THE IMPACT OF URBANIZATION ON ECONOMIC GROWTH IN NIGERIA

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BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS, FACULTY OF SOCIAL SCIENCE, UNIVERSITY OF BENIN, BENIN CITY. IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc) DEGREE IN ECONOMICS, UNIVERSITY OF BENIN, BENIN CITY.

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CERTIFICATION

This is to certify that this work titled "**THE IMPACT OF URBANIZATION ON ECONOMIC DEVELOPMENT IN NIGERIA**" was carried out by **SARAH IFEOMA IGILI** with matriculation number SSC2105569 and has been approved in partial fulfillment of the requirement for the award of Bachelor of science (B.Sc) degree in the department of economics, faculty of social sciences, university of Benin, under the supervision of the following persons;

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DEDICATION

This project is dedicated to God almighty for seeing me through this journey and always being with me. This project is also dedicated to MR SUNNY IGILI for everything because words are not enough to appreciate you daddy, I love you and I hope I made you proud.

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I want to thank God almighty cause I wouldn't be here without him, thank you Father for always being faithful to me.

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Special thanks to my daddy MR IGILI for his unwavering and unconditional support and commitment to me, I love you more than words can say, thanks to SLEEK ANGEL, PRINCESS, SUCCESS, PRINCE, i love you guys so much

To NANA MY LOVE, my day one, I love you and thank you for everything. JOY, CONFIDENCE and ANITA, thank you guys for making classes fun to come to.

And to my final year gift, because words are not enough for you, this project is yours as much as it's mine. To GODWIN ONESO AFEMIKHE aka DADDY WA lol I love youuuuuuu

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ABSTRACT

This study examines the impact of urbanization on economic growth in Nigeria. The objectives here are to assess the predictive relationship between urban population growth and Nigeria's real GDP from 1990 to 2024, to examine the short-run and long-run effects of urbanization on Nigeria's industrial output using econometric models, to investigate how urban infrastructure factors (e.g., electricity access, road density) mediate the impact of urbanization on economic performance across major Nigerian cities.This study employs the auto regressive distribution lag (ARDL) model to analyze the impact of urbanization quantity, urbanization concentration, infrastructure, human capital and unemployment rate on urbanization and its effect on economic growth in Nigeria. The study made use of time series data from 1990 to 2024 with data sourced from the world bank world development indicator.From the findings of this study, it shows that there is a long run equilibrium relationship between economic growth and its explanatory variables, while excessive concentration in the cities negatively affect growth in the long run, education shows a negative short run effect but is insignificant in the long run while infrastructure when combined with urbanization especially in large cities enhances growth.Overall, the results highlight urbanization as a key driver of growth, with infrastructure, education, and labour market conditions shaping its effectiveness.

CHAPTER ONE

THE IMPACT OF URBANIZATION ON ECONOMIC GROWTH IN NIGERIA

1.1 BACKGROUND OF THE STUDY

Urbanization, the increasing shift of populations from rural to urban areas, has become one of the defining demographic trends of the 21st century. It is a process characterized by the growth and spatial expansion of cities, often accompanied by rising population densities, infrastructure development, and shifting economic activities. Globally, urbanization is linked with structural transformation a movement from agriculture-based to industry- and service-based economies and has often served as a catalyst for economic growth and development (UN-Habitat, 2019).

In the context of Nigeria, urbanization has been both rapid and transformational. In 1960, only about 15% of Nigeria's population lived in urban areas, but by 2020, this figure had risen to over 50% (World Bank, 2020). Projections suggest that by 2030, nearly two-thirds of the country's population will reside in cities. This dramatic growth has been driven by rural-urban migration, natural population increases, and the concentration of economic opportunities in urban centers. Cities like Lagos, Abuja, Port Harcourt, and Kano have expanded both demographically and spatially, becoming economic powerhouses within the national economy.

Urban centers in Nigeria contribute significantly to national economic output. According to the National Bureau of Statistics (2020), urban areas account for over 70% of Nigeria's Gross Domestic Product (GDP), hosting key sectors such as manufacturing, telecommunications, finance, transportation, and trade. Urban environments tend to facilitate economies of scale, innovation, and access to markets and capital. In theory, urbanization should enhance productivity and living standards, particularly when

supported by effective urban planning, infrastructure investment, and good governance.

However, the reality of Nigeria's urbanization is far more complex. While urban growth has brought opportunities, it has also generated serious economic, environmental, and social challenges. The speed of urban expansion has often outpaced infrastructure development, leading to overcrowded slums, inadequate transportation systems, insufficient housing, poor waste management, and overstretched public services (Adeleke, 2017). Many cities face chronic electricity shortages, water supply issues, and deteriorating road networks, which undermine productivity and quality of life.

Additionally, urban poverty remains widespread, particularly among recent migrants who settle in informal settlements with limited access to jobs, education, or healthcare. High rates of unemployment and underemployment are prevalent in urban Nigeria, particularly among the youth. These realities complicate the presumed link between urbanization and sustained economic growth. While cities generate wealth, that wealth is often unevenly distributed, and many urban dwellers do not experience tangible improvements in their livelihoods.

Moreover, the institutional and policy frameworks for managing urbanization in Nigeria have often been weak or poorly implemented. Urban planning is frequently outdated or absent, and land use regulations are inconsistently enforced. As a result, many Nigerian cities grow in an uncoordinated and informal manner, further compounding urban inefficiencies.

In light of these challenges and contradictions, understanding the true impact of urbanization on Nigeria's economic growth becomes essential. Does urbanization genuinely promote economic expansion, or are its benefits diluted by poor infrastructure and governance? Can Nigeria harness urban growth as a development driver, or will

urbanization deepen inequality and institutional stress?

This study, therefore, seeks to critically examine the relationship between urbanization and economic growth in Nigeria using empirical, data-driven analysis. By focusing on key economic indicators such as GDP and industrial output, and exploring how infrastructure and policy factors shape this relationship, the research aims to provide insights that can inform effective urban management and economic planning.

1.2 STATEMENT OF THE PROBLEM

Despite the potential of urbanization to drive economic growth, Nigeria continues to face several urban-related challenges. These include infrastructural deficits, high urban unemployment, poor housing conditions, traffic congestion, and inadequate sanitation. While urban centers contribute significantly to the nations GDP, the benefits of urbanization are unevenly distributed, and many cities lack the capacity to manage their growing populations effectively.

Furthermore, there is a lack of consensus in the literature on the direction and magnitude of the impact of urbanization on economic growth in Nigeria. Some studies argue that urbanization positively influences growth by fostering industrialization and innovation, while others contend that it exacerbates inequality and strains public resources.

This study addresses the following critical questions: How does urbanization influence economic growth in Nigeria? Are the effects of urbanization uniformly positive, or are there negative externalities that hinder economic performance? What are the key policy interventions required to harness urbanization for economic development?

1.3 Objectives of the Study

The specific objectives of the study are to:

1. To assess the predictive relationship between urban population growth and Nigeria's real GDP from 1990 to 2024.

2. To examine the short-run and long-run effects of urbanization on Nigeria's industrial output using econometric models.

3. To investigate how urban infrastructure factors (e.g., electricity access, road density) mediate the impact of urbanization on economic performance across major Nigerian cities.

1.4 Research Questions

To guide the study, the following research questions are posed:

1. To what extent does urban population growth predict changes in Nigeria's real GDP between 1990 and 2024?

2. What is the long-run and short-run impact of urbanization on Nigeria's industrial output, using econometric modeling techniques?

3. How do urban infrastructure indices (e.g., electricity access, road density, housing availability) mediate the effect of urbanization on economic performance across major Nigerian cities?

1.5 Research Hypotheses

The study will test the following hypotheses:

* H_{01}: Urban population growth does not significantly predict changes in Nigeria's real GDP between 1990 and 2024.

* H_{11}: Urban population growth significantly predicts changes in Nigeria's real GDP between 1990 and 2024.

* H_{02}: Urbanization has no significant short-run or long-run effect on Nigeria's industrial output.

* H_{12}: Urbanization has significant short-run and long-run effects on Nigeria's industrial output.

* H_{03}: Urban infrastructure does not significantly mediate the impact of urbanization on economic performance across Nigerian cities.

* H_{13}: Urban infrastructure significantly mediates the impact of urbanization on economic performance across Nigerian cities.

1.6 Significance of the Study

This study is significant for several reasons. First, it contributes to the academic discourse on the relationship between urbanization and economic performance in developing countries. Second, the findings will provide valuable insights for policymakers, urban planners, and development agencies seeking to design and implement strategies for sustainable urban growth. Third, the study will highlight the role of infrastructure, governance, and urban planning in maximizing the benefits of urbanization while mitigating its adverse effects.

By providing an evidence-based assessment of urbanizations impact on economic growth in Nigeria, this research aims to inform future development policies and urban management practices.

1.7 Scope of the Study

The study focuses on the Nigerian economy and examines data spanning from 1990 to 2024. It evaluates the relationship between urban population growth and economic indicators such as GDP, employment, and industrial output. The study also considers regional variations and draws from both macroeconomic and micro-level data. Although Nigeria has many urban centers, emphasis will be placed on key cities such as Lagos, Abuja, Kano, and Port Harcourt, which have experienced the highest urbanization rates.

1.8 Limitations of the Study

This study may encounter several limitations, including:

- Data limitations: Inconsistencies or lack of disaggregated urban data may affect the accuracy of some analyses.
- Causality issues: Establishing causality between urbanization and economic growth can be complex due to other intervening factors.
- Time and resource constraints: These may limit the depth of case studies and the scope of field surveys.

1.9 Definition of Terms

- Urbanization: The increase in the proportion of a country's population residing in urban areas, often accompanied by physical and economic transformation.
- Economic Growth: The increase in the production of goods and services in an economy over a period, commonly measured by changes in real Gross Domestic Product (GDP).
- Urban Infrastructure: The fundamental facilities and systems serving a city, including transportation, sanitation, water supply, and electricity.
- Sustainable Development: Economic development that is conducted without depletion of natural resources and that ensures the well-being of future generations.

CHAPTER TWO

CONCEPTUAL REVIEW

2.1.1 Conceptual Clarifications

This section discusses the core concepts of the study, providing definitions, explanations, and methods of measurement. Each variable is discussed under a numbered subheading.

2.1.2 Urbanization

Definition and Explanation Urbanization refers to the increase in the proportion of a country's population living in urban areas, typically associated with changes in economic structure, lifestyle, and spatial organization (Todaro & Smith, 2015). It involves rural-urban migration, natural population growth in cities, and the physical expansion of urban settlements.

Measurement Urbanization is commonly measured by the urban population share (percentage of the total population living in urban areas) and the urban growth rate. Other proxies include the rate of expansion of urban land, number of megacities, and infrastructure density (UN-Habitat, 2019).

Measurement in This Study This study uses urban population growth (as a percentage of total population) as the primary proxy for urbanization, based on data from the World Bank and National Bureau of Statistics.

2.1.3 Economic Growth

Definition and Explanation Economic growth is the sustained increase in the output of goods and services within an economy over time, most often quantified using real Gross

Domestic Product (GDP). It reflects improvements in productivity, investment, human capital, and innovation (Barro & Sala-i-Martin, 2004).

Measurement Economic growth is primarily measured by real GDP growth rate. Additional measures include per capita income, sectoral output (e.g., industry or services), and productivity indices.

Measurement in This Study This study uses real GDP growth rate and industrial output levels as indicators of economic growth, capturing both overall and sector-specific economic performance in relation to urbanization.

2.l.4 Urban Infrastructure

Definition and Explanation Urban infrastructure refers to the essential physical systems and services that support urban life, including roads, electricity, housing, water supply, sanitation, and communication networks (UN-Habitat, 2019).

LITERATURE REVIEW

Urbanization is a pivotal driver of economic growth and development in Nigeria, a country experiencing rapid population expansion and urban sprawl. As Africa's most populous nation, Nigeria has witnessed significant rural-urban migration, with cities such as Lagos, Abuja, and Port Harcourt emerging as major centers of economic activity and urban development (Adelekan, 2016). This rapid urban expansion has transformed settlement patterns, economic structures, and environmental conditions. The proportion of urban dwellers has risen from 9% in 1950 to over 50% in 2019 (Jemiluyi, 2021).

Urban growth, supported by the exploration and utilization of natural resources, has contributed to economic development. However, prioritizing urban expansion over

environmental sustainability has created challenges for long-term growth. Urban activities exert immense pressure on natural resources, leading to pollution, deforestation, and ecological depletion (Dubey & Narayanan, 2010). These environmental consequences undermine agricultural productivity, reduce resource availability, and increase the costs of maintaining economic activities in cities.

Urbanization further exacerbates these effects through increased energy consumption, poor waste management, and deforestation (Mahmood et al., 2020). Since the 1960s, Nigeria has implemented policies to guide urban development (Audi et al., 2014; Famade, 2007), yet weak environmental regulations have allowed rapid expansion to outpace infrastructure and institutional capacity. While urbanization has created jobs, improved markets, and stimulated infrastructure development, its unplanned growth has also led to congestion, rising costs of living, and economic inefficiencies (Mehmood et al., 2024).

The impacts of urbanization on Nigeria's economy are therefore twofold. On one hand, it stimulates economic growth by expanding markets, encouraging investment, and supporting innovation. On the other hand, unregulated urban expansion intensifies land degradation, strains infrastructure, and reduces productivity in both urban and rural sectors (Eze et al., 2020). Urban expansion also contributes to greenhouse gas emissions, land degradation, and environmental stress through rising demands for housing, transportation, and waste management services (Musa et al., 2021; Ohwo & Abotutu, 2015). These factors increase the cost of production, discourage investment, and limit the long-term sustainability of economic growth.

Given these realities, this paper explores the economic consequences of urbanization in Nigeria, emphasizing how environmental pressures from rapid urban growth interact with resource use, infrastructure, and productivity. By linking urban expansion with economic performance, this study highlights the urgent need for sustainable urban policies to

maximize growth benefits while minimizing long-term economic costs.

Urbanization in Nigeria: Trends and Economic Implications of Environmental Impacts

Urbanization in Nigeria has been characterized by rapid population growth and the continuous expansion of urban areas. According to the United Nations, Nigeria's urban population is projected to reach 60% of the total population by 2030, up from 50% in 2020 (UN-Habitat, 2020). This expansion is largely driven by rural-urban migration, natural population increase, and the concentration of economic opportunities in cities (Adelekan, 2016). While urbanization has created new centers of commerce and investment, it has also outpaced the capacity of existing infrastructure and public services. The mismatch between rapid population growth and inadequate planning has generated environmental problems that ultimately constrain economic efficiency and long-term growth.

One of the most pressing challenges is the inadequate management of solid waste. As urban populations expand, the volume of waste generated increases significantly. In many Nigerian cities, poor waste disposal systems lead to pollution of land and water resources, which in turn raises the cost of urban maintenance and undermines investment opportunities (Eze et al., 2020; Omokaro et al., 2024b). Businesses face higher operational costs due to deteriorating environments, and government expenditure on cleanup and restoration diverts funds away from productive investments in infrastructure and human capital. Over time, these inefficiencies reduce Nigeria's ability to attract both domestic and foreign investment, which is crucial for sustainable growth.

Another important environmental impact of urbanization is the loss of green spaces and biodiversity. The conversion of forests, wetlands, and agricultural land into residential areas, roads, and commercial facilities results in deforestation and habitat fragmentation.

This loss of biodiversity undermines ecosystem services that are critical for economic activities. For instance, the destruction of green spaces reduces natural climate regulation, intensifies urban heat, and contributes to flooding risks, which disrupt economic productivity and damage infrastructure (Mafiana et al., 2022). Additionally, the decline in ecosystem functions such as soil fertility and water purification threatens agricultural output, which remains a major source of income and employment for Nigeria's economy (Ogunbiyi & Aderogba, 2018).

