

# Impact of Annuity on the Economic Development of Nigeria

## Impacto de la Renta Vitalicia en el Desarrollo Económico de Nigeria

[Artículos]

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### Abstract

An annuity is a way of transferring longevity risk from an individual to an insurance company, which can pool risk among many individuals and achieve greater diversification of risk than can be accomplished by any individual. Annuity premiums build capital for insurance companies and encourage technical innovation and progress, while the benefits paid to annuitants are beneficial to them in the and, in turn, helps with the economies of large-scale production and increases specialization, which helps to accelerate labour productivity and increase GDP. This paper examines the impact of annuities on economic development in Nigeria. Annuities provide longevity risk protection and retirement income security. The study aims to determine the impact of annuity premiums paid by workers and annuity benefits paid to retirees on Nigeria's economic development, as measured by real GDP. An ex-post facto research design is adopted using secondary data from 2014-2020. Two hypotheses are tested using regression analysis.

The first hypothesis postulates that annuity premiums do not have significant impact on economic development. The second hypothesis postulates that there is no significant effect of annuity benefits on economic development. The results reject both null hypotheses at the 5 % significance level. Annuity premiums positively and

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significantly ( $p = 0.013$ ) affect economic development. This occurs as premiums create capital formation for insurance firms to make productivity-enhancing investments. However, annuity benefits negatively and significantly ( $p = 0.0027$ ) affect development, likely indicating funds withdrawn from the economy. Recommendations include the establishing structures to develop annuity products and markets to address the problems of the decumulation phase.

In addition, it is advisable to increase investment in annuity premiums and to monitor the payout ratio of annuities. The empirical analysis provides useful insights, but future research should explore long-term macroeconomic effects.

**Keywords:** annuity, retirement, insurance, economic development, Nigeria.

## Resumen

Una renta vitalicia es una manera de transferir el riesgo de la longevidad de una persona a una aseguradora, la cual puede agrupar el riesgo de muchas personas y darle una mayor diversificación. Por una parte, las primas de las rentas vitalicias generan capital para las aseguradoras y fomentan la innovación y el progreso técnicos. Por otra, los beneficios pagados a los pensionados son favorables para ellos, ayudan a las economías de producción a gran escala y aumentan la especialización, lo que acelera la productividad laboral e incrementa el PIB. En este artículo se analiza el impacto de las rentas vitalicias en el desarrollo económico de Nigeria, puesto que brindan tanto protección contra el riesgo de longevidad como seguridad a los ingresos de jubilación. El estudio tiene como objetivo determinar el impacto de las primas que pagan los trabajadores y los beneficios de las rentas vitalicias pagadas a los jubilados en el desarrollo económico de Nigeria, el cual se mide con el PIB real. Para esto, se adopta un diseño de investigación ex post facto con datos secundarios del período 2014-2020 y se prueban dos hipótesis mediante análisis de regresión.

La primera postula que las primas no tienen un impacto significativo en el desarrollo económico, mientras que la segunda plantea que no existe un efecto significativo de los beneficios de las rentas vitalicias sobre el desarrollo económico. Los resultados rechazan ambas hipótesis nulas a un nivel de significancia del 5 %. Las primas de rentas vitalicias afectan de forma positiva y significativa ( $p = 0,013$ ) el desarrollo económico, lo cual se presenta cuando las primas forman capital para que las aseguradoras hagan inversiones que mejoran la productividad. No obstante, los beneficios de las rentas vitalicias afectan de forma negativa y significativa ( $p = 0,0027$ ) el desarrollo, lo que probablemente indica el retiro de fondos de la economía.

Se recomienda el establecimiento de estructuras para desarrollar productos y mercados de rentas vitalicias a fin de abordar los problemas de la fase de desacumulación. Además, es aconsejable aumentar la inversión en primas de rentas vitalicias y controlar su índice de pago. El análisis empírico ofrece información útil, pero es importante que las investigaciones futuras exploren los efectos macroeconómicos a largo plazo.

**Palabras clave:** renta vitalicia, jubilación, seguros, desarrollo económico, Nigeria.

## Introducción

Households accumulate long-term savings through a variety of financial vehicles, including annuities, which are increasingly important for providing

income in retirement (Smith, Thompson & White, 2023). Annuities offer a safe place for an individual's money to grow, allowing them to avoid stock market volatility, and provide a guaranteed income stream for the rest of their lifetime (Johnson & Lee, 2023). Annuity contracts combine a savings account with a mechanism for managing the rate at which resources are withdrawn, allowing individuals to insure against the risk of outliving their resources and providing a financial cushion for survivors in the event of premature death (Aquilina & Lee, 2015; Smith et. al., 2023).

Having a guaranteed income alleviates the stress of trying to make a retiree's money last. It gives the retiree peace of mind about their expenses because they can be confident that another check will arrive, even after their payout has exceeded their premiums (Smith *et al.*, 2023). People are often unaware of or confused about the fees associated with different types of annuities (Brown & Davis, 2023). An experienced financial advisor can help you select the right type of annuity for your needs and answer your questions about its features and fees (Brown & Davis, 2023). Annuity contracts, which have been used for centuries, come in various forms and often combine a savings account with a method for managing withdrawals. This allows individuals to protect against outliving their resources, avoid overspending and provide financial security for their loved ones in the event of premature death (Smith *et al.*, 2023).

