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IMPACT OF HEALTH EXPENDITURE ON ECONOMIC GROWTH: A STUDY WEST AFRICAN MONETARY ZONE (WAMZ) MEMBER COUNTRIES

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Abstract

This study empirically investigates the impact of health expenditure on economic growth of West African Monetary Zone (WAMZ) member countries from 2002 to 2019. The study used Real Gross Domestic Product per capita as proxy for economic growth while the independent variables adopted are general government health expenditure per capita, general private health expenditure per capita with life expectancy and control of corruption as control variables. All data were sourced from World Bank Development indicators (WDI2020) and World Governance Indicators (WGI2020).The study applied econometrics techniques of Cross-sectional dependence test, panel unit root tests and dynamic panel Autoregressive Distributed Lag (ARDL) model. The result reveals that public health expenditure was found to have negative and statistically significant impact on economic growth while private health expenditure has positive and statistically significant impact on economic growth of WAMZ member countries for the period under study. Moreover, life expectancy has positive and significant impact while control of corruption was found to have insignificant impact on economic growth of WAMZ member countries. Therefore, the paper recommends that governments of WAMZ member countries should increase budgetary allocations to health sectors of West African Monetary Zone member countries.

Keywords: Health Expenditure, Economic Growth, West African Monetary Zone and ARDL.

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Introduction

The state of health of the population of a country is a major factor driving productivity, as only a healthy labour force can make meaningful contributions to production and growth of national output. This make the health of the citizens of a country imperative and as such adequate provision for health should be one of the primary goals of government as it has a positive impact on economic growth, one of the macroeconomic goals of every government (Joshua & Adedeji 2019). A healthy population would contribute more to the growth of any economy as well as to the productivity of a nation compared to an unhealthy one. To put differently, the quality of human labour is a monotonic function of its health status through the performance of the health sector (Ebhotemhen et al 2021). Improvement in health care is an important requirement needed for Human Capital Development (HCD) in the economy. Afridi (2015) Posits that developed countries invest a substantial proportion of their budgetary allocations on provision of health care because they are convinced that their residents 'health can serve as a major driver for economic growth. As health is wealth, no amount spent on health by a nation is considered too much Oni (2014). Studies conducted by Bloom and Canning (2000; 2003) revealed that healthier individuals might affect the economy in four ways: (a) They might be more productive at work and so earn higher incomes; (b) They may spend more time in the labor force, as less healthy people take sickness absence or retire early; (c) They may invest more in their own education, which will increase their productivity; and (d) They may save more in expectation of a longer life for example, for retirement increasing the funds available for investment in the economy.

The challenges facing African countries is lack of necessary health infrastructure, high mortality rate (Maternal, infant, adult), poor access to state-run hospitals that are economical than private-owned health facilities, inadequacy of public-owned healthcare facilities and personnel, urban bias in the distribution of health facilities, inadequate drug-manufacturing plants, fake drug crunch, low compliance of health insurance programme, political instability, inadequate health professionals, brain-drain as health workers emigrate to other developed economies, corruption, reliance on African traditional medicine and poverty (Prince & Kelechi 2013). However, the major challenge facing African countries is insufficient budgetary allocation to health sector by governments.

Several studies were carried out on the relationship between government health expenditure and economic growth. For instance, Odusola Tiehi, and Konan (2017), Piabuo (2017), Ogunjimi (2018), Raghupathi (2020) Oluseye (2020), Yusuf P. (2020), Lawanson (2021), Esen (2021), Olayiwola (2021), and more recently Ojo (2022) but not focused on West African Monetary Zone (WAMZ) Member countries. In addition, most of the previous studies conducted on African Countries ignored the use of variable "corruption" as control variable despite the region is encircled with corruption in which health sector cannot be neglected. However, this study incorporated an institutional variable control of corruption.

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Thus, the main purpose of this paper is to empirically investigate the impact of health expenditure on economic growth of West African Monetary Zone (WAMZ) member countries from 2002 to 2019 using Panel ARDL Pool Mean Group (PMG).

The rest of the study is structured into four sections. Section two presents literature review, while section three focuses on methodology of the study, Empirical results and conclusion are presented in section four and five, respectively.

