MCom

The Impact of Financial Inclusion on the Nigerian Economy

A Dissertation

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By

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ABSTRACT

Financial inclusion remains a critical issue for developing economies such as Nigeria, where the focus of the government is to bring all economic units into the pool of the country's financial system. The rate of financial inclusion is an economic yardstick that cannot be discounted and one which remains a clear focal point of different inter-governmental efforts and policy. On one hand, there is the realisation that a low rate of financial inclusion means that a huge percentage of the population rarely has access to the kind of financial services that can take them out of poverty. As a contemporary discourse, this research seeks to assess the impact of financial inclusion on the development of the economy; arguing on the premise that proxy indicators in existing research have failed to provide a clear picture on the impact of financial inclusion on the economy, thereby failing to provide stakeholders with a strong motivation to pursue financial inclusiveness in the country. The focus of the study is to assess the effect of financial inclusion on income inequality and economic growth. To achieve this objective the study leverages on data spanning a period of 34 years (1981 to 2016), based on data generated from the Central Bank of Nigeria Statistical Bulletin and the World Bank Development Indicators. Using the Error Correction Mechanism (ECM),Unit Root Analysis and the Co-Integration analytical framework, the findings indicated that the short and long-run relationship between financial inclusion and economic growth in Nigeria show that the current values of the variables were not significant. Regarding the relationship between financial inclusion and income inequality in Nigeria, the short-run result revealed that only the past values of loans to rural areas and number of commercial bank branches appears to be significant, while at the long-run, the lagged value of gross domestic product per capital, commercial bank deposits and loans to rural areas were found to be statistically significant. The study further notes that financial inclusiveness was a precursor for economic growth in Nigeria. It is on this basis that the study recommends among others that; there is the need to increase loans to the rural areas by at least 50% this can be done through moral suasion to boost the economic activities in the rural areas, improve their aggregate demand, and ultimately their standard of living. There is also the need to engage more workforce in the rural areas to close the inequality gap prevalent in the country.

Keyword: Financial Inclusion, Commercial Bank, Economic Growth

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LIST OF ABBREVIATIONS

CBD	Commercial Bank Deposit
CBN	Central Bank of Nigeria
EFINA	Enhancing Financial Innovation and Access
NBB	Number of Commercial Bank Branches
GDPP	Gross Domestic Product Per Capita
LRA	Loan to Rural Areas
POS	Point of Sale
UNDP	United Nations Development Project

CHAPTER ONE.
INTRODUCTION

1.1 Background and Context of the Study

Access to financial services is globally recognised as a catalyst for the growth and development of any economy. It provides a platform for individuals, groups and organisations to participate in the global economy. Khan (2011) observed that one of the major characteristics of poor people in developing countries of Asia and Sub-Saharan Africa is the perennial lack of access to financial services. This implies that the basic financial services required to escape the trap of poverty are not available. As reported by Atkinson and Messy (2013), a startling 2.3 billion adults worldwide are financially excluded and a significant proportion of these are domiciled in Sub-Saharan Africa. While this situation persists, the focus of stakeholders has been channelled towards improving the provision of basic financial services such as savings, loans and credit to financially excluded segments (Ranjan and Zingales, 2003).

In clear terms, Sarma (2008) refers to financial inclusion as a process which ensures that all members of an economy benefit from the availability, affordability and accessibility of formal financial services in their country. Achieving financial inclusiveness has emerged as one of the key economic strategies of governments in most developing economies such as Nigeria. Corroborating this fact, Omojolaibi (2017) argued that one of the reasons for continued emphasis on financial inclusion is the visible evidence of an inclusive financial system in the developed economies of the United States of America and the United Kingdom. Furthermore, the views of Sarma and Pais (2010),as reiterated by Khan (2011) and Shittu (2012), is that a key differentiating factor between the developed and developing nations is the proportion of people with access to basic financial services. Where financial inclusiveness is achieved, Sarma and Pais (2010) observed that the efficiency of the financial system will improve, informal sources of finance begin to decline, cost of capital lessens and the efficiency of the financial system drives economic growth and development as seen in advanced economies (Triki and Faye, 2013; Joseph and Varghese, 2014).

The levels of financial inclusion or exclusion have important socio-economic and political implications for a developing country like Nigeria. As stressed by Omojolaibi (2017) this is responsible for the worsened income inequality and poverty which has remained a perennial problem in Nigeria. Njideka (2014) further added that the slow penetration of financial services has formed the basis for stakeholders, policy makers and industry watchers' criticism

of the effort of the government towards engendering economic development. It is indeed worrisome that between 40% - 70% of bankable adults are financially excluded from the nation's financial system including market women, farmers, youths and households in rural areas, thereby fuelling a vicious cycle of poverty. This condition will further slowdown the pace of capital formation in the country with a negative long term implication on industrial output, employment, national productivity and standard of living.

Over the years, the Nigerian government and other private and international stakeholders have designed and implemented measures aimed at improving financial inclusiveness in the country. Such measures include the institution of policies regulating the operations of financial services providers, the design of innovative financial business models targeted at rural communities and the integration of digital technologies; these are means of bringing more customers into the pool. Such policies also led to the proliferation of various community-based financial centres operated by banks and other financial players to provide basic banking and financial services to financially excluded members of the community. While these measures have reduced financial exclusion to a large extent (Njideka, 2014; Omojolaibi, 2017), the financial inclusion situation in the country is still dismal and the increasing population means that the future of the financial system of the country is still threatened. In fact, compared to other African countries like South Africa, Botswana and Kenya, the picture of financial inclusion in Nigeria has demonstrated that there is a need for more concerted policy and research response aimed at increasing financial inclusion levels in the country (EFInA, 2010). In the long run, such policies are expected to influence financial inclusion; this forms the basis for the current research.

It is premised on the foregoing that this research seeks to assess the impact of financial inclusion on the Nigerian economy.

1.2 Statement of Research Problem

In Nigeria, the rate of financial inclusion is an economic yardstick that cannot be discounted and one which remains a clear focal point of different inter-governmental efforts and policy. On one hand, there is the realisation that a low rate of financial inclusion means that a huge percentage of the population rarely has access to the kind of financial services that can take them out of poverty. On the other hand, there are many benefits associated with a high-level of inclusion which a developing country like Nigeria cannot do without. Also, financial inclusiveness has been celebrated as an effective option for resource allocation, capital cost

reduction, resource optimisation and strengthening of formal financial sources (Sarma and Pais, 2010). It was also confirmed by Triki and Faye (2013) that achieving an increase in saving rates and credit access ensures efficient financial inclusion. The availability of these benefits are critical factors in the quest to alleviate the menace of poverty and stimulate economic growth.

In spite of these benefits and evidence of a positive relationship between economic growth and financial inclusion, it is sad to note that the level of financial inclusiveness in the country (Nigeria) remains low. As indicated in the CBN (2010) report and confirmed by Odeleye (2016), the proportion of individuals who can access financial services stood at 21.6% as at 2010, and only 24% of the adult population had access to savings and other associated services. Further research as presented by Odeleye (2016) indicates that only 2% of adult had access to loans, 1% had access to insurance and 5% had access to pension. According to Njideka (2014), the introduction of the National Financial Inclusion Strategy (NFIS) and its goal of reducing financial exclusion appears unattainable, creating the need for further research to explore effective options of achieving financial inclusiveness in the country.

Furthermore, a research by an international organisation, Enhancing Financial Innovation, and Access (*EFInA*) showed that of the 85 million Nigerians qualified for financial services, only 31 million people have access to basic financial services within the country, while the remaining 54 million Nigerians are not catered for by the formal institutions (EFINA, 2010; CBN, 2013). Among the formally banked segments, about 15 million people have utilised formal financial products and services because they are either salaried employees or business persons. From the foregoing statistics, it is evident that financial inclusion still presents itself as a policy puzzle that must be resolved in a definitive way if inclusive economic growth and development in the country is to be guaranteed. The participation of the government and other stakeholders in ensuring that financial inclusion levels are increased (through means such as national inclusion strategies and programmes, microfinance policy, non-interest banking and more importantly, leveraging digital technology such as electronic banking products and electronic payments systems) can only be assured when there is clear and empirical evidence to map the nature of relationship that exists between the indicators of financial inclusion and other economic variables.

1.3 Research Questions

This study seeks to research the nexus between financial inclusiveness and economic growth. As such, the under-listed questions will be addressed in the course of the research;

1. What is the relationship between financial inclusion and economic growth in Nigeria?
2. What is the relationship between financial inclusion and income inequality in Nigeria?

1.4 Objectives of the Study

As derived from the research questions, the aim of this study is to examine the impact of financial inclusion on the Nigerian economy. Based on this, the main aim of the research is to examine the relationship between financial inclusion and economic growth. Specifically, the research seeks to;

1. Examine the relationship between financial inclusion and economic growth in Nigeria.
2. Examine the relationship between financial inclusion and income inequality in Nigeria.

1.5 Significance of the Research Findings

This research is focused on the topical issue of financial inclusion in the context of the Nigerian economy. The successful completion of this research will contribute to deepening the knowledge of the researcher and contribute to expanding her world view towards pursuing further research on the subject matter.

The outcome of this research will also contribute to improving current knowledge on financial inclusion and its influence on economic variables. The contributions to literature will form the basis for enhancing debates in academia and stimulate future research on the subject matter.

Policy makers such as key stakeholders in the Central Bank of Nigeria (CBN) and other financial regulatory bodies will consider the findings of this research as strategic to continuously improving the policy framework towards achieving financial inclusiveness for sustainable economic growth and development.

1.6 Research Assumptions

1. There is a link between financial inclusion and development
2. Offering affordable financial services to the impoverished is highly beneficial
3. Providing financial products and services to the impoverished opens up unexploited business opportunities that are often underestimated

1.7 Structure of Dissertation

In order to provide a logical and understandable flow of information, this dissertation will be structured into five chapters. Chapter one covers the research area and background of this study, the statement of research problem, the research questions, the objectives of study, the justification/significance for the study and the research assumptions. The second chapter also reviews relevant literature on financial inclusion, economic development and its relationship with growth. The relevant theoretical frameworks are also discussed.

Chapter three covers a discussion of the research design, the population and sample of study, the data collection process, the constructs used for financial inclusion and economic development, and the models developed for this study. Chapter four discusses the results of the analysis based on the stated objectives of the study.

The last chapter, chapter five, summarises and concludes the study. At this point, the researcher will also advance recommendations on how financial inclusion levels can be improved while optimising the impact of financial inclusion on the economy.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

Financial inclusion is a theme that is well researched by previous research, with corresponding debate relating to whether or not it has a positive impact on the economy. This chapter provides a review of conceptual, empirical and theoretical literature on the subject matter. The review is anchored on literature drawn from different academic databases including Emerald Insight, Science Direct, Scorpus and IEEE Xplore, among others. While the review is in no way exhaustive, it forms the basis for advancing the argument of the research. From the data selected from relevant academic databases, this chapter presents a series of reviews that are relevant to the study in terms of financial inclusion, theories and a revision of the previous literature. The review will be segmented into three different sections i.e. a review of conceptual foundations, theoretical arguments on the research and empirical evidence identified from existing literature.

2.2 Overview of the Nigerian Financial System

The Nigerian financial system is a robust structure that is meant to serve as a backbone of the economy since an inseparable link exists between the financial system and the economic structure. The Nigerian financial system is made up of regulatory bodies, banking and non-banking financial institutions which are well coordinated through the nation's financial system. The regulatory bodies basically create and implement policies to guide the financial environment, while the banking and non-banking financial institutions are expected to provide financial services to the banked and unbanked population.

A report published by the Apex Bank in 2018 indicated that 100 million persons out of the total population of 190 million people were financially excluded, with statistical records indicating that only 40% of Nigerian adults had access to banking services. It is generally believed by researchers and policy makers that this huge burden of financial exclusion negates the potential of macroeconomic policies. Consequently, the central bank and other regulatory agencies have been exploring measures to enhance financial inclusion. The constant debate, which is inconclusive in spite of decades of research, is whether or not a more inclusive financial system is positively influencing the Nigerian economy.

2.3 Conceptual Review

2.3.1 Overview of Financial Inclusion

Financial inclusion has become increasingly important, given the level of attention given to it from the perspective of policies and research. Nwankwo and Nwankwo (2014) defined financial inclusion as the provision of financial product such as loans, savings, payments, insurance and pension to every member of the society. In addition, UNDP (2013) defined financial inclusion as a financial system that is all-encompassing, providing services to all customers, including low-income earners and poor people, while also providing them with financial services that is affordable. The concept of financial inclusion could be expressed as a condition where everyone has access to all kinds of financial resources and services of high quality and at very affordable prices in a dignified and comfortable way. Based on this, financial products and services are designed to integrate the financial needs of usually excluded segments such as the poor, rural settlers and the disabled. Financial Integration Centre, 2010; Kama and Adigun, 2013).