Annuities have gained importance over time, as early retirement, and longer life expectancy have lengthened retirement periods and increased the risk of running out of financial resources too early (Ajemunigbohun, Alli & Ganiyu, 2015). This is reflected in the growing interest in annuity products, especially in times of economic uncertainty, such as the COVID-19 pandemic (Smith *et al.*, 2023). The payment of annuity premiums generates capital formation for insurance companies, which can contribute to technical innovation and progress. This can facilitate large-scale production, increase specialization and accelerate labour productivity, which ultimately translates into increased GDP (Johnson & Lee, 2023). As a result, the payment of annuity premiums can lead to the efficient use of scarce resources, the expansion of national output and the resolution of problems such as inflation, balance of payment, poverty, and inequality (Johnson & Lee, 2023). In addition, adequate annuity savings can help break the vicious cycle of poverty in developing countries and can be a key factor in achieving economic development (Johnson & Lee, 2023). Therefore, it can be argued that annuity premium income is a significant source of economic growth and can contribute to a higher welfare state, potentially reducing the burden of external debt (Johnson & Lee, 2023).

In Nigeria, the sales and utility of annuity contracts among retirees have gained impressive notoriety in the last 18 years due to the enactment of Pension Reform Act 2004 and 2014, which have made annuities compete with other financial products such as mutual funds and life insurance (Udeh, OKafo & Osuji, 2018). This development has been largely driven by employees' decision to annuitise their accumulated pension funds at the payout phase (Adeyele & Imouokhome, 2020).

However, the absence of a regulatory framework for the establishment and development of annuity products and markets in Nigeria raises questions about stakeholders' understanding of the importance of establishing the annuity market to overcome potential problems at the decumulation stage (Adeyele & Imouokhome, 2020). This is further complicated by the non-availability of products to cover long-term liabilities and uncertainty surrounding mortality risk, which has made providers reluctant to promote annuities as a retirement benefit option (Adeyele & Imouokhome, 2020).

Moreover, factors such as actuarial unfairness and adverse selection have also been identified as barriers to the adoption of annuities (Adeyele & Imouokhome, 2020). Despite these challenges, the potential benefits of annuities, such as insuring against the risk of outliving one's resources and providing a financial cushion for survivors in the event of premature death, underscore the need for further development of the annuity market in Nigeria (Ajemunigbohun, Alli & Ganiyu, 2015; Adeyele & Imouokhome, 2020). Therefore, it is crucial for the government to intervene by providing an enabling environment for the survival and growth of the annuity market in Nigeria. This could include the establishment of a regulatory framework that encourages the creation and development of suitable annuity products, as well as educational initiatives to increase understanding and awareness of annuities among potential retirees (Adeyele & Imouokhome, 2020). Furthermore, despite the importance of annuities and their use as a means of providing funds for retirees and the economy, little or no research attention has been paid to the area of annuities and economic development in Nigeria. Considering its important implications, this study aims to fill this gap in research.

This paper elaborates on concepts related to annuities, economic development, and GDP as a measure of economic development. The paper presents the theoretical frameworks, methodology, results, and conclusions of the analysis. It ends with recommendations and suggestions for future research. Thus, the following objectives are formulated to further guide this study:

- i. Determine the impact of annuity premium paid by workers on Nigeria's economic development.

- ii. Examine the effect of annuity benefits paid to retirees on the economic development of Nigeria.

### **Annuity**

An annuity is a financial contract between an individual and an insurance company or other financial institution, in which the individual agrees to make a series of payments or a lump sum in exchange for a guaranteed stream of income payments over a period. As Bodie, Kane, and Marcus (2014) explain, an annuity is a contract that provides for a series of payments to be made at specified intervals over a fixed or variable period over the lifetime of the annuitant. Payments can be monthly, quarterly, or annually, and can continue for the rest of the individual's life or for a predetermined period. Annuities are often used as a retirement income tool, as they can provide a stable source of income during retirement years. According to Madrian and Shea (2001), "An annuity is a way to transfer longevity risk from an individual to an insurance company, which can pool risk across many individuals and achieve greater diversification of risk than can any individual" (p. 1505). In other words, annuities can provide a reliable income stream for retirees, especially for those who do not have access to traditional defined benefit pension plans (Brown & Poterba, 2000).

Research has shown that annuities can provide significant benefits to retirees, such as reducing the risk of outliving savings (Milevsky, 2005). In fact, a recent study found that retirees who purchased annuities had a higher level of retirement income security compared to those who did not (Friedberg & Webb, 2019). However, annuities also have some drawbacks. For example, annuities can be expensive and may not provide as high a return as other investment products (Friedberg & Webb, 2019). In addition, some annuity contracts may have restrictions on withdrawals or be subject to surrender fees if the annuitant needs to access the funds early (Mitchell & McCarthy, 2003). Despite these limitations, annuities remain an important tool for planning retirement income, particularly for those who fear outliving their savings. It is therefore important for individuals to carefully consider their options and consult with a financial advisor before making any decisions regarding annuities (Brown & Poterba, 2000).

In Nigeria, insurance companies offer annuity products to individuals who wish to secure their retirement income. According to a study by Adenuga *et al.* (2021), annuity products are gaining popularity in Nigeria due to the need for retirement income security. One of the key features of annuity products in Nigeria is the payout option. Annuity products offer different payout options to suit the

needs of individuals. Adenuga *et al.* (2021) noted that annuity products in Nigeria offer either fixed or variable payout options. Fixed payout options provide a guaranteed income stream, while variable payout options provide income streams that fluctuate depending on market conditions. Another feature of annuity products in Nigeria is the guarantee period. This refers to the period during which the annuity income is guaranteed to be pay out. Adenuga *et al.* (2021) highlighted that annuity products in Nigeria offer guarantee periods ranging from 5 to 25 years. Death benefits are also an important feature of annuity products in Nigeria. Adenuga *et al.* (2021) pointed out that annuity products in Nigeria offer death benefits to the beneficiaries of the annuity. This means that if the annuity holder passes away before the end of the guarantee period, the beneficiaries will continue to receive the annuity income.

