they noted that this effect is temporary and can only explain temporarily higher growth rates. Financial repression is also an implicit tax that the government imposes on the financial sector if it cannot collect enough tax revenue. The concept of financial restriction is considered an unintended consequence of the low tax-raising power of governments[70]. It can be detrimental to the financial sector if the government can impose excessive restrictions. The government can also benefit from financial repression by using the various restrictions to divert savings to the public sector. These include the requirement of a certain amount of reserve requirements and the interest rate ceiling. The banking and credit sectors are generally the best choice for this purpose.

In 1973, Edward Shaw and Ronald McKinnon criticized the financial repression theories of John Tobin and John Keynes. They advocated for the abolition of financial repression measures. Their model focuses on the role of financial intermediaries, investors, and savers. The concept of financial repression is similar to an inside money model, which means that loans to the private sector can be backed by the private sector's internal debt. As a result, the nominal interest rate is fixed, which means that it doesn't affect the real rate. However, when inflation or a decrease in the interest rate leads to a reduction in the savings rate, the value of the investment will decrease. One of the main arguments supporting the concept of financial repression is the idea that land ownership can be protected from inflation by increasing the demand for land. This can lead to higher prices for the property because the savings from bank accounts are no longer attractive. If financial repression occurs, the induced wealth effect can lead to a decline in investment and consumption. However, if it occurs in the form of a nominal interest rate, the value of the investment can increase. As a result, the policy prescription of Shaw and McKinnon is to remove financial restrictions and reduce inflation. Although the two authors agree on the

concept of financial repression, their theoretical approaches have different aspects. For instance, while Shaw and McKinnon support the concept of financial repression, they do not distinguish between investors and households. An investor must have a sufficient amount of financial assets in order to invest later. Since investors are not allowed to borrow to finance their investments, the McKinnon model is often regarded as an outside money model. The concept of financial repression is similar to an inside money model, which means that loans to the private sector can be backed by the private sector's internal debt. Financial intermediaries can increase their profitability by raising the returns that they offer to their depositors. They can also lower their real costs by implementing various measures such as risk diversification, operational efficiency, and liquidity preference. Although the two authors agree on the concept of financial repression, their theoretical approaches have different aspects[71]. For instance, while Shaw and McKinnon support the concept of financial repression, they do not distinguish between investors and households.

Following the debate between the two authors, several studies have emerged that expand the scope of the financial repression framework. Some of these models suggest that financial repression can be effectively regulated by national authorities through the fixing of the deposit rate at the lowest possible level. The money demand is affected by the various factors that affect the monetary supply, such as the nominal interest rate and inflation. Accelerating inflation lowers real money demand, which in turn reduces the supply of credit. According to the studies, if the interest rate is not set in a ceiling, the same effect can be observed when the required reserve ratio is reduced. This effect increases the wedge between the deposit and loan rates. The policy implications of this study are that lower reserve requirements can help boost the

availability of credit. Lower reserve requirements can also increase the deposit rate ceiling. This effect can boost the demand for deposits and the financial sector's profitability[72].

A number of authors have presented a model that suggests that financial intermediation and economic growth are both endogenous[73]. On the one side, financial institutions collect information in order to improve their efficiency and profitability, while on the other hand, they analyse the data to find the most profitable investment opportunities. In order to maximize the efficiency of their funds, financial institutions channel them to the most productive uses. An author proposed a model that allows financial agents to choose between two types of technologies: flexible and productive. The former allows them to expand their horizons and diversify their investments, while the latter is more specialized and produces lower returns. The rise of risk aversion and the lack of demand for certain products have led to the shift toward technological flexibility. This is why financial markets have allowed people to choose between the two types of technologies. They can protect themselves from negative demand by holding a diversified portfolio. The model allows for multiple types of incentives to be created in the financial markets. In the low-to-moderate equilibrium financial markets, people tend to choose productive technologies, which limit the incentives to develop them. The economy is in a state of underdevelopment due to the lack of technological innovation. In order to stimulate the development of new technologies, financial markets are needed. This concept is then extended to consider the multiple growth paths that are available in different countries.

A literature review proposes a learning-by-doing framework that takes into account the various externalities of the financial sector and the real economy[74]. The study aims to find out how these factors affect the growth of the financial sector and the real economy. The framework explains how the financial sector can channel savings to productive uses by analysing and

reporting on investment opportunities. In turn, the expansion of the real economy leads to an increase in the volume of savings. The two-way causality of the financial sector and the real economy leads to multiple equilibriums. Insufficient financial development can cause poverty traps. A study conducted under the auspices of the Schumpeterian model showed that technological progress can be achieved through the use of cost-cutting innovations[75]. The securities and financial markets can help entrepreneurs expand their operations and improve their productivity. They can also help them diversify their risk and manage their expectations. Financial systems can also help them evaluate their potential and develop a strategy to maximize their profits. The better financial systems can also help increase the likelihood of successful innovation. However, distortions such as high reserve requirements or deposit rate ceilings can prevent the innovation rate from rising.

A number of studies are also examining the effects of government interventions on the credit market and market failure. For instance, two scholars looked into the issue of financial repression under the AK model of endogenous growth. In their study, the authors noted that if governments adopt financial repression policies, they can generate easy inflation[76]. When financial repression is implemented, individuals carry a larger stock of money, which is the basis for the inflation tax. As a result, governments raise taxes on the financial sector to prevent people from saving. This leads to a reduction in growth. A different approach was then developed to examine the effects of financial repression and market failure on the growth of the real economy[77]. An endogenous growth model was then used to study the effects of credit rationing and growth on the real economy.

The concept of inclusive growth refers to the idea that the more opportunities a person has, the more he or she can contribute to the development of the country. This is because the

more effort a person puts into improving their situation, the more they can contribute to the reduction of poverty. Although, high growth rates and the reduction of poverty can be achieved only if the sources of growth are expanding and the share of the labour force is increasing, inclusive growth can also be considered as an extension of the growth theory. It focuses on the various factors that affect the development of a country, such as inequality, education, and poverty. Despite the various advantages of inclusive growth, the results of empirical testing of the models are still not very promising. Both the neoclassical and the growth theory emphasize the importance of the various factors that affect the development of a country's economy, such as technological innovation and capital accumulation. The various theories that deal with the concept of savings are commonly based on the assumption that they are equal to investments. For instance, if an investment entity does not have enough funds, then its savings would be equal to those taken out by the country. Due to the existence of complex information and transaction costs, the financial market can't function properly. Human capital is also a major factor that contributes to the growth of the economy. The increasing number of people with a good educational background can boost the productivity of the labour force and improve the quality of services. Aside from investing in education, it is also important that investors have a financial system that supports their growth. The summary of the various theories and investigation on the relationship between economic growth and financial system can be illustrated as[78]:

- The development of a financial system is regarded as a key factor that can influence the growth of the economy. Such that the increasing supply of financial services can lead to the growth of the economy, and a poorly developed financial system can prevent the country from achieving high economic growth rates. Particular emphasis is put on the ability of the

banking system to create and direct money into productive and innovative projects, which stimulates economic growth[79].

- The demand-following approach refers to the development of the financial system as a result of economic growth. This process involves increasing the demand for financial services.
- Development of the financial system is initiated by economic growth (demand-following approach). This approach implies that economic growth leads to an increase in demand for financial services, which leads to development of financial markets and financial institutions[80].
- There is a two-way causal link between financial development and economic growth. This relation indicates a return feedback between financial and real sector.
- There is presence of a positive correlation is only a consequence of a random and simultaneous positive or negative trend in financial and real sector. Meanwhile, the early work on financial development highlighted the key role in economic development that could be played by a financial system[81].

2.4 Empirical Review

The literature on the link among financial development, institutional quality and economic growth has stimulated various empirical studies. The goal of these studies is to identify the transmission channel that influences the quality of institutions has on the growth of the financial services and inclusive growth of developing countries.

2.4.1 Developed Economies Studies

There is a wide variety of empirical studies that examine the effects of financial development on growth, but few studies that focus on the components of inclusive growth such

as income inequality and poverty reduction. The literature on the role of financial markets in growth has been heavily influenced by the work of Peter Schumpeter[82]. According to the author, financial markets play a vital role in helping investors make informed decisions and reducing the risk of financial transactions. The author argues that the development of financial institutions can contribute to the growth of the economy by increasing the capital accumulation and reducing the cost of external finance. Other authors also believe that this can boost the economic growth by making firms more profitable[83,84,85]. According to the author, the high reserve requirement and the interference in interest rate policies are some of the factors that contribute to the underdevelopment of financial institutions[86]. In a study conducted in 1978, Law and Demetriades looked into the relationship between economic growth and financial development.[87]. The financial development has a significant impact on GDP per capita in countries with sound institutional framework. When they compared the data for different countries, they found that the financial system is more effective in middle income regions.

Through a series of studies, the World Bank and Global Findex examined the link between financial inclusion and economic development in emerging and developed countries. They found that women's access to credit cards and bank accounts has a positive effect on development.[88]. A study conducted on middle-income countries revealed that the relationship between economic growth and financial development was strong. They used a panel-vector autoregressive model to analyze the relationship between the two[89]. It was also found that the quality of institutions was positively related to economic growth, but the causality depended on the type of institutional quality. Through a study conducted on global Findex Data, researchers were able to identify the factors that influence the quality of institutions in different countries. They found that political stability, control of corruption, and transparency are some of the factors

that influence financial inclusion in a study conducted on Eastern Indonesian, researchers explored the link between economic growth and financial inclusion. They found that the positive impact of economic growth on the level of financial inclusion was outweighed by the negative impact of poverty. They used a dynamic panel auto-regression model to analyse the data[90]. A second study conducted on the link between financial inclusion and institutional quality in 45 OIC countries revealed that the relationship between the two is strong. This studyalso noted that institutional quality can have a positive impact on financial inclusion[91]. Interestingly, the study also found that institutional quality moderates financial inclusion and has a significant positive impact on financial development.

A study conducted using the structural model for investment revealed how financing constraints and financial sector development affect the growth of firms. The author used this method to analyse how different factors such as firm level data and financing constraints can affect the efficiency of firms' investment[92]. The results of the study revealed a negative link between financial market development and firms' responsiveness to investment. Other factors such as the size of firms and the legal environment were also studied to find possible explanations. New studies conducted in the U.S. indicated that technological advancements can help boost the country's economic growth by increasing the efficiency of financial intermediation[93]. They also believe that the country's financial system can be more effective in allocating capital and credit. According to the studies, the technological advancements in the financial sector contributed to over 29% of the country's GDP growth during the period 1997 to 2004.

A subsequent study conducted on the effects of financial sector development on the country's economy revealed that other factors such as the size of firms and the legal environment

can also affect the country's growth[94]. The author of the study also noted that financial sector development is a vital factor that can guide the country's long-run economic growth. A study conducted by two researchers found that financial inclusion can improve the stability of banks by reducing their funding costs and boosting their pricing power. The study analysed over 2,000 banks from 86 countries[95]. The study found that financial inclusion can help stabilize the financial system of a country. It also noted that various policies and regulations can hamper the development of financial markets in other countries. For instance, certain restrictions on foreign investment can prevent the exploitation of these opportunities[96]. A different study argued that financial depth does not play a significant role in the long-run growth of the economy. Instead, it is influenced by the regulation and supervision of banks. The authors also stated that higher levels of financial sector development may not be beneficial for the economy[97].

The authors[98] of this study conducted a study to investigate the effects of financial inclusiveness on the growth of the economy in 63 developing and developed countries from 2014 to 2017. They measured the level of financial inclusion in each country using a cross-sectional threshold method. The study revealed that financial inclusiveness had a non-monotonic positive effect on the growth of the economy. It showed that the higher level of financial inclusion was associated with a higher economic growth rate.The study aims to motivate policymakers and financial authorities in various countries to step up their efforts in increasing financial inclusion[99]. It also highlights the importance of institutional development and financial inclusion in achieving sustainable economic growth. The results of the study suggest that the establishment of a healthy financial system is very important for the development of an economy. The effects of bank-based and market-based financial systems on the growth of various economies were studied from 1960 to 2002[100]. The results indicated that the banking system in Japan, South Korea, and the US has

more influence on economic development than those in Germany, France, and the UK.A survey was conducted to find out why the relationship between the law and economic growth in China is not highly correlated[101]. The authors found that the Chinese method of governing could be effective. They also found that the asymmetric effects of financial development on the country's economic growth can be accommodated using a three-regime threshold autoregressive distributed lags (TARDL) method[102]. The study noted that financial development can boost economic growth in Singapore and Australia, while it can negatively affect the growth of Finland. In the middle and lower regimes, financial development can also boost economic growth in Malaysia and Singapore. However, it can hamper growth in the US and Singapore. The dynamic multipliers show the varying responses of different economic growth regimes to shocks to financial development. These are important because they show the differences in the way financial development occurs in different regimes. Consequently, two scholars concluded that financial development and institutions contribute positively to economic growth. The study also revealed that the intermediation effect of financial firms on the growth of the finance industry is strong[103]. The study was conducted to examine the effects of financial development on the growth of the emerging European countries' economy from 1995 to 2016[104]. The study found that financial development positively affects the growth of the economy only in the short-run horizon. It also disproves the notion of the finance-growth nexus, which suggests that financial development can have a negative effect on the economy until a certain point. The study also stated that the non-linear effect of financial development on the growth of the economy is only true for domestic credit.

2.4.2 Empirical Evidence from Emerging and African Countries

Various studies have explored the link between financial development and economic growth in emerging economies and African countries. Some of these studies have focused on the A study conducted in Malaysia revealed that the correlation between financial development and real per capita income was strong[105]. Another study conducted in the country also showed a positive relationship between the variables. They suggested that through financial liberalization the financial sector will be more vibrant and hence be more effective for the economic growth[106]. The results of Guru and Yadav study demonstrated that strong institutions and financial deregulation are crucial determinants for financial sector development, though sound institutions that ensure the rule of law have better impact on financial sector development than financial deregulation[107]. A study conducted in Pakistan revealed that the country's economic growth is linked to the development of financial institutions. This helps in reducing the risk and ensuring the stability of the market[108].

The study conducted by two scholars focused on the relationship between the quality of financial institutions and the development of financial sectors in developing and developed countries. It revealed that high-income countries have a stronger financial sector than low-income countries[109]. Although, the study conducted in Pakistan focused on the relationship between the quality of financial institutions and the country's economic performance, few researchers have actually looked into the issue. The findings of the study suggest that the relationship between the two is strong and stable. The results of the study revealed that the link between financial development and economic growth is not clear. However, it did not show a causality between the two[110].Another study conducted by an author analysed the effects of financial and institutional quality on the country's economic performance from 1984 to 2008.

The author argues that economic growth, financial development, and institutional quality are interrelated. He utilizes Engle Granger (EG) techniques and claims that these three factors exhibit a consistent long-term relationship.

Through a combination of the ordinary least square method and the generalized moment method, three scholars investigated the relationship between economic growth, financial development, and institutional quality. They found that the link between these factors is a substitution for bank-based financial development[111]. Although the evidence supporting the link between financial development and economic growth was found in stock market indicators, it was not found in a study conducted by a group of economists. They found that there was a negative relationship between financial sector development and economic growth in the United Arab Emirates[112]. Using the Toda-Yomamoto asymmetric causality technique, a few authors noted that there was a direct causal relationship between financial sector development and economic growth in selected European countries[113]. The two researchers conducted a study to analyse the effects of institutional quality and financial development on the growth of the Organization for Economic Cooperation and Development (OECD) countries from 2002 to 2014. They found that these factors significantly affect the country's economic growth[114]. The study revealed that the establishment of strong financial institutions and the quality of their institutional structure can boost the economic growth of developed countries. Through a linear method, the researchers were able to analyse the effects of financial development and institutional quality on the growth of selected countries in the Middle East and North Africa (MENA)[115]. They found that these factors significantly affect the country's economic growth. The findings of the study revealed that the quality of financial institutions can help mitigate the effects of financial development on the country's economic growth.

The researchers were able to use a panel GMM dynamic method to study the effects of financial development and institutional quality on the growth of selected countries in the Middle East and North Africa[116]. The findings indicate that the quality of institutions can help improve the financial inclusion of low- and middle-income countries. The findings also suggest that financial inclusion is associated with lower income inequality and poverty levels in selected countries.

A study was carried out on the effects of financial development on the growth of the 125 developing Asia countries[117]. It revealed that the efficiency of financial systems will be the key factor that will determine the success of the region's economy. The study found that financial development has a positive effect on the growth of developing Asia countries. It also noted that the impact of the Asian financial crisis has weakened since it started. The study also noted that financial development can help sustain the growth of developing Asia's economies during the post-crisis period. It found that increasing the institutional quality of financial systems can contribute to the development of a more prosperous South Asia[118]. The study noted that various factors such as demographic characteristics, income per capita, and legal regulation are positively associated with financial inclusion. It also noted that financial inclusion is associated with reducing poverty in developing Asian countries[119]. Using the Ordinary Least Square regressions to analyse the effects of financial development on China’s economic growth, some authors found that it has a negative effect on the tertiary industry[120]. A separate study conducted on the financial development of 15 emerging and growth-oriented economies revealed that it has no significant effect on the secondary and primary industries[121]. The results of the study indicated that a well-functioning institutional framework can help minimize the effects of ethnic fragmentation on financial development. They also found that the positive interactions between

various factors such as national culture and economic growth can contribute to the development of financial markets. The role of financial development and institutional quality in green growth in South Asian economies has been studied[122]. This study aims to analyse the long-run co-integration between these factors. It shows that financial developments and green growth have a significant effect on the country's overall economic growth. The findings of the fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) suggest that the quality of financial and institutional development is a vital factor that can help boost the green economy's long-term growth.

Some authors explored the link between the quality of financial institutions and development in emerging and developing countries by employing GMM methodology[123]. They found that good institutions are needed to maintain political stability and control corruption. The control of corruption index is helping developing countries improve their financial performance. It also shows that most of the countries have already reduced their corruption levels. The importance of good institutions is the main factor that contributes to financial development, and it also stimulates the flow of foreign direct investment into emerging economies. A positive impact of the environment on the inflow of FDI was also reported for the country's financial sector. Other studies also examined the linkages between macroeconomic stability and financial inclusion in 22 frontier and emerging economies from 2008 to 2015[124]. The author states that financial inclusion can help developing countries maintain their stable output and inflation rates. It can also improve their financial stability by increasing the number of bank branches. Researchers conducted a study to analyse the role of institutional quality in the development of South Asian countries[125]. They found that financial development leads to higher greenhouse gas emissions. The study also noted that the use of financial development for capital gains has

negated the need for improving production technology. The study found that institutional quality can help minimize the negative effects of financial development on the environment. It also suggested that efforts to improve the quality of public institutions could help promote sustainable development in the region.

Other multitude of the empirical studies had examined the relationship among financial development, institutional quality and economic growth. For instance, Adusei used the FMOLS method to study the relationship between Ghana's economy and financial development[126]. Despite the authors' claims that financial development negatively affects economic growth, other authors have also examined the relationship between financial development and various other factors such as institutional quality and growth. The findings of the review of the literature suggest that the relationship between economic growth and financial development cannot be explained across different countries due to the varying policies and institutions in each region. According to a study conducted by an author, the effects of finance on economic growth were only positive after a certain level of development has been achieved[127]. The study was conducted on 85 countries from 1980 to 2008. Conspicuously, the study revealed that the quality of formal institutions such as the rule of law, government effectiveness, and corruption are important factors that influence the link between financial development and the overall economy. It also conducted sensitivity analyses to explore the direction of causality between financial development and real output in 24 sub-Saharan African countries. The study revealed that the link between real output and financial sector development is unidirectional. It also explored the role of institutional quality in the growth of the economy in 24 African countries. Some of the authors also looked into the correlation between economic freedom and the quality of government in these countries[128].

The study, which was conducted in 48 African countries, explored the link between financial development and inclusive growth[129]. It used a dynamic panel technique to analyse the various factors that influence the link between financial development and the overall economy. The findings of this study suggest that the establishment of an effective regulatory framework for financial market participants is needed to ensure that they are inclusive of their operations. This would help prevent financial development from negatively affecting the country's economic growth. The study found that there is a short-run positive relationship between money supply and economic growth, government expenditure and private investment, and bank deposits. However, it also found a negative relationship between these two. In the long run, all indicators show that financial development positively impacts economic growth[130]. The study revealed that the financial development indicators have a positive long-term impact on economic growth. A study conducted in 2010 revealed that financial development has no significant effect on the growth of the economies of 21 African countries[131]. The study also looked into the effects of financial development and macroeconomic factors on the growth of African economies. It found that these two factors did not have a significant impact on the development of the continent's economies. The authors of a study conducted on the effects of institutional quality on the financial inclusion in 51 African countries analysed the factors that affect this achievement[132]. They found that the quality of institutions can increase the number of people who are able to access financial services using system–generalized method of moments (sys-GMM) technique. Recently, some authors have examined the impact of institutional quality on the success of financial development policy and contended that institutions have a decisive impact on the finance effect on economic growth and development. The findings emphasize the impact of institutions and a favourable legal on institutional environment for the formation of a foundation for healthy financial development[133].

Also, the authors of this study explored the relationship between the measures of institutional quality and financial inclusion in selected sub-Saharan African countries[134]. They found that the institutional context in these regions is not the sole factor that influences financial inclusion.

2.4.3 Empirical Studies from Nigeria

For Nigeria, two authors examined the nexus between stock market development and economic growth and confirmed negative impact of stock market development on economic growth[135]. Likewise, some authors examined the direction of causality between financial sector development and economic growth in Nigeria[136]. The findings from the study revealed that financial sector development granger causes economic growth in Nigeria. Nevertheless, some authors explored bound testing technique to ascertain the long-run relationship between financial sector development and economic growth for Nigeria. The outcome from the study revealed short-run gains at the expense of long-run growth coupled with various exogenous factors could have precipitated economic fluctuations in Nigeria[137]. Using Toda-Yamamoto non-causality test, three authors confirmed a bidirectional causal relationship between inclusive finance and the interaction of institutional quality and financial inclusion in Nigeria[138]. Another recent study employed asymmetric co-integration technique to ascertain that there is a long-run relationship among institutional quality, financial development and inclusive growth in Nigeria. The findings from the study also found that adjustments process to equilibrium for institutional quality; financial development and inclusive growth were asymmetric in Nigeria[139]. Another group of researchers examined impact of financial development on inclusive growth in Nigeria using an ARDL bound technique. The findings from the study revealed that short-run gains at the expense of long-run growth coupled with various exogenous factors could have precipitated economic fluctuations in Nigeria.

A study investigates the links between financial development and service sector's output in Nigeria for a period of 1981 and 2019[140]. The study adopted the Auto-Regressive Distributed Lag (ARDL) test approach to estimate the long and short run impact of market capitalization, monetization ratio, and domestic credit to the private sector to GDP on service sector output growth. The findings show that service sector output positively and significantly responds to changes in market capitalization and monetization ratio in Nigeria. On the contrary, credit to the private sector has an indirect and insignificant effect on service sector performance.

Three authors estimate the existence of the FDI-led economic growth hypothesis by reexamining the connection among financial development, FDI, labour force participation, investment, and output growth of Nigeria using a time series data spanning from 1970 to 2018[141]. The estimators used are the novel and recent robust Bayer and Hanck in 2013 combined cointegration test in conjunction with Pesaran's ARDL bounds and Toda-Yamamoto Granger causality. The findings revealed a long run relationship among the variables. Empirical estimates showed that banking sector development has a significant relationship with economic output. Also, FDI impacted the real GDP growth, implying that FDI acts as a key factor influencing economic growth. They argued that financial development and FDI are key predictors of sustainable growth of the Nigerian economy.

Using the VAR framework, a study examined the response of economic growth to changes in deposit money bank assets, ratio of liquid liabilities and private sector credit of deposit money banks, all as a ratio of GDP in Nigeria for the period of 1981-2014[142]. Findings show that real economic growth and the three indicators of financial development have no less than one common stochastic trend that dive their relationship. The VECM granger causality test revealed that there is a long run one-way causal relationship from output growth to liquid

liability and deposit money bank assets. However, the influence of deposit money bank assets on real GDP per capita shows little significant in the long run. As for private sector credit of deposit money banks, it has a bi-causal relationship with economic growth at the long run.

A study examines the links among investment, financial development, and output growth in Nigeria[143]. It also examines the role of investment in financial development and how it influences economic growth in Nigeria. Batteries of estimators employed to show the links among the variables are the standard VAR framework of Johansen, Inoue in 1999 cointegration framework with endogenous structural break model and Johansen et al. in 2000 cointegration test with exogenous structural breaks. Finding shows that there exist a long run relationship among investment, financial development and output growth after taking into consideration the structural breaks in the series. It means that accounting for structural breaks in series cannot be overemphasized in order to avoid biased estimates and misleading policy outcomes. Thus, it was established that investment act a channel through financial development influences economic growth.

A study investigates the effect of financial development indicators on the performance of manufacturing sector in Nigeria[144]. Employing the Vector Error Correction Model, the results reveal that there is no causal relationship between financial development series and manufacturing output growth. As regards the variance decomposition estimator, shocks of the financial development indicators significantly affect manufacturing output growth at different horizons. Furthermore, a research work understudied the links between financial development and economic growth in Nigeria[145]. The findings show that there is a significant long run link between financial development and economic growth in Nigeria except banking sector metric

which was found to have an insignificant relationship. Thus, other financial development series stimulate output growth.

2.5 Summary of Gaps in Literature Reviewed

The review of the extant literature reveals a seeming question on the relationship between sound institutions, financial sector development and economic growth. The literature shows that well-functioning institutions and vibrant financial sector play key roles for rapid economic growth. However, through the review of the relevant literature, it is apparent that despite the importance of these two variables on growth, only few systematic studies have been carried out on institutions, the financial sector development and inclusive growth using Nigeria as case study. Therefore, this study sought to fill this gap by looking at the impact of the interaction between institutional quality and well-functioning financial sector on the economic growth of Nigeria. Besides, for several studies on the relationship among financial development, institutional quality and economic growth, the outcomes have been mixed and inconclusive with limited focus on inclusive growth.

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Chapter Three

Methodology

This chapter presents the methodological analysis of this research study. It begins with the theoretical framework used to establish the links among financial sector development, institutional quality and inclusive growth. Afterward, it discusses the model specification which was specified for each specific objective. Other sections include theoretical expectation, data measurements and sources, and estimation procedures to analyse the study's objectives.

3.1 Theoretical Framework

Based on the fact that the concept of inclusive growth is relatively new[1], it is therefore hard to identify theories that propose the way the selected variables (financial development and institutional quality) influence inclusive growth[2]. Also, the analysis of factors determining inclusive growth is a new phenomenon that still lacks a well-established modeling framework[3]. The study therefore resorts to the adaptation of analytical framework[4] developed for inclusive growth as well as infusing theoretical explanation on the expected relationship between the key variables (financial development and institutional quality) and economic growth. Afterward, the study extrapolates such association to exist among the variables and inclusive growth.

This research study hinges on Anand, Mishra and Peiris's inclusive growth framework which lay emphasis on the pace and distribution of economic growth[4]. Thus, for an economy to effectively and efficiently sustain its economic growth in reducing poverty, such growth needs to be inclusive[5,6]. Inclusiveness entails fairness, equality of opportunity, equity, market protection and transitions of employment which is a vital ingredient of any successful growth strategy[7]. The Anand, Mishra and Peiris's (AMP) inclusive growth framework integrate equity and growth by

using a utilitarian social welfare function drawn from consumer choice literature, as inclusive growth relies on two factors: (a) income growth; and (b) income distribution. Following the theory of consumer where the indifference curves represent changes in aggregate demand over time, the AMP inclusive growth framework decomposes income and substitution effect into growth and distributional components. The framework outlined two underlying properties of social welfare function to capture the following features: (a) it is increasing in its argument (to capture the dimension of growth); and (b) it suits the transfer property i.e. an income transfer from poor people to rich people curtails the function value (which capture the distributional dimension).

The AMP inclusive growth framework was based on the concept of concentration curve. Concentration curve is a generalized Lorenz curve used to analyze the relationships among the distributions of different economic variables[7]. Following previous studies[8], the AMP inclusive growth framework defines a generalized concentration curve known as the social mobility curve as:

$$S^C \approx \left(y_1, \frac{y_1 + y_2}{2}, ..., \frac{y_1 + y_2 + ... + y_n}{n} \right) \tag{3.1}$$

The number of individuals in the population with income y_1, y_2,…, y_n is defined as n; y_1 indicates the poorest person, while y_n represents the richest being[8]. Thus, the generalized concentration curve mainly indicates the cumulative distribution of a social mobility vector $S \approx (y_1, y_2, y_3, ..., y_n)$ with an essential function $W \approx W(y_1, y_2, y_3, ..., y_n)$ that satisfies the two earlier stated properties to capture growth and distribution dimensions. Given that S^C affirms the transfer property; a higher income distribution will constantly have a greater generalized

concentration curve. Likewise, as it argues that social welfare function is increasing; high income will as well have a greater generalized concentration curve.

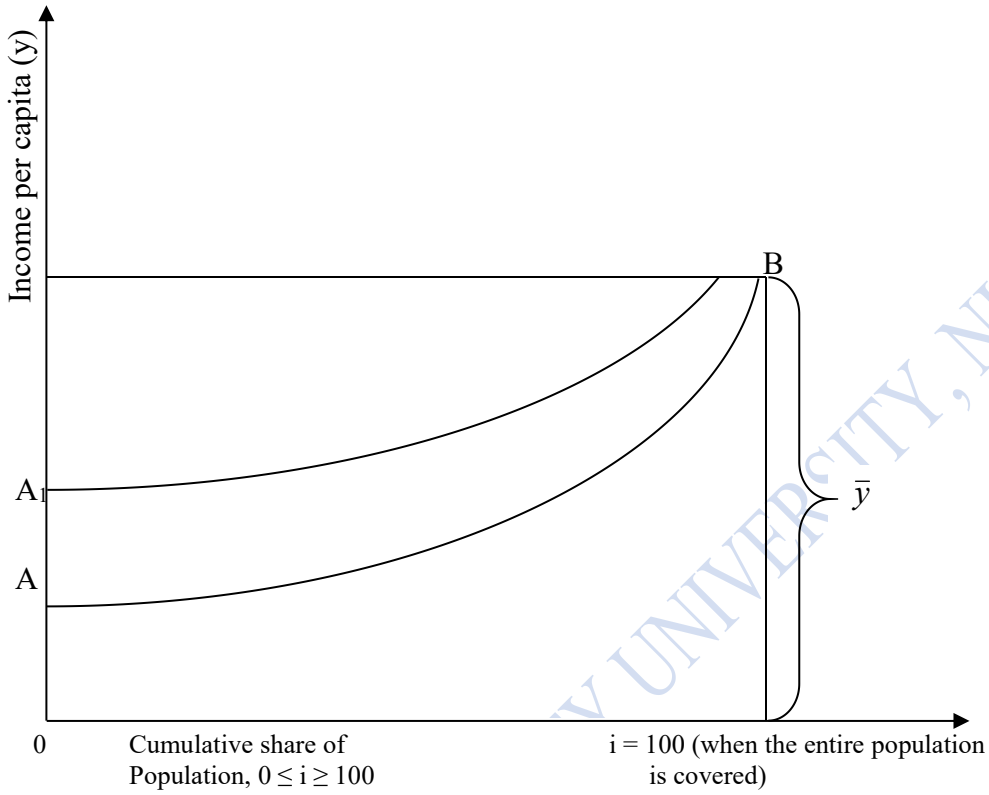

Figure 3.1: Social mobility curve
Source: Anand, Mishraand Peiris (2013).

Further, to be more adaptable to econometric analysis, the generalized concentration curve was stated in continuous time[4,8]. Thus, the populace is organized in an ascending order of their respective income level. For example, $\bar{y}_i$ denotes the mean income of the bottom *i* percent of the population (*i* differs from 0 to 100), and $\bar{y}$ is the average income. Plotting $\bar{y}_i$ on difference values of *i*, the chart (curve AB) is presented in Figure 3.1. Plot AB denotes the earlier explained social mobility curve. Given that a greater curve denotes higher social mobility, growth is therefore inclusive when the social mobility curve shifts upward at all points. Two different degrees[4] of inclusive growth may exist depending on: (a) how much the curve shifts upward (growth); and (b) how the distribution of income changes (equity). This social mobility curve's

characteristic forms the root of the integrated framework of inclusive growth. Also, Figure 3.1 shows two social mobility curves with the same mean income ($\bar{y}$) although different scales of growth inclusiveness (i.e. varying distribution of income). Curve A_1B is more inclusive than curve AB, since the mean income of the bottom part of the society is greater.

The AMP inclusive growth framework employs a simple form of the social mobility function through the computation of an index from the area under the social mobility curve so as to capture the magnitude of income distribution changes. The index is stated as:

$$\bar{y}^* \approx \int_0^{100} \bar{y}_i di \tag{3.2}$$

The higher the income, the higher the $\bar{y}^*$. Meanwhile, $\bar{y}^* = \bar{y}$, if people's income is the same (i.e. distribution of income is completely equitable). When $\bar{y}$ is higher than $\bar{y}^*$, it means that the income distribution is inequitable. Therefore, the departure of $\bar{y}^*$ from $\bar{y}$ is a sign of unequal income distribution. The variation is proposed as income equity index[8] and mathematically derived as:

$$\varpi = \frac{\bar{y}^*}{\bar{y}} \tag{3.3}$$

For a society that is completely equitable, $\varpi = 1$. It therefore indicates that as ϖ moves closer to one (a greater value), it means higher income equality. Reorganizing equation (3.3), it is:

$$\bar{y}^* = \varpi * \bar{y} \tag{3.4}$$

For an economy to witness inclusive growth, it needs an increasing $\bar{y}^*$ and this can be attained by: (a) a rise in $\bar{y}$ i.e. increasing average income via growth; (b) a rise in equity index of income (ϖ) by improving equity; or (c) the combination of increasing $\bar{y}$ and ϖ i.e. a mix of (a) and (b).

Taking the total differential of equation (3.4), we have:

$$d\bar{y}^{*} = \varpi \times d\bar{y} + d\varpi \times \bar{y} \qquad (3.5)$$

Where $d\bar{y}^{*}$ is changes in the degree of inclusive growth; $d\bar{y}$ denotes the extent of changes in income growth; $d\varpi$ is the rate of changes in income equality. If $d\bar{y}^{*} > 0$, growth is inclusive. The signs are further explained as follows: if $d\bar{y} > 0$, $dw > 0$, growth is unambiguously inclusive; if $d\bar{y} > 0$, $dw < 0$, higher per capita income at the expense of equity; if $d\bar{y} < 0$, $dw > 0$, equity objective is achieved at the cost of average income contraction; and if $d\bar{y} < 0$, $dw < 0$, growth in non-inclusive.

This study therefore assumes that financial development ensure inclusive growth through the output production channel. Following the argument of the endogenous growth theory, financial development causes economic growth. Hence, financial development is vital in enhancing inclusive economic growth and prosperity. Also, the financial industry efficiently mobilizes and distributes resources to high-yielding investments, boosting economic growth[9]. Furthermore, literature has argued that the relationship between financial development and income growth is contingent upon the level of institutional qualities that an economy creates or fails to achieve[10,11,12]. Employing the AK model to explain the links between financial development and output growth is conditional on the level of institutional quality, this study first incorporates financial development into the Cobb-Douglas production as an input factor. This is stated as: $Y = f(AK, L, FD)$, where Y, K, L, A, and FD are output, capital, labour, knowledge(technology) and financial development respectively. The model is further stated as:

$$Y = \left(AK^{\alpha} FD^{\beta} L^{(1-\alpha-\beta)}\right) \qquad \text{where } \alpha, \beta > 0;\ \alpha + \beta < 1 \qquad (3.6)$$

The output, capital, total productivity factor, labour, and environmental factors are represented by Y, K, A, L, and E respectively. As regards institutions, it influences income growth via the total factor productivity. According to past studies, under the total factor productivity channel, disparities in institutional settings of nations may perhaps lead to discrepancies in their productive capability[13]. Thus, a country with good finances may be short of growth if the institutional framework is weak and also unsuccessful in supporting efficient credit allocation. The pathway of institutions via total factor productivity to income growth is stated as: $A = A_0 e^{iq}$ (technology as a function of institutions).