Financial inclusion is critical for achieving an efficient and sustainable growth in the economy. An efficient financial inclusion strategy attracts excluded and non-banking audiences by encouraging them to explore available financial services (Michael, 2014). According to Mohan (2006) and Kama and Adigun (2013), financial inclusion exists where all segments of society access appropriate, cheap, secure and fair financial services from relevant institutions. The CBN (2012) reiterated that achieving financial inclusion depends on eligible adults always having easy access to services that meet their financial needs. The CBN (2012) perspective emphasises that financial inclusiveness relates to:

- Ease of accessing financial/credit facilities; all sections of the population, ranging from the rich to the poor, should have access to financial/credit facilities.
- Utilising a huge range of financial/credit facilities; having access to credit facilities.
- Design of customer financial product; for customer needs to be met, financial product and services must be well designed to meet customers' needs, taking the level of income and available distribution channels into cognisance.
- Affordability of financial/credit facilities: the affordability of financial products and services is essential especially to eligible low income or poor people willing and ready to request for loans.

Financial inclusion is a matter of serious concern to all, given its importance and the challenges of implementation and sustainability. In a study on the sustainability of financial

integration in the rural areas, Nwankwo and Nwankwo (2014) argued that sustainability of financial integration in the rural areas remains a key component of economic growth in any country. It is common practice throughout the world that governments, through the monetary authorities of their countries, develop policies and programmes to enhance an inclusive financial system. But, the question is how effective are policies and programmes that are expected to cover those in the rural and urban areas, recognising that financial system development is determined by the extent to which the poorest population access financial services? Studies have shown a positive relationship between financial inclusion and economic growth (Michael, 2014). In a similar research, Mbutor and Uba (2013) stated that a growing financial integration programme has positive consequences for a sound and effective monetary policy. Furthermore, while financial intermediation serves as a lubricant to economic activities, financial exclusion is a huge barrier to it. Financial inclusion is capable of supporting the provision of credit and other financial services to the rural populace; this could contribute to enhancing rural social transformation and economic development, as well as improving the livelihood of the rural dwellers by reducing or eliminating poverty (Matunhu & Mago, 2013). In the light of this, the rural settlements deserve exactly the same financial product and services supplied to urban settlements (Von-Pischke et al, 1983; as cited in Matunhu & Mago, 2013). As such, the development of rural banks will contribute to providing financial products and services to the rural populace, albeit not as 'easy money' but generation of money through their investment and savings.

The settlement pattern of Nigerians has, over the years, been pro-urban. The concentration of industries and most major public institutions in the urban areas is a major motivation for the concentration of banks and many other financial intermediaries or establishments in the urban areas, at the expense of their rural counterparts. The resultant effect of this is the exclusion of more people from the banking and formal financial system in the rural areas. This ugly trend of financial exclusion could be as a result of the colonial mentality of locating financial institutions in urban areas.

The above obviously gave rise to the fundamental issue of a lack of adequate finance and extreme poverty in the rural areas, leading to huge rural-urban drift over the years (Matunhu & Mago, 2013). To stress further on the dark side of financial exclusion, Oluwatayo (2014) argued that obtaining a competitive loan or mobile phone contract can be achievable without a bank account in the urban areas but such services are not available in the rural areas. In realisation of this situation, governments, particularly in Sub-Saharan Africa, have started

thinking outside the box by exploring innovative approaches to achieving financial inclusion through expanding the services to cover the rural dwellers.

The position of the World Development Report of 2000-2001, cited in Oluwatayo (2014),is quoted as follows:

> *"Access to financial markets is important for poor people. Like all economic agents, low income households and micro-enterprises can benefit from credit, savings, and insurance services. Such services help to manage risk and to smooth consumption…and allow people to take advantage of profitable business opportunities and increase their earning potentials. But financial markets, because of their special features, often serve poor people badly… since poor people often have insufficient traditional forms of collateral (such as physical assets) to offer, they are often excluded from the traditional financial markets…transaction costs are often high relative to the small loans typically demanded by poor people. And in areas where population density is low, physical access to banking services can be very difficult".*

The perspective of the World Development Report buttresses the challenges associated with financial exclusion, especially as they relate to segments of the population such as the poor and the rural populace; because their peculiarities put them in a disadvantaged situation in which they are easily excluded from the formal financial sectors. This is what Oluwatayo (2014) rightly observed when he described the perception of the rural areas by banks as non-profitable areas.

Although the challenge of financial exclusion prevails more in emerging economies, it is not entirely an exclusive problem of the developing world – it is a global phenomenon. EFInA (2012) holds that financial institutions in Nigeria, compete with one another by trying to attract and retain existing customers year after year, forgetting the enormous business opportunities at the grassroots which non-banking financial institutions appear to be taking steps to cultivate. Evidence from different research has indicated that of the 190 million Nigerians, only a few have bank accounts, with those living in the rural areas being the most affected (Tijani, 2012). He further asserted that 72.2% of the rural population had no bank account at all as at the time of the study; even though, about 25.3 million adults have mobile telephones which the banks could have utilised as an effective medium for attracting and integrating the unbanked population, particularly those in the country's rural areas. The

proliferation of mobile phones is a good premise for the adoption of mobile money with its attendant benefits as a veritable tool for the enhancement of financial inclusion in the country.

It has been noted that mobile money is capable of becoming a game changer for financial inclusion, seeing that it has the capacity to facilitate the absorption of over 75% of the country's unbanked population into the formal financial system (Tijani, 2012). Some of the benefits that are unequivocally derivable from mobile money include cost effectiveness i.e. it may be relatively cheap vis-à-vis the conventional service models and other alternatives to cash; privacy of transaction is guaranteed and this could boost the confidence of rural dwellers who ordinarily would not want a third party to have knowledge of their monetary worth; it also provides branchless banking which may enable vulnerable groups such as women especially those in the rural areas to receive as well as save money away from the prying eyes of their domineering men (Kelvin, 2012; cited in Tijani, 2012).

Financial exclusion can be said to have two dimensions; the unbanked who have no access to formal and informal financial services, and the under-banked who actually have access to banks and banking services but due to one conviction or the other prefer alternative service providers. This latter category is not substantially relevant to this study.

2.3.1.1 Obstacles to Financial Inclusion

According to the 2010 survey on EFInA, financial services accessibility in Nigeria categorised the barriers to financial inclusions as follows:

Demand-side Obstacle: This is caused by several factors which include low employment level, irregular income and low rate of literacy.

Supply-side Obstacles: This consists of a high cost of service, long distance to access points and inappropriate products.

Regulatory Barriers: These include trust issues in the financial service industry, Know Your Customer (KYC) requirement and high level of corruption in the system.

2.3.1.2 Strategies for Achieving Financial Inclusion

With the view to achieving financial inclusion in Nigeria, the following strategies have been explored by different stakeholders:

Mobile Banking/Mobile Payments: Through the approval of the Nigerian Apex Bank, the Central Bank of Nigeria, banks have explored the option of mobile banking which offers a convenient option for access to and utilisation of financial services.

Agent Banking*:* The concept of agent banking is the provision of banking services outside the traditional banking hall. Agent bankers are able to make devices such as Point of Sale (POS) machines and other technologies to provide banking services to clients anywhere and everywhere.

Linkage Models: The improvement of business and financial cooperation between traditional financial institutions (this includes deposit banks and financial institution development), government and microfinance banks/institutions for wholesale funding and on-lending transaction of microfinance institutions are other options that are increasingly explored.

Client Empowerment*:* The improvement of financial literacy through sponsored campaign, town halls and other symposiums are also explored to enhance financial inclusion.

2.3.1.3 Determinant of Financial Inclusion

According to literature, numerous variables have been used as proxy to financial inclusion. Access to finance can be classified into two different aspects namely; the supply and demand sides. The supply side is where information about the providers of credit facilities such as banks and other financial institutions are accessible. The demand side is where information about potential users of these services like the individuals and business firms are available. Based on empirical review, variables that are widely used to measure financial inclusion are: number of banks per million people, total numbers of available ATMs as per millions, total number of bank account (per 1000 adults), total number of loans and total number of bank deposits. Unfortunately, these indicators of financial inclusion provide inaccurate or partial information about the level of financial development in the country, and have also failed to indicate the level of financial access or inclusion. The households that are included are those who use banking services and thus make the indicators not good enough to proxy financial inclusion.

It is important to effectively examine the indicators of financial inclusion as it would contribute to the development and implementation of an efficient policy to attain an inclusive-oriented society for credit access. Imperatively, financial inclusion is dependent on indicators which are deemed to have socio-economic, demographic and institutional inclinations. From a study conducted by Laha (2011) to examine the overall determinant of financial inclusion in a

selected district of West Bengal, India, using the Probit's bivariate model, it was found that the ownership of land is significantly related to the level of household wealth, which is also likely to increase the potential of becoming a customer with a bank.

According to Kumar (2011) who carried out a study on the determinants of financial inclusion in India, it was revealed that the population of the workforce is an important factor for estimating the awareness and interest of individuals conducting financial transaction with a bank. Furthermore, Anand & Chhikara (2013) examined the relationship between financial inclusion and development to spot out factors influencing financial integration. The regression results revealed that urbanisation and per capita Net State Domestic Product (NSDP) were significant indicators of financial inclusion, while the level of literacy, gender rate and employment were not significantly related to financial inclusion.

In the same vein, Chithral & Selvam (2013) carried out a study in an attempt to determine and analyse the factors of financial inclusion. An empirical analysis was conducted and from the results, socio-economic factors like literacy, population and income were found to have a significant relationship with financial inclusion levels. Furthermore, physical infrastructure and connectivity of information were also significantly related to financial integration. The banks variables that were significantly related to financial inclusion relate to the amount of bank deposits and loans. In conclusion, their findings show that investment and credit indices had no significant relationship with financial inclusion.

2.3.2 Income Inequality and its relationship with Financial Inclusion

The relationship between income inequality and financial inclusion has instigated quite a number of empirical findings by experts and researchers. Firstly, global attention has shifted from the concentration of income distribution as an economic policy to the view that income inequality could be responsible for economic volatility. Furthermore, it has been found that there are several mechanisms through which unequal distribution of income can have an effect on other determinant of macroeconomic variable, specifically economic growth (Aslan, Delechat & Fan Yang, 2017). In this regard, Galor & Zeira (1993) argued that inequality of income and wealth can cause poor investment in human capital which, on the other hand, leads to inefficient allocation of skills and talent. Also, Carvalho &Rezai (2014) opined that unequal income distribution can lead to a reduction in aggregate demand. The research by Corak (2013) further added that such inequality can influence inter-generational movement. Several literature has also postulated that low distribution of income is linked with less

average and shorter growth spells (Dabla-Norris et al, 2015; Hakura et al, 2016; Berg &Tsangarides, 2014).

Seshamani & ounkara (2018) further hypothesised that in Africa, the development of formal financial inclusion is more likely to have an incredible impact on inequality reduction. Moreover, some literature has argued that a high rate of financial inclusion does not significantly relate to a reduction of poverty and inequality. According Fosu (2011), elasticity of growth in poverty reduction decreases when the level of inequality is high. Furthermore, inequality problems should be solved together with the execution of growth-stimulating policies.

2.3.3 Financial Inclusion and Growth of the Nigerian Economy

The expected link between financial inclusion and growth of the economy has been of great scientific interest. The nexus is mostly based on activities that promote financial inclusion. Initially, King and Levine (1993) maintained that an improvement in financial integration will help to accumulate savings, resource allocation, risk diversification and contribute to the system of the economy (Mirdala, 2011; Evans, 2015). Various studies, including those by Mohan (2006) and Chibba (2009) have suggested that financial inclusion is a major contributing factor to economic growth. It was also advanced by Sarma and Pais (2011) that there exists a correlation between financial inclusion and several socio-economic variables such as income equality, income, access to telephones, adult literacy, internet use, and urbanisation. Similarly, Fungacova and Weill (2005) argued that there exists a positive correlation between financial inclusion, income and better education as indicators of a high standard of living. Also, Chithra and Selvam (2013) reported significant correlations between financial inclusion and socio-economic indicators such as income, literacy, deposits and inflow of credit.

The relationship that exists between financial inclusion and development of the economy has been shown to influence the formulation of economic policies. This is because inclusive financing characterised by the access, affordability and availability of formal financial services to all economic unit influences economic activity (Evans, 2015; Odeleye, 2016; Chakraborty, 2011). Ogunleye (2009) also pointed out that financial inclusion is essential to guarantee integration of the economy; financial sector development is mostly responsible for driving growth of the economy through the mobilisation of savings and investments. In addition to the foregoing, Honohan and Beck (2007) argue that financial inclusion drives economic development and growth because it creates a financial system with advanced

infrastructures that contributes to reducing transaction costs in the long term. This enables the growth and development of the micro and macro economy.

The indirect effects of financial inclusion and economic growth are shown by indicators such as living standards, nutrition, health and education. In a study conducted by Collins (2009) on examining the poor people's financial record in Bangladesh, South Africa and India, it was discovered that improving access to affordable and adequate credit facilities contributes immensely to living standards of the poor. In another article, Ghali (1999) decided that financial integration by creating value for SMEs has a positive and insignificant effect on nutrition, education and better health, thus reduces the gap between inequalities and is crucial for economic development.

2.3.4 Income Inequality and Economic Growth

Inequality is central to the sustainable development of the economy. Gallo (2002) defines inequality as the difference in the living standard of the given population. Clark (2015) believes that developing countries are characterised by an unequal distribution of resources. Various types of inequalities, for example; wealth, health, income and gender were the most popular in terms of unequal income distribution, which is further discussed in this section.