Annuity products in Nigeria offer riders, which are optional features that can be added to the annuity product to provide additional benefits. Adenuga *et al.* (2021) mentioned that some of the most common riders offered by annuity products in Nigeria include inflation protection, joint annuity and cash-refund annuities. Compared to other sources of retirement income in Nigeria, annuity products offer several advantages. According to Adenuga *et al.* (2021), annuity products provide a guaranteed income stream, which can help individuals better plan their finances for retirement. In addition, annuity products offer protection against inflation and market fluctuations. In contrast, other sources of retirement income, such as pension funds and personal savings, are subject to market risks and fluctuations.

### **Types of annuities: fixed, variable, indexed, and immediate annuity**

Annuities can be classified into four types: fixed, variable, indexed, and immediate annuity (Madrian & Shea, 2001). A fixed annuity is one in which the insurance company guarantees a fixed interest rate for a specified period. The return on investment is guaranteed and therefore the risk is low (Babbel & Merrill, 2006); Variable annuity is an annuity that offers a wide range of investment options, usually including mutual funds, and the return on investment depends on the performance of these funds. The investor bears the investment risk and therefore the investment return can be high, but also highly variable (Huston & Skousen, 2005); Indexed annuity, also known as equity-indexed annuity, is a type of annuity that is linked to a stock market index such as S&P 500. The investment return is based on the performance of the underlying index, with a guaranteed minimum interest rate (IAI, 2021); The immediate annuity, as the name suggests, provides immediate income payments to the annuitant. Payments may begin within one year

of the annuity purchase and may continue for a specified period or for the life of the annuitant. The investment return is usually fixed, and the risk is low (IAI, 2021). These different types of annuities offer various benefits and risks, and it is important that individuals carefully consider their financial goals and needs before choosing an annuity product that suits their needs (Huston & Skousen, 2005).

### **Global and Nigerian overview of annuity markets**

The global annuity market has experienced significant growth in recent decades, due in part to an increasing number of retirees and a growing interest in securing retirement income (Banks & Tschoegl, 2002; Blake & Wright, 2015). According to a report by the Organization for Economic Co-operation and Development (OECD), annuities accounted for approximately 20 % of total pension assets in the OECD countries in 2019, with the largest share in Japan and Korea (OECD, 2021). Annuity markets vary widely in size, structure, and regulation across countries. In developed countries such as the United States, the United Kingdom, and Australia, annuity markets are well established and highly regulated by government agencies such as the Securities and Exchange Commission and the Financial Conduct Authority (Banks & Tschoegl, 2002; Mitchell & Piggott, 2002). In contrast, annuity markets in developing countries such as India and China are still in their infancy, with limited product offerings and a lack of regulatory oversight (Blake & Wright, 2015; Shim & Seol, 2019). One of the key factors driving the growth of annuity markets globally is the increasing longevity of populations. As life expectancies continue to rise, individuals are increasingly concerned about outliving their savings and are turning to annuities as a means of securing a guaranteed stream of income in retirement (OECD, 2021). In addition, the low interest rate environment in many countries has made it difficult for individuals to generate sufficient income from traditional fixed income investments such as bonds and certificates of deposit, further fueling the demand for annuities (Mitchell & Piggott, 2002).

According to MAPFRE Economics (2022), the size of the Life insurance market in Latin America amounted to USD 63.8 billion as of December 2021, up 11.3 % (USD 6.5 billion) from the previous year. Measured in local currency, all countries had growth compared to previous year, with Argentina (51.1 %), Peru (40.4 %), El Salvador (26.2 %), and Puerto Rico (23.0 %) standing out. Life insurance business in the region, valued in USD, is concentrated in Brazil (49.7 %), Mexico (23.2 %), and Chile (8.7 %), markets that account for 81.6 % of the segment's performance. Thus, Brazil, Mexico, and Chile grew 7.2 %, 15.9 %, and



12.3 % in USD, respectively, above the average market growth for the region (11.3 %). It is worth mentioning that in the cases of Brazil, Mexico, and Argentina, three of the main insurance markets in the region, where 63 % of insurance premiums in Latin America are concentrated, the environment of rising interest rates during 2021 has been favorable for the development of the life savings and annuity business. The restrictive monetary policy in these countries has also served as an instrument to protect domestic savings from rising inflation, and to satisfy a greater need for death coverage, because of greater sensitivity since the pandemic.

The Nigerian annuity market is still in its early stages of development, with limited supply and participation rates (Ihenacho, 2019; Oseghale & Adebayo, 2018). According to a study by Oseghale and Adebayo (2018), Nigeria's annuity market is characterized by a lack of public awareness and trust in insurance companies, an inadequate regulatory framework, and limited product offerings. However, the Nigerian government has taken steps to promote the growth of the annuity market by implementing policies that compel employers to provide retirement benefits to their employees (Ihenacho, 2019). In addition, the government has established the National Pension Commission (PenCom) to regulate and oversee the country's pension industry, including the annuity market (Oseghale & Adebayo, 2018). Despite these efforts, demand for annuity products in Nigeria remains low, partly due to cultural attitudes towards retirement and lack of understanding of the benefits of annuities (Ihenacho, 2019). Moreover, the low interest rate environment and high inflation rates have made it difficult for insurance companies to offer attractive annuity products (Oseghale & Adebayo, 2018).

### **Regulation of annuity markets in different countries and Nigeria**

The regulation of annuity markets is crucial to ensure the safety and soundness of the financial system and to protect the interests of consumers. In different countries, annuity markets are subject to varying degrees of regulatory oversight. In developed countries such as the United States and the United Kingdom, annuity markets are well regulated and have strong consumer protection measures in place (Brown & Mitchell, 2018; Fawzy & Xiao, 2021). In contrast, in many developing countries, including Nigeria, annuity markets are less developed, and regulatory oversight is limited (Olowe, Olowe, & Adeniji, 2019; Obinna, 2021).