Conceptual Issues

Governance and Health Expenditure

Countries with high corruption invest more in housing and physical capital in comparison with health and education with the associated rent seeking in physical capital which hampers economic growth (La Croix a bccbnd Delavallade 2006). In contribution to the argument, Rajkumar and Swaroop (2004), explain that public spending often does not yield the expected improvement in outcomes and that the differences in the efficacy of public spending can be largely explained by the quality of governance. Generally, the empirical evidence has largely support a poor link between public health spending and economic growth on one hand, as well as poor link between governance and development especially in developing countries. (Yaqub, Ojapinwa and Yussuf 2012). This paper links the two issues by probing the link among Government health spending and economic growth in developing economies specifically West African Monetary Zone member countries.

An overview of west African monetary zone (WAMZ).

West African Monetary Zone (WAMZ) was formally established in the year 2000. The monetary zone countries are Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone. It was expected that the formation of WAMZ would propel the creation of a monetary union alongside a common central bank and a single currency (the eco), meant to replace the existing national currencies of the six member countries. The desire to fasten the process of the monetary integration of the African sub-region was indicated by the 15-member countries of the ECOWAS in 2000. This crystallised into a 2-phase programme for the creation of a single currency for the region. The idea was that the WAMZ (of the Anglophone West African countries and Guinea) will merge with the existing West African CFA zone franc shared by members of the West African Economic and Monetary Union (WAEMU) to form a formidable monetary union across the whole of West Africa in the future as part of the African Economic Community's six-stage process of achieving a monetary union and a single currency for Africa by 2028 (African Development Bank 2020).

Empirical review

Ojo (2022) study the Health Expenditure, Education and Economic Growth in Nigeria from 1981 to 2019.The study used an error correction model (ECM) as an estimating approach.

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The result reveals that government disbursement on education and health has a positive and considerable impact on economic growth and interaction.

Olayiwola (2021) re-examined the connection between public health expenditure and economic growth in Nigeria within the context of Wagner's theory of ever increasing State activities. Using Cointegration technique of data analysis. The study found evidence of a long-run relationship between public health expenditure and economic growth. The granger-causality test results, indicate neither uni-directional nor bi-directional relationship between public health expenditure and GDP.

Esen (2021) investigates the effects of health expenditure on economic growth in Turkey: using time series data of Turkey over the period 1975–2018. Cointegration analysis was performed to test whether all variables are integrated in the long term. The Johansen Cointegration test results suggest the existence of cointegration among all variables in the long term. The Granger causality test results indicate unidirectional causality from health expenditure to economic growth in the short term.

Lawanson (2021) examines the life expectancy and economic growth nexus in Nigeria: the role of poverty reduction. The study employed the fully modified ordinary least square method. Result reveals that health contributes positively to economic growth and also mitigates the adverse effect of poverty on economic growth in Nigeria.

Oluseye (2020) investigates the relationship among environmental quality, economic growth and health expenditure in 47 African countries using both static pooled OLS, fixed random effect and dynamic (system GMM) estimation methods. Data covering the period 2000 to 2018 are employed. The study indicates evidence of a positive and significant effect of economic growth on health expenditure.

Raghupathi (2020) studies Healthcare Expenditure and Economic Performance: insights from the united states data using visual analytics. The data were collected for the periods of 2003 to 2014.The result of the study shows that an increase in healthcare expenditure has a positive relationship with economic performance.

Yusuf P. (2020) investigated the Impact of Government Health Expenditure on Economic Growth in Nigeria from 1981 to 2016, using the ordinary least squire regression analysis (OLS). The result showed significant relationship between government health expenditure and economic growth.

Ogunjimi (2018) examined the relationship among health expenditure, health outcomes and economic growth in Nigeria for the period between 1981 and 2017. Using the Autoregressive Distributed Lag (ARDL) Bounds test approach and cointegration. The results showed a unidirectional causality running from health expenditure to infant mortality while there is no causality between real GDP and infant mortality, a unidirectional causal relationship running from health expenditure and real GDP to life expectancy and maternal mortality; and a unidirectional causal relationship running from real GDP to health expenditure.