A study by Dali (2015) posits that the problem of unequal distribution of wealth in Nigeria was prevalent when the GINI Coefficient was at its peak between 1985 and 2004. He further asserts that the country was poorly rated among the most diverse nations of the world. An important factor that led to a lasting increase in unequal income distribution relates to the increasing corruption level, and the lack of fair and equitable wealth distribution in Nigeria. According to UNDP (2015), Nigeria had a human development index of 0.467 in 2005; this placed the country in the category of low human development and ranked 152 out of 188 countries.

The UNDP (2013) report on the performance of development indices further showed that a positive relationship existed between the poor performance of growth indicators and the prevalence of income inequality.

An evaluation of the relationship between income inequality and economic growth-oriented policy can be very uneasy, as it contains several internal and external factors affecting each variable (Lee, 2008). For instance, economic and social conditions can have an effect on income inequality or political, demographics and international problems which can affect the relationship. Although several studies have been done to find out the relationship between

income inequality and economic growth policy in a single country, it does not mean that the result can be applied to all other countries, as each can have their own external and internal factors.

Akpolih &Farayibi (2012) carried out a research based on extent of the inequality as an obstacle to economic growth. After extensive analysis, the study revealed an inverse relationship between inequality and economic growth. It further posits that the level of inequality will cripple economic growth using total savings and investment as a channel in the economy. Rufus (2012) similarly discovered that the Nigeria GINI Coefficient was significantly high, meaning high inequality level. This basically affects the GDP growth rate, government expenditure and education.

A study conducted by Ibrahim &Nurudeen (2014) investigated the effect of inequality and poverty on economic growth between 2000 and2012. From the study results, they found that there exists a unidirectional causality between poverty, inequality and real GDP. It explains that when GDP increases, it definitely will increase the level of poverty and inequality. In another study conducted by Benabou (2000), their conceptual model shows that a reduction in government expenditure on policies of resources redistribution relates will increase income inequality. This shows that income inequality can be reduced by increasing government expenditure on social and economic welfare. Grounded on the theory of capital imperfection, it asserted that under a capital market which is deemed imperfect, each investor has several investment opportunities which is dependent on the size of initial accumulated wealth and income inequalities are generated. He further assumes that income inequality and redistribution channel have a nonlinear relationship which posits that as income inequality increases, social consensus about effective redistribution of income policies dissolves so that government expenditure on resource redistribution slows down.

Tabassum and Majeed (2008) also state that nations with higher inequality rate do not take full advantage of their productivity and growth compared to countries with more equal income distribution. Therefore, investment barriers result in greater inequalities, which adversely affect economic growth. Similarly, Scheuermeyer and Grundler (2014) maintain that inequalities in developing countries lead to a poor standard of living because the poorest people are incapacitated to afford the expenses involved in acquiring good or basic education. This would definitely have an effect on the per capita growth of a country, thereby affecting economic growth as a whole.

2.4 Theoretical Framework

Based on study conducted by Rajan&Zingles (2003), they posit that financial development has created a friendly condition for economic growth. Several empirical findings have also aligned with the fact that financial system development has the capacity to influence the growth of the economy. The relationship between finance and growth sees financial development as a prerequisite for long-run growth, positing that financial liberalisation is an important economic policy instrument. Some of the theoretical arguments regarding financial inclusion and growth are further discussed below.

2.4.1 The Endogenous Growth Model

The endogenous growth model was first identified by Bencivenga and Smith (1991) and Levine (1991) as a link to financial markets and how it affects long-term economic growth. According to the endogenous growth model, the financial market has a direct and indirect effect on economic growth.

As postulated by scholars, the endogenous growth theory explains the relationship between financial development and economic growth. The endogenous growth model placed more emphasis on financial development and long-run economic growth, focusing on the fact that growth in productivity is probably the transmission mechanism from financial development to economic growth. The argument is based on how financial markets or services influence increase in investment, savings and economic growth.

A study by King and Levine (1993) suggested that the endogenous growth model is based on the relationship between entrepreneurial, financial and economic growth. In this model, financial institutions play a vital role in controlling, supervising and financing prospective business owners, engaging in innovative activities and implementing a new product.

The foregoing relationship between finance and growth was identified by the model. Firstly, funding supports innovation and improves economic growth through increased productivity. Secondly, financial sector improved efficacy, such as a reduction in tracking costs and an increase in real return on investment, results in a high growth rate. Thirdly, the model suggests that financial incentives create an inverse channel of causation where distortion of innovation induces demand for financial services and delays financial development.

2.4.2 Harrod-Domar Growth Model

The model of economic growth by Harrod Domar laid emphasis on the advanced capitalist experiences of how the economy functions. The model B was based on the fact that investment plays a vital role in economic growth and development, with evidence on the binary features of investment i.e. income is generating on one side and on the other hand it increases the capacity of total production in the economy through increase in stock of capital. The former is regarded as "demand effect" and the latter as "supply" of investment.

The Harrod-Domar model provides an accurate short-term growth forecast and is widely used in less developed and developing countries of the world to determine investment level required or gaps in finance in order to achieve the targeted growth rate. The Harrod-Domar model is based on the assumptions stated below, with an initial full employment equilibrium level of income.

- No intervention by the government in the economy
- It is a close-ended economy where there exists no international trade
- Average Propensity to Save (APS) is equal to Marginal Propensity to Save (MPS) in the economy
- Lags are not involved in the adjustment processes between creation of productive capacity and investment
- Investments and Savings have a relationship with income in a particular year
- There is no account for capital goods depreciation

Based on the above assumptions, the Domar model was based on the assumption that aggregate demand must be equal to aggregate supply in order to maintain levels of income from total employment. Therefore, we come to the basic equation of the model.

$\Delta I\alpha = I\delta$…… 1

Where I= Investment, ΔI =Changes in Investment,

α = Marginal propensity to save

δ = Net potentials social average productivity of investment ($=\Delta Y/I$)

Solving equation (1) by dividing both sides by I and multiplying by α we get:

$\Delta I/I = \alpha\ \delta$…….. 2

This equation shows that in order for full employment to be sustainable, the net autonomous investment growth rate ($\Delta I / I$) must equal $\alpha\delta$ (the marginal propensity to save (MPS) times the capital productivity). At this rate, investment grows to ensure prospective capacity is fully utilised to sustain the steady pace of growth with an assumption of full employment. Domar posits that the underlying difference between the two leads to a fluctuation in cyclical motion. If $\Delta I / I$ is higher than δ, it will result to economy recovery but if $\Delta I / I$ is lesser than δ, the economy will suffer depression.

The Harrod model attempts to demonstrate the extent to which continuous economic growth can develop. As stable growth rate breaks and the economy becomes unbalanced, this divergence tends to be corrected by the cumulative force, leading to either secular inflation or deflation. The Harrod growth model is rooted in the three growth rates; the real growth rate (G); saving ratio and the return on capital. The fair value is known as G=S/C

If G is seen as growth rate of production over a time period, C is the net surplus of capital and it denotes the investment quotient and growth of income ($I / \Delta Y$), and S is seen as the average propensity to save APS

Secondly, the guaranteed GW growth rate, given as GW=S/Cr, where S=APS and Cr= the required capital to sustain GW. It shows (equation) that if growth occurs in the economy when GW rate is constant, full advantage will be taken of required capital leading to growth in income at a rate of S/Cr per year.

Thirdly, the natural growth rate. The natural growth rate is the growth rate of total employment, which is factored by the increasing rate of population and the technological advance pace, also see Jhingan (2003). The Harrod's Equation of Natural Growth Rate Gn. Cr=0≠ S, where Gn is natural with the growth rate of total employment. To increase the balance of total employment, Gn = GW = G. The difference between the three growth rates can lead to inflation or secular stagnation in the economy.

Models of growth by Harrod-Domar have been criticised for their assumptions being unrealistic, like the presence of full employment, non-governmental economic intervention, the sustainability of the rate of return on capital (∂) and MPS.

However, Harrod-Domar argue that for changes to occur in national income, there must be a change in capital. That is, the inversion results in = N = 1b = N = 1b output. In summary, Harrod-Domar's growth model deals with the following: economic growth occurs at a rate

whereby society mobilises internal sources of savings alongside investment productivity (Somoye, 2002).

2.4.3 Supply - Leading Hypothesis

The concept of the supply-leading hypothesis maintains that growth is increased as a result of financial deepening. Financial market development and existence in the economy will result in a high level of investment and savings hence enhanced effectiveness and efficiency of the accumulation of capital. It argues that if a financial system or institutions are functioning properly, it can on the other hand catalyze liquidity expansion, stimulate savings, improve capital accumulation as well as shift resources from the traditional sector to a well-functioning and technological based industries and help to promote entrepreneurial competitions that are competent enough to respond to a modern time economy. Schumpeter (1911) strongly supports the idea of a causal relationship between financial development and growth of the economy.

A theoretical review of several analytical techniques used in financial literature, recent works done especially by Demirguc-Kunt and Levine (2008), founded cogent proof that financial development has significant relationship with growth. This is essential for policy makers to be motivated for financial sector policies to be prioritised and also to pay attention to the indicators of financial development policies as a channel to promote growth.

2.4.4 Demand - Following Hypothesis

The demand-following hypothesis explains that financial market development is simply a delayed response to growth of the economy. What this connotes it that recent task for development of the financial market can result to huge wastage of resources than can be channelled into a more useful purpose for early growth. As a result of economic expansion, there will be an increase in the need of extra financial products and services which will result in a higher financial development.

Several studies have denoted that economic growth is a determinant of financial development. As noted by Gurley and Shaw (1967), the growth in the real sector will result to increase in the demand for financial products and services which facilitate the financial sector.

Ireland (1994) and Demetriades and Hussein (1996) argue that financial deepening is merely a by-product or as a result of real economic growth. Alternatively, financial development is an inverse response to economic growth.

2.4.5 Modern Theory of Income Inequality and Economic Growth

Modern theories have essentially three key twists regarding the influence of income inequality on economic growth. They are as follows, Political Economy framework developed by(Perotti, 1993), The division of labour and specialization framework developed by Fishman and Simhon (2002), and finally, the Two-Regime framework developed by Galor & Moav (2004), which is a combination of the theory of human capital developed byBecker (1965)and Mincer (1974). Every of these fragments of theoretical literature rely heavily on the principle of human capital as well as on credit limitations.

The classical framework on human capital clearly describes the function of human capital throughout the process of production as expertise (schooling) and also on-the-job development (training)(Acemoglu, 2009). Shortcomings in the credit market relate to the circumstance under which accessibility to credit is limited for citizens. These constraints may emerge through the institutions that make laws, credit rationing as foist by central banks, or poorly developed banking. Which further highlight the imperfection of the credit market.

are present when acquiring credit in return for expected future profits is gravely limited.

Political Economy Framework assumes personal interests are consolidated by the democratic framework. Therefore, the democratic framework stimulates income redistribution as well as economic development. The median voter or coordinated social groups drive democratic process. According to the Perotti (1993) model, the economic equilibrium attained is a function of the previous income distribution. Peradventure the cumulative capital is extremely minimal, the reallocation of wealth by means of taxation as well as subsidy would bring about poverty trap of deprivation in which no individual will afford education. In a circumstance of this nature, a far more skewed wealth distribution would be of benefit to the nation, since several individuals tends to receive education thus boost the volume of human capital

With the advancement of the economy, the rather disproportionate distribution of income will impede growth, because the development of human resources will demand that middle-class as well as disadvantaged people to attain education, since the wealthy have indeed developed themselves. For an economy that is affluent, the magnitude of human capital can only be increased by the poor, thus sustainable path to steady-state productivity demands that wealth be equally distributed. Whether the aggregate capital of an economy is limited, disproportionate income distribution prompts owners of capital to invest in expertise Fishman & Simhon (2002). in such a scenario, income disparity leads to a greater amount of human

capital, a greater division of labour, and hence to rapid growth. The more equal income distribution inspires households to invest in specialization or even entrepreneurship once the gross capital within the economy is significant. Hence, income equality would generate a somewhat risk-free economy and wide-ranging request for products. It would translate to increased job opportunities, significantly higher division of labour and accelerated growth in the economy.

According to Galor & Moav (2004) framework, the wellspring of economic growth transfers between physical and human resources, to financial capital during the phase of economic prosperity. The economic growth cycle is categorized into two systems that have their respective stable productivity pathways.

Economies are underdeveloped in the first system, cumulative physical capital is minimal, and also the return on investment on human capital is less than the rate of return on physical capital. According to this system, inequality improves cumulative savings by growing extremely wealthy incomes thus greater cumulative savings drive the accumulation of physical resources.

For the second system, there are the affluent in the system and hence, the rate of return on intellectual capital is extremely huge that it stimulates concentration of human capital (Galor & Moav, 2004). Hence human capital along with physical capital are vehicles for economic growth. Given that investment in intellectual capital by individuals is prone to decreasing returns over time, return on investment in intellectual capital is significantly increased whenever investment in intellectual capital is broadly circulated across the populace. Since accessibility to credit is limited, investment in intellectual capital is maximized if revenue is equally allocated in the economy.

2.5 Review of empirical literature

Numerous studies have been conducted to investigate the relationship between financial inclusion and growth in the economy or related indicators. Using the Middle East, Alper (2008) studied financial development as it relates to growth using a panel data analysis for a dynamic heterogeneous panel from period 1990-2003 i.e. 14 years. The result of the study posits a significant and positive relationship between financial development and growth. Further analytical approach used in the study found that indicators such as the gross fixed capital formation, manpower development, government expenditures and international trade are useful to economic growth and development.