In Nigeria, annuity markets are regulated by the National Insurance Commission (NAICOM), which is responsible for ensuring that insurance companies comply with regulatory requirements (Olowe *et al.*, 2019). However, there are concerns about the effectiveness of the regulatory framework, particularly



in terms of consumer protection and market transparency (Obinna, 2021). Some experts argue that Nigeria needs to strengthen its regulatory framework and improve market transparency to enhance the development of the annuity market and promote greater consumer participation (Olowe *et al.*, 2019; Obinna, 2021).

The regulation of annuity markets in different countries has significant implications for the development of these markets and consumers welfare. Effective regulation can help promote market stability, encourage innovation, and enhance consumer protection, while inadequate regulation can lead to market failure and harm consumers' financial well-being. Therefore, policymakers should carefully consider regulatory frameworks for annuity markets and ensure that they are robust, transparent, and effective in promoting market development and consumer protection.

### **Economic Development, and GDP as a measure for Economic Development**

Economic development is a multifaceted concept that encompasses several dimensions of social, economic, and political progress. According to Todaro and Smith (2017), economic development refers to the process by which a nation improves the economic, political, and social well-being of its population. Economic development is usually measured using different indicators, with Gross Domestic Product (GDP) being one of the most used. GDP is the market value of all final goods and services produced within a country in a given period, typically one year. GDP per capita, which is the GDP divided by the population, is often used as a proxy indicator of economic development. However, some scholars argue that GDP per capita is an incomplete and imperfect measure of economic development. For instance, Sen (1999) argues that GDP per capita only captures economic output and ignores other important dimensions of development, such as health, education, and social welfare. Similarly, Stiglitz, Sen, and Fitoussi (2009) criticize GDP as a measure of economic performance, claiming that it does not consider income distribution, environmental sustainability, and quality of life. Despite these criticisms, GDP remains a widely used measure of economic development due to its simplicity and data availability. Moreover, GDP per capita has been found to be positively correlated with other development indicators, such as the human development index and poverty reduction (Ravallion, 2012).

## **Annuity Premiums Paid and Economic Development**

The imposition of mandatory pension systems, which obligate workers to contribute a portion of their earnings to a retirement fund, can be interpreted as a form of enforced savings. At first glance, this may appear to diminish the current disposable income of individuals and impede their ability to spend freely in the present. However, economists have made several compelling arguments to suggest that mandatory pension contributions may not significantly suppress aggregate demand or consumption in the overall economy (Cato Institute, 2015).

Government-mandated retirement savings rates are often modest, constituting only a minor percentage of total wages (Cato Institute, 2015). For instance, many national pension plans require employees and employers to each contribute an equivalent of 5 - 0 % of their paychecks. While this may restrict current purchasing power, the impact is relatively insignificant compared to total incomes. In addition, funds deducted from paychecks are not completely withdrawn from economic circulation. Rather than being sequestered, these collective retirement savings are professionally invested in capital markets, including stocks, bonds, real estate, and other assets that support businesses. Consequently, the capital continues to function productively to yield returns rather than being removed from use in the economy.

Mandatory pension systems facilitate intertemporal consumption smoothing by distributing contributions and investment gains over an entire working career (Schell, 2023; Thomas & Spataro, 2016). Workers make sacrifices now with the anticipation that they can sustain their living standards post-retirement. This is a departure from merely reducing current spending ability and hoarding cash outside of economic activity. Empirical studies examining national pension assets as a percentage of GDP have shown limited negative correlations with aggregate demand indicators such as consumption and GDP growth (Morina & Grima, 2021). Overall household savings rates may experience a slight increase under mandatory retirement programs, but this does not necessarily occur at the expense of current expenditures and economic activity. When professionally managed, mandatory savings can stimulate investment without severely restricting current consumption (Dorfman, Hinz & Robalino., 2008). When retirement contributions are professionally managed in diversified investment portfolios, pooled savings have a significant impact on capital formation and investment in the economy. Economists define capital as the set of productive assets used to generate goods and services (Meng & Pfau, 2010). This encompasses physical capital like factories, machinery and infrastructure, as well as financial capital invested in firms. By directing

worker's premiums to capital markets through mandatory pension funds, more loanable funds are available for productive private sector investment.

Pension funds play a crucial role in capital markets by allocating these retirement savings among different asset classes based on prudent risk-return criteria (OECD, n.d.). A portion of the funds can be invested in the public equity markets, providing companies with access to growth capital through the purchase of corporate stocks and bonds. This allows companies to expand operations, upgrade technology and equipment, open new facilities, and finance other productivity-enhancing capital expenditures. Some of the pension assets can also be allocated to infrastructure projects through investments in public-private partnerships or bonds of public agencies that undertake major works such as roads, bridges and utilities (Vittas, 1996).

In addition, pension investments catalyze commercial and residential real estate development. Fund managers can allocate a portion of the portfolio to real estate investment trusts and properties, either directly or through mortgages and development loans (Stewart, Despalins & Remizova, 2017). The increased availability of financing drives new construction of office buildings, shopping malls, apartment complexes, and other properties that comprise the built environment. Over time, the larger stock of various capital assets such as industrial facilities, communications infrastructure, housing stock, and so on translates into higher capital-labor ratio in the overall economy.