The study substitutes the total productivity factor into equation (3.6) and also obtains the natural logarithm to derive:

$$\ln Y = \alpha \ln K + \beta \ln FD + \ln Ae^{iq} + (1-\alpha-\beta)\ln L \qquad (3.7)$$

In mathematically structure, equation (3.7) is specified as:

$$\bar{y} = \phi_0 + \alpha k + \beta fd + \varphi lb + iq \qquad [\text{Note: } \ln e = 1, \ln A = \phi_0, (1-\alpha-\beta) = \varphi\,] \qquad (3.8)$$

As the study previous noted that financial development influences growth inclusiveness via the income growth channel with the assumption of equal wealth distribution, equation (3.8) is substituted into equation (3.6) to get:

$$\bar{y}^* = \phi_0 + \alpha k + \beta fd + \varphi lb + iq \qquad (3.9)$$

The variables are the same as earlier specified and $\bar{y}^*$ depict inclusive growth $= Y_t^* - Y_{t-1}^*$ i.e. log-differencing $\bar{y}^*$. Based on the functional form of equation (3.9) in mathematical form including the disturbance term and time specific effect, it is therefore specified as:

$$incg_t = \phi_0 + \alpha k_t + \beta fd_t + \varphi lb_t + \theta iq_t + \mu_t \qquad (3.10)$$

In the above theoretical equation, it shows that financial sector development factors can either be direct or indirect on inclusive growth based on the level of income growth and wealth distribution which is driven by a country's institutional framework. For an adverse consequence, it implies that inadequate financial resources or low access of financial resources to the poor coupled with weak institutional quality causes drag to growth inclusiveness. However, there can be growth inclusiveness in an economy if quality institutions envisaged in stimulating output growth exceed the drags exerted by inadequate or low access to financial resources. This has been the case of many developed countries at which their quality institutions have been employed to ensure financial sector development improve inclusive growth.

3.2 Model Specification

The empirical models designed for this research study are specified based on the specified research objectives in chapter one.

3.2.1 Empirical Model of Financial Sector Development and Inclusive Growth

Based on the theoretical framework developed in first section of this chapter and the past studies[2,3,4,8,14], the empirical model designed to show the links between financial sector development and inclusive growth is stated as follows:

$$incg_t = \varpi_0 + \varpi_1 k_t + \varpi_2 fd_t + \varpi_3 lb_t + \Phi ctv_t + v_t \qquad (3.11)$$

Where: *incg* is inclusive growth; *k* denotes capital investment; *fd* represents financial sector development which is a column vector of domestic credit to private sector by banks to GDP, broad money supply to GDP, and bank lending-deposit spread; and *lb* is labour force participation rate. Other control variables (*ctv*) in a row vector form are: trade openness measured by total trade to GDP (*topen*); and unstable price proxy by annual growth of consumer

price index (*inf*); and exchange rate (*exr*). The stochastic term is represented by *v*; *t* denotes time; and $\varpi_0, \varpi_{1-3}, \Phi$ are parameters.

3.2.2 Empirical Model of the Minimum Financial Sector Development Threshold that Stimulate Inclusive Growth

Following the empirical equation (3.11), the model is re-specified to capture the minimum threshold at which financial sector development stimulates inclusive growth. It is stated as follows:

$$incg_t = \vartheta_0 + \vartheta_1 k_t + \vartheta_2 fd_t + \vartheta_3 fd_t^2 + \vartheta_4 lb_t + \Pi ctv_t + \varepsilon_t \quad (3.12)$$

Where: *incg* is inclusive growth; *k* denotes capital investment; *fd* represents financial sector development which is a column vector of domestic credit to private sector by banks to GDP, broad money supply to GDP, and bank lending-deposit spread; fd^2 is the square of financial sector development; and *lb* is labour force participation rate. Other control variables (*ctv*) in a row vector form are: trade openness measured by total trade to GDP (*topen*); unstable price proxy by annual growth of consumer price index (*inf*); and exchange rate (*exr*). The stochastic term is represented by ε; *t* denotes time; ϑ_0 is constant; and ϑ_{1-4}, Π are the coefficients of the variables.

$$incg_t = \vartheta_0 + \vartheta_1 k_t + \vartheta_2 fd_t + \vartheta_3 fd_t^2 + \vartheta_4 lb_t + \Pi ctv_t + \varepsilon_t \quad (3.13)$$

To get the minimum financial sector development threshold that stimulates inclusive growth is calculated by taking the partial derivate of inclusive growth with respect to financial development variables, which is dented as:

$$\frac{\partial(incg_t)}{\partial(fd_t)} = \vartheta_2 + 2\vartheta_4 fd \quad (3.14)$$

Afterwards, financial development is factored out after equating the derivative to zero. It is specified as:

$$fd = -\frac{\vartheta_2}{2\vartheta_4} \tag{3.15}$$

3.2.3 Empirical Model of Institutional Quality and Inclusive Growth

Following the theoretical framework in section 3.1 and the past empirical studies[2,3,4,8,14], the model developed to establish the relationship between institutional quality and inclusive growth is specified as:

$$incg_t = \pi_0 + \pi_1 k_t + \pi_2 iq_t + \pi_3 lb_t + \Psi ctv_t + e_t \tag{3.16}$$

Where: *incg* is inclusive growth; *k* denotes capital investment; *iq* represents institutional quality which is a column vector of political risk factor of government stability, control of corruption, law and order and bureaucracy quality; and *lb* is labour force participation rate. Other control variables (*ctv*) in a row vector form are: trade openness measured by total trade to GDP (*topen*); unstable price proxy by annual growth of consumer price index (*inf*); and exchange rate (*exr*). The stochastic term is represented by *e*; *t* denotes time; and π_0, π_{1-3}, Ψ are the parameters.

3.2.4 Empirical Model of Institutional Quality, Financial Sector Development and Inclusive Growth

Based on the theoretical exposition extensive discussed in section 3.1, the empirical model that establishes the relationship between financial sector development, institutional quality and inclusive growth as well as the term interacting institutions with financial sector development is stated as follows:

$$incg_t = \rho_0 + \rho_1 k_t + \rho_2 fd_t + \rho_3 iq_t + \rho_4 (iq \times fd)_t + \rho_5 lb_t + \Omega ctv_t + \upsilon_t \quad (3.17)$$

Where: *incg* is inclusive growth; *k* denotes capital investment; *fd* represents financial sector development which is a column vector of domestic credit to private sector by banks to GDP, broad money supply to GDP, and bank lending-deposit spread; *iq* denotes institutional quality which is a column vector of political risk factor of government stability, control of corruption, law and order and bureaucracy quality; and *lb* is labour force participation rate. Other control variables (*ctv*) in a row vector form are: trade openness measured by total trade to GDP (*topen*); unstable price proxy by annual growth of consumer price index (*inf*); and exchange rate (*exr*). The stochastic term is represented by υ; *t* denotes time; ρ_0 is constant; and ρ_{1-5}, Ω are the coefficients of the variables.

The net effect of the interactive variable in equation (3.17) is calculated as:

$$\frac{\partial(incg_t)}{\partial(fd_t)} = \rho_2 + \rho_4 iq \quad (3.18)$$

This reveals the net impact of financial sector development on inclusive growth at the average value of institutional quality. It equally denotes the financial elasticity of inclusive growth at the mean value of institutions. Afterwards, the interaction of institutional quality and financial development on inclusive growth are conditional on the parameters: ρ_2 and ρ_4 in equation (3.18). Thus, if the net effect value is negative, it means that institutional quality and financial sector development are substitute, while complement if the net effect value is positive. Similarly, it suggests that financial development has a favourable impact on inclusive growth, and the quality of institutions improves and supplements the direct impact if $\rho_2 > 0$ and $\rho_4 > 0$. Also, financial development contributes positively to inclusive growth, but the quality of institutional

settings acts as a drag, leaking out the beneficial impact if $\rho_2 > 0$ and $\rho_4 < 0$. Meanwhile, financial development has a detrimental influence on inclusive growth at the same time as institutional quality mitigates and minimizes the negative impact if $\rho_2 < 0$ and $\rho_4 > 0$. However, the perspective changes when $\rho_2 < 0$ and $\rho_4 < 0$ which implies that financial development harms inclusive growth, likewise, institutions degenerate or magnify the adverse impact. Besides, ρ_2 and ρ_4 in equation (3.18) have different signs as they indicate the starting point of institutional quality beyond which financial development is motivated to have a robust impact on inclusive growth.

3.3 Theoretical Expectation of the Explanatory Variables

In this section, the study highlights the theoretical expectation of the links between institutional quality, financial sector development, and inclusive growth. For inclusive growth model, an improvement in financial sector development is expected to enhance inclusive growth. This is so as financial market provides adequate and easy access to financial resources mostly to the less privileged people in a way that it generates an income growth that is inclusive. Also, financial sector development ensures that an excess fund that will be available for domestic use by the credit providers will ensure growth inclusiveness. Likewise, a direct relationship is expected between institutional quality and growth inclusiveness. It denotes that an economy with quality institutional framework would ensure that output growth promotes the welfare of the poor people. Moreso, capital investment is expected to have positive relationship with inclusive growth. As capital investment increases, there are higher chances of more commodities available to people living in the economy thus improving income and growth inclusiveness. As regards labour force

participation rate, it equally creates the chances of increasing national income which will spur inclusive growth.

With respect to the control variables, trade openness is expected to have a direct relationship with inclusive growth. This is because as the trade between countries improves, more income is expected to be more inclusive in such country. Concerning inflation and interest rate, they are expected to have a negative relationship with inclusive growth. A country experiencing stable price has higher chances of high inclusive growth. Likewise, stable exchange rate is expected to spur investment which will not only increase output but also enhance inclusive growth.

3.4 Data Sources and Measurement of Variables

The data were sourced 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) spanning from 1984 to 2020, which are primarily secondary. Exogenous variables to the inclusive growth process are included in the study. The major variables of interest are financial development, inclusive growth, and institutional quality.

Inclusive Growth: It measures the pace and distribution of output growth as well as its employment creation in an economy. The measurement is in line with the absolute definition of pro-poor growth. Since inclusive growth is perceived from a multifaceted viewpoint of employability, output pace and growth distribution, three indicators used as factors of inclusive growth for this study are per capita income growth, income inequality and unemployment rate. A principal component analysis was adopted by this research study to generate inclusive growth measure based on the three indicators. The estimation method was employed based on its inherent characteristic as an approach to lessen the dimensions of a series that contained a large set of variables mostly unrelated, albeit keeping an improved percentage of the variability in the

dataset[15]. The PCA method is therefore utilized to compress the three selected indicators chosen from the framework of AMP inclusive growth to produce a variable with corresponding data, and it is denoted as "inclusive growth".

Financial Development: Since this study examines how the financial system can turn liquid and brief savings into illiquid and lengthy investments that promote capital accumulation, the financial market plays a vital function in channeling investment funds to its greatest value. The literature established several measures to measure financial growth, such as domestic credit to the private sector measured as private-sector domestic credit by bank (percentage of GDP), and liquid liabilities (as percentage of GDP). Broad money being a term for liquid liabilities is the most comprehensive concept of financial intermediation, encompassing three financial institutions: the central bank, deposit money banks, and other financial institutions. The World Bank considers the depth of financial growth to include all two financial development indices. Bank lending-deposit spread is calculated by subtracting the disparities between the lending rate and the deposit rate, is used to determine the efficiency of financial development. The variables were sourced from the World Development Indicators (WDI). All these are put together to form indices that measure financial development.

Institutional Quality: Institutions are important in defining game rules for society because they provide formal and informal restrictions on the interactions between political, social, and economic systems. As a result, good institutions are thought to create incentives that reduce uncertainty and encourage productivity, resulting in improved financial results. Strong institutions form the overall conditions for investment and growth and are seen as supporting a country's economic development (i.e., private property rights protection, the rule of law operation, low level of corruption, and private interaction rather than small elite protection)[16].

The role of institutions in economic growth has been demonstrated in both theoretical and empirical studies. A simple weighted average of the institutional quality indices is political risk factor of government stability, control of corruption, law and order and bureaucracy quality.

Other main factors of inclusive growth in this study are capital stock and labour force participation rate. Capital investment, which is proxy by gross fixed capital formation, and employed to capture how much investment in human capital is made by the government to increase aggregate output, which subsequently leads to inclusive growth. Labour force participation rate depicts the estimate of a country's active workforce and it is the ratio of the labour force to the total working-age population. Other control variables are trade openness measured by total trade to GDP, unstable price proxy by annual growth of consumer price index and exchange rate measured by Naira value to a US Dollar. Table 3.1 presents a summary of the variable sources and measurements.

Table 3.1: Data Description, Measurement, and Sources

Variables	Signs	Description	Data Sources
Inclusive growth	*incg*	A Principal Component Analysis of income growth, equality and employment.	Index
Financial development	*fd*	It captures domestic credit to private sector by banks to GDP, broad money supply to GDP, and lending-deposit spread.	World Development Indicators (2020)
Institutional quality	*iq*	Political risk factor of government stability, control of corruption, law and order and bureaucracy quality (average value)	International Country Risk Guide (ICRG)
Capital investment	*k*	Gross fixed capital formation to GDP	World Development Indicators (2020)
Labour force participation rate	*lb*	The ratio of the labour force to the total working-age population	World Development Indicator (2020)
Trade openness	*topen*	Total trade to GDP	World Development Indicator (2020)
Unstable price	*inf*	Annual growth of consumer price index	World Development Indicator (2020)
Exchange rate	*exr*	Nominal exchange rate	World Development Indicator (2020)

Source: Author's Compilations (2022).

3.5 Estimation Techniques

This study uses the following econometric procedure to capture economic analysis of institutional quality, financial development, and inclusive growth in Nigeria. First, a pre-estimation assessment was 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 typically distributed[17]. Afterwards, the augmented Dickey-Fuller (ADF), Phillip-Perron (PP), Kwiatkowski Phillips Schmidt Shin (KPSS) and unit root approaches were employed to ascertain the preliminary properties of the data set. After that, the autoregressive distribution lag (ARDL) bound co-integration test was conducted to ascertain the long-run relationship between the variables for have combinations of I(0) and I(1) variables. The autoregressive distribution lag (ARDL) proposed by Pesaran, Shin and Smith[18]. The generalized ARDL (p, q, …, q) model is specified as:

$$Y_t = \omega_{0i} + \sum_{i=1}^{p} \tau_i Y_{t-i} + \sum_{i=1}^{q} \mathrm{B}_i X_{t-i} + \sum_{i=1}^{q} \Psi_i Z_{t-i} + u_t \qquad (3.19)$$

Where: Y denotes inclusive growth; X represents the column vector of the main explanatory variables i.e. indices of financial development and institutional quality which are allowed to be solely I(0) or I(1) or co-integrated; Z is the row vector of control variables i.e. labour, capital, trade, inflation and exchange rate; τ, B and Ψ are coefficients; ω_{0i} is constant; p, q are optimal lag order; t is time; and u represents the stochastic disturbance term with zero mean. To establish the long run relationship, equation (3.19) is estimated by utilizing the ARDL error correction representation, which is specified as follow:

$$\Delta Y_t = \varphi_0 + \varphi_1 Y_{t-i} + \Phi X_{t-i} + \Theta Z_{t-i} + \sum_{i=1}^{p-1} a_1 \Delta Y_{t-i} + \sum_{i=1}^{q-1} \Pi_i \Delta X_{t-i} + \sum_{i=1}^{q-1} \Omega_i \Delta Z_{t-i} + e_t \qquad (3.20)$$

The difference operator is denoted by Δ; while the speed of adjustment coefficient is $1-\sum_{j=1}^{p}\tau_i$.

The short-run dynamic parameters of the model's adjustment to long run equilibrium are a_1, Π and Ω. It is also indicated in the above equation relies on its lag length, equilibrium disturbance term, and differenced independent variables. However, for variables that have their unit root results stationary at first differences and the existing cointegration among the variables using the Johansen cointegration test approach, the appropriate test used was the vector error correction model (VECM) approach. In a VECM form, the equation is written as:

$$\Delta Z_t = A_0 + \Pi Z_{t-1} + \sum_{i=1}^{k}\Gamma_j \Delta Z_{t=j} + \mu_i \qquad (3.21)$$

Where: $\Delta$is the difference operator, Z_t is a *n* by 1 dimensional vector of non-stationary I(1) endogenous variables of the model, A_0 is a *n* by 1 dimensional vector of constant; Π is the long-run matrix that determines the number of co-integrating vectors that consists of parameters representing the speed of adjustment towards long-run equilibrium and long-run parameter respectively; Γ is the vector of parameters that represents the short term relationship; and μ_i is k-dimensional vector of the stochastic error term normally distributed with white noise properties $N(0,\sigma^2)$.

Table 3.2: Principal Component Analysis for Inclusive Growth

Inclusive Growth Index

Principal Components	Component Matrix			Proportion	Cumulative Proportion	Eigen value
	Growth	Equality	Employment			
First PC	0.2799	0.6585	-0.6986	0.5089	0.5089	1.5268
Second PC	0.9373	-0.3448	0.0506	0.3259	0.8348	0.9777
Third PC	0.2075	0.6690	0.7137	0.1652	1.0000	0.4955

Financial Development Index

Principal Components	Component Matrix			Proportion	Cumulative Proportion	Eigen value
	Domestic Credit	Broad Money	Lending-Deposit Spread			
First PC	0.6439	0.6652	0.3780	0.6567	0.6567	1.9702
Second PC	-0.3377	-0.1962	0.9206	0.2819	0.9386	0.8457
Third PC	0.6866	-0.7204	0.0983	0.0614	1.0000	0.1841

Note: PC - principal component.
Source: Author's computation (2022).

3.5.1 Construction of Inclusive Growth Using Principal Component Analysis

This study uses the principal component analysis (PCA) to construct composite inclusive growth and financial development index. The indicators of inclusive growth considered for this study are income growth, income equality and employment while the indices of financial development are domestic credit to private sector by banks, broad money supply and interest rate spread (see Table 3.2). This estimator is employed to lessen extremely correlated series into small units of unrelated series known as "Principal Components" despite the fact that the original information in the datasets is retained. Also, the method has greater chances of keeping away from extreme correlation among the various measures of inclusive growth. According to a study, "principal component analysis is a gauge reduction process used to analyze observed series/variables that

would give rise to a relatively small number of interpretable components (variables group) that make up most of the dispersion in a set of observed variables"[19].

Using the criterion of Kaiser and Jolliffe to hold on to the common factors, the study calculates the eigenvalues for each component[20]. With an eigenvaluse greater than 1, this shows that the dispersion amount in the principal component explained by each component is retained. In Table 3.2, the study shows the results of the principal components. The inclusive growth index generated from the three main components of inclusive growth explains about 50.89% of the total variance in the unique data with an eigenvalue of 1.5268. The financial development index created from the three measures (domestic credit to private sector by banks, broad money supply and lending-deposit spread) explains about 65.67% (eignevalue of 1.9702) of the total variance in the data.

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Chapter Four

Results and Discussion of Findings

The empirical results of this research study are discussed in this chapter. The sub-sections are presented in three parts, where the first section presents preliminary analysis, the second section discusses the empirical results according to the stated objectives, and the last section presents the discussion of findings. The discussion of results started with descriptive analysis and summary statistics, which provided trend analysis of basic indicators of institutions, financial sector development and inclusive growth in Nigeria. The chapter also provides some diagnostic tests using some test statistics in order to ensure that the estimated results are reliable for meaningful inferences.

4.1 Preliminary Analysis

The preliminary analysis on descriptive statistics and trend analysis of the variables understudied for empirical analysis based on formulated hypotheses are presented in this section.

4.1.1 Descriptive and Trend Analysis

This sub-section presents the descriptive analysis, trend and pattern of institutional quality variables and industrial output growth in Nigeria. The stylized facts of the trend of GDP growth (gdpg), income Equality (equ), employment (emp), inclusive growth index (ig), domestic credit to private sector by banks (dcps), broad money (bm), interest rate spread (lds), financial development index (fd), institutional quality (iq), gross fixed capital formation (k), labour force participation rate (lb), trade openness (topen), inflation rate (inf), and official exchange rate (exr) are reviewed under this section using summary statistics in Table 4.1.

Table 4.1: Summary Statistics

Variable Measurements	Signs	Mean	Std Dev	Max.	Min.	Kurtosis	Skewness	Obs.
Outcome Variables								
GDP growth (annual %)	*gdpg*	4.2507	3.9149	15.329	-2.0351	0.5360	0.4600	36
Income Equality	*equ*	58.994	6.1703	64.9	48.1	-0.6592	-0.9068	36
Employment	*emp*	88.869	7.5141	98.2	72.9	-0.8037	-0.5312	36
Inclusive growth index	*incg*	-0.00228	1.2356	1.8290	-2.1714	-1.0813	-0.2194	36
Main Explanatory Variables								
Domestic credit to private sector by banks (% of GDP)	*dcps*	9.5376	3.5441	19.604	4.9480	1.1472	1.1017	36
Broad money (% of GDP)	*bm*	16.876	5.966	27.379	9.0633	-1.5201	0.4228	36
Interest rate spread (lending rate minus deposit rate, %)	*lds*	6.8343	2.5466	11.064	0.3167	1.2191	-1.0277	36
Financial development index	*fd*	-0.00178	1.4036	2.6317	-2.1190	-1.2628	0.2475	36
Institutional Quality	*iq*	2.9650	0.4380	3.9375	1.9375	0.6628	-0.2105	36
Other Controlling Variables								
Gross fixed capital formation (% of GDP)	*k*	31.100	13.140	54.948	14.169	-1.2622	0.2555	36
Labor force participation rate, total (% of total population ages 15-64) (modeled ILO estimate)	*lb*	58.977	2.1214	61.210	53.910	0.3337	-1.2928	36
Trade (% of GDP)	*topen*	34.271	10.943	53.278	9.1358	-0.0777	-0.4507	36
Inflation, consumer prices (annual %)	*inf*	19.177	17.685	72.836	5.3880	2.1437	1.8190	36
Official exchange rate (LCU per US$, period average)	*exr*	111.88	100.17	358.81	0.8938	0.0430	0.8193	36

Note: Std. Dev. – standard deviation; Max. – maximum; Min. – minimum; Obs. - observation.
Source: Author's computation (2022).

The summary statistic of the variables presented in Table 4.1 indicated that the average growth of gross domestic product per capita stands at 4.25%, while its highest and lowest rates are 15.33% and -2.04% respectively. It indicates that the standard of living account for an average of 4.25% of economic activities produced per individual in the Nigerian economy. Concerning the income equality (equ) of inclusive growth, the mean value of the series is 58.99% with maximum and minimum values of 64.9% and 48.1% correspondingly. Regarding the employment rate (emp) variable of growth inclusive, the average rate was 88.87% whereas the maximum and minimum values are 98.2% and 72.9% respectively. After using the principal component analysis to compute an index using the three components of inclusive growth, the average value of inclusive growth indicate a negative value of -0.0023 with maximum and minimum values of 1.829 and -2.1714 respectively.

Furthermore, the mean values of financial sector development variables measured by domestic credit to private sector by banks to GDP (dcps), broad money to GDP (bm), and interest rate spread (lds) were 9.54%, 16.88%, and 5.83%, while their respective maximum and (minimum) values stood at 19.6%, 27.38%, and 11.06% and (4.95%, 9.06%, and 0.32%). The mean value of financial development composite after using principal component analysis to compute an index was -0.00178 while the maximum and minimum values are 2.6317 and -2.1190 correspondingly. As regards the institutional quality, the mean value stood at 2.965, while the maximum and minim values were 3.9375 and 1.9375 respectively. This therefore means that the Nigerian institution in terms of quality of public services, government policy formulation and implementation promoting private sector development, quality of contract enforcement and property rights, and promotion of citizens' effort and competence are weak within the specified

periods. One of the main reasons for the weak nature of economic institutional settings in the country is the unstable nature of her political structure over the years.

The average values of the two key factor determinants of inclusive growth stood at 31.1% and 58.98% for capital investment as percentage of GDP (k) and labour force participation rate (lb) respectively under the reviewed periods. Their maximum values stood at 54.95% and 61.21% while the minimum values are 14.17% and 53.91% respectively. For the control variables, the mean values of trade openness proxy by total trade as a ratio of GDP (topen), inflation rate measured by annual growth rate of consumer price index (inf), and official exchange rate (exr) are 34.27%, 19.18%, and ₦111.88/US Dollar correspondingly. The three control variables have their minimum values to be at 9.14%, 5.39%, and ₦0.89/US Dollar whereas the maximum values are 53.28%, 72.84% and ₦358.81/US Dollar respectively for trade openness proxy by total trade as a ratio of GDP (topen), inflation rate measured by annual growth rate of consumer price index (inf), and official exchange rate (exr).

As well, the standard deviation reports the rate at which these variables deviate from their individual mean values. All our variables have low deviation rates in varying magnitude from their mean values, as their standard deviation values are lower than average values except inclusive growth index and financial development index. Moreover, income equality, employment, inclusive growth index, interest rate spread, institutional quality, labour force participation rate and trade openness skewed leftward with a value of -0.9068, -0.5312, -0.2194, -1.0277, -0.2105, -1.2928 and -0.4507 respectively, while other indicators skewed rightward. Also, the Kurtosis identified 3.0 suggesting the normal distribution. From Table 4.1, none of the variables exhibits normal distribution. All the variables are platykurtic in distribution implying that the variables are not normally distributed.

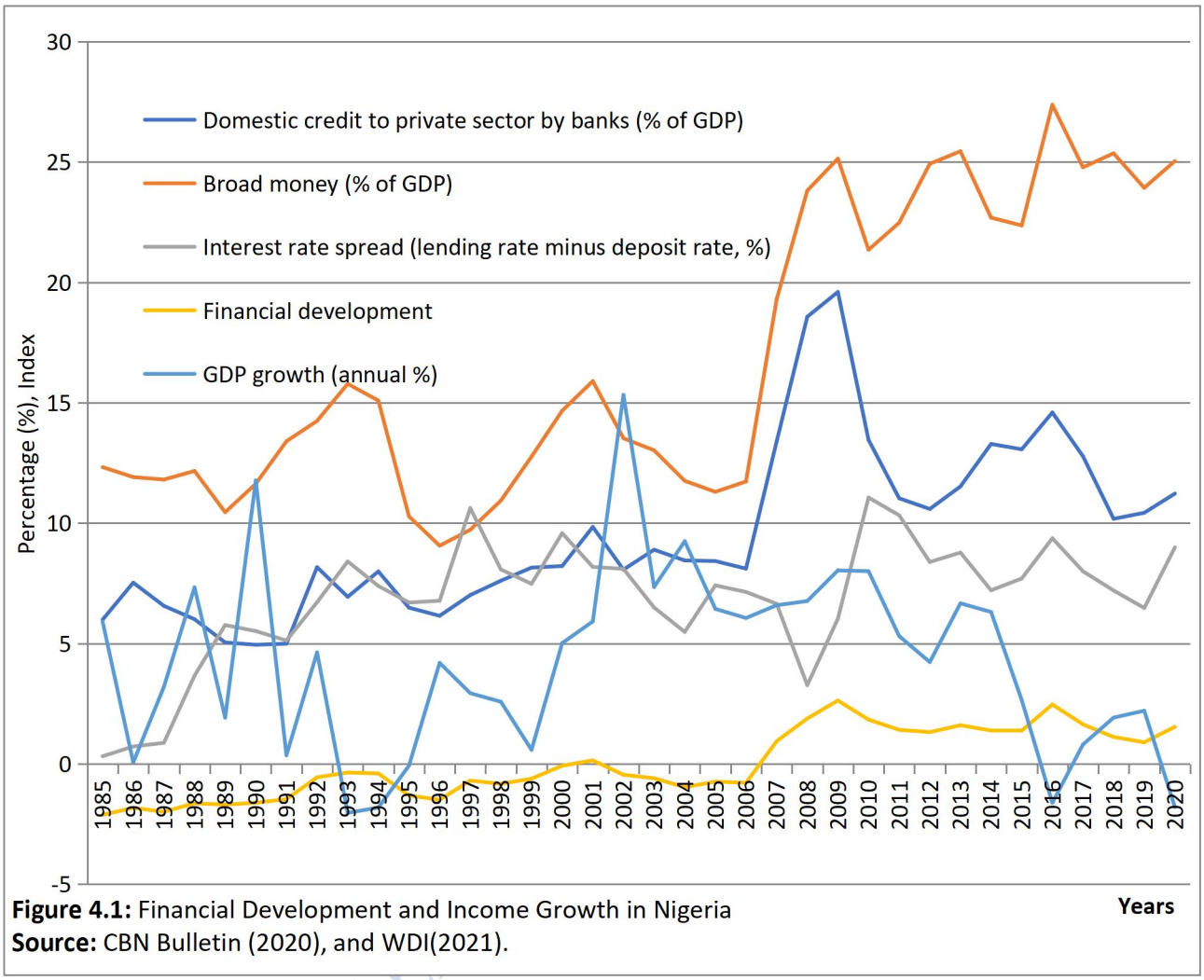

Figure 4.1: Financial Development and Income Growth in Nigeria

Source: CBN Bulletin (2020), and WDI(2021).

The trend review of income per capita growth and financial development variables (such as domestic credit to private sector by banks, broad money supply, interest rate spread, and a composite index) are shown in Figure 4.1. It was observed in the chart that gross domestic product per capita growth series fluctuate throughout the periods understudied. In the early years of Structural Adjustment Programme (SAP), it peaked at 7.33% in 1998 and 11.78% in 1990. Subsequently, the growth rates of GDP per capita went below 5% between 1993 and 1999, and a negative growth was recorded within the periods of 1993-1995. The country began to experience significant growth in per capita GDP as its statistics were 5.01%, 5.92% and 15.33% in 2000, 2001 and 2002 respectively, thereafter slopes downwardly in an interweave manner till 2014. A major decline in per capita GDP growth was noted afterward as the series dig deep to -1.62% in 2016. The GDP per capita growth improved marginally from 2017 to 2019 and later fell to -1.79% in 2020.

Also, Table 4.2 revealed that GDP per capita growth has the highest rate at 6.95% within 1999-2007, followed by 6.49%, 3.68%, 1.5%, and 0.91% within the periods of 2007-2014, 1985-1993, 20014-2020 and 1993-1999 respectively. These periods considered were specified according to the five ruling political administrations within the periods under study i.e. General Ibrahim Babangida (1985-1993); Ernest Shonekan, late General Sani Abacha and General Abdulsalam (1993-1999); Olusegun Obasanjo (1999-2007); late Yardua and Goodluck Jonathan (2007-2014); and Buhari administration (2014-2020).

Table 4.2: Interval Average of Institutions, Financial Development and Inclusive Growth

Variables	1985-1993	1993-1999	1999-2007	2007-2014	2014-2020	Overall (1985-2020)
GDP growth (annual %)	3.68	0.91	6.95	6.49	1.50	4.25
Income Equality	59.90	51.06	56.66	63.04	62.80	58.99
Employment	95.46	97.23	88.06	82.84	82.31	88.87
Inclusive growth	-0.56	-1.86	0.02	1.15	0.82	-0.0023
Domestic credit to private sector by banks (% of GDP)	6.24	7.19	9.06	13.93	12.22	9.54
Broad money (% of GDP)	12.64	11.95	13.77	23.14	24.51	16.88
Interest rate spread (lending rate minus deposit rate, %)	4.12	7.92	7.39	7.71	7.85	6.83
Financial development	-1.47	-0.81	-0.35	1.63	1.49	-0.0018
Institutional Quality	2.62	3.44	3.05	2.92	2.92	2.96
Investment	48.60	39.66	28.32	17.01	18.81	31.10
Labour Force Participation Rate	60.05	60.47	59.94	58.42	55.47	58.98
Trade Openness	25.56	37.39	41.04	39.91	27.39	34.27
Inflation Rate	27.95	34.39	11.76	10.36	12.28	19.18
Exchange Rate	8.43	31.99	119.30	146.35	268.87	111.88

Source: Author's computation (2022).

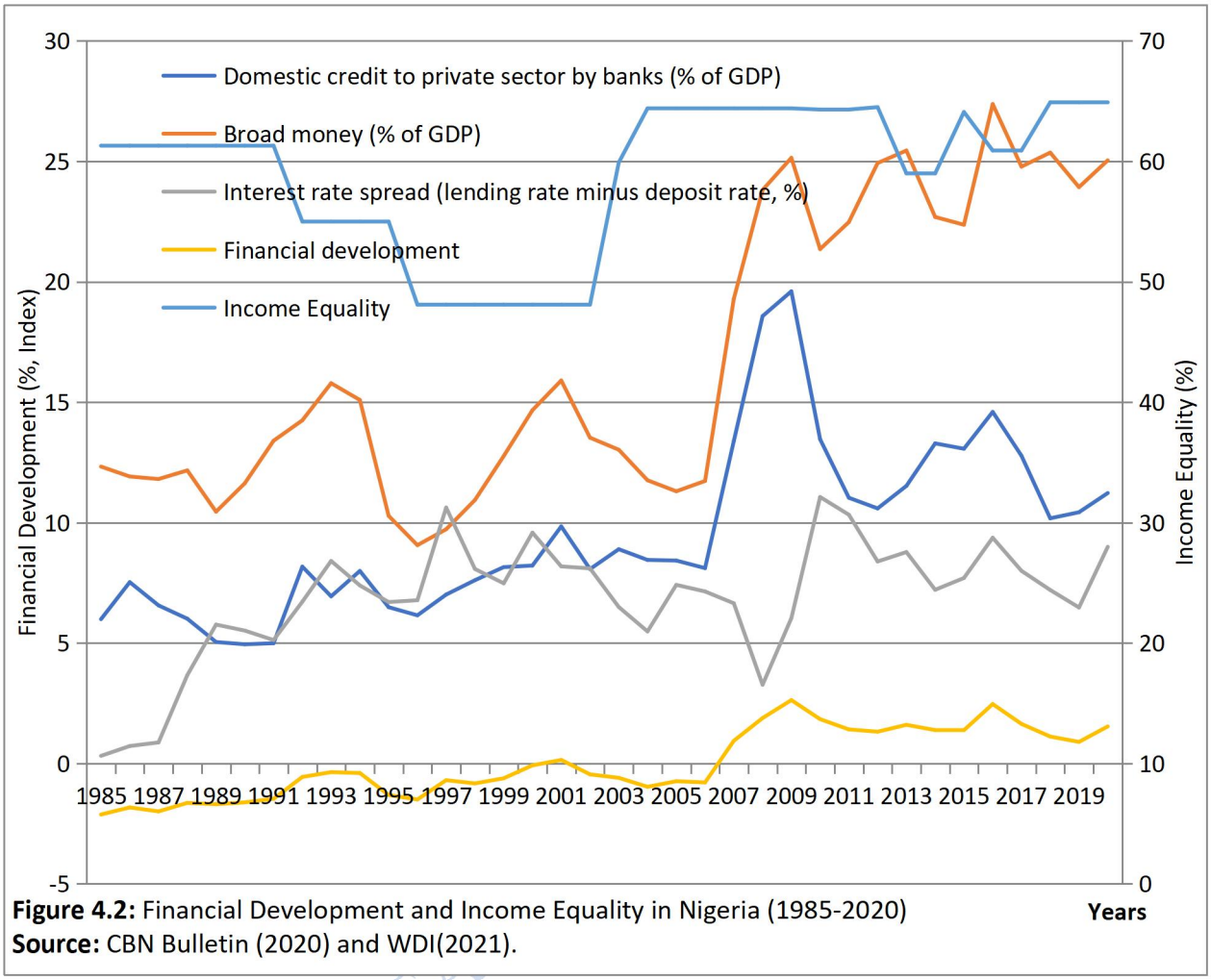

Figure 4.2: Financial Development and Income Equality in Nigeria (1985-2020)
Source: CBN Bulletin (2020) and WDI(2021).