This present study aligns to previous studies such as Calderon and Liu (2012) and Christopoulus et al. (2004). It was noted in Calderon and Liu (2012) that financial development contributes to economic growth, although Granger's mutual causal analysis has shown that financial development leads to more economic growth in developed economies as compared to developing economies of the world. Also, Christopoulos et al., (2004), using a multivariate framework, verified the existence of a long-run nexus between financial inclusiveness and growth with panel data for underdeveloped countries from1970 to 2000. Root testing and co-integration analysis for developing countries in the sample, the VEM (Vector Error Correction Model) was found to have a one-way causal relationship between financial development and growth of the economy.

Onalapo (2015) assessed the effect of an inclusive financial system on growth in Nigeria. Through a conceptual framework which is focused on financial intermediation though inter-bank mediation, the researcher sought to find how financial intermediary leads to poverty reduction and economic growth. It was noted that financial inclusion is a tool for alleviating poverty and facilitating economic wellbeing. With variables such as sector network, deposit, rural credit, liquidity index, capital shortage and financial inclusion as a measure for economic growth, the research focused on data from 1982 to 2012. Regression analysis of the study showed that though an inclusive financial system significantly minimises poverty, it contributes a minor role in fostering economic growth in the country.

Evans (2015) researched the impact of financial improvement on financial integration in the African context. The study provided evidence regarding how African financial integration is impacted by financial and economic integration, the Fully Modified Ordinary Least Square (FMOLS) was used between the periods 2005-2014. It also revealed a positive relationship between financial inclusion in the African context and economic growth. The result further depicts that GDP per capita has a positive and significant impact on financial integration. Other factors influencing the high level of financial integration such as financial literacy, usage of the internet and the emergence of Islamic banking services were noted. Other studies also showed that a low rate of deposit and inflation limits financial inclusion in a country.

Odeleye (2016) examined the situation of Nigeria's financial inclusion. The study outlined the relationship between inclusive financial growth and access to banking services for the population in order to combat poverty, improve well-being and overall standard of living. As a basis for the financial-based growth hypothesis, the study used the Ordinary Minimum Square to analyse macroeconomic and banking data between 1981 and 2014. Since the

financial-based growth model assumes that the "Supply-led" nexus is the growth of the financial and economic sector, such as real GDP, private sector credit (CPS), demand deposit (DD), index Financial Deepening (FD) and liquidity index (LIQR) were used to study the relationship between financial inclusion and inclusive growth in the country. The study concludes that money supply, aggregate liquidity index and loans to the private sector appear to be the main drivers of Nigeria's economic growth. The study also validates the financial driven growth and found that funding in Nigeria is causing growth. Azege (2004) and Ogiriki and Andabai (2014) reported similar results in both studies, also based on the financial-driven growth hypothesis.

Neaime and Gaysett (2016) conducted a study on the relationship between financial development and economic growth, which was measured by increasing the number of banks to improve poor inclusion growth and income inequality across 8 Middle East countries and North Africa since 2003-2016, with a generalised method of Moment and Generalised least square method. The results show that there is a significant and negative relationship between financial integration and development, and therefore financial inclusion reduces income inequalities. Kim (2015) argues that financial inclusion increases the relationship between economic growth and income inequality specifically in high fragile countries, Income inequality reduction through the channel of inclusion, changes the negative relationship between income inequality and economic growth into a positive relationship.

Omojolaibi (2017) examined the relationship between Nigeria's financial integration and economic progress over time. The study empirically examined the extent to which financial integration and governance influence economic growth through infrastructural investment, per capita GDP, and income inequality. Using data from 1980 to 2014 and analysing the Generalised Average Approach (GMM) estimation method, the research showed that financial inclusion and the indicators of governance are of statistical significance in determining infrastructure investment in Nigeria. The study also found that governance ratios and commercial bank deposits significantly increase GDP per capita and that financial inclusion tends to reduce income disparities (Honohan, 2008; Allen et al. 2013; Migap, 2015).

Michael and Aremu (2018) examined the relationship between financial inclusion and economic growth through a compendium of evidence from Nigeria. Imperatively, the study was limited to the relationship between financial inclusion and economic growth with a compendium of data from 2001 to 2018. The analysis was performed by a two-step least squares regression method. The results of the study showed that financial integration has a

significant impact on Nigeria's economic growth and that financial intermediation did not influence financial integration during the period under review (Babajideet al, 2015; Harley et al, 2017).

Perotti and Classens (2007) explored the existence of a somewhat complicated route between financial inclusion and income inequality. They found that unequal access to political influence produces unequal access to finance and unequal opportunities which can reinforce economic inequality. Akinlo and Egbetunde (2010) carried out a study on finance impacting economic growth of some selected countries in Sub-Sahara. Dataset from the panel using a time period 1980 and 2005, the study used the VECM to estimate. The results revealed a one-way causal relationship ranging from substitution of financing to the growth in countries such as the Republic of Congo, Nigeria and Central African Republic, whereas countries such as Zambia One-way road, causation, which ranges from growth to financing. Proof of a two-way relationship has been discovered in Chad, South Africa, Swaziland, Kenya and Sierra Leone.

2.6 Conclusion

The literature review showed that previous research found a nexus regarding economic development and financial inclusion demonstrated through studies in different economic contexts. Apart from the growth and inclusion nexus, the research also showed that inclusiveness drives other economic development indicators including human capital development, consumption and Gross Domestic Product (GDP). While the argument regarding the impact of financial inclusion on the Nigerian economy remains, the limitation of previous research is the use of fixed variables such as human capital development, consumption and GDP which are not effective predictors of the effect of financial inclusion on the economy. For instance, human capital development can occur without financial inclusion and hence, it plays an insignificant role in explaining how financial inclusion drives economic growth indices. Therefore, this research rather focuses on effective variables that can mirror the influence of financial incentive on economic growth.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents an overview of the methodology that has been selected for the research, including the research approach, study strategy, sources of data and the framework for data analysis.

3.2 Research Approach

The research is focused on a deductive approach because the assumption is that research is scientific and that certain hypotheses need to be tested (Saunders, Thornhill, & Lewis, 2009). The study hypothesis is expressed in an operative manner, designed to pass through a series of test to be accepted or rejected. Usually the hypothesis looks at the relationships between these variables and concepts. The present hypothesis is assessed by time series regression analysis. According to Saunders et al (2009), it is hypothesised that examining the relationship between variables contributes to the hypothesis conformity or the modification of the suitable theory. The advantage of adopting the deductive reasoning approach is that it helps to investigate the relationship between the dependent and independent variables. This may also lead to generalized finding. This study also makes use of an economic modelling approach to determine the impact of financial inclusion on economic growth of Nigeria

The researcher considered utilising a qualitative, quantitative and mixed research design for the study. After reflecting on the objectives of the study and the methodological approach of previous studies, the quantitative research design was selected. Quantitative research enables the collection, analysis and interpretation of numerical data towards estimating the impact of financial inclusion on the Nigerian economy.

3.3 Types and Sources of Data

The research made use of the secondary type of data for the research. This, in contrast to primary data, is not collected from the field but sourced from credible databases such as the World Bank and the Central Bank of Nigeria. This already processed data formed the basis for estimating the nature of impact of financial inclusion on the Nigerian economy.

In view of the above, the study utilises the times series annual data for the research with time lags of 1981 to 2016 i.e. thirty-four years. This data was extracted from secondary data sources like the Central Bank of Nigeria Statistical Bulletin (2016) and World Bank

Development Indicators. The data summation in this adopted model broadens the financial inclusion concept and also enhances the aggregation of indicators of financial deepening.

3.4 Unit of Analysis

The primary unit of data analysis is macroeconomic variables relating to financial inclusion and economic growth at the Nigerian level. For the analysis, the key variables involved in the study include Income inequality, GDP, commercial bank deposits, number of bank branches and volume of loans to rural areas. The unit of analysis was majorly influenced by the approach of previous research (Evans, 2015; Michael and Aremu, 2018).

3.5 Regression Equation Specification

From the nature of evidence identified in the course of the review, a functional model is specified for the research as expressed below.

$Y_t = Z_t^i \gamma_0 + \varepsilon_t$ 3

Where:

Z_t^i is the vector of an explanatory variable;

γ_0 is the vector of unknown coefficients and

ε_t is a random error term.

3.6 Analytical Framework

In a bid to estimate the nature of relationship that exist between financial inclusion and the performance of economic development indicators, dependent and independent variables were identified for the study. From the assumption and leading argument of the research, a total of two empirical models was specified to assess the impact of the dependent variables on the independent variables. The model considered sensitivity of GDPP and Financial inclusion to GINI and vice versa. The specified single equation linear Error Correction Mechanism (ECM) methodology was used in analysing the models stated below;

Model A: Sensitivity of GDPP to financial inclusion

$$\ln GDPP_t = \eta_0 + \eta_1 \ln CBD_t + \eta_2 \ln NBB_t + \eta_3 \ln LRA_t + \eta_4 \ln GDPP_{t-1} + \tau_t \text{ ..... } 4$$

Model B: Sensitivity of GINI to financial inclusion

$$\ln GINI_t = \beta_0 + \beta_1 \ln CBD_t + \beta_2 \ln NBB_t + \beta_3 \ln LRA_t + \beta_4 \ln GINI_{t-1} + \varepsilon_t \text{ ..... } 5$$

(*Where GDPP= GDP per capita, GINI= Income inequality, CBD= Commercial Bank Deposit, NBB= Number of commercial bank branches per 1000km^{2,}, LRA= Loan to Rural Areas*).

3.6.1 Measurement and Definition of Variables

This research made use of some independent variables to mirror financial inclusion and the dependent variable as specified relates to economic development. The variables are not direct measures but proxies which are further explained below.

Table 1: Variables and sources

S/n	Research Variable	Variables Description (Unit of Measurement)	Sources
1.	**CBD**	Commercial Bank Deposit; indicator of financial inclusion (Billions)	CBN Statistical Bulletin 2016
2.	**NBB**	Population of commercial bank branches per 1000km^2; indicator of financial inclusion (rate)	CBN Statistical Bulletin 2016
3.	**LRA**	Volume of Loan to Rural Areas; indicator of financial inclusion (Billions)	CBN Statistical Bulletin 2016
4.	**GDPP**	The Gross domestic product per capita; indicator of economic development (Billions)	CBN Statistical Bulletin, 2016
5.	**GINI**	Estimated variability of income and households and individual's consumption expenditure in the economy (Rate)	World Income Inequality Database, 2016

Source: Adapted from Omojolaibi (2017)

3.6.2 Estimation Approach

The economic model is built on the axiom of existing long run relationship between and among the variables. Thus, it is expected that the time series becomes stationary at level. However, given the fact that time series are not always stationary at any level, there is a need for differencing the variables to make the series stationary. The process of differencing of time series affects the long run relationship of the model thereby requiring an approach that

validates the existence of long run relationship between and among the variables under investigation. This study utilised the Error Correction Mechanism (ECM) to estimate the relationship between the selected variables of interest in the two models developed for the study. One of the advantages is that it is a convenient model that measures correction from dis-equilibrium of the previous period with reasonable economic implication. Secondly, in the existence of co-integration, it is developed on the ground that the terms is subjected to first difference, thereby eliminating trends from the variables involved and resolving the problem of spurious regression.

3.6.2.1 Unit Root Analysis

The Unit Root Test was used in a bid to examine the integration order of the variables used in the study. To this end, the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) option of unit root analysis was selected for the study. The choice of using the KPSS alternative was motivated by the fact that it facilitates a formal validation of whether a series is I (1) against the alternative that it is I (0). The advantage of using KPSS is that it expresses the sequence as the combination of the deterministic pattern, the random walk as well as the stationary error, while the test happens to be a Lagrange multiplier analysis of a random walk hypothesis assuming a zero variance

3.6.2.2 Co- Integration Analysis

The fact that time series variables contain unit roots, they may contain some linear aggregation of them which has no unit root. In this case, the variables of the study are known to be significantly co-integrated. The implication is that there exists a long term or long run relationship between variables used for the study. Where the stationary test reveals that majority of the indicators fail to meet the stationary criterion, the co-integration test will be required. For the purpose of the research, the Engle-Granger Co-integration approach was utilised. The model for the research is expressed below:

$$X_t = \alpha + \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \ldots. \Pi_n X_{t-n} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots 6$$

Where:

Xt is a n×1 vector of non-stationary I(1) variables,

α is a n×1 vector of constant terms,

$\Pi 1$, $\Pi 2$... Πn are n×k coefficient matrices and

εt is a n×1 vector of white Gaussian noises with mean zero and finite variance.

The Engle-Granger cointegration approach involves a two-step method. The first approach is to construct residuals (errors) based on the static regression that is an estimation of the variables involved, after which the residuals are taken and are tested for the presence of unit roots using the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. Where the time series output is co-integrated, then the residuals will be practically stationary. That is, the values for the KPSS need to be less than the critical values of the residual at 1%, 5% and 10% respectively.

