

**IMPACT OF HUMAN CAPITAL DEVELOPMENT ON ECONOMIC GROWTH
IN NIGERIA.**

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BENIN CITY.**

OCTOBER, 2023.

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**A PROJECT TO BE SUBMITTED TO THE DEPARTMENT OF ECONOMICS
UNIVERSITY OF BENIN, BENIN CITY**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
BACHELOR OF SCIENCE (B.Sc.) HONOURS IN ECONOMICS**

OCTOBER, 2023.

DECLARATION

I, **INEGBENOSE DAVID ODIANOSEN**, do hereby declare that this project work is entirely my own work and composition. The work contained in this project has not been submitted in candidature of any degree and is not concurrently being submitted for any other degree.

Acknowledgements have been accorded to whom it is due with respect to all citations and references used in the course of this project.

INEGBENOSE DAVID ODIANOSEN
(PROJECT STUDENT)

DATE: _____

CERTIFICATION

We the undersigned persons certify that this research project work titled “The impact of Human Capital Development on economic Growth in Nigeria” carried out by Inegbenose David Odianoson with matriculation number SSC1809442 of the Department of Economics and Statistics, Faculty of Social Sciences, University of Benin, Benin City is approved and considered adequate in the scope and content for partial fulfilment of the requirement for the award of Bachelor of science (B.Sc.) Degree in Economics and Statistics.

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DEDICATION

This project work is dedicated to God Almighty for His infinite mercy towards me, for by His grace this project work became a reality.

ACKNOWLEDGEMENT

This project work could not have been a success without the support of the following persons. Firstly, I want to say a very big thank you to my project supervisor Mr. Dading Festus Isuwa for the rigorous supervision, corrections and suggestions in the course of carrying out this research. Your supervision was indeed the brain behind this successful work. Thank you for being so accommodating. God Bless You Sir!

I would like to express my heartfelt gratitude to my dear mama Mrs. Cecilia Inegbenose for her unwavering support, encouragement, and belief in my abilities. Her valuable insights and constant motivation play a pivotal role in my life.

My warm regard to all lecturers and staffs of the Department of Economics, Faculty of Social Sciences, University of Benin, Benin City for the opportunity offered to me to learn at the feet of pace-setters. special thanks to my Dr. S.O Igbinedion the HOD OF Economics Department

Also, my bundle of gratitude goes to all my siblings Mr. Austin, Mr. innocent, Mr. Jeffery Mr Fred, Mr. Alex Inegbenose and their wives for supporting me financially and believing in me. God bless you all.

I am also deeply thankful to my dearest friends Omorogbe Osagumwenro, Marvelous Osaretin, Agbawa God-Do-Well, Chinye Samuel and Ik Numo for their invaluable assistance, constructive feedback, and willingness to dedicate their time and effort to help me refine and improve throughout my stay in school.

Finally, to my wonderful course mates and friends whose names I cannot exhaust, I say a ‘big thank you’ to you all for being there for me. Specially, my appreciation goes to Austin Agbonze, Confidence, Odeh Newton, Edochie Daniel, Okafor Laura, Albert

ABSTRACT

The study was undertaken to examine the impact of Human capital development on economic growth in Nigeria from 1981 to 2021. The main objective of the study is to examine the impact of human capital development has on the growth dynamics of the Nigerian economy. The study adopted the autoregressive distributive lag (ARDL), unit root and co-integration using EVIEWS 9 to analyse among the variables using time series data on government expenditure on education (GEE), government expenditure on health (GEH), population growth (POPGR) and government expenditure on social community services (GESCS) as proxies for human capital development, and gross domestic product (GDP) as proxy for economic growth. The results reveal that increases in human capital increases economic growth in Nigeria. and health sectors of the economy. The study recommend that the government and policy makers should increase its total expenditure on education, ensure sufficient budgetary allocation on health expenditure, and ensure a standard is set across all educational institutions in the country so that proper human capital required for any individual to become productive and economic growth is enhanced.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The most valuable assets in both developed and developing countries, according to Hadir and Lahrech (2015) are humans. To achieve development, it therefore becomes imperative for these assets to be managed properly and effectively used. One way this can be done is by ensuring adequate investment is made in human capital. Research has shown that the most significant and potential source of increased productivity and economic growth is people. Technology and equipment are creations of human intellect, can only be productively utilized by individuals. The success of any productive program depends on human innovative ideas and creativity.

Human Capital can be described as the collective skills, knowledge, and intangible assets of individuals that can be used to create economic value. Human capital according to Schultz (1993) can also be described as a tool for enhancing competitive advantage since it involves the process of training, knowledge acquisition (education), initiatives and others which are all geared towards skill acquisition.

Economist often use the term human capital for education, health and other human capacities that can enhance productivity (Todaro and Smith, 2003). Thus, quality of human capital connotes the state of education, health and other human capabilities that

can raise productivity when increased. Studies in the United States of America have shown that high school and college education lead to improvement in earnings even after taking into consideration the direct costs (study fees, cost of purchasing books and other materials) and indirect costs (foregone income from being employed) during schooling. Studies in several other countries with different cultural and economic systems also showed the same outcome that income obtained by educated people will always be above the average income level.

Human capital development tends to improve the quality and productivity of labour which in turn, leads to economic growth. Sadly, development planners have failed to make investment in human capital development a central focus of development strategies. It is now largely and generally accepted that investment in human capital promotes economic growth. However, a country's economic capacity also determines its ability to invest in human capital, so that "a good educational system may be the flower of economic development. Many developed countries according to International Bank for Reconstruction and Development and World Health Organization have employed their human capital to achieve significant progress in terms of level of productivity and technological advancement. In spite of significant achievements attained by developed countries by employing the human capital factor, many developing have not realized that human capital can be used as a major derive to facilitate economic growth.

Many developing countries including those of Sub-Saharan Africa and West African are yet to reach their maximum capacity in spending on the component of human capital in boosting their economic growth. The lack of government spending on human capital in these Sub-Saharan countries have contributed to numerous challenges ranging from low quality of educational delivery which consequently result to poorly equipped graduates to poor infrastructures in healthcare (Ragan & Lipsey, 2005). Developing countries generally are described by their low levels of literacy, low income, poor health care system, gender inequality, and low standard of living (Todaro and Smith, 2011)

The impact of human capital in economic growth cannot be overemphasized. Thus, the need for adequately appropriate manpower development and accumulation is a prerequisite for modern economic growth in both developed and developing countries. It has been observed that the development of human capital is also a fundamental precondition in the economic, political and socio-cultural transformation of a country. Therefore, human capital is considered as the most valuable asset for a country's socio-economic and political transformation and this needs to be mobilized, developed and empowered to participate fully in all socio-economic activities.

1.2 STATEMENT OF RESEARCH PROBLEM

In spite of all the abundant resources Nigeria has been endowed with, as one of Africa's biggest economies, Nigeria has been faced with the problem of human capital development over the years and has failed to realize her optimum development potential

in terms of sustainable human capital development or people-oriented development like many other prosperous economies of the world that have adopted a similar strategy to boost their economic growth. A large percentage of Nigeria's population estimated to be 182.2 million according to World Bank, (2016) remain at rather low levels of literacy and as a result of insufficient access to education and health care. Health and education are fundamental aspect of human capital development of a nation and they are also of paramount importance to the economy of the country. It is usually said that a healthy nation is a wealthy nation. The health sector in developing countries has witnessed neglect in the last three decades. Though, this neglect has become glaring especially in Sub-Sahara Africa where there has been outbreak of diseases such as Lassa fever, Ebola and the recent COVID 19 pandemic that affected almost all countries of the world. The outbreak of these diseases in and outside of African continent and the need to urgently curtail them has made it glaring that the health facilities in Africa are overwhelmed. This is not unconnected to the reason why African leaders usually go abroad for medical treatment and also send their children to Europe for quality education. In order to promote economic growth, adequate allocation of funds by the government should be directed towards factors capable of eradicating the persistent challenge of high unemployment rate, inadequate education, poor health and so on. These include education, healthcare, training, skills and other related factors.

Against this background, the current study seeks to examine the impact of human capital development using the ordinary least square method (OLS) because the OLS possesses the BLUE properties that is an estimator that is unbiased and has the minimum.

The study uses two proxies: government health expenditure, government expenditure on social and community services, population growth and government educational expenditure, all expressed as a percentage of gross domestic product (GDP). However, the economic growth rate is appropriated by the real GDP growth rate.

1.3 Research Objectives

The major objective of the study is to examine the impact of government sectoral expenditure on economic growth in Nigeria.

The specific objectives are:

- a. To ascertain the impact of government health expenditure on economic growth in Nigeria.
- b. To investigate the impact of government educational expenditure on economic growth in Nigeria.

1.4 RESEARCH QUESTIONS

- a. What is the impact of government health expenditure on economic growth in Nigeria?

b. What is the impact of government educational expenditure on economic growth in Nigeria?

1.5 HYPOTHESIS TESTING

H0: Human capital development has no impact on economic growth in Nigeria.

H1: Human capital development has an impact on economic growth in Nigeria.

1.6 SIGNIFICANCE OF THE STUDY

The significance of studying the impact of human capital development cannot be over emphasized. This is because human capital development plays a crucial role in fostering the growth of any economy. Worthy to note that by investing in human capital, countries can improve their economic growth, productivity, innovation, competitiveness, quality of life, and reduce poverty.

Firstly, a study of this nature will help to shed light on the contribution of the human capital development to the country's economic development. Human capital development plays a vital role in terms of education and training as well as the general wellbeing of people.

Furthermore, this study will help to identify the challenges and bottlenecks that hinder the development of human capital. These challenges may include Inadequate funding for education and training, poor quality education and training as well as Inadequate funding of health care. By identifying these challenges, policymakers and stakeholders can devise

strategies to address them, thus creating an enabling environment for the growth and development.

Lastly, the study will be of immense benefit to the government and its agencies as it would assist them in providing deep insight on the level of human capital development in Nigeria. These benefits include:

1. **Economic Growth:** A skilled and educated workforce leads to increased productivity and innovation, which drives economic growth. Governments that invest in education, vocational training, and healthcare can create a more capable and productive workforce that contributes to the country's economic development.
2. **Reduced Poverty and Inequality:** Improving human capital development can help reduce poverty and inequality by providing individuals with the skills and opportunities to access better jobs and income-generating activities. This can lead to a more inclusive society and a decreased reliance on social welfare programs.
3. **Increased Tax Revenue:** A more skilled and employed population typically leads to higher incomes, which in turn generates increased tax revenue for the government. These additional funds can be used to finance public services and infrastructure.
4. **Enhanced Global Competitiveness:** A country with a highly skilled workforce is more likely to be competitive in the global marketplace. Companies are attracted to locations

with a well-educated labour force, leading to increased foreign direct investment and economic development.

5. **Better Public Health Outcomes:** Investments in healthcare and public health initiatives improve the overall health of the population. A healthier workforce is more productive, reduces the burden on healthcare systems, and contributes to economic growth.
6. **Social Stability:** Education and skills development can empower individuals and foster social cohesion. A more educated population is generally more engaged in democratic processes, leading to greater social stability and reduced social unrest.
7. **Long-term Development:** Human capital development focuses on sustainable and long-term growth by investing in education, research, and training. This lays the foundation for continuous development and progress.
8. **Adaptation to Technological Changes:** As technology rapidly evolves, a skilled workforce is better equipped to adapt and contribute to technological advancements, positioning the country for success in the digital age.

1.7 SCOPES OF THE STUDY

The study's aim is to investigate the relationship between human capital development and economic growth in Nigeria and how government policies impact on this relationship.

The study makes use of the following selected variables; gross domestic product [GDP],

The reason for the choice of this selected variable is that they proxy or reflect the factors of human capital development. The study time frame covers from the period from 1981 - 2021.

1.8 LIMITATIONS OF THE STUDY

It is inevitable that certain problems will likely be encountered in the course of carrying out the research work. Time was certainly a constraint to this study because the time within which it is to be submitted was not enough. Obtaining secondary data for the purpose of analysis was another constraint because the data were had get from the institutions who issue them. In as much as the sources are very hard to come by, the research was planned in such a way that, time was allocated to each section to enable the researcher fulfil each task within the timeframe. For the problem of obtaining data relevant data base of relevant institutions was consulted for secondary data extraction i.e., CBN, NBS etc.

To address these limitations, the study may use appropriate statistical methods, ensure data accuracy and reliability, and consider alternative explanations for the findings. The study may also acknowledge these limitations in the interpretation of the results and make recommendations for future research.

1.9 ORGANIZATION OF THE STUDY

This study spreads across five chapters. The main theme of the research is given in chapter one which is the introduction part of the study. The statement of the problem, objectives of the study, research questions and hypotheses, significance of the study, scope and delimitation of the study are included. The impact of human capital development on the economic growth of Nigeria is reviewed in chapter two, chapter two explores the conceptual issues for this study. Chapter three includes sources of data, method of data analysis and model specification. Chapter four presents the results with proper analysis and the last chapter summarises the findings, concludes and articulates some policy recommendations.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Framework

The term "human capital" refers to the competencies and proficiencies possessed by individuals within a workforce. Meanwhile, "human capital development" denotes the procedure of obtaining and augmenting the quantity of skilled individuals who possess the necessary education and experience crucial for fostering economic growth through innovation and enhanced productivity within a nation. The primary source of human capital formation in Nigeria is predominantly attributed to the education sector. The allocation of public resources by the government towards the education sector involves the provision of funds for various educational purposes, including the procurement of

books, instructional materials, and other necessary resources that contribute to the development of human capital. Therefore, the contribution to the education sector consists of the amount of time dedicated to education by individuals and the financial investments made by the government. The economy is comprised of a multitude of successive cohorts of humans that do not overlap. Therefore, the availability of human capital is contingent upon the way it is developed and the benefits it yields for individuals. The primary factors contributing to the development of human capital include an individual's inherent ability and the amount of time dedicated to educational pursuits.

From an individual perspective, the amount of time one has available is constrained by the anticipated duration of their lifetime, which is thus regarded as a fixed parameter by the individual. Moreover, the enhanced provision of an educated society has a direct correlation with the augmentation of national production and economic progress. The primary concern lies in determining the specific category of human capital to be obtained, as well as the optimal quantity thereof.

The human capital theory elucidates the relationship between education and the cognitive abilities of workers, hence enhancing their production and efficiency. The concept of individuals investing in education to enhance their stock of human capabilities, which results from the combination of intrinsic abilities and investments in human capital, was developed by Theodore Schultz, Gory Bucker, and Jacob Mincer. Illustrative instances of such investments encompass allocations towards healthcare, education, nutrition, and

vocational training. In order to augment the accumulation of human capital within a specified timeframe, it is imperative that the level of gross investment surpasses the depreciation incurred due to either excessive utilisation or insufficient utilisation over time. The act of providing education is regarded as a valuable investment in human capital, a type of investment that is deemed by advocates of human capital theory to be equally or maybe even more valuable than investments in physical capital. According to human capital theorists, there is a consensus that the acquisition of basic literacy skills has a positive impact on the productivity levels of individuals employed in low-skilled occupations. According to these theorists, it is said that instructional methods that require logical and analytical thinking, as well as impart technical and specialised information, have the potential to enhance the marginal productivity of those working in high-skill occupations and roles. Moreover, the enhanced provision of an educated society has a direct correlation with the augmentation of national production and economic progress.

The significance of human capital is substantially higher in countries with a surplus of labour. These countries possess a greater abundance of labour as a result of their high birth rates within the prevailing environmental conditions. The countries in question possess a surplus of labour, indicating a greater availability of human resources compared to tangible capital resources. According to Haq et al. (1996), the concept of human resource can be enhanced and transformed into human capital through the incorporation of education, health, and moral values. The process of human capital formation involves the conversion of raw human resources into highly productive human resources through

the utilisation of various inputs. The issue of limited availability of physical capital in countries with an excess of labour can be addressed by the promotion of human capital development, achieved through increasing investments in education and healthcare sectors within their respective national economies, both from private and governmental sources. Financial capital, in its physical form, serves as a potent tool for fostering the economic progress of a nation. The intangible aspect of human capital serves as a means to facilitate the holistic advancement of a nation. This is due to the direct correlation between human capital and human development, whereby the presence of human development inevitably leads to both qualitative and quantitative progress within the nation (Haq, Mahbub ul, 1996). The significance of human capital is readily apparent in the altered methodology of the United Nations in assessing the economic growth of various nations within the global economy (UNDP, 2009). The United Nations releases the Human Development Report, which aims to assess the level of human capital production in various nations, as part of its efforts to analyse and understand human development. The Human Development Index (HDI) serves as a statistical measure for assessing the level of Human Development in different countries.