In Figure 4.1, the flowchart movement of interest rate spread and domestic credit to private sector by banks to GDP moves in opposite direction, revealing that as lending rate decreases, domestic credit to private sector to GDP increases. The line movement of lending rate revealed that the apex bank embarked more upon series of contractionary policies between 1996 and 2005, while it was more of expansionary policies in later years. This is further confirmed in the values derived from the periods' growth rates reported in Table 4.2. Also, this reflected in the movement of broad money supply to GDP as it increases upwardly over the periods understudy. During the period understudy, the financial deepening, broad money supply to GDP, and interest rate spread grew at an average rate of 6.24%, 12.64% and 4.12% within 1985-1993; 7.19%, 11.95% and 7.92% within 1993-1999; 9.06%, 13.77%, and 7.39% within 1999-2007; 13.93%, 23.14% and 7.71% within 2007-2014; 12.22%, 24.51% and 7.84% within 2014-2020; and 9.54%, 16.88% and 6.83 within 1985-2020.

Overall, the flowchart of financial development index reveals an improvement in the financial industry over time as it shows an upward trend movement throughout the periods understudied. It is obtained from the chart that the sector possibly has a weak performance at the initial period till 2007 when the industry experienced market recapitalization by the authority. Apparently, the industry performed best from 2007 to 2014 with an index of 1.63, followed by 2014-2020, 1999-2007, 1993-1999 and 1985-1993 with indexes of 1.49, -0.35, -0.81 and -1.46 respectively (see Table 4.2).

Afterward, Figure 4.2 shows the plot series of financial sector development indices against income equality in Nigeria for the periods understudied. The flowcharts of financial development variables remained as earlier discussed. The trend of income equality shows a fall in equality of income from 61.3% to 55% in 1992 and further dropped to 48.1% in 1996 through to 2002. After that, income equality rose to 59.9% in 2003, 64.4% in 2004 and 64.5% in 2012. Subsequently, the chart shows a decline to 59% in 2013, then rose to 64.1% in 2015. It fell slightly to 60.9% in 2017 and subsequently maintained a marginal growth to 64.9% through 2018 to 2020. The average growth of income equality within the periods 1985-1993, 1993-1999, 1999-2007, 2007-2014, and 2014-2020 were 59.90%, 51.06%, 56.66%, 63.04%, and 62.8% respectively, while the overall growth from 1985-2020 stood at 58.99%.

The flowchart of financial sector development variables against employment rate is presented in Figure 4.3. Following the series of employment rate over the periods, it depicts a downward slope approximately from 1985 to 2020. However, an upward slope is evident from 93.9% in 1985 to 98.2% in 1995, but dropped to 96.9% in 1999, 86.9% in 2000, 86.4% in 2001 and 85.1% in 2008. A drastic fall was further observed as it dropped to 76.1% in 2011. A swing movement was noticed between 2012 and 2014 seeing that the statistics was 89.4% in 2012, 75.3% in 2013 and 90.3% in 2014. Later, employment rate slopes downwardly throughout the remaining periods from 90.3% in 2014 to 72.9% in 2020. The average growth of employment rate within the periods 1985-1993, 1993-1999, 1999-2007, 2007-2014, and 2014-2020 were 95.46%, 97.23%, 88.06%, 82.84%, and 82.31% respectively, while the overall growth from 1985-2020 stood at 88.87%.

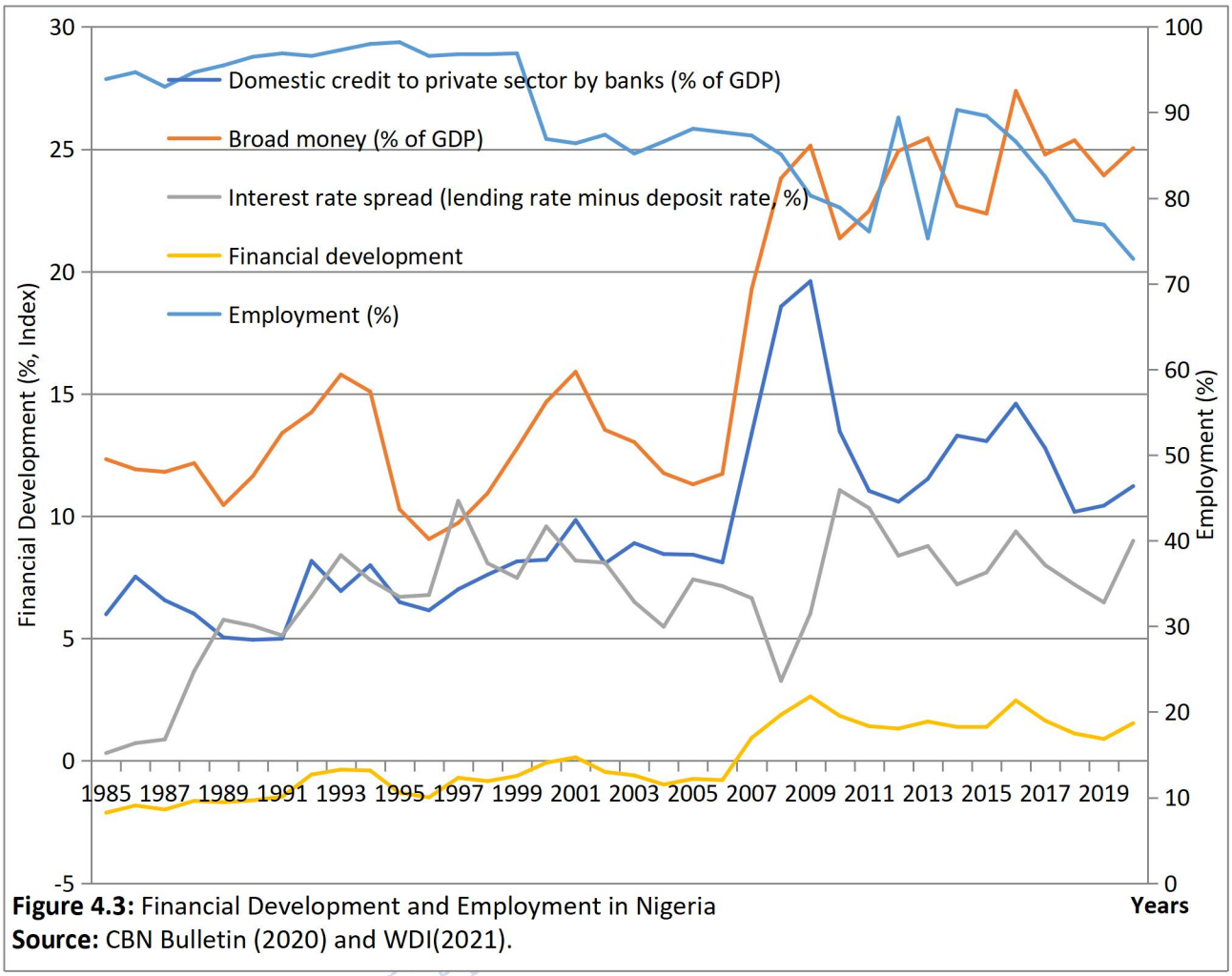

Figure 4.3: Financial Development and Employment in Nigeria

Source: CBN Bulletin (2020) and WDI(2021).

Figure 4.4 reveals the graphical illustration of financial sector development indicators and inclusive growth index in Nigeria within the periods considered. The movement in the flow charts shows that inclusiveness of income growth in the earlier period of the years is considered weak as the statistics are negative from 1985 to 2002 except in 1990 which have an index of 0.0748. The series shows an upward trend from 0.6592 in 2003 to 1.8290 in 2011. Afterwards, income inclusive index declined to 0.5268 in 2012, rose to 1.4352 in 2013 and subsequently fell to 0.0148 in 2014 and -0.0052 in 2016. After that, the series continues to slide upwardly through the remaining periods, 0.5492 in 2017 to 1.5301, 1.5970, and 1.6827 in 2018, 2019 and 2020 respectively. Also, this is further confirmed in the values derived from their interval growth rates reported in Table 4.2. During the period understudy, the inclusive growth grew at an average of -0.56, -1.86, 0.02, 1.15 and 0.82 within 1985-1993, 1993-1999; 1999-2007; 2007-2014; and 2014-2020; and -0.0023 within 1985-2020.

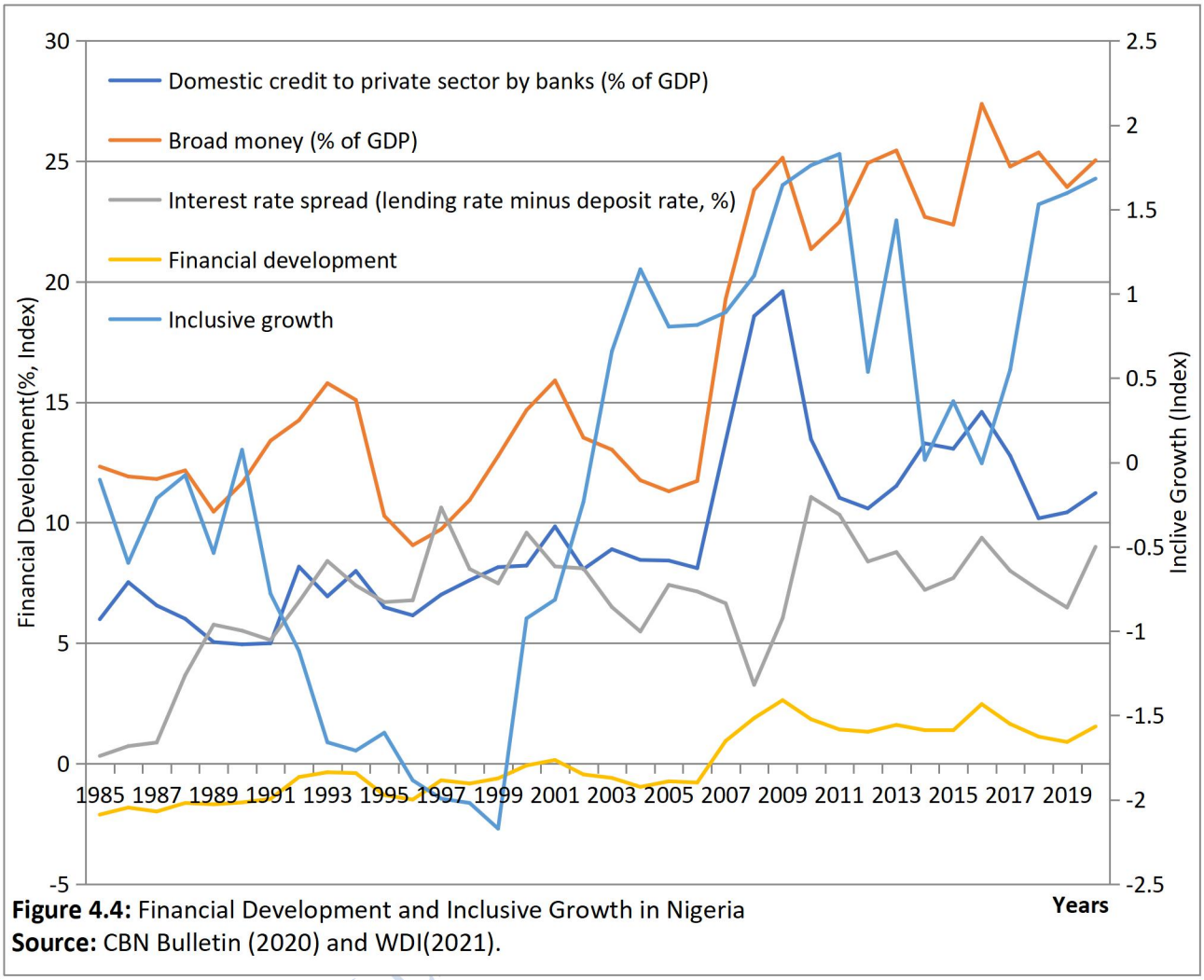

Figure 4.4: Financial Development and Inclusive Growth in Nigeria
Source: CBN Bulletin (2020) and WDI(2021).

The trend of institution quality comprising of government stability, control of corruption, law and order, and bureaucracy quality against inclusive growth variables (income growth, employment, equality and the composite index) are shown in Figure 4.5. It shows that institutional quality slopes upward during the initial periods as the index moves from 2.082 in 1985 to 3.938 in 1997 implying that there is some level of improvement to which the citizens select and challenge the government, though the executives still have much power despite the fact that most of the periods understudy are within democratic dispensation. However, this line chart of institutional quality moves downward to 2.594 in 2002 suggesting an unstable institutional system and some level of political instability, insecurity and violence in some states in Nigeria most especially in the Northern region. The flowchart for the remaining periods slopes in a zigzag way. For the period understudy, the growth of institutional quality was 2.62, 3.44, 3.05, 2.92, and 2.92 within 1985-1993, 1993-1999, 1999-2007, 2007-2014, and 2014-2020.

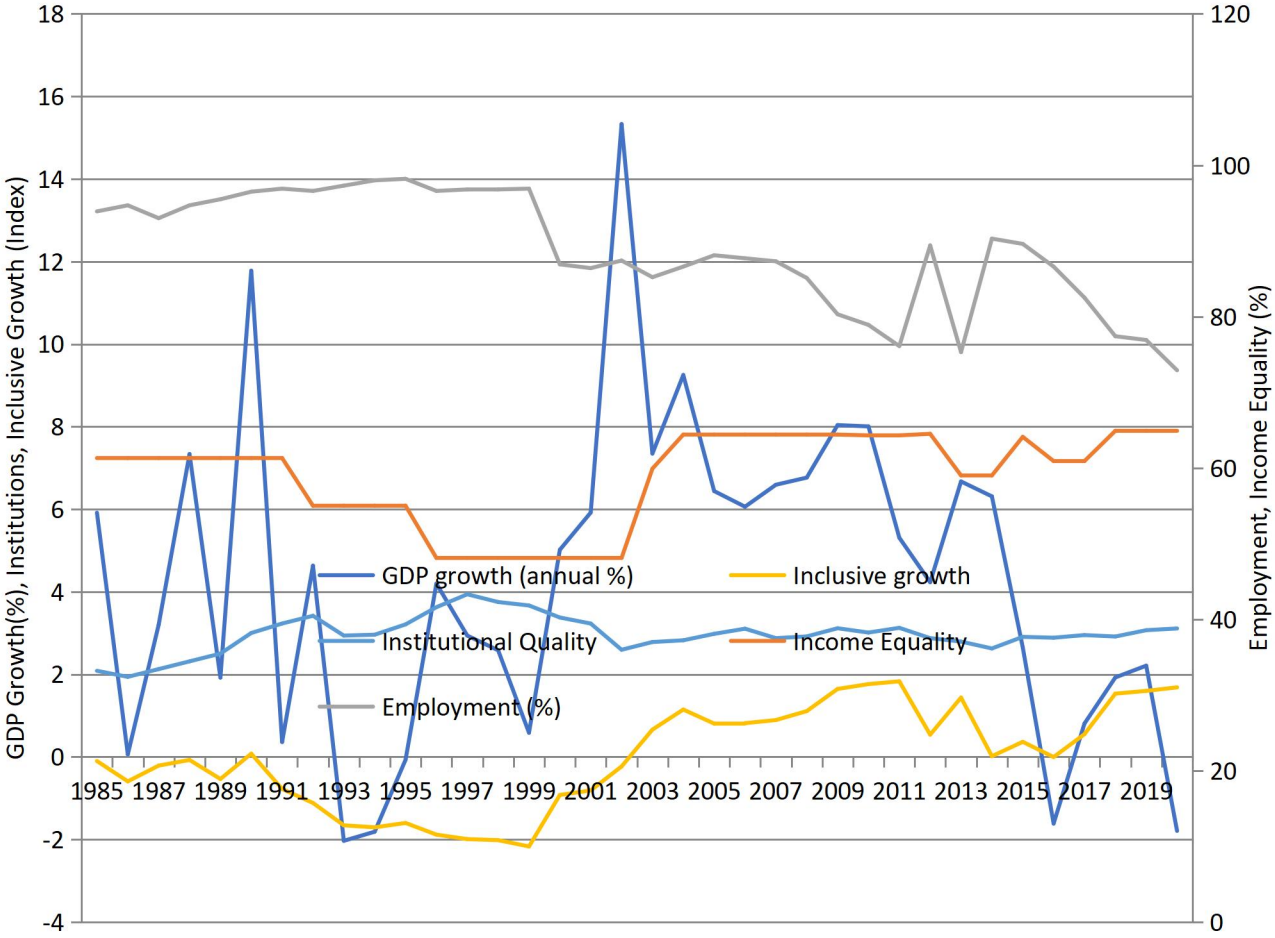

Figure 4.5: Institutions, Income, Employment, Equality and Inclusive Growth
Source: CBN Bulletin (2020), WDI(2021), and ICRG(2020).

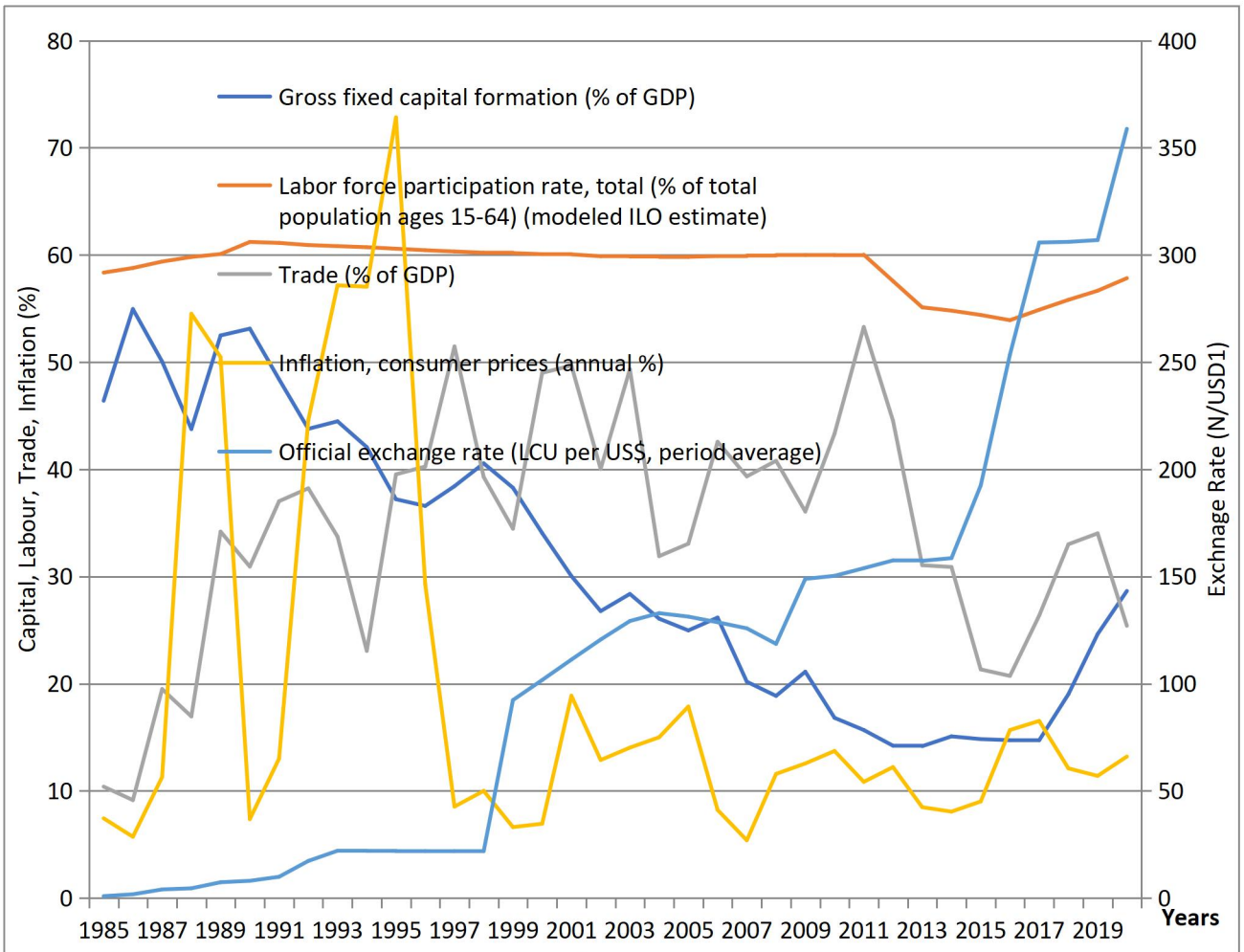

Figure 4.6: InInvestment, Labour Force, Trade, Inflation and Exchange Ratein Nigeria

Source: CBN Bulletin (2020), and WDI(2021).

Likewise, the graphical illustrations of the key factors of inclusive growth (capital and labour force participation rate) were depicted in Figure 4.6. The chart revealed that the volume of gross fixed capital formation to the size of the Nigerian economy decreases over the years understudy except for some growth witnessed in the early years. The flowchart shows a downward slope indicating the inefficiency of gross capital investment to improve the overall economic activities in Nigeria. More so, the movement of the trend indicated that the country begins to record some progress in terms of capital efficiency lately. However, the labour force of the country had increased at the initial periods (1985-1990), dropped slight through 1991-2011. It fell drastically to from 60.02% in 2011 to 55.11% and 53.91% in 2013 and 2016 respectively, thereafter slides upward to 57.83% in 2020. Furthermore, capital investment and labour force participate rate grew at an average of 48.6% and 60.05% within 1985-1993; 39.66% and 60.47% within 1993-1999; 28.32% and 59.94% within 1999-2007; 17.01% and 58.42% within 2007-2014; and 18.81% and 55.47% within 2014-2020.

Also, Figure 4.6 shows the flowchart of the three control variables, i.e. trade openness, inflation rate and exchange rate within the period of 1985 to 2020. The graphical illustration of the three variables moves in a zigzag way, thereby, failing to reveal the direction of the indicators. The interval growth rate of trade openness, inflation rate and exchange rate stood at 25.56%, 27.95% and 8.43% within 1985-1993; 37.39%, 34.49% and ₦31.99/US$1 within 1996-1999; 41.04%, 11.76% and ₦119.3/US$1 within 1999-2007; 39.91%, 10.362% and ₦146.35/US$1 within 2007-2014; 27.39%, 12.28% and ₦268.87/US$1 within 2014-2020; and overall 34.27%, 19.18% and ₦111.88/US$1 within 1985-2020 as reported in Table 4.2. Thus, the graph did not really indicate the exact the relationship between the variables which is not clear enough to indicate whether it

is direct or indirect, therefore suggesting the need for empirical analysis as the directions of variables are inconclusive.

4.2 Test of Objectives

In this section, the research study presents the empirical results in regards to the set objectives in the following five sub-sections. Prior to the findings of the stated objectives, pre-estimation test such as correlation analysis for the detection of multicollinearity problem, unit root for stationarity test and cointegration test for long-run relationship to decide the appropriate estimators. The outcomes are presented in the following sub-sections.

4.2.1 Analysis of the First Objective

This sub-section reports the empirical results relating to the relationship between financial sector development and inclusive growth in Nigeria.

4.2.1.1 Correlation Analysis and Scatter Plots

Table 4.3 presents the partial correlation of inclusive growth index, income growth, income equality, employment, domestic credit to private sector by banks, broad money supply, lending rate spread, financial sector development index, investment, labour force, trade openness, inflation, and exchange rate in Nigeria using an annual dataset within the period of 1985 and 2020.

Table 4.3: Correlation Matrix

	equ	*emp*	*incg*	*dcps*	*bm*	*lds*	*fd*	*k*	*lb*	*topen*	*inf*	*exr*
gdpg	0.034	-0.179	0.346	0.099	-0.120	-0.058	-0.027	-0.187	0.206	0.278	-0.321	-0.098
equ	1	-0.483	0.814	0.384	0.481	-0.255	0.335	-0.336	-0.330	-0.309	-0.178	0.418
emp		1	-0.863	-0.622	-0.746	-0.339	-0.630	0.630	0.464	-0.165	0.439	-0.733
incg			1	0.579	0.651	0.042	0.585	-0.634	-0.391	-0.008	-0.416	0.671
dcps				1	0.709	0.229	0.904	-0.675	-0.446	0.090	-0.339	0.605
bm					1	0.330	0.934	-0.672	-0.600	-0.036	-0.297	0.698
lds						1	0.531	-0.525	-0.128	0.612	-0.018	0.421
fd							1	-0.863	-0.571	0.189	-0.301	0.669
k								1	0.600	-0.285	0.365	-0.673
lb									1	0.390	0.317	-0.687
topen										1	-0.080	0.035
inf											1	-0.377

Note: gdpg - GDP growth (annual %); equ - Income Equality; emp - Employment; incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

The correlation result shows that all the indicators of financial sector development (domestic credit to private sector by banks, broad money supply, lending rate spread, and financial development index) have positive level of association with inclusive growth. As for the components of inclusive growth, the correlation matrix revealed that the variables of financial sector development negatively correlate with employment rate. It also shows that income equality directly associates with domestic credit to private sector by banks, broad money supply and financial development index but indirectly relates with lending rate spread. Further, the correlation table reveals that GDP per capita growth positively correlates with domestic credit to private sector by banks but negatively relates with broad money supply, lending rate spread and financial development index. A pictorial view of the correlation coefficients is depicted in the scatter graph of the variables in Figures 4.7(a-d), 4.8(a-d), 4.9(a-d), and 4.10(a-d). The scatter charts in Figures show a graphical outlook of the correlation coefficients of financial development variables (domestic credit to private sector by bank, broad money supply, leading rate spread and financial development index) against inclusive growth, income growth, income equality and employment.

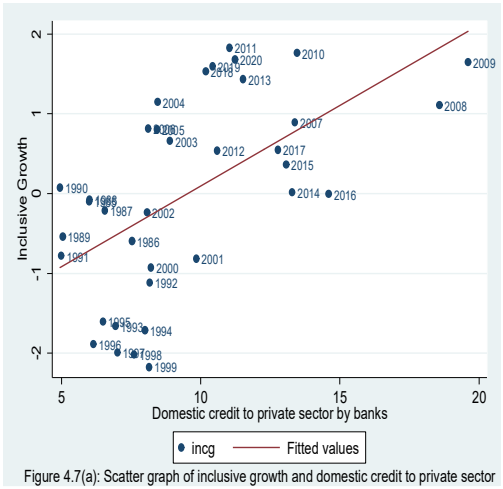

Figure 4.7(a): Scatter graph of inclusive growth and domestic credit to private sector

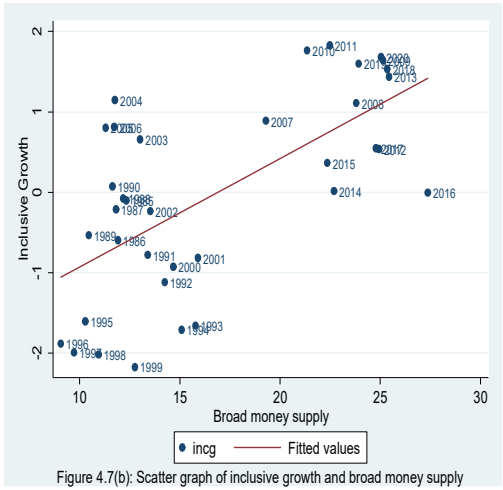

Figure 4.7(b): Scatter graph of inclusive growth and broad money supply

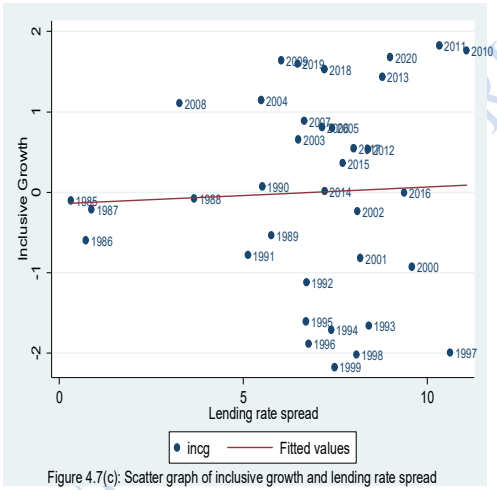

Figure 4.7(c): Scatter graph of inclusive growth and lending rate spread

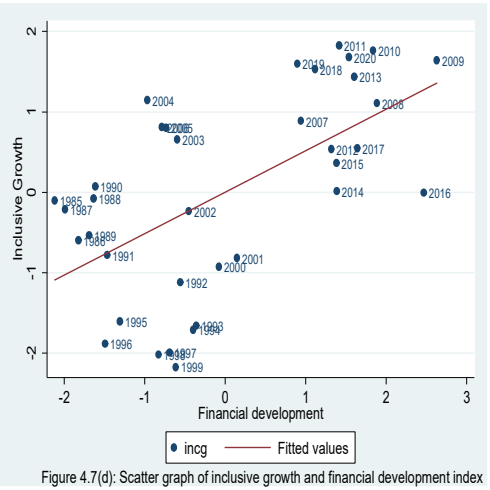

Figure 4.7(d): Scatter graph of inclusive growth and financial development index

Figure 4.7(a-d): Scatter charts of financial development indices and inclusive growth

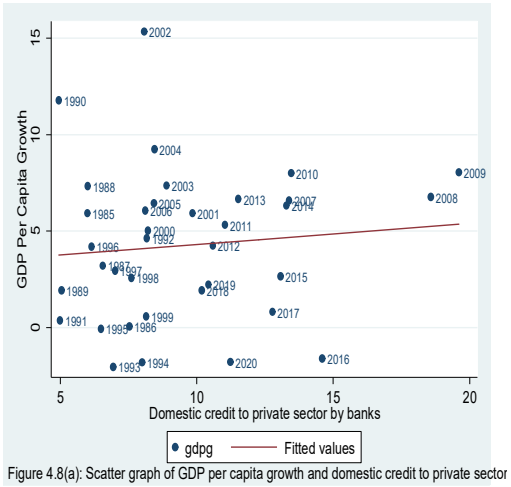

Figure 4.8(a): Scatter graph of GDP per capita growth and domestic credit to private sector

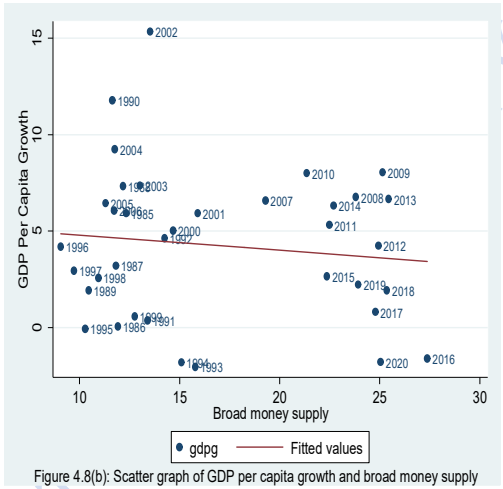

Figure 4.8(b): Scatter graph of GDP per capita growth and broad money supply

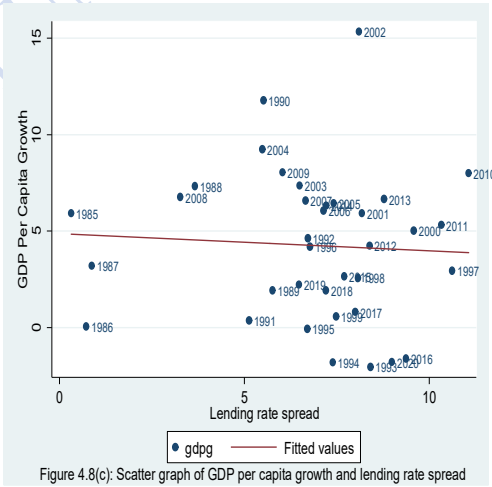

Figure 4.8(c): Scatter graph of GDP per capita growth and lending rate spread

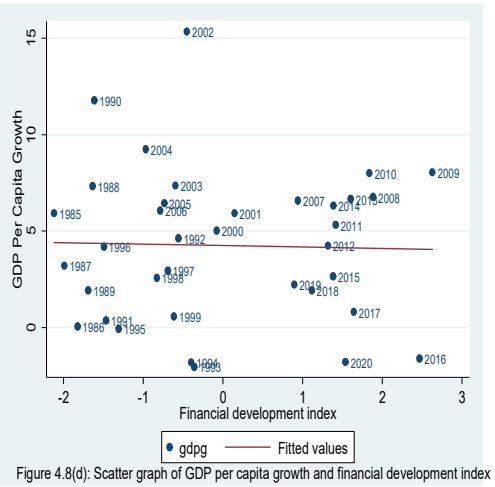

Figure 4.8(d): Scatter graph of GDP per capita growth and financial development index

Figure 4.8(a-d): Scatter charts of financial development indices and income growth

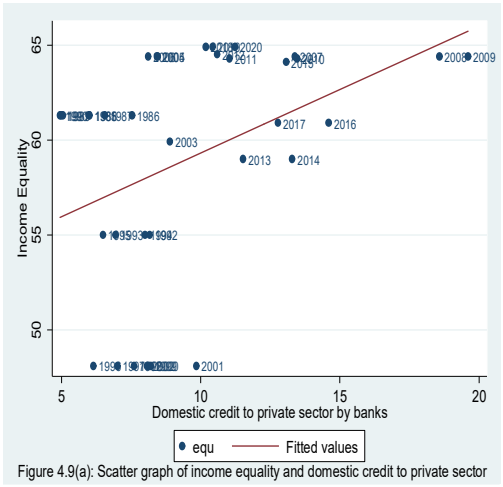

Figure 4.9(a): Scatter graph of income equality and domestic credit to private sector

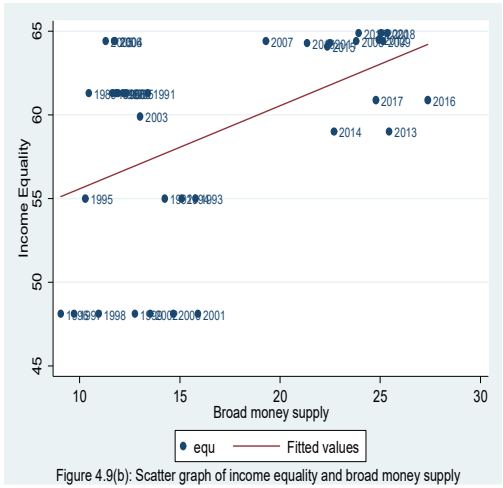

Figure 4.9(b): Scatter graph of income equality and broad money supply

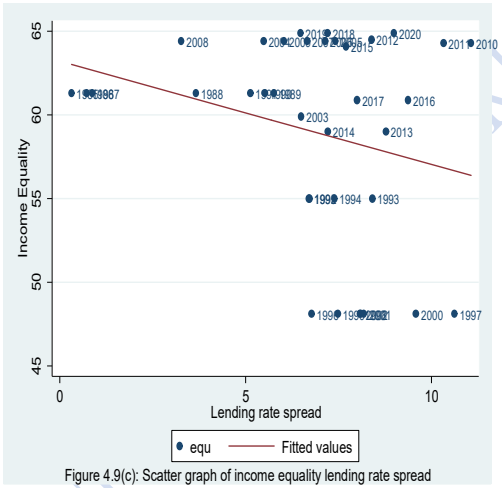

Figure 4.9(c): Scatter graph of income equality lending rate spread

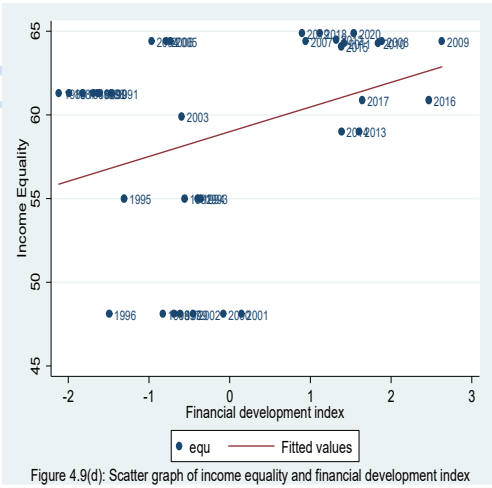

Figure 4.9(d): Scatter graph of income equality and financial development index

Figure 4.9(a-d): Scatter charts of financial development indices and income equality

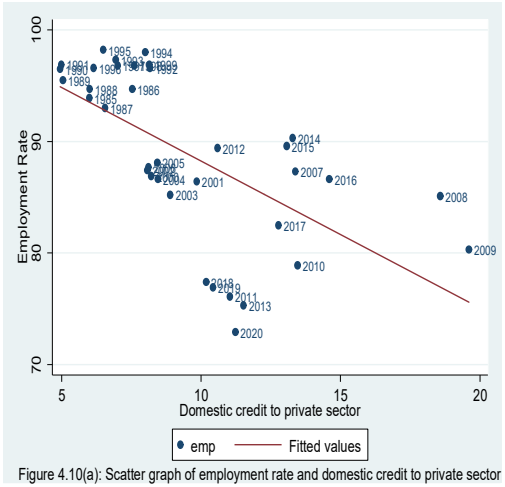

Figure 4.10(a): Scatter graph of employment rate and domestic credit to private sector

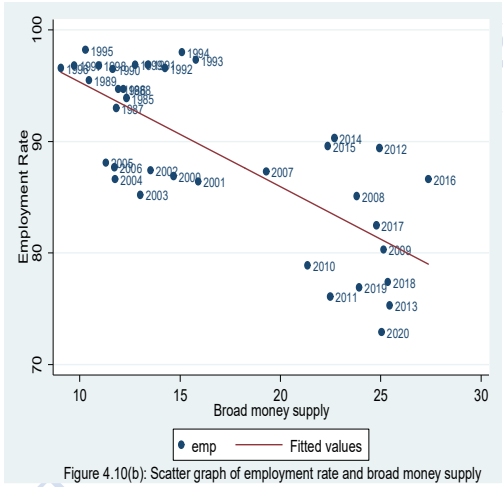

Figure 4.10(b): Scatter graph of employment rate and broad money supply

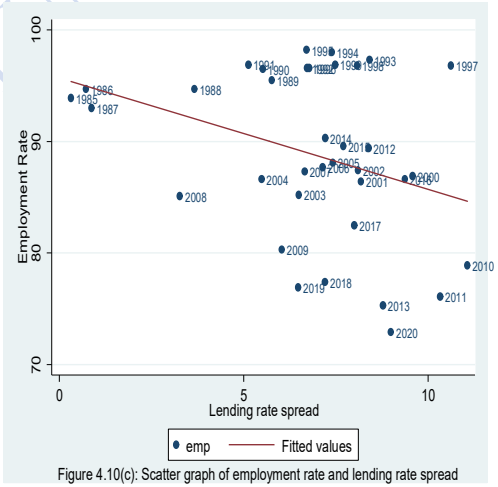

Figure 4.10(c): Scatter graph of employment rate and lending rate spread

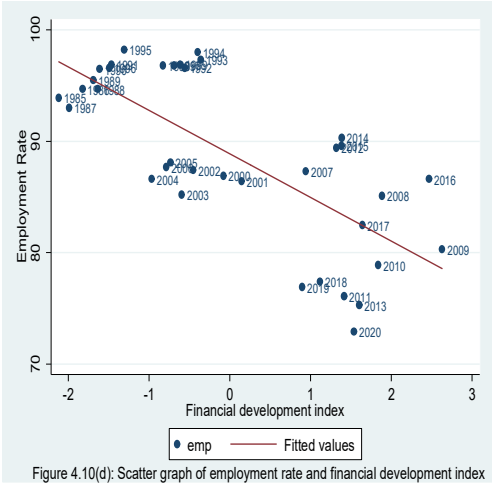

Figure 4.10(d): Scatter graph of employment rate and financial development index

Figure 4.10(a-d): Scatter charts of financial development indices and employment rate

In relations to the key factors of inclusive growth variables, capital investment and labour force participation rate positively correlate with employment but indirectly relate with income equality and inclusive growth. Also, the correlation coefficient of capital investment is negative whereas labour force participation rate reports a positive value. Concerning the control variables, trade openness correlates negatively with income equality, employment and inclusive growth but directly relates with trade openness. Inflation rate has a negative level of association with income per capita, income equality and inclusive growth but positively related with employment. Exchange rate has a negative correlation with GDP per capita growth and employment but directly relates with income equation and inclusive growth.