A simple co-integration equation, according to Pesaran & Shin (2001), can be expressed as follows:

If Yt and Xt are both I(1), if we regress:

$Yt = \beta 1 + \beta 2Xt + ut$ …… 7

However, if $\hat{u}_t = Yt - \beta_1 - \beta_2 Xt = 0$; then there is long-run relationship.

3.6.2.3 ECM Model

If the existence of a long-term relationship is verified by a cointegration analysis, thus, the defined method seems indispensable to model the dynamic relationships. One important feature of the error correction model is that it shows the velocity of change from the short-run balance to the long-run equilibrium state. Therefore, the larger the parameter coefficient, the larger the speed of the model from the short run to the long run and vice versa.

The ECM (p) form is written as:

$\Delta K_t = \gamma + pK_{t-1} + \Sigma Ø \Delta K_{t-1} + Ɛ_t$ ----------8

Where, Δ is the differencing operator, such that $\Delta K_{t-1} - K_t = K_{t-1}$

3.6.2.4 Serial Correlation

Autocorrelation depicts the magnitude of similarity across consecutive time intervals between a specified time-series as well as a lagged version itself. Autocorrelation examines the correlation between the present value of a variable and its previous values. The Breusch-Godfrey Serial Correlation LM Test will be employed to conduct the presence and absence of serial correlation in the model

3.6.2.5 Heteroskedasticity Test

The heteroskedasticity Test is an analysis to check if the variance of the errors term in the estimation is reliant on the values of the explanatory variables. When the test is conducted and significant then the standard error of the variables monitored over a specific period is equal, hence, they are homoskedasticity

3.6.2.6 Short-Run and Long run Equation Analysis

Short-Run Equation

Equation 1 &2 short-run can be expressed as follow:

$$\Delta \text{In}GDPP_t = \Pi_0 + \Pi_1 \Delta \text{In}CBD_t + \Pi_2 \Delta \text{In}NBB_t + \Pi_3 \Delta \text{In}LRA_t + \Pi_4 \Delta \text{In}GDPP_{t-1} + \Delta\varepsilon_t \quad \ldots\ldots 9$$

Model B: Sensitivity of GINI to financial inclusion

$$\Delta \text{In}GINI_t = ß_0 + ß_1 \Delta \text{In}CBD_t + ß_2 \Delta \text{In}NBB_t + ß_3 \Delta \text{In}LRA_t + ß_4 \Delta \text{In}GINI_{t-1} + \Delta\varepsilon_t \quad \ldots\ldots 10$$

Long-Run Equation

$$\text{In}GDPP_t = Z_0 + Z_1 \text{In}CBD_t + Z_2 \text{In}NBB_t + Z_3 \text{In}LRA_t + Z_4 \text{In}GDPP_{t-1} - \theta\hat{u}_{t-1} + \varepsilon_t \quad \ldots\ldots 11$$

Model B: Sensitivity of GINI to financial inclusion

$$\text{In}GINI_t = ß_0 + ß_1 \text{In}CBD_t + ß_2 \text{In}NBB_t + ß_3 \text{In}LRA_t + ß_4 \text{In}GINI_{t-1} - \theta\hat{u}_{t-1} + \varepsilon_t \quad \ldots\ldots 12$$

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The study sought to empirically examine the nexus of financial inclusion and the Nigerian economy from 1981 to 2016. The data was subjected to a Descriptive test, Unit Root, Engle Granger Co-integration, and the Error Correction Model. The descriptive assessment helped to show the characteristics of the data collected. The Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test statistic for Unit Root was employed to verify whether or not the variables are stationary (unit root). The Engle Granger Co-integration test was employed to verify if there was a long run relationship among the series. The Error Correction Model was employed for the relationships that exist between the dependent variable and the explanatory variables.

4.2 Descriptive Analysis

The descriptive analysis helps to show the characteristics of the data and to reveal if the times series data is normally distributed or not. The table below shows the output of the descriptive characteristics of the variables;

Table 2: Descriptive Characteristics of the Variables

	GDPP	GNI	CBD	NBB	LRA
Mean	121.8495	42.68889	600.1333	1844.667	58.28563
Median	26.68079	43.00000	64.35000	1897.000	11.03035
Maximum	551.5114	51.90000	4144.400	3492.000	868.9478
Minimum	0.685350	34.50000	0.300000	869.0000	0.011900
Std. Dev.	178.5772	5.440261	1223.419	650.7656	185.2914
Skewness	1.417000	0.499459	2.162152	0.515397	3.851922
Kurtosis	3.446712	2.366359	6.089770	2.891477	16.15487
Jarque-Bera	12.34666	2.099009	42.36942	1.611470	348.5997
Probability	0.002084	0.350111	0.000000	0.446759	0.000000
Sum	4386.582	1536.800	21604.80	66408.00	2098.282
Sum Sq. Dev.	1116144.	1035.876	52386431	14822356	1201651.
Observations	36	36	36	36	36

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita

From the above results, GDPP had a mean of 121.8495, GNI had a mean of 42.68889, CBD had a mean of 600.1333, NBB had a mean of 1844.667 and LRA had a mean of 58.28563. The median of the variableswere26.68079, 43.00000, 64.35000, 1897.000 and 11.03035, respectively. Observing the Skewness value of the variables, GDPP had a value of 1.417000, GNI had a value of 0.499459, CBD had a value of 2.162152, NBB had a Skewness value of 0.515397 while LRA had a value of 3.851922, It could be seen that all the variables had a positive value, showing that they are positively skewed to the right. The variables also have a

positive kurtosis as their values are 3.446712 for GDPP, 2.366359 for GNI, 6.089770 for CBD, 2.891477 for NBB, while LRA had a Kurtosis value of 16.15487. Hence, the GDPP, CBD and LRA are platykurtic (their values are greater than three) while GNI and NBB is leptokurtic (their values are less than three)). The probability value of the Jarque-Bera reveals that the variables had a value of 0.002084 for GDPP, 0.350111 for GNI, 0.000000 for CBD, 0.446759 for NBB, 0.000000 for LRA. From these values, it could be seen that the p-values of GDPP, CBD, LRA are less than the 0.05 level of significance which means that they are normally distributed. GNI and NBB had a value greater than the 0.05 level of significance. However, the series did not violate any of the assumptions of the Ordinary Least Square, hence, the data was subjected to unit root test.

4.3 Correlation

Correlation test is a test for the strength of association among variables employed in the model. However, this test was conducted to verify the strength of relationship among the explanatory variable employed in the model. The result is as displayed below in table 3.

Table 3: Correlation Matrix for the Explanatory Variables

	CBD	NBB	LRA	GDPP	GINI
CBD	1.000000	0.024832	0.190721	0.121988	0.036812
NBB	0.024832	1.000000	0.029018	-0.067485	0.560146
LRA	0.190721	0.029018	1.000000	0.575700	0.021702
GDPP	0.121988	-0.067485	0.575700	1.000000	0.042393
GINI	0.036812	0.560146	0.021702	0.042393	1.000000

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita, GINI= GINI Coefficient (variability of income and households and individual's consumption expenditure in the economy)

Results in table 3 above, displayed the correlation between the explanatory variables. The rule is that variables with values close to 1 are highly correlated as the correlation coefficient lies between 0 and 1. From the output, it could be seen that the value of the relationship between CBD and NBB was 0.024832; this showed that the relationship between the two explanatory variables is very weak. The correlation coefficient of the relationship between LRA and NBB was 0.029018, which also showed that the relationships between the two variables is also very weak. Finally, the relationship between LRA and CBD was 0.690721, though the value appears to be slightly higher but not strong enough to depict evidence of multicollinearity among the two variables, as a value of very close to 1 is required to ascertain multicollinearity

of the variables. Furthermore, the Auto-regressive Distributed Lag model was employed for the analysis in this study. Multicollinearity appears not to be an issue in the ARDL estimation as the technique takes care of such issue with the lag inclusion in the model.

4.4 Unit Root Analysis

Stationary Test: This test was conducted to find out whether the mean value and variance of the variables are constant overtime. The unit root test was conducted with Kwiatkowski-Phillips-Schmidt-Shin (KPSS), the test was adopted under the null hypothesis of stationarity.

If the KPSS statistical value is greater than the critical value at 10%, 5% or 1%, then the null hypothesis is rejected; meaning that the series is non-stationary.

Table 4: Kwiatkowski-Phillips-Schmidt-Shin Unit Root Test at level (Trend and intercept)

Variables	KPSS Statistics	Critical value (1%)	Critical value (5%)	Critical value (10%)	Remarks
lnGDPP	0.137682	0.216000	0.146000	0.119000	Not Stationary
lnGNI	0.163353	0.216000	0.146000	0.119000	Not Stationary
lnCBD	0.193070	0.216000	0.146000	0.119000	Not Stationary
lnNBB	0.149038	0.216000	0.146000	0.119000	Not Stationary
lnLRA	0.143610	0.216000	0.146000	0.119000	Not Stationary

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita, GINI= GINI Coefficient (variability of income and households and individual's consumption expenditure in the economy)

The Kwiatkowski-Phillips-Schmidt-Shin Unit Root Test above shows that the variables are not stationary at 5% and 10% respectively. This is based on the decision rule that states that the KPSS test statistics need to be less than the critical values. On this basis, the null hypothesis is rejected and the variables are differenced to verify their means and variance are constant. The table below shows the differenced output.

Table 5: Kwiatkowski-Phillips-Schmidt-Shin Unit Root Test at First Difference (Trend and intercept)

Variables	KPSS @ 1st difference	Critical value (1%)	Critical value (5%)	Critical value (10%)	Order of Integration	Remarks
D(lnGDPP)	0.10949	0.216	0.146	0.119	I(1)	Stationary
D(lnGINI)	0.073823	0.216	0.146	0.119	I(1)	Stationary
D(lnCBD)	0.09659	0.216	0.146	0.119	I(1)	Stationary
D(lnNBB)	0.073303	0.216	0.146	0.119	I(1)	Stationary
D(lnLRA)	0.100625	0.216	0.146	0.119	I(1)	Stationary

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita, GINI= GINI Coefficient (variability of income and households and individual's consumption expenditure in the economy)

From table 5 above, it could be observed that the values for the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test statistics for all the variables are less than the critical values, both at 1%, 5% and 10%. This means that the variables employed for the study are all stationary and integrated of order one. The next step was to test for the long run relationship between the variables which was done with the application of the Engle Granger co-integration.

4.5 Co-integration

Co-integration was employed to test for the long run relationship between the variables considered. From Table 6, which represent the co-integration for the growth model, it could be seen that the LM-Statistic has a value of 0.266884 which is less than the various asymptotic critical values (1%, 5% and 10% respectively). Table 7 also represents the co-integration for the inequality model; it could be seen that the LM-Statistics has a value of 0.240889 which is less than the various asymptotic critical values (1%, 5% and 10% respectively). The LM-Statistics, as earlier stated, were obtained through a two-step analytical method. First, the equation of the variables was estimated and the residuals extracted; the second step being to subject the extracted residuals to KPSS unit root test where the above LM-Statistics was obtained. As stated by the decision rule, since that the LM-Statistics of the residual is co-integrated by taking a value less than the asymptotic critical values, the study concludes that there is a long-run relationship among the series employed for the study.

Table 6: Engle Granger Co-integration Test for the Growth Model

Variables	Values
LM-Statistics	0.266884
Asymptotic critical values @ 1% Level	0.739000
Asymptotic critical values @ 5% Level	0.463000
Asymptotic critical values @ 10% Level	0.347000

Source: Researcher's Compilations from E-views 9

Table 7: Engle Granger Co-integration Test for the Inequality Model

Variables	Values
LM-Statistics	0.240889
Asymptotic critical values @ 1% Level	0.739000
Asymptotic critical values @ 5% Level	0.463000
Asymptotic critical values @ 10% Level	0.347000

Source: Researcher's Compilations from E-views 9

4.5.1 Results: GDP and Financial Inclusion

4.5.2 Error Correction Model

The error correction model is a hypothetical approach employed in estimating the short-and long-term influences of a time series variable on another. The concept of error-correction allies to the fact that the last-period's divergences from a long-run equilibrium, the error, have an effect on its short-run changes. Thus, ECMs without deviation account for the speed at which a regression returns to equilibrium as a result of the change in the explanatory variables. It has been pointed out that once there is a co-integration among the series, the error correction model will be employed to verify the dynamics of the short-run deviation to the long run equilibrium. The result is presented Table 8.

The error correction term for Equation one at the short run had a coefficient of -0.485598; the coefficient was consistent as it was negative and revealed that 4.8% of the errors at the short run are corrected at the long run.