Furthermore, the strain on infrastructure caused by unplanned urban growth creates economic bottlenecks. Congestion in transportation networks reduces the efficiency of goods and labor mobility, while insufficient housing supply drives up living costs and limits disposable income that could otherwise stimulate demand. Similarly, the pressure on energy and water supply systems contributes to frequent shortages, raising the cost of production for industries and service providers (Akinwale & Oladipo, 2014; Oyeleye, 2013). These conditions weaken Nigeria's global competitiveness and slow down the potential economic benefits that urbanization is expected to deliver.

In summary, while urbanization in Nigeria fosters growth by concentrating labor, markets, and capital in urban centers, its environmental impacts create significant economic risks. Poor waste management, deforestation, and infrastructure deficits undermine productivity, increase government expenditure, and discourage private investment. Unless properly managed through sustainable urban planning and policies, the negative consequences of rapid urban expansion may outweigh its economic gains in the long run (World Bank, 2016; UN-Habitat, 2020).

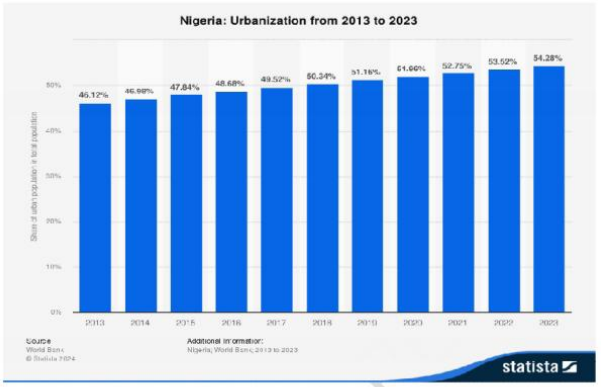


Figure 1: Nigeria Urban Growth

The date in Figure 1 shows that Nigeria's urban population remained steady at about 54.28% in 2023, showing no major change from the year 2022. However, this was the highest level recorded during the observed period.

URBANIZATION AND POVERTY AND HOW IT AFFECTS ECONOMIC GROWTH IN NIGERIA

Nigeria, widely regarded as the “Giant of Africa,” is the most populous nation on the continent and boasts the largest economy. It is also Africa’s leading exporter of petroleum, accounting for about 2.7% of global oil production. Based on international economic rankings, Nigeria has been placed as the 27th largest economy in the world by nominal GDP and 22nd by purchasing power parity. However, this economic status contrasts sharply with the nation’s social realities, as Nigeria ranks 176th in the world and 24th in Africa on the Human Development Index (HDI), reflecting poor outcomes in health, education, and living standards (UN-Habitat, 2020). Poverty remains widespread, with nearly 98 million Nigerians classified as multidimensionally poor, despite the country’s vast natural and human resources (Today News Africa, 2020).

Nigeria’s poverty is distinctive it represents severe deprivation in the midst of abundance.

Unlike many countries with similar economic profiles, the living standards of most Nigerians do not align with the nation's wealth. Poverty in Nigeria is multidimensional, cutting across sectors and fueled by numerous factors, one of which is rapid urbanization. Urbanization, defined as the rising proportion of people living in towns and cities, is typically expressed as a percentage of the total population (Oyeleye, 2013).

In theory, urbanization should generate significant economic and social benefits. Concentrated populations create large markets, boost productivity, encourage business linkages, and expand employment opportunities. Socially, it improves access to education, enhances cultural interaction, and promotes the spread of technology. Furthermore, it facilitates global integration through increased international trade and stronger geopolitical presence. Thus, urbanization has the potential to act as a driver of economic growth and social transformation (UN-Habitat, 2020).

This potential is echoed in the United Nations Sustainable Development Goals (SDGs), particularly Goal 11, which advocates for sustainable, inclusive, and resilient cities by 2030. The target emphasizes safe and affordable housing and reducing the proportion of urban dwellers living in slums or informal settlements. For a country like Nigeria, achieving this goal would reduce urban hardships and enhance rural-to-urban migration incentives (UN-Habitat, 2020).

Challenges of Urbanization in Nigeria

Despite these prospects, Nigerian cities face severe deficiencies in essential services such as electricity, water supply, transportation, housing, healthcare, and schools. The pressure of large populations overwhelms available facilities, leading to widespread hardship, disease outbreaks, high maternal and child mortality, and rising insecurity. Even affluent households often provide their own basic services, such as electricity through generators,

water via boreholes, and security through private guards (Oyeleye, 2013).

Transport congestion is another critical challenge. In Lagos, for example, daily commuters leave home as early as 4 a.m. to avoid gridlock, only returning late at night conditions that not only lower productivity but also expose them to security risks such as armed robbery (Today News Africa, 2020).

Housing shortages also remain a major issue. High rental costs push many into slums, where conditions are deplorable marked by poor sanitation, limited road access, and lack of basic infrastructure. Despite government justification for mass evictions on the grounds that slums foster crime and prostitution, such actions rarely address the root causes or provide adequate alternatives for displaced residents (Today News Africa, 2020).

Slums also act as breeding grounds for social vices and crime. Children raised in these environments are often exposed to harsh conditions that push them into street life and criminal activities. Law enforcement records indicate that most criminal hotspots are located in urban slums, as seen during "Operation Puff Adder," which uncovered widespread kidnapping, armed robbery, and cultism across Nigerian cities (Oyeleye, 2013).

Underlying Factors

Several factors explain why urbanization has become a challenge rather than a driver of development in Nigeria. First is the high cost of maintaining large urban centers. Compared with other countries with low HDI rankings, Nigeria has an unusually high number of cities with populations exceeding 500,000. While most countries in this category typically manage only one such city, Nigeria has over 20, which strains limited resources (Oyeleye, 2013).

Second, weak governance exacerbates these challenges. While governments often cite insufficient resources to meet urban demands, the problem is compounded by lack of political will and poor urban planning. Effective management of urban centers requires visionary leadership and proactive planning, which have often been absent in Nigeria's urban development policies. As a result, poverty remains more pronounced in cities where the challenges are magnified by population pressure and infrastructure deficits (Oyeleye, 2013).

Urbanization, Environmental Degradation, and Economic Growth in Nigeria

Urbanization in Nigeria has transformed the natural environment through land-use change, pollution, and the overexploitation of resources. The rapid growth of cities, largely driven by population increase and infrastructural expansion, has encroached on wetlands, contributed to deforestation, and worsened soil degradation. While urbanization can stimulate industrial growth and job creation, the accompanying environmental damage undermines the very foundation of economic sustainability. Scholars such as Newman (2006) note that unchecked population concentration in cities can weaken environmental quality, thereby reducing productivity and increasing health costs. Similarly, Ejaro and Abubakar (2013) emphasize that uncontrolled urbanization in developing countries often leads to poverty, crime, and unsustainable growth patterns all of which constrain long-term economic expansion.

Although urbanization sometimes brings efficiency, such as lower per capita emissions compared to rural populations (Dodman, 2009), in Nigeria, the negative consequences have been more pronounced. Iroye (2015) highlights that urban-related construction and illegal mining have degraded soil and water quality, threatening agricultural output and access to clean water. These outcomes diminish economic growth by reducing agricultural productivity, raising public health expenditures, and discouraging investment

in affected regions.

Industrialization, often considered a pathway to economic growth, has further driven environmental decline. In Nigeria, since the 1960s, efforts to industrialize have been linked with widespread gas flaring, greenhouse gas emissions, and water contamination (Audi et al., 2014). While industrial activity increases GDP in the short run, studies show that it deteriorates air, soil, and water quality, which erodes the natural capital needed to sustain growth (Mahmood et al., 2020). Weak enforcement of environmental regulations has allowed pollution and degradation to persist (Ohwo & Abotutu, 2015).

Air Pollution and Economic Implications

Air pollution is among the most critical consequences of Nigeria's urban and industrial growth. Vehicular emissions, industrial activities, and the burning of fossil fuels release large amounts of nitrogen oxides, carbon monoxide, and particulate matter (Ohwo & Abotutu, 2015). Musa et al. (2021) show a direct causality between industrial growth and CO_2 emissions, reinforcing the environmental cost of economic expansion. Such pollution increases the prevalence of respiratory and cardiovascular diseases, which reduces labor productivity, increases healthcare costs, and diminishes the quality of human capital a crucial driver of economic growth (Chindo, 2014).

Water Pollution and Growth Constraints

Industrial effluents, oil spills, and municipal waste discharged into water bodies have degraded water quality across Nigeria, especially in industrial hubs like the Niger Delta (Jemiluyi, 2021). Contaminated water sources contribute to diseases such as cholera and typhoid, placing additional burdens on healthcare systems and lowering workforce efficiency. Omokaro et al. (2024a, 2025) report the presence of heavy metals such as

mercury, lead, and cadmium in water sources, which threaten public health and agricultural productivity. By compromising Nigeria's abundant water resources and raising the risk of epidemics, water pollution reduces the capacity of the economy to grow sustainably.

Deforestation, Land Degradation, and Agricultural Growth

Nigeria's forests have been depleted by urban expansion, agriculture, and industrial activity. Ohwo and Abotutu (2015) report that urban sprawl has accelerated deforestation, resulting in soil erosion, desertification, and loss of biodiversity. These outcomes reduce agricultural yields and increase food insecurity directly slowing rural economic growth and national GDP. Maijama'a et al. (2020) further note that foreign direct investment and agricultural expansion have contributed to deforestation, compounding the problem. The reduction in forest cover also limits Nigeria's capacity to sequester carbon, making the economy more vulnerable to the global effects of climate change.

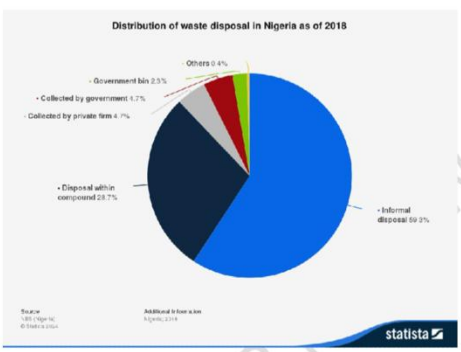


Figure 2: Nigeria 2018 Waste Disposal Pattern

Waste Management Challenges and Economic Growth in Nigeria

The accelerating pace of urbanization in Nigeria has outstripped the capacity of existing waste management systems, creating widespread environmental and economic challenges. Poor waste disposal practices such as indiscriminate dumping and open burning have become common in urban areas, resulting in environmental degradation and health risks. Jemiluyi (2021) notes that most Nigerian cities lack adequate waste collection and recycling infrastructure, leading to the accumulation of refuse on streets and drainage channels. The improper handling of hazardous and industrial waste further worsens pollution levels, while the surge in plastic waste has clogged waterways, exacerbating flooding and increasing urban vulnerability.

The economic implications of these inefficiencies are severe. For instance, the National Emergency Management Agency (NEMA) reported that the 2022 flood disaster linked partly to poor waste disposal and infrastructural weaknesses affected 4.47 million people nationwide, displacing over 2 million and causing 665 deaths. Beyond the humanitarian toll, such disasters disrupt agricultural productivity, displace labor, and increase government spending on relief rather than development, thereby slowing economic growth.

Similarly, Omokaro et al. (2024b) emphasize that massive dumpsites such as Olusosun in Lagos illustrate the scale of Nigeria's waste management crisis. These sites not only pollute surrounding ecosystems but also impose long-term economic costs by undermining land value, deterring investment, and threatening the health of urban populations. The release of toxic gases, leachates, and greenhouse emissions from such dumpsites contributes to respiratory diseases, waterborne illnesses, and other public health crises that lower labor productivity and increase healthcare costs.

Overall, inadequate waste management in Nigeria not only undermines environmental sustainability but also constrains economic growth by escalating public health

expenditures, reducing workforce productivity, and discouraging industrial and foreign investment.

EMPIRICAL LITERATURE

Conceptualizing Urban Slums and Overpopulation

Urban Slums

The notion of "urban slums" has shifted from being an informal label for poor neighborhoods to a well-defined concept in urban studies. UN-Habitat (2003) describes slums as settlements where inhabitants are deprived of one or more critical needs such as durable housing, adequate living space, safe drinking water, proper sanitation, or secure land tenure. This multidimensional framework highlights deprivation of basic human necessities rather than just physical deterioration, in line with Sustainable Development Goal (SDG) 11.1, which emphasizes adequate housing for all (United Nations, 2015). In Nigeria, areas such as Makoko in Lagos and Sabon Gari in Kano exemplify these conditions, with congested makeshift structures, exposed sewage channels, and uncertain tenure arrangements (Akinwale, 2021).

Slums are not merely physical spaces but also socio-economic outcomes. Davis (2006) argues that they result from the interaction of rapid urbanization and economic systems unable to absorb surplus labor into formal markets an issue particularly visible in Nigeria's post-oil boom urban expansion. The typical demographic of slum dwellers young, migrant, and engaged in informal work reflects both the attractiveness of urban centers and the limitations of rural economies (Mberu & Ezch, 2017). Slum growth in Nigeria is thus a symptom of structural inequalities, where city expansion surpasses infrastructural and institutional capacity, leaving millions in substandard conditions (Ogunbodede, 2017).

Thomson et al. (2021) further emphasize that slums often occupy marginal lands such as floodplains, industrial zones, or riverbanks, making residents vulnerable to disasters. For example, the floating settlement of Makoko in Lagos illustrates how exclusion from formal housing markets drives informal habitation (Akinwale, 2018). Similar patterns are visible across Nigerian cities: waterfront communities in Port Harcourt face frequent demolitions and flooding risks (Agbola & Agunbiade, 2009); informal settlements like Oje and Beere in Ibadan are characterized by overcrowded compounds and inadequate sanitation facilities (Adelekan, 2016); and in Onitsha, one of West Africa's largest commercial hubs, dense slum clusters around markets have become hotspots for poor waste management and environmental pollution (Okoye, 2017). These cases reinforce that Nigerian slums are not isolated phenomena but part of a broader pattern of urban exclusion.

Overpopulation

Overpopulation goes beyond high population density and is best defined in relation to available resources and sustainable living. Ehrlich and Ehrlich (1990) conceptualize it as a condition in which the population exceeds the carrying capacity of its environment to sustain a reasonable quality of life. In cities, this translates into a mismatch between rapid population growth and the ability of governments to provide housing, jobs, and services (United Nations, 2019). Nigeria's urban areas reflect this imbalance clearly, as annual growth rates surpassing 3% have placed enormous strain on cities like Lagos, Port Harcourt, Ibadan, and Kano (UN-Habitat, 2020).

The key drivers of overpopulation include high fertility rates, rural-urban migration, and natural population growth. The National Population Commission and ICF Macro (2009)

reported a fertility rate of 5.3 children per woman, among the highest in sub-Saharan Africa, resulting in a predominantly youthful population that drives migration to cities. Importantly, overpopulation in Nigeria is also a matter of spatial concentration rather than just absolute numbers. Lagos, for example, has over 6,000 people per square kilometer, with densities reaching 20,000 in areas like Ajegunle (Akinwale, 2021). Similarly, Port Harcourt has witnessed rising densities in informal riverine settlements, where population growth has overwhelmed sanitation and waste systems (Agbola & Agunbiade, 2009). Ibadan, Nigeria's largest indigenous city, experiences severe overcrowding in its inner-core neighborhoods, where shared facilities are stretched beyond capacity (Adelekan, 2016). In Onitsha, population pressure around the main market has led to one of the highest waste generation rates in the country, creating acute environmental and public health challenges (Okoye, 2017).

These examples demonstrate that overpopulation in Nigeria is not merely a demographic issue but a spatial and infrastructural challenge that significantly undermines urban quality of life (Ezch et al., 2017).

Empirical Review on Urban Slums in Nigeria

Urban slums in Nigeria have become a defining feature of the country's urbanization trajectory, symbolizing both the opportunities and challenges of rapid population growth in cities. Urbanization refers to the spatial, social, and demographic transformation associated with city growth, but in Nigeria, this process has also generated a host of socio-economic and environmental problems (Adesola & Olabiyi, 2023). The development of slums is typically linked to economic hardship, persistent rural-to-urban migration, poor urban planning, and inadequate provision of social services all of which have widened inequalities in living standards.