As regards the correlation among the indicators of inclusive growth, the table shows that inclusive growth has direct correlation with per capita income and income equality but negatively relates with employment rate. Also, a weak and positive relationship exists between GDP per capita growth and income equality. Employment indirectly correlates with GDP per capita and income equality. Meanwhile, the correlation table shows that there exists a positive correlation among the indices of financial sector development. It was noticed that the correlation coefficients of financial development index with domestic credit to private sector by banks and broad money supply which is above 0.9 will not cause multicollinearity problem since they are not estimated in the same model. In the same way, the level of association of factors determining inclusive growth was reported in the table. Summarily, the correlation values suggest the absence of perfect multicollinearity among the predictive variables, as positive and negative relationships were reported among the variables of interest in varying magnitudes and signs. Consequently, the problem of multicollinearity is avoided in the empirical analysis. Nonetheless, the results of

the correlation coefficients are just preliminary analyses that are being put through confirmation in the next sub-section after considering other determinants of inclusive growth.

4.2.1.2 Pre-Estimation Tests (Unit Root and Cointegration)

The pre-estimation approaches used to estimate the stationary level of the variables are Augmented Dickey Fuller (ADF), Phillips Perron (PP) and Kwiatkowski Phillips Schmidt Shin (KPSS). The estimators are employed to test the stationary level of the financial sector development indicators and inclusive growth variables to suggest the appropriate technique to estimate the parameter coefficients. Table 4.4 presents the results of the unit root for the indicators. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference. Meanwhile, it should be noted that the lag length for ascertaining this stationarity level of our variables as well as unit-root test is automatic and optimally chosen by the Schwarz-Bayesian Information Criterion (SIC) while few were fixed.

The three unit root estimation approaches under the conventional methods follow the same decision on stationary level of variables of interest at varying significant levels which were not stationary at levels at 5% except for some few differences. Thus, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. These variables that are not stationary at levels were further tested at first differences which were found significant 5% significance level. The results suggest that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean.

Table 4.4: Conventional Unit Root Tests

Variables	Level			First Difference			*I*(d)
	ADF	PP	KPSS	ADF	PP	KPSS	
incg	-2.0999	-2.1493	0.1005	-7.0261***	-6.9057***	0.0783***	*I*(1)
gdpg	-1.8711	-3.5568**	0.1454	-4.6783***	-	0.0601***	*I*(1)
equ	-1.7597	-1.8350	0.1205	-5.0906***	-5.0906***	0.0785***	*I*(1)
emp	-2.2808	-3.5988**	0.1085	-4.5759***	-	0.0541***	*I*(1)
dcps	-3.9980***	-2.7795	0.1674	-	-4.5068***	0.0392***	*I*(1)
bm	-2.9508	-2.1230	0.1545	-4.7223**	-7.1560***	0.0605***	*I*(1)
lds	-3.6567**	-3.2898*	0.1511	-	-5.8906***	0.0442***	*I*(1)
fd	-3.4622*	-2.2361	0.0635***	-4.8224**	-6.6552***	-	*I*(1)
k	-0.7543	-0.6386	0.1489	-6.2791***	-6.5354***	0.0406***	*I*(1)
Lb	-3.4651*	-2.3339	0.1450	-5.5852***	-5.5128***	0.0909**	*I*(1)
topen	-2.8554	-2.6092	0.1900	-7.3815***	-11.580***	0.0490***	*I*(1)
inf	-2.6345	-2.9831	0.1352	-4.2477**	-6.6240***	-0.0417***	*I*(1)
exr	-0.6298	-0.8653	0.1241	-4.4456***	-4.2527**	0.0783***	*I*(1)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%. Calculated at trend and intercept and lag lengths selected automatically using the Schwarz Info Criterion (SIC). gdpg - GDP growth (annual %); equ - Income Equality; emp - Employment; incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Afterwards, the study conducted the cointegration test using the Johansen cointegration test. The optimal lag length employed in estimating the Johansen co-integration model was determined using the vector autoregressive (VAR) lag order selection criteria test and lag exclusion Wald tests, whose results were presented in the appendix. The result presented in the appendix revealed that lag length 2 is the most appropriate for the models using Schwarz Information Criterion (SIC), optimal and significant lag order to estimate the VAR model system to estimate the Johansen co-integration model. The cointegration results are presented in Table 4.5. The co-integrating equation reported for the models indicated that at McKinnon-Haug-Michelis 5% significance level, the Trace and Max Eigenvalue tests suggest that the incorporated time series variables are co-integrated at the second hypothesized co-integration equations order i.e. r = 2 for linear deterministic trend model with intercept when financial sector development is represented by domestic credit to private sector by banks and lending rate spread. These indicate that the alternative hypotheses "r=2" were not rejected for Trace statistics and Max-Eigen values. This suggests that there exist three cointegrating vector equations among inclusive growth, domestic credit to private sector by banks and lending rate spread in their respective stated order.

Table 4.5: Johansen Cointegration Test of Financial Development and Inclusive Growth Index

Series	Lags interval (in first differences): 1 to 2					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
incg, k, lb, dcps, topen, inf, exr	r = 0	0.9286	214.89***	125.615	87.119***	46.2314
	r ≤ 1	0.7769	127.77***	95.7537	49.497***	40.0776
	r ≤ 2	0.6053	78.277***	69.8189	35.679***	33.8769
	r ≤ 3	0.4352	47.598*	47.8561	18.851	27.5843
	r ≤ 4	0.4106	28.747	29.7971	17.445	21.1316
	r ≤ 5	0.2694	11.302	15.4947	10.359	14.2646
	r ≤ 6	0.0282	0.9428	3.84147	0.9428	3.84147
incg, k, lb, bm, topen, inf, exr	r = 0	0.9424	261.01***	125.615	94.212***	46.2314
	r ≤ 1	0.8610	166.80***	95.7537	65.121***	40.0776
	r ≤ 2	0.7225	101.68***	69.8189	42.308***	33.8769
	r ≤ 3	0.5550	59.367***	47.8561	26.722*	27.5843
	r ≤ 4	0.4674	32.645**	29.7971	20.789*	21.1316
	r ≤ 5	0.2924	11.856	15.4947	11.416	14.2646
	r ≤ 6	0.0133	0.4404	3.84147	0.4404	3.84147
incg, k, lb, lds, topen, inf, exr	r = 0	0.8741	196.44***	125.615	70.462***	46.2314
	r ≤ 1	0.7690	125.98***	95.7537	49.828***	40.0776
	r ≤ 2	0.6513	76.154**	69.8189	35.824**	33.8769
	r ≤ 3	0.4272	40.331	47.8561	18.947	27.5843
	r ≤ 4	0.3405	21.383	29.7971	14.156	21.1316
	r ≤ 5	0.1145	7.2276	15.4947	4.1351	14.2646
	r ≤ 6	0.0869	3.0926	3.84147	3.0926	3.84147
incg, k, lb, fd, topen, inf, exr	r = 0	0.9573	242.26***	125.615	104.04***	46.2314
	r ≤ 1	0.7818	138.22***	95.7537	50.237***	40.0776
	r ≤ 2	0.6189	87.979***	69.8189	31.835*	33.8769
	r ≤ 3	0.5586	56.145***	47.8561	26.984*	27.5843
	r ≤ 4	0.4132	29.161*	29.7971	17.592	21.1316
	r ≤ 5	0.2838	11.569	15.4947	11.013	14.2646
	r ≤ 6	0.0167	0.5551	3.84147	0.5551	3.84147

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

As for broad money supply as a measurement of financial sector development, the Trace statistics suggest that the incorporated time series variables is cointegrated at the fourth hypothesized co-integration equations order i.e. r = 4 for linear deterministic trend model with intercept, but the Max Eigenvalue test shows cointegration at the second order i.e. r = 2. Similarly, the Trace statistics revealed that financial development and inclusive growth are cointegrated at the third order i.e. r = 3, whereas the Max Eigenvalue test indicate cointegration at the first order i.e. r = 1. Overall, the implication is that there is long-run relationship between financial development indices and inclusive growth in Nigeria. The Johansen cointegration results of financial sector development and inclusive growth components (i.e. income per capita growth, income equality and employment rate) are presented in Appendix II(a-c) respectively. As a result, the result of both unit root test and Johansen cointegration test suggest that the vector error correction model (VECM) is the most appropriate estimation technique to be used for the parameter estimates.

4.2.1.3 Short-run and Long-run Estimation Results

The vector error correction model (VECM) results of the parameter estimates both in short-run and long-run are presented in Tables 4.6a and 4.6b respectively. The results on the table answer the null hypothesis that financial sector development has no statistical and significant impact on inclusive growth. For robustness check of our results, Tables 4.7a-b report the short run and long run estimates of financial sector development on the components of inclusive growth in Nigeria. In Table 4.7a, the lag length on all variables as the model was set at two because the number of observation is limited while putting the augmenting the variables into one model and this was found to be sufficient based on the results of the automatic selection of Schwarz Information

Criterion (SIC). The results are presented in columns 1–4 based on the indices of financial sector development.

In the short-run, it shows that the lag one of inclusive growth have negative relationship with the current inclusive growth, whereas the lag two has positive coefficient. Among all the financial development variables, only broad money supply and the composite index of financial development at first lag influence inclusive growth in the short-run at 10% significance level. Meanwhile, domestic credit to private sector by banks and interest rate spread at lag one also had positive impact on inclusive growth but they were not significant. At the second lag, domestic credit to private sector by banks and money supply positively and significantly impacted on inclusive growth at the conventional level. Also, the financial development index has direct and significant effect on inclusive growth in Nigeria. As for the key factors of inclusive growth, only labour force participation rate indicates some positive level of influence on inclusive growth whereas the significant impact of investment is not statistically established. Concerning the controlling variables, trade openness acts mitigating factors of inclusive growth whereas low inflation and exchange rate ameliorate inclusive growth.

As regards the error correction term (ECT) that measures the speed or degree of adjustment, the result is reported in the short-run estimation results in Table 4.6a. It measures the adjustment rate of the dependent variable changes to changes in the explanatory variables. The coefficients of the ECT are found to be negative and statistically significant at the conventional level for all models in columns 1–4. For the augmented model of the composite index of financial development, the ECT value (-0.1086) implies that the model corrects its short-run disequilibrium by 10.86% speed of adjustment in order to return to the long run equilibrium.

Table 4.6a: Short-run Estimates of Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	Domestic credit to private sector	**Broad money supply**	**Lending rate spread**	**Financial development index**
	1	**2**	**3**	**4**
Δ*(incg(-1))*	-0.1377	-0.3743**	-0.1492	-0.0162
	(0.2004)	(0.1673)	(0.2176)	(0.1816)
Δ*(incg(-2))*	0.4253**	0.2095	0.1559	0.4814**
	(0.1980)	(0.1572)	(0.2275)	(0.1828)
Δ*(k(-1))*	0.0129	-0.0255	-0.0395	-0.0185
	(0.0363)	(0.0286)	(0.0451)	(0.0340)
Δ*(k(-2))*	0.0313	0.0422	-0.0039	0.0412
	(0.0468)	(0.0345)	(0.0418)	(0.0449)
Δ*(lb(-1))*	0.2298	0.5674***	0.1475	0.1741
	(0.3129)	(0.2248)	(0.2285)	(0.2314)
Δ*(lb(-2))*	0.4913*	0.7001***	0.4303*	0.5752**
	(0.2697)	(0.2072)	(0.2586)	(0.2318)
Δ*(fd(-1))*	0.1303	0.0828*	0.1864	0.4232*
	(0.0811)	(0.0427)	(0.1665)	(0.2555)
Δ*(fd(-2))*	0.1669***	0.2001***	0.1854	0.7903***
	(0.0719)	(0.0448)	(0.1451)	(0.2405)
Δ*(topen(-1))*	-0.0377	-0.0704***	-0.0704*	-0.0570**
	(0.0298)	(0.0221)	(0.0421)	(0.0260)
Δ*(topen(-2))*	-0.03680*	-0.0504**	-0.0521**	-0.0436**
	(0.0214)	(0.0149)	(0.0249)	(0.0175)
Δ*(inf(-1))*	-0.0138	-0.0214**	-0.0202*	-0.0239**
	(0.0088)	(0.0070)	(0.0114)	(0.0093)
Δ*(inf(-2))*	0.0112	0.0154***	0.0029	0.00587
	(0.0092)	(0.0072)	(0.0086)	(0.0081)
Δ*(exr(-1))*	1.1651***	1.2208***	0.6979*	1.2892**
	(0.5430)	(0.3560)	(0.4288)	(0.4427)
Δ*(exr(-2))*	0.4911	0.6277*	0.3744	0.2810
	(0.4992)	(0.3634)	(0.4483)	(0.3978)
ECT(-1)	-0.2167***	-0.2112***	-0.1889*	-0.1086**
	(0.758)	(0.0573)	(0.1088)	(0.0453)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

As for the long-run estimates in Table 4.6b, the parameter of domestic credit to private sector by banks and money supply has negative coefficients and also statistically significant at 5% level. It thus means that domestic credit to private sector by banks and broad money supply had an inverse influence on inclusive growth in the long-run during the periods understudy. Thus, a 1% changes in domestic credit to private sector by banks and broad money supply lead to about 1.08% and 0.61% decrease in inclusive growth correspondingly. However, the coefficients of interest rate spread are positive and significant at the conventional level. It however means that high lending rate against deposit rate positively influences income growth inclusiveness in Nigeria. In magnitude terms, inclusive growth changes by 2.26% due to a 1% increase in interest rate spread.

Overall, financial sector development has an adverse effect on inclusive growth, following the negative parameter of financial development index which is significant statistically at 5% level. It means that high lending rate spread coupled with insufficient financial credit to private sector by banks and money supply controls are factors poor inclusiveness of income growth in Nigeria. In regards to their coefficient values, it was reported that a 1% changes in the composite index of financial development will cause a decrease in inclusive growth by 4.23%. Concerning the key factors of inclusive growth, investment and labour participation rate have an indirect effect on inclusive growth in Nigeria. As for the control variables, trade openness and Naira appreciation have chances to improve inclusive growth in the long-run. Meanwhile, the positive coefficients of inflation rate means that inclusive growth would be achieved with some level of price instability.

Table 4.6b: Long-run Estimates of Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	1	2	3	4
Capital investment (k)	-0.6899***	-0.3189***	-0.0285	-0.4456***
	(0.0573)	(0.0534)	(0.0199)	(0.0580)
Labour force participation rate (lb)	-1.6226***	-2.5107***	1.7914***	-3.5354***
	(0.1731)	(0.2496)	(0.135)	(0.2294)
Domestic credit to private Sector (dcps)	-1.0825***			
	(0.07886)			
Broad money supply (bm)		-0.6139***		
		(0.0540)		
Lending rate spread (lrs)			2.2607***	
			(0.1388)	
Financial development index (fd)				-4.2341***
				(0.2561)
Trade openness(topen)	0.6328***	0.5598***	-0.5565***	0.8624***
	(0.0451)	(0.0614)	(0.0366)	(0.0609)
Inflation rate (inf)	0.1266***	0.1124***	-0.0990***	0.2793***
	(0.0124)	(0.0169)	(0.0133)	(0.0171)
Exchange rate (exr)	-5.1839***	-2.9990***	-1.3907***	-3.1771***
	(0.4195)	(0.5183)	(0.2629)	(0.4863)
Constant	-0.1115	-0.1483	-0.0921	-0.1180*
	(0.1524)	(0.11688)	(0.1579)	(0.0705)
Adjusted R^2	0.4064	0.6659	0.4507	0.5524
F-Stat	3.2540***	4.8607***	3.1140***	4.7202***
Serial Correlation	(0.4128)	(0.3804)	(0.6255)	(0.5633)
Normality Test	(0.0554)	(0.1313)	(0.2794)	(0.5837)
Heteroskedasticity test	(0.2703)	(0.2499)	(0.2964)	(0.2480)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

Furthermore, the coefficient of determination (measured by the Adjusted-R^2) is high for the models in column 1–4 ranges from 40.64% to 66.59%. As for the augment model of financial development index (column 4), the adjusted R^2 of 55.24% indicates that about 55.24% of the total variations in inclusive growth was explained by the financial development variables in the model. The overall test using the F-statistics are statistically significant at 5% level of significance showing that models are well specified and statistically significant. As for the diagnostic tests, the estimated VECM models are tested for serial correlation, normality and heteroskedasticity. The results from these tests are also shown in Table 4.6b. The results revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

Concerning the robustness checks of the components of inclusive growth in Table 4.7a, the short run result shows that money supply positively and significantly impacted on income growth but negatively influenced employment. However, its direct impact on income equality is not statistically proven. As for domestic credit to private sector, it significantly influenced employment negatively but the impact on income growth and equality is not significant statistically. Also, interest rate spread had direct and significant effect on employment but its impact on income growth and equality are not significant statistically. Following the parameters of composite index of financial development, it shows that financial sector development negatively impacted on employment but had no significant impact on income growth and equality.

Table 4.7a: Short-run Estimates of Financial Development and Inclusive Growth Components

Variables	Per Capita Income Growth (*gdpg*)				Income Equality (*equ*)				Employment Rate (*emp*)			
	Domestic credit	*Money supply*	*Interest rate spread*	*Financial dev. Index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Δ(incg(-1))	-0.3805	-0.2850	-0.3698	-0.4099	0.0050	-0.0435	0.1832	-0.0241	-0.7229***	-0.7389***	-0.2985	-1.0577***
	(0.2708)	(0.2801)	(0.2998)	(0.2885)	(0.2274)	(0.2413)	(0.2152)	(0.2311)	(0.2254)	(0.1858)	(0.2888)	(0.2911)
Δ(incg(-2))	0.1274	0.1351	0.0848	0.0961	-0.0160	-0.0606	-0.0563	-0.0111	0.0384*	-0.2166	0.2674	-0.2330
	(0.2380)	(0.2106)	(0.2361)	(0.23219)	(0.2156)	(0.2038)	(0.2305)	(0.2146)	(0.2101)	(0.2089)	(0.2393)	(0.2475)
Δ(k(-1))	-0.1467	-0.4053	-0.1466	-0.1146	0.0112	-0.1481	-0.0709	-0.0966	-0.2052	-0.2464	0.0966	-0.1975
	(0.2801)	(0.2904)	(0.4034)	(0.2973)	(0.2061)	(0.2112)	(0.2396)	(0.2104)	(0.2601)	(0.2496)	(0.3401)	(0.2608)
Δ(k(-2))	0.1638	0.11632	0.0637	0.1326	-0.2117	-0.1001	-0.3756	-0.1015	-0.2412	-0.0826	-0.1515	0.1395
	(0.3832)	(0.2888)	(0.3027)	(0.3642)	(0.2686)	(0.2699)	(0.2352)	(0.2917)	(0.28665)	(0.2560)	(0.3430)	(0.2937)
Δ(lb(-1))	-2.5828***	-1.4243***	-1.9413	-2.4263*	5.1517**	5.2780***	2.5126*	5.4653***	0.479734	0.7973	1.4407	1.2438
	(1.4403)	(0.1299)	(2.0559)	(1.4858)	(1.9545)	(1.8294)	(1.3783)	(2.0128)	(1.72061)	(1.3359)	(1.7399)	(1.4605)
Δ(lb(-2))	0.6043	1.3208	0.7324***	0.7359	-0.7571	-0.1029	-2.0330	-0.1464	-5.4370***	-2.8373**	-3.9422**	-3.4921***
	(1.5571)	(1.4683)	(0.1956)	(1.4840)	(1.6981)	(1.6743)	(1.3294)	(1.7744)	(1.4570)	(1.3487)	(1.7750)	(1.4461)
Δ(fd(-1))	0.3246	0.0591	-0.5824	0.1820	0.2409	0.1259	0.4680	0.99135	-0.9346	0.1193	-0.3585	-1.9557
	(0.4976)	(0.3344)	(0.8030)	(1.5433)	(0.4235)	(0.2945)	(0.9679)	(1.4326)	(0.4972)	(0.3174)	(0.9749)	(1.43855)
Δ(fd(-2))	0.1928	0.6066**	-0.0155	1.9194	0.1627	0.3738	0.4740	0.8603	-1.4810***	-0.8239**	0.2895***	-5.0580***
	(0.4797)	(0.3146)	(0.5861)	(1.6183)	(0.3878)	(0.2863)	(0.9950)	(1.2200)	(0.4646)	(0.3163)	(0.0872)	(1.6562)
Δ(topen(-1))	0.2932***	0.1894*	0.2181***	0.2459**	-0.3801*	-0.4654**	-0.2014	-0.4770**	0.1799	-0.0621	0.1667	0.0514
	(0.1352)	(0.1127)	(0.0300)	(0.1125)	(0.1960)	(0.2175)	(0.1625)	(0.2368)	(0.1275)	(0.1122)	(0.2079)	(0.1107)
Δ(topen(-2))	0.0619	-0.0266	-0.0025	0.0559	-0.1971	-0.2324	-0.0506***	-0.2561	0.1497	-0.0387	0.1793	-0.0042
	(0.1229)	(0.1268)	(0.2277)	(0.1326)	(0.1513)	(0.1551)	(0.1033)	(0.1705)	(0.1074)	(0.1177)	(0.1512)	(0.1251)
Δ(inf(-1))	0.0024	0.0299	0.0038	-0.0151	-0.0515	-0.0552	-0.0835	-0.0612	0.1584**	0.0747	0.0557	0.2354***
	(0.0604)	(0.0685)	(0.0608)	(0.0718)	(0.0444)	(0.0455)	(0.0857)	(0.0459)	(0.0707)	(0.0545)	(0.0699)	(0.0826)
Δ(inf(-2))	0.0883	0.2023**	0.0786	0.0563	0.0463	0.0843	-0.0227	0.0694	0.0716	0.0688	-0.0287	0.2289**
	(0.0706)	(0.0980)	(0.0959)	(0.0912)	(0.0621)	(0.0687)	(0.0822)	(0.0681)	(0.0730)	(0.0614)	(0.0699)	(0.1073)
Δ(exr(-1))	2.0597	-1.4185	2.9465	3.4928	2.4672	1.3167	1.4508	1.8431	-9.8224**	-6.4320**	-1.2720***	-12.943***
	(3.0086)	(3.7069)	(3.6448)	(3.9886)	(2.5315)	(2.1969)	(2.6899)	(2.3213)	(4.4498)	(2.8849)	(0.3487)	(4.7195)
Δ(exr(-2))	-1.8300	-4.3469	-0.5701	-1.6228	2.9690	2.6763	1.4808	2.8350	-6.6531*	-5.4407*	-0.9030	-8.0112**
	(2.9616)	(3.0776)	(3.0925)	(3.3487)	(2.4929)	(2.2145)	(2.4241)	(2.3196)	(3.7845)	(2.9988)	(3.5139)	(3.8867)
ECT(-1)	-0.5483***	-0.3892***	-0.1952**	-0.3859***	-0.1631***	-0.1454*	-0.3171***	-0.0716**	-0.3679**	-0.1325***	-0.1791***	-0.5335***
	(0.1165)	(0.1616)	(0.0918)	(0.1507)	(0.0499)	(0.0867)	(0.0753)	(0.0273)	(0.17016)	(0.0455)	(0.0248)	(0.20040)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

Table 4.7b: Long-run Estimates of Financial Development and Inclusive Growth Components

Variables	Per Capita Income Growth (*gdpg*)				Income Equality (*equ*)				Employment Rate (*emp*)			
	Domestic credit	*Money supply*	*Interest rate spread*	*Financial dev. Index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. Index*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Capital	-1.7400***	-0.0138	-0.0760*	-0.1975*	-5.1283***	-1.1744***	-1.4624***	-3.6428***	1.2546	-1.0716***	0.4708***	0.3558***
	(0.3478)	(0.0821)	(0.0461)	(0.1019)	(0.4855)	(0.2744)	(0.2091)	(0.5843)	(0.1832)	(0.2607)	(0.0558)	(0.1247)
Labour	-3.7188***	1.6912***	4.9901***	-0.2542	-14.522***	-14.560***	8.0010***	-25.724***	0.4409	8.4509***	-4.4659***	-1.1350**
	(1.1168)	(0.3897)	(0.3211)	(0.4100)	(1.4727)	(1.2964)	(1.2979)	(2.2714)	(0.4985)	(1.2437)	(0.3702)	(0.4814)
Domestic Credit	-4.4525***				-7.7774***				1.8714***			
	(0.4859)				(0.6677)				(0.2591)			
Money supply		0.3625***				-2.7205***				0.1875		
		(0.0853)				(0.2803)				(0.2715)		
Lending rate			3.0913***				20.078***				-5.2003***	
			(0.3281)				(1.3262)				(0.3762)	
FD index				-3.1139***				-21.463***				2.9593***
				(0.4568)				(2.6330)				(0.5657)
Trade	1.8032***	-0.3083***	-1.4614***	0.0260**	5.6533***	3.8035***	-1.9913***	7.6978***	-0.5982***	-0.7356**	1.1406***	0.1735
	(0.2857)	(0.0965)	(0.0853)	(0.1095)	(0.4119)	(0.3396)	(0.3594)	(0.6359)	(0.1365)	(0.3052)	(0.1005)	(0.1297)
Inflation	0.4574***	0.3860***	0.1389***	0.4907***	0.3966***	0.2502**	-1.2787***	0.7515***	-0.4973***	0.3480***	0.1222***	-0.4937***
	(0.0754)	(0.0260)	(0.0327)	(0.030)	(0.10106)	(0.0845)	(0.1285)	(0.1624)	(0.0340)	(0.0777)	(0.0377)	(0.0334)
Exch. Rate	-7.9274***	4.0299***	4.9804***	5.1046***	-46.638***	-19.630***	-33.757***	-43.659***	4.7673***	20.003***	6.7062***	-4.5588***
	(2.5377)	(0.7932)	(0.7025)	(0.8580)	(3.68598)	(2.7925)	(2.8090)	(4.9630)	(1.3820)	(2.6311)	(0.771)	(1.0714)
Constant	-0.5576	0.1891	-0.6973	-0.8996	-0.3113	-0.1325	-0.7418	-0.1402	0.9522	0.7236	-0.7775	2.4402*
	(1.0332)	(1.1692)	(1.1750)	(1.2799)	(0.8476)	(0.8691)	(1.1157)	(0.8820)	(1.2077)	(1.0013)	(1.1942)	(1.4646)
Adjusted R^2	0.4819	0.5321	0.4146	0.4826	0.3908	0.4468	0.4046	0.4075	0.5210	0.5961	0.4765	0.4111
F-Statistics	4.4743***	5.0608***	4.5829***	5.4766***	4.2131***	3.9616***	3.9903***	4.2572***	5.5511***	5.1007***	4.4572***	4.4894***
Serial Correlation	(0.7249)	(0.4822)	(0.2166)	(0.2001)	(0.9513)	(0.7889)	(0.8401)	(0.7592)	(0.3971)	(0.3475)	(0.1575)	(0.0974)
Normality Test	(0.1162)	(0.2680)	(0.1462)	(0.1393)	(0.4654)	(0.2564)	(0.2935)	(0.3966)	(0.4996)	(0.1574)	(0.1468)	(0.3199)
Heteroskedasticity	(0.2918)	(0.2716)	(0.2521)	(0.2607)	(0.3161)	(0.2931)	(0.2714)	(0.2786)	(0.2613)	(0.2694)	(0.2948)	(0.2166)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

Pertaining to the long run estimates of the robustness checks in Table 4.7b, domestic credit to private sector by banks had indirect and significant effect on income growth and equality but positively and significantly impacted employment in Nigeria. The table shows that the positive and negative effect of money supply on income growth and equality respectively is significant whereas its impact on employment rate is not significant statistically. More so, interest rate spread positively and significantly impacted on income growth and equality but adversely impacted on employment rate in Nigeria. In general, financial sector development indirectly influenced income growth and equality but positively impacted on employment rate.

Additionally, the coefficient of determination (measured by the Adjusted-R^2) is relatively high for the models in column 1–12 ranges from 39.08% to 59.61%. As for the augment model of financial development index (column 4, 8 and 12), the adjusted R^2 of 48.26%, 40.75% and 41.11% indicate that about 48.26%, 40.75% and 41.11% of the total variations in income growth, income equality and employment was explained by the financial development variables in the model. Following the F-statistics, it indicates that the parameter estimates of financial development variables are statistically significant at 5% level of significance. This shows that the models are well specified and statistically significant. Concerning the diagnostic tests, the estimated VECM models are tested for serial correlation, normality and heteroskedasticity. The results from these tests are also shown in Table 4.7b. The results revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

4.2.2 Analysis of the Second Objective

In this sub-section, the study presents the empirical outcomes with reference to the minimum financial sector development threshold that stimulate inclusive growth in Nigeria.

4.2.2.1 Correlation Analysis and Scatter Plots

Table 4.8 presents the partial correlation of the variables understudied such as inclusive growth index, income growth, income equality, employment, domestic credit to private sector by banks, broad money supply, lending rate spread, financial sector development index, the square of financial development indicators, investment, labour force, trade openness, inflation, and exchange rate in Nigeria using an annual dataset within the period of 1985 and 2020. The result of the correlation coefficients shows that the four financial development indicators have direct correlation with inclusive growth index. Likewise, the square of financial development series positively relate with the composite index of inclusive growth. As for the components of inclusive growth, the correlation table shows that all the financial development and their square are negatively associated with employment rate. Income per capita is negatively correlated with the financial development series and its square except domestic credit to private sector by banks and its square which have positive coefficients. As regards income equality, it positively correlates with domestic credit to private sector by banks, broad money supply and financial development index but negatively relates with interest rate spread. The coefficient result is the same with the square of financial development indices. A pictorial view of the relationship between inclusive growth components and financial development variables is presented in scattered forms in Figures 4.11(a-d), 4.12(a-d), 4.13(a-d) and 4.14(a-d).

Table 4.8: Correlation Matrix

	equ	*emp*	*incg*	*dcps*	*Bm*	*lds*	*fd*	*dcps²*	*bm²*	*lds²*	*fd²*	*k*	*lb*	*topen*	*inf*	*exr*
gdpg	0.034	-0.179	0.346	0.099	-0.120	-0.058	-0.027	0.124	-0.138	-0.078	-0.019	-0.187	0.206	0.278	-0.321	-0.098
equ	1	-0.483	0.814	0.384	0.481	-0.255	0.335	0.383	0.481	-0.251	0.447	-0.336	-0.330	-0.309	-0.178	0.418
emp		1	-0.863	-0.622	-0.746	-0.339	-0.630	-0.538	-0.742	-0.360	-0.183	0.630	0.464	-0.165	0.439	-0.733
incg			1	0.579	0.651	0.042	0.585	0.536	0.644	0.052	0.337	-0.634	-0.391	-0.008	-0.416	0.671
dcps				1	0.809	0.229	0.904	0.780	0.801	0.217	0.429	-0.675	-0.446	0.090	-0.339	0.605
bm					1	0.330	0.934	0.742	0.795	0.325	0.365	-0.672	-0.600	-0.036	-0.297	0.698
lds						1	0.531	0.130	0.327	0.755	-0.353	-0.525	-0.128	0.612	-0.018	0.421
fd							1	0.836	0.928	0.511	0.275	-0.663	-0.571	0.189	-0.301	0.669
dcps²								1	0.739	0.112	0.523	-0.673	-0.350	0.069	-0.295	0.495
bm²									1	0.323	0.405	-0.670	-0.722	-0.049	-0.296	0.705
lds²										1	-0.253	-0.485	-0.141	0.546	-0.104	0.376
fd²											1	-0.083	-0.300	-0.461	-0.140	0.080
k												1	0.600	-0.285	0.365	-0.673
lb													1	0.390	0.317	-0.687
topen														1	-0.080	0.035
inf															1	-0.377

Note: gdpg - GDP growth; equ - Income Equality; emp - Employment; ig - Inclusive growth index; dcps - Domestic credit to private sector by banks; bm - Broad money; lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; $dcps^2$ - Domestic credit to private sector by banks squared; bm^2 - Broad money squared; lds^2 - lending rate spread squared; fd^2 - Financial development index squared; k - Gross fixed capital formation; lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade as % of GDP; inf – Inflation rate, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Concerning the key factors of inclusive growth variables, capital investment and labour force participation rate has a positive correlation with employment but it indirectly relates with income equality and inclusive growth. Further, the correlation coefficient of capital investment is negative whereas labour force participation rate reports a positive value. For the control variables, trade openness correlates negatively with income equality, employment and inclusive growth but directly relates with trade openness. Inflation rate has a negative level of association with income per capita, income equality and inclusive growth but positively related with employment. Exchange rate has a negative correlation with GDP per capita growth and employment but directly relates with income equation and inclusive growth.