2.1.1 Human Development Index

The Human Development Index (HDI) is derived from the amalgamation of three key components: the Life Expectancy Index, the Education Index, and the Income Index. The Life Expectancy Index provides insight into the overall health status of a nation's

population. The Education Index offers an assessment of the educational standards and literacy rates within the population. Lastly, the Income Index serves as an indicator of the level of living experienced by the people. If there is a consistent upward trend observed in all of these indicators over an extended duration, it is indicative of a corresponding upward trend in the Human Development Index. Human capital is cultivated by factors such as health, education, and the quality of standard of life. Hence, the constituents of the Human Development Index, namely the Life Expectancy Index, Education Index, and Income Index, exhibit a direct correlation with the production of Human Capital inside a given nation. Consequently, over an extended period, this phenomenon contributes to the economic advancement of said country. The Human progress Index (HDI) serves as an indicator that demonstrates a favourable association between the generation of human capital and economic progress. An increase in the Human Development Index (HDI) is associated with a higher rate of human capital production, which can be attributed to the improved standards of education and health. Likewise, an increase in the Human Development Index is associated with a corresponding increase in the per capita GDP of a nation. The Human Development Index (HDI) indicates that there exists a positive relationship between human capital production, which is influenced by factors such as health and education, and the per capita income of a nation. The process of human development serves as a robust basis for the sustained economic development of a nation over an extended duration. The importance of the concept of human capital in fostering sustained economic development of a nation cannot be overlooked.

2.1.2 Government Expenditure

Government expenditure continues to play a significant role as a demand management instrument, and when effectively administered, it has the potential to propel an economy towards sustained growth and development in the long run. Government expenditure encompasses various areas of expenditures, including investments in infrastructure, direct investments in production, supply of vital infrastructural amenities, preservation of law and internal/external security, and the implementation of national policies aimed at achieving balanced economic development. The effective distribution of government resources across various sectors of the economy is a prudent approach to public expenditure. This strategy fosters inclusive and sustainable economic growth, hence playing a crucial role in the eradication of poverty and inequality within society. According to the empirical research conducted by Holden and Sparkman (2013), it has been observed that a one percent rise in government purchases relative to the Gross Domestic Product (GDP) has resulted in a drop in unemployment rates and has had a substantial influence on poverty alleviation. This finding demonstrates a clear correlation between government spending on human capital investment and the subsequent economic growth.

2.1.3 Economic Growth

When the topic of economic growth is addressed, it is commonly denoted with a connotation of a quantitative expansion. That is to say, economic growth refers to the

expansion of the aggregate production of commodities and services over a period of time. In the present setting, the gross domestic product (GDP) undergoes alterations, resulting in a subsequent increase in GDP through time. The quantitative interpretation of economic growth is a crucial aspect that Professor Robert Kuznez highlighted in 1971. He argued that economic growth is primarily a quantitative concept. Therefore, in order to advance our understanding of the growth phenomenon through empirical and theoretical analysis, it is imperative to prioritize the quantitative dimension. (Kuznez, 1955) The human capital, consisting of employees in different sectors, plays a crucial role in driving economic growth. Given its significance, it is inevitable that further growth would be witnessed in due course, as human capital serves as the primary engine of economic development in every given economy. Therefore, it is anticipated that there exists a positive correlation between economic expansion and the development of human capital.

2.2 THEORETICAL FRAMEWORK

In today's debate on human capital development and economic growth, several theories have dominated the scene; these theories include the following;

2.2.1 Human Capital Theory

The theory assumes that education plays a crucial role in enhancing the productivity and efficiency of workers through the elevation of their cognitive skills. The concept that individuals engage in educational pursuits in order to enhance their stock of human

capabilities, which is generated through a combination of intrinsic abilities and investments in human capital, was developed by Theodore Schultz, Gary Becker, and Jacob Mincer (Babalola, 2000). Illustrative instances of such investments encompass outlays on education, on-the-job training, health, and nutrition. Nevertheless, the accumulation of human capital occurs during a specific timeframe only when the level of gross investment above the rate of depreciation, which can be influenced by factors such as intensive utilisation or underutilization. The allocation of resources towards education is perceived as a valuable investment in human capital, a form of investment that proponents of human capital theory regard as being equally, if not more, useful than investments in physical capital. Scholars in the field of human capital have posited that the acquisition of fundamental reading skills has been shown to augment the efficiency and effectiveness of individuals employed in occupations that require minimal levels of expertise.

2.2.2 A Critique of Human Capital Theory

Although human capital theory is generally considered a credible framework for understanding economic development, many economists specialising in labour issues have expressed criticism towards the Chicago school theory. These economists argue that the theory attempts to attribute all disparities in earnings and incomes solely to variations in human capital. "Signalling theory" is a prominent alternative proposed by Michael Spence and Joseph Stiglitz. Based on the principles of signalling theory, it is posited that

education does not directly result in the augmentation of human capital. Instead, it functions as a mechanism via which individuals endowed with exceptional intrinsic abilities can effectively communicate and demonstrate their skills to potential employers, thereby securing earnings that above the average. The notion of human capital possesses a potentially boundless elasticity, encompassing intangible factors that are difficult to quantify, such as individual character traits or affiliations with influential individuals (e.g., familial or fraternal associations). This notion has been extensively examined in the field, demonstrating that employee pay can be influenced by factors beyond their human capital. Several characteristics that have been found in the academic literature during the past two decades encompass gender and nativity salary differentials, workplace discrimination, and socioeconomic status.

2.2.3 The Modernization Theory

This theory centres on the process by which education facilitates the transformation of an individual's values, beliefs, and behaviours. The presence of modernisation institutions, such as educational establishments, industrial facilities, and mass media platforms, has a significant role in instilling contemporary ideals and attitudes. The attitude encompasses a receptiveness to novel ideas, a detachment from conventional authorities, a readiness to strategize and anticipate future contingencies, and an increasing perception of personal and societal effectiveness. The argument of the potential for technology developments

and economic changes to facilitate shifts in moral and cultural values may be traced back to the contributions of the esteemed French philosopher, Marquis de Condorcet.

In accordance with the modernisation thesis, the aforementioned normative and attitudinal shifts persist over the course of an individual's lifespan, resulting in a lasting transformation of their connection with the social framework. The level of individual modernity achieved by a society is positively correlated with the extent of exposure to modernisation institutions among its population. When a significant portion of a population undergoes such a transformation, it accelerates the process of societal modernisation and economic progress. Consequently, the process of educational expansion, by influencing human values and yielding various benefits, initiates the essential foundations for a more efficient labour force and a more enduring economic development.

2.2.4 A Critique of Modernization Theory

The theory has faced criticism mostly due to its association of modernisation with Westernisation. According to several thinkers, achieving modernity entails either the eradication or marginalisation of indigenous cultures, as per the prevailing Western modernisation paradigm. According to one interpretation, the term "modern" pertains to the current time period, implying that any civilisation that continues to exist is considered modern. Advocates of modernisation commonly hold the perspective that Western

culture is the epitome of modernity, hence asserting the perceived primitiveness or lack of progress in other societies. This perspective perceives non-modernized countries as being of lower quality, despite their comparable standard of life to that of Western societies. Critics of this perspective contend that modernity possesses an inherent autonomy from culture and may be assimilated into any given societal context. Japan has been referenced as an illustrative case by proponents on both ends of the spectrum. This phenomenon is regarded by certain individuals as evidence supporting the notion that a non-western society may successfully embrace a contemporary way of life. On the contrary, there are many who contend that Japan's modernisation has led to a discernible Western influence on Japanese culture. According to Tipp's argument in 1973, when Modernisation is associated with other processes such as democratisation, liberalisation, and development, which are often used interchangeably by theorists, the term becomes vague and hence challenging to refute. The theory's decline in popularity within empirical study can be attributed to the neglect of external drivers of societal change by modernisation theorists. They held the belief that modernisation encompasses more than only the Western countries' influence. The dichotomy between traditional and modern is not a useful framework, as these two concepts are interconnected and often rely on each other. Additionally, the notion of "modernisation" does not occur as a singular, unified process.

The dependency theory presents a critical analysis of the modernisation idea. This idea posits that the advancement of industrialised societies has contributed to the

impoverishment of third world countries, as the progress of the former has resulted in the hindered growth of the latter. Underdevelopment should not be regarded as a static condition, but rather as a dynamic process that is intricately connected to the concept of development. It may be observed that certain regions of the world are characterised by underdevelopment, which can be attributed to the presence of other regions that have achieved a higher level of development. The aforementioned processes are not distinct entities, but rather two facets of a unified process. To clarify, the process of economic expansion in the western world resulted in the emergence of poverty in Third World countries. The poverty experienced by the Third World is not just attributed to its relative economic disadvantage compared to the industrialised world. Rather, it can be argued that the impoverished of several societies across Asia, Africa, and Latin America is a consequence of the rise of the industrial economies in Western Europe and North America. These phenomena manifest themselves through an economic framework characterised by imperialist-style terms of trade.

2.2.5 The Dependency Theory

The genesis of this theory may be traced back to Marxist conceptual frameworks that are rooted in the dynamic global system. This system shapes the conditions under which economic transformation occurs in both the core and periphery of the world economy. Several factors within the global political system, including the financial stability of states, the level of centralization and governance inside regimes, and the extent of foreign

political integration, have the potential to influence economic growth in developing nations. Raul Prebisch, an Argentine economist affiliated with the United Nations Commission for Latin America (UNCLA), reached the conclusion that developing nations must adopt a certain level of protectionist measures in their trade policies in order to embark on a trajectory of sustainable development.

2.2.6 A Critique of Dependency Theory

The arguments put out by market economists against dependency theory are grounded in compelling instances. The notion that the transition from a communist-style economy to a capitalist-style economy has significantly contributed to the enhancement of India's economy is frequently referenced. The case of India appears to challenge the assertions made by dependence theorists on comparative advantage and mobility. This is evident in the country's economic progress, which has been primarily driven by phenomena like outsourcing, a highly mobile type of capital transfer. The case of South Korea and North Korea serves as an additional illustration of the dichotomy between trade-oriented development and self-sufficiency, sometimes known as autarky. Following the conclusion of the war, the two states underwent a division, exhibiting comparable populations, resources, infrastructure, and degrees of development.

Nevertheless, North Korea adopted a strategy of import substitution industrialization in accordance with the principles of dependence theory, whilst South Korea pursued a policy of export-oriented industrialization in line with the principles of comparative

advantage theory. Based on the per capita GDP data of South Korea in 2013, it was observed that the value was 18 times higher than that of North Korea. In the African context, it has been observed that countries that have prioritized import-substitution development, such as Zimbabwe, have generally exhibited poor economic performance. Conversely, the most prosperous economies in Africa, excluding those reliant on oil, such as Egypt, South Africa, and Tunisia, have pursued a development strategy centred around trade. Numerous hypotheses regarding growth are also prevalent in scholarly literature. Economists have put out these hypotheses to analyse the correlation between the development of human capital and economic growth. Several theories have been proposed, including:

2.2.7 The Solow's Growth Theory

The Solow-Swan model was introduced by Robert Solow and T.W. Swan in 1956. The model in question is commonly referred to as the Solow-Swan model, or alternatively, the Solow model. According to Solow's model, all else being equal, the rates of saving/investment and population growth play significant roles in determining economic growth. Increased saving and investment rates result in the accumulation of a greater amount of capital per worker, thereby leading to higher levels of production per worker. Conversely, it is important to note that elevated population growth rates can have a detrimental impact on economic growth due to the necessity of allocating a larger proportion of savings in economies with high population growth towards maintaining a

stable capital-labour ratio. In the event of a lack of technological advancements and innovation, a rise in capital per worker would not result in a commensurate increase in output per worker due to the principle of diminishing returns. Therefore, the process of capital deepening would result in a decrease in the rate of return on capital.

2.2.8 A Critique of Solow Growth Theory

The Solow Growth Model lacks much empirical support. The model has many flaws, namely its failure to incorporate the influence of entrepreneurship, which is widely recognized as a significant catalyst for economic growth. Additionally, the model overlooks the role of institutional strength within the economy, which also plays a crucial role in facilitating economic progress. Furthermore, the current explanation provided lacks an elucidation of the mechanisms and underlying causes that drive technical advancements. The aforementioned constraint has prompted the emergence of endogenous growth theory, which incorporates the internalization of technical progress and/or the accumulation of knowledge.

2.2.9 The Endogenous Growth Theory

The primary advancement of endogenous growth theory in comparison to preceding models is in its explicit incorporation of technology modelling, as opposed to assuming it to be exogenous, by investigating the factors that determine technological progress.

Primarily, economic growth is derived from technological advancements, which fundamentally entail the capacity of an economic entity to enhance the efficiency of its productive resources over a period of time. A significant portion of this capability arises from the acquisition of skills necessary to effectively manage recently established manufacturing facilities, hence enhancing productivity. Additionally, this capability can also be attributed to the development of strategies to adapt to the swift alterations in the production structure that are inherent to industrial advancement (Verbeck, 2000).

2.2.10 A Critique of the Endogenous Growth Theory

A significant drawback of endogenous growth theory is in its collective inability to provide a satisfactory explanation for the observed phenomenon of conditional convergence, as documented in empirical studies. Another commonly raised criticism is to the fundamental premise of declining returns to capital. Certain economists argue that the efficacy of new growth theory in elucidating the income disparity between emerging and industrialized nations is not much superior than that of exogenous growth theory, despite its often-greater complexity. In 2013, Paul Krugman expressed his criticism against endogenous growth theory, asserting that it is exceedingly challenging to experimentally validate. He argued that a significant portion of this theory relies on assumptions regarding the impact of immeasurable factors on other immeasurable factors.

2.3 Empirical Literature

The empirical study conducted by Awe and Ajayi (2010) examines the impact of human capital on economic growth in Nigeria. The findings of the study indicate a positive correlation between the contribution of human capital, specifically in terms of training, and economic growth. The findings of Krueger and Lindahl (1998) in their comprehensive investigations, as documented in a survey of econometric studies on cross-country growth equations, indicate that growth rates are not influenced by variations in the human capital pool, as proposed by the Lucas model (1998). This is in opposition to the substantial body of evidence found in the micro literature regarding the impact of education on income. After accounting for potential measurement errors, it has been determined that there exists a positive association between the fluctuations in educational stock indicators and economic growth. Furthermore, it is worth noting that while there is a substantial body of research supporting the notion that the level of human capital stock has a beneficial impact on growth rates, it is important to acknowledge that the magnitude of this influence differs across different countries. Additional findings that have been derived from the cross-country analyses investigated by Krueger and Lindahl (1998) include:

- (a) The comparative impact of secondary and higher education on economic growth, in contrast to basic education, and
- (b) The purportedly negligible or adverse impact of female education on production growth. In relation to the latter point, the authors agree with Barro (1991) in positing that the lack of major impact of female education could perhaps be attributed to

gender-based discrimination prevalent in the labour markets of some nations. The argument posits that despite women in these nations receiving education, their ability to contribute to production growth is hindered due to societal discouragement against their participation in the labour market.

