AGING POPULATION AND ITS EFFECT ON THE NIGERIAN ECONOMY

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Abstract

This study examined the effect of aging population on Nigeria's economy from 1985 to 2018. An Auto Regressive Distributed Lag (ARDL) model was formulated to establish the relationship between aging population and its effects on Nigeria's economy Secondary data from the Central Bank of Nigeria (CBN) Statistical bulletin was used for the study. The findings revealed a significant relationship between old age dependency ratio and per capita GDP; also, it was found that health care and public pension expenditures significantly impact per capita GDP in Nigeria. National Aging policy and a review of public health care expenditures were called for. In particular, the need to reorganise health care expenditure to reflect a positive relationship with economic welfare was recommended.

Key Words: Aging population, Dependency Ratio, ARDL
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Introduction

Aging is a complex multi-factorial process characterized by progressive changes in body tissue which eventually leads to a decline and death of individual. Nigeria is culturally heterogeneous with over 350 ethnic-linguistic groups, all of which share a similar cultural perception of care for older persons. The aging population of Nigeria is expected to reach 26 million by 2050 from 9 million reported in 2016. This population change has several implications and as such proper attention has to be paid to healthy aging. However, in over sixty years of independence from colonial administration, Nigeria is yet to enact a National policy on the care and welfare of older persons. Since March 2003, the policy has remained in draft form as the challenges of bureaucratic bottlenecks have hampered its approval and implementation. Aging in Nigeria is occurring against the background of socioeconomic hardship, widespread poverty, the HIV/AIDS epidemic, the Covid-19 pandemic and the rapid transformation of the traditional extended family structure. Another cause for the increase in the older segment of the Nigerian aging population can be found in better nutrition, good sanitation, healthcare, education and economic wellbeing.

A major challenge facing most governments in Africa is the development of policies and training of officials capable of understanding and responding to the current social priorities and complex

needs of an increasingly ageing population. The government will be expected to initiate policies that will support older people, train and empower health and social service professionals and supply employers with a trained workforce to take care of the older adults. As such, authorities at all levels of governance have a direct stake in arguably the most significant issue in the polity. Against this background, the study explores the challenges that come with ageing in Nigeria, the current state of the policy environment in Nigeria when it comes to matters that impact the well-being of the elderly in the country, and the need for effective strategic policy and advocacy on issues concerning the elderly population. The study thus broadly aims at finding the effect of aging population on Nigeria's economy from 1985-2018.

Review of Literature

Aging population is a shift in the distribution of a country's population towards older ages. This is usually reflected in an increase in the population's mean and median ages, a decline in the proportion of the population composed of children, and a rise in the proportion of the population composed of elderly. Population aging is widespread across the world. It is most advanced in the most highly developed countries, but is growing faster in less developed regions, which means that older persons will be increasingly concentrated in the less developed regions of the world in time to come. Most countries have rising life expectancy and an aging population, trends that emerged first in developed countries which are now seen in virtually all developing countries. This has significant impact on all areas of society and as such is an important area of research. Aging is a multidisciplinary topic covering a diverse range of subjects including healthcare, employment, social policy, sociology and even media studies.

Generalist View of Ageing in Nigeria

It is important to recognize that Nigerian cultural practices concerning ageing vary widely. The typical traditional Nigerian society evolved an extended family structure. The extended family structure reflects a living arrangement pattern in which grandparents, parents and their children lived in a primarily patriarchal society in communities, villages, towns and some urban centers. Families served as political, economic units that provided food security and welfare for the group. Agriculture was the mainstay of the community and so the supply of food for consumption and trade, as well as the protection of the group, were undertaken by small communal units. In the past, the traditional society was grouped and organized according to age, though some states still practice it till date.

Many groups have elaborate rites of passage that accompany both individual and group transitions from one stage to another. It was assured that old age would bring responsibility and respectability. This stage was acknowledged as a period of great wisdom and soberliness. This

phase of life was so central to the social processes of growing up that indigenous tradition struggle to juxtapose it with the early period of child hood adolescence and adulthood. In most African societies, old age is celebrated in copious rites of passage. For example some Igbo communities celebrate the “Ori na Ndu” as the last rite of passage into old age before the ultimate, which is death. It is a time similar to the Christian marking of seventy years, when adults become elders and are regarded as traditional consultants to youths who are still governing the society.