With reference to the correlation among the indicators of inclusive growth, the table shows that inclusive growth has direct correlation with per capita income and income equality but negatively relates with employment rate. More so, a weak and positive relationship exists between GDP per capita growth and income equality. Employment indirectly correlates with GDP per capita and income equality. The correlation table shows that there exists a positive correlation among the indices of financial sector development. It was noticed that the correlation coefficients of financial development index with domestic credit to private sector by banks and broad money supply which is above 0.9 will not cause multicollinearity problem since they are not estimated in the same model. The correlation relationship among the key and other controlling variables is presented in Table 4.8 which shows different magnitudes and degrees. The values of the correlation coefficients revealed the absence of multicollinearity problem. Thus, the problem of multicollinearity is avoided in the empirical analysis. Nonetheless, the results of the correlation coefficients are just preliminary analyses that are being put through confirmation in the next sub-section after considering other determinants of inclusive growth.

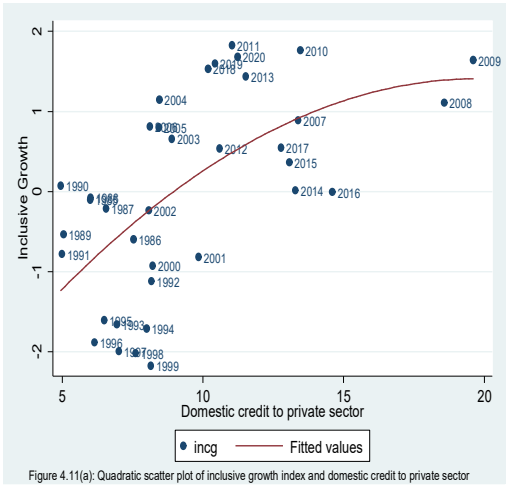

Figure 4.11(a): Quadratic scatter plot of inclusive growth index and domestic credit to private sector

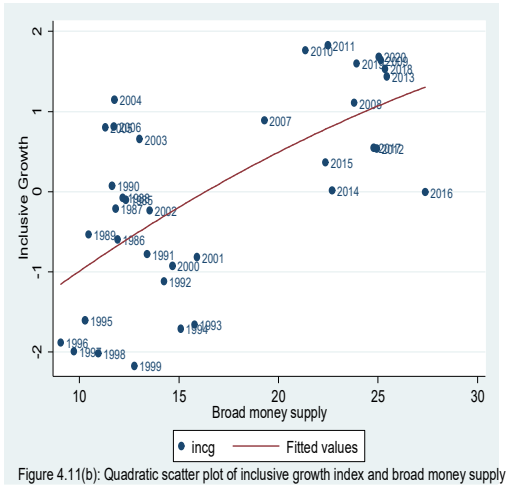

Figure 4.11(b): Quadratic scatter plot of inclusive growth index and broad money supply

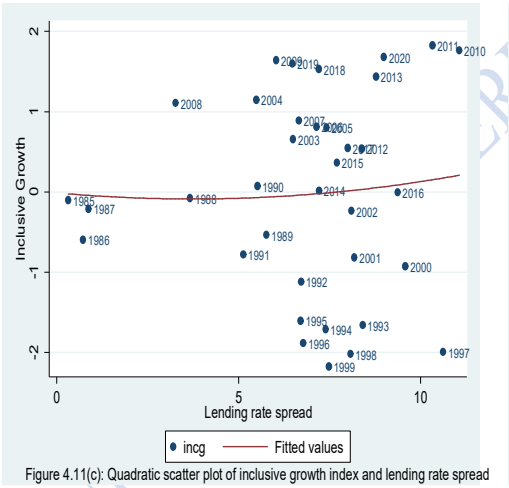

Figure 4.11(c): Quadratic scatter plot of inclusive growth index and lending rate spread

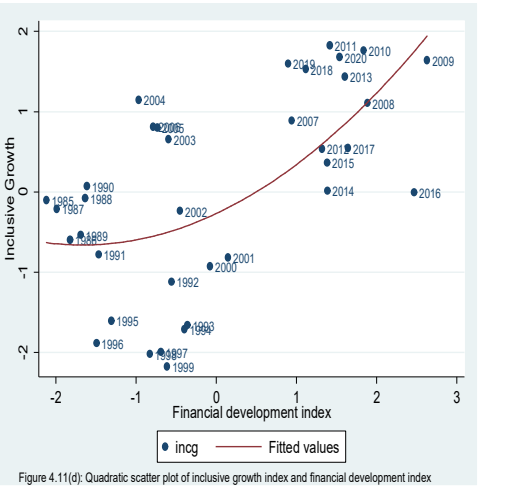

Figure 4.11(d): Quadratic scatter plot of inclusive growth index and financial development index

Figure 4.11(a-d): Quadratic scattered plots of financial development indices and inclusive growth

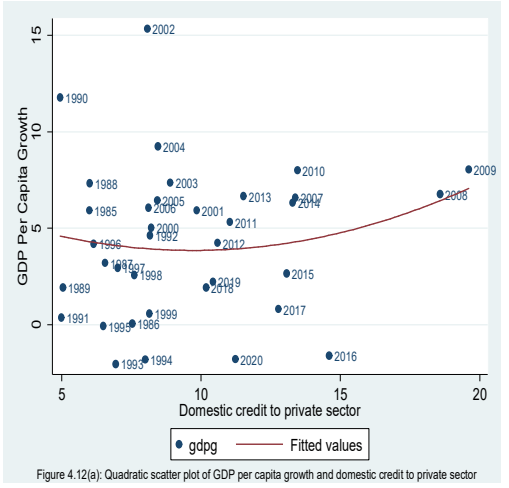

Figure 4.12(a): Quadratic scatter plot of GDP per capita growth and domestic credit to private sector

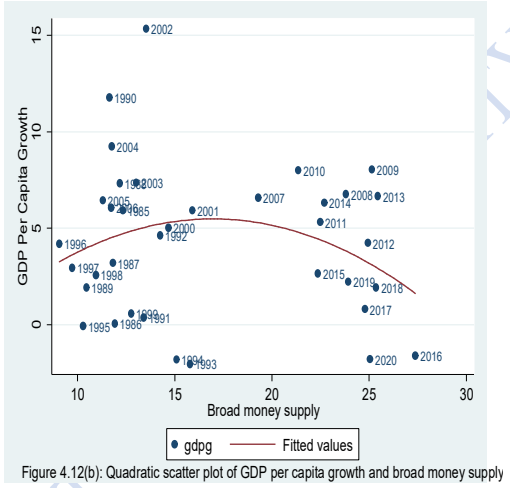

Figure 4.12(b): Quadratic scatter plot of GDP per capita growth and broad money supply

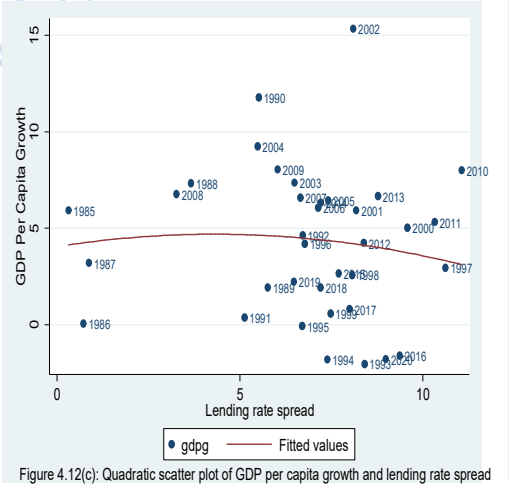

Figure 4.12(c): Quadratic scatter plot of GDP per capita growth and lending rate spread

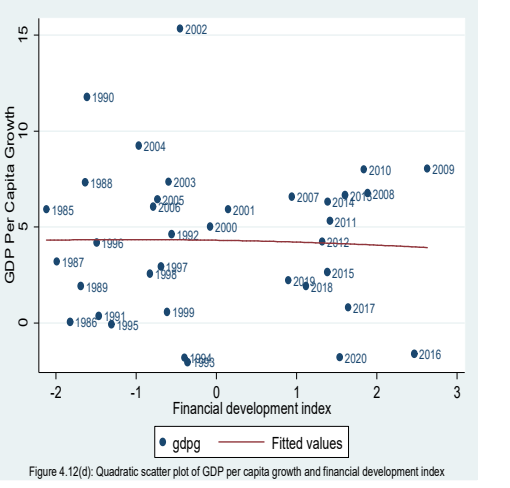

Figure 4.12(d): Quadratic scatter plot of GDP per capita growth and financial development index

Figure 4.12(a-d): Quadratic scattered plots of financial development indices and income growth

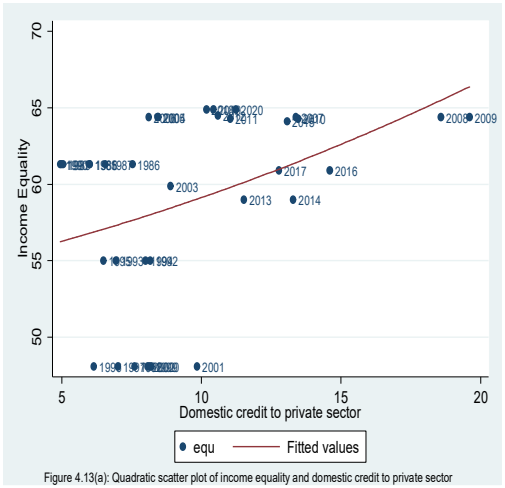

Figure 4.13(a): Quadratic scatter plot of income equality and domestic credit to private sector

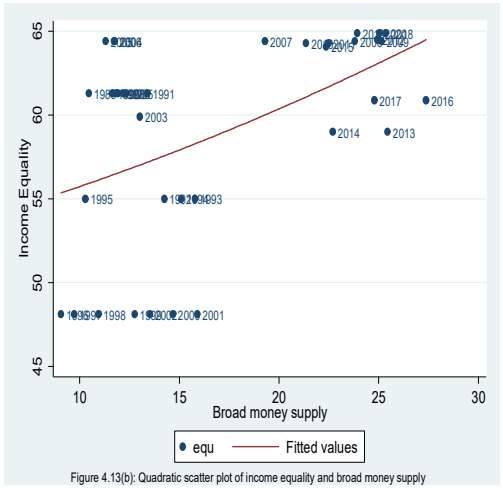

Figure 4.13(b): Quadratic scatter plot of income equality and broad money supply

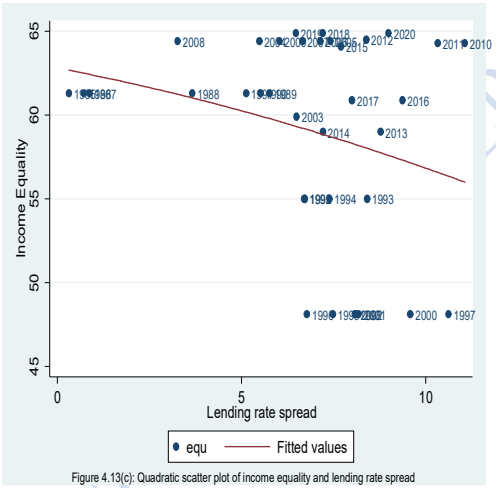

Figure 4.13(c): Quadratic scatter plot of income equality and lending rate spread

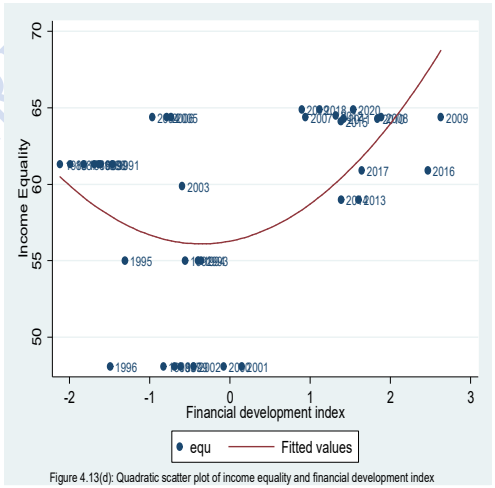

Figure 4.13(d): Quadratic scatter plot of income equality and financial development index

Figure 4.13(a-d): Quadratic scattered plots of financial development indices and income equality

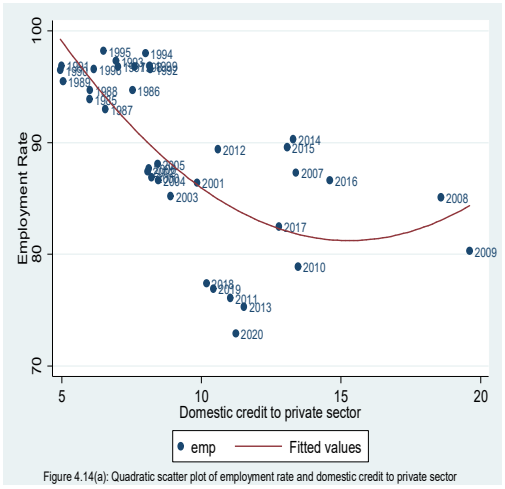

Figure 4.14(a): Quadratic scatter plot of employment rate and domestic credit to private sector

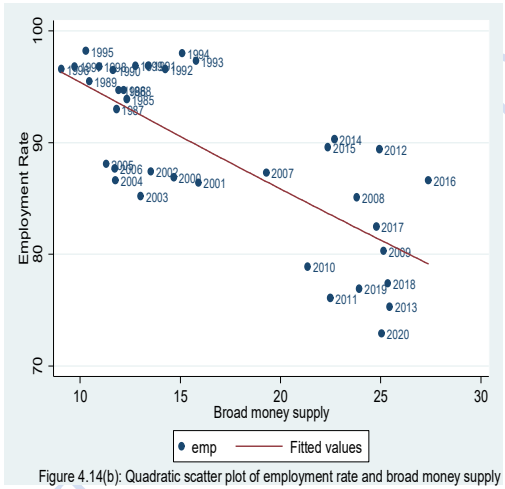

Figure 4.14(b): Quadratic scatter plot of employment rate and broad money supply

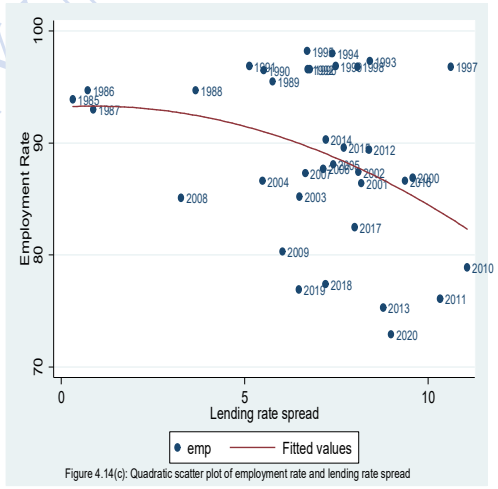

Figure 4.14(c): Quadratic scatter plot of employment rate and lending rate spread

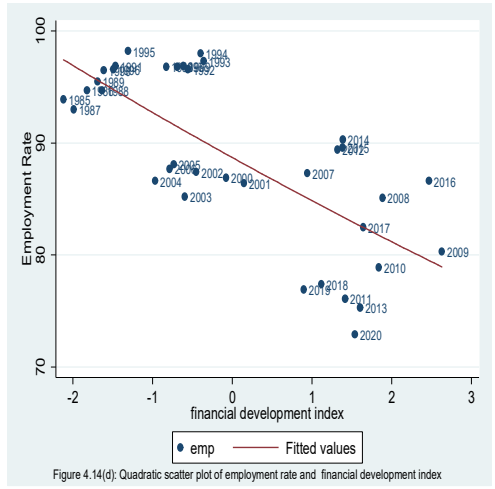

Figure 4.14(d): Quadratic scatter plot of employment rate and financial development index

Figure 4.14(a-d): Quadratic scattered plots of financial development indices and employment rate

4.2.2.2 Pre-Estimation Tests (Unit Root and Cointegration)

In this sub-section, Augmented Dickey Fuller (ADF), Phillips Perron (PP) and Kwiatkowski Phillips Schmidt Shin (KPSS) unit root estimation approaches were used to estimate the stationary level of the variables. These estimators are used to reveal the stationary level of financial development indicators, their squared and inclusive growth to propose the appropriate method to evaluate the parameters. The results of the unit root for the indicators are presented in Table 4.9. For the tau-statistics, their results in intercept and trend form were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference. Also, the lag length for ascertaining the variables' stationarity is automatic and optimally chosen by the Schwarz-Bayesian Information Criterion (SIC) while few were fixed.

The three unit root tests under the conventional methods follow approximately the same decision on stationary level of variables of interest at varying significant levels which were stationary at levels for the squared of domestic credit to private sector by banks and interest rate spread at 5%. As for the remaining variables, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. The variables that are not stationary at levels were further tested at first differences which were found significant 5% level. The variables are GDP growth, income equality, employment, inclusive growth index, domestic credit to private sector by banks, broad money, interest rate spread, financial development index, broad money squared, financial development index squared, gross fixed capital formation, labor force participation, trade, inflation rate and official exchange rate. The results suggest that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean.

Table 4.9: Conventional Unit Root Tests

Variables	Level			First Difference			*I*(d)
	ADF	PP	KPSS	ADF	PP	KPSS	
incg	-2.0999	-2.1493	0.1005	-7.0261***	-6.9057***	0.0783***	*I*(1)
gdpg	-1.8711	-3.5568**	0.1454	-4.6783***	-	0.0601***	*I*(1)
equ	-1.7597	-1.8350	0.1205	-5.0906***	-5.0906***	0.0785***	*I*(1)
emp	-2.2808	-3.5988**	0.1085	-4.5759***	-	0.0541***	*I*(1)
dcps	-3.9980***	-2.7795	0.1674	-	-4.5068***	0.0392***	*I*(1)
bm	-2.9508	-2.1230	0.1545	-4.7223**	-7.1560***	0.0605***	*I*(1)
lds	-3.6567**	-3.2898*	0.1511	-	-5.8906***	0.0442***	*I*(1)
fd	-3.4622*	-2.2361	0.0635***	-4.8224**	-6.6552***	-	*I*(1)
$dcps^2$	-4.2760***	-4.3210***	0.06622***	-	-	-	*I*(0)
bm^2	-2.5241	-2.3417	0.1519	-5.4794***	-9.5152***	0.07043***	*I*(1)
lds^2	-3.7108***	-3.5703**	0.0690**	-	-	-	*I*(0)
fd^2	-3.262*	-3.0587	0.1571	-5.4649***	-6.5544***	0.0726***	*I*(1)
k	-0.7543	-0.6386	0.1489	-6.2791***	-6.5354***	0.0406***	*I*(1)
lb	-3.4651*	-2.3339	0.1450	-5.5852***	-5.5128***	0.0909**	*I*(1)
topen	-2.8554	-2.6092	0.1900	-7.3815***	-11.580***	0.0490***	*I*(1)
inf	-2.6345	-2.9831	0.1352	-4.2477**	-6.6240***	-0.0417***	*I*(1)
exr	-0.6298	-0.8653	0.1241	-4.4456***	-4.2527**	0.0783***	*I*(1)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%. Calculated at trend and intercept and lag lengths selected automatically using the Schwarz Info Criterion (SIC). gdpg - GDP growth; equ - Income Equality; emp - Employment; incg - Inclusive growth index; dcps - Domestic credit to private sector by banks; bm - Broad money; lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; $dcps^2$ - Domestic credit to private sector by banks squared; bm^2 - Broad money squared; lds^2 - lending rate spread squared; fd^2 - Financial development index squared; k - Gross fixed capital formation; lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade as % of GDP; inf – Inflation rate, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Subsequently, the study conducted the long run relationship test using both the ARDL bound and Johansen Cointegration approaches which are found appropriate due to the outcomes of the unit root test. The estimation approach is employed because it is suitable for variables at different order of integration. The F-statistics estimates for testing the existence of long-run relationship between the square of domestic credit and interest rate spread and inclusive growth were presented in Table 4.10a. In the table, the estimated F-statistics of the normalized equations were found greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. The implication of the above estimation is that there is existence of long-run relationship between the turning point of financial development using domestic credit to private sector by banks and interest rate spread and inclusive growth in Nigeria. The models have equilibrium condition that keeps the variables together in the long-run.

Table 4.10a: Cointegration Test Results using ARDL Bound Test

Dependent variable: *y*	**Functions**	**F-statistics**
Model I ARDL (2, 3, 2, 3, 3, 3, 3, 2)	$F_{incg}(incg \mid k, lb, dcps, dcps^2, topen, \inf, exr)$	19.959***
Model II ARDL (2, 3, 3, 3, 3, 3, 1, 3)	$F_{incg}(incg \mid k, lb, lds, lds^2, topen, \inf, exr)$	24.787***

	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 7)	2.73	3.90	2.17	3.21	1.92	2.89

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU/US$).
Source: Authors' computation (2022).

Table 4.10b: Johansen Cointegration Test using Johansen Cointegration Test

Series	**Lags interval (in first differences):** 1 to 2					
	Trend assumption:*Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
incg, k, lb, bm, bm^2 topen, inf, exr	r = 0	0.927214	224.0695***	159.5297	89.08802***	52.36261
	r ≤ 1	0.718891	134.9814**	125.6154	48.14641**	46.23142
	r ≤ 2	0.620870	91.83503	95.75366	32.97577	40.07757
	r ≤ 3	0.473559	58.85926	69.81889	21.81492	33.87687
	r ≤ 4	0.361500	37.04434	47.85613	15.25352	27.58434
	r ≤ 5	0.306496	21.79082	29.79707	12.44396	21.13162
	r ≤ 6	0.144958	9.346860	15.49471	5.324541	14.26460
	r ≤ 7	0.111574	3.022318	3.841466	4.022318	3.841466
incg, k, lb, fd, fd^2, topen, inf, exr	r = 0	0.914838	246.7582***	159.5297	83.74862***	52.36261
	r ≤ 1	0.793455	163.0096***	125.6154	53.62604***	46.23142
	r ≤ 2	0.654479	109.3835***	95.75366	46.13191**	40.07757
	r ≤ 3	0.636407	73.25163**	69.81889	34.39847**	33.87687
	r ≤ 4	0.384819	38.85316	47.85613	16.51852	27.58434
	r ≤ 5	0.343976	22.33463	29.79707	14.33298	21.13162
	r ≤ 6	0.153465	8.001658	15.49471	5.664541	14.26460
	r ≤ 7	0.066429	2.337117	3.841466	2.337117	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$).
Source: Author's computation (2022).

Meanwhile the Johansen cointegration test was used for the long run of the turning point of broad money and financial development index and inclusive growth. The optimal lag length employed in estimating the Johansen co-integration model was determined using the vector autoregressive (VAR) lag order selection criteria test and lag exclusion Wald tests, and the result revealed lag length 1 using Schwarz Information Criterion (SIC). The cointegration results are presented in Table 4.10b. The co-integrating equation reported for the models indicated that at McKinnon-Haug-Michelis 5% significance level, the Trace and Max Eigenvalue tests suggest that the incorporated time series variables are co-integrated at the first and third hypothesized co-integration equations for linear deterministic trend model with intercept when financial sector development is represented by money supply and financial development index. This suggests that there exist two and four cointegrating vector equations among inclusive growth and money supply and financial development index in their respective stated order. In general, the implication is that there exist a long-run relationship between financial development turning point and inclusive growth in Nigeria. Also, the cointegration results of financial sector development and inclusive growth components (i.e. income per capita growth, income equality and employment rate) are presented in Appendix III(a-c) respectively. Consequently, the result of both unit root test and Johansen cointegration test suggest that the ARDL and vector error correction model (VECM) are the most appropriate estimation technique to be used for the parameter estimates.

4.2.2.3 Short-run and Long-run Estimation Results

The autoregressive distributed lag (ARDL) and vector error correction (VEC) model results of the parameter estimates both in short-run and long-run are presented in Tables 4.11a and 4.11b respectively. The results on the tables provide answers to the null hypothesis that the minimum financial sector development threshold that stimulates inclusive growth is not statistically significant. For robustness check of our results, Tables 4.12a-b report the parameter estimates of the minimum financial sector development threshold that stimulates income growth, income equality and employment in Nigeria.

First, the short run analysis in this sub-section shows the dynamic pattern in the model and also ensures that the dynamics of the model have not been constrained by inappropriate lag length specification. In Table 4.11a, the lag length on all variables as the model was set at one and three for VECM and ARDL respectively because the number of observation is limited while putting the augmenting the variables into one model and this was found to be sufficient based on the results of the automatic selection of Schwarz Information Criterion (SIC). Accordingly, the results were presented in columns 1-4 based on the variables of financial sector development. The error correction term (ECT) that measures the speed or degree of adjustment is reported in the short-run estimation results in Table 4.11a. It shows the rate of adjustment at which the outcome variable changes owing to changes in the explanatory variables. The coefficients of the ECT are found to be negative and statistically significant at the conventional level for the models in columns 1–4. For the augmented model of financial development index, the ECT value (-0.3783) implies that the model corrects its short-run disequilibrium by 37.83% speed of adjustment in order to return to the long run equilibrium.

Table 4.11a: Short-run Estimates of Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	Domestic credit to private sector	**Broad money supply**	**Lending rate spread**	**Financial development index**
	1	**2**	**3**	**4**
Δ*(incg(-1))*	-0.5254***	-0.2259	0.0843	-0.2611
	(0.0325)	(0.1830)	(0.0417)	(0.1835)
Δ*(k(-1))*	0.1100***	0.02069	0.0972***	0.0123
	(0.0120)	(0.0316)	(0.0077)	(0.0301)
Δ*(lb(-1))*	0.1480**	-0.4211*	0.0425	0.0645
	(0.0427)	(0.2335)	(0.0432)	(0.2110)
Δ*(fd(-1))*	-0.4738***	-0.0092	0.8306***	-0.7134***
	(0.0523)	(0.1704)	(0.0511)	(0.2070)
Δ*(fd^2(-1))*	0.0130***	0.00033	0.0231***	0.0317
	(0.0017)	(0.0045)	(0.0025)	(0.0773)
Δ*(topen(-1))*	-0.0189***	0.0161	-0.1754***	0.0105
	(0.0033)	(0.0169)	(0.0071)	(0.0186)
Δ*(inf(-1))*	0.0499***	-0.0012	0.0044**	0.000186
	(0.0029)	(0.0073)	(0.0017)	(0.0074)
Δ*(exr(-1))*	0.0106***	0.0141***	0.0072**	0.0144***
	(0.0011)	(0.0055)	(0.0011)	(0.0057)
ECT(-1)	-0.8229***	-0.3514***	-0.7495***	-0.3783***
	(0.0355)	(0.0419)	(0.0676)	(0.0135)
Minimum thresholds	18.22%	n.a.	n.a.	n.a.

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available since the square of financial development variables are not statistically significant or it failed to exhibit an open parabola curve.
Source: Author's computation (2022).

According to the short-run parameters, it shows that the lag one of inclusive growth has a negative relationship with the current level of inclusive growth but its significant estimate was only established in the first column. Thus, it does not follow the a'priori expectation as it means that the level of economic activities in the previous periods are not sufficient to ensure improvement in economic activities in the current short period. For the financial sector development variables, only domestic credit to private sector by banks exhibit an open parabola curve i.e. a U-shape curve in the short run. However, broad money supply and financial development index also exhibit the attribute but its squared coefficient is not significant statistically. As for interest rate spread, the signs of its coefficients do not exhibit the attributes of an open parabola curve, albeit the coefficients are statistically significant at 5% level. The study concludes that the minimum domestic credit to private sector by bank as a ratio of GDP that would stimulate inclusive growth is at 18.22% in the short run. As regards the key factors of inclusive growth, the table shows that investment is an enabler of inclusive growth while labour force participation rate have conflicting parameter estimates. In the case of the controlling variables, trade openness has positive link with inclusive growth whereas inflation and exchange rate positively influenced inclusive growth.

Table 4.11b: Long-run Estimates of Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	1	2	3	4
Capital investment (k)	-0.2273**	0.1096***	-0.0295*	0.0598
	(0.0594)	(0.0318)	(0.0111)	(0.1272)
Labour force participation rate (lb)	-0.0550	-2.1880***	-0.4323***	-5.8790***
	(0.1360)	(0.1817)	(0.0824)	(0.6184)
Domestic credit to private Sector (dcps)	-3.0186***			
	(0.5941)			
Broad money supply (bm)		-2.4933***		
		(0.3605)		
Lending rate spread (lrs)			-0.6661***	
			(0.1271)	
Financial development index (fd)				6.9011***
				(1.0711)
Financial development squared	0.1119***	0.0699***	-0.0383***	-4.9515***
	(0.0199)	(0.0103)	(0.0083)	(0.5641)
Trade openness(topen)	0.1403	0.4866***	0.2129***	1.7571***
	(0.0741)	(0.0294)	(0.0205)	(0.1250)
Inflation rate (inf)	-0.0136	0.0533***	0.0259***	-0.2305***
	(0.0100)	(0.0119)	(0.0038)	(0.0393)
Exchange rate (exr)	0.0015	-0.0254***	0.0127***	-0.0092
	(0.0037)	(0.0051)	(0.0013)	(0.0176)
Constant	22.843***	-0.0493***	23.644***	-0.0357
	(10.355)	(0.1142)	(4.4700)	(0.1184)
Minimum thresholds	13.49%	17.84%	n.a.	0.697
Adjusted R^2	0.7759	0.4350	0.6793	0.4154
F-Stat	74.737***	4.1329***	51.163***	3.0574***
Serial Correlation	(0.7019)	(0.9769)	(0.6255)	(0.6992)
Normality Test	(0.2888)	(0.2458)	(0.2794)	(0.1696)
Heteroskedasticity test	(0.5031)	(0.2312)	(0.2964)	(0.7921)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available since the square of financial development variables are not statistically significant or it failed to exhibit an open parabola curve.

Source: Author's computation (2022).

As for the long-run estimates in Table 4.11b, the parameters of domestic credit to private sector by banks to GDP and broad money supply to GDP exhibit an open parabola curve i.e. a U-shape curve. The coefficient of financial development index exhibits a downward open parabola curve i.e. an inverted U shape since its squared estimates is less than zero. Concerning the coefficient of interest rate spread, the signs do not exhibit the attributes of an open parabola curve, although the coefficients are statistically significant at 5% level. Therefore, the minimum domestic credit to private sector by bank and money supply (as ratios of GDP) that stimulate inclusive growth is at 13.49% and 17.84% in the long run respectively. However, financial development exhibits a maximum threshold of 0.697 that maintain inclusive growth in the long run. Regarding the key factor of inclusive growth, capital investment and labour force participation rate have negative impacts on inclusive growth. Concerning other control variables, trade openness ameliorates inclusive growth but the coefficients of inflation and exchange rate shows conflicting outcomes.

Besides, the coefficient of determination (measured by the Adjusted-R^2) is high for the models in column 1–4 which ranges from 41.54% to 77.59%. As for the augmented model of the financial development index (column 4), the adjusted R^2 at 41.54% indicate that about 41.54% of the total variations in inclusive growth was explained by the financial sector development variables in the model. As for the overall test, the F-statistics values are statistically significant at 5% level of significance which means that the estimated models are well specified and statistically significant. Concerning the diagnostic tests, the estimated VECM and ARDL models are tested for serial correlation, normality and heteroskedasticity. The results in Table 4.11b revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

Table 4.12a: Short-run Estimates of Inclusive Growth Components (Robustness Checks)

Variables	Per Capita Income Growth (*gdpg*)				Income Equality (*equ*)				Employment Rate (*emp*)			
	Domestic credit	*Money supply*	*Interest rate spread*	*Financial dev. Index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
$\Delta(incg(-1))$	2.3172***	-0.3129*	-0.3937***	-0.4064***	1.0741***	0.7984***	-0.1112**	0.0186***	-0.4166***	-0.5411***	-0.3689***	-0.5785***
	(0.1119)	(0.1953)	(0.0645)	(0.1705)	(0.1361)	(0.2227)	(0.0505)	(0.2048)	(0.0464)	(0.1549)	(0.1067)	(0.1498)
$\Delta(k(-1))$	-2.0084***	0.1093	-0.7598***	0.0283	1.9533***	0.0544	-0.3083**	0.0608	0.1172	-0.0190		0.0568
	(0.1116)	(0.2343)	(0.0869)	(0.2082)	(0.1976)	(0.1846)	(0.0719)	(0.1749)	(0.0975)	(0.2161)		(0.2062)
$\Delta(lb(-1))$	1.7042***	-2.1287	3.3844***	-1.7514	1.6233***	1.0877	3.0455***	1.8176	-1.4101***	0.8655***		1.0564***
	(0.0851)	(1.4452)	(0.4328)	(1.4053)	(0.1132)	(1.0621)	(0.3534)	(1.3033)	(0.5018)	(0.1592)		(1.5178)
$\Delta(dcps(-1))$	-0.4397				6.9825***				4.4058***			
	(0.2768)				(0.8821)				(0.5651)			
$\Delta(bm(-1))$		-1.0182				0.4431				0.2531		
		(1.0901)				(1.7262)				(1.2106)		
$\Delta(lds(-1))$			2.9836***				9.3384***				2.8681**	
			(0.6427)				(0.5329)				(1.0842)	
$\Delta(fd\ index(-1))$				-0.8319				0.0782				0.2301
				(1.2527)				(1.2227)				(1.5339)
$\Delta(fd^2(-1))$	-0.1089***	0.0320	-0.2268***	0.7609*	-0.2624***	-0.0172	-0.3038***	-0.3031	-0.1160***	-0.0130	-0.2179***	-0.2884
	(0.0124)	(0.0286)	(0.0427)	(0.4681)	(0.0282)	(0.0631)	(0.0258)	(0.4409)	(0.0186)	(0.0318)	(0.0714)	(0.5354)
$\Delta(topen(-1))$	-2.4244***	0.2797**	-0.2958***	0.2816**	-1.4308***	0.7573***	-0.7171***	0.1553***	-0.5112***	-0.1390		-0.1755
	(0.1044)	(0.1085)	(0.0520)	(0.1278)	(0.1042)	(0.0879)	(0.0397)	(0.0109)	(0.0455)	(0.1156)		(0.1258)
$\Delta(inf(-1))$	0.6230***	0.00039	0.0851***	0.01093	0.3824***	-0.0188	-0.4935***	-0.0110	-0.1324***	0.0262		0.0175
	(0.0224)	(0.0478)	(0.0200)	(0.0475)	(0.0396)	(0.0433)	(0.0258)	(0.0433)	(0.0212)	(0.0502)		(0.0492)
$\Delta(exr(-1))$	-9.1552***	0.0400	-9.5874***	0.03429	13.511***	0.0081	14.2097***	0.0190	-3.1094***	-0.1128**	-1.3028	-0.1138***
	(0.5256)	(0.0356)	(1.0170)	(0.0360)	(1.1133)	(0.0367)	(0.8571)	(0.0329)	(0.7016)	(0.0397)	(1.6118)	(0.0398)
ECT(-1)	-0.4559***	-0.6729***	-0.7638***	0.4104***	-0.6246***	-0.3041**	-0.7380***	0.1925***	-0.8074***	-0.1418**	-0.6328***	-0.0858***
	(0.0175)	(0.0574)	(0.0771)	(0.0611)	(0.0810)	(0.1269)	(0.0398)	(0.0243)	(0.0430)	(0.05937)	(0.1054)	(0.0054)
Min. thresholds	n.a.	n.a.	6.58%	0.547	13.31%	n.a.	15.37%	n.a.	18.99%	n.a.	6.58%	n.a.

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available since the square of financial development variables are not statistically significant or it failed to exhibit an open parabola curve.
Source: Author's computation (2022).