In addition to this issue, it seems that there are additional systems in operation. In nations characterized by a substantial presence of women in the workforce, the disparities observed in the extent of female education have a negligible and marginally beneficial impact on rates of economic output growth. While there exists evidence indicating a positive correlation between initial levels of human capital and output growth, and limited empirical backing for the association between changes in human capital and growth, the causal relationship between human capital and growth remains uncertain. According to Bils and Klenow (2000), there is a suggestion that the causal direction could potentially go from growth to schooling. The Mincerian model posits a correlation between the significant rise in educational attainment over the past three decades and the occurrence of a "productivity slowdown" in several high-income economies. According to this model, the relationship can be explained by the notion that economic growth results in reduced discount rates within a nation, consequently driving up the demand for education.

Both variables may be influenced by additional factors. Based on the findings of multiple empirical tests, Bils and Klenow concluded that the relationship between schooling and

economic growth is insufficient to account for the significant positive correlation shown by Barro (1991) and Barro and Lee (1993), as previously discussed. However, proponents contend that the correlation between economic growth and education can provide a coefficient of similar value as indicated by Barro. In Lucas' seminal work published in 1988, he incorporates human capital as an additional factor of production in the neo-classical growth model, while still retaining other fundamental features of the model. The underlying premise of this model posits that the production output of an economy may be achieved by the utilization of the work force to accumulate human capital, which is then combined with physical capital. One iteration of the paradigm posits that human capital is obtained through the allocation of time towards an educational process that is deemed non-productive. This implies that workers face a trade-off between allocating their time towards producing output and investing it in acquiring additional human capital, which in turn enhances their productivity in future times. Another iteration of the model demonstrates that the acquisition of human capital through on-the-job training is apparent, resulting in enhanced productivity for workers during subsequent periods of employment. In the context of education, the process of human capital accumulation entails a trade-off wherein individuals forego immediate satisfaction in the form of reduced present consumption. Alternatively, in the case of on-the-job training, individuals may experience a less favourable allocation of current consumption items. During the 1990s and early 2000s, groundbreaking econometric studies were conducted using international panel data from a diverse range of countries

spanning the post-1960 period. These studies offered empirical evidence to support the assertion that the formation of human capital played a significant role in influencing the overall rate of economic growth at the aggregate level. The study revealed a favourable correlation between achieving international parity in GDP growth and the comprehensive societal rate of human capital development.

Furthermore, it is worth noting that countries with lower income levels that exhibited a propensity for narrowing the economic gap with higher income economies were mostly those that allocated a significant portion of their gross domestic product (GDP) towards formal education investments. Several significant empirical findings have emerged in recent econometric studies: The theory positing that alterations in the relative quantity of human capital, in proportion to the labour force or aggregate output, has a positive impact on growth rates is well supported by statistical evidence. The extent to which the "level effect" of the human capital stock varies across different economies is not consistent. The influence on growth rates does not change in a linear manner in relation to the relative magnitude of the stock. Instead, it diminishes proportionally more in economies where the average educational attainment is already high. According to Wakeel and Alani (year), China underwent a period of significant economic change, resulting in the most substantial growth among all large countries globally. In a span of less than twenty years, it managed to achieve what other nations required centuries to do. According to the World Bank (1997, Table 3), the per capita income had a twofold increase from 1978 to 1987, followed by another twofold increase from 1987 to 1996. A significant proportion

of the Chinese population, specifically over 170 million out of the total 270 million individuals, who were living in conditions of absolute poverty in 1978, experienced an improvement in their socio-economic status and were lifted over the poverty level. China experienced a significant shift in its economic growth trajectory following the implementation of reforms, with the growth rate rising from a modest 3.9% to a range of 8% to 9.5%. Nevertheless, empirical research has indicated that a substantial portion of China's economic expansion can be attributed to the buildup of human capital, as evidenced by studies conducted by the World Bank in 1997.

2.3.1 Government Spending on Education, Human Capital and Growth

The importance of human capital in promoting economic growth and enhancing material well-being cannot be overstated. Education plays a pivotal role as a key source of human capital, leading to enhanced productivity within the labour force, improved welfare, and the promotion of economic progress. Government intervention is typically justified by the positive externalities linked to the accumulation of human capital and the distinction between societal and private returns to education (Yazid, Selma, & Tatsiana, 2012). Primary and secondary education in the majority of nations is primarily financed by the public sector, whereas tertiary education is frequently supported through the provision of scholarships and student loans. Multiple studies have posited that the allocation of government funds towards educational endeavors has a positive impact on the overall well-being of society, leading to a decrease in poverty rates and an enhancement of

economic growth (Fan, Nyange, & Rao, 2005; Sequiera & Martins, 2008). Although experts broadly agree on the direct advantages of public spending on education, there is a lack of clarity regarding the fiscal tools that should be employed to pay such expenditures. The rationale behind this phenomenon is readily apparent: government-funded expansions in educational expenditures have a twofold effect, influencing both individuals' choices regarding consumption and savings, as well as their decisions about the allocation of time towards the acquisition of human capital. An illustration of this phenomenon can be observed in the imposition of taxes on labour income, which may potentially discourage the accumulation of human capital. This is due to the fact that such taxes effectively diminish the future earnings of individuals after accounting for tax deductions (Yazid, Selma, & Tatsiana, 2012). Several studies have been conducted to assess different methods of financing public education and analyse their macroeconomic implications within a dynamic general equilibrium (DGE) framework, taking into account the distortions mentioned earlier. Voyvoda and Yeldan (2000), Blankeneau and Simpson (2004), Annabi et al. (2007), Verbic et al. (2009), and various other studies have constructed models that clearly acknowledge the presence of two contrasting impacts resulting from government intervention in education.

Blankeneau and Simpson (2004) argue that the relationship between public expenditure on education and economic growth is contingent upon the tax arrangements adopted by governments. In accordance with the recommendation put forth by Verbic et al. (2009), a comparative analysis was conducted on analogous fiscal policies within the framework of

a dynamic general equilibrium model applied to a small open economy. According to their theoretical framework, households allocate their resources, including both time and cash, towards the development and enhancement of human capital. Firms exhibit a greater propensity to allocate resources towards the development of human capital when their production technology is characterized by a higher degree of skill intensity. The government facilitates the buildup of human capital through the implementation of diverse tax and subsidy mechanisms targeted at both enterprises and households. In this particular context, the optimization of growth is best attained through a reduction in personal income tax, thereby enabling households to independently allocate resources towards the enhancement of human capital. According to a study conducted by Yazid, Selma, and Tatsiana in 2012, the policy instrument of providing corporate tax credits to enterprises that invest in human capital has been found to be the least successful in terms of promoting eventual growth.

According to the findings of Voyvoda and Yeldan (2000), the examination of alternative fiscal policy options highlights that the public education system provides labour market entrants with human capital, in addition to the human capital acquired privately from the previous generation. In the interim, the government undertakes the task of repaying its debt while implementing a system of proportionate taxation, either based on consumption or wage income, in order to generate revenue for the funding of public education. Rather than implementing higher taxation, the government can opt to devote a reduced portion of its spending towards education as a means to enhance its ability to fulfil its debt

obligations. This approach results in significant welfare losses and hampers long-term economic growth at a slower pace. According to Voyvoda and Yeldan (2000), one potential policy solution is to adopt a 5% increase in income tax. This measure is believed to stimulate long-term economic growth. However, it is important to note that individuals who enter the labour force during the implementation of this policy may experience a disproportionate negative impact. In summary, the implementation of a 5% rise in consumption tax results in a more equitable distribution of the tax burden across different generations, while also facilitating the attainment of the optimal long-term growth rate for the economy.

In their study, Annabi et al. (2007) examined and compared fiscal strategies within the framework of the ageing population in Canada. The researchers analyze the immediate and prolonged consequences of a 1% enduring augmentation in public expenditure on education. The augmentation in expenditure can be funded by three distinct fiscal strategies: lump-sum taxation, personal income taxation, and the re-allocation of public expenditure. It has been determined that the latter strategy yields the most favourable welfare effects. Furthermore, the reallocation of public funds towards education leads to increased democratic benefits for households with varying levels of human capital endowments. Furthermore, it has been seen that there is a notable crowding-out effect, wherein the implementation of higher taxes leads to a decrease in disposable income and a reduction in savings, as evidenced by the first two policies. In each policy scenario, the augmentation of public education expenditure leads to a transitory reduction in labour

participation, notably among individuals with advanced skill sets. In a similar vein, Isola (2002) notes that the acquisition of knowledge and information has assumed heightened significance in fostering economic progress, particularly as scientific and engineering discoveries continue to proliferate and assume increased relevance in the production of products and services. The exponential growth of information and its increasing complexity in production processes need the acquisition, adoption, and adaptation of new knowledge as crucial factors influencing economic progress. This likely necessitated a deeper examination of the correlation between education and economic growth in Nigeria. The study conducted by Adebisi and Oladele (2005) presents an empirical analysis that highlights the correlation between public education expenditure and defence spending in Nigeria. The research utilized the error correction mechanism and vector autoregressive (VAR) models to investigate the relationship between defence spending and public education expenditure. The findings revealed a negative trade-off between these two variables. The examination of the impulse response functions obtained from the VAR model indicates that previous shocks in public education expenditure exhibit an initial positive association with current public education expenditure, which gradually diminishes over the first two years. Subsequently, this relationship transitions to a negative correlation. Additionally, the analysis of impulsive responses reveals that an augmentation in defence expenditures will result in a short-term rise in the amount of public expenditure allocated to education. The study did not investigate the causal relationship between different levels of education and economic growth.

The study conducted by Babatunde and Adefabi (2005) aimed to investigate the enduring association between Education and economic growth in Nigeria. The researchers employed the Johansen co-integration methodology as a methodological framework for analysis. The findings derived from the use of the co-integration technique indicate the existence of a long-term association between enrolments in primary and higher education and the average duration of schooling, in relation to production per worker. The research findings indicate that a highly educated workforce has a substantial and statistically significant influence on both the accumulation of factors of production and the development of total factor productivity, hence contributing to economic growth.

In their study, Aighokhan et al (2005) conducted an analysis to examine the influence of education expenditures on the growth of human capital. This study utilized historical data to examine the relationship between public expenditure on education and the development of human capital in Nigeria. The findings of this study indicate that inadequate and unpredictable budgetary allocations towards education have led to a decline in its effectiveness in fostering human capital development. The allocation of funds towards education, expressed as a proportion of annual budgets, had a consistent pattern of being both insufficient and volatile during the examined timeframe. Nevertheless, the study did not offer an analysis of the specific mechanisms by which education expenditure influences the growth of human capital. Omotor (2004) conducted a study on the factors influencing federal government spending in the education sector in Nigeria, employing the ordinary least squares (OLS) methodology. The study provides

confirmation of the fluctuating nature of education expenditure in Nigeria, highlighting its correlation with the instability observed in government revenue. The findings of the regression analysis indicate that government money is the sole influential factor in determining education spending. The report proposes the implementation of a strategy to diversify the funding sources for education in order to address the prevailing instability in this particular sector.

In a study conducted by Owoeye and Adenuga (2005), an examination was undertaken to explore the correlation between educational and healthcare expenses, as well as their impact on economic growth. The research conducted an estimation of a parsimonious error correction model and discovered a favourable influence of education expenditures on economic growth. While the study proposed allocating additional resources to education levels that yield greater advantages for individuals and society as a whole, it did not ascertain the specific relationship between educational expenditures and economic growth.

2.3.2 Endogenous Growth Theory; Empirical Evidence from Cross-Country Comparisons

The body of literature on endogenous growth theory has stimulated economists' curiosity in the empirical data obtained through cross-country comparisons, which shed light on the fundamental associations between the accumulation of human capital and the rate of growth in real output. In the study conducted by Ogujuiba and Adeniyi (2011), it is

posited that growth models which perceive human capital as a basic input in the production process suggest a positive correlation between growth rates and variations in the quantity of education. Conversely, models that consider human capital as instrumental in the generation and dissemination of innovations within the economy propose that it is the overall stock, rather than the flow, of human capital that influences the country's productivity growth rate. The initial investigations into the impact of human capital on economic growth, as conducted by Mankiw, Romer, and Weil (1992) and Barro (1991), utilised datasets encompassing a wide range of over 100 countries, specifically focusing on the period following 1960. The study utilized human capital measures that focused on specific indicators, such as elementary and secondary school enrolment rates. These indicators were found to have a positive correlation with rates of output growth. According to Barro, there exists a strong association between the process of catching up and the production of human capital. Specifically, Barro observed that only those impoverished nations that demonstrated significant levels of human capital formation in relation to their gross domestic product (GDP) were able to make progress and narrow the gap with wealthier countries. Barro and Sala-i-Martin (1995), along with numerous other researchers, have incorporated life expectancy and infant mortality into growth regressions as a means of representing tangible human capital. This addition complements the intangible human capital measures derived from school inputs or cognitive tests that are typically considered. Their research reveals a robust and positive relationship between life expectancy and economic growth.

The dynamic evolution of output can be determined solely by the equation that describes physical capital accumulation in the Solow-Swan and Ramsey models. In order to delineate the trajectory of growth when accounting for human capital, it becomes imperative to incorporate an extra sector that encompasses the development and accumulation of human capital. In order for the model to demonstrate a positive growth rate of production per worker in the steady state, it is necessary to assume that the "technology" used to generate human capital exhibits continuous returns, while acknowledging that physical capital continues to experience diminishing returns. This implies that the rate of human capital growth is presumed to be consistent, regardless of the current amount of human capital achieved, provided a certain degree of effort. Based on this premise, it can be inferred that the rate of production growth per worker has a positive trend and is positively correlated with the level of productivity in education and on-the-job training, which contribute to the development of human capital. According to Azaria and Drazen (1990), the instrument of human capital transmission across generations is considered a more credible framework within the context of an overlapping generation's model. Within these models, the agents are bestowed with the human capital that has been accumulated by the preceding generation. Subsequently, they make decisions regarding the allocation of their time towards teaching a fresh graduate in the acquisition of further technological skills, which in turn enhances the quality of labour. This, in effect, influences their marginal productivity as they grow older. Since a given generation deciding its own human capital investment does not take into account the inter

temporal spill-over effect upon the human capital endowment of future generations, there is a technological externality that can result in constant or increasing returns to human capital at the social level. The current situation can be attributed to the inherent difficulty of entering into agreements with future generations, and is occasionally referred to as allocation inefficiency resulting from market incompleteness. The origin of this issue impacting the investment in human capital differs significantly from the factors previously identified as hindrances to the effectiveness of existing markets.

According to Ogujuiba and Adeniyi (2011), Acemoglu (1998) provided a formal illustration of the manner in which favourable spill-over effects, also known as pecuniary externalities, resulting from the educational and training investment choices made by workers, can lead to macro-level amplification of human capital. The proposed model posits that individuals and organizations engage in the allocation of resources towards the development of human and physical capital, respectively, prior to undergoing a random process of matching with one another. The primary outcome of random matching is that the anticipated rate of return on human capital is positively correlated with the anticipated quantity of (complementary) physical capital that a worker will receive. Likewise, the return on physical capital is positively correlated with the average level of human capital that firms expect workers to possess. Therefore, the provision of additional education to a certain cohort of workers stimulates enterprises to allocate greater resources towards physical assets, thereby leading to an augmentation in the overall returns for all workers within the economy. By employing a same line of reasoning, the model also suggests that

there exist "social increasing returns" in physical capital. During the early 1990s, there were groundbreaking econometric studies conducted using international panel data from a diverse range of countries spanning the post-1960 period. These studies offered empirical evidence to support the notion that the formation of human capital was one of the key factors influencing the overall rate of economic growth at the aggregate level. It was discovered that the attainment of success in the endeavour to catch up with other nations in terms of GDP growth had a positive correlation with the comprehensive societal rate of human capital development. Moreover, the developing nations that exhibited progress towards narrowing the income gap with more prosperous economies were found to be those that sustained substantial investments in formal education, relative to their respective levels of gross domestic product (GDP). Recent econometric studies have produced three empirically robust findings. The results of the studies indicate that alterations in the stock of human capital have an impact on rates of economic growth. There exists substantial statistical evidence supporting the concept that the proportionate quantity of human capital, in relation to the work force or overall output, exerts a favourable impact on rates of economic growth. The extent to which the "Level effect" of the human capital stock manifests differs significantly across economies. The influence on growth rates does not exhibit a linear relationship with the relative magnitude of the stock. Instead, it diminishes proportionately more in economies where the average educational attainment is already high.