With more physical and financial capital per worker, labor productivity and potential output increase (Pozzoli, Jensen, Pinkus & Beetsma, 2022). Multiple empirical studies have found strong positive correlations between countries' pension fund asset levels relative to GDP and subsequent improvements in economic growth rates, wages, innovation, and living standards. Thus, mandatory retirement systems can play a crucial role in facilitating higher rates of capital formation, investment, and long-term development.

Investment of pension reserves also creates employment opportunities (Shahid, 2022). As fund managers allocate premiums among different asset classes, they create demand for financial services like securities brokerage, fund administration, custodial banking, and investment research. This stimulates job creation in the growing pensions industry. Additionally, companies and projects that receive an influx of investment capital often expand their operations and hire more workers to utilize the new fixed assets. Some research indicates that for every \$1 increase in pension fund investment, \$3 to \$4 of additional economic activity is generated through these multiplier effects (Liu & Goldstein, 2022). There are also fiscal benefits, as pension investment returns produce tax revenues that

governments can use to fund other developmental priorities. Countries with large, well-managed retirement systems have greater capacity to finance infrastructure, education, healthcare, and social programs (Despins, 2021).

**Hypothesis 1:** *The annuity premium paid by workers does not have a significant impact on economic development of Nigeria.*

### **Annuity Benefits Paid to Retirees and Economic Development**

In addition to catalyzing capital formation and investment during the accumulation phase, mandatory pension systems can also bolster economic activity through the distribution of retirement benefits in the form of annuities. When workers retire after decades of professional employment, they are entitled to begin receiving regular monthly or annual payments from their pension plans (Cipriani, 2014). These annuities are funded by investment returns accumulated over the years from the worker's own contributions, as well as amounts provided by their employer (Bazzana, 2020). Pension assets are professionally managed over the long term in diversified portfolios, with the objective of achieving stable risk-adjusted returns to ensure the long-term sustainability of the plan (IMF, 2020).

As retirees age, they gradually withdraw this accumulated savings fund through their annuity distributions. A retiree's monthly or annual pension check represents the portion of their individual retirement account's investment earnings that is paid out to meet their living needs once they stop working (O'Brien, 2022). As more and more members of the workforce transition into retirement each year, the total amount of annuities distributed to the retired population grows substantially (Cipriani, 2018). This is due to two factors: first, individual retirees receive pension payments for potentially decades of life in retirement until death (Financegov, 2023). Second, as life expectancies increase due to medical and technological advances, the population is aging dramatically in many countries (Cipriani, 2014). Quite simply, more retirees are drawing annuities each year, as both cohort and longevity effects cause the retiree segment of society to expand rapidly relative to the working-age population (Cipriani, 2018). It is this rising tide of retirement benefit outlays that feeds directly into the consumer economy.

The growing trend of demographic aging, characterized by increasing life expectancy and a declining birth rates, is a global phenomenon that is poised to substantially augment the retired population in many countries in the coming decades (Population Aging and Economic Growth, 2016). This expansion of the retired population will inevitably lead to an increase in the total amount of retirement benefits distributed annually through annuities. United Nations

projections anticipate that the population over the age of 65 will nearly double by 2050, from approximately 703 million worldwide to more than 1.5 billion (Bloom, Canning & Fink, 2011).

As societies see a larger proportion of their population retire, pension systems will have to pay annuities to an increasingly number of pensioners. These retirees constitute a significant segment of consumer purchasing power in economies. Although their consumption patterns may differ from those of the working-age population due to factors such as fixed incomes and health considerations, empirical evidence suggests that retirees continue to allocate a substantial portion of their retirement benefits to expenditures that stimulate business activity (Kotschy & Bloom, 2023).

Essential expenses such as housing, utilities, food, and healthcare constitute an important part of retiree's budgets. Furthermore, annuities are also used for various discretionary purchases: a considerable number of retirees spend regularly on leisure, travel, hobbies, and recreational activities (Wise, 1989). Some research indicates that retirees in developed countries may spend up to 70 % of their retirement benefits on average each year. This argument underscores the critical role that the growing retiree population plays in shaping economic trends and consumer behavior (Maestas, Mullen & Powell, 2016).

The burgeoning demographic of retirees, with their collective purchasing power, perpetuates a substantial demand for a diverse range of goods and services in various sectors. Businesses that primarily cater to retirees, such as those offering senior housing, home and health services, pharmaceuticals, and age-related products, rely heavily on pensioners as their primary customer base (Albanese, 2019). Other sectors, such as retail, leisure, and hospitality, also derive significant benefits from retired consumer spending (Bearden, 2022). As annuity distributions continue to circulate through local economies through consumption, they help sustain employment not only within these retirement-oriented industries, but in many areas of the overall service-based economy.

Thus, the purchasing power of retirees creates and sustains demand for various products and services. This consumption-driven benefits businesses and helps sustain employment in many sectors of the economy (IvyPanda, 2020). As the population of pensioners increases, so does the multiplier impact of their consumption-driven demand. More jobs are needed in industries that cater to retirees, such as healthcare, home remodeling, and repair services (Albanese, 2019). In addition, retirees often tap into some portion of annuity income to assist family members, such as helping pay for grandchildren's education expenses or supplementing the income of unemployed adult children. Multigenerational

financial transfers fueled by pension benefits can further multiply their stimulative effects (Bearden, 2022). The dependability of annuity payouts also gives retirees confidence to undertake larger discretionary expenditures like home renovations or elective medical procedures that require outlays over longer periods of time (Blanchett, 2014). Thus, well-designed pension systems allow for a stable transition from the accumulation to distribution phase, maintaining a steady flow of savings through the economy via retiree consumption. This stabilizes aggregate demand and supports a variety of industries and jobs. At the macroeconomic level, annuitized benefits reinforce long-term economic development by continuously recycling savings and investment returns to sustain business activity and living standards across generations.