Table 4.12b: Long-run Estimates of Inclusive Growth Components (Robustness Checks)

Variables	Per Capita Income Growth (*gdpg*)				Income Equality (*equ*)				Employment Rate (*emp*)			
	Domestic credit	*Money supply*	*Interest rate spread*	*Financial dev. Index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. index*	*Domestic credit*	*Money supply*	*Interest rate spread*	*Financial dev. Index*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Capital	-0.3050***	0.5543***	-0.1083	-0.016	-3.7229	1.0739***	-1.4278**	-0.9567**	-0.6723*	-0.2194***	-0.5949*	0.5234***
	(0.0775)	(0.1627)	(0.1630)	(0.1876)	(2.2234)	(0.0625)	(0.4851)	(0.4440)	(0.3506)	(0.0922)	(0.3070)	(0.2383)
Labour	-1.0390***	-8.3379***	-2.5651**	9.8560***	-2.8456	-2.8373***	-3.3894*	-21.378***	-2.0313**	6.3972***	0.6324	12.679***
	(0.3488)	(0.9257)	(1.1169)	(0.9300)	(3.8753)	(0.2212)	(1.7450)	(2.1151)	(0.7031)	(0.5311)	(0.9133)	(1.1457)
Domestic Credit	-5.0182***				-3.2273**				1.1521			
	(0.5488)				(1.0987)				(3.9870)			
Money supply		-14.588***				18.578***				7.3374***		
		(1.8734)				(0.6422)				(1.0443)		
Lending rate			-2.3250				9.8434**				10.594***	
			(1.8965)				(3.7222)				(3.4124)	
FD index				9.4753***				-24.878***				13.621***
				(1.58123				(3.6504)				(1.9811)
FD squared	0.2018***	0.4230***	0.0535	-6.8326***	1.1378**	-0.7005***	-1.4334***	11.555***	-0.1033	-0.2006***	-0.6953***	-5.9983***
	(0.0225)	(0.0536)	(0.1253)	(0.8491)	(0.3489)	(0.0231)	(0.3042)	(1.9907)	(0.1422)	(0.0297)	(0.2446)	(1.0372)
Trade	0.3598**	1.8777***	1.1242***	-2.6711***	1.3278	0.8625***	1.8756**	5.9977***	0.3403	-1.2754***	-0.2038	-2.8559***
	(0.1770)	(0.1519)	(0.3240)	(0.1885)	(1.6615)	(0.0351)	(0.6331)	(0.4270)	(0.2141)	(0.0851)	(0.1991)	(0.2304)
Inflation	-0.2395***	0.2302***	-0.0760	-0.2069***	0.2310	0.0238*	0.7173***	0.8450***	0.0012	-0.2422***	-0.0307	-0.7308***
	(0.0116)	(0.0595)	(0.0943)	(0.0589)	(0.2494)	(0.0129)	(0.2219)	(0.1420)	(0.0867)	(0.0339)	(0.0767)	(0.0718)
Exch. Rate	-4.1598***	-0.0586**	-3.5697	0.0269	-12.851	-0.0804***	0.2879	-0.1608**	-13.295***	0.1090***	-11.714***	0.1195***
	(0.5067)	(0.0252)	(2.3884)	(0.0256)	(13.879)	(0.0060)	(3.7873)	(0.0593)	(2.7512)	(0.0147)	(3.2562)	(0.0329)
Constant	1.1235	-0.7269	1.4935***	-0.5171	5.3133	0.1474	2.2147**	0.1319	2.71821***	0.3019	8.7190**	0.2514
	(2.0336)	(0.7172)	(0.5803)	(0.7341)	(3.5120)	(0.6897)	(0.9090)	(0.6864)	(0.5281)	(0.8019)	(4.8259)	(0.8156)
Min. Thresholds	12.43%	17.24%	n.a.	0.693	1.42%	13.26%	3.43%	1.08%	n.a.	18.29%	7.62%	1.135
Adjusted R^2	0.6084	0.4207	0.7844	0.3249	0.6260	0.4468	0.5700	0.4474	0.7581	0.4339	0.6356	0.4353
F-Statistics	3.9238***	4.7313***	5.3111***	4.7648***	4.3419***	3.9616***	6.6824***	4.5290***	4.9076***	5.8378***	9.4116***	4.8496***
Serial Correlation	(0.7249)	(0.8983)	(0.4523)	(0.9902)	(0.4109)	(0.7889)	(0.6020)	(0.7987)	(0.1903)	(0.7183)	(0.7570)	(0.4986)
Normality Test	(0.4432)	(0.5021)	(0.3443)	(0.6381)	(0.5814)	(0.2564)	(0.5820)	(0.1176)	(0.0629)	(0.3294)	(0.5509)	(0.2123)
Heteroskedasticity	(0.7020)	(0.3214)	(0.2232)	(0.2352)	(0.5909)	(0.2931)	(0.9120)	(0.2513)	(0.8508)	(0.2189)	(0.2690)	(0.1938)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available since the square of financial development variables are not statistically significant or it failed to exhibit an open parabola curve.
Source: Author's computation (2022).

Concerning the short run estimates of the robustness checks in Table 4.12a, it shows that the minimum domestic credit to private sector by banks as a ratio of GDP threshold that stimulate income equality and employment is 13.31% and 18.99% respectively. Similarly, the minimum financial development index that stimulates income per capita growth is 0.547. As for the short run interest rate spread parameters, the results show that the maximum interest rate spread thresholds that sustain income growth, income equality and employment are 5.68%, 15.3% and 6.58% respectively. In the long run, the minimum domestic credit to private sector to GDP threshold that arouse income per capita growth and income equality is 12.43% and 1.42% respectively. Concerning the minimum money supply to GDP threshold, it stimulates per capita income growth, income equality and employment at 17.24%, 13.26% and 18.29% correspondingly. The maximum interest rate spread threshold that would uphold income equality and employment rate is 3.43% and 7.62% respectively. Overall, the thresholds of financial development index that stimulate income growth, income equality and employment rate is 0.693, 1.077 and 1.135 respectively.

Also, the coefficient of determination is relatively high for the estimated models in column 1–12 which range from 32.49% to 75.81%. The overall test shows that the explanatory variables statistically and significantly influence inclusive growth components at 5% level. With reference to the diagnostic tests, the estimated VECM and ARDL models are tested for serial correlation, normality and heteroskedasticity. The results in Table 4.12b revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

4.2.3 Analysis of the Third Objective

In this sub-section, the study presents the empirical outcomes with reference to the impact of institutional quality on inclusive growth in Nigeria.

4.2.3.1 Correlation Analysis and Scatter Plots

Table 4.13 presents the partial correlation of inclusive growth index, income growth, income equality, employment, institutional quality, investment, labour force, trade openness, inflation, and exchange rate in Nigeria using an annual dataset within the period of 1985 and 2020. In Table 4.13, the correlation coefficients indicating the level of association of institutional quality with inclusive growth were low and none of them is up to 0.9. More so, the coefficients have different signs among themselves. The result shows that institutional quality had a negative level of association with inclusive growth. Also, it negatively correlates with income growth and income equality whereas it has a direct correlation with employment. Likewise, the scatter chart in Figures 4.15(a-d) show a graphical outlook of the coefficient of correlation of the links between institutional quality and inclusive growth.

In relations to the key factors of inclusive growth, capital investment and labour force report negative coefficients. Also, trade openness and inflation rate were found to have negative level of association with inclusive growth while exchange rate correlate positively with inclusive growth. Equally, the level of association of factors determining inclusive growth was also reported in the table. Summarily, the correlation values suggest absence of perfect multicollinearity among the predictive variables, as positive and negative relationships were reported among the variables of interest in varying magnitudes and signs. However, the results of the correlation coefficients are just preliminary analyses that are being put through confirmation in the next sub-section after considering other determinants of inclusive growth.

Table 4.13: Correlation Matrix

	equ	*emp*	*incg*	*iq*	*k*	*lb*	*topen*	*inf*	*Exr*
gdpg	0.034	-0.179	0.346	-0.151	-0.187	0.206	0.278	-0.321	-0.098
equ	1	-0.483	0.814	-0.496	-0.336	-0.330	-0.309	-0.178	0.418
emp		1	-0.863	0.063	0.730	0.464	-0.165	0.439	-0.733
incg			1	-0.335	-0.634	-0.391	-0.008	-0.416	0.671
iq				1	-0.123	0.261	0.657	-0.012	0.063
k					1	0.600	-0.285	0.365	-0.673
lb						1	0.390	0.317	-0.687
topen							1	-0.080	0.035
inf								1	-0.377

Note: gdpg - GDP growth; equ - Income Equality; emp - Employment; incg - Inclusive growth index; iq - institutional quality; k - Gross fixed capital formation; lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade as % of GDP; inf – Inflation rate, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

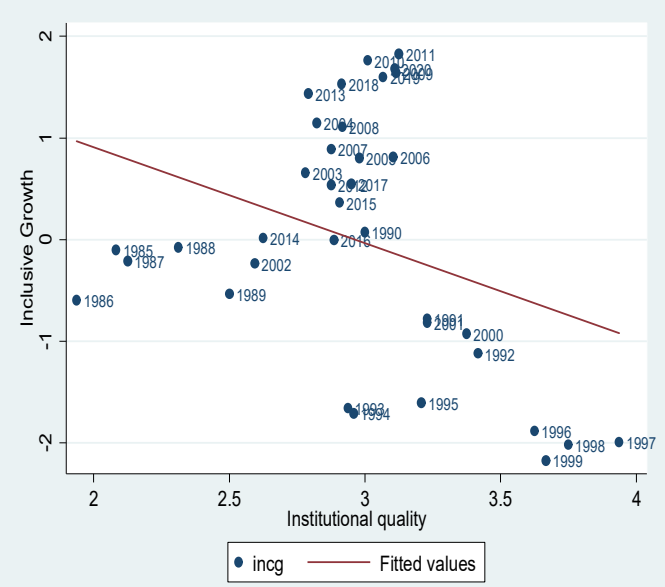

Figure 4.15(a): Scatter graph of inclusive growth and institutional quality

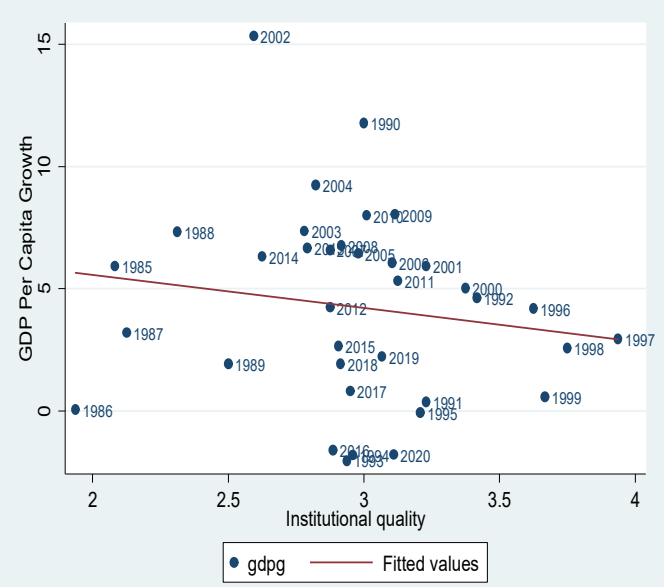

Figure 4.15(b): Scatter graph of GDP per capita growth and institutional quality

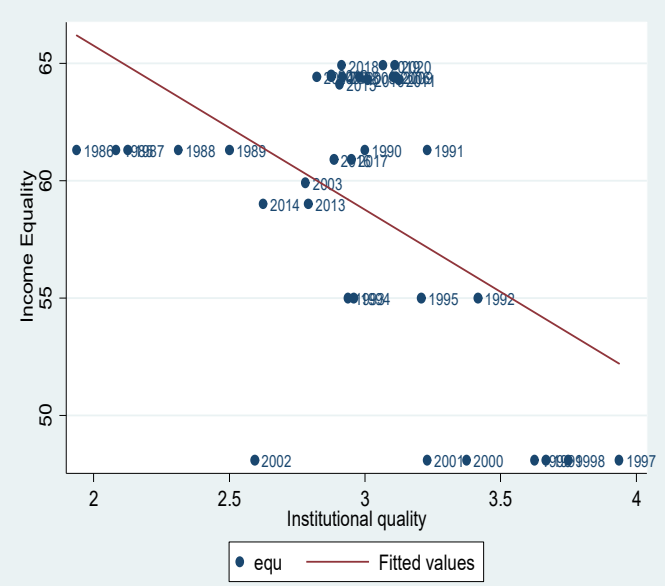

Figure 4.15(c): Scatter graph of income equality and institutional quality

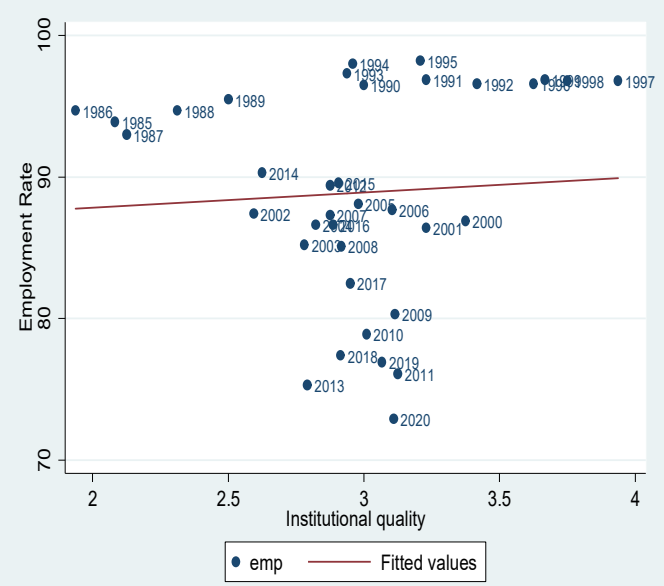

Figure 4.15(d): Scatter graph of employment Rate and institutional quality

Figure 4.15(a-d): Scattered plots of institutional quality and income growth

4.2.3.2 Pre-Estimation Tests (Unit Root and Cointegration)

In this sub-section, the pre-estimation approaches used to estimate the stationary level of the variables are Augmented Dickey Fuller (ADF), Phillips Perron (PP) and Kwiatkowski Phillips Schmidt Shin (KPSS). They are employed to test the stationary level of institutions, inclusive growth indicators, key factors and other controlling variables to suggest the appropriate technique to estimate the parameter coefficients. The results of the unit root for the indicators are presented in Table 4.14. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference. Meanwhile, it should be noted that the lag length for ascertaining this stationarity level of these variables as well as unit-root test is automatic and optimally chosen by the Schwarz-Bayesian Information Criterion (SIC) while few were fixed.

In Table 4.14, the unit root test approaches under the conventional methods follow approximately the same decision on stationary level of variables of interest at varying significant levels which were not stationary at levels at 5%. Thus, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. These variables that are not stationary at levels were further tested at first differences which were found significant 5% significance level. The results suggest that at first difference, the time series of the variables (income growth, income equality, employment, inclusive growth index, institutional quality, gross fixed capital formation, labor force participation rate, trade openness, inflation rate, and official exchange rate) were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean.

Table 4.14: Conventional Unit Root Tests during the Era of Direct Monetary Control

Variables	Level			First Difference			*I*(d)
	ADF	PP	KPSS	ADF	PP	KPSS	
incg	-2.0999	-2.1493	0.1005	-7.0261***	-6.9057***	0.0783***	*I*(1)
gdpg	-1.8711	-3.5568**	0.1454	-4.6783***	-	0.0601***	*I*(1)
equ	-1.7597	-1.8350	0.1205	-5.0906***	-5.0906***	0.0785***	*I*(1)
emp	-2.2808	-3.5988**	0.1085	-4.5759***	-	0.0541***	*I*(1)
iq	-3.3353*	-2.0664	0.1380	-4.9466***	-4.8916***	0.0842**	*I*(1)
k	-0.7543	-0.6386	0.1489	-6.2791***	-6.5354***	0.0406***	*I*(1)
lb	-3.4651*	-2.3339	0.1450	-5.5852***	-5.5128***	0.0909**	*I*(1)
topen	-2.8554	-2.6092	0.1900	-7.3815***	-11.580***	0.0490***	*I*(1)
inf	-2.6345	-2.9831	0.1352	-4.2477**	-6.6240***	-0.0417***	*I*(1)
exr	-0.6298	-0.8653	0.1241	-4.4456***	-4.2527**	0.0783***	*I*(1)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%. Calculated at trend and intercept and lag lengths selected automatically using the Schwarz Info Criterion (SIC). gdpg - GDP growth; equ - Income Equality; emp - Employment; ig - Inclusive growth index; iq - institutional quality; k - Gross fixed capital formation; lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade as % of GDP; inf – Inflation rate, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Afterwards, the study conducted the cointegration test using the Johansen cointegration test. The optimal lag length employed in estimating the Johansen co-integration model was determined using the vector autoregressive (VAR) lag order selection criteria test and lag exclusion Wald tests, whose results were presented in the appendix. The result presented in the appendix revealed that lag length 1 is the most appropriate for the models using Schwarz Information Criterion (SIC), optimal and significant lag order to estimate the VAR model system to estimate the Johansen co-integration model. The cointegration results are presented in Table 4.5. The co-integrating equation reported for the models indicated that at McKinnon-Haug-Michelis 5% significance level, the Trace and Max Eigenvalue tests suggest that the incorporated time series variables are co-integrated at the second hypothesized co-integration equations order i.e. r = 2 for linear deterministic trend model with intercept for the inclusive growth model. These indicate that the alternative hypotheses "r=2" were not rejected for Trace statistics and Max-Eigen values. This suggests that there exist three cointegrating vector equations among inclusive growth, institutional quality in their respective stated order. Just like in the inclusive growth model, the result shows that there exist three cointegrating vector equations in income growth and income equality models. However, the conintegrating equation vector in employment model is two. Thus, there is long-run relationship between institutional quality and inclusive growth in Nigeria. Accordingly, the result of both unit root test and Johansen cointegration test suggest that the vector error correction model (VECM) is the most appropriate estimation technique to be used for the parameter estimates.

Table 4.15: Johansen Cointegration Test of Institutions and Inclusive Growth

Series	Lags interval (in first differences): 1 to 2					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
incg, k, lb, iq, topen, inf, exr	r = 0	0.8556	183.06***	125.62	65.796***	46.231
	r ≤ 1	0.7313	117.26***	95.754	44.678***	40.078
	r ≤ 2	0.6612	72.583***	69.819	36.799***	33.877
	r ≤ 3	0.3946	35.784	47.856	17.065	27.584
	r ≤ 4	0.2820	18.719	29.797	11.266	21.132
	r ≤ 5	0.1235	7.4532	15.495	4.4822	14.265
	r ≤ 6	0.0837	2.9710	3.8415	2.9710	3.8415
gdpg, k, lb, iq, topen, inf, exr	r = 0	0.921385	204.29***	125.62	86.469***	46.231
	r ≤ 1	0.736145	117.83***	95.754	45.300***	40.078
	r ≤ 2	0.672840	72.528***	69.819	37.988***	33.877
	r ≤ 3	0.434505	34.540	47.856	19.382	27.584
	r ≤ 4	0.209052	15.158	29.797	7.9738	21.132
	r ≤ 5	0.117863	7.1839	15.495	4.2639	14.265
	r ≤ 6	0.082300	2.9201	3.8415	2.9201	3.8415
equ, k, lb, iq, topen, inf, exr	r = 0	0.885659	199.08***	125.62	73.731***	46.231
	r ≤ 1	0.800554	125.35***	95.754	54.815***	40.078
	r ≤ 2	0.542963	70.533***	69.819	36.622***	33.877
	r ≤ 3	0.426316	43.911	47.856	18.893	27.584
	r ≤ 4	0.335018	25.018	29.797	13.872	21.132
	r ≤ 5	0.211861	11.146	15.495	8.0948	14.265
	r ≤ 6	0.085838	3.0514	3.8415	3.0514	3.8415
emp, k, lb, iq, topen, inf, exr	r = 0	0.8683	178.45***	125.62	68.932***	46.231
	r ≤ 1	0.6994	109.52***	95.754	40.868***	40.078
	r ≤ 2	0.5632	68.647*	69.819	28.161	33.877
	r ≤ 3	0.45312	40.486	47.856	20.524	27.584
	r ≤ 4	0.3024	19.962	29.797	12.245	21.132
	r ≤ 5	0.1542	7.7173	15.495	5.6946	14.265
	r ≤ 6	0.0578	2.0228	3.8415	2.0228	3.8415

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

4.2.3.3 Short-run and Long-run Estimation Results

In the sub-section, the vector error correction model (VECM) results of the parameter estimates both in short-run and long-run are presented in Tables 4.16a and 4.16b respectively. The results presented in the tables answer the null hypothesis that institutional quality does not have statistical and significant impact on inclusive growth. For the short run analysis, it shows the dynamic pattern in the model which ensure that dynamics of the model have not been constrained by inappropriate lag length specifications. In Table 4.16a, the lag length on all variables as the model was set at two because the number of observation is limited while putting the augmenting the variables into one model and this was found to be sufficient based on the results of the automatic selection of Schwarz Information Criterion (SIC). The results are presented in columns 1–4 considering the inclusive growth and its components (income growth, equality, and employment).

In Table 4.16a, the error correction term (ECT) measures the speed or degree of adjustment at which the inclusive growth changes due to changes in the financial development variables. The coefficient of the ECT is found to be negative and statistically significant at the conventional level for the models in columns 1–4. For the estimated models, the ECT values imply that the income growth, income equality, employment and inclusive growth models corrects its short-run disequilibrium by 32.83%, 17.13%, 18.28% and 61.31% speed of adjustment in order to return to the long run equilibrium respectively.

Table 4.16a: Short-run Estimates of Institutional Quality and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth			
	Income Growth	**Income Equality**	**Employment**	**Inclusive Growth index**
	1	**2**	**3**	**4**
Δ*(incg(-1))*	-0.2807	-0.1290	-0.4036	-0.2674
	(0.4187)	(0.2030)	(0.3408)	(0.2254)
Δ*(k(-1))*	-0.2117	0.39249	0.0962	0.0355
	(0.3556)	(0.2531)	(0.3435)	(0.0462)
Δ*(lb(-1))*	-0.8658	2.7817***	1.1013	0.1817
	(2.1133)	(0.9076)	(2.0315)	(0.2181)
Δ*(iq(-1))*	-0.3892**	-3.6879	2.3097	-0.9269**
	(0.5459)	(2.7801)	(5.4535)	(0.3765)
Δ*(topen(-1))*	0.1059	-0.0449	0.1110	-0.0054
	(0.3055)	(0.0751)	(0.1537)	(0.0187)
Δ*(inf(-1))*	0.1426**	-0.0809*	0.5091**	-0.0127
	(0.0690)	(0.0387)	(0.1098)	(0.0095)
Δ*(exr(-1))*	1.9224***	4.2507*	-2.8287	1.0640**
	(0.3660)	(2.5587)	(5.9431)	(0.4614)
ECT(-1)	-0.3283***	-0.1713*	-0.1828***	-0.6131***
	(0.0591)	(0.10317)	(0.0275)	(0.07848)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

In the short-run, it shows that the lag one of inclusive growth and its components have no significant impact on the current levels. The coefficients of Institutional quality were negative in income growth, income equality and inclusive growth models while the parameter of institutional quality in employment model is positive. Among all the parameter estimates, institutional quality negatively and significantly influences income growth and inclusive growth. In magnitude terms, a 1% changes in institutional quality affect income growth and inclusive growth by 0.389 and 0.927 respectively. The statistical impacts of investment, labour force participation rate and trade openness on inclusive growth and its components are not established. For other control variables, inflation rate has positive and significant effect on income growth and employment but negatively and statistically impacted income equality. Exchange rate directly and significantly impacted per capita income growth, income equality and inclusive growth in the short run.

As for the long-run estimates, the parameter estimates of institutional quality are positive across the estimated models. The statistical effect of institutional quality on income growth, income equality and inclusive growth was established at 5% level but was not confirmed in employment at the conventional level. Its statistical values indicate that a 1 unit change in institutional quality lead to about 5.71, 35.34 and 8.45 unit changes in income growth, income equality and inclusive growth in the long run.

Table 4.16b: Long-run Estimates of Institutional Quality and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth			
	Income Growth	**Income Equality**	**Employment**	**Inclusive Growth index**
	1	2	3	4
Capital investment (k)	0.0210	0.1185	0.4091***	0.2315***
	(0.0236)	(0.1136)	(0.0764)	(0.0395)
Labour force participation rate (lb)	1.3092***	-5.7941***	-1.7883***	-0.8250***
	(0.1444)	(0.6179)	(0.4907)	(0.2341)
Institutional quality (iq)	5.7136***	35.339***	0.4124	8.4996***
	(0.3963)	(1.9365)	(1.3093)	(0.6942)
Trade openness(topen)	-0.6389***	0.3889**	0.4122***	-0.1514**
	(0.0399)	(0.1825)	(0.1338)	(0.0651)
Inflation rate (inf)	0.2017***	-0.5177***	-0.3887***	-0.1480***
	(0.0110)	(0.0514)	(0.0375)	(0.0183)
Exchange rate (exr)	3.4711***	-13.401***	0.3163	-1.5367***
	(0.2941)	(1.3182)	(1.0018)	(0.5008)
Constant	-0.1515	-0.6627	-0.7658	-0.0276
	(1.1883)	(0.8136)	(1.6932)	(0.1978)
Adjusted R^2	0.4071	0.4131	0.3459	0.4551
F-Stat	4.5570***	4.5019***	4.1026***	4.3915***
Serial Correlation	(0.1303)	(0.0685)	(0.8716)	(0.5460)
Normality Test	(0.4748)	(0.2480)	(0.2293)	(0.0710)
Heteroskedasticity test	(0.2752)	(0.3085)	(0.2744)	(0.2481)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively.
Source: Author's computation (2022).

As to the input factors, capital investment has positive impact and significant on employment and inclusive growth in the long run. The table shows that labour force participation rate influences income growth positively but impacted income equality, employment and inclusive growth negatively. For other control variables, trade openness has adverse effect on income growth and inclusive growth but influence income equality and employment positively. Inflation rate directly affect income growth but indirectly influence income equality, employment and inclusive growth. Exchange rate has positive effect on income growth and employment but negatively affect income equality and inclusive growth.

In addition, the coefficient of determination (measured by the Adjusted-R^2) is relatively high for the estimated models. The statistics showed that about 40.71%, 41.31%, 34.59% and 45.51% of the total variations in income growth, income equality, employment and inclusive growth were explained by institutional quality and other control variables in the model. The overall test using the F-statistics are statistically significant at 5% level of significance showing that models are well specified and statistically significant. As for the diagnostic tests, the estimated VECM models are tested for serial correlation, normality and heteroskedasticity. The results from these tests are also shown in Table 4.16b. The results revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

4.2.4 Analysis of the Fourth Objective

In this sub-section, the study presents the empirical outcomes regarding the links among institutional quality, financial sector development and inclusive growth in Nigeria.

4.2.4.1 Correlation Analysis and Scatter Plots

The partial correlation of institutional quality, financial development and inclusive growth in Nigeria within the period of 1985 and 2020 are presented in Table 4.17. The variables used to establish the links are inclusive growth index, income growth, income equality, employment, domestic credit to private sector by banks, broad money supply, lending rate spread, financial sector development index, institutional quality, the interactions of institutional quality and financial development indicators, investment, labour force, trade openness, inflation, and exchange rate. The result shows that all the indicators of financial development have positive level of association with inclusive growth index. However, institutional quality has a negative correlation with inclusive growth index. Meanwhile, the interaction of institutional quality and financial development indices positively correlate with inclusive growth except the interaction of institutional quality and interest rate spread which has negative coefficient. A pictorial view of the relationship among inclusive growth and interaction of institutional quality and financial development indicators are presented in Figures 4.16(a-d).

Table 4.17: Correlation Matrix

	equ	*emp*	*incg*	*dcps*	*bm*	*lds*	*fd*	*iq*	*dcps×iq*	*bm×iq*	*lds×iq*	*fd×iq*	*k*	*lb*	*topen*	*inf*	*exr*
gdpg	0.034	-0.179	0.346	0.099	-0.120	-0.058	-0.027	-0.151	0.050	-0.165	-0.122	-0.022	-0.187	0.206	0.278	-0.321	-0.098
equ	1	-0.483	0.814	0.384	0.481	-0.255	0.335	-0.496	0.225	0.337	-0.394	0.406	-0.336	-0.330	-0.309	-0.178	0.418
emp		1	-0.863	-0.622	-0.746	-0.339	-0.730	0.063	-0.580	-0.723	-0.214	-0.759	0.730	0.464	-0.165	0.439	-0.733
incg			1	0.579	0.651	0.042	0.585	-0.335	0.459	0.551	-0.117	0.641	-0.634	-0.391	-0.008	-0.416	0.671
dcps				1	0.809	0.229	0.904	0.027	0.756	0.795	0.143	0.915	-0.775	-0.446	0.090	-0.339	0.605
bm					1	0.330	0.934	-0.061	0.745	0.755	0.190	0.951	-0.772	-0.700	-0.036	-0.297	0.698
lds						1	0.531	0.655	0.398	0.506	0.758	0.438	-0.525	-0.128	0.612	-0.018	0.421
fd							1	0.160	0.899	0.953	0.414	0.989	-0.863	-0.571	0.189	-0.301	0.669
iq								1	0.313	0.231	0.810	0.033	-0.123	0.261	0.657	-0.012	0.063
dcps×iq									1	0.819	0.364	0.677	-0.755	-0.328	0.272	-0.318	0.588
bm×iq										1	0.416	0.737	-0.773	-0.580	0.160	-0.287	0.600
lds×iq											1	0.311	-0.391	-0.006	0.655	-0.051	0.301
fd×iq												1	-0.736	-0.593	0.099	-0.315	0.667
k													1	0.600	-0.285	0.365	-0.673
lb														1	0.390	0.317	-0.687
topen															1	-0.080	0.035
inf																1	-0.377

Note: gdpg - GDP growth; equ - Income Equality; emp - Employment; ig - Inclusive growth index; dcps - Domestic credit to private sector by banks; bm - Broad money; lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; dcps×iq - interaction of domestic credit to private sector by banks and institutions; bm×iq - interaction of broad money and institutions; lds×iq - interaction of lending rate spread and institutions; fd×iq - interaction of financial development index and institutions; k - Gross fixed capital formation; lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade as % of GDP; inf – Inflation rate, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

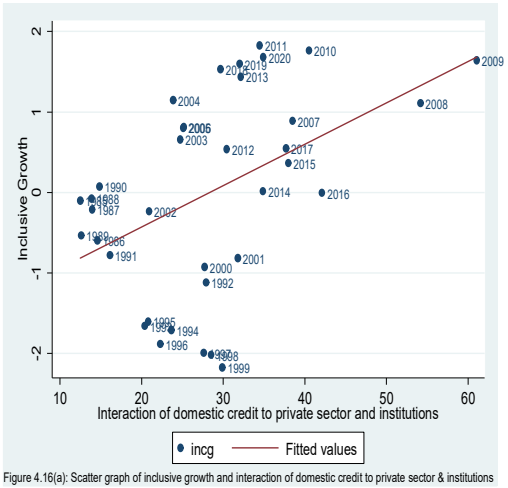

Figure 4.16(a): Scatter graph of inclusive growth and interaction of domestic credit to private sector & institutions

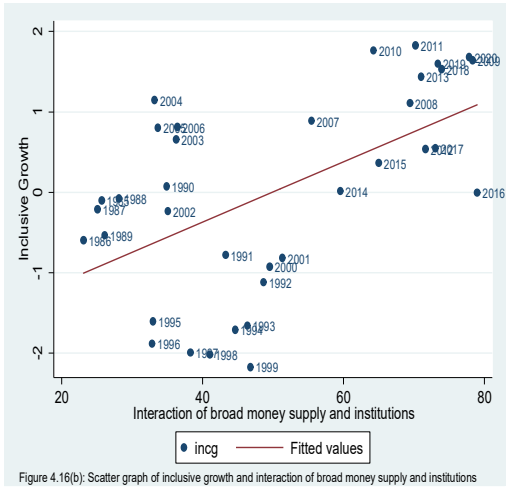

Figure 4.16(b): Scatter graph of inclusive growth and interaction of broad money supply and institutions

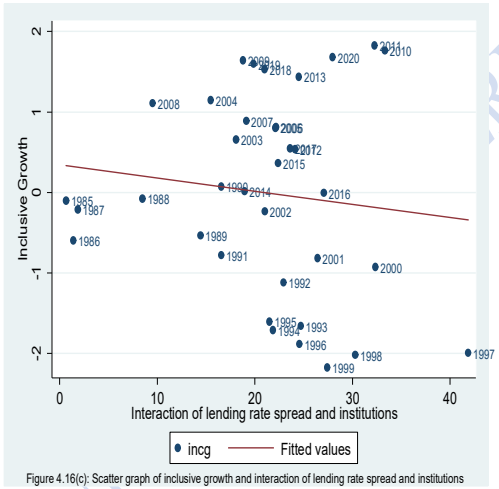

Figure 4.16(c): Scatter graph of inclusive growth and interaction of lending rate spread and institutions

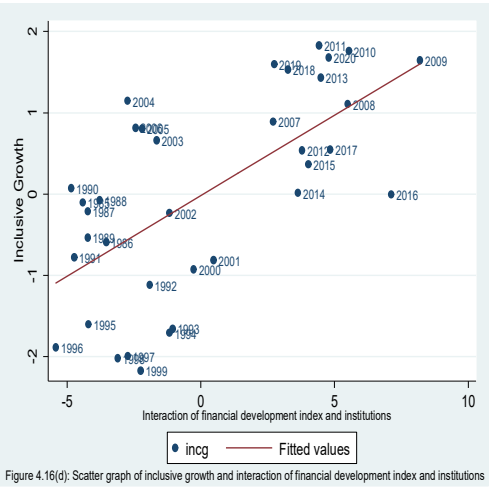

Figure 4.16(d): Scatter graph of inclusive growth and interaction of financial development index and institutions

Figure 4.16(a-d): Scattered plots of inclusive growth and interaction of financial development indices and institutional quality

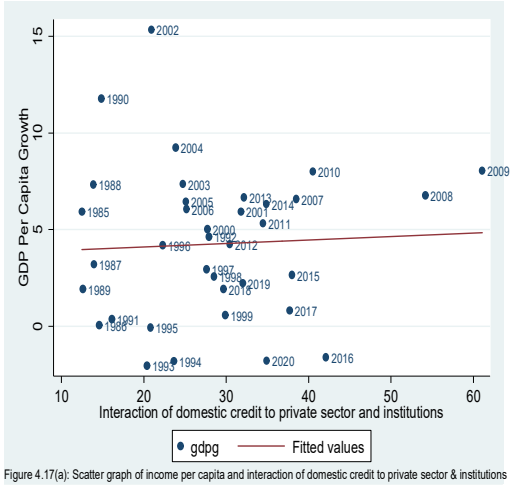

Figure 4.17(a): Scatter graph of income per capita and interaction of domestic credit to private sector & institutions

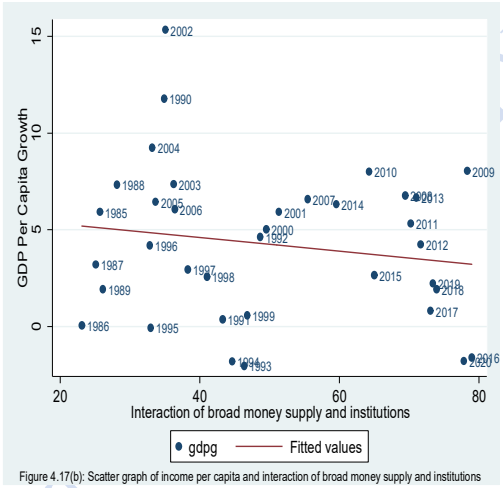

Figure 4.17(b): Scatter graph of income per capita and interaction of broad money supply and institutions