According to Tanyi, et al (2018), Nigeria has no functional national policy on the care and welfare of older persons. Changing demographics in Nigeria, in addition to the breakdown of the family structure and absence of a social security system, present unique challenges to the elderly in Nigeria. In Nigeria, family members play a significant role in care for elders providing up to 90% of home care. The 1989 policy on Ageing by the Federal Ministry of social welfare emphasizes home care for the elderly by both family and healthcare workers to provide psychological. Nigeria, described as culturally and environmentally diverse is a lower-middle income country in sub-Saharan Africa. It is currently the seventh largest country in the world, and with the fastest population growth is projected to become the third largest. This could be seen in figure 3, which shows the estimates and projections of population size from 1950 to 2050 in Nigeria. Due to technological advancements in medicine and water hygiene and sanitation measures like other African nations, Nigeria reports a significant increase in survival for persons over age 60.

According to Adebanjoko and Ugwuoke, (2014), ageing in Nigeria is occurring against the background of socio economic hardship, widespread poverty, the HIV/AIDS epidemic and the rapid transformation of the traditional extended family structure. Ageing causes people to be less active, frail and exposed to more risks of contracting a disease leading to prejudice or discrimination against the elderly, social isolation and sometimes abandonment. Furthermore, of all age groups, the group over age 85 - that is the oldest age - is increasing the fastest. Amidst this demographic reality and the challenges it is about to unleash in future, Nigeria will be hard-pressed to meet the economic, health, psychological and material well-being challenges of the elderly, especially as traditional family support systems for the elderly are breaking down and disappearing in the country (Okoye, 2012)

According to Prettner (2016), an older population presents many challenges to labour markets, government tax, government spending and the wider economy. One of the great achievements of the twentieth century is a dramatic rise in life expectancy. Increased life expectancy combined with declining birth rates have caused many to worry about the impact of an ageing population in Nigeria. We frequently hear about ‘a demographic time bomb’ and the fear future generations will struggle to meet an ever increasing number of retired workers and pension commitments.

Other big factors in determining the impact of an ageing population include future rates of economic growth. There is a concern that African countries and in particular, Nigeria, are unable to achieve a sustained economic growth; they often experience declining rates of growth. This decline in economic growth will increase the pressure on public finances from an ageing population. Strong economic growth, however, will increase tax revenues and makes it easier to fund pension commitments. But in recent years, we have seen stagnant wages and a decline in real incomes of young people in the country. This places stress on redistribution of income from the young to retired. The problem is that an ageing population is one reason put forward for secular stagnation in a country like Nigeria. Another impact/problem with an ageing population is that it could exacerbate inequality. With increased reliance on private sector savings, there could be a division between those with a good private sector pension, and those who rely on a diminishing state pension.

The point of emphasis from the foregoing is that Nigerian academicians and policy makers can no longer ignore the very obvious signs that the ageing situation has been transformed from personal problem of individuals to one of the key public issues of our time. Four propositions regarding the defining features of public issues are as follows:

- Issues have to do with matters that transcend the local environment of the individual and the range of his inner life.
- Issues have to do with the ways in which various millieu overlap and interpenetrate to form the large structure of social and historical life.
- An issue is a public matter when some values cherished by the public are felt to be threatened.
- An issue often involves crisis in institutional arrangements.

Examined against these four features, ageing population no longer constitutes a personal problem but rather has become a public issue currently affecting over six million Nigerians. Nigeria has no Operational National Policy on Ageing - again a sign of the neglect of the issue some have claimed that we rarely identify public policy issues or mobilize to address them until some external development partner makes an issue, a focus of intervention and provide resources.

In the coming years, the ageing population in Nigeria is expected to increase in numbers, and life expectancy rates will gradually increase with significant social and economic implications to the individuals and the Nigerian government. Life after retirement is dreaded by most workers in Nigeria.

The fears of facing the future after retirement create an ambiance of disturbance among employees. Retirement is seen by workers as a transition that could lead to psychological, physiological and economic problems. This is a case Nigerian government should address,

instead of it being a problem to the economy should rather help to contribute to the economic growth of the nation.

Disengagement Theory is recognized as the first formal theory that attempted to explain the process of growing older.

- It refers to an inevitable process in which many of the relationships between a person and other members of the society are severed and those remaining are altered in quality.
- Withdrawal may be initiated by the aging person or by society and may be partial or total.
- It was observed that older people are less involved with life than they were as younger adults.
- As people age, they experience greater distance from society and they develop new types of relationships with society, meaning that they are no longer relate with people as before.
- There is evidence that a society forces withdrawal on older people whether or not they want it. Some suggest that this theory does not consider the large number of older people who do not withdraw from society.