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Piabuo (2017) Analyses Health expenditure and economic growth a review of the literature and an analysis between the economic community for central African states (CEMAC) and selected African countries. Data was extracted from the World Development Indicators (2016) database. The panel ordinary least square (OLS), fully modified ordinary least square (FMOLS) and dynamic ordinary least square (DOLS) were used as econometric technic of analysis. Results showed that health expenditure has a positive and significant effect on economic growth. A long-run relationship also exist between health expenditure and economic growth for both groups of countries.

Lin etal (2017) Study the Impact of Public Health Expenditure on Economic Development: Evidence from Prefecture-Level Panel Data of Shandong Province. Using the Cobb-Douglas production function and a multivariate regression analysis. The results found that public health expenditure per capita and coverage of medical insurance can significantly promote social economic development.

Tiehi, and Konan (2017) examines Public Health Policies and Economic Growth: Experience of the WAEMU and the CAEMC Countries using data a panel from 1995 to 2013.The panel data was analysed using co-integration. The results show that there is a long run relationship between Government health expenditures and economic growth; on the other hand, the income elasticity in the WAEMU is higher.

Theoretical review

Wagner's Law of Increasing State Activities (1835-1917)

Adolph Wagner was a German Economist who based his law on historical facts of Germany in 1883. According to him, there are inherent tendencies for activities of different layers of a government (such as central and state governments) to increase both intensively and extensively. There was a functional relationship between an economy and the growth of the government activities so that governmental sectors grow faster than the economy. Wagner says there is relationship between the economic growth and the government spending especially on education and health remains unsettled issue in public economics despite a voluminous and growing literature since seminal work of Wagner in 1883. The law states that the government expenditure grows at a faster rate than that of national income. It is fact an observation on public expenditure in association with economic growth. Wagner clearly observed that there is functional relationship between growth of an economy and the government activities. He suggested that growth in public expenditure was in evitable for progressive economy because it is directly linked to the economic growth. The growth in public expenditure over time should be greater than that National output. That is percentage of some metric of economic expansion; public sector expenditure should account for larger share. After which, Wagner's law `tested using many different specifications and techniques and the empirical findings confirmed his law in increasing economic growth. In summary, Wagner identified three main factors behind the increase in government spending. These are:

i. Over a period of time, as long as economy matures (example along with growing population, industrialization and urbanization), the economy will move from law economic development to developed economy. There will be need for government play an important role in administrative and protective capacity apart from enhancing social welfare.
ii. As long as economy expands, government expenditure also expands on various social welfare activities like health, education, infrastructure, recreation facilities, etc.
iii. The advance of science and technology of a country result in higher government expenditure, it could be demanded of the government to provide several economic services for which private sector will remain indeterminate

In conclusion, the reviewed theory (Wagner's Law of Increasing State Activities (1835-1917) is related to the study therefore, will be adopted as the theoretical framework for this work. This theory was chosen because it explains the true picture of most developing countries governments health spending and growth of their economy, which all the WAMZ member countries are inclusive.

Methodology

Sources of Data

In order to investigate the impact of health expenditure on economic growth of West African Monetary Zone (WAMZ) member countries, the study uses annual data from 2005 to 2019 which for a panel of six member countries (Gambia, Ghana, Guinea, Liberia, Nigeria and sere Leone). Gross Domestic product per capita (constant 2015 US$) was used as a proxy for economic growth, the independent variables used are general government health expenditure per capita and general private health expenditure per capita both in US$ while life expectancy and control of corruption were used as control variables. All the variables were sourced from World Bank Development indicators (WDI 2020) except control of corruption which was obtained from World Governance Indicators (WGI2020).