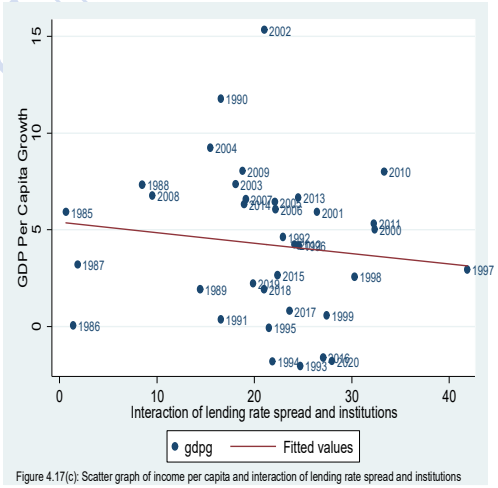

Figure 4.17(c): Scatter graph of income per capita and interaction of lending rate spread and institutions

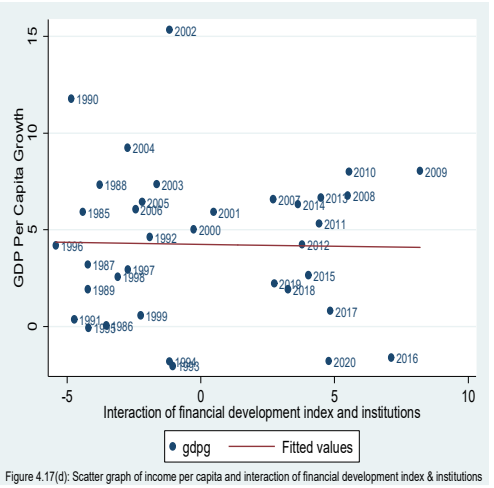

Figure 4.17(d): Scatter graph of income per capita and interaction of financial development index & institutions

Figure 4.17(a-d): Scattered plots of income per capita growth and interaction of financial development indices and institutional quality

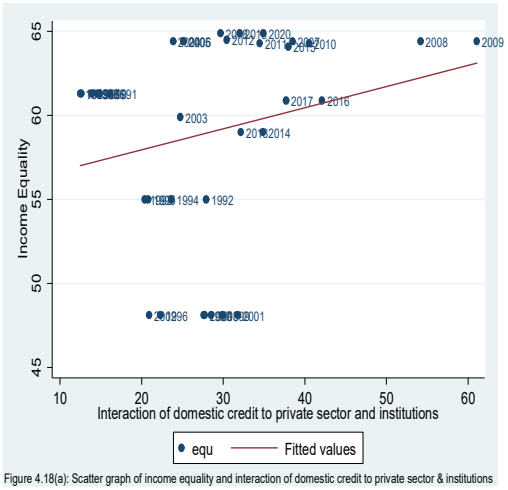

Figure 4.18(a): Scatter graph of income equality and interaction of domestic credit to private sector & institutions

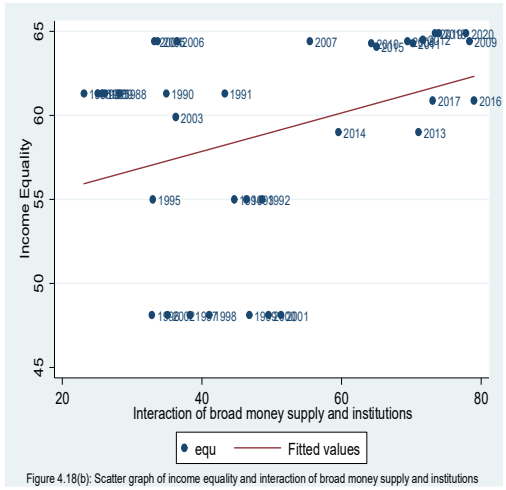

Figure 4.18(b): Scatter graph of income equality and interaction of broad money supply and institutions

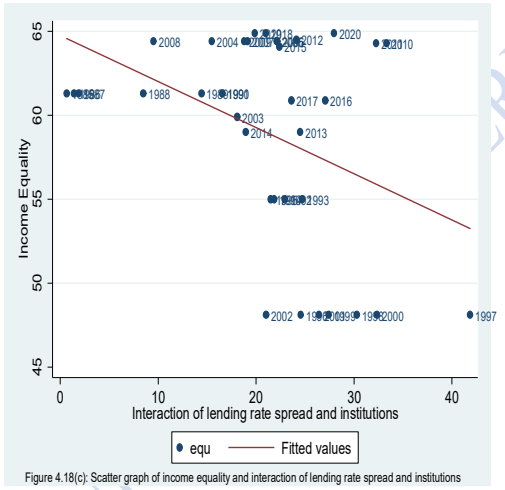

Figure 4.18(c): Scatter graph of income equality and interaction of lending rate spread and institutions

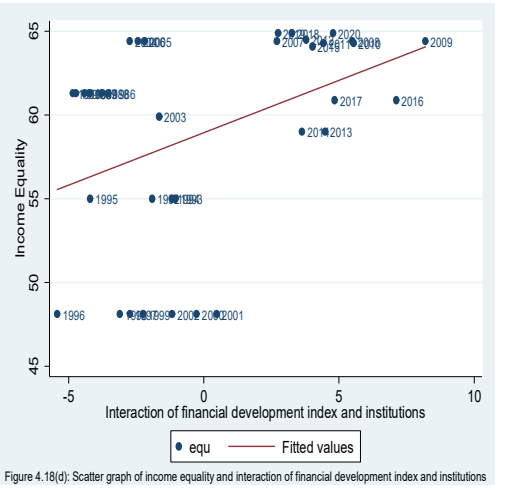

Figure 4.18(d): Scatter graph of income equality and interaction of financial development index and institutions

Figure 4.18(a-d): Scattered plots of income equality and interaction of financial development indices and institutional quality

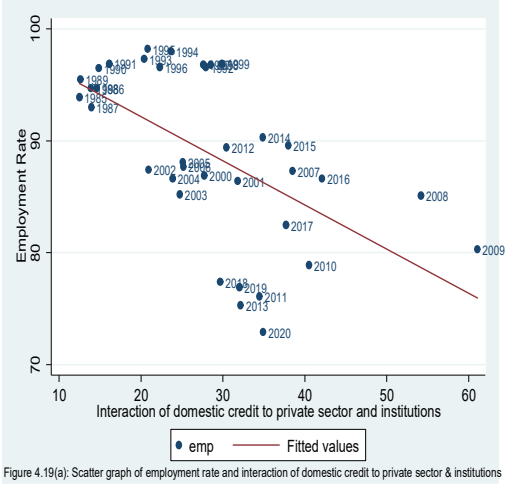

Figure 4.19(a): Scatter graph of employment rate and interaction of domestic credit to private sector & institutions

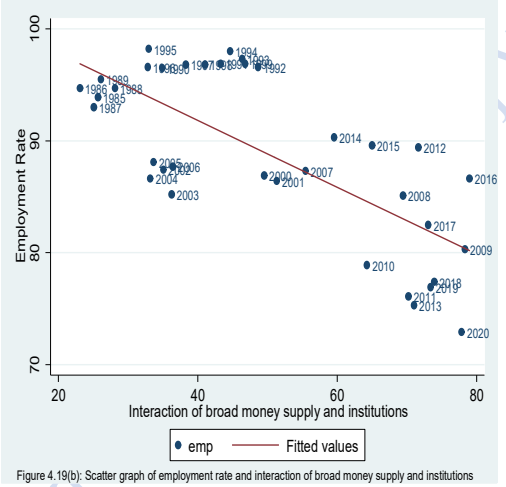

Figure 4.19(b): Scatter graph of employment rate and interaction of broad money supply and institutions

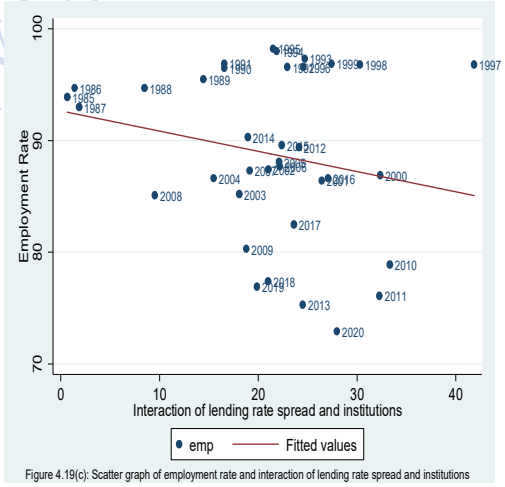

Figure 4.19(c): Scatter graph of employment rate and interaction of lending rate spread and institutions

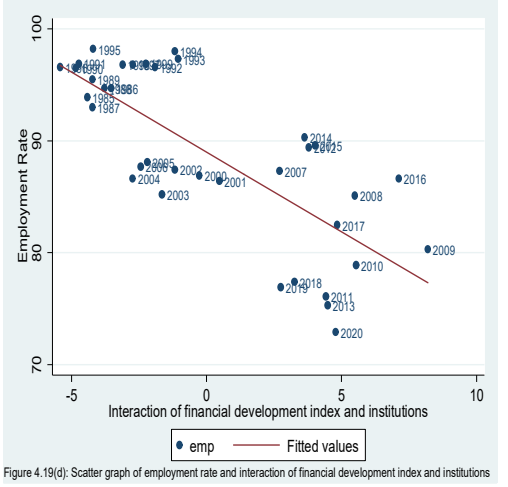

Figure 4.19(d): Scatter graph of employment rate and interaction of financial development index and institutions

Figure 4.19(a-d): Scattered plots of employment rate and interaction of financial development indices and institutional quality

As for components of inclusive growth, their correlation coefficients are equally presented in the table. Likewise, the scatter chart in Figures 4.17(a-d), 4.18(a-d) and 4.19(a-d) shows a graphical outlook of the coefficients of correlation of the links between the inclusive growth components and the interaction of institutions and financial development indices. Also, the correlation table shows the correlation coefficients among these other controlling factors of inclusive growth indices at different magnitudes and degrees. The values of the correlation coefficients revealed the absence of multicollinearity problem. Thus, the problem of multicollinearity is avoided in the empirical analysis. Nonetheless, the results of the correlation coefficients are just preliminary analyses that are being put through confirmation in the next sub-section after considering other determinants of inclusive growth.

4.2.4.2 Pre-Estimation Tests (Unit Root and Cointegration)

In this sub-section, the pre-estimation approaches used to estimate the stationary level of the variables are Augmented Dickey Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski Phillips Schmidt Shin (KPSS). They are employed to test the stationary level of the monetary policy management indicators and output growth to suggest the appropriate technique to estimate the parameter coefficients. The results of the unit root for the indicators are presented in Table 4.18. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference. Meanwhile, it should be noted that the lag length for ascertaining this stationarity level of our variables as well as unit-root test is automatic and optimally chosen by the Schwarz-Bayesian Information Criterion (SIC) while few were fixed.

Table 4.18: Conventional unit root tests of institutions, financial development and inclusive growth

Variables	Level			First Difference			*I*(d)
	ADF	PP	KPSS	ADF	PP	KPSS	
ig	-2.0999	-2.1493	0.1005	-7.0261***	-6.9057***	0.0783***	*I*(1)
gdpg	-1.8711	-3.5568**	0.1454	-4.6783***	-	0.0601***	*I*(1)
equ	-1.7597	-1.8350	0.1205	-5.0906***	-5.0906***	0.0785***	*I*(1)
emp	-2.2808	-3.5988**	0.1085	-4.5759***	-	0.0541***	*I*(1)
dcps	-3.9980***	-2.7795	0.1674	-	-4.5068***	0.0392***	*I*(1)
bm	-2.9508	-2.1230	0.1545	-4.7223**	-7.1560***	0.0605***	*I*(1)
lds	-3.6567**	-3.2898*	0.1511	-	-5.8906***	0.0442***	*I*(1)
fd	-3.4622*	-2.2361	0.0635***	-4.8224**	-6.6552***	-	*I*(1)
iq	-3.3353*	-2.0664	0.1380	-4.9466***	-4.8916***	0.0842**	*I*(1)
dcps×iq	-3.3691*	-2.1846	0.0895**	-5.0827***	-5.0277***	-	*I*(1)
bm×iq	-2.4831	-2.6618	0.0839**	-5.0118***	-5.4479***	-	*I*(1)
lds×iq	-2.8381	-2.5739	0.1366	-5.8999***	-5.7918***	0.0519***	*I*(1)
fd×iq	-3.6332**	-2.8337	0.1692	-	-4.7602***	0.0446***	*I*(1)
k	-0.7543	-0.6386	0.1489	-6.2791***	-6.5354***	0.0406***	*I*(1)
lb	-3.4651*	-2.3339	0.1450	-5.5852***	-5.5128***	0.0909**	*I*(1)
topen	-2.8554	-2.6092	0.1900	-7.3815***	-11.580***	0.0490***	*I*(1)
inf	-2.6345	-2.9831	0.1352	-4.2477**	-6.6240***	-0.0417***	*I*(1)
exr	-0.6298	-0.8653	0.1241	-4.4456***	-4.2527**	0.0783***	*I*(1)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%. Calculated at trend and intercept and lag lengths selected automatically using the Schwarz Info Criterion (SIC). gdpg - GDP growth; equ - income equality; emp - employment; ig - inclusive growth index; dcps - domestic credit to private sector by banks; bm - broad money; lds - interest rate spread (lending rate minus deposit rate, %); fd - financial development index; dcps×iq - interaction of domestic credit to private sector by banks and institutions; bm×iq - interaction of broad money and institutions; lds×iq - interaction of lending rate spread and institutions; fd×iq - interaction of financial development index and institutions; k - gross fixed capital formation; lb - labor force participation rate, total (% of total population ages 15-64); topen - trade as % of GDP; inf – inflation rate, consumer prices (annual %); and exr - official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

From the above table, the three unit root test estimators under the conventional methods follow almost the same decision on stationary level of variables of interest at varying significant levels which were not stationary at levels at 5%. Thus, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. These variables that are not stationary at levels were further tested at first differences which were found significant 5% significance level. The results suggest that at first difference, the time series of our understudied variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series converge to their long-run equilibrium or true mean.

Afterwards, the study conducted the cointegration test using the Johansen cointegration test. The optimal lag length employed in estimating the Johansen co-integration model was determined using the vector autoregressive (VAR) lag order selection criteria test and lag exclusion Wald tests, whose results were presented in the appendix. The result presented in the appendix revealed that lag length 2 is the most appropriate for the models using Schwarz Information Criterion (SIC), optimal and significant lag order to estimate the VAR model system to estimate the Johansen co-integration model. The cointegration results are presented in Table 4.19.

Table 4.19: Johansen Cointegration Test Results

Series	Lags interval (in first differences): 1 to 1					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Max-Eigen Statistic	0.05 Critical Value
incg, k, lb, iq, dcps, iq×dcps, topen, inf, exr	r = 0	0.909639	335.4362***	197.3709	81.73392***	58.43354
	r ≤ 1	0.879171	253.7023***	159.5297	71.85489***	52.36261
	r ≤ 2	0.798819	181.8474***	125.6154	54.52064***	46.23142
	r ≤ 3	0.767778	127.3267***	95.75366	49.64211***	40.07757
	r ≤ 4	0.628375	77.68462***	69.81889	33.65562***	33.87687
	r ≤ 5	0.506655	44.02900	47.85613	24.02260	27.58434
	r ≤ 6	0.332617	20.00640	29.79707	13.74929	21.13162
	r ≤ 7	0.140709	6.257116	15.49471	5.156024	14.26460
	r ≤ 8	0.031866	1.101092	3.841466	1.101092	3.841466
incg, k, lb, iq, bm, iq×bm, topen, inf, exr	r = 0	0.950369	337.3803***	197.3709	102.1071***	58.43354
	r ≤ 1	0.884507	235.2732***	159.5297	73.39066***	52.36261
	r ≤ 2	0.768796	161.8826***	125.6154	49.79151***	46.23142
	r ≤ 3	0.721923	112.0910***	95.75366	43.51512***	40.07757
	r ≤ 4	0.618507	68.57591	69.81889	32.76451	33.87687
	r ≤ 5	0.326607	35.81140	47.85613	13.44451	27.58434
	r ≤ 6	0.289841	22.36690	29.79707	11.63704	21.13162
	r ≤ 7	0.202110	10.72986	15.49471	7.676681	14.26460
	r ≤ 8	0.085885	3.053179	3.841466	3.053179	3.841466
incg, k, lb, iq, lds, iq×lds, topen, inf, exr	r = 0	0.922053	319.1169***	197.3709	86.75849***	58.43354
	r ≤ 1	0.847944	232.3584***	159.5297	64.03925***	52.36261
	r ≤ 2	0.778649	168.3191***	125.6154	51.27213***	46.23142
	r ≤ 3	0.657815	117.0470***	95.75366	36.46174***	40.07757
	r ≤ 4	0.645909	80.58527***	69.81889	35.29882***	33.87687
	r ≤ 5	0.440425	45.28645	47.85613	19.73962	27.58434
	r ≤ 6	0.363275	25.54683	29.79707	15.34820	21.13162
	r ≤ 7	0.176486	10.19864	15.49471	6.601928	14.26460
	r ≤ 8	0.100382	3.596709	3.841466	3.596709	3.841466
incg, k, lb, iq, fd, iq×fd, topen, inf, exr	r = 0	0.949024	337.6754***	197.3709	101.1979***	58.43354
	r ≤ 1	0.892944	236.4775***	159.5297	75.96974***	52.36261
	r ≤ 2	0.788749	160.5078***	125.6154	52.86012***	46.23142
	r ≤ 3	0.698708	107.6476***	95.75366	40.78891***	40.07757
	r ≤ 4	0.520144	66.85874	69.81889	24.96515	33.87687
	r ≤ 5	0.412833	41.89359	47.85613	18.10318	27.58434
	r ≤ 6	0.364557	23.79041	29.79707	15.41673	21.13162
	r ≤ 7	0.157393	8.373687	15.49471	5.822639	14.26460
	r ≤ 8	0.072285	2.551048	3.841466	2.551048	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. incg - Inclusive growth index; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

In Table 4.19, the co-integrating equation reported for the model of inclusive growth and the interaction of institutions and domestic credit to private sector by banks and interest rate spread indicated that at McKinnon-Haug-Michelis 5% significance level, the Trace and Max Eigenvalue tests suggest that the incorporated time series variables are co-integrated at the fourth hypothesized co-integration equations order i.e. r = 4 for linear deterministic trend model with intercept. It indicates that the alternative hypotheses "r=4" were not rejected for Trace statistics and Max-Eigen values. This suggests that there exist five cointegrating vector equations among inclusive growth, institutions, domestic credit to private sector by banks, lending rate spread and their interactions in their respective stated order.

However, the Trace and Max Eigenvalue tests of the institutions interaction of broad money supply and financial development index with inclusive growth are co-integrated at the third hypothesized co-integration equations order i.e. r = 3 for linear deterministic trend model with intercept. This means that the alternative hypotheses "r = 3" were not rejected for Trace statistics and Max-Eigen values. It therefore implies that there exist four cointegrating vector equations among inclusive growth, institutions, money supply, financial development index and their interactions in their respective stated order. Thus, the implication of the above outcomes is that there is existence of long-run relationship among institution, financial development and inclusive growth in Nigeria. The models have equilibrium condition that keeps the variables together in the long-run.

Table 4.20a: Short-run Estimates of Institutions, Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	Domestic credit to private sector	**Broad money supply**	**Lending rate spread**	**Financial development index**
	1	**2**	**3**	**4**
Δ*(incg(-1))*	-0.2476	-0.1272	-0.2491	-0.1806
	(0.1688)	(0.1896)	(0.1625)	(0.197)
Δ*(k(-1))*	0.0162	0.0293	-0.0008	0.0165
	(0.0263)	(0.0342)	(0.0265)	(0.0336)
Δ*(lb(-1))*	-0.0569	0.2673*	0.1676	0.2068
	(0.1666)	(0.1582)	(0.1458)	(0.1711)
Δ*(fd(-1))*	-0.3586	0.2707	-0.0921	0.0732
	(0.4208)	(0.3847)	(0.3004)	(1.4711)
Δ*(iq(-1))*	-1.9453***	-0.4742**	-1.3738*	-1.0952**
	(0.1332)	(0.2008)	(0.7614)	(0.4814)
Δ*((iq×fd)(-1))*	0.1205	-0.0968	0.0245	-0.0338
	(0.1394)	(0.1295)	(0.0959)	(0.4829)
Δ*(topen(-1))*	-0.0323**	-0.0419**	-0.0723***	-0.0635***
	(0.0132)	(0.0145)	(0.0123)	(0.0135)
Δ*(inf(-1))*	-0.0080	0.0057	-0.0110	-0.0004
	(0.0070)	(0.0107)	(0.0079)	(0.0097)
Δ*(exr(-1))*	0.1383	0.5738*	0.7879	0.5339*
	(0.3221)	(0.3346)	(0.3194)	(0.3308)
ECT(-1)	-0.2075***	-0.1597***	0.0997***	-0.0759***
	(0.08672)	(0.0121)	(0.0053)	(0.0104)
Net effects	n.a.	n.a.	n.a.	n.a.

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available if the coefficient of the interaction of institutions and financial development is not statistically significant at the conventional level.

Source: Author's computation (2022).

4.2.4.3 Short-run and Long-run Estimation Results

The vector error correction (VEC) model results of the parameter estimates both in short-run and long-run are presented in Tables 4.20a and 4.20b respectively. The results on the table answer the null hypothesis that the interactive effect of institutions and financial development has no have statistical and significant impact on inclusive growth. The short run analysis shows the dynamic pattern in the model and also ensures that the dynamics of the estimated models have not been constrained by inappropriate lag length specification. In Table 4.20a, the lag length on all variables as the model was set at one because the number of observation is limited while putting the augmenting the variables into one model and this was found to be sufficient based on the results of the automatic selection of Schwarz Information Criterion (SIC). The results are presented in columns 1–4 for each of the financial development variables considered. The error correction term (ECT) that measures the speed or degree of adjustment is reported in the short-run estimation results in Table 4.20a. It is the rate of adjustment at which inclusive growth changes due to changes in institutions and financial development variables. The coefficients of the ECT are found to be negative and statistically significant at the conventional level for the estimated models in columns 1–4. For the augmented model, the ECT values show that the estimated models correct their short-run disequilibrium within 7.59%-20.75% speed of adjustment in order to return to the long run equilibrium.

For the short run parameters in Table 4.20a, the statistical influence of the inclusive growth at lag one on its current level is not statistically significant. As to the financial development variables, they do not have significant effect on inclusive growth after their interaction with institutional quality. However, the significance influence of institutional quality on inclusive growth is negative across all the estimated models. Afterwards, the interaction of financial development

and institutions indicates both positive and negative influences but they are not statistically significant on inclusive growth. It implies that institutions play a mitigating influence in the relationship between financial development and inclusive growth. With regards to key factors, investment and labour force participation rate are not statistically significant. Pertaining to other control variables, trade openness negatively affects inclusive growth whereas exchange rate influences inclusive growth positively at 10% significance level. The impact of inflation rate on inclusive growth is not statistically established.

As to the long-run estimates reported in Table 4.20b, the parameter of interest rate spread has a negative and significant coefficient. It means that interest rate spread has an indirect and significant impact on inclusive growth in Nigeria. Likewise, the coefficient of domestic credit to private sector by bank is negative but not statistically significant at 5% level. However, broad money supply and financial development index have positive coefficients and they are not significant statistically at 5% level. Therefore, domestic credit to private sector by banks, broad money supply and financial development index had no significance impact on inclusive growth in Nigeria. As regards institutional quality, it negatively impacted on inclusive growth in Nigeria. Subsequently, the interaction of financial development and institutions indicates both positive and negative influences but they are not statistically significant on inclusive growth. It means that institutions play a mitigating influence in the nexus between financial development and inclusive growth. Concerning the key factors, investment positively impacted on inclusive growth while labour force participation rate influenced inclusive growth negatively. As for the control variables, trade openness has direct and significant impact on inclusive growth in the long run. Equally, inflation rate and exchange rate have positive and significant influence on inclusive growth in the long run.

Table 4.20b: Long-run Estimates of Institutions, Financial Development and Inclusive Growth

Variables	**Dependent Variable:** Inclusive Growth (*incg*)			
	1	2	3	4
Capital investment (k)	-0.0625***	0.0161*	0.5293***	0.0631***
	(0.0223)	(0.0096)	(0.1356)	(0.0168)
Labour force participation rate (lb)	-0.8656***	-0.0005	-2.8703***	0.0849
	(0.0677)	(0.0417)	(0.5469)	(0.0576)
Domestic credit to private Sector (dcps)	-0.7627			
	(0.4789)			
Broad money supply (bm)		0.0180		
		(0.1611)		
Lending rate spread (lrs)			-7.8192***	
			(1.8488)	
Financial development index (fd)				0.3487
				(0.8037)
Institutions (iq)	0.6441	1.0092*	-15.183***	-0.3252
	(1.1412)	(0.5922)	(4.7325)	(0.3296)
Institutions × Financial development	0.1774	-0.0365	0.2088	-0.2164
	(0.1581)	(0.0520)	(0.6070)	(0.2655)
Trade openness(topen)	0.1670***	0.0847***	1.2657***	0.0943***
	(0.0151)	(0.0079)	(0.1363)	(0.0133)
Inflation rate (inf)	0.0182***	0.0494***	1.1255***	0.0445***
	(0.0042)	(0.0025)	(0.0421)	(0.0042)
Exchange rate (exr)	-1.7676***	0.0206	18.957***	0.4825***
	(0.1427)	(0.0818)	(1.4801)	(0.1268)
Constant	0.07566	0.0357	-0.0092	0.0332
	(0.1040)	(0.1131)	(0.1080)	(0.1178)
Net effects	n.a.	n.a.	n.a.	n.a.
Adjusted R^2	0.5242	0.4116	0.4825	0.3856
F-Stat	5.5335***	4.6092***	5.1444***	4.4435***
Serial Correlation	(0.6131)	(0.6975)	(0.9864)	(0.4818)
Normality Test	(0.0920)	(0.0523)	(0.4429)	(0.1354)
Heteroskedasticity test	(0.1834)	(0.3130)	(0.1392)	(0.2094)

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. n.a. means not available if the coefficient of the interaction of institutions and financial development is not statistically significant at the conventional level.

Source: Author's computation (2022).

Moreover, the coefficient of determination (measured by the Adjusted-R^2) is high for the models in columns 1-4 which ranges from 38.56% to 52.42%. As for the augmented model of the financial development index in column 4, the adjusted R^2 at 38.56% indicates that about 38.56% of the total variations in inclusive growth was explained by financial development index in the model. The overall test using the F-statistics are statistically significant at 5% level of significance showing that models are well specified and statistically significant. As for the diagnostic tests, the estimated VECM models are tested for serial correlation, normality and heteroskedasticity. The results from these tests are also shown in Table 4.20b. The results revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 2. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance.

4.3 Discussion of Findings

This study thus provides answers to the first hypothesis i.e. the effect of financial sector development on inclusive growth. The result reported that domestic credit to private sector by banks and money supply positively and significantly impacted inclusive growth in the short run but negatively and significantly influenced inclusive growth in the long run. The finding is similar to the result of previous studies that a short run positive relationship exists between money supply and inclusive growth in the short run[1]. This means that increasing the volume of money supply and domestic credit supports by banks contributed to short run growth inclusiveness in Nigeria. Thus, financial depth will propel inclusive growth by ensuring cheap and accessible financial credit and more money will be available for borrowing in the economy. It implies that an increase in the supply of money typically lowers interest rates, resulting in

more investment and more money in the hands of the country's citizens. It was also revealed that interest rate spread has a positive and significant impact on inclusive growth in the long run but the direct relationship is not statistically significant in the short run. This means that high lending rate over the deposit rate enhances inclusive growth in the long run. Therefore, interest rate spreads rise as income rises due to increased investment demand which occurs because increased income increases demand for money while the supply of money remains constant, therefore, interest rate spreads must rise to ensure inclusive growth. Overall, the study discovered that financial sector development only impacted inclusive growth in the short run but had an adverse effect on growth inclusiveness in the long run. This supports the argument that short-run gains at the expense of long-run growth coupled with various exogenous factors could have precipitated economic fluctuations in Nigeria[2]. It therefore aligns with the research outcome of past studies that that the establishment of an effective regulatory framework for financial market participants is needed to ensure that they are inclusive of their operations[1].

As for the components of inclusive growth, the study found that money supply had positive and significant on income per capita growth whereas domestic credit to private sector by banks and interest rate spread have no significant impact on income per capita growth in the short run. However, domestic credit to private sector had an adverse influence on income per capita growth while money supply and interest spread directly impact per capita income growth in the long run. In general, the study concludes that financial sector development had long run negative impact on income per capita growth but no relationship exist in the short run. This aligns with the results of other developing nations that economic growth is linked to the development of financial institutions[3,4,5,6,7,8,9,10]. It was also discovered that financial sector development had no significant impact on income equality in the short run whereas income equality is adversely influenced by

financial sector development in the long run. The adverse influence of financial sector development on income equality mainly came through low domestic credit to private sector by banks, money supply and high interest rate spread. More so, the study showed that domestic credit to private sector by banks and money supply had short run negative and significant impact on employment rate but interest rate spread influence employment rate positively. In the long run, the estimations outcome was reverse of the short run findings. In general, financial sector development had high chances of improving employment rate in the long run while this is not obtainable in the short run.

In the second hypothesis, the study provides the empirical results in regards to the minimum financial sector development threshold that stimulates inclusive growth is not statistically significant. Concerning the financial sector development indicators, the study shows that the minimum domestic credit to private sector by bank as a ratio of GDP that would stimulate short run inclusive growth is at 18.22%. Statistical data from the Central Bank of Nigeria shows that the country only had her domestic credit to private sector by bank as a ratio of GDP greater than 18.22% in 2008 and 2009 standing at 18.57% and 19.6% respectively. The country only had a 12 year periods of double digit whereas the remaining years had single digits. On the other hand, the minimum broad money supply, interest rate spread and financial development index that boost inclusive growth was not established in the short run. In the long run, it was discovered that the minimum domestic credit to private sector by bank and money supply (as ratios of GDP) that stimulate inclusive growth are at 13.49% and 17.84% in the long run respectively. However, financial development exhibits a maximum threshold of 0.697 that maintain inclusive growth in the long run. The minimum threshold of interest rate spread was not established bath at short and long run.

Concerning the third hypothesis, the study provides the empirical outcomes relating to the effects of institutional quality on inclusive growth. It was established that institutional quality had a negative effect on inclusive growth in the short run. Meanwhile, the study shows that institutional quality has the ability to improve the inclusiveness of growth in the long run. It is similar to studies that argued the quality of institutions was positively related to economic growth[11,12,13]. Thus, it supports the argument that quality of public institutions could help promote sustainable development[14,15,16]. This means that for Nigeria's financial systems to benefit from financial development in terms of inclusive growth, they must be embedded in sound institutional frameworks. As a main finding, investment profile appears to play an important role in all areas of financial development; thus, creating a friendly business environment is critical in order to reduce investment risks, increase confidence, and attract foreign investors to ensure inclusive growth.

The fourth hypothesis presents the results relating the role of institutional quality in the relationship between financial sector development and inclusive growth in Nigeria. The interrelationship among institutional quality, financial development, and inclusive growth is similar to the findings of past studies[17,18,19,20]. While interacting institutional quality and financial sector development, the result shows that institutions had an adverse effect on inclusive growth in the short run whereas the significant impact of financial sector development on inclusive growth was not established statistically. The study reports that the interactive effect of both institutions and financial sector development on inclusive growth was not established in the short run. Similarly, the ameliorating role of institutions in the links between financial sector development and inclusive growth was not authenticated statistically in the long run. Thus, the quality of formal institutions like rule of law, government effectiveness, and corruption are key

factors that influence the link between financial development and the overall Nigerian economy, albeit not statistically significant. This implies that there is a need for effective institutions to regulate the activities of financial market participants in order to ensure that they are inclusive in nature. It does not follow the estimation outcomes of previous studies that the financial development has a significant impact on income per capita in countries with sound institutional quality[6,8,9,13,18,21,22,23,24,25,26,27]. This does not align with the findings that institutional quality help minimize the negative effects of financial development on the environment[14]. The likely reason for the insignificant role of institutions and financial development in inclusive growth may be attributed to the discovery of asymmetric link between financial sector development and inclusive growth[2]. However, low interest rate spread was found to improve inclusive growth in the long run.

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Chapter Five

Conclusion

This chapter presents the summary, conclusion and recommendation of the study. This is divided into five sections which includes summary of findings, conclusion, recommendations, contribution to knowledge, and suggestions for future studies.

5.1 Summary of Findings

The broad objective of this study was to investigate the interrelationship among financial sector development, institutional quality and inclusive growth in Nigeria using an annual data from 1984 to 2020. The estimators employed are Vector Error Correction Model (VECM) and Autoregressive Distributed Lag (ARDL) approaches. The empirical results of specific objectives are reported and discussed in the previous chapter in details. However, the summary of findings from this study is discussed in this sub-section. The result of the trend analysis did not present a precise or exact relationship among financial sector development, institutional quality and inclusive growth whether it is direct or indirect. It however necessitated the need for empirical analysis with more appropriate econometrics tools as the directions of the variables are inconclusive. The unit root results revealed that many of the series are not stationary at levels but after differencing once, they were stationary. This implies that many of these series trended with prevalent economic, political, financial, social, cultural, fiscal, and trade and external sector reforms. Therefore, they have stochastic trends. In addition, an inherent property of these time series in Nigeria is that they exhibit wide variance and diverge continuously from the previous levels. This however, reveals that series swing unexpectedly and their underlying changes are highly unpredictable. The long-run co-movement of the variables was confirmed using both the

Johansen cointegration and ARDL bound tests before using the appropriate estimate techniques for empirical analysis and discussion.

For the first objective, broad money supply and the composite index of financial development at first lag influence inclusive growth in the short-run at 10% significance level. Also, domestic credit to private sector by banks and interest rate spread at lag one also had positive impact on inclusive growth but they were not significant. At the second lag, domestic credit to private sector by banks and money supply positively and significantly impacted on inclusive growth at the conventional level. Also, the financial development index has direct and significant effect on inclusive growth in Nigeria. In the long run, domestic credit to private sector by banks and broad money supply had an inverse influence on inclusive growth in the long-run during the periods understudy. Also, high lending rate against deposit rate positively influences income growth inclusiveness in Nigeria. Overall, financial sector development has an adverse effect on inclusive growth, following the negative significant parameter of financial development index at 5% level. It means that high lending rate spread coupled with insufficient financial credit to private sector by banks and money supply controls are factors poor inclusiveness of income growth in Nigeria.

Concerning the second hypothesis, the study found that the minimum domestic credit to private sector by bank as a ratio of GDP that would stimulate short run inclusive growth is at 18.22%. In the long run, the minimum domestic credit to private sector by bank and money supply (as ratios of GDP) that stimulate inclusive growth is at 13.49% and 17.84% respectively. However, financial development exhibits a maximum threshold of 0.697 that maintain inclusive growth in the long run. For the components of inclusive growth, the minimum domestic credit to private sector by banks as a ratio of GDP threshold that stimulate income equality and employment is 13.31% and 18.99% respectively. Likewise, the minimum financial development index that

stimulates income per capita growth is 0.547. As for the short run interest rate spread parameters, the results show that the maximum interest rate spread thresholds that sustain income growth, income equality and employment are 5.68%, 15.3% and 6.58% respectively. In the long run, the minimum domestic credit to private sector to GDP threshold that arouse income per capita growth and income equality is 12.43% and 1.42% respectively. Regarding the minimum money supply to GDP threshold, it stimulates per capita income growth, income equality and employment at 17.24%, 13.26% and 18.29% correspondingly. The maximum interest rate spread threshold that would uphold income equality and employment rate is 3.43% and 7.62% respectively. Overall, the thresholds of financial development index that stimulate income growth, income equality and employment rate is 0.693, 1.077 and 1.135 respectively.

Pertaining to the third hypothesis, the parameters of institutional quality were negative in income growth, income equality and inclusive growth models while the parameter of institutional quality in employment model is positive. Among all the parameter estimates, institutional quality negatively and significantly influences income growth and inclusive growth. In the long run, the statistical effect of institutional quality on income growth, income equality and inclusive growth was established at 5% level but was not confirmed in employment at the conventional level.