A comprehensive analysis of these findings, taking into consideration modern growth models, suggests that increasing the overall level of educational achievement has a beneficial interaction with other factors, such as the accumulation of complementing physical capital and the adoption of new technologies. Countries with higher levels of human capital intensity are able to increase their rate of productivity growth and reduce the gap in per capita real income between themselves and the leading nations. According to Ogujuiba and Adeniyi (2011), it can be inferred that maintaining a consistently high level of educational achievements, along with substantial investments in other aspects of human capital such as health, internal spatial and occupational mobility, may potentially act as a stabilizing factor in mitigating the ongoing decline in a country's relative per capita income. However, it is important to note that this does not guarantee a complete halt to the decline.

2.3.3 The Effects of Population Growth on Economic Growth

In their study, Kwori, Ajegi, Ochinyabo, and Abu (year) conducted an analysis of the Malthusian Population Theory within the context of Nigeria, spanning the years 1982 to 2012. The research employed a vector error correction model to analyse the relationship between Population Growth and Economic Growth in Nigeria. The findings indicate that Population Growth does not have a statistically significant effect on Economic Growth in the country. This aligns with the scholarly investigations conducted by Dao. The application of Malthusian population theory to the Nigerian economy is of significant

relevance. Hence, positing that population expansion is deleterious to economic growth is tantamount to asserting a correlation between overpopulation and poverty, which portends peril. Religious rules exert additional effect on population growth, so presenting a contradiction to the principle of moral constraint as articulated by Malthus. The impact of population on the economy in Nigeria surpasses the food-related challenges outlined by Malthus. Several repercussions arise from these circumstances, including congestion, a high dependency ratio, escalating social issues, emigration, increased unemployment and/or underemployment, inequality, and the prevailing occurrences of insurgency, terrorism, and insecurity. Therefore, it is imperative to implement effective strategies to mitigate the escalating threat, which has the potential to pose significant risks to the Nigerian economy, ultimately leading to widespread poverty.

2.3.4 The Effects of School Enrolment on Growth in Nigeria

The literature extensively acknowledges the significance of education in the socio-political advancement of nations. Aliu (2001) posits that the growth and development of a nation are contingent upon its human resources. According to Schultz (2002), the primary significance of education in Nigeria is in its ability to supply the necessary human resources to expedite economic growth and development. The belief in the effectiveness of education as a significant driver of development has prompted numerous countries to allocate substantial portions of their resources towards the building of educational institutions across different tiers, including primary, secondary, and tertiary levels. Ajayi

and Ekundayo (2007) argue that the financial resources designated for education should not be perceived as trivial expenditures, but rather as a strategic investment with long-term implications that yield substantial societal advantages. The existing body of literature pertaining to the factors influencing educational attainment consistently demonstrates a favourable association between family income and schooling outcomes (Cameron and Heckman, 2001). The prevailing interpretation of this finding pertains to the financial limits in educational funding that adolescents encounter while making decisions regarding their schooling. An alternative explanation for the positive link observed between parental income and educational attainment emphasizes the enduring impacts of family income through time. Multiple studies have also discovered a positive association between family income, as well as other family background indicators, and academic accomplishment in elementary and secondary school exam results. The available research indicates that parental income may have a similar impact as parental education in influencing children's cognitive abilities and their inclination towards education. According to Carneiron and Heckman (2002), the significance of family income and other familial characteristics has been consistently validated across many contexts, even in settings where tuition is free and admittance is unrestricted.

According to Glick and Sahn (2000), among all the factors influencing households, household income is considered the most significant determinant. Orazen and King (2008) provide additional support for these findings in an independent investigation. Controversies exist regarding the constraints connected with estimating household

income, particularly in relation to the imposition of restrictions. These limitations encompass the presence of measurement mistakes that arise from the utilization of current yearly income as a metric. The literature acknowledges that surveys tend to provide a less accurate representation of household income compared to expenditure. In order to mitigate the limitations associated with home income as a deterrent to school enrolment, many research have employed household expenditure as a surrogate measure for income (Tansel, 2002). Moreover, it is commonly contended that there exists a positive correlation between household income and educational attainment (Glick and Sahn, 2000; Roizen and King, 2008; Lincove, 2009). This phenomenon arises due to the financial constraints faced by households, which may prevent them from affording both the direct and indirect expenses associated with education. Additionally, these households may have limitations in their capacity to get loans in order to meet their financial obligations. Typically, households experiencing poverty would refrain from enrolling their children in educational institutions. According to Ray (2000), it has been stated that a primary factor contributing to children's withdrawal from educational institutions and involvement in child labour is the insufficient income levels of their parents. According to the findings of Patrinos and Psacharopoulos (1997), engaging in employment in Peru can facilitate children's access to education, particularly in cases where parents lack sufficient financial resources to maintain their children's enrolment. In a correlated progression, the financial burdens encountered by a household in facilitating a child's education encompass expenses associated with tuition, mandatory textbooks and

educational resources, transportation, uniforms, as well as examination and entrance fees necessary for school enrolment. The prices associated with different types of school's exhibit variation, with private schools generally imposing higher fees compared to government institutions. Consequently, the price elasticity of demand for schools tends to exhibit variation among different school kinds. The price elasticity of demand is greater for private schools in comparison to government schools. According to the research conducted by Brown and Park (2002), it may be inferred that households with lower socioeconomic status exhibit a higher degree of sensitivity to changes in price compared to those with higher socioeconomic status.

2.3.5 Impact of Health Expenditure on Growth Impact in Nigeria

Bhargava et al. (2001) propose that a direct correlation exists between the rate of adult survival and economic growth. The findings exhibit a consistent pattern when the variable of adult survival rate is substituted with the measure of life expectancy. Nevertheless, there exists a negative correlation between fertility rate and economic growth. The impact of child mortality on life expectancy has a significant influence on the growth of the workforce, resulting in a lower rate of workforce growth compared to population increase. As a result, a high fertility rate has the potential to diminish economic growth due to the additional strain it places on limited resources. Bloom, Canning, and Sevilla (2001) assert in their study that there exists a positive and statistically significant relationship between health and economic growth. The results

indicate that an increase of one year in the life expectancy of a population has been associated with a recent rise in productivity. The relationship between health and income, as explored in the field of health economics, has been the subject of numerous studies aimed at determining the direction of causality. According to Bloom and Canning (2000), the causal relationship between education and health suggests that individuals who are in good health tend to live longer and are more motivated to invest in their skills and talents. This is because the potential benefits of human capital development, in terms of its current value, are larger for healthy individuals. According to his perspective, better education is associated with increased production and subsequently, higher income levels. In Hartwig's (2010) study, a panel Granger causality test is employed to examine the relationship between health capital development and long-term economic growth in a sample of 21 OECD nations. The analysis covers the time period from 1970 to 2005. The findings of the study indicate that health capital production positively influences economic growth across all the OECD countries included in the analysis. Devlin and Hansen (2001) conducted a study to investigate the presence of Granger causality between health expenditure and GDP. Their findings revealed a combination of evidence suggesting the potential existence of bi-directional Granger causation between health spending and income. The study conducted by Mehrare and Musai (2011) investigates the correlation between health expenditure and economic growth in Iran from 1979 to 2008. The researchers utilize Gregory Hensen's (1996) co-integration approaches, which account for potential structural discontinuities in the data. Based on the authors' findings,

it is observed that there exists a significant long-term association between health expenditure and the income elasticity for healthcare spending, with a value exceeding one during the studied time. The findings additionally indicate a unidirectional causal link from GDP to health spending, therefore leading to the conclusion that health expenditure does not granger-cause economic development. Mehrara and Musai (2011) conducted a study that investigates the Granger causality tests between health expenditure and economic growth in a sample of 11 oil exporting countries from 1971 to 2007. The study used panel unit root tests and panel co-integration techniques. Based on the findings, a robust causal relationship is observed between revenues and economic growth, as well as health expenditure, in oil exporting states. Similarly, it can be argued that health expenditure does not yield substantial impacts on GDP in both the short and long term. Moreover, Odior (2011) conducted a study in Nigeria that examined the correlation between health and economic growth. The study utilized an integrated sequential dynamic computable general equilibrium (CGE) model to analyze the effects of government expenditure on health on economic growth during the period of 2004-2015. The researchers discovered that the redistribution of government funds towards the healthcare sector plays a substantial role in elucidating the economic growth observed in Nigeria. In a comparable study, Dauda (2011) investigates the correlation between health expenditure and economic growth in Nigeria from 1970 to 2009. The author employs descriptive statistics, the Johansen co-integration technique, and an error correction model (ECM). The findings suggest that health expenditure has a positive and

statistically significant impact. However, the coefficients of the second and third lags exhibit negative and statistically significant effects. The error correction model yields statistically significant results, indicating a negative relationship with an expected coefficient of 40%. This coefficient suggests that the speed of adjustment is 40%. Furthermore, the study conducted by Adeniyi and Abiodun (2011) employed the ordinary least square (OLS) method to analyse the influence of health expenditure on economic growth within the timeframe of 1985-2009.

The authors propose that by effectively allocating and appropriately utilizing funds for both recurring and capital projects in the healthcare sector, the favourable correlation between economic growth and health outcomes can be further expanded. Bakare and Sanmi (2011) employed ordinary least squares (OLS) multiple regression analysis to examine the relationship between health expenditure and economic growth in Nigeria. Their study utilized annual time series data spanning from 1974 to 2008. The findings of their analysis revealed a statistically significant and positive association between health expenditure and economic growth. Hence, it is recommended by the study that policymakers should accord greater importance to health expenditure by augmenting its annual budgetary allocation to the sector.

2.4 Implications of the Empirical Literature

The implications of these findings, within the framework of contemporary growth theories, suggest that increasing the overall level of educational achievement has a

beneficial interaction with other factors. Two key factors contributing to this phenomenon are the buildup of complementary physical capital and the adoption of innovative technology. The increased level of human capital enables nations to enhance their rate of productivity growth and reduce the relative magnitude of per capita real income disparities that separate them from the most advanced economies. Sustaining a consistently high level of educational achievement, along with substantial investments in various aspects of human capital such as health, internal spatial mobility, and occupational mobility, seems to function as a stabilizing factor that may potentially mitigate the ongoing decline in a nation's relative per capita income. However, it does not provide an absolute assurance of preventing such decline. However, the majority of the theoretical literature pertaining to economic growth centres its attention on the significance of investment in formal education within contemporary economies.

With respect to the empirical significance of human capital, there exists evidence indicating a positive correlation between education and the rise of income. At the microeconomic level, there appears to be a strong and consistent positive association. At the broader macroeconomic scale, the conclusions drawn from the research conducted by Krueger and Lindahl (2001) exhibit a degree of fragility. However, it is important to note that this fragility may be attributed to potential inaccuracies in the measurement process. The study conducted by Krueger and Lindahl reveals that when considering measurement errors, cross-country regressions consistently exhibit a positive correlation between changes in education and economic growth. Moreover, Levine and Renelt (1992) have

demonstrated that the inclusion of human capital, as measured by the secondary enrollment rate, in growth regressions yields consistent results. This finding supports the notion that constructing endogenous growth models using human capital as the driving force of economic expansion is a reasonable approach.

The empirical literature reviewed indicates that there is a positive relationship between the total social rate of human capital production and success in the process of catching up internationally in terms of GDP growth. Moreover, the low-income nations that were making progress towards narrowing the gap with higher-income economies were limited to those that were maintaining high levels of investment in formal education relative to their respective Gross Domestic Product (GDP) levels. Recent econometric investigations have produced three consistent and reliable empirical findings: The hypothesis positing a relationship between changes in the human capital pool and growth rates lacks robust empirical support. There exists robust statistical evidence to substantiate the idea that the proportionate quantity of human capital stock, in relation to the labour force or aggregate output, exerts a favourable impact on rates of economic growth. Although this concept has not been implemented in Nigeria, its potential use in the country holds promise for stimulating economic growth.

The findings obtained from this research also indicate that there exist varying suggestions regarding the most effective fiscal tool for promoting economic growth and welfare through increased public expenditure in the field of education. Verbic et al. (2009) put up

the proposition of a reduction in personal income tax, whilst Voyoda and Yeldan (2000) and Blankenau et al. (2004) argue in favour of an augmentation in consumption tax. Additionally, Annabi et al. (2007) offer a redistribution of public expenditure without causing any distortions to the tax framework. Nevertheless, the optimal and comprehensive approach to funding public education expenditure remains undetermined.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The methodology used in this study is based on econometric analysis of OLS. The model adopted is of the form used by Oluwatobi et al., (2011) on Government Expenditure on Human Capital Development: Implications for Economic Growth in Nigeria.

3.1 Model Specification

The augmented Solow model is therefore specified as

$$Y_t = f(K, L, H) \dots\dots\dots 1$$

Its modified form in terms of Cobb-Douglas production function is given by:

$$Y = AK^\alpha (hL)^\beta U \dots\dots\dots 2$$

In order to transform this Cobb-Douglas production function into linear form, we take log on both sides $\log Y = \alpha_0 + \alpha_1 \log K + \beta \log L + V \dots\dots\dots 3$

Where $\alpha_0 = \log A$ and $V = \log U$

In order to accommodate other variables and to suit the current study objectives, the model is further modified. These include government’s capital expenditure on education and health (CE) and government’s recurrent expenditure on education and health (RE), Government expenditure. These three variables are incorporated to capture government’s investment in human capital development, since this study is focused on government’s investment in human capital development and its impact on economic growth. The new improved model is thus stated as follows:

$$\text{LogEcogrowth} = \alpha_0 + \alpha_1 \text{LogExpedu} + \alpha_2 \text{LogExphealth} + \alpha_3 \text{Expscs} + \alpha_4 \text{popgrowth} + \mu_t \dots\dots\dots 4$$

Where:

ECOGROWTH= Log of Economic Growth (Economic growth);

EXPEDU = Log of Government’s Expenditure on Education;

EXPHEALTH= Log of Government’s Expenditure on Health care;

EXPCESCS =Log of Government Capital Expenditure on Social Community Services

POPGROWTH=Population Growth

3.2 Methods of Evaluation

Autoregressive Distributed Lag Model was the econometric method of choice for this study. However, in order to avoid issues that may develop when performing our analysis with clearly non-stationary series, which leads to erroneous results, this study applied the Augmented Dickey Fuller (ADF) test for unit root to determine if the data series has a unit root. To analyze the variables' long-term connection, the Autoregressive Distributed Lag Model Bound Test for co-integration was also performed.

3.2.1 Evaluation Based on Economic Apriori Criteria (Theoretical relationship)

This test is carried out to check if the signs and magnitudes of the estimated parameters confirm to what economic theory postulates. It's also known as apriori expectations.

3.2.2 Evaluation Based on Statistical Criteria

This measures the goodness of fit of the equation to the data ($0 < R^2 < 1$). It is always greater than zero but less than one. The higher the values of R^2 , the better the variation in explanatory variable or independent variables are able to explain the variation in the dependent variable. R^2 cannot assume the value of zero and one and if it does assume zero, the variation in the dependent variable is not explained by variation in independent variable and otherwise

3.2.3 The F-Test

F-tests is used to test the overall significance of the regression model. That is, it helps to determine the significance and fitness of the whole variables.

3.2.4 The T-Test

This is used to test whether the variables included in the work are significant or not in determining the level of effect of Human Capital Development on economic growth in Nigeria. To perform a two tailed test, we must

(a) Define the null and alternative hypothesis

(b) Choose the desired level of significance usually 5%

Null Hypothesis (H₀): This is applied to see whether the mean differences can be explained by chance fluctuation about a common mean.

The Null hypothesis (H₀) is rejected if $t_{cal} > t_{tab}$ while the alternative hypothesis (H₁) is rejected if $t_{cal} < t_{tab}$.

Where;

t_{cal} = Calculated

't' tab = Tabulated 't'

Degree of freedom (df) = N-2

Level of Significance is at 5%.