**Hypothesis 2:** *The annuity benefit paid to retirees does not significantly affect economic development in Nigeria.*

### **Theoretical Underpinnings**

Theoretical frameworks have been proposed to explain the relationship between annuitization and economic development. One of these frameworks is based on the life-cycle hypothesis (LCH) of consumption and savings. This hypothesis holds that individuals save during their working years to consume during their retirement years (Modigliani, 1986). Annuities are considered an ideal financial product for retirement because they provide an income stream that lasts for the rest of the individual's life.

Another theoretical framework linking annuity and economic development is the theory of incomplete markets. Incomplete markets refer to situations in which individuals cannot protect themselves against certain risks, such as longevity risk. Annuities can help to mitigate longevity risk by providing a guaranteed stream of income for life. This, in turn, can lead to increased consumption and investment in the economy (Davidoff, Brown & Diamond, 2003).

The "annuity puzzle" is another theoretical framework that has been proposed to explain the relationship between annuities and economic development. The annuity puzzle refers to the phenomenon of the reluctance of individuals to purchase annuities, even though they provide a guaranteed stream of income for life. The puzzle can be explained by several factors, such as behavioral biases, lack of financial literacy and adverse selection (Finkelstein & Poterba, 2002).

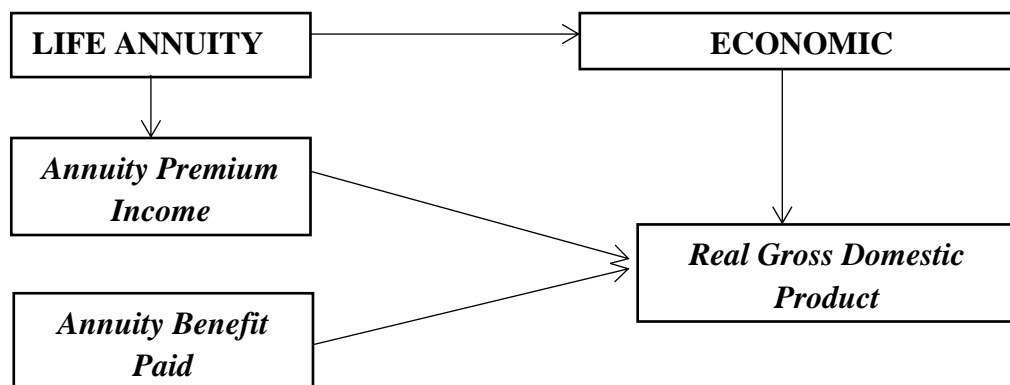
These theoretical frameworks suggest that annuity products can play an important role in promoting economic development by providing a stable source of retirement income, mitigating longevity risk, and increasing consumption and



investment. However, the effectiveness of annuities in achieving these goals depends on various factors, including product design, market regulations, and individual preferences and behaviors.

**Figure 1**

*Conceptual Framework*



Source: Authors Design, 2022.

## Methodology

The research employed an ex-post facto research design, as defined by Kerlinger (1970), which involves the observation of dependent variables after the occurrence of independent variables. Onwumere (2005) states that this design establishes a causal link between variables. Given the cause-effect nature of this study, which aims to examine the impact of annuity on economic development in Nigeria using data that the researcher cannot be manipulated by the researcher, ex-post facto research design was considered appropriate. The data for the study were derived from secondary sources. The use of secondary data from the Central Bank of Nigeria Statistical Bulletin, which was compiled from quarterly data, the National Pension Commission (PENCOM), and the Nigerian Bureau of Statistics (NBS) was justified, as they were available and adequate to answer the research questions. The data were obtained between 2014 and 2020. The hypotheses stated in this study were tested using regression analysis. As explained by Gujarati and Porter (2009), regression analysis studies the dependence of a dependent variable on one or more explanatory variables, with the aim of estimating or predicting the population mean of the former from the values of the latter. Regression analysis is commonly used in modeling and analyzing several variables, especially when the focus is on the relationship between a dependent variable and one or more independent variables, as noted by Onwumere (2005). Specifically, regression

analysis estimates the conditional expectation of the dependent variable given the independent variables, which is the average value of the dependent variable when the independent variables are held fixed.

This study adopted annuity premium income paid to insurance companies and annuity benefits paid to retirees as the measure of Annuity. Also, the study uses Real Gross Domestic Product as measures of Economic development.

### **Hypothesis One Model**

*The model was represented as follows:*

$$RGDP = \beta^0 + \beta^1 * APPW + \varepsilon_i \quad (1)$$

*Where:*

**RGDP:** Real Gross Domestic Product (a measure of economic development)

**$\beta_0$ :** Y-intercept (represents the level of RGDP when APPW is zero)

**$\beta_1$ :** Slope coefficient (indicates the change in RGDP for a one-unit increase in APPW)

**APPW:** Annuity Premium Paid by Workers

**$\varepsilon_i$ :** Error term (represents the random, unexplained variation in RGDP that is not captured by the model)

### **Hypothesis Two Model**

$$RGDP = C^0 + C^1 * ABPR + \varepsilon_i \quad (2)$$

*Where:*

**RGDP:** Real Gross Domestic Product (a measure of economic development)

**$C_0$ :** Y-intercept (represents the level of RGDP when ABPR is zero) (Note: This uses a different constant term than Model 1)

**$C_1$ :** Slope coefficient (indicates the change in RGDP for a one-unit increase in ABPR)

**ABPR:** Annuity Benefit Paid to Retirees

**$\varepsilon_i$ :** Error term (represents the random, unexplained variation in RGDP that is not captured by the model)