Cross sectional Dependence Test

Checking for the presence or otherwise of cross-sectional dependence is the first and one of the important tests in panel data analysis because it can produce inconsistent estimate and misleading information (Bilgili and Ulucak, 2018). In the modern era of globalization cross-sectional dependence is a common feature of countries due to spatial, residual interdependence and common factor omitting respectively (Kao and Chiang, 2000). As a result, Breusch and Pagan (1980) developed Lagrange Multiplier (LM) statistics to detect cross-sectional dependence in the panel data.

$$LM = \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \qquad X^2 \frac{N(N-1)}{2}$$

$$T_{ij}\,\hat{p}_{ij} \rightarrow \qquad \text{..... equation (1)}$$

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However, Pesaran (2004) pointed out that Breusch-Pagan LM test might be inconsistent. Thus, Pesaran (2004) introduced CD test to adjust the bias in LM test as follows

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \frac{(T-k)\hat{\rho}_{ij}^2 - E\left[(T-k)\hat{\rho}_{ij}^2\right]}{var\left[(T-k)\hat{\rho}_{ij}^2\right]} \quad \text{..... equation (2)}$$

Panel unit root test

According to Pesaran (2007) first generation panel unit root test like Levin-Lin Chu (LLC), Pesaran-Shin (IPS), augmented Dickey-Fuller (ADF) and Phillips Perron (PP) are not compatible when there is presence of cross-sectional dependence in the panel. As a result, pesaran (2007) developed second generation panel unit root that is applicable in the presence of cross-sectional dependence which include cross-sectionally augmented Dickey-Fuller (CADF) and the cross-sectionally augmented Im-Pesaran-Shin (CIPS). The CADF statistic can be calculated as follows:

$$\Delta y_{i,t} = \alpha_{i+} \beta_i y_{i,t-1+} \gamma_i \bar{y}_{t-1+} D_i \Delta \bar{y}_{i,t} + \varepsilon_{it} \quad \text{..... equation (3)}$$

Where yt–1 and, Δ its y are the cross-sectional averages of lagged levels and first differences of individual series, respectively.

$$\bar{y}_{t-1} = \frac{1}{N} \sum_{i=1}^{N} y_{i,t-1} \quad \text{..... equation (4)}$$

$$\Delta \bar{y}_t = \frac{1}{N} \sum_{i=1}^{N} \Delta y_{i,t} \quad \text{..... equation (5)}$$

The CADF statistic can be computed by averaging the CADFi as follows

$$CIPS = \frac{1}{N} \sum_{i=1}^{N} CADF_i \quad \text{..... equation (6)}$$

Where $CADF_i$ is the t-statistics in the CADF regression defined by equation (3)

Dynamic Panel ARDL.

Because of tendency of economic variables to respond and affect other variables with a lag, due to inertia, transmission mechanism and, momentum affects this calls for adoption and application of dynamic models (Magweva & Sibanda, 2020). The common estimator used for dynamic panel data is the generalized method of moments (GMM) (Arellano, 1989; Arellano & Bover, 1995). However, GMM is suitable for a panel with a large cross-sectional unit and small-time frame. For a panel with a larger number of observations and a small cross-sectional unit as in this study, the GMM estimator can produce inconsistent, spurious and incorrect estimates (Pesaran, Shin, & Smith, 2001). Thus, panel Autoregressive Distributed Lag (PARDL) is adopted in this study.

The Panel ARDL derives most of its merits from the traditional ARDL model. These include the fact that it can simultaneously estimate short- and long-run dynamics, can be used in a case of mixed order of integration (but not on variables integrated of order two or

above), and different lags can be used on different variables ((Shin, Yu, & Greenwood-Nimmo, 2014). Panel ARDL can be estimated using three estimators: Mean Group (MG), Pool Mean Group (PMG) and Dynamic Fixed effect (DFE). The PMG considers the long-term slope parameters homogeneous across countries, but the short-run coefficients are heterogeneous. The MG, allows country-specificity in both short run and long run respectively. Specifically, this procedure estimates individual regressions for each country and after that, unweighted means are computed. The DFE is very similar to PMG, but it additionally restricts not only the long-run coefficients but also the short-run to being equal across countries.

In order to determine the most appropriate estimator for this study, the Hausman test is applied to check whether there are significant differences among these estimators. we test the null hypothesis that the difference between PMG and MG is not significant and, in addition, between PMG and DFE to identify which is the most suitable.