Evidence from recent studies shows that Nigeria's urban population is expanding at an unprecedented pace. Between 2010 and 2050, the number of people in Nigerian cities is expected to rise from 62.5 million to nearly 226 million (Onwujekwe et al., 2021). Much of this increase stems from rural migrants seeking employment and improved living conditions. However, most migrants end up in informal settlements where overcrowding, poor housing, and limited access to basic services such as water, sanitation, and healthcare are common realities (Philip, 2024; Ebekozien et al., 2024).

The social and economic implications of these settlements are considerable. Many residents rely on precarious informal sector activities, which exposes them to instability and insecurity (Ebekozien et al., 2024). Slum life is often associated with rising crime, substance abuse, and various forms of exploitation. Women and adolescents are particularly vulnerable, with research noting that some resort to prostitution due to extreme economic hardship (Olofinbiyi & Singh, 2020). These issues highlight how structural poverty in slums perpetuates cycles of deprivation and marginalization.

City-specific studies across Nigeria reveal how these dynamics play out in practice. In Makoko, Lagos, often described as the "Venice of Africa," thousands of households live in precarious wooden structures built on stilts over the Lagos Lagoon. Residents face frequent flooding, insecure tenure, and threats of eviction, highlighting the intersection of poverty and environmental risk (Akinwale, 2018). Similarly, Ajegunle in Lagos, with a population density estimated at over 20,000 persons per square kilometer, suffers from inadequate waste management, poor sanitation, and widespread youth unemployment, all of which fuel crime and social unrest (Olajide et al., 2018).

In Port Harcourt, informal riverine settlements such as Diobu and waterfront

communities illustrate the vulnerability of slum dwellers to both state-led demolitions and recurrent flooding. These communities are marginalized in urban planning frameworks, despite being integral to the city's labor force (Agbola & Agunbiade, 2009). In Ibadan, Nigeria's largest indigenous city, slum-like conditions dominate its historic inner-core areas such as Beere and Oje, where overcrowded compound housing, inadequate drainage, and poor sanitation create major health risks (Adelekan, 2016). Likewise, Onitsha, one of West Africa's largest commercial hubs, has seen uncontrolled urban expansion and slum proliferation around its main markets, resulting in extreme congestion, pollution, and one of the country's highest levels of unmanaged solid waste (Okoye, 2017).

Urban infrastructure has failed to keep pace with these trends. Informal settlements often arise in unplanned areas lacking essential amenities, leading to socio-spatial inequalities. Research suggests that poor urban planning intensifies environmental degradation and worsens slum conditions (Okafor et al., 2023). Such areas are typically underserved in terms of potable water, sanitation, and waste management, creating serious health risks for residents. Limited access to healthcare compounds the problem, with both physical and mental health challenges frequently reported (Onwujekwe et al., 2021; Sekoni et al., 2022).

The psychological dimension of slum life is also significant. Inadequate recreational facilities and weak community networks have been linked to mental health problems such as depression and loneliness among slum dwellers (Philip, 2024; Sekoni et al., 2022). The absence of green spaces and social cohesion undermines residents' well-being, contributing to deeper social fragmentation and diminished quality of life.

Government interventions through slum upgrading and urban renewal programs have produced mixed outcomes. Participatory regeneration initiatives can improve

neighborhood conditions and promote inclusivity if they align with residents' priorities (Onyekwelu & Ogbuefi, 2021). However, poorly designed projects often result in displacement, leaving vulnerable populations worse off. Scholars warn of the risk of "accumulation by dispossession," where redevelopment disproportionately benefits wealthier groups while marginalizing the urban poor (Ibrahim et al., 2024).

Finally, health and nutritional inequities remain a pressing concern. Despite the rising urban population, comprehensive strategies to address slum health vulnerabilities are still lacking (Onwujekwe et al., 2021). Addressing these inequities requires integrated policy frameworks that combine infrastructure upgrades with accessible healthcare, health education, resource allocation, and community participation (Ebekozien et al., 2024; Okafor et al., 2023). Without such inclusive strategies, the growth of Nigerian cities will continue to deepen socio-economic disparities and reinforce cycles of deprivation in urban slums.

Socioeconomic Characteristics of Slum Dwellers

The socioeconomic profile of slum dwellers is complex, with each characteristic contributing to their vulnerability and shaping their health, well-being, and overall ability to participate productively in society. These features reflect the interplay of poverty, marginalization, and systemic neglect that defines life in urban slums.

1. Economic Instability

A defining trait of slum dwellers is low and unstable income, which severely undermines their quality of life. Obembe et al. (2021) emphasize that reduced earning capacity increases exposure to catastrophic health expenditures, as residents often cannot afford medical care when health crises arise. Research further shows that most slum inhabitants fall within the lowest income brackets, limiting their access to essential services and

restricting opportunities to escape poverty (Rahman et al., 2022). This fragility is compounded by widespread unemployment and underemployment, leaving many families in perpetual financial insecurity (Abdi et al., 2021). In Ajegunle, Lagos, often called "Jungle City," unemployment and underemployment are pervasive, with many residents surviving through petty trading, motorcycle riding, or menial jobs, reflecting deep economic exclusion (Olajide et al., 2018).

2. Educational Deficits

Education is another critical determinant of slum dwellers' livelihood opportunities. Poor educational attainment restricts access to stable jobs and perpetuates poverty. Nejad et al. (2021) argue that limited education influences health outcomes, as awareness and utilization of health services depend on literacy levels. Similarly, Rahman et al. (2022) link low educational achievement in slum communities to poor health indicators, such as higher fertility and mortality rates. The absence of formal education often translates into minimal engagement with health systems, as residents lack both awareness of health risks and knowledge of available resources. In Makoko, Lagos, children frequently attend poorly resourced informal schools on stilts or drop out entirely to support household income, perpetuating intergenerational poverty and limited health literacy (Akinwale, 2018).

3. Inadequate Housing

Housing conditions among slum dwellers are typically unsafe and overcrowded. Shelters often lack clean drinking water, adequate sanitation, and durability (Safdar et al., 2022). According to UN-Habitat, households are classified as slums when deprived of these essential services (Ogbonna et al., 2024). Such inadequate housing exposes residents to communicable diseases, poor mental health, and general insecurity (Ahmed et al., 2020).

Das et al. (2021) further demonstrated how substandard housing facilitated the rapid spread of diseases during the COVID-19 pandemic. In Ibadan's inner-core neighborhoods such as Beere and Oje, families are crowded into old compound houses with shared toilets and inadequate ventilation, conditions that heighten risks of cholera and respiratory infections (Adelekan, 2016).

4. Infrastructural Deficits

The physical environment of slums is characterized by poor infrastructure, including blocked drainage channels, inefficient waste management, and exposure to pollutants. These conditions lead to respiratory infections, waterborne illnesses, and vector-borne diseases (G. et al., 2024). Kaur et al. (2024) highlight that children are particularly affected, with high rates of undernutrition and mortality resulting from these poor living environments. Beyond physical health, prolonged exposure to such conditions generates chronic stress and worsens mental health, with slum residents reporting elevated levels of anxiety and depression (Abdi et al., 2021). In Onitsha, Nigeria's commercial hub, uncontrolled waste disposal in slum areas around the market has created severe environmental pollution, with refuse blocking drainage systems and fueling recurrent flooding (Okoye, 2017).

5. Poor Access to Healthcare

Healthcare access remains one of the most significant barriers faced by slum populations. Factors such as high treatment costs, long distances to facilities, and inadequate health infrastructure within settlements hinder utilization (Ahmed et al., 2020). The COVID-19 pandemic amplified these barriers, with restrictions on movement and strained health systems leaving slum residents disproportionately affected (Ahmed et al., 2020). In Port Harcourt's waterfront communities, residents often depend on poorly equipped private

clinics or traditional healers, as public health facilities are distant and overstretched (Agbola & Agunbiade, 2009). This limited access exacerbates maternal and child health challenges in the city's slum settlements.

6. Limited Employment Opportunities

Employment among slum dwellers is typically restricted to insecure, low-paying jobs in the informal sector. Such employment rarely provides benefits or job security, reinforcing economic precarity. Rahman et al. (2022) note that these conditions force households into difficult trade-offs, often choosing between healthcare, food, or housing. Agyabeng et al. (2023) add that job insecurity fosters chronic stress and poor health outcomes, further entrenching poverty cycles. Many slum dwellers also depend on casual or agricultural labor, where fluctuating income makes financial planning or long-term investment in education and healthcare almost impossible. In Diobu, Port Harcourt, most residents engage in informal street trading, motorbike transport ("okada"), or casual dock work at the waterfront, reflecting unstable livelihoods highly vulnerable to market shocks and government crackdowns (Agbola & Agunbiade, 2009).

Relationship between Overpopulation and Urban Slum Expansion

The nexus between overpopulation and urban slum expansion in Nigeria is both profound and multifaceted, particularly as the country grapples with one of the fastest rates of urbanization globally. With rural–urban migration accelerating, major cities such as Lagos, Abuja, Ibadan, and Port Harcourt have witnessed unprecedented population inflows that far exceed their infrastructural and housing capacities (Adama, 2020; Olatunde, 2025). This influx has triggered severe overcrowding, placing enormous strain on urban systems and giving rise to the proliferation of slums and informal settlements.

Slum growth in Nigeria is not solely the by-product of population density; it also reflects

systemic weaknesses in urban governance, planning, and housing policies. In Lagos, where an estimated 60% of residents live in slums or informal housing, areas such as Makoko, Ajegunle, and Agege epitomize how inadequate planning and population pressure intersect to produce large informal settlements lacking sanitation, water, and health facilities (UN-Habitat, 2020; Akinwale, 2022). Similarly, in Port Harcourt, studies reveal that settlements such as Waterfronts expanded rapidly due to rising rural migration and the failure of the government to provide affordable housing for low-income groups (Chima & Okoye, 2021).

The expansion of slums directly undermines public health outcomes. Research in Lagos slums shows that high population density correlates with poor access to healthcare, low infant immunization rates, and increased vulnerability to infectious diseases (Balogun et al., 2023; Osuh et al., 2023). Comparable findings in Ibadan reveal that overcrowded housing environments contribute to respiratory infections and waterborne diseases, with children and women most affected (Adelekan, 2019). These outcomes demonstrate how overpopulation-driven slum growth perpetuates cycles of health inequality and heightened morbidity among vulnerable groups.

Socioeconomic consequences are equally severe. Slum households are often entrenched in poverty due to unemployment and dependence on insecure informal jobs. In Kano, a study on slum households in Sabon Gari and Kurna-Asabe indicated that overpopulation and economic stagnation intensified food insecurity, pushing many households into malnutrition and deepening the poverty trap (Auta & Danladi, 2020). Similarly, overcrowding in Lagos slums has been linked to increased crime rates, gang violence, and substance abuse as limited opportunities fuel social unrest (Eteng et al., 2022).

Infrastructure remains grossly inadequate to accommodate the growing urban population. Drainage collapse, road congestion, and waste mismanagement are common across Nigerian slums. In Port Harcourt's waterfront communities, infrastructural decay is compounded by frequent evictions, leaving many families homeless and worsening social instability (Alonge & Wadinga, 2021). The absence of inclusive urban renewal projects that prioritize slum residents deepens their marginalization, as government interventions often focus on cosmetic urban beautification rather than substantive service delivery (Iya & Gürdalh, 2020).

Ultimately, the expansion of slums in Nigeria reflects the intersection of overpopulation, poor governance, and inadequate planning. Addressing these challenges requires comprehensive strategies that integrate slum dwellers into urban development processes. Evidence from Lagos suggests that involving community-based organizations in housing and sanitation initiatives enhances sustainability and reduces resistance to urban renewal projects (Akinwale, 2022). Thus, a participatory and multi-stakeholder approach involving government agencies, NGOs, and local communities is crucial in mitigating the negative outcomes of overpopulation-driven slum expansion in Nigeria.

THEORETICAL LITERATURE REVIEW

2.3.1 Urban Growth Theory

The Urban Growth Theory, rooted in classical and neoclassical urban economics, provides a foundational lens through which urban expansion and its economic implications can be analyzed. The theory asserts that urbanization is driven primarily by the concentration of economic activities in specific geographic locations, which leads to agglomeration economies cost advantages experienced when firms and people cluster in urban areas. These benefits arise from proximity to suppliers, access to skilled labor, shared infrastructure, and knowledge spillovers (Fujita et al., 1999).

Agglomeration facilitates higher productivity due to improved resource allocation and the rapid diffusion of ideas and innovation. Over time, this clustering effect attracts further investment, labor, and businesses, creating a self-reinforcing cycle of urban economic growth. This explains why cities often become engines of national economic performance.

In the Nigerian context, this theory is evident in the disproportionate economic importance of cities like Lagos, Abuja, and Port Harcourt. Lagos, for example, has emerged as a regional financial center, housing the headquarters of major banks, multinational corporations, and logistics firms. The economic vibrancy of these cities attracts rural-urban migrants seeking jobs and better living standards, further expanding the urban population and local market size.

However, the Urban Growth Theory also recognizes urban diseconomies, which occur when cities grow too rapidly without adequate planning or infrastructure. These include traffic congestion, pollution, slum proliferation, and rising land and housing costs. Nigerian cities, particularly Lagos and Kano, increasingly reflect this side of the theory, where urban expansion outpaces infrastructure development, undermining productivity and quality of life. Thus, the Urban Growth Theory underscores both the potential and the pitfalls of rapid urbanization in developing economies.

2.3.2 New Economic Geography (NEG)

Paul Krugman's New Economic Geography (NEG) theory offers a spatially oriented explanation for why economic activities concentrate in specific regions and how that impacts national development. NEG integrates elements of increasing returns to scale, transportation costs, and market access to explain why economic output is often unevenly distributed across space (Krugman, 1991).

According to the theory, when firms and workers locate near each other, especially in large markets with efficient infrastructure, they benefit from lower production and distribution costs. Over time, this encourages further concentration of activities, leading to the emergence of urban growth poles cities that dominate regional or national economies.

In Nigeria, this is reflected in how urban hubs like Lagos and Abuja receive the lion's share of foreign direct investment (FDI), public infrastructure, and commercial activity. Lagos, in particular, benefits from seaport access, relatively better road infrastructure, and a massive consumer market, which makes it a magnet for both formal and informal enterprises.

NEG also warns of regional divergence, where peripheral or rural regions fall behind due to limited access to markets and infrastructure. This theoretical perspective helps explain Nigeria's north-south economic divide, where the southern and southwestern states experience faster economic growth due to better urban connectivity and investment, while northern states struggle with low infrastructure and limited industrial activity.

Thus, the NEG theory provides insight into the geographical inequality and spatial economic imbalances that arise from urban-centered development, reinforcing the need for balanced regional planning and infrastructural investment in Nigeria.

2.3.3 Endogenous Growth Theory

Endogenous Growth Theory, developed by Romer (1990) and Lucas (1988), emphasizes that economic growth is not just a function of external technological changes, but also arises from factors internal to the economy particularly human capital development, innovation, and institutional quality.

The theory posits that knowledge generation, learning-by-doing, and public investment in education, research, and infrastructure are key drivers of sustained growth. In urban environments, where skilled labor, research institutions, and knowledge-based industries are concentrated, endogenous growth forces are more active and effective.

Applied to Nigeria, this theory suggests that urban areas should act as incubators of economic advancement, fostering entrepreneurship, higher education, and innovation. Universities and tech clusters in cities like Lagos and Abuja such as the Yaba tech ecosystem are prime examples of how urbanization can drive innovation-led growth when supported by policy and infrastructure.