According to Biological Aging Theory most people will live to experience aging. Age-related determination is affecting an ever-growing number of people. Although the process is unavoidable, if we better understand the process as a physiotherapist, it is important to understand that we might be able to positively influence aspects that maintain or engender better health and wellness as a person ages, treating and ameliorating symptoms of common conditions associated with aging. In the past, maximum life Span (the maximum biological limit of life in an ideal environment) was not thought to be subject to change with the process of aging considered non adaptive and subject to genetic traits. In the early 1900s, a series of flawed experiments by researcher Alexis carrel demonstrated that in an optimal environment, cells of higher organisms (chickens) were able to divide continually, leading people to believe our cells to potentially possess immortal properties.

Empirical Literature Review

According to Ademola (2018), in recent years, the debate on whether population aging enhances or dampens economic growth has been a subject of controversy in economic development discourse.

There are two opposing schools of thought in this debate; the pessimistic and optimistic schools. The pessimists contend that the inequality in a country's age population structure, particularly, a greater share of the elderly, depresses the country's productivity level. According to them, cite (pessimists) other than the sharp reduction in labour force and national saving rates which in turn would lessen investment and real output, in an aging economy, fiscal problems which have profound consequences on economic growth, are likely to emerge. A rising old-age dependency

ratio will not only translate into growing tax burden, but also health care and public pension expenditures which will crowd-out public investment spending for infrastructure with negative effects for capital accumulation and productivity growth.

The optimists, in contrast to the pessimistic school of thought, hold that a positive nexus, between economic growth and population aging, exists. The optimists posit that a positive interaction between economic growths ageing population exists. According to this body of literature, since both few children and longer life bring about higher savings in preparation for retirement, older individuals tend to save more. As such, the increase in longevity will not only bring about an upsurge in savings as well as savings time span, but provide more resources for investment, which positively impact investment, particularly in Research and Development, which is unanimously recognized as the engine of economic growth. (Nagarajan 2016)

Regarding the problem of increasing deficits in government budgets with its negative attendant on capital accumulation and productivity growth associated with ageing, the Optimists hold a contrasting view. Even though ageing as argued by pessimists, is assumed to exert a negative effect on government budgets; however, the degree of such impact depends on the type of retirement policies that the government adopts.

Nagarajan (2016) postulated that as long as retirement policies can be adjusted by moving them to private pension schemes and raising the retirement age and, if the number of immigrant workers can be increased to recompense for the shortfall in the labour force, then it becomes possible to offset the rise in public expenditure associated with ageing.

Numerous studies have explored the implications of these two propositions. For instance Ademola (2018) examined the impact of declines in adult mortality on growth in an over-lapping generation's model. With public education and imperfect annuity markets, a decline in mortality affects growth through three channels. First, it raises the saving rate and thereby lowers the rate of physical capital accumulation. Second, it reduces accidental bequests, lowers investment and thereby lowers the rate of physical capital accumulation. Third, it may lead to the median voter to increase the tax rate for public education initially but lower the tax rate in a later stage. If the economy slows down, the saving is necessary for increasing economic growth as the role of accumulation capital. Bloom, Canning and Fink (2010), examined the effects of aging population on economic growth. They began with a presentation and analysis of descriptive statistics on the extent and pace of aging population and then explored the overall effect of aging population on economic growth as well as the effects operating via two main channels through which growth can occur: labour supply and human capital accumulation. Accounting the effects of aging population on factor accumulation and economic growth are distinguished from behavioural

effects. This paper analyses the implications of aging population for economic growth. Their main conclusion is that aging population poses challenges that are formidable, but not insurmountable. Walder and Doring (2012) argued that the degree of inequality regarding the population age structure of a country impacts on the consumption pattern of its households. Due to the aging problem, the overall demand for certain goods will be affected, since they will not provide any utility for the older household. For instance, in a country with a high old age population, the overall demand for education will decline as the consumption preferences of the old-age group fall more on medical care.