Table 8: Short Run Result for ECM: GDP and Financial Inclusion

Dependent Variable: LGDPP					
Variables	**Coefficient**	**Standard Error**	**T-Statistics**	**P-value**	**Comment**
C	-0.058281	1.077411	-0.054094	0.9573	insignificant
D(LGDPP(-1))	0.081314***	0.004875	8.989210	0.0000	Significant
D(LCBD(-1))	0.270712**	0.078946	3.429078	0.0130	Significant
D(LNBB(-1))	0.432648***	0.141693	3.053418	0.0011	Significant
D(L(LRA(-1)))	0.124612***	0.025432	4.899811	0.0001	Significant
ECM(-1)	-0.485598***	0.061388	-7.910308	0.0000	Significant
F-Statistics	513.9648***				
R-Square	0.993716				
Durbin-Watson	1.957154				

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita; **** & ** denotes significance at 1% and 5% respectively.*

The lag of Gross domestic product per capita had a positive coefficient of 0.08, which showed that an increase in the lag of GDPP by 1% led to an increase in the value of GDPP by 8%. The result show that commercial bank deposit (LCBD), number of bank branches (NBB) and loan to rural areas (LRA) are all positive and significant at lag one. The coefficient of 0.43 for the number of bank branches shows that an increase in the number of commercial banks by 1% led to an increase in GDPP by 43%. In addition, the coefficients of 0.12 and 0.27 observed also shows that an increase in LRA by 1% led to increase in the GDPP by 12% and 27%,respectively. Even from Onalapo (2015) research findings, loan to rural area which was proxy for using rural credit was found to be a major financial inclusive factor, influencing up to 15% of the GDP. Similarly, the findings by Evans (2015) with respect to financial inclusion and African economy noted that inclusiveness enhanced the deposit rate and had a positively significant influence on GDP. It was also consistent with the findings of Perotti and Calssens (2007) for other emerging economies.

The results were obtained following the lag length structure of the Aikaike Criterion. Overall implication is that an increase in commercial bank branches, increase in loans to rural areas and others will have effect on the economic growth of Nigeria in the subsequent year. The findings of the research are consistent with the finding of Alper (2008) regarding the effect of financial development on economic growth, where it was found that a positive relationship existed between financial development and economic growth. The implication of the findings was also consistent with that of Odeleye (2016), Omojolabi (2017) and Michael and Aremu (2018). However, the findings did contradict Calderon and Liu (2012) because contrary to

their findings that financial inclusiveness does not contribute to growth in less developed countries, the findings of the research verified that economic development can be actually achieved through financial development. Of course, this is a reality as most economic variables impact is felt after passing through the time lag mostly one year.

The coefficient of multiple determination (R^2) was 0.993716; showing that 99% of the variations in Gross Domestic product per capita are as a result of the variations in the explanatory variables. This shows a goodness of fit of the regression result. The F-statistics had a coefficient of 513.9648 and a p-value of 0.00000; the p-value appears to be less than the 0.05 level of significance which means that the explanatory variables jointly influence the dependent variable. The Durbin-Watson with a value of 1.957154 which is less than 2 shows that there is no autocorrelation in the model, however, the Breusch-Godfrey Serial Correlation test was conducted to support this assertion and the result is as displayed below;

4.5.3 Long-Run Results: GDP and Financial Inclusion

The result presented in table 9 displays the long-run coefficients on the relationship between the Gross domestic product per capita and the explanatory variables. It was found that loans to rural areas, lag values of gross domestic product per capita and lag of commercial bank deposit were statistically significant. Commercial bank deposits had a coefficient of 0.2516, showing that a 1% increase in the value of commercial bank deposit led to an increase in GDPP by 25%. Finally, loans to rural areas had a negative coefficient of 0.118, showing that an increase in the value of LRA by 1% led to a decrease in the value of GDPP by 11.8%. The long run relationship between financial inclusion and economic growth as proxied by the Gross Domestic Product (DGP) was also validated in the Neaime and Gaysett (2016) research on financial inclusion and its impact on economic progress with data spanning 1980 to 2014. The positive long run relationship stemmed from loans and other credit facilities to the rural area which contributed to reducing income inequality and enhancing infrastructural development resulting in economic growth. The same was consistent with the long run relationship verified in the research of Azege (2004) and Ogiriki and Andabai (2014), although the volume of increase was not static across board.

Table 9: Long Run Result: GDP and Financial Inclusion

Dependent Variable: LGDPP					
Variables	**Coefficient**	**Standard Error**	**T-Statistics**	**P-value**	**Comment**
C	0.010166	1.032888	0.009842	0.9922	Not Significant
LCBD	0.251650***	0.082291	3.058050	0.0055	Significant
LLRA	0.118093**	0.035066	3.367735	0.0101	Significant
LNBB	-0.005136	0.164816	-0.031161	0.9754	Not Significant

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita; **** & ** denotes significance at 1% and 5% respectively.*

4.5.4 LM Serial Correlation Test

The LM serial correlation test is a test of autocorrelation which was conducted to verify the presence of autocorrelation of the error term, the null hypothesis is that there is no serial correlation in the model; this can be attained when the p-value of the Obs*R-squared is greater than the 0.05 level of significance, the results is presented and discussed below;

Table 10: Breusch-Godfrey Serial Correlation LM Test

F-statistic	**0.038184**	Prob. F(2,24)	**0.9626**
Obs*R-squared	0.111018	**Prob. Chi-Square(2)**	0.9460

Source: Researcher's Compilations from E-views 9

From the result above, it could be seen that the Obs*R-squared0.038184had a p-value of 0.9626 and as well the F-statistics 0.038184had a probability value of 0.9460, both of which are greater than 0.05. Since the P-values are greater than the 0.05 level of significance, we thus conclude that there is no autocorrelation in the series. Hence, the results obtained can be relied upon for forecasting purposes.

4.6 Result: Inequality and Financial Inclusion

4.6.1 Short Run

The result as presented in table 11 displays the short run Error Correction Model for Equation for the relationship between inequality and financial inclusion. The estimated error correction term (ECM(-1))coefficient of -0.832531, which shows that 83% of the errors at the short-run are corrected at the long run annually.

Table 11: Short Run Result for ECM EQN Two

Dependent Variable: LGINI					
Variables	Coefficient	Standard Error	T-Statistics	P-value	Comment
C	2.505304***	0.270169	9.273090	0.0000	Significant
D(LCBD(-1))	0.054222**	0.022592	2.407726	0.0322	Significant
D(L(LRA(-1)))	-0.145963**	0.060249	-2.422663	0.0293	Significant
D(LNBB(-1))	0.153236***	0.049548	3.092669	0.0046	Significant
ECM(-1)	-0.832531***	0.130619	6.373721	0.0000	Significant
F-Statistics	14.93583***				
R-Square	0.794756				
Durbin-Watson	1.861773				

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita; **** & ** denotes significance at 1% and 5% respectively.*

The result shows that only the lag value of commercial bank branches, loans to rural areas and that of number of bank branches were significant. The lag of loan to rural areas had a negative coefficient of -0.145963 which shows that there is a negative relationship between the past level of LRA and current level of the GINI index. It shows that an increase in the amount of loans to rural areas led to a decrease in the GINI indexed value by 14%. The number of bank branches had a positive coefficient of 0.153236, showing that an increase in NBB by 1% led to an increase in the GINI coefficient index by 15%. The results were obtained following the lag length structure of the Aikaike Criterion. The findings were also consistent with the report of Aslan, Delechat and Fanyang (2017) but it was noted in their findings that a number of factors such as the level of capital development, skills allocation and resource available could not determine whether LRA impacts positively on GINI index or not. Even from other literature such as Hakura et al (2016), the volume of LRA determines the nature of impact on income inequality and vice versa.

The coefficient of multiple determination (R^2) was 0.794756. This shows that 79% of the variations in GINI index are as a result of the variations in the explanatory variables. This does not show a goodness of fit of the regression result. The F-statistics had a coefficient of 14.93583 and a p-value of 0.000000; the p-value appears to be lesser than the 0.05 level of significance which means that the explanatory variables jointly influence the dependent variable. The Durbin-Watson with a value of 1.861773 which is less than 2 shows that there is

no autocorrelation in the model. However, the Breusch-Godfrey Serial Correlation test was conducted to support this assertion and the result is as displayed below.

4.6.2 Long-Run Results: Inequality and Financial Inclusion

The results presented in table 12 display the long-run relationship between the GINI index and the explanatory variables. It was also found that only the lag values of GINI Index, commercial bank deposit and loans to rural areas were statistically significant. The lag value of the GINI had a positive coefficient of 0.832531, which shows that an increase in the past level of GINI by 1% led to an increase in the current level of GINI by 83%. Commercial bank deposits had a coefficient of 0.042465, showing that a 1% increase in the value of commercial bank deposits led to an increase in GINI by 4.2%. Finally, loans to rural areas had a negative coefficient of -0.062030, showing that an increase in the value of LRA by 1% led to a decrease in the value of GDPP by 6.2%. The findings are not different from that of previous research; for instance, Picket (2016) noted that financial inclusion through rural loans may actually have a negative impact on income inequality thereby affecting growth where the macroeconomic environment is not stable. Some aspects of the research, especially the relationship between loans and GINI were consistent with that of Nascold (2002) where GINI was found to positively correlate with access to financial facilities. But in all, the environment as described by Picket (2016) and Fosu (2011) is a critical determinant of the relationship.

Table 12: Long Run Result

Dependent Variable: LGINI					
Variables	Coefficient	Standard Error	T-Statistics	P-value	Comment
C	0.584945	0.370258	1.579832	0.1258	Not Significant
LGINI	0.832531	0.130619	6.373721	0.0000	Significant
LCBD	0.042465	0.016602	2.558871	0.0137	Significant
LLRA	-0.062030	0.021584	-2.873911	0.0075	Significant
LNBB	-0.000506	0.048938	-0.010331	0.9918	Not Significant
F-Statistics	14.93583			0.00000	Significant
R-Square	0.794756				
Durbin-Watson	1.861773				

Notes: CBD = Commercial Bank Deposit, NBB = Number of commercial bank branches per 1000km^2, LRA = Loan to Rural Areas, GDPP = Gross domestic product per capita; **** & ** denotes significance at 1% and 5% respectively.*

LM Serial Correlation Test

The LM serial correlation test is a test of autocorrelation which was conducted to verify the presence of autocorrelation of the error term. The null hypothesis is that there is no serial correlation in the model; this can be attained when the p-value of the Obs*R-squared is greater than the 0.05 level of significance, the results is presented and discussed below;

Table 13:Breusch-Godfrey Serial Correlation LM Test

F-statistic	**0.325458**	Prob. F(2,26)	**0.7252**
Obs*R-squared	0.888157	**Prob. Chi-Square(2)**	0.6414

Source: Researcher's Compilations from E-views 9

From the result above, it could be seen that the Obs*R-squared of 0.888157 had a p-value of 0.7252 and as well the F-statistics 0.325458 has a probability value of 0.6414 which are both greater than 0.05. Since the P-values are greater than the 0.05 level of significance, we thus conclude that there is no autocorrelation in the series. Hence, the results obtained can be relied upon for forecasting purposes.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusion and recommendations of the research based on the data collected, analysed and interpreted in the previous section. As a concluding chapter, the focus of this section of the research is to advance the study position on the impact of financial inclusion on economic growth, to identify possible policy options for optimising outcomes and to explore avenues for further research on the subject matter.

5.2 Summary and Conclusion of the Study

The study examined the association between financial inclusion and economic development in Nigeria for the period between 1981 and 2016, employing various techniques of econometric analysis. The major objective of the study was to examine the relationship between economic growth and financial inclusion in Nigeria. This was done by testing the null hypothesis that there was no significant impact existing between them, equally to empirically investigate relationship between income inequality and financial inclusion in Nigeria. The study also verified if there was a significant relationship between economic growth and income inequality in Nigeria for the period under review. The variables used for the empirical analysis in this study are; gross domestic product per capita (GDPP), Number of Commercial Bank Branches (NBB), Loan to Rural Areas (LRA) Commercial Bank Deposits (CBD) and Gini index (GINI).

On the application of advanced econometric techniques: Kwiatkowski-Phillips-Schmidt-Shin (KPSS), Engle-Granger Cointegration Test, and Error Correction Mechanism, the following information was extracted:

i. None of the variables were stationary at zero level using Kwiatkowski-Phillips-Schmidt-Shin unit root test. This means they all have unit roots. However, all the variables were stationary at first difference, which necessitated the application of Engle-Granger cointegration for the test for long-run. The Engle-Granger cointegration test which is used to test the null hypothesis of no long-run relationship revealed that there is a co-integrating equation between financial inclusion variables

and economic growth in Nigeria, implying that there is long-run relationship between the variables employed.

ii. From the relationship between financial inclusion and economic growth in Nigeria, the short and long-run relationship shows that the current values of the variables were not significant.

iii. In the relationship between financial inclusion and income inequality in Nigeria, the short run result revealed that only the past values of loans to rural areas and number of commercial bank branches appears to be significant while at the long-run, the lagged value of gross domestic product per capital, commercial bank deposits and loans to rural areas were found to be statistically significant, Also, loans to rural areas were found to be negatively related to inequality..

iv. In the relationship between economic growth and income inequality in Nigeria, the output from the study shows that economic growth, which was proxied by the gross domestic product per capita, has a positive and significant relationship with income inequality in Nigeria. The findings of this study are in line with those of the study by Nwosa (2019) who found that economic growth contributed positively in increasing income inequality in Nigeria.

The outcome of the relationship between economic growth and income inequality revealed that increase in the growth of the economy results to increased disparity in the level of income inequality in Nigeria

5.2 Limitations of the Study

Although, this research managed to address the objectives of the study as set out in the first chapter, there are certain limitations worth noting. First, the scope of the study was limited to data collated between 1981 and 2016; any data outside this time frame was thus excluded. Second, there were significant data discrepancies in the sources, for instance, data from the Bureau of Statistics tended to differ with that from the Central Bank of Nigeria. For example, the same bulletin for various years' reports indicated different figures for the same series. However, effort was made to reconcile the data used for the study. Third, the key indicators used for the study include the GDP, GINI, CBD, NBB and LRA, while other possible indicators which could explain the relationship amongst the variables were excluded. In spite

of the above noted limitations, concerted effort was made to ensure that the research was up to standard.