However, endogenous growth theory also highlights the role of institutions and governance. Poor urban planning, weak property rights, and underinvestment in public goods (like transport and electricity) can stifle innovation and reduce productivity gains from urbanization. Nigeria's infrastructural and institutional weaknesses such as unreliable electricity supply and congestion in urban logistics illustrate how endogenous growth potential can be undermined if urban expansion is unmanaged.

Ultimately, the theory reinforces the idea that urbanization alone does not guarantee economic growth it must be paired with strategic investment in human capital and public infrastructure to create sustainable development.

2.4 Review of Empirical Literature

The empirical literature on the relationship between urbanization and economic growth is vast and varied, spanning global, regional, and national studies. This section critically examines key empirical findings, highlighting methodologies, data sources, and implications for the Nigerian context.

2.4.1 Global Evidence on Urbanization and Economic Growth

Empirical research conducted across countries and regions suggests a generally positive, though conditional, relationship between urbanization and economic growth.

Bloom, Canning, and Fink (2008) examined cross-country data for over 180 countries and found that urbanization tends to coincide with increases in per capita income, especially when supported by infrastructure and institutional capacity. Their findings suggested that the benefits of urbanization are strongest in middle-income countries, where urban expansion tends to be better managed.

Similarly, Henderson (2003) utilized panel data from over 80 countries to show that cities contribute significantly to national productivity. However, his research also highlighted a nonlinear relationship: beyond a certain threshold, urban concentration without adequate infrastructure or institutional capacity leads to congestion, environmental degradation, and reduced economic efficiency.

Glaeser (2011), in his work "Triumph of the City," argued that cities drive innovation and entrepreneurship, making urbanization essential for modern economic growth. He emphasized that dense cities create knowledge spillovers and foster specialization, which in turn improve overall productivity. His work, however, warned that the urbanization-growth nexus breaks down in countries with weak governance and high informality characteristics often found in developing economies.

These studies underline that urbanization is not an automatic driver of growth; rather, it is the quality of urban development and policy environment that determines the nature of its impact.

2.4.2 Evidence from Sub-Saharan Africa

In Sub-Saharan Africa, the empirical relationship between urbanization and economic performance is more complex. Rapid urban growth in the region has not always been accompanied by structural transformation or industrialization.

Turok and McGranahan (2013) conducted a meta-analysis of urbanization trends in Africa and concluded that many cities are growing without sufficient economic base, leading to the phenomenon of urbanization without growth. They attributed this to low levels of formal job creation, inadequate infrastructure, and poor urban planning. Their study showed that many African cities remain consumption centers rather than production hubs, limiting their contribution to national output.

Jedwab and Moradi (2016) studied historical urban growth patterns in Ghana and found that urbanization driven by commodity booms (e.g., cocoa and gold) did not always lead to sustainable economic growth. Their study emphasized the need to distinguish between consumption-driven urbanization and productive urbanization.

Fox (2014) used household survey data across several African countries and concluded that informal urban employment dominates the labor market, often leading to underemployment and low productivity. In this context, urban growth contributes little to GDP unless accompanied by formal sector expansion and industrial investment.

These findings are particularly relevant to Nigeria, where informal employment dominates urban labor markets, and infrastructure is underdeveloped in many fast-growing cities.

2.4.3 Empirical Evidence from Nigeria

Numerous empirical studies have been conducted on urbanization and economic growth in Nigeria, reflecting both national trends and city-level dynamics.

Oyeleke and Ajayi (2014) used time-series data from 1980 to 2010 and found a positive correlation between urban population growth and GDP. However, they argued that infrastructure bottlenecks, such as power shortages and road deficits, constrained the full realization of urban productivity gains.

Akinbobola and Saibu (2016) employed an autoregressive distributed lag (ARDL) model to assess the long-run and short-run relationship between urbanization and economic growth. Their findings confirmed a long-run equilibrium relationship, but also revealed that in the short run, urbanization could negatively affect growth if not accompanied by corresponding infrastructure investment.

Okonkwo and Nwankwo (2020) conducted a panel data analysis across 10 Nigerian cities and found that urban infrastructure, particularly access to electricity and quality of road networks, significantly moderates the effect of urbanization on GDP. Their study concluded that infrastructure is not just a complementary input but a critical conditionfor urban-led growth.

Olanrewaju et al. (2019) investigated the link between urbanization and industrial output and discovered that cities with better planning and public investment (e.g., Lagos and Abuja) had stronger industrial performance compared to others. This supports the hypothesis that urbanization can enhance economic growth, but its impact varies by city, depending on governance, planning, and resource allocation.

In addition to existing research, several recent studies have reinforced or challenged prior findings on urbanization and economic growth in Nigeria.

Adebayo and Akinola (2018) used state-level data from 1999–2016 and found that urban population growth positively influenced economic output, especially in states with diversified economies. Their regression analysis showed a statistically significant link between urban density and manufacturing output, but also highlighted the negative effects of traffic congestion and informal housing.

Ibrahim and Olalekan (2020) investigated the relationship between urban infrastructure and poverty levels in urban Nigeria. Using panel data from 12 states, their study concluded that infrastructure especially access to electricity and piped water had an indirect but strong effect on local economic performance and social mobility.

Uche and Onyekachi (2022) applied spatial analysis techniques to examine urban economic clusters in Nigeria. Their findings suggested that economic growth is not evenly distributed across cities and that Lagos, Abuja, and Port Harcourt form a triangular growth corridor. However, they cautioned that this spatial inequality could widen the urban-rural gap unless smaller cities receive strategic investments.

These recent studies underscore that while urbanization can be a catalyst for economic development, its benefits are highly contingent on local context, infrastructure quality, and policy implementation.

2.4.4 Summary and Implications for the Current Study

Across the reviewed literature, three major themes emerge:

1. Urbanization has the potential to stimulate economic growth, especially through increased productivity, agglomeration effects, and innovation.

2. However, the relationship is highly dependent on infrastructure quality, institutional capacity, and governance frameworks.

3. In Nigeria, while urbanization has contributed to GDP growth, its positive effects are uneven, and are often undermined by poor urban planning, inadequate infrastructure, and regional inequality.

This study, therefore, contributes to the literature by empirically assessing the predictive relationship between urban population growth and economic growth, analyzing the short- and long-run impact of urbanization on industrial output, and evaluating how urban infrastructure mediates this relationship across major Nigerian cities.

2.5 Critical Evaluation of Literature

The reviewed literature provides compelling evidence that urbanization can stimulate economic growth through mechanisms such as agglomeration economies, improved labor mobility, and infrastructure development. However, a number of important limitations and contradictions emerge across the theoretical and empirical studies.

First, while many global studies support a positive relationship, their applicability to Nigeria may be limited due to contextual differences. For example, studies in middle-income countries often assume efficient institutions and public infrastructure conditions that may not exist in many Nigerian urban centers.

Second, the empirical studies on Nigeria, although insightful, suffer from inconsistent methodologies and limited geographic coverage. Many focus heavily on Lagos or Abuja, overlooking the experience of smaller or mid-tier cities. This introduces regional bias and limits the generalizability of their findings.

Third, several studies rely on cross-sectional data, which may show correlation but cannot establish causality. Others fail to account for moderating variables such as urban infrastructure, governance, or environmental sustainability despite their obvious influence on urban performance.

Moreover, some literature focuses excessively on urban population size while neglecting urban quality such as access to transport, housing, and public services. This creates an analytical gap between “urbanization” as a numerical measure and “urban development” as a holistic process.

Finally, only a few studies explore the long-run vs. short-run dynamics of urbanization's impact on growth. This weakens policy relevance since urban development is inherently a long-term process.

These limitations justify the present study's approach, which combines time-series and panel data to assess:

* The predictive relationship between urbanization and economic growth

* The moderating role of infrastructure

* And the sectoral effects on industrial output

By addressing these gaps, the study aims to provide a more complete, evidence-based understanding of how urbanization influences Nigeria’s economic trajectory.

CHAPTER THREE

THEORETICAL FRAMEWORK AND RESEARCH METHODOLOGY

3.1. Introduction

In this chapter, the theoretical framework for the empirical analysis of the impact of urbanization on economic growth in Nigeria is examined. The study adopts the endogenous growth theory as the theoretical framework (and an econometric model is developed based on the theoretical framework). The research methodology is also examined, while the sources of data and the data analysis methods are presented in the sub section.

3.2. Theoretical Framework

The Endogenous Growth Theory, developed by Romer (1986) and Lucas (1988), explains economic growth as being largely driven by factors within the economy, rather than relying only on external technological progress as assumed in the Solow model. The theory emphasizes the role of human capital accumulation, innovation, knowledge spillovers, and learning-by-doing in sustaining long-run growth. Unlike the neoclassical view, where growth slows down once diminishing returns set in, endogenous growth models argue that investments in education, research and development (R&D), and urban-based innovation systems can create increasing returns, allowing growth to continue indefinitely.

In simple terms, the model is often expressed as:

(3.1)

Where, $0<\alpha<1$

=Output

=Physical Capital

=Labour Force

=Technology/Knowledge (endogenously determined)

t=time

Lucas (1988) extends this by making human capital (H) an explicit factor of production. Thus equation 3.1 can be modified as:

(3.2)

Where, $\alpha+\beta<1$

=Human Capital (education, skills, innovation)

Urbanization fosters these mechanisms by concentrating people, firms, and industries in specific geographical spaces, thereby generating agglomeration economies. In urban settings, human capital accumulation is higher due to better access to education, training, and knowledge spillovers. Thus, urbanization expands . Urbanization () can be formally introduced as a variable that enhances both human capital () and technological progress () via agglomeration effects, scale economies, and innovation diffusion. Hence:

(3.3)

Where,

=Initial Technology

=Urbanization

Substituting equation 3.3 in equation 3.2:

(3.4)

Where, α, β, λ are all elasticities.

This formulation implies that an increase in urbanization raises productivity (through innovation and knowledge spillovers.

For simplicity, equation 3.4 can be linearized as thus:

(3.5)

Thus, urbanization contributes to growth both directly (by expanding labour productivity and human capital) and indirectly (by accelerating technological diffusion). For a country like Nigeria, urbanization plays a central role in this theory because cities concentrate people, skills, and industries. This fosters knowledge spillovers, innovation, and productivity growth, which are consistent with the drivers of long-run growth in endogenous models. However, the benefits of urbanization depend on adequate infrastructure and policies that manage rapid population growth in cities.

3.3. Variables of the Study

This study employs annual time series data covering the period 1990 to 2024 to examine the impact of urbanization on economic growth in Nigeria.

- **Economic Growth (ECOGR):** In this study, the dependent variable is economic growth, measured as the annual growth rate of gross domestic product (GDP). This variable captures the overall performance of the Nigerian economy by reflecting the extent to which productive activities translate into higher national output over time. A higher growth rate indicates stronger economic performance, while lower or negative rates signal economic stagnation or contraction.
- **Urban Population Growth (UBQTY):** Urban population growth represents the annual growth rate of the urban population. It reflects the pace at which Nigeria's

population is shifting from rural to urban areas. This variable is expected to influence economic growth through agglomeration economies, access to markets, labour specialization, and the concentration of skills. However, rapid or poorly managed urban population growth can also create pressure on housing, transport, and public services, potentially weakening its growth benefits.

- **Population in the Largest City (UBCON):** Population in the largest city measures the share of the urban population residing in Nigeria's largest city. It reflects the degree of urban concentration or primacy. While moderate concentration can stimulate growth through economies of scale and efficient service delivery, excessive primacy often leads to congestion, infrastructure strain, and social inequality, which may undermine growth in the long run.
- **Infrastructure (LNINFRA):** Infrastructure is proxied by electric power consumption (kWh per capita), reflecting the extent of energy use as a key driver of economic activity. Adequate infrastructure lowers transaction costs, improves productivity, and supports industrialization. However, weak or inefficient infrastructure—as is often the case in Nigeria—may constrain growth, even when consumption rises.
- **Education (EDU):** Education is measured as primary school enrolment (% gross) and serves as a proxy for human capital development. Education enhances labour productivity, fosters innovation, and supports technological adoption. In theory, higher enrolment should contribute positively to economic growth, but in practice, the impact may depend on quality, progression to higher levels, and alignment with labour market needs.
- **Unemployment (UNEMP):** Unemployment measures the share of the total labour force without jobs, based on modelled ILO estimates. It reflects the underutilization of labour resources in the economy. High unemployment

undermines growth by reducing household income, dampening consumption, and lowering aggregate demand, while low unemployment supports productive capacity and economic performance.

- **Interaction Term (UBQTY × LNINFRA):** This interaction term captures whether the growth effect of urban population growth depends on infrastructure. The expectation is that urban expansion contributes more strongly to growth when supported by reliable infrastructure that reduces costs and enhances productivity.
- **Interaction Term (UBCON × LNINFRA):** This interaction term examines how infrastructure moderates the effect of population concentration in the largest city on growth. While city primacy may create diseconomies, adequate infrastructure investment in large cities could mitigate congestion costs and enhance agglomeration benefits, thereby influencing growth outcomes.

3.4. Model Specification

Based on the theoretical framework in section 3.2, this study uses the following empirical model to analyse the impact of urbanization on economic growth in Nigeria:

(3.6)

Where,

=Economic Growth

=Urbanization Quantity

=Urbanization Concentration

=Infrastructure

=Human Capital

=Unemployment Rate

and; is the error term. β_0 is the intercept, while β_1, β_2, β_3, β_4, and β_5 are the coefficients of the explanatory variables.

To account for infrastructural development (as a moderating/interacting term for the impact of urbanization on economic growth, equation 3.6 can be modified as:

(3.7)

3.4.1. Apriori Expectations

Based on economic theory and previous empirical evidence, the expected signs of the explanatory variables in relation to the impact of urbanization on economic growth in Nigeria are as follows:

- **Urban Population Growth (UBQTY):** UBQTY is expected to have a positive effect on economic growth. A rising urban population promotes agglomeration economies, increases market size, and encourages specialization and innovation. However, if urban population growth is unmanaged, it may place excessive pressure on housing, transport, and services, which could weaken its growth benefits.
- **Population in the Largest City (UBCON):** The effect of UBCON on growth is expected to be negative in the long run. While moderate city concentration can generate scale economies, excessive primacy often leads to congestion, infrastructure strain, and inequality, which dampen economic growth.
- **Infrastructure (LNINFRA):** Infrastructure is expected to be positively related to growth, as reliable access to electricity and related facilities reduces production

costs, enhances efficiency, and supports industrialization. Nevertheless, weak infrastructure management may limit this positive role.

- **Education (EDU):** EDU is expected to positively influence economic growth, as greater school enrolment enhances human capital, productivity, and adaptability to technological changes. Inadequate quality, however, could diminish its impact.
- **Unemployment (UNEMP):** Unemployment is expected to have a negative relationship with growth. Higher unemployment reflects underutilization of labour, which reduces output, weakens demand, and slows economic activity.

Table 3.1: Expected Apriori Signs

Variable	Symbol	Expected Sign	Justification
Urbanization Quantity	UBQTY	+/-	Agglomeration economies, larger markets, innovation; however, unmanaged growth may cause congestion and infrastructure strain.
Urbanization Concentration	UBCON	-	Excessive primacy can lead to congestion, inequality, and infrastructure pressure, outweighing potential scale economies.
Infrastructure	LNINFRA	+	Adequate infrastructure reduces production costs, improves efficiency, and supports industrialization.
Education	EDU	+	Improves human capital, labour productivity, innovation, and adaptability.
Unemployment	UNEMP	-	High unemployment reflects underutilization of labour, reducing output and weakening demand.
Interaction Terms	UBQTY*LNINFRA	+	Infrastructure strengthens the growth benefits of urban population growth by improving mobility and lowering transaction costs.
	UBCON*LNINFRA	-	Infrastructure may mitigate but not fully offset the diseconomies of excessive city concentration.