Decision Rule: if $t_{cal} > t_{tab}$ fail to accept H_0 : and accept H_1 : which implies that it is statistically significant. On the other hand, if $t_{cal} < t_{tab}$ accept H_0 : and Reject H_1 , which implies that it is statistically insignificant.

However, in recent reports, probability value is being used to either reject or accept the null hypothesis because the p value is adjudged the precise value for this purpose (Damodar, 2005).

3.2.5 Evaluation Based on Econometric Criteria

3.2.6 Unit Root Test

The unit root test was used to determine the stationarity of the variables. It helped to determine stationarity of the variables at levels. The presence of unit root leads to co integration test using Johansen Co integration test due to possible long run relationship.

3.2.7 Test for Auto Correlation

This is to test whether the errors corresponding to different observations are uncorrelated. The test will adopt the Durbin Watson statistics because of the presence of the lagged dependent variables of the regressor. This indicates that the model is an autoregressive model.

3.3 Justification For statistical Tool

The statistical tool that would be used is the ordinary Least Square technique (OLS). This is adopted because is the best among estimators. It contains some properties that are

not available among others. The properties include; Best Estimator, it is not biased; it is efficient and has minimum variance. Those are some of the BLUE properties that distinguish it from others.

3.4. Sources of Data

The data to be used for the regression analysis would be secondary data. Data would be collected from the National Bureau of statistic (NBS), Central Bank of Nigeria (CBN), National Data Bank (NDB), and Statistical Bulletin Publications. The data spans through 1981 to 2021.

3.5 Apriori Expectation

A priori expectations refer to the expected sign of the coefficient of explanatory variables and show the expected impact of explanatory variables on dependent variable. An increase in quality of human capital component through improved education, improves output. That is; all the explanatory variables are expected to have positive relationship with economic growth. This corroborates the human capital theory which postulates that education and healthcare of workers ensure greater productivity Olaniyan and Okemakinde, (2008) cited in Oluwatobi etal.,(2011).

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CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSIONS

4.1 Introduction

In this section, the various variables employed in this study are tested, their parameters estimated, presented and results interpreted in line with economic theorizing as it relates

to their policy implications. The section starts with descriptive statistics, followed by the unit root test, Johansen co-integration test and then the long run and short run regression estimates of the models. Finally, the chapter ends with a summary of the results and its policy implications.

4.2 Descriptive Statistics and Graphical Exposition

The summary statistics of all the series employed in this study are presented and discussed in table 4.1. Specifically, the measures of central tendencies and variability. The mean of each of the series is a pointer to the average of the respective variable. The standard deviation shows how distributed the variable is from the mean. The summary statistics are given in Table 4.1.

Table 4.1: Descriptive Statistics Results

	GDP	GEEDU	GEH	GESCS	POPGR
Mean	2.05E+11	148.2600	89.74776	67.62812	2.618001
Median	1.05E+11	57.95664	24.52227	30.03252	2.602869
Maximum	5.74E+11	646.7475	423.3298	303.6626	3.002988
Minimum	2.78E+10	0.162154	0.041315	0.237600	2.406363
Std. Dev.	1.76E+11	193.7982	123.8775	80.03301	0.122305
Skewness	0.639792	1.238722	1.338238	1.185235	0.836599
Kurtosis	1.818262	3.331793	3.630589	3.634651	4.049266

Jarque-Bera	5.182812	10.67336	12.91700	10.28743	6.663440
Probability	0.074915	0.004812	0.001567	0.005836	0.035732
Sum	8.42E+12	6078.660	3679.658	2772.753	107.3381
Sum Sq. Dev.	1.24E+24	1502310.	613825.1	256211.3	0.598345
Observations	41	41	41	41	41

Source: Author's Computation Using EViews (2023)

Table 4.1 above shows that GDP, GEEDU, GEH, GESCS and POPGR have mean values 2.05E+11, 148.2600, 89.74776, 67.62812, 2.618001 of billion naira respectively and their standard deviation are given respectively as follows 1.05E+11, 57.95664, 24.52227, 30.03252, 2.602869. In terms of the peakiness of the variables measured by Kurtosis statistic, the value often compared to is 3. From the above table, the distribution is all leptokurtic in nature given that the Kurtosis values are greater than 3 except for GDP that is platykurtic in nature given the kurtosis value is less than 3. The table also show that the values of the mean of all the variables falls between their minimum and maximum values. The table also suggest that all the variables are positively skewed.

4.3 Preliminary Results

4.3.1 Test for Stationarity/ Unit Root Test

The Augmented Dickey Fuller Test

This section investigates the time series variables' stationarity. Stationarity refers to refers to the fact that the statistical characteristics of time series (or, more precisely, the proves that generates it) do not change with time. Stationarity is important because many useful analytical techniques, statistical tests, and models rely on it. The table below shows the stationarity and non-stationarity of the variables in these investigations as well as the order of integration.

TABLE 4.2a: The Augmented Dickey Fuller Test at Levels

VARIABLE S	ADF TEST STATISTICS	ADF CRITICAL VALUE			ORDER OF INTEGRATION	REMARKS
		1% LEVEL	5% LEVEL	10% LEVEL		
LNGDP	-0.008358	- 3.605593	- 2.936942	- 2.606857	1(0)	NOT STATIONARY
LNGEEDU	-3.295616	- 3.632900	- 2.948404	- 2.612874	1(0)	STATIONARY
LNGEH	-1.766695	- 3.626784	- 2.945842	- 2.611531	1(0)	NOT STATIONARY
LNGESCS	-0.618235	- 3.610453	- 2.938987	- 2.607932	1(0)	NOT STATIONARY

POPGR	-1.310623	3.646342	- 2.954021	- 2.615817	1(0)	NOT STATIONARY
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Source: Author's Computation Using EViews 9.0(2023)

TABLE 4.2b: The Augmented Dickey Fuller Test at First Difference

VARIABLES	ADF TEST STATISTICS	ADF CRITICAL VALUE			ORDER OF INTEGRATION	REMARKS
		1% LEVEL	5% LEVEL	10% LEVEL		
LNGDP	-4.399797	- 3.610453	- 2.938987	- 2.607932	1(1)	STATIONARY
LNGEEDU	-5.162841	- 3.626784	- 2.945842	- 2.611531	1(1)	STATIONARY
LNGEH	-10.35897	- 3.610453	- 2.938987	- 2.607932	1(1)	STATIONARY
LNGESCS	-9.878703	- 3.610453	- 2.938987	- 2.607932	1(1)	STATIONARY

POPGR	-4.758562	-	-	-	1(1)	STATIONARY
		3.621023	2.943427	2.610263		

Source: Author's Computation Using EViews 9.0(2023)

From the ADF results in table 4.2a and 4.2b., only GEEDU was stationary at level while others were stationary at first difference at the 5% level of significance. This result justifies the use of the Autoregressive Distributed Lag Model as the estimating technique for this analysis. As a result of the stationarity of the variables, we now proceed to conduct the ARDL Co-Integration Bounds testing and the estimation of the short and long run models.

4.3.2 Cointegration Test

It is important that the study examines the possibility of having a co-integrating relationship amongst the variables of our study; this is in light of the different levels of stationarity of our variables, some at level and some at the first difference. To do this, Pesaran recommended using the ARDL bound cointegration test, and the results are shown in table 4.3.

Table 4.3: ARDL BOUND COINTEGRATION TEST

Test Statistic	Value	Number of independent variables - K

F-statistic	8.204887	4
Critical Value Bounds	I0 Bound	I1 Bound
Level of Significance		
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's computation using Eviews (2023)

From table 4.4, it is evident that the estimated F-statistic of the model surpassed the upper bound limit even at the 5% level of significance. As a consequence, the findings indicate a long-term link between the variables in the model.

4.4 Model Estimates

Short-Run and Long-Run Estimation

Table 4.4: Short-run Results

Dependent Variable: LNGDP

Variable	Coefficients	Std. Error.	t-Statistics	P-values
D(LNGEEDU)	0.078440	0.076183	1.029624	0.3117
D(LNGEEDU(-1))	0.162254	0.071916	2.256139	0.0318
D(LNGEH)	-0.122334	0.085270	-1.434665	0.1621
D(LNGEH(-1))	-0.180171	0.076615	-2.351646	0.0257
D(LNGESCS)	0.019273	0.049509	0.389292	0.6999
D(POPGR)	0.656663	0.205439	3.196382	0.0033
ECM(-1)	-0.172429	0.046017	-3.747080	0.0008

Source: Author's Computation Using EViews 9.0(2023)

Discussion of Findings

The error correction term (ECM) which represents the speed of adjustment needed to restore equilibrium in the dynamic model after a disturbance appropriately explains the model as both its sign and significance level meets theoretical and statistical expectations. The implication of this is that a shock to economic growth as proxied by LNGDP in the current period will be restored at a speed of adjustment of about 17.2% in the next period. Put differently, the rate of adjustment of a short-run disequilibrium in LNGDP is slow as about 17.2% of the divergence as a result of a current period shock will converge towards long-run equilibrium in the next period. Thus, confirming the adequacy and statistically efficiency of the model.

The coefficient of LNGEEDU at 0.078440 entails that a percent increase in LNGEEDU will increase LNGDP by about 0.078% yearly. This is not significant at the 5% level of significance. However, at lag 1 it is significant even at the 5% level of significance. The coefficient of LNGEH at 0.122334 which implies that a one percent increase in LNGEH will contract economic growth by 0.12%. Surprisingly, LNGEH is significant at one period lag and its coefficient is at -0.180171 which implies that a one percent increase in LNGEH at one period lag will also contract economic growth by 0.18%

A one percent increase in LNGSCS will increase LNGDP by 0.019% yearly. However, it is not significant at the 5% level of significance. Also, a one percent increase in POPGR will increase POPGR by 0.65%. This is significant even at the 5% level of significance.

TABLE 4.5: Long-run Result

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-statistic</i>	<i>Prob.</i>
LNGEEDU	0.103221	0.587744	0.175623	0.8618
LNGEH	0.238495	0.579725	0.411393	0.6838
LNGESCS	0.111777	0.294429	0.379639	0.7070
POPGR	3.808317	1.630816	2.335222	0.0267
C	14.731073	4.634201	3.178773	0.0035

Source: Author's Computation Using EViews 9.0(2023)

Discussion of Findings

For the long run, only POPGR significantly affects economic growth as proxied by LNGDP. The coefficient of POPGR at 3.808317 suggests that a one percent increase in POPGR will improve economic growth by about 3.80% in the long run. This is significant at the 5% level of significance.

4.5 Diagnostic Results

Table 4.6

R-squared	Adj R-squared	F-Stat	Prob(F-Stat)	DW Stat	Ramsey RESET F. (Prob)	Breusch-Pagan-Godfrey F. (Prob)	Breusch-Godfrey F. (Prob)	Jarque-Bera Prob.
0.989582	0.986349	306.0797	0.00000	2.356101	0.6144	0.2885	0.3420	0.595860

Discussion of Findings

The R-squared value of 0.9899582 indicates that approximately 98.9% of the variation in the dependent variable (GDP) can be explained by the model's set of explanatory variables (GEEDU, GEH, GESCS and POPGR). Moreover, its adjusted counterpart which takes into consideration the loss of degrees of freedom suggests that the explanatory variable of the model accounts for about 98.6% of the changes in the

dependent variable. There is little to no strong evidence of autocorrelation in the model residuals, as indicated by the Durbin-Watson value of 2.3 and the Breusch-Godfrey F-probability value of 0.03420 (its greater than the 0.05 threshold for rejecting the null hypothesis of serial correlation). This means that the model reflects the temporal dynamics accurately, as there is no substantial correlation between the residuals and their lagged values. With a p-value of 0.6144, the Ramsey RESET test concludes that the model does not suffer from omitted variable bias. This indicates that the existing regressors of the model provide a satisfactory explanation for the changes in the dependent variable. With a p-value of 0.2885, the Breusch-Pagan-Godfrey test indicates that there is no statistically significant evidence of heteroscedasticity in the model residuals. This suggests that the residuals' variance is stable across the range of measured values. Jarque-Bera p-value of 0.595860 suggests that the residuals are normally distributed. This implies that the model's normalcy assumptions are not seriously affected. Lastly, the Prob(F-Stat) value of 0.0000 indicates the goodness of fit of the entire model.

4.6 Policy Implications

The results of the ARDL model, there is insignificant positive relationship between Government Expenditure on Education (GEEDU) and economic growth in Nigeria. The implication is that Nigeria's educational system is suffering from different structural problems such as lack of accountability on the side of the officials, mismanagement of revenue allocated by the government, hence its insignificant impact on the Nigeria

economy. Although it is positively significant at one period lag, in the long run it is (GEEDU) insignificant.

There is an insignificant negative relationship between Federal government recurrent expenditure on health and economic growth in the short run and it is also negative although it is significant at one period lag. From this, government expenditure on health (a proxy of human capital development) will have negative impact on economic growth in the short run. The implication of this that GEH is not a significant variable of determining economic growth.

There is positive insignificant relationship between Government Expenditure on social Community Services (GESCS). This finding is in tandem with economic theory in that an increase in GESCS will bring about an increase in the welfare of citizens which will increase economic growth in Nigeria. The implication of this result is that GESCS is not a significant variable in investigating the determinants of economic growth in Nigeria.

There is significant positive relationship between population growth (POPGR) and economic growth in the short run in Nigeria. This finding is in tandem with economic theory in that an increase POPGR will bring about more readily available humans which in turn increases economic growth measured by GDP. Hence, POPGR is an important determinant of economic growth in Nigeria. However, based on the findings an increase in POPGR will insignificantly reduce economic growth in the long run. However, there is

a positive significant relationship between POPGR and economic growth proxied by GDP in the long.

The implication of the findings is that all the explanatory factors were crucial in explaining economic growth both in the current time period and the next time period. Therefore, the importance of human capital development cannot be over-emphasized in effecting and increasing economic growth in Nigeria. Therefore, human capital development gives an economy a cutting edge that improves and increases economic activity, which in turn spurs economic growth and development.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Summary of Findings

This study investigates the long run and short run relationship between the impact of human capital development on economic growth in Nigeria from 1981 to 2021. The role of Government investment in health, education, social and community services as well as population growth rate is crucial. Growth can only take place where human capitals are skilled enough to transform raw material into finished product. This is how the economy can grow. The empirical result shows that Government expenditures on education was found to be statistically insignificant to economic growth in Nigeria from 1981 to 2021.

Findings from this study reveals that government expenditure on social community services, and expenditure on health do not have significant effect on economic growth in Nigeria. Population growth however, has a positive relationship with economic growth with the year under study. This is evident from the estimated long-run and the short-run ARDL models.

5.2. Recommendation

Based on the findings made in the course of this study, the following recommendations are made for the government to adopt to enhance economic growth in Nigeria;

1. Increased financing should be provided for expenditure across all sectors, along with oversight of how the allotted funds are handled and put to use for the economy's expansion and development.
2. Since the total expenditure on healthcare appears to have decreased during the study period, the government should promote economic saving and investment, raise spending on health care, and raise the level of labour productivity.
3. The government should also make sure that capital and ongoing expenses are appropriately controlled so as to increase the country's production capacity and accelerate economic growth
4. Strengthen for the health sector through increased funding: The government should support the health sector by increasing money and making sure that the

funds are appropriately handled and put to use in the creation of health and education services.

5. Adequate Funding of the Educational Sector: The number of resources that are actually allocated to the education sector serves as a barometer for a country's goals and commitments. This causes such disparities in human capital between groups of nations. The amount of funds that industrialized economies invest in education, compared to the meagre amount that the Nigerian government spends, vehemently supports this viewpoint.
6. Revitalization of Education in Nigeria: Complete revitalization of education in Nigeria with the emergence of strong and vibrant institutions deeply engaged in fundamental and development-oriented research, teaching, community outreach, and enrichment services to all levels of the economy, and operating in a setting of academic freedom and institutional autonomy, within the general framework of public accountability.
7. Educational Curriculum Must Reflect Industry Needs: With recent and anticipated technological and industry changes, more positions will require higher education, and there will be an ongoing need for continuing education. Raising the educational skill levels of the country is vital. However, this will not result in economic growth unless training is strategically coordinated to meet current and potential industry needs.