Research Method

A single equation model was developed in which GDP per capita served as the dependent variable explained by old age dependency ratio, mortality rate for selected age range, life expectancy, public pensions expenditure and government health care expenditure. The model is as follows:

$$\mathrm{LNPCGDP} = \beta_0 + \beta_1 \mathrm{OADR} + \beta_2 \mathrm{MR} + \beta_3 \mathrm{LEXP} + \beta_4 \mathrm{LNPPE} + \beta_5 \mathrm{LNHCEXP} + \varepsilon$$

Where PCGDP = per capita GDP

OADR = old age dependency ratio

MR = mortality rate (15 to 60)

LEXP = life expectancy

PPE = public pensions expenditure

HCEXP = health care expenditure of government

LN = natural logarithm

$\boldsymbol{\beta}_{0\text{-}5}$ = parameters;

$\boldsymbol{\epsilon}$ = error term

Unit root tests were conducted for all variables, the results of which turned out to be difference stationary (first level) for all except old age dependency ratio (OADR) and health care expenditure (HCEXP) both of which were stationary at level. On account of the mixed order of integration of the variables, ARDL procedure was selected. ARDL Bounds test for co-integration was next conducted which established the existence of a long run relationship among the variables. The ARDL model thus necessitates the estimation of the short run coefficients of the model as well as the long run.

Table 1 Short Run Estimates of the ADRL

Selected Model Lag: ARDL (4, 4, 4, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNPCGDP(-1)	-0.481893	2.047538	-0.235353	0.8528
LNPCGDP(-2)	1.631806	2.675190	0.609978	0.6513
LNPCGDP(-3)	0.168138	0.922140	0.182334	0.8852
LNPCGDP(-4)	0.350229	0.699921	0.500383	0.7046
OADR	-0.079402	0.593760	-0.133727	0.9154
OADR(-1)	-0.166204	0.529337	-0.313985	0.8063
OADR(-2)	-0.124097	0.579353	-0.214199	0.8657
OADR(-3)	0.181461	0.699545	0.259399	0.8384
OADR(-4)	-0.563535	0.982117	-0.573796	0.6684
MR	-0.005880	0.005472	-1.074653	0.4771
MR(-1)	0.003274	0.008355	0.391841	0.7623
MR(-2)	0.007028	0.010076	0.697532	0.6123
MR(-3)	0.002721	0.010569	0.257457	0.8396
MR(-4)	-0.004891	0.009803	-0.498917	0.7054
LEXP	0.011441	0.031147	0.367333	0.7759
LEXP(-1)	0.038531	0.047047	0.818989	0.5631
LEXP(-2)	0.009833	0.034662	0.283690	0.8240
LEXP(-3)	-0.022156	0.039960	-0.554458	0.6777
LEXP(-4)	-0.039904	0.062290	-0.640621	0.6373
LNPPE	-0.019827	0.041865	-0.473599	0.7184
LNPPE(-1)	-0.014272	0.045677	-0.312455	0.8072
LNPPE(-2)	-0.034371	0.031322	-1.097327	0.4705
LNPPE(-3)	-0.049462	0.041023	-1.205709	0.4408
LNPPE(-4)	-0.025428	0.039766	-0.639434	0.6378
LNHCEXP	0.009701	0.042172	0.230041	0.8561
LNHCEXP(-1)	0.019802	0.036136	0.548004	0.6809
LNHCEXP(-2)	0.032341	0.035662	0.906868	0.5311
LNHCEXP(-3)	0.000554	0.028810	0.019220	0.9878
LNHCEXP(-4)	-0.016158	0.017187	-0.940106	0.5196
CointEq(-1)	-0.668279	0.221882	-3.011867	0.0245

R-squared	0.999858	Mean dependent var	8.319466
Adjusted R-squared	0.995893	S.D. dependent var	0.235811
S.E. of regression	0.015111	Akaike info criterion	-7.014612
Sum squared resid	0.000228	F-statistic	5.004321
Log likelihood	134.2192	Prob(F-statistic)	0.001854

Source: Author's computation

The short run estimates show that old age dependency ratio has negative coefficients in the short run decreasing per capita GDP by 0.079402 units. Similarly, the first and second period lags also have negative relationships with GDP per capita decreasing it by 0.166204 and 0.124097 units

respectively. This implies that an increase in old age dependency ratio in Nigeria has a decreasing effect on the economic welfare hence the need for ensuring adequate financial security for the ageing population to cushion the negative effect on the economy in the short run. For mortality rate, it is negatively signed in the current year decreasing per capita GDP by 0.005880. However, in the first, second, third and fourth period lags, mortality rate is positively but not significantly related to per capital GDP. What this implies is that mortality rate for Nigeria has been low in the previous years leading to the current year when it increased to the point that the increase is negatively felt in the economy. This makes GDP per capita to decrease by 0.005880 units due to the high death rate of experienced labour force which depletes the growth of the economy in the short run. Life expectancy is positive in the current year and the lag periods up to the second previous year (i.e. second period lag). The unit of growth in the current year is estimated at 0.011441 which means that an increase in life expectancy for Nigeria results to 0.011441 units increase in the economy in the short run. In other words, in the short run period, life expectancy positively grows the economy though not significantly. Interestingly, the coefficients of public pensions' expenditure are all negative in the short run up to the fourth period lag. This implies that the money government spends on pensions and gratuities have decreasing effect on the economy as against the a priori expectation. This means that pensions and gratuities are withdrawals from the economy rather than investments. The implication is that an increase in aged workers leads to increase in pensions and gratuities payments which pose a serious decrease in per capita GDP and economic development in Nigeria. However, health care expenditure (on ageing population) is positively signed in the short run and increases per capita GDP by 0.009701 in the short run. This is as expected because investment in health is part of human capital investment and implies a positive addition to the economy since the aged ones can still be productive in terms of consultancy (i.e. if they are well and healthy). The Durbin Watson value of 1.9697 shows no autocorrelation in the data.