Source: Author's Computation (2025)

- **Interaction Term (UBQTY × LNINFRA):** This interaction term is expected to be positive, as adequate infrastructure enhances the growth effects of rising urban population. Infrastructure lowers transaction costs, supports mobility, and ensures that urban expansion translates into sustainable growth.
- **Interaction Term (UBCON × LNINFRA):** The expected effect is negative, as excessive concentration in the largest city may continue to dampen growth even when supported by infrastructure. While infrastructure investment can mitigate congestion effects, it may not fully offset the diseconomies associated with overconcentration.

3.5. Data and Econometric Methodology

This study employs the autoregressive distributed lag (ARDL) methodology. The ARDL methodology is a robust econometric technique used to analyse both short run and long run relationships between variables in a single equation framework. It is particularly useful when dealing with time series data that may be integrated at different orders, such as I(0) or I(1), without requiring all variables to be at the same level of integration. The ARDL approach, developed by Pesaran and Shin, is based on estimating an error correction model (ECM), which helps capture the dynamic adjustments toward equilibrium. One key advantage of ARDL is that it provides unbiased long run estimates even in small samples, making it ideal for macroeconomic and financial studies. The methodology involves selecting an optimal lag structure, conducting bounds testing to determine cointegration, and then estimating both the short run and long run coefficients, offering a comprehensive view of variable interactions over time.

The autoregressive distributed lag model is expressed as follows:

(3.8)

Where: is a difference operator, represents time, is an intercept term, are the coefficients of their respective variables.

(3.9)

Table 3.2: Summary of Variables and Data Sources

Variable	Measurement/Description	Data Source
Economic Growth	GDP growth rate (annual %)	World Development Indicators (WDI), World Bank
Urbanization Quantity	Urban population growth (annual %)	World Development Indicators (WDI), World Bank
Urbanization Concentration	Population in the largest city (% of urban population)	World Development Indicators (WDI), World Bank
Infrastructure	Electric power consumption (kWh per capita)	World Development Indicators (WDI), World Bank
Education	School enrolment, primary (% gross)	World Development Indicators (WDI), World Bank
Unemployment	Unemployment, total (% of labour force, modelled ILO estimate)	World Development Indicators (WDI), World Bank

Source: Author's Computation (2025)

The study uses annual time series data on the dependent variables (economic growth) and the explanatory variables from 1990 to 2024. With data sourced from the World Bank's World Development Indicators (WDI, 2024).

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF EMPIRICAL RESULTS

4.1. Introduction

The results of the descriptive statistics, unit root test, correlation test, co-integration test, and autoregressive distributed lag estimation (short run and long run estimation) are shown and interpreted in this chapter. The unit root test was used to check for stationarity of the variables. The co-integration test was used to establish if there is a correlation between the dependent variable and the explanatory variables in the long run. The post estimation diagnostic tests were also carried out to show that the model is of a functional form, with its residuals being serially uncorrelated, homoscedastic, normally distributed, and stable.

4.2. Descriptive Statistics

The descriptive statistics of the data series gave information about simple statistics such as mean, median, minimum value, maximum value, and the distribution of the sample (measured by skewness, kurtosis, and the Jarque-Bera statistic). The descriptive statistics of the variables is shown in Table 4.1.

Economic growth (ECOGR), measured by GDP growth rate, recorded an average of 4.22%, which is close to its median value of 4.20%, indicating relative balance around the central tendency. The values ranged between –2.04% and 15.33%, reflecting periods of both economic contraction and rapid expansion, with a standard deviation of 3.85% pointing to considerable fluctuations. The distribution was moderately right-skewed (0.52) and slightly leptokurtic (3.59). The Jarque-Bera statistic of 2.12 ($p = 0.35$) suggests that ECOGR is normally distributed.

Table 4.1

Descriptive Statistics of the Variables

	ECOGR	UBQTY	UBCON	INFRA	EDU	UNEMP
Mean	4.222343	4.419371	14.97844	132.1593	88.77556	4.030229
Median	4.195924	4.282930	15.17175	131.2805	89.25034	3.851000
Maximum	15.32916	5.566966	16.93439	219.2345	100.1878	5.742000
Minimum	-2.035119	3.449717	12.88395	95.55121	72.97555	2.989000
Std. Dev.	3.850174	0.532085	1.559106	27.20112	7.032129	0.584926
Skewness	0.524998	-0.044530	-0.127977	1.441017	-0.153526	1.315896
Kurtosis	3.592593	2.245135	1.370709	5.315279	2.347947	4.736009
Jarque-Bera	2.119916	0.842556	3.966815	19.93052	0.757536	14.49591
Probability	0.346470	0.656207	0.137600	0.000047	0.684704	0.000712
Sum	147.7820	154.6780	524.2453	4625.575	3107.145	141.0580
Sum Sq. Dev.	504.0107	9.625902	82.64757	25156.63	1681.329	11.63270
Observations	35	35	35	35	35	35

Source: Author's Computation from Estimations using Eviews 10

Urban population growth (UBQTY) averaged 4.42%, with a median of 4.28%, highlighting the relative stability of Nigeria's urbanization rate. Its minimum and maximum values of 3.45% and 5.57% reflect a narrow spread, with a low standard deviation of 0.53%. The distribution was nearly symmetric (–0.04) and slightly platykurtic (2.25). The Jarque-Bera statistic of 0.84 (p = 0.66) confirms that UBQTY is normally distributed. Similarly, population in the largest city (UBCON) accounted for an average of 14.98% of the urban population, with a median of 15.17%. The values ranged between 12.88% and 16.93%, producing a standard deviation of 1.56%. UBCON was

slightly negatively skewed (–0.13) and platykurtic (1.37), while the Jarque-Bera statistic of 3.97 ($p = 0.14$) indicates approximate normality.

Infrastructure, proxied by electric power consumption per capita (INFRA), had a mean of 132.16 kWh and a median of 131.28 kWh, but exhibited substantial variation, ranging from 95.55 kWh to 219.23 kWh, with a standard deviation of 27.20 kWh. Its distribution was positively skewed (1.44) and highly leptokurtic (5.32), indicating the presence of large deviations. The Jarque-Bera statistic of 19.93 ($p < 0.01$) strongly rejects the null hypothesis of normality.

In terms of human capital, primary school enrolment (EDU) averaged 88.78%, with a median of 89.25% and a range from 72.98% to 100.19%, suggesting consistently high enrolment levels. The standard deviation was 7.03%, while the distribution was nearly symmetric (–0.15) and slightly platykurtic (2.35). The Jarque-Bera statistic of 0.76 ($p = 0.68$) indicates normality. Finally, unemployment (UNEMP) recorded a mean of 4.03%, with a median of 3.85%, ranging from 2.99% to 5.74%. The variable showed low variability, as indicated by a standard deviation of 0.58%. Its distribution was positively skewed (1.32) and leptokurtic (4.74), pointing to the persistence of extreme values. The Jarque-Bera statistic of 14.50 ($p < 0.01$) rejects the null of normality, suggesting non-normal distribution.

The results reveal that most variables are approximately normally distributed, with the exception of infrastructure and unemployment, which exhibit significant departures from normality.

4.3. Correlation Analysis

Before proceeding to regression estimation, it is important to examine the degree of association among the explanatory variables and check for the presence of multicollinearity, which could bias or weaken the reliability of parameter estimates. The correlation matrix provides insight into the pairwise relationships between economic growth and its determinants, while the variance inflation factors (VIF) indicate whether any variable is excessively correlated with others. Table 4.2 therefore presents the correlation coefficients alongside the VIF values to ensure the robustness and validity of the regression results.

Table 4.2

Matrix of Correlation and Variance Inflation Factors

	ECOGR	UBQTY	UBCON	INFRA	EDU	UNEMP	VIF
ECOGR	1.00	0.69	0.13	-0.09	0.26	-0.44	
UBQTY	0.69	1.00	0.45	-0.13	0.27	-0.38	1.490615
UBCON	0.13	0.45	1.00	-0.68	0.23	-0.33	2.572204
INFRA	-0.09	-0.13	-0.68	1.00	-0.17	0.17	2.053881
EDU	0.26	0.27	0.23	-0.17	1.00	-0.34	1.179973
UNEMP	-0.44	-0.38	-0.33	0.17	-0.34	1.00	1.291250

Source: Author's Computation from Estimations using Eviews 10

The correlation results show that urban population growth (UBQTY) is strongly and positively correlated with economic growth (ECOGR) at 0.69, suggesting that increases in urbanization are associated with higher economic growth in Nigeria. Population in the largest city (UBCON) has a weak positive correlation with ECOGR (0.13), while infrastructure measured by electric power consumption (INFRA) is negatively but weakly

related to growth (–0.09). Education (EDU), proxied by primary school enrolment, shows a moderate positive correlation with ECOGR (0.26), indicating that improvements in educational access may support growth. Unemployment (UNEMP), however, exhibits a negative correlation with growth (–0.44), consistent with economic theory that high unemployment reduces productive output.

Examining the inter-correlations among explanatory variables, UBQTY and UBCON are moderately correlated (0.45), while UBCON and INFRA show a strong negative correlation (–0.68), implying that rapid concentration of population in the largest city may place strain on infrastructure provision. Most other pairwise correlations are weak to moderate, and none exceed the conventional threshold of 0.80, suggesting that multicollinearity is unlikely to be a serious concern.

This conclusion is further reinforced by the VIF values reported in the final column of Table 4.2. All VIFs are below 3, with the highest being 2.57 for UBCON, well below the critical cut-off of 10 often used in econometric literature. This indicates that the explanatory variables do not suffer from problematic multicollinearity, and thus the regression estimates can be considered reliable.

4.4. Unit Root Test

The significance of this test is to test for stationarity in time series variables. The unit root test was done to avoid having a spurious regression result.

Table 4.3

Unit Root Test

Variable	ADF	ADF	PP	PP	Order
	Levels	1st Difference	Levels	1st Difference	
ECOGR	-3.8035 (0.0066)	–	-3.9298 (0.0048)	–	I(0)
UBQTY	-1.8069 (0.3710)	-8.6020 (0.0000)	-2.1104 (0.2420)	-7.9089 (0.0000)	I(1)
UBCON	-2.7658 (0.0742)	-4.3932 (0.0014)	0.1191 (0.9626)	-3.8476 (0.0060)	I(1)
INFRA	-2.0869 (0.2509)	-6.4661 (0.0000)	-2.0597 (0.2614)	-6.6838 (0.0000)	I(1)
LNINFRA	-1.9754 (0.2957)	-6.6136 (0.0000)	-1.9264 (0.3167)	-6.6455 (0.0000)	I(1)
EDU	-2.4750 (0.1302)	-5.0896 (0.0002)	-2.5021 (0.1239)	-5.7621 (0.0000)	I(1)
UNEMP	-3.7202 (0.0087)	–	-1.8565 (0.3480)	-3.0288 (0.0425)	I(0)/I(1)
UBQTY*LNINFRA	-1.6442 (0.4497)	-7.3455 (0.0000)	-2.0179 (0.2781)	-6.9106 (0.0000)	I(1)
UBCON*LNINFRA	-0.3755 (0.9024)	-6.9234 (0.0000)	-0.2117 (0.9275)	-7.0402 (0.0000)	I(1)

Source: Author's Computation from Estimations using Eviews 10

Note. Probability values are in parentheses ().

The stationarity properties of the variables were investigated using the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests, and the results are reported in Table 4.3. The findings reveal a mix of integration orders, with some variables stationary at level and others becoming stationary after first differencing. Specifically, economic growth (ECOGR) is found to be I(0), as both ADF and PP tests reject the null hypothesis of a unit root at level. Unemployment (UNEMP) similarly shows signs of stationarity at level under the ADF test, although the PP test suggests stationarity after first differencing, indicating that it may be treated as borderline I(0)/I(1). In contrast, urban population growth (UBQTY), population in the largest city (UBCON), infrastructure (INFRA), its logarithmic transformation (LNINFRA), and education (EDU) are all non-stationary at level but achieve stationarity after first differencing, confirming that they are integrated of order one. The interaction terms (UBQTY*LNINFRA and UBCON*LNINFRA) also follow this pattern, with both tests indicating I(1) behaviour.

Taken together, the results indicate that the dataset comprises a mixture of I(0) and I(1) variables, but no series is integrated beyond the first order. This combination validates the use of the autoregressive distributed lag (ARDL) bounds testing framework, which is particularly suitable for models that accommodate variables with mixed integration properties.

4.5. Discussion of Empirical Results

An autoregressive distributed lag model is applied when the variables are of mixed order of integration. In this approach, variables can be stationary at levels; I(0) or first difference; I(1).

Table 4.4

F-Bounds Test Results (Dependent Variable: ECOGR)

Model	F-statistic	k	5% I(0)	5% I(1)	1% I(0)	1% I(1)	Decision
Baseline	13.97985	5	2.39	3.38	3.06	4.15	Cointegration confirmed
Interaction	10.33184	5	2.39	3.38	3.06	4.15	Cointegration confirmed

Source: Author's Computation from Estimations using Eviews 10

The F-Bounds test is used to test whether a long run equilibrium relationship existed among the dependent variable and the explanatory variables. The F-Bounds tests are shown in Table 4.4. The F-Bounds co-integration tests show that the F-statistic values which are 13.98 and 10.33 respectively are greater than the lower bound value which is 2.39 and the upper bound value which is 3.38 at 5 percent level of significance. This shows that there is a long run equilibrium relationship between the dependent variable (ECOGR) and its explanatory variables.

Model 1: Baseline Model

Table 4.5 shows the short run error correction model (ECM) estimation result for the impact of urbanization on economic growth in Nigeria from 1990 to 2024; using the autoregressive distributed lag estimation technique. The findings reveal that short-run dynamics of urbanization, infrastructure, education, and unemployment significantly influence economic performance in Nigeria.

Urban population growth (UBQTY) has a strong and highly significant positive effect on

economic growth, both contemporaneously and with a one-period lag. The current value of UBQTY carries a coefficient of 11.20 ($p < 0.01$), while its lagged value records 4.85 ($p < 0.01$), confirming that urban expansion consistently stimulates growth in the short run. Similarly, population concentration in the largest city (UBCON) exerts an even stronger positive influence on growth, with a coefficient of 60.52 ($p < 0.01$), underscoring the growth-enhancing role of urban agglomeration economies.

Table 4.5

ECM Short Run Estimation Results (Dependent Variable: ECOGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UBQTY)	11.20104	1.765796	6.343338	0.0000
D(UBQTY(-1))	4.850279	0.990863	4.895004	0.0001
D(UBCON)	60.52246	5.389378	11.22995	0.0000
D(LNINFRA)	-3.824939	2.279102	-1.678266	0.1097
D(EDU)	-0.224637	0.045116	-4.979144	0.0001
D(UNEMP)	-2.869534	0.788887	-3.637447	0.0018
D(UNEMP(-1))	2.380910	0.795324	2.993635	0.0075
CointEq(-1)*	-0.989664	0.087216	-11.34732	0.0000
R-squared	0.870432	Durbin-Watson stat		1.852899
Adjusted R-squared	0.834153			

Source: Author's Computation from Estimations using Eviews 10

On the other hand, infrastructure, proxied by the logarithm of electric power consumption (LNINFRA), shows a negative but statistically insignificant effect (–3.82, $p > 0.10$), suggesting that infrastructure constraints remain a limiting factor in translating short-run consumption into productive growth. Education (EDU) unexpectedly shows a negative

and significant short-run effect (–0.22, $p < 0.01$), implying that short-run expansions in primary enrolment may impose adjustment costs before contributing to long-term productivity. Unemployment (UNEMP) has a negative and significant short-run impact on growth (–2.87, $p < 0.01$), consistent with theoretical expectations. Interestingly, its lagged value turns positive (2.38, $p < 0.01$), suggesting that short-run labour market adjustments may reverse part of the negative impact of unemployment shocks over time.