8. Adequate funding for Antigrift Agencies: In order to apprehend and punish those who misappropriate and embezzle public funds, the government should increase funding for antigraft or anticorruption organizations like the Economic and Financial Crime Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC).

5.3 Conclusion

Nigeria should be the doorway to Africa in terms of growth for both domestic and international investment to thrive for expected national savings given the size of the country's economy and its natural and human capital resources. Therefore, Nigeria's economy has to be headed in the correct path for sustainable growth and development if it is to fulfil this crucial leadership position.

The key policy challenge for Nigeria is to take decisive action to address problems of human capital deficiency and take the role of the leading light in Africa in terms of strategically allocating resources on training its human resources in order to achieve this. The bedrock of economic growth is laid on the development of its human capital, so it must be encouraged. All of these things indicate that Nigeria will now serve as an African hub for human capital training. That is a logical economic advantage in and of itself.

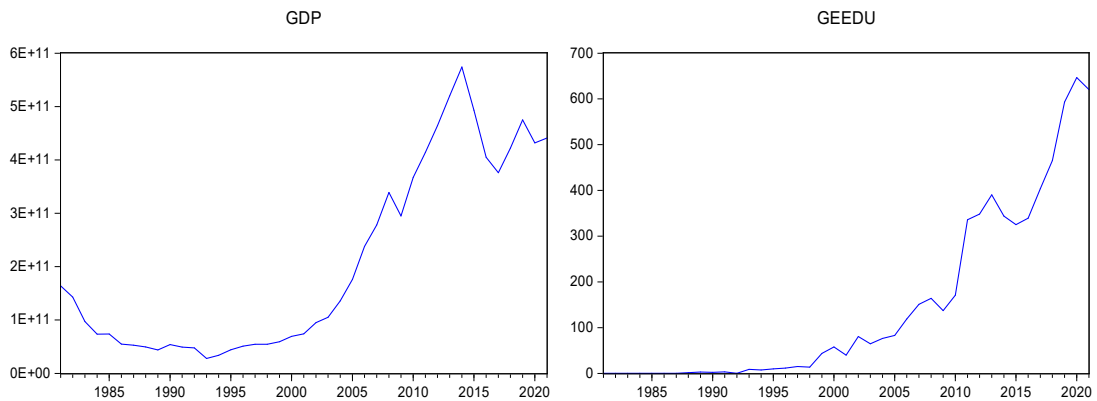
Appendix I

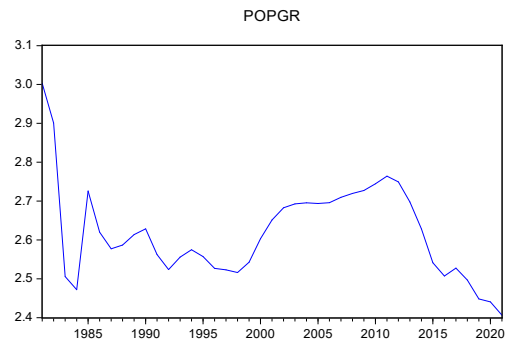
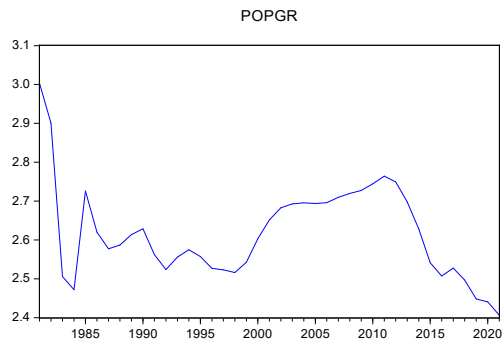
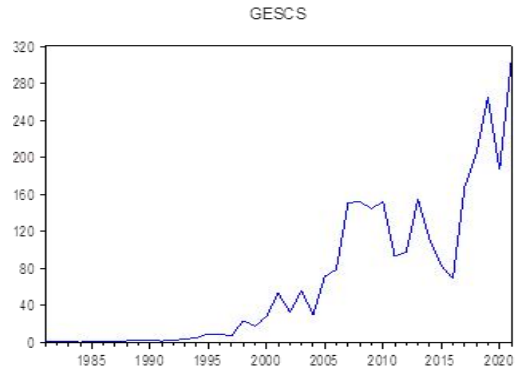
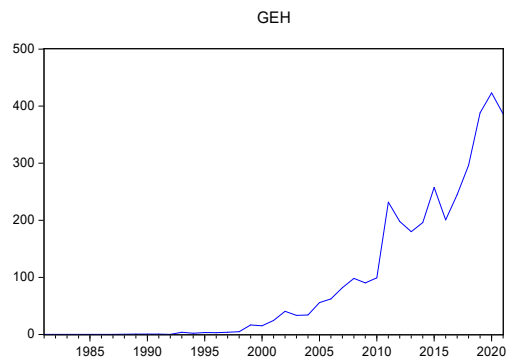
Descriptive statistics

	GDP	GEEDU	GEH	GESCS	POPGR
Mean	2.05E+11	148.2600	89.74776	67.62812	2.618001
Median	1.05E+11	57.95664	24.52227	30.03252	2.602869
Maximum	5.74E+11	646.7475	423.3298	303.6626	3.002988
Minimum	2.78E+10	0.162154	0.041315	0.237600	2.406363
Std. Dev.	1.76E+11	193.7982	123.8775	80.03301	0.122305
Skewness	0.639792	1.238722	1.338238	1.185235	0.836599
Kurtosis	1.818262	3.331793	3.630589	3.634651	4.049266

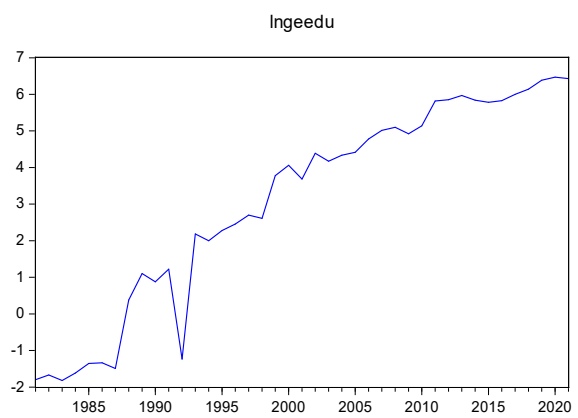
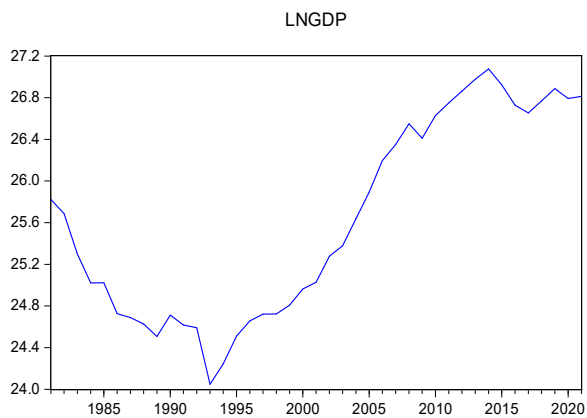
Jarque-Bera	5.182812	10.67336	12.91700	10.28743	6.663440
Probability	0.074915	0.004812	0.001567	0.005836	0.035732
Sum	8.42E+12	6078.660	3679.658	2772.753	107.3381
Sum Sq. Dev.	1.24E+24	1502310.	613825.1	256211.3	0.598345
Observations	41	41	41	41	41

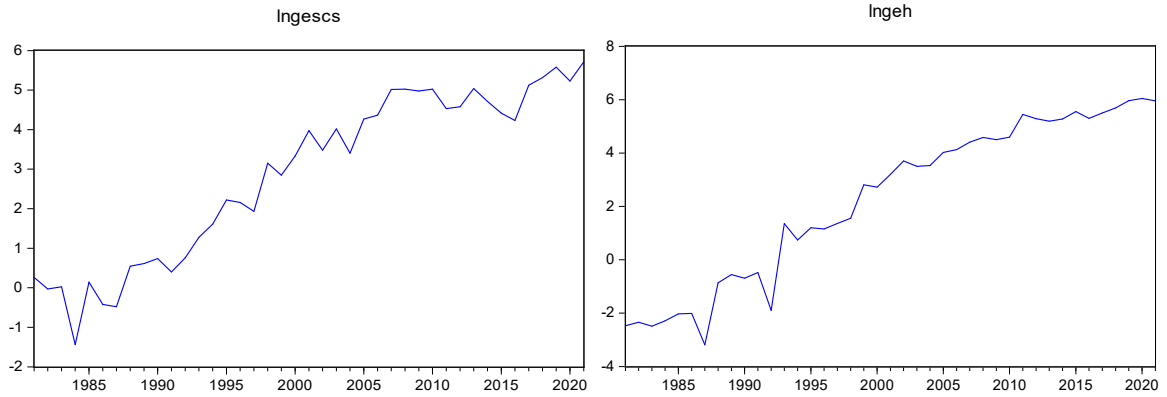
RAW DATA SPREAD OVERTIME





LOGGED DATA SPREAD OVERTIME





TEST FOR STATIONALITY /UNIT ROOT TEST

At level

Null Hypothesis: LNGDP has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.008358	0.9522
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP)
 Method: Least Squares
 Date: 09/22/23 Time: 14:31
 Sample (adjusted): 1982 2021
 Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	-0.000270	0.032346	-0.008358	0.9934
C	0.031649	0.828436	0.038203	0.9697
R-squared	0.000002	Mean dependent var		0.024729
Adjusted R-squared	-0.026314	S.D. dependent var		0.191272
S.E. of regression	0.193772	Akaike info criterion		-0.395561
Sum squared resid	1.426811	Schwarz criterion		-0.311117
Log likelihood	9.911214	Hannan-Quinn criter.		-0.365028
F-statistic	6.99E-05	Durbin-Watson stat		1.336154
Prob(F-statistic)	0.993375			

Null Hypothesis: LNGEEDU has a unit root
 Exogenous: Constant
 Lag Length: 5 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.295616	0.0228
Test critical values:		
1% level	-3.632900	
5% level	-2.948404	
10% level	-2.612874	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LNGEEDU)
 Method: Least Squares
 Date: 09/22/23 Time: 14:32
 Sample (adjusted): 1987 2021
 Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGEEDU(-1)	-0.162230	0.049226	-3.295616	0.0027
D(LNGEEDU(-1))	-0.756037	0.161480	-4.681926	0.0001
D(LNGEEDU(-2))	-0.612294	0.191384	-3.199292	0.0034
D(LNGEEDU(-3))	-0.622330	0.193176	-3.221572	0.0032
D(LNGEEDU(-4))	-0.566649	0.191742	-2.955270	0.0063
D(LNGEEDU(-5))	-0.225887	0.165276	-1.366723	0.1826
C	1.437476	0.292899	4.907755	0.0000
R-squared	0.536619	Mean dependent var		0.221925

Adjusted R-squared	0.437323	S.D. dependent var	0.830732
S.E. of regression	0.623147	Akaike info criterion	2.068788
Sum squared resid	10.87274	Schwarz criterion	2.379858
Log likelihood	-29.20379	Hannan-Quinn criter.	2.176169
F-statistic	5.404237	Durbin-Watson stat	2.120691
Prob(F-statistic)	0.000815		

Null Hypothesis: LNGEH has a unit root
 Exogenous: Constant
 Lag Length: 4 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.766695	0.3904
Test critical values:		
1% level	-3.626784	
5% level	-2.945842	
10% level	-2.611531	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LNGEH)
 Method: Least Squares
 Date: 09/22/23 Time: 14:33
 Sample (adjusted): 1986 2021
 Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGEH(-1)	-0.070819	0.040086	-1.766695	0.0875
D(LNGEH(-1))	-0.738580	0.166923	-4.424664	0.0001
D(LNGEH(-2))	-0.534483	0.198749	-2.689239	0.0116
D(LNGEH(-3))	-0.448798	0.197594	-2.271309	0.0305
D(LNGEH(-4))	-0.317337	0.166233	-1.908996	0.0659
C	0.878793	0.203989	4.308033	0.0002

R-squared	0.441451	Mean dependent var	0.221701
Adjusted R-squared	0.348359	S.D. dependent var	0.792233
S.E. of regression	0.639524	Akaike info criterion	2.094826
Sum squared resid	12.26973	Schwarz criterion	2.358746
Log likelihood	-31.70687	Hannan-Quinn criter.	2.186941
F-statistic	4.742115	Durbin-Watson stat	1.956667
Prob(F-statistic)	0.002607		

Null Hypothesis: LNGESCS has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.618235	0.8549
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGESCS)

Method: Least Squares

Date: 09/22/23 Time: 16:25

Sample (adjusted): 1983 2021

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGESCS(-1)	-0.025531	0.041297	-0.618235	0.5403
D(LNGESCS(-1))	-0.435404	0.149094	-2.920335	0.0060
C	0.275970	0.144230	1.913397	0.0637
R-squared	0.209782	Mean dependent var		0.147388
Adjusted R-squared	0.165881	S.D. dependent var		0.574135
S.E. of regression	0.524358	Akaike info criterion		1.620520
Sum squared resid	9.898255	Schwarz criterion		1.748486
Log likelihood	-28.60014	Hannan-Quinn criter.		1.666433
F-statistic	4.778522	Durbin-Watson stat		2.085754
Prob(F-statistic)	0.014436			

Null Hypothesis: POPGR has a unit root

Exogenous: Constant

Lag Length: 7 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.310623	0.6129
Test critical values:		
1% level	-3.646342	
5% level	-2.954021	
10% level	-2.615817	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(POPGR)

Method: Least Squares

Date: 09/27/23 Time: 09:01

Sample (adjusted): 1989 2021

Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
POPGR(-1)	-0.105910	0.080809	-1.310623	0.2024
D(POPGR(-1))	1.080594	0.190413	5.674994	0.0000
D(POPGR(-2))	-0.636420	0.241058	-2.640109	0.0143
D(POPGR(-3))	0.458192	0.174212	2.630079	0.0147
D(POPGR(-4))	-0.045056	0.128962	-0.349373	0.7299
D(POPGR(-5))	0.232209	0.108267	2.144781	0.0423
D(POPGR(-6))	-0.136918	0.080832	-1.693865	0.1032
D(POPGR(-7))	0.130502	0.068300	1.910722	0.0681
C	0.275342	0.211986	1.298870	0.2063
R-squared	0.637500	Mean dependent var	-0.005469	
Adjusted R-squared	0.516667	S.D. dependent var	0.034781	
S.E. of regression	0.024181	Akaike info criterion	-4.379530	
Sum squared resid	0.014033	Schwarz criterion	-3.971391	
Log likelihood	81.26224	Hannan-Quinn criter.	-4.242204	
F-statistic	5.275861	Durbin-Watson stat	1.872128	
Prob(F-statistic)	0.000693			

At first difference

Null Hypothesis: D(LNGDP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.399797	0.0012
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP,2)

Method: Least Squares

Date: 09/22/23 Time: 16:26

Sample (adjusted): 1983 2021

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.677441	0.153971	-4.399797	0.0001
C	0.020866	0.029697	0.702629	0.4867
R-squared	0.343485	Mean dependent var	0.004042	
Adjusted R-squared	0.325742	S.D. dependent var	0.223979	
S.E. of regression	0.183916	Akaike info criterion	-0.498755	

Sum squared resid	1.251529	Schwarz criterion	-0.413444
Log likelihood	11.72572	Hannan-Quinn criter.	-0.468146
F-statistic	19.35822	Durbin-Watson stat	2.097700
Prob(F-statistic)	0.000088		

Null Hypothesis: D(LNGEEDU) has a unit root
 Exogenous: Constant
 Lag Length: 3 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.162841	0.0001
Test critical values:		
1% level	-3.626784	
5% level	-2.945842	
10% level	-2.611531	