Long Run Estimates of the ARDL Model

Table 4: Summary of Long Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OADR	1.124944	0.280715	4.007424	0.0034
MR	-0.003369	0.004429	-0.760718	0.5860
LEXP	0.003375	0.001002	3.368263	0.0059
LNPPE	0.214521	0.075900	2.826384	0.0265
LNHCEXP	-0.069193	0.019009	-3.640013	0.0193

Source: Author's computation

Old age Dependency Ratio (ODRA): This has a positive coefficient of 1.124944 implying that a unit increase in the old age dependency ratio increases per capita GDP in the long run by 1.124944 units annually. The implication is that increasing effect of old age dependency ratio increases the economy due to the positive addition of the ageing population on the economy in terms of experience, consultancy etc. This supports the position of Ubah (2018) that ageing population are not totally detrimental to the economy but can be converted to positive strides through harnessing their intellectual potentials. Mortality Rate (MR): mortality rate has coefficient of -0.003369 implying that a unit increase in mortality rate decreases per capita GDP by 0.003369 units in the long run. Life Expectancy (LEXP): This has a positive coefficient of 0.003375 meaning that a unit increase in life expectancy increases per capita growth. In other words, the higher the life expectancy for Nigeria, the higher the growth experienced in the economy. Public Pension Expenditure (PPE): The coefficient of public pension expenditure is positive 0.214521; this implies that a unit increase in public pensions' expenditure increases per capita GDP in the long run. Health Care Expenditure (HCEXP): This has a negative coefficient of -0.069193 which is an indication that a unit increase in health care expenditure for the aged decreases per capita GDP in the long run by 0.069193 units. This represents an inverse relationship between health care expenditure on the aged and per capita GDP in Nigeria for the period reviewed.

Conclusion, Recommendation

The study found that in Nigeria, old age dependency ratio impacts per capita GDP growth positively and significantly in the long run. In the same time frame, other variables of interest with the exception of mortality rate also impact economic welfare growth significantly. However, health expenditure does so negatively. The following are therefore recommended: a comprehensive national policy on aging, which alone can permit an orderly development of human capital required for the care for the aged. There is also a need to overhaul government health

expenditure, which currently indicates a counter a priori relationship with economic welfare, to target and achieve a positive relationship with economic welfare.

References

Adebanjoko, A. A. & Ugwuoke, D. W. (2014), Poverty and the challenges of insecurity to development. European Scientific Journal www.semanticscholar.org/paper

Ademola, O.Y. (2018), Economic Growth and Population Aging in Nigeria: Innovation Accounting Techniques. Department of Economics, Mountain top University, Ogun State Nigeria.

Bloom Canning & Fink (2010), Implications of Population Aging for Economic Growth. www.nber.org>papers

Davis & Robert (2006), The relation between an aging population and economic growth in Bangladesh: Evidence from an endogenous growth model. URL:https://doi.org/I0.5539.

Nagarajan N. R, (2016), The impact of an aging population on economic growth. URL:https://doI.or/10.5539/jsd.vlln4p.190

Okoye, M. E. (2012). Curriculum development and quality assurance in education. Paper presented at the international conference of the institute of education, Delta State university, Abraka 12-15 June 2012

Prettner, K. (2016) *Population aging and endogenous economic growth* Journal of population economics 26(20) 811-834

Tanyi, P.L. et al (2018), Cited in Ademola, O.Y. (2018) Mountain top University Ogun State, Nigeria.

Ubah, C. C. (2018) Ageing Population and Third World Nations; A study of Sub-Saharan Africa Nations. European Journal of Development and Economic Reforms 4(2)

Walder & Doring (2012), the Effects of Population Aging on Private Consumption https://econpapers.repec.org>RepEc:spr