The error correction term (CointEq(–1)) is negative and highly significant, with a coefficient of –0.99 ($p < 0.01$). This confirms the existence of a stable long-run relationship among the variables and indicates that approximately 99% of deviations from the long-run equilibrium are corrected within one period. The model also performs well overall, with an R-squared of 0.87 and an adjusted R-squared of 0.83, showing that over 80% of the short-run variations in economic growth are explained by the included regressors. The Durbin-Watson statistic of 1.85 suggests that autocorrelation is not a major concern in the model.

In summary, the short-run dynamics highlight the pivotal role of urbanization and city concentration in driving growth, while unemployment exerts a constraining influence. Infrastructure and education, however, reveal mixed short-run effects, suggesting that their growth-enhancing impacts may be more pronounced in the long run.

Table 4.6

Long Run Form Estimation Results (Dependent Variable: ECOGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UBQTY	17.57204	2.973656	5.909238	0.0000
UBCON	-3.983635	0.828956	-4.805602	0.0001
LNINFRA	-16.61244	4.456250	-3.727896	0.0014
EDU	-0.075349	0.057820	-1.303171	0.2081
UNEMP	-1.834403	1.204637	-1.522785	0.1443
C	89.23934	31.27883	2.853027	0.0102

Source: Author's Computation from Estimations using Eviews 10

Table 4.6 presents the long-run estimation results of the ARDL model, with economic growth (ECOGR) as the dependent variable. The findings highlight that urbanization and infrastructure play crucial roles in shaping Nigeria's long-run growth trajectory.

Urban population growth (UBQTY) is positive and highly significant, with a coefficient of 17.57 ($p < 0.01$). This suggests that sustained expansion of the urban population has a strong long-term growth-enhancing effect, likely through agglomeration economies, increased labour mobility, and expanded markets. Conversely, the population in the largest city (UBCON) carries a negative and significant coefficient of –3.98 ($p < 0.01$), implying that excessive concentration of population in Nigeria's largest city hampers growth. This reflects the diseconomies of congestion, such as infrastructure strain, housing shortages, and rising inequality, that often accompany urban primacy.

Infrastructure, proxied by the logarithm of electric power consumption (LNINFRA), also records a negative and significant coefficient of –16.61 ($p < 0.01$). This counterintuitive

result may indicate that infrastructural expansion in Nigeria has not been efficiently harnessed for productive purposes, with energy bottlenecks and systemic inefficiencies reducing the growth benefits of rising consumption. Education (EDU) and unemployment (UNEMP) both have negative coefficients (–0.08 and –1.83, respectively), but these effects are statistically insignificant ($p > 0.10$). This suggests that, in the long run, primary school enrolment and unemployment fluctuations do not exert a strong direct impact on growth, possibly because the quality of education and the structure of the labour market matter more than sheer enrolment or unemployment levels.

Finally, the constant term (C) is positive and significant (89.24, $p < 0.05$), capturing other long-run structural drivers of growth not directly included in the model. Overall, the long-run results demonstrate that while urban population growth promotes Nigeria's economic growth, excessive city concentration and inefficient infrastructure pose significant challenges. The mixed signs for education and unemployment suggest that structural reforms are needed to unlock their potential contribution to sustainable long-run growth.

Model 2: Interaction Model

Table 4.7 presents the short-run dynamics of the error correction model (ECM), incorporating the interaction between urbanization and infrastructure. The results reveal important insights into how urban growth, city concentration, and infrastructure combine to influence Nigeria's economic growth in the short run.

Table 4.7

ECM Short Run Estimation Results (Dependent Variable: ECOGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UBQTY*LNINFRA)	0.725673	0.359700	2.017441	0.0580
D(UBQTY*LNINFRA(-1))	0.292871	0.205566	1.424706	0.1705
D(UBCON*LNINFRA)	5.756018	0.620093	9.282512	0.0000
D(LNINFRA)	-87.59712	9.867003	-8.877784	0.0000
D(EDU)	-0.190190	0.049374	-3.852063	0.0011
D(UNEMP)	-2.813937	0.872856	-3.223826	0.0045
D(UNEMP(-1))	2.516201	0.877098	2.868779	0.0098
CointEq(-1)*	-0.783499	0.080317	-9.755084	0.0000
R-squared	0.842288	Durbin-Watson stat		1.728286
Adjusted R-squared	0.798129			

Source: Author's Computation from Estimations using Eviews 10

The interaction between urban population growth and infrastructure (UBQTY*LNINFRA) has a positive coefficient of 0.73 and is marginally significant at the 10% level ($p = 0.058$). This suggests that improvements in infrastructure enhance the short-run growth benefits of rising urban population, although the effect is relatively weak. The lagged interaction term is positive but statistically insignificant, implying that the reinforcing effect of infrastructure on urbanization-driven growth may not persist strongly over time.

The interaction between population concentration in the largest city and infrastructure (UBCON*LNINFRA) is strongly positive and highly significant (5.76, $p < 0.01$). This indicates that when infrastructure development is combined with urban primacy, economic growth experiences a substantial boost. It highlights the importance of targeted

infrastructure investment in large urban centres to mitigate congestion effects and unlock agglomeration economies.

Infrastructure alone, proxied by the logarithm of electric power consumption (LNINFRA), has a large negative and highly significant effect (–87.60, $p < 0.01$). This counterintuitive result suggests that infrastructure consumption, when isolated from urban dynamics, may reflect inefficiencies, high costs, or structural bottlenecks that hinder its growth-enhancing role. Education (EDU) maintains a negative and significant short-run effect (–0.19, $p < 0.01$), consistent with earlier results, suggesting that expansions in primary school enrolment may impose adjustment costs in the short run rather than contributing immediately to growth. Unemployment (UNEMP) again has a negative and significant impact (–2.81, $p < 0.01$), showing that rising joblessness depresses short-run economic growth. Interestingly, its lagged value is positive and significant (2.52, $p < 0.01$), indicating that short-run shocks in unemployment may be partially offset in subsequent periods as labour markets adjust.

The error correction term (CointEq(–1)) is negative and highly significant (–0.78, $p < 0.01$), confirming the existence of a stable long-run equilibrium. Its magnitude implies that approximately 78% of deviations from the long-run path are corrected within one year, indicating a rapid speed of adjustment. The model performs strongly overall, with an R-squared of 0.84 and an adjusted R-squared of 0.80, indicating that nearly 80% of the short-run variations in economic growth are explained by the included regressors. The Durbin-Watson statistic of 1.73 suggests the absence of serious autocorrelation.

In summary, the results show that the growth-enhancing effect of urbanization is strengthened when supported by infrastructure, particularly in Nigeria's largest city. However, infrastructure on its own appears inefficient, while unemployment and

education continue to pose challenges to short-run growth performance.

Table 4.8

Long Run Form Estimation Results (Dependent Variable: ECOGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UBQTY*LNINFRA	2.471915	0.537911	4.595400	0.0002
UBCON*LNINFRA	-0.729541	0.217436	-3.355197	0.0033
LNINFRA	-20.87844	5.755836	-3.627352	0.0018
EDU	-0.021050	0.076059	-0.276760	0.7850
UNEMP	-2.455673	1.762815	-1.393041	0.1797
C	122.1097	41.23552	2.961274	0.0080

Source: Author's Computation from Estimations using Eviews 10

Table 4.8 reports the long-run ARDL estimation results, incorporating the interaction between urbanization and infrastructure. The findings reveal important structural relationships shaping Nigeria's long-term growth path.

The interaction between urban population growth and infrastructure (UBQTY*LNINFRA) is positive and highly significant, with a coefficient of 2.47 ($p < 0.01$). This indicates that infrastructure development amplifies the growth-enhancing effects of rising urban population in the long run. In other words, urbanization contributes more strongly to growth when supported by adequate infrastructure, reinforcing the role of complementary investments in urban settings. By contrast, the interaction between population in the largest city and infrastructure (UBCON*LNINFRA) carries a negative and significant coefficient of –0.73 ($p < 0.01$). This suggests that infrastructure expansion, when combined with excessive urban primacy, may worsen the challenges of congestion,

overpopulation, and inefficiency in Nigeria's largest city. Thus, while infrastructure supports dispersed urban growth, it does not fully offset the diseconomies associated with city concentration.

Infrastructure alone (LNINFRA) remains negative and significant (–20.88, $p < 0.01$), consistent with the short-run results. This finding points to inefficiencies in Nigeria's infrastructural sector, where increased consumption does not translate effectively into productive output, likely due to supply constraints, energy losses, and poor management. Education (EDU) is negative but statistically insignificant (–0.02, $p > 0.10$), suggesting that primary school enrolment alone may not exert a direct long-term effect on growth, especially if the quality of education and transition to higher levels remain limited. Similarly, unemployment (UNEMP) shows a negative but insignificant coefficient (–2.46, $p > 0.10$), implying that long-run growth is shaped more by structural labour market reforms than by unemployment fluctuations.

The constant term (C) is positive and significant (122.11, $p < 0.01$), capturing other structural drivers of growth not directly accounted for by the included regressors. Taken together, the results highlight the crucial role of infrastructure in moderating the effects of urbanization. While infrastructure enhances the growth benefits of urban population expansion, it is less effective in addressing the growth constraints imposed by urban concentration in the largest city. This suggests that Nigeria's long-run growth requires not only investment in infrastructure but also policies to reduce excessive urban primacy and promote balanced urban development.

4.6. Diagnostic Tests

To ensure the reliability of the ARDL estimation results, a series of diagnostic tests were conducted, and the outcomes are reported in Table 4.9. The diagnostic tests are carried out in this section, and indicated that the models are of a functional form, with their residuals being serially uncorrelated, homoscedastic, and normally distributed. The Breusch-Godfrey Serial Correlation LM test returned p-values of 0.76 for Model 1 and 0.62 for Model 2, both exceeding the 5% threshold. This indicates that the models are free from serial correlation problems. The Breusch-Pagan-Godfrey test for heteroskedasticity produced probabilities of 0.30 (Model 1) and 0.31 (Model 2), while the ARCH test yielded even higher values of 0.87 and 0.94, respectively. Since all are greater than 0.05, the null hypothesis of homoskedasticity cannot be rejected, implying that the residuals have constant variance. Finally, the Ramsey RESET test produced very high p-values of 0.93 for Model 1 and 0.98 for Model 2, confirming that both models are correctly specified with no evidence of functional form misspecification.

Overall, the diagnostic tests collectively suggest that the models are robust, free from serial correlation and heteroskedasticity, and properly specified, thereby lending credibility to the estimated short-run and long-run relationships.

Table 4.9

Diagnostic Tests (Dependent Variable: ECOGR)

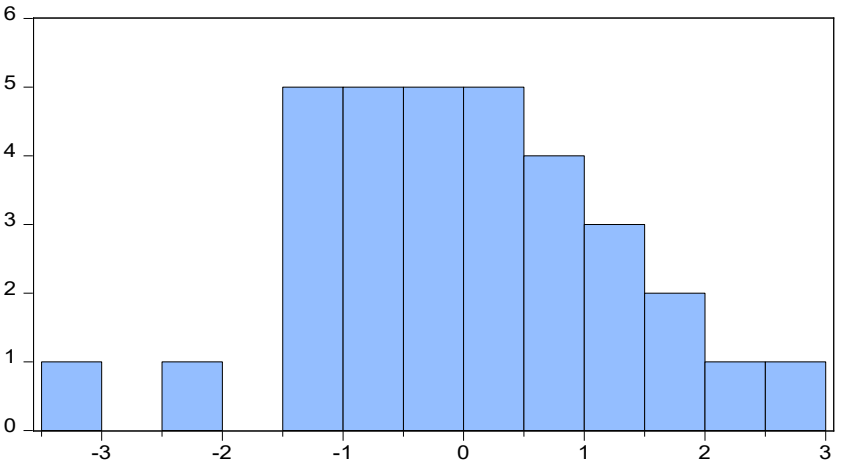
Diagnostic Test	Model 1	Model 2
	Prob.	Prob.
Breusch-Godfrey Serial Correlation LM Test	0.7590	0.6171
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.2973	0.3067
ARCH Heteroskedasticity Test	0.8708	0.9360
Ramsey RESET Test	0.9290	0.9822

Source: Author's Computation from Estimations using Eviews 10

The Histogram Normality tests in Figures 4.1 and 4.2 indicate that the residuals are normally distributed, as shown by their probability values of the Jarque-Bera statistic which are greater than 0.05 (0.96 and 0.39 > 0.05).

Figure 4.1

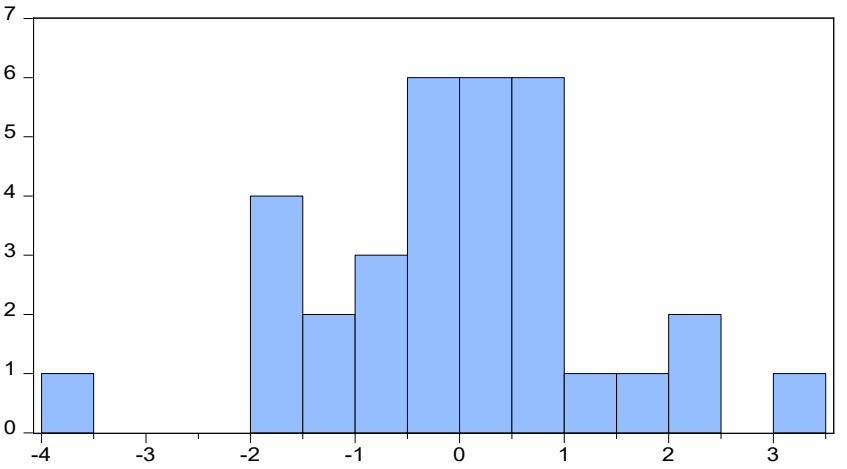
Histogram Normality Test (Dependent Variable: ECOGR)



Source: Author's Computation from Estimations using Eviews 10

Figure 4.2

Histogram Normality Test (Dependent Variable: ECOGR)



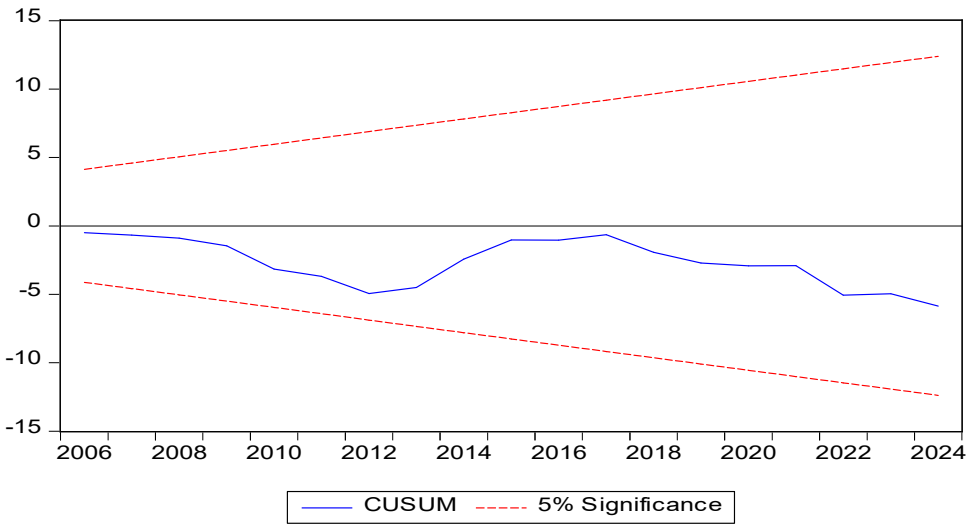
Source: Author's Computation from Estimations using Eviews 10

4.7. Stability Tests

The Cumulative Sum of Recursive Residuals (CUSUM) is used in testing the stability of the parameters of the model, by plotting the recursive estimation of the model. This indicates stability in the coefficients of the model over the sample period, as the plot of the CUSUM statistic falls inside the critical bounds of the 5 percent confidence interval of parameter stability. This is shown in Figures 4.3, 4.4, 4.5, and 4.6.