**Table 1**

*Variables and definitions*

Variables	Definition
Dependent Variable	

<b>RGDP</b>	Real Gross Domestic Product
<b>Independent Variables</b>	
<b>ANPRI</b>	Annuity Premium
<b>ANPA</b>	Annuity Benefit Paid

Source: Author's Analysis, 2022

**Table 2**

*Data Presentation*

SN	QUART	RGDP	ANPRI	ANPA
1	2014Q1	15438679,5	0	0
2	2014Q2	16084622,31	0	0
3	2014Q3	17479127,58	6646500958	1792503751
4	2014Q4	18150356,45	11759056392	58637328.75
5	2015Q1	16050601,38	15546196662	2616057311
6	2015Q2	16463341,91	12363541891	2819130347
7	2015Q3	17976234,59	15673535477	3237553486
8	2015Q4	18533752,07	17770693600	3712396619
9	2016Q1	15943714,54	1.71089E+12	4262561406
10	2016Q2	16218542,41	20315733681	30259083679
11	2016Q3	17555441,69	12955450133	32934221010
12	2016Q4	18213537,29	3391850150	17675662479
13	2017Q1	15797965,83	239189324.2	5650810500
14	2017Q2	16334719,27	14950959045	5721803125
15	2017Q3	17760228,17	24967141664	6052764309
16	2017Q4	18598067,07	23686071883	7113067548
17	2018Q1	16096654,19	18881679420	8126303084
18	2018Q2	16580508,07	16165148523	8684367389
19	2018Q3	18081342,1	16814476634	9057903332
20	2018Q4	19041437,59	21537714067	9610750571
21	2019Q1	16434552,65	11512520315	9643739049
22	2019Q2	16931434,89	8449354112	10475347925
23	2019Q3	18494114,17	10630714026	10015653224
24	2019Q4	19527724,96	10462829878	11718452290
25	2020Q1	16741809,92	8013135201	11045331172
26	2020Q2	15897931,94	5863482563	12335605957
27	2020Q3	17824482,08	77672608707	7275042588
28	2020Q4	1955014,9	77672608707	7275042588

Source: Author's Analysis, 2022.

## Results and Discussion

**Table 3**

*ARDL (2,1,2) estimated parameters*

ARDL 2,1,2 ESTIMATED PARAMETERS				
DEPENDENT VARIABLE: RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	0,090494	0,129901	0,69664	0,4949
RGDP(-2)	-0,895724	0,133925	-6,68824	0,0000
ANPA	7,43E-05	2,70E-05	2,755341	0,0130
ANPA(-1)	6,14E-05	1,81E-05	3,399822	0,0032
ANPRI	-3,33E-07	4,21E-07	-0,79078	0,4394
ANPRI(-1)	-8,86E-07	5,47E-07	-1,62091	0,1224
ANPRI(-2)	-2,56E-06	7,36E-07	-3,47518	0,0027
C	30465229	3106560	9,806741	0,0000
R-squared	0.76583	Mean dependent var	17395299	
Adjusted R-squared	0.674763	S.D. dependent var	1170486	
S.E. of regression	667522.7	Akaike info criterion	29,90819	
Sum squared resid.	8.02E+12	Schwarz criterion	30,2953	
Log likelihood	-380.8065	Hannan-Quinn criter.	30,01967	
F-statistic	8.409587	Durbin-Watson stat.	2,864299	
Prob(F-statistic)	0.000133			

Source: Author's Analysis, 2022

The table presents the estimated parameters of an ARDL (2,1,2) model for the dependent variable RGDP (Real Gross Domestic Product). The model includes lagged values of RGDP, ANPA (Annuity Payout), ANPRI (Annuity Premium Income), as well as a constant term C.

The estimated coefficients indicate the impact of the independent variables on RGDP. The coefficient for RGDP(-1) is 0.090494, indicating that a 1 % increase in RGDP in the previous period is associated with a 0.090494 % increase in RGDP in the current period, although the t-statistic suggests that this effect is not statistically significant at the 5 % level. The coefficient of RGDP(-2) is -0.895724, indicating that a 1 % increase in RGDP in two prior periods is associated with a 0.895724 % decrease in RGDP in the current period, and this effect is statistically significant at the 5 % level.

The coefficient of ANPA is 7.43E-05, indicating that a 1 % increase in ANPA is associated with a 7.43E-05 % increase in RGDP in the current period, and this effect is statistically significant at the 5 % level. The coefficient for ANPA(-1) is 6.14E-05, indicating that a 1 % increase in ANPA in the previous period is associated with a 6.14E-05 % increase in RGDP in the current period, and this effect is also statistically significant at the 5 % level.

The coefficient of ANPRI is -3.33E-07, indicating that a 1 % increase in ANPRI is associated with a -3.33E-07 % decrease in RGDP in the current period, although the t-statistic suggests that this effect is not statistically significant at the 5 % level. The coefficient for ANPRI(-1) is -8.86E-07, indicating that a 1 % increase in ANPRI in the previous period is associated with an -8.86E-07 % decrease in RGDP in the current period, although this effect is also not statistically significant at the 5 % level. The coefficient of ANPRI(-2) is -2.56E-06, indicating that a 1 % increase in ANPRI two periods ago is associated with a -2.56E-06 % decrease in RGDP in the current period, and this effect is statistically significant at the 5 % level.

The constant term C is 30465229, which indicates the expected value of RGDP when all other independent variables are equal to zero. The adjusted R-squared value of 0.674763 suggests that the model explains approximately 67 % of the variation in RGDP, and the F-statistic of 8.409587 suggests that the model is statistically significant at the 5 % level. The Durbin-Watson statistic of 2.864299 suggests that there may be some autocorrelation in the residuals of the model.