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(LNGEEDU,2)
 Method: Least Squares
 Date: 09/22/23 Time: 16:26
 Sample (adjusted): 1986 2021
 Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEEDU(-1))	-2.779256	0.538319	-5.162841	0.0000
D(LNGEEDU(-1),2)	1.122801	0.443395	2.532283	0.0166
D(LNGEEDU(-2),2)	0.715791	0.316258	2.263310	0.0308
D(LNGEEDU(-3),2)	0.322468	0.169572	1.901660	0.0665
C	0.611676	0.167265	3.656932	0.0009
R-squared	0.776363	Mean dependent var	-0.008437	
Adjusted R-squared	0.747506	S.D. dependent var	1.398931	
S.E. of regression	0.702945	Akaike info criterion	2.261170	
Sum squared resid	15.31809	Schwarz criterion	2.481103	
Log likelihood	-35.70106	Hannan-Quinn criter.	2.337933	
F-statistic	26.90433	Durbin-Watson stat	2.036747	
Prob(F-statistic)	0.000000			

Null Hypothesis: D(LNGEH) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
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Augmented Dickey-Fuller test statistic		-10.35897	0.0000
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGEH,2)

Method: Least Squares

Date: 09/22/23 Time: 16:27

Sample (adjusted): 1983 2021

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEH(-1))	-1.489175	0.143757	-10.35897	0.0000
C	0.319693	0.112483	2.842161	0.0072
R-squared	0.743605	Mean dependent var		-0.005621
Adjusted R-squared	0.736675	S.D. dependent var		1.314465
S.E. of regression	0.674520	Akaike info criterion		2.100291
Sum squared resid	16.83418	Schwarz criterion		2.185602
Log likelihood	-38.95567	Hannan-Quinn criter.		2.130899
F-statistic	107.3083	Durbin-Watson stat		2.225386
Prob(F-statistic)	0.000000			

Null Hypothesis: D(LNGESCS) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-9.878703	0.0000
Test critical values:	1% level	-3.610453
	5% level	-2.938987
	10% level	-2.607932

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGESCS,2)

Method: Least Squares

Date: 09/22/23 Time: 16:28

Sample (adjusted): 1983 2021

Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGESCS(-1))	-1.447621	0.146540	-9.878703	0.0000

C	0.204409	0.085328	2.395583	0.0218
R-squared	0.725089	Mean dependent var	0.020000	
Adjusted R-squared	0.717658	S.D. dependent var	0.978553	
S.E. of regression	0.519962	Akaike info criterion	1.579799	
Sum squared resid	10.00335	Schwarz criterion	1.665110	
Log likelihood	-28.80608	Hannan-Quinn criter.	1.610408	
F-statistic	97.58878	Durbin-Watson stat	2.092378	
Prob(F-statistic)	0.000000			

Null Hypothesis: D(POPGR) has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.758562	0.0004
Test critical values:		
1% level	-3.621023	
5% level	-2.943427	
10% level	-2.610263	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(POPGR,2)
Method: Least Squares
Date: 09/22/23 Time: 16:28
Sample (adjusted): 1985 2021
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POPGR(-1))	-1.193388	0.250788	-4.758562	0.0000
D(POPGR(-1),2)	0.267385	0.129358	2.067011	0.0467
D(POPGR(-2),2)	-0.151575	0.110620	-1.370224	0.1799
C	-0.004694	0.007830	-0.599428	0.5530
R-squared	0.719345	Mean dependent var	-1.62E-05	
Adjusted R-squared	0.693831	S.D. dependent var	0.083640	
S.E. of regression	0.046280	Akaike info criterion	-3.206409	
Sum squared resid	0.070681	Schwarz criterion	-3.032255	
Log likelihood	63.31856	Hannan-Quinn criter.	-3.145011	
F-statistic	28.19406	Durbin-Watson stat	1.599157	
Prob(F-statistic)	0.000000			

Cointegration

Date: 09/22/23 Time: 16:30
Sample (adjusted): 1983 2021
Included observations: 39 after adjustments

Trend assumption: No deterministic trend
 Series: LNGDP LNGEEDU LNGEH LNGESCS POPGR
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.489535	68.63866	60.06141	0.0079
At most 1 *	0.364247	42.41380	40.17493	0.0292
At most 2 *	0.273799	24.74895	24.27596	0.0436
At most 3	0.252743	12.27173	12.32090	0.0509
At most 4	0.023044	0.909217	4.129906	0.3938

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.489535	26.22486	30.43961	0.1533
At most 1	0.364247	17.66484	24.15921	0.2953
At most 2	0.273799	12.47723	17.79730	0.2634
At most 3 *	0.252743	11.36251	11.22480	0.0473
At most 4	0.023044	0.909217	4.129906	0.3938

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

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

LNGDP	LNGEEDU	LNGEH	LNGESCS	POPGR
1.173967	-0.783419	0.151745	-0.014757	-10.71426
0.123700	-1.616379	1.760719	-0.488802	-0.743591
-0.212049	-3.087814	2.972457	-0.325499	3.584127
0.114394	0.301801	-2.918261	3.733943	-3.001788
-0.578760	1.465592	-1.042983	-0.601227	5.416552

Unrestricted Adjustment Coefficients (alpha):

D(LNGDP)	D(LNGEEDU)	D(LNGEH)	D(LNGESCS)	D(POPGR)
-0.069433	-0.014769	-0.027687	-0.008895	-0.015556
0.194395	-0.204547	0.154721	0.162771	-0.048301
0.196979	-0.269065	0.052055	0.180264	-0.021857
0.128570	-0.247109	-0.006846	-0.092627	-0.013016
0.019747	-0.000628	-0.026167	0.006037	-0.008208

1 Cointegrating Equation(s): Log likelihood 16.53145

Normalized cointegrating coefficients (standard error in parentheses)

LNGDP	LNGEEDU	LNGEH	LNGESCS	POPGR
1.000000	-0.667326 (0.56827)	0.129258 (0.70311)	-0.012570 (0.57300)	-9.126542 (0.38646)

Adjustment coefficients (standard error in parentheses)

D(LNGDP)	-0.081512 (0.02835)
D(LNGEEDU)	0.228214 (0.13675)
D(LNGEH)	0.231247 (0.12899)
D(LNGESCS)	0.150937 (0.09723)
D(POPGR)	0.023183 (0.01580)

2 Cointegrating Equation(s): Log likelihood 25.36388

Normalized cointegrating coefficients (standard error in parentheses)

LNGDP	LNGEEDU	LNGEH	LNGESCS	POPGR
1.000000	0.000000	-0.629823 (0.48308)	0.199417 (0.70068)	-9.294201 (0.35122)
0.000000	1.000000	-1.137498 (0.38585)	0.317667 (0.55965)	-0.251241 (0.28052)

Adjustment coefficients (standard error in parentheses)

D(LNGDP)	-0.083339 (0.02834)	0.078267 (0.04313)
D(LNGEEDU)	0.202911 (0.13093)	0.178332 (0.19922)
D(LNGEH)	0.197963 (0.11733)	0.280594 (0.17854)
D(LNGESCS)	0.120370 (0.08354)	0.298697 (0.12712)
D(POPGR)	0.023105 (0.01589)	-0.014456 (0.02417)

3 Cointegrating Equation(s): Log likelihood 31.60249

Normalized cointegrating coefficients (standard error in parentheses)

LNGDP	LNGEEDU	LNGEH	LNGESCS	POPGR
1.000000	0.000000	0.000000	-0.453043 (0.25324)	-10.07743 (0.32162)
0.000000	1.000000	0.000000	-0.860714 (0.46554)	-1.665798 (0.59125)
0.000000	0.000000	1.000000	-1.035941 (0.47169)	-1.243569 (0.59905)

Adjustment coefficients (standard error in parentheses)

D(LNGDP)	-0.077468 (0.02821)	0.163760 (0.08402)	-0.118839 (0.08134)
D(LNGEEDU)	0.170103	-0.299417	0.129250

	(0.12904)	(0.38434)	(0.37206)
D(LNGEH)	0.186925	0.119859	-0.289127
	(0.11871)	(0.35358)	(0.34229)
D(LNGESCS)	0.121821	0.319835	-0.435928
	(0.08487)	(0.25278)	(0.24470)
D(POPGR)	0.028654	0.066344	-0.075890
	(0.01519)	(0.04523)	(0.04379)

4 Cointegrating Equation(s): Log likelihood 37.28374

Normalized cointegrating coefficients (standard error in parentheses)

LNGDP	LNGEEDU	LNGEH	LNGESCS	POPGR
1.000000	0.000000	0.000000	0.000000	-12.28210
				(0.61893)
0.000000	1.000000	0.000000	0.000000	-5.854355
				(1.17922)
0.000000	0.000000	1.000000	0.000000	-6.284846
				(1.35106)
0.000000	0.000000	0.000000	1.000000	-4.866374
				(0.94606)

Adjustment coefficients (standard error in parentheses)

D(LNGDP)	-0.078485	0.161075	-0.092881	-0.015958
	(0.02828)	(0.08414)	(0.10620)	(0.08871)
D(LNGEEDU)	0.188723	-0.250293	-0.345757	0.654530
	(0.12505)	(0.37209)	(0.46965)	(0.39232)
D(LNGEH)	0.207546	0.174263	-0.815185	0.784765
	(0.11310)	(0.33654)	(0.42478)	(0.35483)
D(LNGESCS)	0.111225	0.291880	-0.165617	-0.224747
	(0.08301)	(0.24701)	(0.31177)	(0.26043)
D(POPGR)	0.029344	0.068166	-0.093508	0.031075
	(0.01520)	(0.04524)	(0.05710)	(0.04770)

Dependent Variable: LNGDP

Method: ARDL

Date: 09/28/23 Time: 00:30

Sample (adjusted): 1983 2021

Included observations: 39 after adjustments

Maximum dependent lags: 2 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (2 lags, automatic): LNGEEDU LNGEH LNGESCS

POPGR

Fixed regressors: C

Number of models evaluated: 162

Selected Model: ARDL(1, 2, 2, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	0.827571	0.046017	17.98410	0.0000
LNGEEDU	0.078440	0.076183	1.029624	0.3117
LNGEEDU(-1)	0.101612	0.078483	1.294695	0.2056
LNGEEDU(-2)	-0.162254	0.071916	-2.256139	0.0318

LNGEH	-0.122334	0.085270	-1.434665	0.1621
LNGEH(-1)	-0.016714	0.077403	-0.215937	0.8305
LNGEH(-2)	0.180171	0.076615	2.351646	0.0257
LNGESCS	0.019273	0.049509	0.389292	0.6999
POPGR	0.656663	0.205439	3.196382	0.0033
C	2.540060	1.380794	1.839564	0.0761
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R-squared	0.989582	Mean dependent var	25.61695	
Adjusted R-squared	0.986349	S.D. dependent var	0.990607	
S.E. of regression	0.115739	Akaike info criterion	-1.258400	
Sum squared resid	0.388471	Schwarz criterion	-0.831846	
Log likelihood	34.53881	Hannan-Quinn criter.	-1.105356	
F-statistic	306.0797	Durbin-Watson stat	2.356101	
Prob(F-statistic)	0.000000			

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

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.116717	Prob. F(2,27)	0.3420
Obs*R-squared	2.979599	Prob. Chi-Square(2)	0.2254

Test Equation:

Dependent Variable: RESID

Method: ARDL

Date: 09/28/23 Time: 00:35

Sample: 1983 2021

Included observations: 39

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	0.019922	0.047807	0.416713	0.6802
LNGEEDU	0.008806	0.076519	0.115082	0.9092
LNGEEDU(-1)	-0.005314	0.079693	-0.066677	0.9473
LNGEEDU(-2)	0.022626	0.073608	0.307383	0.7609
LNGEH	-0.024825	0.089125	-0.278546	0.7827
LNGEH(-1)	0.010763	0.079892	0.134722	0.8938
LNGEH(-2)	-0.023353	0.077902	-0.299771	0.7666
LNGESCS	0.010809	0.050010	0.216129	0.8305
POPGR	-0.002589	0.204897	-0.012635	0.9900
C	-0.527871	1.422945	-0.370970	0.7136
RESID(-1)	-0.234992	0.195598	-1.201407	0.2400
RESID(-2)	-0.236234	0.215388	-1.096783	0.2824
<hr/>				
R-squared	0.076400	Mean dependent var	-5.27E-15	
Adjusted R-squared	-0.299882	S.D. dependent var	0.101108	
S.E. of regression	0.115276	Akaike info criterion	-1.235312	
Sum squared resid	0.358792	Schwarz criterion	-0.723447	
Log likelihood	36.08859	Hannan-Quinn criter.	-1.051660	
F-statistic	0.203039	Durbin-Watson stat	2.067508	
Prob(F-statistic)	0.995908			

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.281444	Prob. F(9,29)	0.2885
Obs*R-squared	11.09681	Prob. Chi-Square(9)	0.2691
Scaled explained SS	5.083991	Prob. Chi-Square(9)	0.8269

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

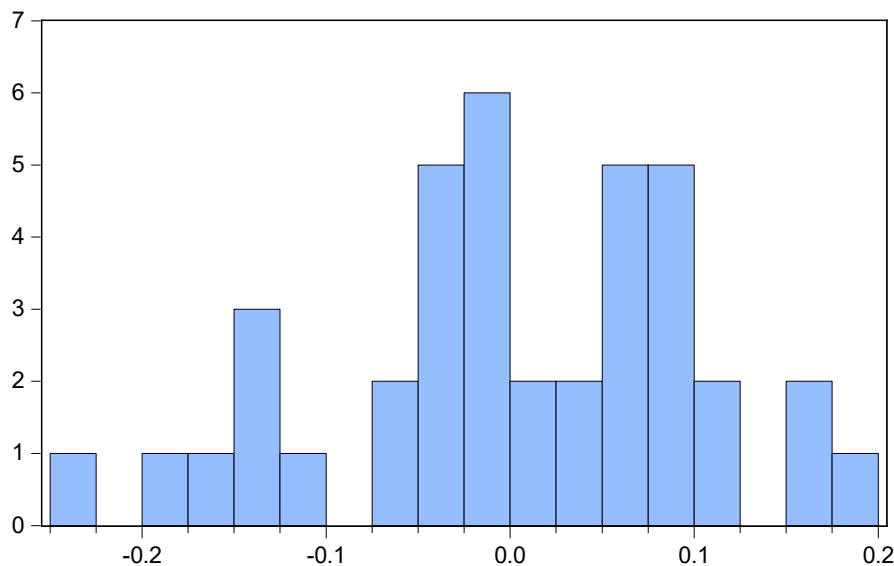
Date: 09/28/23 Time: 00:35

Sample: 1983 2021

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.134100	0.150057	0.893661	0.3789
LNGDP(-1)	-0.006040	0.005001	-1.207720	0.2369
LNGEEDU	-0.010148	0.008279	-1.225788	0.2301
LNGEEDU(-1)	-0.016089	0.008529	-1.886324	0.0693
LNGEEDU(-2)	0.008248	0.007815	1.055357	0.3000
LNGEH	0.008800	0.009267	0.949662	0.3501
LNGEH(-1)	0.012293	0.008412	1.461430	0.1546
LNGEH(-2)	-0.006242	0.008326	-0.749678	0.4595
LNGESCS	0.005465	0.005380	1.015731	0.3182
POPGR	0.013983	0.022326	0.626310	0.5360
R-squared	0.284534	Mean dependent var	0.009961	
Adjusted R-squared	0.062492	S.D. dependent var	0.012990	
S.E. of regression	0.012578	Akaike info criterion	-5.697201	
Sum squared resid	0.004588	Schwarz criterion	-5.270646	
Log likelihood	121.0954	Hannan-Quinn criter.	-5.544157	
F-statistic	1.281444	Durbin-Watson stat	2.421019	
Prob(F-statistic)	0.288543			