Figure 4.3

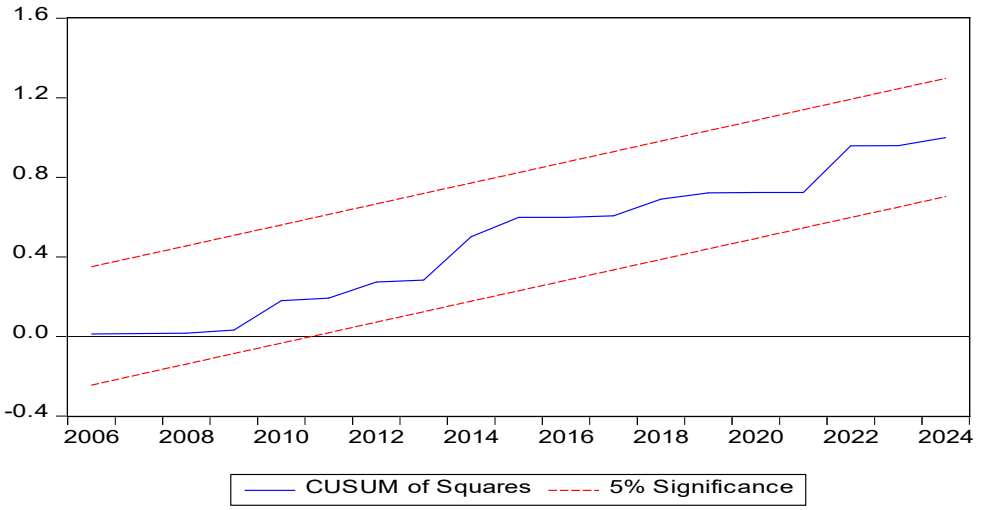
Cumulative Sum of Recursive Residuals (Dependent Variable: ECOGR)



Source: Author's Computation from Estimations using Eviews 10

Figure 4.4

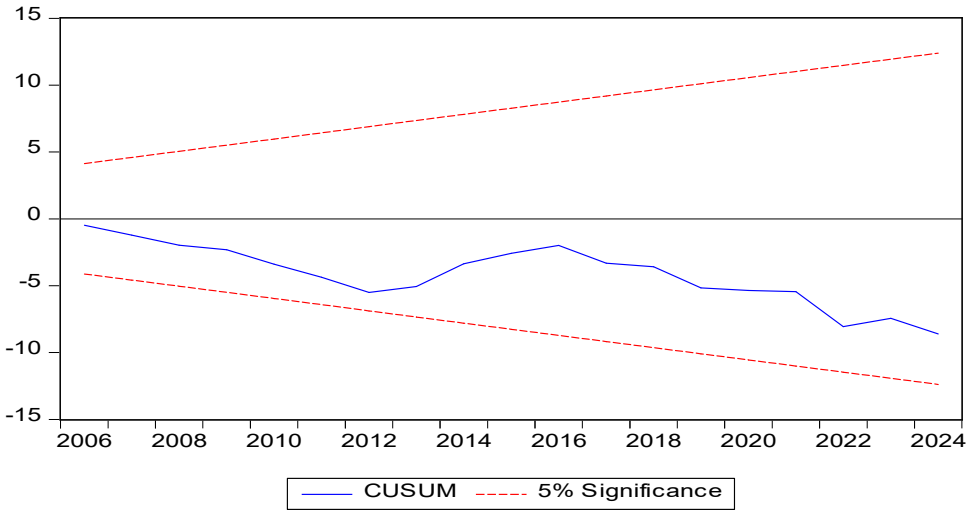
Cumulative Sum of Recursive Residuals Square (Dependent Variable: ECOGR)



Source: Author's Computation from Estimations using Eviews 10

Figure 4.5

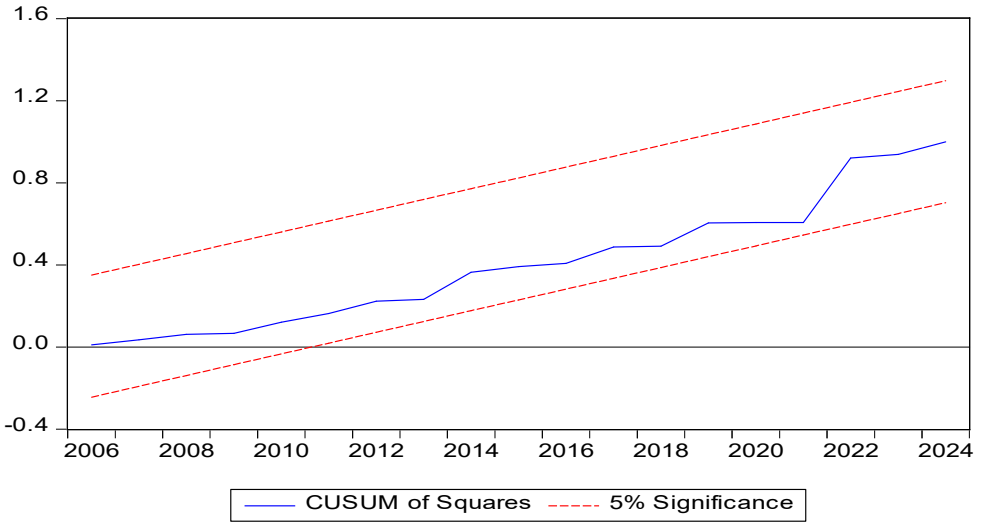
Cumulative Sum of Recursive Residuals (Dependent Variable: ECOGR)



Source: Author's Computation from Estimations using Eviews 10

Figure 4.6

Cumulative Sum of Recursive Residuals Square (Dependent Variable: ECOGR)



Source: Author's Computation from Estimations using Eviews 10

4.8. Test of Hypotheses

The study formulated and tested hypotheses on the relationship between urbanization, infrastructure, and economic growth in Nigeria. The estimation results provide evidence to accept or reject each hypothesis at conventional significance levels.

i. The first hypothesis, which posited that urban population growth has no significant impact on economic growth, is failed to be accepted. Both the short-run and long-run results show that urban population growth exerts a strong positive and statistically significant effect on economic growth.
ii. The second hypothesis, that population concentration in the largest city has no significant effect on economic growth, is also failed to be accepted. The findings reveal that excessive concentration in the largest city negatively and significantly affects growth in the long run, while in the short run, its interaction with infrastructure has a positive effect.
iii. The third hypothesis, which assumed that infrastructure does not significantly influence economic growth, is partially supported. While infrastructure alone shows a negative and significant effect on growth in both the short run and long run, its interaction with urbanization variables reveals positive effects, suggesting that infrastructure matters for growth when combined with urban expansion but remains inefficient on its own.

Taken together, the hypothesis testing confirms that urbanization and its interaction with infrastructure are central drivers of Nigeria's economic growth, while excessive city concentration and inefficient infrastructure use remain key constraints.

4.9. Policy Implications

The findings of this study have several important policy implications for Nigeria's urban development and growth strategy. First, the strong positive relationship between urban population growth and economic growth underscores the need for policies that harness the benefits of urbanization. This includes investments in housing, transport, and service delivery systems that can accommodate the rising urban population without generating bottlenecks. Properly managed, urbanization can serve as a powerful engine for long-term growth.

Second, the negative long-run effect of population concentration in the largest city highlights the risks of excessive urban primacy. Nigeria's economic growth strategy must therefore promote balanced regional development by encouraging the growth of secondary cities, decongesting megacities, and decentralizing key economic activities. This approach would help reduce the diseconomies of congestion while spreading growth opportunities more evenly across regions.

Third, infrastructure emerges as a critical determinant, though with mixed outcomes. On its own, infrastructure provision—proxied by electric power consumption—has not contributed positively to growth, suggesting inefficiencies, poor maintenance, and systemic bottlenecks in Nigeria's infrastructure sector. However, the positive interaction effects between infrastructure and urbanization variables indicate that infrastructure investment, when properly aligned with urban expansion, can significantly enhance growth. Policymakers should therefore prioritize integrated urban-infrastructure planning, ensuring that new infrastructure projects directly support urban and industrial productivity.

Fourth, the negative short-run effects of education imply that expansion in primary

enrolment may initially impose adjustment costs, perhaps due to pressure on resources or quality concerns. This suggests that education policy should not only focus on enrolment numbers but also on improving quality, progression to higher levels, and alignment with labour market needs. Over the long run, such reforms would allow education to translate more effectively into productivity and growth.

Finally, unemployment is shown to significantly undermine growth in the short run. Reducing unemployment requires comprehensive job creation strategies, including fostering labour-intensive industries, supporting entrepreneurship, and addressing skills mismatches in the labour market. By improving labour absorption, Nigeria can turn its growing workforce into a demographic dividend rather than a burden on growth.

In summary, the results emphasize the importance of coordinated policies that integrate urbanization, infrastructure, labour market reforms, and education quality improvements. Such a holistic approach would maximize the benefits of urban growth while mitigating the challenges of congestion, inefficiency, and unemployment that currently constrain Nigeria's economic performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS, AND CONCLUSION

5.1. Introduction

In this chapter, the summary of findings, policy recommendations, and conclusion of the study are presented. The summary of findings gives a brief and concise description of the entire study. Furthermore, economic policies are recommended based on the findings of the study. Finally, the conclusion of the study is presented.

5.2. Summary of Findings

In consideration of the role urbanization plays in economic growth; the study examined the impact of urbanization on economic growth in Nigeria from 1990 to 2024; using time series econometric tools of autoregressive distributed lag (ARDL). The study began with an introductory chapter, where the background to the study, statement of the research problem, research questions, objectives, hypotheses, significance, limitations, scope, and structure of the study were presented.

The literature review was presented in chapter two, where the extant literature (conceptual, theoretical, and empirical) on the subject was reviewed. Where the adequate gap was identified. Following the literature review was the discussion of the theoretical framework and methodology of the study, and the specification of the model used for analysis, in chapter three. The study employed the Endogenous growth theory as its theoretical foundation.

The presentation and discussion of empirical results was presented in chapter four. The chapter began with the descriptive statistics and correlation analysis,

followed by the unit root test for stationarity of the variables using the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests. The result indicated that the variables were of mixed order of integration. The ARDL Bounds test was carried out, and determined that a long run equilibrium relationship existed between economic growth and its explanatory variables. The short run ECM and long run form ARDL estimation were also carried out to determine the relationship between the dependent variable and its explanatory variables. Finally, the post estimation diagnostic tests were carried out, and determined that the model was homoscedastic, of a functional form, with its residuals being serially uncorrelated, and normally distributed.

Evidence from the empirical analysis showed that, urban population growth significantly promotes Nigeria's economic growth in both the short and long run, while excessive concentration in the largest city negatively affects growth in the long run. Infrastructure on its own exerts a negative effect, reflecting inefficiencies, but when combined with urbanization it enhances growth, especially in large cities. Education shows a negative short-run effect but is insignificant in the long run, suggesting quality and structural challenges, while unemployment consistently constrains growth in the short run though its long-run impact is insignificant. Overall, the results highlight urbanization as a key driver of growth, with infrastructure, education, and labour market conditions shaping its effectiveness.

5.3. Recommendations

Based on the empirical evidence, to enhance economic growth in Nigeria, the findings suggest several recommendations for policy consideration;

1 Harness urbanization for growth: Nigeria should implement deliberate policies that channel the benefits of urban expansion into economic development. This includes heavy investment in affordable housing, efficient public transport, sanitation, and social services to accommodate the rising urban population. Such measures will help prevent urban slums, reduce pressure on existing infrastructure, and ensure that urbanization translates into improved productivity and living standards.

2 Reduce excessive city concentration: The negative impact of population concentration in the largest city highlights the need to discourage excessive primacy. Government should promote balanced regional development by strengthening secondary cities, improving connectivity between urban centres, and decentralizing industries and administrative functions away from megacities like Lagos. By doing so, Nigeria can spread growth opportunities more evenly across regions and reduce the diseconomies of congestion.

3 Improve infrastructure efficiency: While infrastructure is essential for growth, the study shows that infrastructure alone has not contributed positively, reflecting systemic inefficiencies. Policymakers should focus on increasing the efficiency of the power sector, reducing transmission losses, ensuring timely maintenance of facilities, and aligning infrastructure projects with urban and industrial development plans. Transparent governance in infrastructure delivery will also ensure that resources are not wasted but directed toward projects with real economic returns.

4 Reform the education sector: The short-run negative effect of education suggests that enrolment expansion without quality improvement may be counterproductive. Government should focus on upgrading the quality of primary and secondary education, improving teacher training, and ensuring adequate funding for schools. Equally important is aligning the education system with labour market demands through vocational training, digital skills, and programs that enhance employability, so education translates into productivity in the long run.

5 Address unemployment challenges: Rising unemployment continues to undermine economic growth. Government should adopt deliberate job creation strategies, including fostering labour-intensive industries such as agriculture, manufacturing, and construction, while also promoting small and medium enterprises (SMEs). Entrepreneurship programs, skills acquisition centres, and targeted youth employment schemes can absorb Nigeria's growing workforce. Such strategies will not only reduce unemployment but also maximize the demographic dividend of a young and expanding labour force.

5.4. Conclusion

This study examined the impact of urbanization and infrastructure on economic growth in Nigeria from 1990 to 2024, with emphasis on both the direct and interaction effects of urban development, infrastructure, education, and unemployment. The findings reveal that while urban population growth significantly enhances economic growth, excessive concentration in the largest city undermines long-run performance, reflecting the diseconomies of congestion. Infrastructure on its own exerts a negative effect, pointing to inefficiencies in Nigeria's infrastructure sector, yet its interaction with urbanization demonstrates

strong growth-enhancing potential when properly aligned with urban expansion. Education shows limited and, in some cases, adverse short-run effects, highlighting quality and structural challenges, while unemployment continues to constrain growth in the short run. Overall, the results underscore the need for Nigeria to harness urbanization through balanced regional development, efficient infrastructure provision, quality education reforms, and targeted labour market policies. By addressing these structural challenges, Nigeria can transform urbanization into a sustainable engine of economic growth and improve the welfare of its citizens.

REFERENCES

Abdi, A., Rahman, M., & Agyabeng, M. (2021). Urban poverty and health vulnerability in informal settlements. Journal of Urban Studies, 45(2), 155–170.

Adebayo, T., & Akinola, J. (2018). Urban population growth and economic output in Nigeria: Evidence from state-level data. Journal of African Development Studies, 12(3), 45–61.

Adelekan, I. O. (2016). Vulnerability of poor urban coastal communities to climate change in Lagos, Nigeria. Environment and Urbanization, 28(1), 135–160.

Adeleke, J. (2017). Urban development and infrastructure challenges in Nigeria. Journal of Sustainable Development in Africa, 19(4), 112–129.

Adama, P. (2020). Overpopulation and the expansion of informal settlements in Nigeria. African Population Review, 34(1), 25–39.

Adesola, A., & Olabiyi, T. (2023). Urbanization and slum development in Nigeria: Challenges and opportunities. Journal of Urban Management, 12(1), 66–80.

Agbola, T., & Agunbiade, E. (2009). Urbanization, slum development and security of tenure: The challenges of meeting Millennium Development Goal 7 in metropolitan Lagos, Nigeria. International Development Planning Review, 31(1), 1–23.

Ahmed, F., Das, S., & Safdar, H. (2020). Housing and public health in slum environments: Lessons from developing nations. Public Health Review, 41(3), 225–240.

Agyabeng, M., Rahman, M., & Abdi, A. (2023). Informal employment and urban well-being in African slums. Development Policy Review, 41(2), 192–210.

Akinbobola, T., & Saibu, M. (2016). Urbanization and economic growth in Nigeria: An ARDL approach. Journal of Economic Policy Research, 8(2), 101–118.

Akinwale, A. (2018). The floating city of Makoko: Informality and resilience in Lagos. African Cities Review, 9(1), 22–39.

Akinwale, A. (2021). Urban slums and environmental degradation in Lagos, Nigeria. African Journal of Urban Affairs, 11(3), 201–218.