5.3 Policy Recommendations of the findings

From the study analysis, the following recommendations ensue:

- The findings revealed that increased loans to rural areas have a positive impact on the economic growth of Nigeria. The implication is that CBN, through its developmental policies, should increase loans to the rural areas by at least 50%. For instance, CBN can, through moral suasion, ask commercial banks to increase their loans to rural areas and serve as collateral to those loans. This will boost economic activities in the rural areas, improve their aggregate demand, and ultimately their standard of living. This outcome is in consonance with the discoveries of Honohan (2008) that high institutional quality and expanded financial inclusion will fundamentally improve the welfare of the poor in developing nations.
- To increase commercial bank branches in the rural areas and create banking habits among the rural dwellers, the government should as a matter of urgency improve infrastructure in the rural areas like good road networks, availability of electricity, and adequate security. It is important to state that commercial banks will not freely invest or open a branch in a place where the security of lives and property are not secured, or where infrastructural development is low or poor, among other reasons.
- To reduce the income inequality gap which was identified as one of the major challenge of economic growth and development in the country, it is important that the government engages more workforce from the rural areas and increase the minimum wage to increase income in the rural areas, as well as increasing their aggregate demand. It is important to note that no matter how many commercial banks exist in the rural areas, if there are no productive economic activities ongoing in the rural areas, even the banks will be forced out of the rural area markets thereby halting the plan of ensuring financial inclusion of all.
- Government should undertake massive financial orientation to enlighten the people and enable them to benefit from the financial system. High quality financial activities which are applicable, suitable and moderate for the whole adult populace, particularly the low-income agile poor, ought to be put into place in a convenient and consistent manner that makes it accessible.

5.4 Avenues for the Future

While the research has contributed to closing the gap by explaining the impact of financial inclusion on economic growth through a new set of proxy indicators, there are unaddressed gaps indicated by the findings of the research which future researchers need to consider. It is imperative to assess the factors responsible for the lack of short-term relationship between the indicators of financial inclusiveness and economic growth in Nigeria. Also, future researchers need to adopt policy specific research which will focus on assessing a specific policy of financial inclusiveness by the government to find out its impact on an inclusive financial system in the country. This will help to determine which policies are more effective and which are not, and this will further contribute to shaping the policy environment. More so, future studies need to look at the impact of microfinance institutions on enhancing financial inclusion, including the extent to which informal sources such as cooperative societies serve as third party agents in boosting financial inclusiveness among excluded population.

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APPENDIX

Data for Regression Analysis

YEAR	CBD (₦, BILLIONS)	NBB	LRA (₦, BILLIONS)	GDPP (₦, BILLIONS)	GNI (%)
1981	0.7	869	0.0326	0.68535	34.50
1982	1.1	991	0.0359	0.69262	34.50
1983	0.8	1108	0.0442	0.72944	34.50
1984	0.6	1249	0.0582	0.78930	34.50
1985	0.3	1297	0.0119	0.87955	38.70
1986	1.0	1367	0.3736	0.87287	38.70
1987	1.6	1483	0.4928	1.27027	38.70
1988	1.5	1665	0.6599	1.63561	38.70
1989	1.1	1855	3.7211	2.46059	38.70
1990	2.1	1939	4.7308	2.95529	38.70
1991	4.5	2023	5.9621	3.36727	38.70
1992	31.6	2275	1.8953	5.54218	45.00
1993	42.0	2358	10.9104	6.96020	45.00
1994	42.1	2403	1.6022	8.97490	45.00
1995	53.8	2368	8.6593	18.59584	45.00
1996	52.5	2407	4.4112	25.27737	51.90
1997	45.3	2407	11.1586	25.60391	51.90
1998	44.5	2185	11.8527	24.19889	51.90
1999	74.9	2185	7.4981	27.75766	51.90
2000	120.4	2193	11.1503	38.55541	51.90
2001	142.4	2193	12.3410	39.13113	51.90
2002	128.3	3010	8.9422	55.40052	51.90
2003	186.4	3247	11.2519	66.24595	40.10
2004	186.5	3492	34.1185	86.21974	40.10
2005	120.4	869	16.1055	106.05570	40.10
2006	195.6	991	24.2746	131.19170	40.10
2007	234.5	1108	27.2635	143.02240	40.10
2008	393.8	1249	46.5215	164.05500	40.10
2009	472.3	1297	15.5905	163.44370	43.00
2010	467.6	1367	16.5560	349.79170	43.00

2011	1218.0	1483	19.9803	391.17450	43.00
2012	2072.8	1665	22.5800	433.95580	43.00
2013	3313.8	1855	739.9233	471.45610	43.00
2014	4133.0	1939	868.9478	510.80540	43.00
2015	4144.4	1984	36.1922	525.31640	43.00
2016	3672.6	2032	112.4325	551.51140	43.00

Sources: **CENTRAL BANK OF NIGERIA'S STATISTICAL BULLETIN, VOL 27 (2016*)***

REGRESSION RESULTS

DESCRIPTIVE STATISTICS

	GDPP	GNI	CBD	NBB	LRA
Mean	121.8495	42.68889	600.1333	1844.667	58.28563
Median	26.68079	43.00000	64.35000	1897.000	11.03035
Maximum	551.5114	51.90000	4144.400	3492.000	868.9478
Minimum	0.685350	34.50000	0.300000	869.0000	0.011900
Std. Dev.	178.5772	5.440261	1223.419	650.7656	185.2914
Skewness	1.417000	0.499459	2.162152	0.515397	3.851922
Kurtosis	3.446712	2.366359	6.089770	2.891477	16.15487
Jarque-Bera	12.34666	2.099009	42.36942	1.611470	348.5997
Probability	0.002084	0.350111	0.000000	0.446759	0.000000
Sum	4386.582	1536.800	21604.80	66408.00	2098.282
Sum Sq. Dev.	1116144.	1035.876	52386431	14822356	1201651.
Observations	36	36	36	36	36

CORRELATION

	CBD	NBB	LRA
CBD	1.000000	0.024832	0.690721
NBB	0.024832	1.000000	0.029018
LRA	0.690721	0.029018	1.000000

UNIT ROOT TESTS

GDPP @ LEVEL

Null Hypothesis: lnGDPP is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.137682
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.079408
HAC corrected variance (Bartlett kernel)	0.228360

KPSS Test Equation
Dependent Variable:lnGDPP
Method: Least Squares
Date: 09/06/19 Time: 11:08
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.689361	0.094675	-7.281321	0.0000
@TREND("1981")	0.216650	0.004652	46.57032	0.0000

R-squared	0.984565	Mean dependent var	3.102010
Adjusted R-squared	0.984111	S.D. dependent var	2.300369
S.E. of regression	0.289964	Akaike info criterion	0.415835
Sum squared resid	2.858697	Schwarz criterion	0.503808
Log likelihood	-5.485031	Hannan-Quinn criter.	0.446540
F-statistic	2168.795	Durbin-Watson stat	0.441504
Prob(F-statistic)	0.000000		

GDPP @ 1ST DIFFERNCE

Null Hypothesis: D(lnGDPP) is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.109490
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.035223
HAC corrected variance (Bartlett kernel)	0.036372

KPSS Test Equation
Dependent Variable: D(lnGDPP)
Method: Least Squares
Date: 09/06/19 Time: 11:13
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.215587	0.066767	3.228952	0.0028
@TREND("1981")	-0.001357	0.003235	-0.419563	0.6775

R-squared	0.005306	Mean dependent var	0.191157
Adjusted R-squared	-0.024836	S.D. dependent var	0.190925
S.E. of regression	0.193281	Akaike info criterion	-0.393894
Sum squared resid	1.232804	Schwarz criterion	-0.305017
Log likelihood	8.893142	Hannan-Quinn criter.	-0.363214
F-statistic	0.176033	Durbin-Watson stat	1.889536
Prob(F-statistic)	0.677524		

GNI @ LEVEL

Null Hypothesis: lnGINI is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.163353
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.012759
HAC corrected variance (Bartlett kernel)	0.047769

KPSS Test Equation
Dependent Variable: lnGINI
Method: Least Squares
Date: 09/06/19 Time: 11:15
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.662199	0.037950	96.50093	0.0000
@TREND("1981")	0.004802	0.001865	2.575160	0.0145

R-squared	0.163210	Mean dependent var	3.746235
Adjusted R-squared	0.138598	S.D. dependent var	0.125232
S.E. of regression	0.116230	Akaike info criterion	-1.412538
Sum squared resid	0.459320	Schwarz criterion	-1.324565
Log likelihood	27.42569	Hannan-Quinn criter.	-1.381833
F-statistic	6.631447	Durbin-Watson stat	0.275184
Prob(F-statistic)	0.014542		

GNI @ 1ST DIFFERENCE

Null Hypothesis: D(lnGINI) is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.073823
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.003515
HAC corrected variance (Bartlett kernel)	0.003224

KPSS Test Equation
Dependent Variable: D(lnGINI)
Method: Least Squares
Date: 09/06/19 Time: 11:15
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.023564	0.021092	1.117207	0.2720
@TREND("1981")	-0.000960	0.001022	-0.938961	0.3546

R-squared	0.026021	Mean dependent var	0.006293

Adjusted R-squared	-0.003493	S.D. dependent var	0.060953
S.E. of regression	0.061059	Akaike info criterion	-2.698491
Sum squared resid	0.123033	Schwarz criterion	-2.609614
Log likelihood	49.22359	Hannan-Quinn criter.	-2.667811
F-statistic	0.881647	Durbin-Watson stat	2.076216
Prob(F-statistic)	0.354573		

CBD @ LEVEL

Null Hypothesis: lnCBD is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.193070
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.450685
HAC corrected variance (Bartlett kernel)	1.144364

KPSS Test Equation
Dependent Variable: lnCBD
Method: Least Squares
Date: 09/06/19 Time: 11:16
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.805011	0.225549	-3.569119	0.0011
@TREND("1981")	0.265679	0.011083	23.97200	0.0000

R-squared	0.944139	Mean dependent var	3.844371
Adjusted R-squared	0.942496	S.D. dependent var	2.880717
S.E. of regression	0.690794	Akaike info criterion	2.152002
Sum squared resid	16.22467	Schwarz criterion	2.239975
Log likelihood	-36.73603	Hannan-Quinn criter.	2.182707
F-statistic	574.6568	Durbin-Watson stat	0.520201
Prob(F-statistic)	0.000000		

CBD @ 1st DIFFERENCE

Null Hypothesis: D(lnCBD) is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.096590
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.240637
HAC corrected variance (Bartlett kernel)	0.155137

KPSS Test Equation
Dependent Variable: D(lnCBD)
Method: Least Squares
Date: 09/06/19 Time: 11:56
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.229909	0.174514	1.317427	0.1968
@TREND("1981")	0.000823	0.008455	0.097342	0.9230

R-squared	0.000287	Mean dependent var	0.244724
Adjusted R-squared	-0.030007	S.D. dependent var	0.497781
S.E. of regression	0.505194	Akaike info criterion	1.527698
Sum squared resid	8.422305	Schwarz criterion	1.616575
Log likelihood	-24.73472	Hannan-Quinn criter.	1.558379
F-statistic	0.009475	Durbin-Watson stat	1.670336
Prob(F-statistic)	0.923044		

LRA @ LEVEL

Null Hypothesis: lnLRA is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.143610
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	1.445928
HAC corrected variance (Bartlett kernel)	3.265025

KPSS Test Equation
Dependent Variable: lnLRA
Method: Least Squares
Date: 09/06/19 Time: 11:17
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.204249	0.403996	-5.456114	0.0000
@TREND("1981")	0.219566	0.019851	11.06052	0.0000

R-squared	0.782518	Mean dependent var	1.638155
Adjusted R-squared	0.776122	S.D. dependent var	2.615045

S.E. of regression	1.237329	Akaike info criterion	3.317739
Sum squared resid	52.05339	Schwarz criterion	3.405713
Log likelihood	-57.71931	Hannan-Quinn criter.	3.348444
F-statistic	122.3350	Durbin-Watson stat	1.071217
Prob(F-statistic)	0.000000		

LRA @ 1ST DIFFERENCE

Null Hypothesis: D(lnLRA) is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 10 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.100625
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	1.582844
HAC corrected variance (Bartlett kernel)	0.235708

KPSS Test Equation
Dependent Variable: D(lnLRA)
Method: Least Squares
Date: 09/06/19 Time: 11:20
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.412199	0.447576	0.920958	0.3638
@TREND("1981")	-0.009970	0.021685	-0.459766	0.6487

R-squared	0.006365	Mean dependent var	0.232737
Adjusted R-squared	-0.023745	S.D. dependent var	1.280561
S.E. of regression	1.295675	Akaike info criterion	3.411386
Sum squared resid	55.39955	Schwarz criterion	3.500263
Log likelihood	-57.69926	Hannan-Quinn criter.	3.442067
F-statistic	0.211385	Durbin-Watson stat	2.750984
Prob(F-statistic)	0.648699		