**Table 4**  
*ARDL Bounds Test*

ARDL Bounds Test		
Test Statistic	Value	K
F-statistic	32,36630	2
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	3,17	4,14
5%	3,79	4,85
2.50%	4,41	5,52
1%	5,15	6,36
Observation 28		

Source: Author's Analysis, 2022

Table 4 also presents the critical value limits for the test at various significance levels, including 10 %, 5 %, 2.50 %, and 1 %. The I0 Bound and I1 Bound values represent the lower and upper limits of the critical values, respectively. The F-statistic value of 32.36630 exceeds all critical value limits, indicating that the test result is statistically significant at all these significance levels.

**Table 5**

*Long Run Coefficients*

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ANPA	0,000075	0,00002	3,807768	0,0013
ANPRI	-0,000002	0,000001	-3,48508	0,0026
C	16876094	144349,7	116,9112	0,0000

*Authors Analysis, 2022*

From the information provided in the Table 5, it appears that the long-term coefficients of three variables, ANPA, ANPRI, and C are presented.

The coefficient of ANPA is 0.000075, with a standard error of 0.00002. The t-statistic of this coefficient is 3.807768, which is statistically significant at the 0.05 level (assuming a two-tailed test). This suggests that there is a positive relationship between ANPA and the dependent variable (RGDP), and that this relationship is unlikely to have occurred by chance.

The ANPRI coefficient is -0.000002, with a standard error of 0.000001. The t-statistic of this coefficient is -3.48508, which is also statistically significant at the 0.05 level. This suggests that there is a negative relationship between ANPRI and the dependent variable, meaning that as ANPRI increases, the dependent variable is likely to decrease.

The coefficient for C is 16876094, with a standard error of 144349.7. The t-statistic of this coefficient is 116.9112, which is highly statistically significant ( $p < 0.0001$ ). This coefficient represents the intercept of the model and indicates the value of the dependent variable when all other independent variables are equal to zero.

These coefficients provide some evidence for the relationships between ANPA, ANPRI, and the dependent variable, and suggest that both ANPA and ANPRI may be important predictors of the dependent variable.

**Table 6**

*ARDL Cointegrating And Long Run Form*

ARDL Cointegrating And Long Run Form				
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Dependent Variable: RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	0.895724	0.133925	6.688235	0.0000
D(ANPA)	0.000074	0.000027	2.755341	0.013
D(ANPRI)	0.000000	0.000000	-0.79078	0.4394
D(ANPRI(-1))	0.000003	0.000001	3.47518	0.0027
CointEq(-1)	-1.80523	0.183695	-9.82731	0.0000

Source: Author's Computation, 2022

From the information provided, this is a table of the coefficients, standard errors, t-statistics and probabilities for the ARDL cointegrating and long-run form analysis of the relationship between the dependent variable RGDP (Real Gross Domestic Product) and the independent variables ANPA (Annuity Payout), ANPRI (Annuity Premium Income), and CointEq (the Cointegrating Equation).

The results suggest that lagged changes in RGDP have a statistically significant positive effect on current RGDP, as indicated by the coefficient of D(RGDP(-1)) (0.895724) with a t-statistic of 6.688235 and a probability of 0.0000. This suggests that there is a positive autocorrelation in RGDP, meaning that past values of RGDP are useful predictors of current values.

The coefficient of D(ANPA) (0.000074) suggests that changes in annuity payments have a statistically significant positive effect on short-run RGDP, with a t-statistic of 2.755341 and a probability of 0.013. This implies that an increase in annuity payment leads to an increase in short-run RGDP.

The coefficient of D(ANPRI(-1)) (0.000003) also suggests a statistically significant positive effect on RGDP, with a t-statistic of 3.47518 and a probability of 0.0027. This indicates that lagged changes in annuity premium income are positively associated with current RGDP. However, the coefficient of D(ANPRI) (0.000000) does not appear to have a statistically significant effect on RGDP, with a t-statistic of -0.79078 and a probability of 0.4394.

Finally, the coefficient of CointEq(-1) (-1.80523) suggests that there is a cointegrating relationship between the variables in the model, with a statistically significant negative long-run effect on RGDP. This implies that there is a long-run equilibrium relationship between the variables, and that deviations from this equilibrium will be corrected over time. Overall, these results suggest that changes in annuity premium income and lagged changes in the annuity payout ratio may have a positive effect on short-term economic growth, while lagged changes in RGDP and the cointegrating relationship between the variables may have a negative effect on long-term economic growth.

## Conclusion and Recommendation

Based on the information provided, it appears that the empirical results of this study do not support the hypothesis H1 that "Annuity premium paid by workers does not have a significant impact on economic development in Nigeria". The coefficient for ANPA in Table 3 shows a statistically significant positive relationship between ANPA and RGDP, indicating that an increase in annuity premium paid by workers is associated with an increase in economic development in Nigeria. However, the empirical results also do not support hypothesis H2 that "Annuity benefit paid to retirees does not significantly affect economic development of Nigeria". The coefficient for ANPRI in Table 3 shows a statistically significant negative relationship between ANPRI and RGDP, indicating that an increase in the annuity benefit paid to retirees is associated with a decline in economic development in Nigeria. In addition, the long-run coefficients in Table 5 show a statistically significant positive relationship between ANPA and the dependent variable, as well as a statistically significant negative relationship between ANPRI and the dependent variable. These results further support the relationships between annuity premiums and benefits, and economic development in Nigeria. In conclusion, the empirical results suggests that both annuity premiums and benefits have a significant impact on economic development in Nigeria, contrary to the two hypotheses presented. Based on the findings of the study, the following recommendations can be made:

1. Encourage investment in annuity premium income.
2. Improve consumer education about annuity products.
3. Monitor the annuity payout ratio.

Consider the long-term effects of economic policies.

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