Ramsey RESET Test



Series: Residuals	
Sample 1983 2021	
Observations 39	
Mean	-5.27e-15
Median	-0.013626
Maximum	0.188366
Minimum	-0.244804
Std. Dev.	0.101108
Skewness	-0.360453
Kurtosis	2.657181
Jarque-Bera	1.035497
Probability	0.595860

Ramsey RESET Test
Equation: UNTITLED
Specification: LNGDP LNGDP(-1) LNGEEDU LNGEEDU(-1)
LNGEEDU(-2) LNGEH LNGEH(-1) LNGEH(-2) LNGESCS POPGR
C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.097828	28	0.2816
F-statistic	1.205227	(1, 28)	0.2816

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.016031	1	0.016031
Restricted SSR	0.388471	29	0.013396
Unrestricted SSR	0.372440	28	0.013301

Unrestricted Test Equation:
Dependent Variable: LNGDP
Method: ARDL
Date: 09/28/23 Time: 00:36
Sample: 1983 2021
Included observations: 39
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic):
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
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LNGDP(-1)	2.778052	1.777264	1.563106	0.1293
LNGEEDU	0.283497	0.201622	1.406081	0.1707
LNGEEDU(-1)	0.354704	0.243443	1.457031	0.1562
LNGEEDU(-2)	-0.539264	0.350812	-1.537186	0.1355
LNGEH	-0.413706	0.278677	-1.484532	0.1488
LNGEH(-1)	-0.072971	0.092601	-0.788012	0.4373
LNGEH(-2)	0.592162	0.382965	1.546255	0.1333
LNGESCS	0.052910	0.058075	0.911068	0.3700
POPGR	2.129382	1.357014	1.569167	0.1278
C	-21.77835	22.19407	-0.981269	0.3349
FITTED^2	-0.045487	0.041433	-1.097828	0.2816
<hr/>				
R-squared	0.990012	Mean dependent var	25.61695	
Adjusted R-squared	0.986445	S.D. dependent var	0.990607	
S.E. of regression	0.115332	Akaike info criterion	-1.249261	
Sum squared resid	0.372440	Schwarz criterion	-0.780052	
Log likelihood	35.36060	Hannan-Quinn criter.	-1.080913	
F-statistic	277.5417	Durbin-Watson stat	2.450419	
Prob(F-statistic)	0.000000			

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

ARDL Bounds Test

Date: 09/28/23 Time: 00:37

Sample: 1983 2021

Included observations: 39

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	8.204887	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Test Equation:

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 09/28/23 Time: 00:37

Sample: 1983 2021

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEEDU)	0.063695	0.083955	0.758677	0.4542

D(LNGEEDU(-1))	0.202582	0.081199	2.494884	0.0185
D(LNGEH)	-0.089604	0.089494	-1.001228	0.3250
D(LNGEH(-1))	-0.211492	0.083707	-2.526583	0.0172
C	4.328849	1.391041	3.111949	0.0042
LNGEEDU(-1)	-0.032568	0.108568	-0.299974	0.7663
LNGEH(-1)	0.095939	0.115004	0.834222	0.4110
LNGESCS(-1)	0.024886	0.060233	0.413159	0.6825
POPGR(-1)	0.334619	0.235591	1.420340	0.1662
LNGDP(-1)	-0.209306	0.050739	-4.125153	0.0003

R-squared	0.650439	Mean dependent var	0.028877
Adjusted R-squared	0.541955	S.D. dependent var	0.191942
S.E. of regression	0.129904	Akaike info criterion	-1.027485
Sum squared resid	0.489378	Schwarz criterion	-0.600931
Log likelihood	30.03595	Hannan-Quinn criter.	-0.874441
F-statistic	5.995696	Durbin-Watson stat	2.245147
Prob(F-statistic)	0.000099		

Model Estimate

ARDL Cointegrating And Long Run Form

Dependent Variable: LNGDP

Selected Model: ARDL(1, 2, 2, 0, 0)

Date: 09/28/23 Time: 00:37

Sample: 1981 2021

Included observations: 39

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEEDU)	0.078440	0.076183	1.029624	0.3117
D(LNGEEDU(-1))	0.162254	0.071916	2.256139	0.0318
D(LNGEH)	-0.122334	0.085270	-1.434665	0.1621
D(LNGEH(-1))	-0.180171	0.076615	-2.351646	0.0257
D(LNGESCS)	0.019273	0.049509	0.389292	0.6999
D(POPGR)	0.656663	0.205439	3.196382	0.0033
CointEq(-1)	-0.172429	0.046017	-3.747080	0.0008

Cointeq = LNGDP - (0.1032*LNGEEDU + 0.2385*LNGEH + 0.1118
*LNGESCS + 3.8083*POPGR + 14.7311)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGEEDU	0.103221	0.587744	0.175623	0.8618
LNGEH	0.238495	0.579725	0.411393	0.6838
LNGESCS	0.111777	0.294429	0.379639	0.7070
POPGR	3.808317	1.630816	2.335222	0.0267

C 14.731073 4.634201 3.178773 0.0035

Dependent Variable: LNGDP
 Method: ARDL
 Date: 09/28/23 Time: 00:30
 Sample (adjusted): 1983 2021
 Included observations: 39 after adjustments
 Maximum dependent lags: 2 (Automatic selection)
 Model selection method: Akaike info criterion (AIC)
 Dynamic regressors (2 lags, automatic): LNGEEDU LNGEH LNGESCS
 POPGR
 Fixed regressors: C
 Number of models evaluated: 162
 Selected Model: ARDL(1, 2, 2, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	0.827571	0.046017	17.98410	0.0000
LNGEEDU	0.078440	0.076183	1.029624	0.3117
LNGEEDU(-1)	0.101612	0.078483	1.294695	0.2056
LNGEEDU(-2)	-0.162254	0.071916	-2.256139	0.0318
LNGEH	-0.122334	0.085270	-1.434665	0.1621
LNGEH(-1)	-0.016714	0.077403	-0.215937	0.8305
LNGEH(-2)	0.180171	0.076615	2.351646	0.0257
LNGESCS	0.019273	0.049509	0.389292	0.6999
POPGR	0.656663	0.205439	3.196382	0.0033
C	2.540060	1.380794	1.839564	0.0761

R-squared	0.989582	Mean dependent var	25.61695
Adjusted R-squared	0.986349	S.D. dependent var	0.990607
S.E. of regression	0.115739	Akaike info criterion	-1.258400
Sum squared resid	0.388471	Schwarz criterion	-0.831846
Log likelihood	34.53881	Hannan-Quinn criter.	-1.105356
F-statistic	306.0797	Durbin-Watson stat	2.356101
Prob(F-statistic)	0.000000		

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

Specification: LNGDP LNGDP(-1) LNGEEDU LNGEEDU(-1)
 LNGEEDU(-2) LNGEH LNGEH(-1) LNGEH(-2) LNGESCS POPGR
 C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.097828	28	0.2816
F-statistic	1.205227	(1, 28)	0.2816

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.016031	1	0.016031
Restricted SSR	0.388471	29	0.013396
Unrestricted SSR	0.372440	28	0.013301

Unrestricted Test Equation:

Dependent Variable: LNGDP

Method: ARDL

Date: 09/28/23 Time: 00:36

Sample: 1983 2021

Included observations: 39

Maximum dependent lags: 2 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (2 lags, automatic):

Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	2.778052	1.777264	1.563106	0.1293
LNGEEDU	0.283497	0.201622	1.406081	0.1707
LNGEEDU(-1)	0.354704	0.243443	1.457031	0.1562
LNGEEDU(-2)	-0.539264	0.350812	-1.537186	0.1355
LNGEH	-0.413706	0.278677	-1.484532	0.1488
LNGEH(-1)	-0.072971	0.092601	-0.788012	0.4373
LNGEH(-2)	0.592162	0.382965	1.546255	0.1333
LNGESCS	0.052910	0.058075	0.911068	0.3700
POPGR	2.129382	1.357014	1.569167	0.1278
C	-21.77835	22.19407	-0.981269	0.3349
FITTED^2	-0.045487	0.041433	-1.097828	0.2816

R-squared	0.990012	Mean dependent var	25.61695
Adjusted R-squared	0.986445	S.D. dependent var	0.990607
S.E. of regression	0.115332	Akaike info criterion	-1.249261
Sum squared resid	0.372440	Schwarz criterion	-0.780052
Log likelihood	35.36060	Hannan-Quinn criter.	-1.080913
F-statistic	277.5417	Durbin-Watson stat	2.450419
Prob(F-statistic)	0.000000		

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

ARDL Bounds Test

Date: 09/28/23 Time: 00:37

Sample: 1983 2021

Included observations: 39

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	8.204887	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Test Equation:

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 09/28/23 Time: 00:37

Sample: 1983 2021

Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEEDU)	0.063695	0.083955	0.758677	0.4542
D(LNGEEDU(-1))	0.202582	0.081199	2.494884	0.0185
D(LNGEH)	-0.089604	0.089494	-1.001228	0.3250
D(LNGEH(-1))	-0.211492	0.083707	-2.526583	0.0172
C	4.328849	1.391041	3.111949	0.0042
LNGEEDU(-1)	-0.032568	0.108568	-0.299974	0.7663
LNGEH(-1)	0.095939	0.115004	0.834222	0.4110
LNGESCS(-1)	0.024886	0.060233	0.413159	0.6825
POPGR(-1)	0.334619	0.235591	1.420340	0.1662
LNGDP(-1)	-0.209306	0.050739	-4.125153	0.0003
R-squared	0.650439	Mean dependent var		0.028877
Adjusted R-squared	0.541955	S.D. dependent var		0.191942
S.E. of regression	0.129904	Akaike info criterion		-1.027485
Sum squared resid	0.489378	Schwarz criterion		-0.600931
Log likelihood	30.03595	Hannan-Quinn criter.		-0.874441
F-statistic	5.995696	Durbin-Watson stat		2.245147
Prob(F-statistic)	0.000099			

ARDL Cointegrating And Long Run Form

Dependent Variable: LNGDP

Selected Model: ARDL(1, 2, 2, 0, 0)

Date: 09/28/23 Time: 00:37

Sample: 1981 2021

Included observations: 39

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGEEDU)	0.078440	0.076183	1.029624	0.3117

D(LNGEEDU(-1))	0.162254	0.071916	2.256139	0.0318
D(LNGEH)	-0.122334	0.085270	-1.434665	0.1621
D(LNGEH(-1))	-0.180171	0.076615	-2.351646	0.0257
D(LNGESCS)	0.019273	0.049509	0.389292	0.6999
D(POPGR)	0.656663	0.205439	3.196382	0.0033
CointEq(-1)	-0.172429	0.046017	-3.747080	0.0008

Cointeq = LNGDP - (0.1032*LNGEEDU + 0.2385*LNGEH + 0.1118
*LNGESCS + 3.8083*POPGR + 14.7311)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGEEDU	0.103221	0.587744	0.175623	0.8618
LNGEH	0.238495	0.579725	0.411393	0.6838
LNGESCS	0.111777	0.294429	0.379639	0.7070
POPGR	3.808317	1.630816	2.335222	0.0267
C	14.731073	4.634201	3.178773	0.0035

Appendix II

YEAR	GDP	GEEDU	GEH	POPGR	GESCS	Ingdp	Ingeedu	Ingeh	Ingescs
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1981	1.64E+11	0.17	0.08	3.002988	1.299	25.82313	-1.79922	-2.47151	0.261595
1982	1.43E+11	0.19	0.10	2.900872	0.9683	25.68611	-1.67168	-2.34397	-0.03221
1983	9.71E+10	0.16	0.08	2.505584	1.0265	25.29901	-1.81921	-2.49149	0.026155
1984	7.35E+10	0.20	0.10	2.471938	0.2376	25.02055	-1.61493	-2.28722	-1.43717
1985	7.37E+10	0.26	0.13	2.725926	1.154	25.02327	-1.35248	-2.02477	0.143234
1986	5.48E+10	0.26	0.13	2.62007	0.6554	24.72696	-1.3367	-2.00899	-0.42251
1987	5.27E+10	0.23	0.04	2.577103	0.6191	24.68788	-1.49163	-3.18654	-0.47949
1988	4.96E+10	1.46	0.42	2.586844	1.726	24.62726	0.377614	-0.86086	0.545807
1989	4.4E+10	3.01	0.58	2.613645	1.8448	24.50746	1.102538	-0.55286	0.612371
1990	5.4E+10	2.40	0.50	2.628599	2.096	24.71225	0.876635	-0.69175	0.740031
1991	4.91E+10	3.40	0.62	2.562201	1.4917	24.61712	1.224599	-0.48094	0.399916
1992	4.78E+10	0.29	0.15	2.523728	2.1326	24.59029	-1.23341	-1.89605	0.757342
1993	2.78E+10	8.88	3.87	2.555768	3.5753	24.0483	2.184069	1.353668	1.274049
1994	3.38E+10	7.38	2.09	2.574829	4.9944	24.24373	1.999145	0.739068	1.608317
1995	4.41E+10	9.75	3.32	2.55719	9.2156	24.50973	2.276898	1.200176	2.220898
1996	5.11E+10	11.67	3.18	2.526853	8.6562	24.65705	2.456764	1.155402	2.158276
1997	5.45E+10	14.85	3.89	2.522965	6.902	24.72147	2.698238	1.358692	1.931811
1998	5.46E+10	13.59	4.74	2.516034	23.3656	24.7233	2.609297	1.556515	3.151265
1999	5.94E+10	43.61	16.64	2.54262	17.2535	24.80756	3.775301	2.811736	2.848015
2000	6.94E+10	57.96	15.22	2.602869	27.9652	24.96315	4.059695	2.722484	3.330961
2001	7.4E+10	39.88	24.52	2.651265	53.336	25.02733	3.68594	3.199582	3.976612
2002	9.51E+10	80.53	40.62	2.68289	32.4673	25.27819	4.388641	3.704295	3.480233
2003	1.05E+11	64.78	33.27	2.692768	55.736	25.37723	4.17103	3.504595	4.020626
2004	1.36E+11	76.50	34.20	2.695503	30.03252	25.63592	4.337291	3.532226	3.402281
2005	1.76E+11	82.80	55.70	2.693693	71.36119	25.89375	4.416428	4.01998	4.267754
2006	2.38E+11	119.02	62.25	2.695926	78.68134	26.19554	4.779275	4.131217	4.365406
2007	2.78E+11	150.78	81.91	2.709627	150.8952	26.35089	5.015817	4.405613	5.016585
2008	3.39E+11	163.98	98.22	2.719687	152.1746	26.54927	5.099729	4.587203	5.025029
2009	2.95E+11	137.12	90.20	2.727385	144.9265	26.41024	4.920827	4.502029	4.976227
2010	3.67E+11	170.80	99.10	2.744379	151.7745	26.62863	5.140493	4.596129	5.022396
2011	4.14E+11	335.80	231.80	2.764062	92.8489	26.74913	5.816516	5.445875	4.530973
2012	4.64E+11	348.40	197.90	2.749289	97.4	26.86315	5.853351	5.287762	4.578826
2013	5.2E+11	390.40	180.00	2.697474	154.7067	26.97709	5.967172	5.192957	5.041531
2014	5.74E+11	343.75	195.98	2.628124	111.29	27.0759	5.839929	5.277996	4.712139
2015	4.93E+11	325.19	257.70	2.541187	82.97675	26.92378	5.78441	5.551796	4.41856
2016	4.05E+11	339.28	200.82	2.507034	68.80033	26.72715	5.826833	5.302429	4.231209
2017	3.76E+11	403.96	245.19	2.527317	167.6555	26.65285	6.001309	5.502025	5.121911

2018	4.22E+11	465.30	296.44	2.496645	203.4181	26.76827	6.142685	5.691854	5.315263
2019	4.75E+11	593.33	388.37	2.448201	264.6905	26.88658	6.385755	5.961951	5.578561
2020	4.32E+11	646.75	423.33	2.440609	186.7394	26.79169	6.471956	6.048152	5.229714
2021	4.41E+11	620.59	386.24	2.406363	303.6626	26.81231	6.430672	5.95647	5.715917

SOURCE: Central Bank OF Nigeria (CBN), World Bank