Akinwale, A. (2022). Participatory urban renewal and community resilience in Lagos slums. Journal of Urban Policy and Planning, 14(2), 95–113.

Akinwale, A., & Oladipo, S. (2014). Urban infrastructure and environmental sustainability in Nigeria. International Journal of Environmental Policy, 7(3), 115–132.

Alonge, R., & Wadinga, J. (2021). Urban renewal and displacement in Nigeria's waterfront communities. Journal of Planning and Development, 17(1), 88–101.

Audi, M., Okoli, E., & Iroye, O. (2014). Environmental challenges of industrialization in Nigeria. Journal of Environmental Economics, 6(4), 210–225.

Auta, S., & Danladi, M. (2020). Population pressure and food insecurity in urban slums of Kano State, Nigeria. Nigerian Journal of Development Studies, 10(1), 33–50.

Balogun, T., Osuh, O., & Philip, N. (2023). Overcrowding and health outcomes in Lagos slums. International Journal of Urban Health, 30(1), 56–73.

Barro, R. J., & Sala-i-Martin, X. (2004). Economic growth (2nd ed.). MIT Press.

Bloom, D. E., Canning, D., & Fink, G. (2008). Urbanization and the wealth of nations. Science, 319(5864), 772–775. https://doi.org/10.1126/science.1153057.

Central Bank of Nigeria. (2024). Statistical bulletin. Abuja: CBN. https://www.cbn.gov.ng

Chindo, S. (2014). Air pollution and economic cost in Nigeria. Environmental Management Journal, 9(2), 72–85.

Chima, O., & Okoye, C. (2021). The dynamics of waterfront settlements in Port Harcourt, Nigeria. Urban Studies Journal, 58(5), 991–1008.

Das, S., Safdar, H., & Ahmed, F. (2021). COVID-19 and housing inequalities in slum communities. Urban Health Review, 48(2), 155–173.

Davis, M. (2006). Planet of slums. Verso.

Dodman, D. (2009). Blaming cities for climate change? Urbanization and global emissions. Environment and Urbanization, 21(1), 185–201.

Dubey, R., & Narayanan, K. (2010). Urbanization and environmental degradation: A developing country perspective. International Journal of Urban and Regional Research, 34(2), 415–432.

Ebekozien, A., Okafor, I., & Philip, N. (2024). Urban slums and socio-economic deprivation in Nigeria. African Development Review, 36(1), 67–85.

Ehrlich, P., & Ehrlich, A. (1990). The population explosion. Simon and Schuster.

Ejaro, S., & Abubakar, M. (2013). Urbanization and environmental degradation in Nigeria. Journal of Sustainable Development Studies, 5(3), 234–245.

Eze, R., Musa, M., & Omokaro, E. (2020). Urbanization, pollution, and resource depletion in Nigeria. Environmental Research Journal, 12(1), 76–90.

Famade, O. (2007). Urban policy and housing development in Nigeria. Housing Studies Review, 11(2), 99–115.

Fox, S. (2014). Urbanization as a global historical process: Theory and evidence from Sub-Saharan Africa. Population and Development Review, 40(3), 587–613.

Fujita, M., Krugman, P., & Venables, A. (1999). The spatial economy: Cities, regions, and international trade. MIT Press.

Glaeser, E. (2011). Triumph of the city: How our greatest invention makes us richer, smarter, greener, healthier, and happier. Penguin Press.

Henderson, J. V. (2003). The urbanization process and economic growth: The so-what question. Journal of Economic Growth, 8(1), 47–71.

Ibrahim, A., & Olalekan, T. (2020). Urban infrastructure and poverty reduction in Nigeria. Nigerian Journal of Economics, 15(2), 56–73.

Iroye, O. (2015). Urban construction and environmental degradation in Nigeria. Environmental Science Reports, 5(3), 214–229.

Jedwab, R., & Moradi, A. (2016). The permanent effects of transportation revolutions in poor countries. Review of Economics and Statistics, 98(2), 268–284.

Jemiluyi, A. (2021). Urbanization and environmental management in Nigeria. African Journal of Urban Studies, 14(2), 45–60.

Krugman, P. (1991). Geography and trade. MIT Press.

Lucas, R. E. (1988). On the mechanics of economic development. Journal of Monetary Economics, 22(1), 3–42. https://doi.org/10.1016/0304-3932(88)90168-7.

Mahmood, A., Mehmood, A., & Musa, M. (2020). Urban expansion, energy consumption, and environmental degradation in developing economies. Energy Policy Journal, 14(3), 100–115.

Maijama'a, A., Ibrahim, T., & Danladi, A. (2020). Deforestation, agricultural expansion, and foreign direct investment in Nigeria. Journal of Environmental Policy, 11(1), 99–117.

Mafiana, A., Okoye, C., & Musa, M. (2022). Urban green space depletion and climate resilience in Nigeria. Sustainable Cities Journal, 10(4), 204–219.

Mberu, B., & Ezch, I. (2017). Urban migration and slum proliferation in Nigeria. Demographic Research Review, 33(1), 34–50.

Mehmood, A., et al. (2024). Urban growth and its economic implications in developing countries. International Journal of Development Studies, 16(1), 51–70.

Musa, M., Ohwo, E., & Abotutu, A. (2021). Industrial growth and carbon emissions in Nigeria. Journal of Environmental and Economic Development, 13(1), 17–30.

National Bureau of Statistics. (2020). Annual abstract of statistics. Abuja: NBS.

National Population Commission & ICF Macro. (2009). Nigeria demographic and health survey 2008. Abuja: NPC and ICF Macro.

Nejad, A., Rahman, M., & Safdar, H. (2021). Education and health outcomes in low-income urban communities. Global Public Health Journal, 16(3), 290–307.

Newman, P. (2006). The environmental impact of cities. Environment and Urbanization, 18(2), 275–295.

Obembe, T., Rahman, M., & Nejad, A. (2021). Health expenditures and vulnerability in urban slums. Health Economics Review, 11(2), 122–138.

Ogbonna, U., Okafor, I., & Safdar, H. (2024). Housing deprivation and health outcomes in urban Nigeria. Journal of Housing and the Built Environment, 39(1), 85–102.

Ogunbiyi, T., & Aderogba, K. (2018). Environmental degradation and agricultural productivity in Nigeria. Journal of Agricultural and Environmental Studies, 9(2), 101–118.

Ogunbodede, E. (2017). Urban growth and infrastructure deficit in Nigerian cities. Urban Affairs Review, 53(4), 612–634.

Olanrewaju, A., Sulaiman, B., & Ajayi, O. (2019). Urbanization and industrial output in Nigeria: Evidence from city-level data. African Economic Research Journal, 8(3), 78–94.

Olatunde, K. (2025). Population density and housing challenges in Lagos State. Nigerian Urban Planning Review, 19(1), 90–108.

Okafor, I., Philip, N., & Ebekozien, A. (2023). Urban planning and slum management in Nigeria. Planning and Development Review, 22(2), 45–63.

Okonkwo, L., & Nwankwo, F. (2020). Infrastructure and economic performance across Nigerian cities. Journal of Infrastructure Economics, 10(2), 110–128.

Okoye, C. (2017). Urban congestion and waste management in Onitsha, Nigeria. Journal of African Urban Studies, 5(2), 143–158.

Omokaro, E., Philip, N., & Musa, M. (2024a). Heavy metal pollution and public health risks in Nigeria's water systems. Environmental Research and Sustainability, 14(1), 22–39.

Omokaro, E., & Philip, N. (2024b). Waste management inefficiencies and urban flooding in Nigeria. Sustainable Development Journal, 11(2), 130–147.

Onwujekwe, O., Sekoni, A., & Ebekozien, A. (2021). Health inequities in Nigeria's urban slums. African Health Studies Journal, 19(1), 75–93.

Onyekwelu, S., & Ogbuefi, F. (2021). Participatory regeneration and slum upgrading in Nigerian cities. Urban Development Studies, 7(1), 59–77.

Osuh, O., Balogun, T., & Rahman, M. (2023). Population pressure and child health outcomes in urban Nigeria. International Journal of Population Studies, 9(1), 144–161.

Oyeleke, B., & Ajayi, T. (2014). Urban population and economic growth in Nigeria. Journal of Economic Research, 7(2), 99–115.

Oyeleye, O. (2013). Challenges of urbanization and sustainable development in Nigeria. University of Lagos Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289–326. https://doi.org/10.1002/jae.616.

Philip, N. (2024). Mental health outcomes among slum dwellers in Nigeria. Health and Society Journal, 18(1), 66–82.

Rahman, M., Nejad, A., & Abdi, A. (2022). Education and health inequalities among urban poor communities. Urban Social Science Review, 12(3), 111–130.

Romer, P. M. (1986). Increasing returns and long-run growth. Journal of Political Economy, 94(5), 1002–1037. https://doi.org/10.1086/261420.

Safdar, H., Das, S., & Ahmed, F. (2022). Housing deprivation and environmental inequality in developing countries. Journal of Urban Development, 16(2), 200–219.

Today News Africa. (2020, November 12). Nigeria's human development challenges. https://todaynewsafrica.com.

Turok, I., & McGranahan, G. (2013). Urbanization and economic growth: The arguments and evidence for Africa and Asia. Environment and Urbanization, 25(2), 465–482.

Uche, P., & Onyekachi, J. (2022). Spatial economic clusters and urban growth in Nigeria. Journal of Regional Economics, 15(4), 301–320.

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations.

United Nations. (2019). World population prospects 2019. United Nations.

UN-Habitat. (2003). The challenge of slums: Global report on human settlements. United Nations Human Settlements Programme.

UN-Habitat. (2019). World cities report 2019: The value of sustainable urbanization. United Nations Human Settlements Programme.

UN-Habitat. (2020). World cities report 2020: The value of sustainable urbanization. United Nations Human Settlements Programme.

World Bank. (2016). World development indicators 2016. World Bank.

World Bank. (2020). World development indicators 2020. World Bank.

World Bank. (2024). World development indicators 2024. World Bank. https://databank.worldbank.org.

APPENDIX

THE IMPACT OF URBANIZATION ON ECONOMIC GROWTH IN NIGERIA

ARDL Long Run Form and Bounds Test

ARDL Long Run Form and Bounds Test
Dependent Variable: D(ECOGR)
Selected Model: ARDL(1, 2, 1, 1, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 09/18/25 Time: 13:20
Sample: 1990 2024
Included observations: 33

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	88.31692	25.54509	3.457296	0.0026
ECOGR(-1)*	-0.989664	0.139834	-7.077433	0.0000
UBQTY(-1)	17.39041	2.835119	6.133927	0.0000
UBCON(-1)	-3.942458	0.642947	-6.131854	0.0000
LNINFRA(-1)	-16.44072	3.521566	-4.668583	0.0002
EDU(-1)	-0.074570	0.056643	-1.316497	0.2037
UNEMP(-1)	-1.815442	1.117965	-1.623882	0.1209
D(UBQTY)	11.20104	3.147944	3.558209	0.0021
D(UBQTY(-1))	4.850279	1.467334	3.305505	0.0037
D(UBCON)	60.52246	12.52415	4.832460	0.0001
D(LNINFRA)	-3.824939	3.054233	-1.252340	0.2256
D(EDU)	-0.224637	0.065072	-3.452151	0.0027
D(UNEMP)	-2.869534	1.164181	-2.464851	0.0234

D(UNEMP(-1))	2.380910	1.830878	1.300419	0.2090

* p-value incompatible with t-Bounds distribution.

- **Diagnostic Tests**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.280236	Prob. F(2,17)	0.7590
Obs*R-squared	1.053249	Prob. Chi-Square(2)	0.5906

Test Equation:

Dependent Variable: RESID

Method: ARDL

Date: 09/18/25 Time: 13:24

Sample: 1992 2024

Included observations: 33

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECOGR(-1)	-0.078313	0.191527	-0.408885	0.6877
UBQTY	0.718728	4.096765	0.175438	0.8628
UBQTY(-1)	0.741049	3.225578	0.229741	0.8210
UBQTY(-2)	-0.313674	1.669180	-0.187921	0.8532
UBCON	1.716791	14.02070	0.122447	0.9040
UBCON(-1)	-1.744738	14.53931	-0.120001	0.9059
LNINFRA	0.117184	3.196668	0.036658	0.9712

LNINFRA(-1)	0.491340	3.320762	0.147960	0.8841
EDU	0.020386	0.073360	0.277883	0.7845
EDU(-1)	-0.025423	0.076202	-0.333623	0.7427
UNEMP	0.263585	1.262626	0.208760	0.8371
UNEMP(-1)	-0.737829	2.238118	-0.329665	0.7457
UNEMP(-2)	0.819427	2.229681	0.367509	0.7178
C	-8.021561	28.66023	-0.279885	0.7829
RESID(-1)	0.166072	0.353067	0.470369	0.6441
RESID(-2)	-0.198907	0.323085	-0.615650	0.5463

R-squared	0.031917	Mean dependent var	-3.32E-14
Adjusted R-squared	-0.822275	S.D. dependent var	1.232812
S.E. of regression	1.664193	Akaike info criterion	4.162960
Sum squared resid	47.08213	Schwarz criterion	4.888539
Log likelihood	-52.68884	Hannan-Quinn criter.	4.407095
F-statistic	0.037365	Durbin-Watson stat	2.089202
Prob(F-statistic)	1.000000		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.292888	Prob. F(13,19)	0.2973
Obs*R-squared	15.48972	Prob. Chi-Square(13)	0.2778
Scaled explained SS	5.541458	Prob. Chi-Square(13)	0.9613

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 09/18/25 Time: 13:24

Sample: 1992 2024

Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.899452	33.18770	-0.027102	0.9787
ECOGR(-1)	-0.234587	0.181669	-1.291287	0.2121
UBQTY	-9.250956	4.089750	-2.261986	0.0356
UBQTY(-1)	0.599913	3.515049	0.170670	0.8663
UBQTY(-2)	1.376077	1.906332	0.721845	0.4792
UBCON	-33.35516	16.27114	-2.049958	0.0544
UBCON(-1)	34.57958	16.90559	2.045452	0.0549
LNINFRA	1.812591	3.968002	0.456802	0.6530
LNINFRA(-1)	-1.296234	4.042655	-0.320639	0.7520
EDU	0.160550	0.084540	1.899104	0.0728
EDU(-1)	0.018954	0.082662	0.229298	0.8211
UNEMP	-1.580909	1.512483	-1.045241	0.3090
UNEMP(-1)	2.495016	2.471541	1.009498	0.3254
UNEMP(-2)	-2.316978	2.378643	-0.974076	0.3423

R-squared	0.469386	Mean dependent var	1.473769
Adjusted R-squared	0.106334	S.D. dependent var	2.198755
S.E. of regression	2.078570	Akaike info criterion	4.597653
Sum squared resid	82.08859	Schwarz criterion	5.232535
Log likelihood	-61.86128	Hannan-Quinn criter.	4.811272
F-statistic	1.292888	Durbin-Watson stat	2.749752
Prob(F-statistic)	0.297319		

Heteroskedasticity Test: ARCH

F-statistic	0.026892	Prob. F(1,30)	0.8708

Obs*R-squared	0.028659	Prob. Chi-Square(1)	0.8656

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 09/18/25 Time: 13:25

Sample (adjusted): 1993 2024

Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.557836	0.485386	3.209479	0.0032
RESID^2(-1)	-0.029929	0.182511	-0.163987	0.8708

R-squared	0.000896	Mean dependent var	1.512555
Adjusted R-squared	-0.032408	S.D. dependent var	2.222438
S.E. of regression	2.258163	Akaike info criterion	4.527442
Sum squared resid	152.9791	Schwarz criterion	4.619051
Log likelihood	-70.43907	Hannan-Quinn criter.	4.557808
F-statistic	0.026892	Durbin-Watson stat	2.001585
Prob(F-statistic)	0.870841		