NBB @ LEVEL

Null Hypothesis: lnNBB is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.149038
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.123822
HAC corrected variance (Bartlett kernel)	0.370180

KPSS Test Equation
Dependent Variable: lnNBB
Method: Least Squares
Date: 09/06/19 Time: 11:22
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.343318	0.118223	62.11403	0.0000
@TREND("1981")	0.006543	0.005809	1.126255	0.2679

R-squared	0.035966	Mean dependent var	7.457813
Adjusted R-squared	0.007612	S.D. dependent var	0.363471
S.E. of regression	0.362085	Akaike info criterion	0.860077
Sum squared resid	4.457589	Schwarz criterion	0.948051
Log likelihood	-13.48139	Hannan-Quinn criter.	0.890782
F-statistic	1.268451	Durbin-Watson stat	0.499885
Prob(F-statistic)	0.267944		

NBB @ 1ST DIFFERENCE

Null Hypothesis: D(lnNBB) is stationary
Exogenous: Constant, Linear Trend
Bandwidth: 14 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.073303
Asymptotic critical values*:	1% level	0.216000
	5% level	0.146000
	10% level	0.119000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.062618
HAC corrected variance (Bartlett kernel)	0.021419

KPSS Test Equation
Dependent Variable: D(lnNBB)
Method: Least Squares
Date: 09/06/19 Time: 11:23
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.072507	0.089022	0.814484	0.4212
@TREND("1981")	-0.002680	0.004313	-0.621327	0.5387

R-squared	0.011563	Mean dependent var	0.024270
Adjusted R-squared	-0.018390	S.D. dependent var	0.255371
S.E. of regression	0.257708	Akaike info criterion	0.181467
Sum squared resid	2.191644	Schwarz criterion	0.270344

Log likelihood	-1.175664	Hannan-Quinn criter.	0.212147
F-statistic	0.386047	Durbin-Watson stat	2.134790
Prob(F-statistic)	0.538653		

ENGLE GRANGER COINTEGRATION TEST

Null Hypothesis: ECT is stationary
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.172085
Asymptotic critical values*:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.177205
HAC corrected variance (Bartlett kernel)	0.266142

KPSS Test Equation
Dependent Variable: ECT
Method: Least Squares
Date: 09/06/19 Time: 11:39
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.99E-16	0.071155	4.20E-15	1.0000

R-squared	0.000000	Mean dependent var	2.73E-16
Adjusted R-squared	0.000000	S.D. dependent var	0.426928
S.E. of regression	0.426928	Akaike info criterion	1.162984
Sum squared resid	6.379375	Schwarz criterion	1.206971
Log likelihood	-19.93371	Hannan-Quinn criter.	1.178336
Durbin-Watson stat	0.977892		

SHORTRUN EQUATION OF GDPP

Dependent Variable: LGDPP
Method: Least Squares
Date: 10/20/19 Time: 12:20
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.058281	1.077411	-0.054094	0.9573
D(LCBD)	0.081314	0.004875	8.989210	0.0000

D(LNBB)	0.270712	0.078946	3.429078	0.0130
D(LLRA)	0.432648	0.141693	3.053418	0.0011
D(LGDPP(-1))	0.124612	0.025432	4.899811	0.0001
D(LCBD(-1))	-0.485598	0.061388	-7.910308	0.0000
D(LNBB(-1))	0.081314	0.004875	8.989210	0.0000
D(LLRA(-1))	0.270712	0.078946	3.429078	0.0130
ECM(-1)	0.432648	0.141693	3.053418	0.0011

R-squared	0.993716	Mean dependent var	3.201434
Adjusted R-squared	0.991783	S.D. dependent var	2.254109
S.E. of regression	0.204331	Akaike info criterion	-0.121119
Sum squared resid	1.085528	Schwarz criterion	0.278828
Log likelihood	11.11958	Hannan-Quinn criter.	0.016943
F-statistic	513.9648	Durbin-Watson stat	1.957154
Prob(F-statistic)	0.000000		

AUTOCORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.038184	Prob. F(2,24)	0.9626
Obs*R-squared	0.111018	Prob. Chi-Square(2)	0.9460

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 10/20/19 Time: 12:23
Sample: 1982 2016
Included observations: 35
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.025148	1.143900	-0.021985	0.9826
D(LCBD)	-0.002909	0.087791	-0.033131	0.9738
D(LNBB)	0.007799	0.192433	0.040531	0.9680
D(LLRA)	0.000719	0.037183	0.019335	0.9847
D(LGDPP(-1))	0.006385	0.107987	0.059124	0.9533
D(LCBD(-1))	-0.002305	0.094832	-0.024302	0.9808
D(LNBB(-1))	-0.004437	0.171608	-0.025853	0.9796
D(LLRA(-1))	5.25E-05	0.036091	0.001456	0.9989
ECM(-1)	-0.007404	0.453630	-0.016321	0.9871
RESID(-1)	-0.006591	0.228025	-0.028904	0.9772
RESID(-2)	-0.060523	0.219013	-0.276346	0.7846

R-squared	0.003172	Mean dependent var	-4.55E-16
Adjusted R-squared	-0.412173	S.D. dependent var	0.178682
S.E. of regression	0.212337	Akaike info criterion	-0.010010
Sum squared resid	1.082085	Schwarz criterion	0.478814
Log likelihood	11.17517	Hannan-Quinn criter.	0.158732
F-statistic	0.007637	Durbin-Watson stat	1.963284
Prob(F-statistic)	1.000000		

SHORTRUN EQUATION OF GINI

Dependent Variable: LGNI
Method: Least Squares

Date: 10/20/19 Time: 12:39
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.505304	0.270169	9.273090	0.0000
D(LCBD)	0.013343	0.024495	0.544706	0.5904
D(LLRA)	-0.011732	0.010343	-1.134344	0.2666
D(LNBB)	0.007383	0.051110	0.144453	0.8862
D(LCBD(-1))	-0.000222	0.022592	-0.009828	0.9922
D(LLRA(-1))	-0.145963	0.060249	-2.422663	0.0293
D(LNBB(-1))	0.153236	0.049548	3.092669	0.0046
ECM(-1)	-0.832531	0.130619	6.373721	0.0000

R-squared	0.794756	Mean dependent var	3.752100
Adjusted R-squared	0.741545	S.D. dependent var	0.121941
S.E. of regression	0.061993	Akaike info criterion	-2.525963
Sum squared resid	0.103764	Schwarz criterion	-2.170454
Log likelihood	52.20434	Hannan-Quinn criter.	-2.403241
F-statistic	14.93583	Durbin-Watson stat	1.861773
Prob(F-statistic)	0.000000		

AUTO CORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.325458	Prob. F(2,25)	0.7252
Obs*R-squared	0.888157	Prob. Chi-Square(2)	0.6414

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 10/20/19 Time: 12:41
Sample: 1982 2016
Included observations: 35
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.080240	0.294486	-0.272476	0.7875
D(LCBD)	-0.001168	0.025174	-0.046402	0.9634
D(LLRA)	-0.001897	0.010894	-0.174168	0.8631
D(LNBB)	0.040616	0.072808	0.557861	0.5819
D(LCBD(-1))	0.001409	0.023251	0.060621	0.9521
D(LLRA(-1))	0.001702	0.010857	0.156753	0.8767
D(LNBB(-1))	-0.029939	0.063070	-0.474691	0.6391
ECM(-1)	0.010882	0.214834	0.050654	0.9600
RESID(-1)	0.076294	0.288635	0.264328	0.7937
RESID(-2)	-0.232258	0.342739	-0.677654	0.5042

R-squared	0.025376	Mean dependent var	-5.13E-16
Adjusted R-squared	-0.325489	S.D. dependent var	0.055244
S.E. of regression	0.063602	Akaike info criterion	-2.437380
Sum squared resid	0.101131	Schwarz criterion	-1.992995
Log likelihood	52.65415	Hannan-Quinn criter.	-2.283979
F-statistic	0.072324	Durbin-Watson stat	1.912502

Prob(F-statistic)	0.999848

LONGRUN EQUATION OF GDPP

Dependent Variable: LGDPP
Method: Least Squares
Date: 10/20/19 Time: 12:45
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010166	1.032888	0.009842	0.9922
LCBD	0.051650	0.082291	0.627649	0.5355
LLRA	0.018093	0.035066	0.515978	0.6101
LNBB	-0.005136	0.164816	-0.031161	0.9754
LGDPP(-1)	0.877105	0.092137	9.519529	0.0000

R-squared	0.993696	Mean dependent var	3.201434
Adjusted R-squared	0.992062	S.D. dependent var	2.254109
S.E. of regression	0.200831	Akaike info criterion	-0.175075
Sum squared resid	1.088993	Schwarz criterion	0.180434
Log likelihood	11.06381	Hannan-Quinn criter.	-0.052353
F-statistic	608.0271	Durbin-Watson stat	1.959192
Prob(F-statistic)	0.000000		

AUTOCORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.037584	Prob. F(2,25)	0.9632
Obs*R-squared	0.104919	Prob. Chi-Square(2)	0.9489

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 10/20/19 Time: 12:49
Sample: 1982 2016
Included observations: 35
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009493	1.088569	-0.008721	0.9931
LCBD	-0.002615	0.086107	-0.030368	0.9760
LLRA	0.000804	0.036507	0.022013	0.9826
LNBB	0.005421	0.172174	0.031485	0.9751
LGDPP(-1)	0.005239	0.103724	0.050514	0.9601
LCBD(-1)	-0.001881	0.092399	-0.020354	0.9839
LLRA(-1)	0.000199	0.035405	0.005608	0.9956
LNBB(-1)	-0.004117	0.163326	-0.025208	0.9801
RESID(-1)	-0.005017	0.222493	-0.022547	0.9822
RESID(-2)	-0.058355	0.212862	-0.274145	0.7862

R-squared	0.002998	Mean dependent var	6.15E-16
Adjusted R-squared	-0.355923	S.D. dependent var	0.178967
S.E. of regression	0.208397	Akaike info criterion	-0.063791
Sum squared resid	1.085729	Schwarz criterion	0.380594

Log likelihood	11.11634	Hannan-Quinn criter.	0.089611
F-statistic	0.008352	Durbin-Watson stat	1.967253
Prob(F-statistic)	1.000000		

LONGRUN EQUATION OF GINI

Dependent Variable: LGNI
Method: Least Squares
Date: 10/20/19 Time: 12:51
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.584945	0.370258	1.579832	0.1258
LCBD	0.013343	0.024495	0.544706	0.5904
LLRA	-0.011732	0.010343	-1.134344	0.2666
LNBB	0.007383	0.051110	0.144453	0.8862
LGNI(-1)	0.832531	0.130619	6.373721	0.0000

R-squared	0.794756	Mean dependent var	3.752100
Adjusted R-squared	0.741545	S.D. dependent var	0.121941
S.E. of regression	0.061993	Akaike info criterion	-2.525963
Sum squared resid	0.103764	Schwarz criterion	-2.170454
Log likelihood	52.20434	Hannan-Quinn criter.	-2.403241
F-statistic	14.93583	Durbin-Watson stat	1.861773
Prob(F-statistic)	0.000000		

AUTOCORRELATION

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.325458	Prob. F(2,25)	0.7252
Obs*R-squared	0.888157	Prob. Chi-Square(2)	0.6414

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 10/20/19 Time: 12:56
Sample: 1982 2016
Included observations: 35
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.105341	0.556880	-0.189164	0.8515
LCBD	-0.001168	0.025174	-0.046402	0.9634
LLRA	-0.001897	0.010894	-0.174168	0.8631
LNBB	0.040616	0.072808	0.557861	0.5819
LGNI(-1)	0.010882	0.214834	0.050654	0.9600
LCBD(-1)	0.001216	0.023533	0.051686	0.9592
LLRA(-1)	0.001741	0.010957	0.158882	0.8750
LNBB(-1)	-0.031948	0.072894	-0.438287	0.6649
RESID(-1)	0.076294	0.288635	0.264328	0.7937
RESID(-2)	-0.232258	0.342739	-0.677654	0.5042

R-squared	0.025376	Mean dependent var	-1.03E-15
Adjusted R-squared	-0.325489	S.D. dependent var	0.055244

S.E. of regression	0.063602	Akaike info criterion	-2.437380
Sum squared resid	0.101131	Schwarz criterion	-1.992995
Log likelihood	52.65415	Hannan-Quinn criter.	-2.283979
F-statistic	0.072324	Durbin-Watson stat	1.912502
Prob(F-statistic)	0.999848		

GDPP and GNI

Dependent Variable: LGNI
Method: Least Squares
Date: 10/20/19 Time: 12:57
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.589050	0.335921	1.753540	0.0894
LGDPP	0.305728	0.083371	3.667292	0.0082
LGDPP(-1)	-0.039874	0.053953	-0.739066	0.4654
LGNI(-1)	0.842365	0.091773	9.178808	0.0000

R-squared	0.779899	Mean dependent var	3.752100
Adjusted R-squared	0.758599	S.D. dependent var	0.121941
S.E. of regression	0.059913	Akaike info criterion	-2.684648
Sum squared resid	0.111275	Schwarz criterion	-2.506894
Log likelihood	50.98134	Hannan-Quinn criter.	-2.623287
F-statistic	36.61488	Durbin-Watson stat	1.933070
Prob(F-statistic)	0.000000		