As to the fourth hypothesis, the interaction effects of financial development and institutions on inclusive growth show both positive and negative effects but they are not statistically significant on inclusive growth. It implies that institutions play a mitigating influence in the relationship between financial development and inclusive growth, albeit not significant at 5% level. As to the financial development variables, they do not have significant effect on inclusive growth after their interaction with institutional quality. However, the significance influence of institutional quality on inclusive growth is negative across all the estimated models. Likewise, the interaction

of financial development and institutions has no significant effect on inclusive growth. It means that institutions play a mitigating influence in the nexus between financial development and inclusive growth, albeit not significant at 5% level. Also, interest rate spread has an indirect and significant impact on inclusive growth in Nigeria. Likewise, domestic credit to private sector by bank, broad money supply and financial development index are not significant statistically at 5% level. As regards institutional quality, it negatively impacted on inclusive growth in Nigeria.

5.2 Conclusion

This study provides an empirical insight on the links among financial sector development, institutional quality and inclusive growth in Nigeria for a period of 1984 and 2020. The problem of weak institutions has been one of the major challenges impeding the Nigerian financial industry and growth inclusiveness. Thus, the issue on ground is not just to ensure quality of institutions amidst of other economic goals, but to adopt appropriate policies that are able to sustain these qualities over the coming years as they serve as a catalyst towards ensuring inclusive growth in Nigeria. The study formulated four specific objectives and evaluated using appropriate statistical methods like vector error correction model and autoregressive distributed lag approaches, whereas, pre-estimation tests (such as charts, descriptive statistics, unit root and cointegration) were carried out to validate the choice of our estimation techniques.

The empirical findings show that domestic credit to private sector by banks and money supply positively and significantly impacted inclusive growth in the short run but they negatively and significantly influenced inclusive growth in the long run. Interest rate spread has a positive and significant impact on inclusive growth in the long run but the direct relationship is not statistically significant in the short run. The study discovered that financial sector development only impacted inclusive growth in the short run but had an adverse effect on growth

inclusiveness in the long run. It shows that the minimum domestic credit to private sector by bank as a ratio of GDP that would stimulate short run inclusive growth is at 18.22%. However, the minimum broad money supply, interest rate spread and financial development index that boost inclusive growth was not established in the short run. In the long run, it was discovered that the minimum domestic credit to private sector by bank and money supply (as ratios of GDP) that stimulate inclusive growth are at 13.49% and 17.84% in the long run respectively. However, financial development exhibits a maximum threshold of 0.697 that maintain inclusive growth in the long run. The minimum threshold of interest rate spread was not established bath at short and long run. Also, institutional quality had a negative effect on inclusive growth in the short run. The study shows that institutional quality has the ability to improve the inclusiveness of growth in the long run. The study reports that the interactive effect of both institutions and financial sector development on inclusive growth was not established in the short run. Likewise, the ameliorating role of institutions in the links between financial sector development and inclusive growth was not authenticated statistically in the long run. This study therefore concludes that the observed relationship among financial sector development, institutional quality and inclusive growth in Nigeria is consistent with the empirical results obtained from previous studies. The policy implications of the findings and recommendations are presented in the next section.

5.3 Recommendations

The following recommendations arising from the empirical results of this study are suggested in this sub-section. The following suggestions are stated as follows:

i. The study reported that poor institutions affected inclusive growth in Nigeria majorly the government stability, control of corruption, law and order and bureaucracy quality. It suggests the need for government to improve quality of public services and their ability to formulate and implement sound policies and regulations as they are adherent to the growth inclusiveness process in Nigeria.

ii. Based on the findings that the role of money supply cannot be overemphasized in the inclusive growth process in Nigeria, the apex bank needs to control money supply in a way that it would not cause disequilibrium between the aggregate demand and supply or excess liquidity/shortage. It means that money supply smoothen the rate at which economic activities in Nigeria grew over the years.

iii. In addition, cautious action is also needed by the financial industry for domestic credit to private sector by banks in order to achieve a desirable level of inclusive growth. This was based on the findings that it played a key role in determining the growth inclusiveness in Nigeria. The action should be limited to the absorptive capacity of the economy as it tends to promote overall output growth and revive the Nigerian economy.

iv. Concerning the fact that interest rate spread is also an important financial variables that determine the inclusive growth pattern of the Nigerian economy, the Monetary Policy Committee (MPC) should take caution and also coordinate its activities when setting the

monetary policy rate so that the desired behavioural changes in the real sector will be achieved.

v. Also, the country's institutional settings show the importance of monitoring and controlling the activities of financial sector from corruption and fund mismanagement as these have tendency of improving the income distribution, growth and employment in Nigeria. The Central Bank of Nigeria should ensure that domestic credits and other financial facilities are made available easily to prospective investors at cheaper and affordable rate in order to boost production so as to ensure income sustainability and equality. This also boiled down to the fact that these credits should be made available at lower rate in order to ease the cost of doing businesses in Nigeria.

vi. The government should direct effort towards improving the level of development of financial market. This is because a well-developed financial institution with wide range of both short and long-term finance is necessary for efficiency of the monetary system.

5.4 Contribution to Knowledge

The contributions made by this study to the extant literature are in the areas of identified gaps and achieved with the proposition of appropriate policy suggestions based on the results obtained from empirical findings. The following major contributions are stated below as:

Empirical Policy Analysis: This study contributed to the existing body of literature by filling the empirical gaps in literature by investigating the role of institutions in the relationship between financial sector development and inclusive growth. The study found that institutional quality has the ability to improve the inclusiveness of growth in the long run. Also, institutions play a mitigating role in the links between financial development and inclusive growth, albeit not

significant. Apart from this, the study also considers inclusive growth classifications which include income growth, income equality and employment. The findings provide testable hypotheses for future studies regarding how the financial development variables (domestic credit to private sector by banks, money supply, interest rate spread, a composite index) influence inclusive growth in Nigeria.

Conceptual Framework: A schematic diagram simplifying the conceptual relationship of the key concepts in a clear form was developed. The diagram presented in Figure 2.1 under sub-section 2.2 make a clear explanation of the concepts that are explained in mathematical language in some complex models. This gives a clear cut presentation of the concepts without mathematical notation that are self-explanatory to those whose interest are not in the research purview, and most importantly, its adaptability to policy implementation in reality.

Methodological Analysis: This study employs appropriate estimation techniques to achieve the stated objectives. The study used VECM and ARDL to examine both the short- and long- run estimates of the parameters of our variables. These estimation approaches have explicitly shown the interrelationship among financial sector development, institutional quality and inclusive growth in short-run and long-run.

Behavioural Model: The study developed a theoretical foundation that only includes important hypothetical variables in building the study's theoretical framework. The perspectives were built on Anand, Mishra and Peiris's inclusive growth framework which was found relevant towards illustrating the relationship among financial sector development, institutional quality and inclusive growth. The theoretical models were tested based on the injunctions of the AMP framework and also restricting empirical estimations to our variables of interest. This theoretical model can be extended by future studies to explore more economic policy variables from the

financial sector development, fiscal or monetary policy indices, pricing or wage policy variables among others. This can also be used in situation for validating previous empirics for policy formulations.

5.5 Suggestion for Further Studies

Future studies can conduct a structural break analysis of the variables which will provide chances of comparing different policy eras or major events that are prominent in the Nigeria economy. In addition, the adoption of non-linear estimation approaches such as the two or three stage least square or asymmetric autoregressive distributed lag model to establish the links among financial sector development, institutional quality and inclusive growth would expand frontiers of knowledge. The evolution of inclusive growth at the national and state government levels in relations to fiscal consolidation and inclusive growth. It is imperative to study information and communication technology (ICT) and technological advancement influence inclusive growth. Also, future studies needs to understudy how unemployment and labour market institutions foster inclusive growth in Nigeria through job creation. More economic policy variables like monetary policy or fiscal policy among others can be included in the inclusive growth model for more future knowledge expansion.

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Appendix

Appendix Ia: Data

Year	gdpg	Equ	emp	incg	dcps	bm	lds	Fd	iq	dcps_iq	bm_iq	lds_iq	fd_iq
1985	5.913027	61.3	93.9	-0.10277	5.99109	12.32653	0.316667	-2.11896	2.083333	12.48144	25.68028	0.659722	-4.41449
1986	0.060945	61.3	94.7	-0.5956	7.528398	11.91441	0.724167	-1.82513	1.9375	14.58627	23.08416	1.403073	-3.53618
1987	3.200125	61.3	93	-0.21308	6.563383	11.80946	0.874167	-1.98989	2.125	13.94719	25.09509	1.857604	-4.22851
1988	7.334025	61.3	94.7	-0.07553	6.010196	12.16855	3.666667	-1.63587	2.3125	13.89858	28.13977	8.479167	-3.78295
1989	1.919381	61.3	95.5	-0.53709	5.042703	10.45432	5.766667	-1.69108	2.5	12.60676	26.13581	14.41667	-4.2277
1990	11.77689	61.3	96.5	0.074823	4.948032	11.63537	5.516667	-1.6137	3	14.84409	34.90612	16.55	-4.84111
1991	0.358353	61.3	96.9	-0.77887	4.992393	13.39988	5.125	-1.46704	3.229167	16.12127	43.27045	16.54948	-4.7373
1992	4.631193	55	96.6	-1.11778	8.171612	14.24738	6.716667	-0.5587	3.416667	27.91967	48.67856	22.94861	-1.90889
1993	-2.03512	55	97.3	-1.65955	6.940109	15.78772	8.408333	-0.3596	2.9375	20.38657	46.37642	24.69948	-1.05633
1994	-1.81492	55	98	-1.70888	7.994131	15.09194	7.391667	-0.39659	2.958333	23.6493	44.64698	21.86701	-1.17324
1995	-0.07266	55	98.2	-1.60289	6.48923	10.28191	6.7025	-1.3086	3.208333	20.81961	32.9878	21.50385	-4.19842
1996	4.195924	48.1	96.6	-1.88527	6.15079	9.063329	6.7775	-1.49483	3.625	22.29661	32.85457	24.56844	-5.41874
1997	2.937099	48.1	96.8	-1.99388	7.012976	9.725269	10.62583	-0.69318	3.9375	27.61359	38.29325	41.83922	-2.72941
1998	2.581254	48.1	96.8	-2.01933	7.608687	10.93903	8.075833	-0.82811	3.75	28.53258	41.02138	30.28438	-3.10541
1999	0.584127	48.1	96.9	-2.17143	8.152684	12.76339	7.479167	-0.61442	3.666667	29.89317	46.79911	27.42361	-2.25289
2000	5.015935	48.1	86.9	-0.92484	8.218357	14.66963	9.583333	-0.07764	3.375	27.73696	49.51001	32.34375	-0.26202
2001	5.917685	48.1	86.4	-0.81387	9.843124	15.90097	8.1825	0.146921	3.229167	31.78509	51.34687	26.42266	0.474433
2002	15.32916	48.1	87.4	-0.23386	8.070036	13.527	8.100833	-0.45203	2.59375	20.93166	35.08565	21.01154	-1.17245
2003	7.347195	59.9	85.2	0.659209	8.896912	13.02659	6.496667	-0.5957	2.78125	24.74454	36.23019	18.06885	-1.65678
2004	9.250558	64.4	86.6	1.145397	8.451011	11.75879	5.482494	-0.9686	2.822917	23.8565	33.19407	15.47662	-2.73427
2005	6.438517	64.4	88.1	0.804863	8.425299	11.30051	7.415833	-0.73741	2.979167	25.10037	33.66611	22.093	-2.19685
2006	6.059428	64.4	87.7	0.814944	8.111026	11.72897	7.141667	-0.78742	3.104167	25.17798	36.40868	22.16892	-2.4443

2007	6.59113	64.4	87.3	0.890151	13.38805	19.29109	6.650833	0.941612	2.875	38.49063	55.46187	19.12115	2.707136
2008	6.764473	64.4	85.1	1.107078	18.57315	23.81187	3.268333	1.885645	2.916667	54.17168	69.45129	9.532639	5.499798
2009	8.036925	64.4	80.3	1.644317	19.60353	25.14416	6.0325	2.631666	3.114583	61.05682	78.31357	18.78872	8.196543
2010	8.005656	64.3	78.9	1.761566	13.4594	21.35585	11.06417	1.839849	3.010417	40.51839	64.29	33.30775	5.538712
2011	5.307924	64.3	76.1	1.828972	11.03214	22.47905	10.3275	1.414762	3.125	34.47543	70.24702	32.27344	4.421131
2012	4.230061	64.5	89.4	0.536755	10.58945	24.92823	8.386667	1.319345	2.875	30.44467	71.66866	24.11167	3.793117
2013	6.671335	59	75.3	1.435223	11.52443	25.44805	8.7775	1.60518	2.791667	32.17236	71.04246	24.50385	4.481128
2014	6.309719	59	90.3	0.014832	13.29021	22.68961	7.210833	1.385888	2.625	34.88681	59.56023	18.92844	3.637956
2015	2.652693	64.1	89.6	0.362681	13.06695	22.36683	7.700833	1.382065	2.90625	37.97581	65.00359	22.38055	4.016626
2016	-1.61687	60.9	86.6	-0.00522	14.59721	27.37879	9.372815	2.467074	2.885417	42.11902	78.99921	27.04448	7.118536
2017	0.805887	60.9	82.5	0.549195	12.77727	24.78142	7.998847	1.642894	2.949561	37.68734	73.09431	23.59309	4.845817
2018	1.922757	64.9	77.4	1.530081	10.17951	25.36246	7.203185	1.117625	2.914417	29.66735	73.9168	20.99309	3.257226
2019	2.208429	64.9	76.9	1.596993	10.43073	23.92961	6.47607	0.895581	3.067275	31.99392	73.39869	19.86389	2.746993
2020	-1.79425	64.9	72.9	1.682649	11.22807	25.04167	8.995394	1.538368	3.10965	34.91537	77.87082	27.97253	4.783786

Source: CBN Statistical bulletin (2020), WDI (2020) and ICRG (2020).

Appendix Ib: Data

Year	gdpg	equ	emp	incg	dcps	bm	lds	fd	iq	k	lb	topen	inf	exr
1985	5.913027	61.3	93.9	-0.10277	5.99109	12.32653	0.316667	-2.11896	2.083333	46.39545	58.35	10.39198	7.435345	0.893774
1986	0.060945	61.3	94.7	-0.5956	7.528398	11.91441	0.724167	-1.82513	1.9375	54.94827	58.78	9.135846	5.717151	1.754523
1987	3.200125	61.3	93	-0.21308	6.563383	11.80946	0.874167	-1.98989	2.125	50.04989	59.38	19.49534	11.29032	4.016037
1988	7.334025	61.3	94.7	-0.07553	6.010196	12.16855	3.666667	-1.63587	2.3125	43.75477	59.81	16.94061	54.51122	4.536967
1989	1.919381	61.3	95.5	-0.53709	5.042703	10.45432	5.766667	-1.69108	2.5	52.48744	60.08	34.18262	50.46669	7.364735
1990	11.77689	61.3	96.5	0.074823	4.948032	11.63537	5.516667	-1.6137	3	53.12219	61.21	30.92474	7.3644	8.038285
1991	0.358353	61.3	96.9	-0.77887	4.992393	13.39988	5.125	-1.46704	3.229167	48.40018	61.12	37.0216	13.00697	9.909492
1992	4.631193	55	96.6	-1.11778	8.171612	14.24738	6.716667	-0.5587	3.416667	43.77439	60.92	38.22739	44.58884	17.29843
1993	-2.03512	55	97.3	-1.65955	6.940109	15.78772	8.408333	-0.3596	2.9375	44.47636	60.82	33.71975	57.16525	22.0654
1994	-1.81492	55	98	-1.70888	7.994131	15.09194	7.391667	-0.39659	2.958333	42.06784	60.72	23.05924	57.03171	21.996
1995	-0.07266	55	98.2	-1.60289	6.48923	10.28191	6.7025	-1.3086	3.208333	37.20593	60.58	39.52838	72.8355	21.89526
1996	4.195924	48.1	96.6	-1.88527	6.15079	9.063329	6.7775	-1.49483	3.625	36.58167	60.44	40.25773	29.26829	21.88443
1997	2.937099	48.1	96.8	-1.99388	7.012976	9.725269	10.62583	-0.69318	3.9375	38.42226	60.32	51.46101	8.529874	21.88605
1998	2.581254	48.1	96.8	-2.01933	7.608687	10.93903	8.075833	-0.82811	3.75	40.5534	60.21	39.27861	9.996378	21.886
1999	0.584127	48.1	96.9	-2.17143	8.152684	12.76339	7.479167	-0.61442	3.666667	38.278	60.17	34.45783	6.618373	92.3381
2000	5.015935	48.1	86.9	-0.92484	8.218357	14.66963	9.583333	-0.07764	3.375	34.04928	60.07	48.9956	6.933292	101.6973
2001	5.917685	48.1	86.4	-0.81387	9.843124	15.90097	8.1825	0.146921	3.229167	30.03794	60.05	49.6805	18.87365	111.2313
2002	15.32916	48.1	87.4	-0.23386	8.070036	13.527	8.100833	-0.45203	2.59375	26.76866	59.88	40.03517	12.87658	120.5782
2003	7.347195	59.9	85.2	0.659209	8.896912	13.02659	6.496667	-0.5957	2.78125	28.3709	59.85	49.33496	14.03178	129.2224
2004	9.250558	64.4	86.6	1.145397	8.451011	11.75879	5.482494	-0.9686	2.822917	26.06325	59.81	31.89587	14.99803	132.888
2005	6.438517	64.4	88.1	0.804863	8.425299	11.30051	7.415833	-0.73741	2.979167	24.96612	59.82	33.05946	17.86349	131.2743
2006	6.059428	64.4	87.7	0.814944	8.111026	11.72897	7.141667	-0.78742	3.104167	26.1665	59.89	42.56657	8.225222	128.6517
2007	6.59113	64.4	87.3	0.890151	13.38805	19.29109	6.650833	0.941612	2.875	20.18004	59.94	39.33693	5.388008	125.8081
2008	6.764473	64.4	85.1	1.107078	18.57315	23.81187	3.268333	1.885645	2.916667	18.85977	59.99	40.79684	11.58108	118.5667

2009	8.036925	64.4	80.3	1.644317	19.60353	25.14416	6.0325	2.631666	3.114583	21.11545	59.99	36.05871	12.55496	148.88
2010	8.005656	64.3	78.9	1.761566	13.4594	21.35585	11.06417	1.839849	3.010417	16.81501	59.98	43.32076	13.7202	150.2975
2011	5.307924	64.3	76.1	1.828972	11.03214	22.47905	10.3275	1.414762	3.125	15.67631	60.02	53.27796	10.84003	153.8625
2012	4.230061	64.5	89.4	0.536755	10.58945	24.92823	8.386667	1.319345	2.875	14.21112	57.56	44.53237	12.21778	157.5
2013	6.671335	59	75.3	1.435223	11.52443	25.44805	8.7775	1.60518	2.791667	14.16873	55.11	31.04886	8.475827	157.3117
2014	6.309719	59	90.3	0.014832	13.29021	22.68961	7.210833	1.385888	2.625	15.08353	54.8	30.88519	8.062486	158.5526
2015	2.652693	64.1	89.6	0.362681	13.06695	22.36683	7.700833	1.382065	2.90625	14.82718	54.4	21.33265	9.009387	192.4403
2016	-1.61687	60.9	86.6	-0.00522	14.59721	27.37879	9.372815	2.467074	2.885417	14.72496	53.91	20.72252	15.67534	253.492
2017	0.805887	60.9	82.5	0.549195	12.77727	24.78142	7.998847	1.642894	2.949561	14.71562	54.88	26.3476	16.52354	305.7901
2018	1.922757	64.9	77.4	1.530081	10.17951	25.36246	7.203185	1.117625	2.914417	19.01838	55.81	33.00783	12.09473	306.0837
2019	2.208429	64.9	76.9	1.596993	10.43073	23.92961	6.47607	0.895581	3.067275	24.62523	56.66	34.02388	11.39679	306.921
2020	-1.79425	64.9	72.9	1.682649	11.22807	25.04167	8.995394	1.538368	3.10965	28.64594	57.83	25.39979	13.2	358.8108

Source: CBN Statistical bulletin (2020), WDI (2020) and ICRG (2020).

Appendix II

Appendix IIa: Johansen Cointegration Test of Financial Development and Income Growth

Series	Lags interval (in first differences): 1 to 1					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
gdpg, k, lb, dcps, topen, inf, exr	r = 0	0.956101	248.0131***	125.6154	103.1537***	46.23142
	r ≤ 1	0.837362	144.8594***	95.75366	59.93544***	40.07757
	r ≤ 2	0.641340	84.92398***	69.81889	37.83754***	33.87687
	r ≤ 3	0.581166	51.08644	47.85613	28.71927	27.58434
	r ≤ 4	0.374257	22.36717	29.79707	15.47092	21.13162
	r ≤ 5	0.118318	6.896249	15.49471	4.155501	14.26460
	r ≤ 6	0.079698	2.740749	3.841466	2.740749	3.841466
gdpg, k, lb, bm, topen, inf, exr	r = 0	0.967870	264.2150***	125.6154	113.4532***	46.23142
	r ≤ 1	0.866114	150.7618***	95.75366	66.35531***	40.07757
	r ≤ 2	0.652344	84.40645***	69.81889	34.86587**	33.87687
	r ≤ 3	0.523551	49.54058**	47.85613	24.46605	27.58434
	r ≤ 4	0.354155	25.07454	29.79707	14.42744	21.13162
	r ≤ 5	0.197487	10.64710	15.49471	7.260230	14.26460
	r ≤ 6	0.097541	3.386869	3.841466	3.386869	3.841466
gdpg, k, lb, lds, topen, inf, exr	r = 0	0.978932	264.0235***	125.6154	127.3798***	46.23142
	r ≤ 1	0.790896	136.6437***	95.75366	51.64250***	40.07757
	r ≤ 2	0.753145	85.00119***	69.81889	46.16554***	33.87687
	r ≤ 3	0.433876	38.83565	47.85613	18.77508	27.58434
	r ≤ 4	0.358749	20.06057	29.79707	14.66304	21.13162
	r ≤ 5	0.096856	5.397533	15.49471	3.361801	14.26460
	r ≤ 6	0.059825	2.035732	3.841466	2.035732	3.841466
gdpg, k, lb, fd, topen, inf, exr	r = 0	0.923141	235.3254***	125.6154	84.67070***	46.23142
	r ≤ 1	0.872323	150.6547***	95.75366	67.92218***	40.07757
	r ≤ 2	0.654310	82.73250***	69.81889	35.05300***	33.87687
	r ≤ 3	0.522227	47.67950*	47.85613	24.37448	27.58434
	r ≤ 4	0.373579	23.30502	29.79707	15.43520	21.13162
	r ≤ 5	0.154597	7.869822	15.49471	5.542099	14.26460
	r ≤ 6	0.068107	2.327722	3.841466	2.327722	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. gdpg - GDP per capita growth; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

Appendix IIb: Johansen Cointegration Test of Financial Development and Income Equality

Series	Lags interval (in first differences): 1 to 1					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
equ, k, lb, dcps, topen, inf, exr	r = 0	0.888704	222.5299***	125.6154	72.45347***	46.23142
	r ≤ 1	0.751768	150.0764***	95.75366	45.98190***	40.07757
	r ≤ 2	0.711831	104.0945***	69.81889	41.05892***	33.87687
	r ≤ 3	0.592554	63.03557***	47.85613	29.62894***	27.58434
	r ≤ 4	0.433579	33.40663**	29.79707	18.75777*	21.13162
	r ≤ 5	0.259833	14.64886*	15.49471	9.929012	14.26460
	r ≤ 6	0.133268	4.719852	4.841466	4.719852	4.841466
equ, k, lb, bm, topen, inf, exr	r = 0	0.953217	247.8728***	125.6154	101.0541***	46.23142
	r ≤ 1	0.769182	146.8187***	95.75366	48.38209***	40.07757
	r ≤ 2	0.657638	98.43662***	69.81889	35.37223**	33.87687
	r ≤ 3	0.547436	63.06440***	47.85613	26.16329*	27.58434
	r ≤ 4	0.438267	36.90111***	29.79707	19.03206*	21.13162
	r ≤ 5	0.330436	17.86905**	15.49471	13.23726*	14.26460
	r ≤ 6	0.130952	4.631788**	4.841466	4.631788	3.841466
equ, k, lb, lds, topen, inf, exr	r = 0	0.864340	203.7629***	125.6154	65.92081***	46.23142
	r ≤ 1	0.767050	137.8421***	95.75366	48.07874***	40.07757
	r ≤ 2	0.723916	89.76338***	69.81889	42.47270***	33.87687
	r ≤ 3	0.462917	47.29068*	47.85613	20.51290*	27.58434
	r ≤ 4	0.368539	26.77777	29.79707	15.17074	21.13162
	r ≤ 5	0.191533	11.60704	15.49471	7.016324	14.26460
	r ≤ 6	0.129870	4.590712	4.841466	4.590712	4.841466
equ, k, lb, fd, topen, inf, exr	r = 0	0.930898	247.4897***	125.6154	88.18183***	46.23142
	r ≤ 1	0.815126	159.3079***	95.75366	55.70668***	40.07757
	r ≤ 2	0.680803	103.6012***	69.81889	37.68430***	33.87687
	r ≤ 3	0.579405	65.91693***	47.85613	28.58077***	27.58434
	r ≤ 4	0.506652	37.33616***	29.79707	23.31586***	21.13162
	r ≤ 5	0.280631	14.02030*	15.49471	10.86957	14.26460
	r ≤ 6	0.091060	3.150724*	3.841466	3.150724	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. equ - Income Equality; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Appendix IIc: Johansen Cointegration Test of Financial Development and Employment Rate

Series	Lags interval (in first differences): 1 to 1					
	Trend assumption: *Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
emp, k, lb, dcps, topen, inf, exr	r = 0	0.896851	202.4513***	125.6154	74.96206***	46.23142
	r ≤ 1	0.692659	127.4892***	95.75366	38.93331**	40.07757
	r ≤ 2	0.652313	88.55593***	69.81889	34.86293**	33.87687
	r ≤ 3	0.535059	53.69300**	47.85613	25.27287*	27.58434
	r ≤ 4	0.331009	28.42013	29.79707	13.26548	21.13162
	r ≤ 5	0.272094	15.15464	15.49471	10.48024	14.26460
	r ≤ 6	0.132074	4.674405	4.841466	4.674405	4.841466
emp, k, lb, bm, topen, inf, exr	r = 0	0.925354	227.6837***	125.6154	85.63495***	46.23142
	r ≤ 1	0.711748	142.0488***	95.75366	41.04937**	40.07757
	r ≤ 2	0.659892	100.9994***	69.81889	35.59021**	33.87687
	r ≤ 3	0.595502	65.40921***	47.85613	29.86856**	27.58434
	r ≤ 4	0.464762	35.54064***	29.79707	20.62645*	21.13162
	r ≤ 5	0.312217	14.91419*	15.49471	12.35131*	14.26460
	r ≤ 6	0.074724	2.562880	4.841466	2.562880	4.841466
emp, k, lb, lds, topen, inf, exr	r = 0	0.984036	283.1030***	125.6154	136.5344***	46.23142
	r ≤ 1	0.852414	146.5687***	95.75366	63.14029***	40.07757
	r ≤ 2	0.699794	83.42839***	69.81889	39.70849***	33.87687
	r ≤ 3	0.452534	43.71991	47.85613	19.88101	27.58434
	r ≤ 4	0.278616	23.83890	29.79707	10.77727	21.13162
	r ≤ 5	0.196867	13.06163	15.49471	7.234771	14.26460
	r ≤ 6	0.161861	3.826856	4.841466	3.826856	4.841466
emp, k, lb, fd, topen, inf, exr	r = 0	0.855667	209.1492***	125.6154	63.87591***	46.23142
	r ≤ 1	0.773762	145.2733***	95.75366	49.04347***	40.07757
	r ≤ 2	0.698247	96.22985***	69.81889	39.53888***	33.87687
	r ≤ 3	0.588865	56.69098***	47.85613	29.33153**	27.58434
	r ≤ 4	0.346399	27.35945	29.79707	14.03350	21.13162
	r ≤ 5	0.277638	13.32595	15.49471	10.73258	14.26460
	r ≤ 6	0.075578	2.593369	3.841466	2.593369	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. emp - employment Equality; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).
Source: Author's computation (2022).

Appendix IIIa: ARDL and Johansen Cointegration Test of Income Growth

A) ARDL Cointegration Test Result

Dependent variable: *y*	**Functions**				**F-statistics**	
Model I ARDL (2, 3, 3, 3, 3, 3, 3, 3)	$F_{gdpg}(gdpg \mid k, lb, dcps, dcps^2, topen, \inf, exr)$				15.031***	
Model II ARDL (2, 1, 1, 2, 2, 2, 2, 1)	$F_{gdpg}(gdpg \mid k, lb, lds, lds^2, topen, \inf, exr)$				6.7492***	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 7)	2.73	3.90	2.17	3.21	1.92	2.89

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. gdpg - GDP per capita growth; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU/US$).

Source: Authors' computation (2022).

B) Johansen Cointegration Results

Series	**Lags interval (in first differences):** 1 to 1					
	Trend assumption:*Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
gdpg, k, lb, bm, bm^2, topen, inf, exr	r = 0	0.912037	216.9240***	159.5297	82.64837***	52.36261
	r ≤ 1	0.780334	134.2756**	125.6154	51.53200**	46.23142
	r ≤ 2	0.642075	82.74358	95.75366	34.93266	40.07757
	r ≤ 3	0.445079	47.81092	69.81889	20.02358	33.87687
	r ≤ 4	0.326903	27.78734	47.85613	13.45946	27.58434
	r ≤ 5	0.204283	14.32788	29.79707	7.769385	21.13162
	r ≤ 6	0.119651	6.558499	15.49471	4.332869	14.26460
	r ≤ 7	0.063363	2.225630	3.841466	2.225630	3.841466
gdpg, k, lb, fd, fd^2, topen, inf, exr	r = 0	0.902744	225.3304***	159.5297	79.23386***	52.36261
	r ≤ 1	0.836270	146.0965***	125.6154	61.52430***	46.23142
	r ≤ 2	0.593064	84.57220	95.75366	30.56934	40.07757
	r ≤ 3	0.532428	54.00286	69.81889	25.84690	33.87687
	r ≤ 4	0.315264	28.15596	47.85613	12.87655	27.58434
	r ≤ 5	0.229836	15.27941	29.79707	8.879166	21.13162
	r ≤ 6	0.111999	6.400247	15.49471	4.038621	14.26460
	r ≤ 7	0.067102	2.361626	3.841466	2.361626	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. gdpg - GDP per capita growth; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

Appendix IIIb: ARDL and Johansen Cointegration Test of Income Equality

A) ARDL Cointegration Test Result

Dependent variable: *y*	**Functions**	**F-statistics**
Model I ARDL (2, 3, 3, 3, 3, 3, 3, 3)	$F_{equ}(equ \mid k, lb, dcps, dcps^2, topen, \inf, exr)$	4.2802***
Model II ARDL (2, 3, 3, 3, 3, 3, 2, 3)	$F_{equ}(equ \mid k, lb, lds, lds^2, topen, \inf, exr)$	10.419***

	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 7)	2.73	3.90	2.17	3.21	1.92	2.89

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. equ - Income Equality; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU/US$).

Source: Authors' computation (2022).

B) Johansen Cointegration Test

Series	**Lags interval (in first differences):** 1 to 1 **Trend assumption:***Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
equ, k, lb, bm, bm^2, topen, inf, exr	r = 0	0.914971	239.7856***	159.5297	83.80208***	52.36261
	r ≤ 1	0.774429	155.9835***	125.6154	50.63016**	46.23142
	r ≤ 2	0.653642	105.3533***	95.75366	36.04959	40.07757
	r ≤ 3	0.550637	69.30374*	69.81889	27.19740	33.87687
	r ≤ 4	0.452110	42.10634	47.85613	20.45712	27.58434
	r ≤ 5	0.345894	21.64922	29.79707	14.43254	21.13162
	r ≤ 6	0.147644	7.216685	15.49471	5.431547	14.26460
	r ≤ 7	0.051150	1.785138	3.841466	1.785138	3.841466
equ, k, lb, fd, fd^2, topen, inf, exr	r = 0	0.907157	254.2200***	159.5297	80.81261***	52.36261
	r ≤ 1	0.812396	173.4074***	125.6154	56.89627***	46.23142
	r ≤ 2	0.719161	116.5112***	95.75366	43.17914**	40.07757
	r ≤ 3	0.583014	73.33203**	69.81889	29.73987	33.87687
	r ≤ 4	0.434612	43.59216	47.85613	19.38825	27.58434
	r ≤ 5	0.393235	24.20391	29.79707	16.98685	21.13162
	r ≤ 6	0.157472	7.217059	15.49471	5.825856	14.26460
	r ≤ 7	0.040092	1.391203	3.841466	1.391203	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. equ - Income Equality; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).

Appendix IIIc: ARDL and Johansen Cointegration Test of Income Equality

A) ARDL Cointegration Test Result

Dependent variable: *y*	**Functions**				**F-statistics**	
Model I ARDL (2, 3, 2, 3, 3, 3, 1, 2)	$F_{emp}(emp \mid k, lb, dcps, dcps^2, topen, \text{inf}, exr)$				16.7606***	
Model II ARDL (2, 0, 0, 1, 1, 0, 0, 1)	$F_{emp}(emp \mid k, lb, lds, lds^2, topen, \text{inf}, exr)$				3.8984**	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 7)	2.73	3.90	2.17	3.21	1.92	2.89

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. emp – employment rate; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU/US$).

Source: Authors' computation (2022).

B) Johansen Cointegration Test

Series	**Lags interval (in first differences):** 1 to 1					
	Trend assumption:*Linear deterministic trend*					
	Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Max-Eigen Statistic**	**0.05 Critical Value**
emp, k, lb, bm, bm^2, topen, inf, exr	r = 0	0.931084	246.4084***	159.5297	90.94541***	52.36261
	r ≤ 1	0.811918	155.4629***	125.6154	56.80983***	46.23142
	r ≤ 2	0.603656	98.65311**	95.75366	31.46607	40.07757
	r ≤ 3	0.554705	67.18703*	69.81889	27.50662	33.87687
	r ≤ 4	0.428265	39.68041	47.85613	19.00868	27.58434
	r ≤ 5	0.260681	20.67173	29.79707	10.26886	21.13162
	r ≤ 6	0.169582	10.40287	15.49471	6.318097	14.26460
	r ≤ 7	0.113204	3.084772	3.841466	3.084772	3.841466
emp, k, lb, fd, fd^2, topen, inf, exr	r = 0	0.907863	261.2966***	159.5297	81.07213***	52.36261
	r ≤ 1	0.853744	180.2245***	125.6154	65.36139***	46.23142
	r ≤ 2	0.725294	114.8631***	95.75366	43.92984**	40.07757
	r ≤ 3	0.598609	70.93322**	69.81889	31.03590*	33.87687
	r ≤ 4	0.417454	39.89733	47.85613	18.37177	27.58434
	r ≤ 5	0.254197	21.52555	29.79707	9.971992	21.13162
	r ≤ 6	0.189107	11.55356	15.49471	7.127045	14.26460
	r ≤ 7	0.122073	3.426518	3.841466	3.426518	3.841466

Note: ***, ** &* denotes rejection of the hypothesis at the 0.01, 0.05 and 0.1 level respectively. emp - employment Equality; dcps - Domestic credit to private sector by banks (% of GDP); bm - Broad money (% of GDP); lds - Interest rate spread (lending rate minus deposit rate, %); fd - Financial development index; k - Gross fixed capital formation (% of GDP); lb - Labor force participation rate, total (% of total population ages 15-64); topen - Trade (% of GDP); inf - Inflation, consumer prices (annual %); and exr - Official exchange rate (LCU per US$, period average).

Source: Author's computation (2022).