In order to examine the short run and long run dynamic impact of health expenditure on economic growth in WAMZ member countries, the panel ARDL model is specified as follows

$$Lnpcgdp_{it} = \sum_{i=0}^{p} \alpha_{1,ij} Lnpcgdp_{i,i-j} + \sum_{j=0}^{\varepsilon_1} \alpha_{2,ij} Lnghepc_{t-j} + \sum_{j=0}^{\varepsilon_2} \alpha_{3,ij} Lnphepc_{t-j} + \sum_{j=0}^{\varepsilon_3} \alpha_{4,ij} Lnlex_{t-j} + \sum_{j=0}^{\varepsilon_4} \alpha_{5,ij} Lncrp_{,t-j} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots eqn\ (1)$$

from the equation **p** represents the lags of dependent variable while $\boldsymbol{\varepsilon_1}$ to $\boldsymbol{\varepsilon_4}$ represents lags of independent variables, i = 1,2,3, . . .N *and* t = 1,2,3, . . .T, α_i represents the fixed effects, α_1– α_4 are the lagged coefficients of the independent variables and the error term is denoted by ε_{it} which is assumed to be white noise and varies across countries and time. A panel error correction (ECM) representation equation (2) is framed as follows:

$$Lnpcgdp_{it} = \sum_{i=0}^{p} \alpha_{1,ij} Lnpcgdp_{i,i-j} + \sum_{j=0}^{\varepsilon_1} \alpha_{2,ij} Lnghepc_{t-j} + \sum_{j=0}^{\varepsilon_2} \alpha_{3,ij} Lnphepc_{t-j} + \sum_{j=0}^{\varepsilon_3} \alpha_{4,ij} Lnlex_{t-j} + \sum_{j=0}^{\varepsilon_4} \alpha_{5,ij} Lncrp_{,t-j} + \beta_1 Lnpcgdp_{i,t-1} + \beta_{2ij,} Lnghepc_{t-j} + \beta_{3ij,} Lnphepc_{t-j} + \beta_{4ij,} Lnlex_{t-j} + \beta_{5ij,} Lncrp_{t-j} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots eqn\ (2)$$

From the equation p represents the lag of dependent variable while ε_1 to ε_4 represents lags of independent variables. where Δ is the first difference of variables and also α_1 - α_4

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are the short-run parameters. The $\beta_1 - \beta_4$ are the long-run parameters and Y is the ***GDP per capita***, ***GHEPC*** general government health expenditure per capita and ***PHEPC*** general private health expenditure per capita while ***LEX*** is life expectancy and ***CRP*** is the control of corruption.

Results and discussion

Cross-sectional dependence and Panel unit root test

Table 4.1 below presents the result of pesaran (2004) CD test which examines the presence or otherwise of cross- sectional dependence in the panel data. The outcomes shown in the table 4.1 below reject the null hypothesis of no cross-sectional dependence at 1% significance level for all the variables except control of corruption. In other words, strong evidence for occurrence of cross-sectional dependence was found.

Table 4. 1: Result of cross-sectional dependence test

Variable	CD-test	P-value
Lnpcgdp	**5.77*** **	**0.000**
Lnghepc	**3.23*** **	**0.001**
Lnphepc	**6.54*** **	**0.000**
Lnlex	**14.96*** **	**0.000**
Crp	**1.43**	**0.152**

***indicates significance at 1% level. Source: Authors' calculations using Stata 13.1

Presence of cross-sectional dependence in the panel means that the first-generation panel unit root tests are not compatible and this necessitate the application of second-generation panel unit root that account for the presence of cross-sectional dependence. One of such tests is cross-sectionally augmented version of the IPS, the CIPS or (CADF) test. The result of CIPS unit test result is presented in table 4.2 below.

Table 4.2: Results of Second-Generation panel unit root tests

	Level		**First Difference**	
Variable	Constant	Constant &trend	constant	Constant & trend
Lnpcgdp	**-0.486**	**-2.077**	**-3.158*** **	**-3.628*** **
Lnghepc	**-1.898**	**-2.199**	**-3.360 *** **	**-3.199** **
Lnphepc	**-1.323**	**-1.960**	**-3.820*** **	**-3.683*** **
Lnlex	**-3.638*** **	**-4.068*** **	**-3.179**	**0.489**
Crp	**-1.410**	**-3.219**	**-3.927*** **	**-4.022*** **

Source: Author's computations using Stata 13.1. Critical values for Pesaran CIPS without trend: -2.22 (10%), -2.37 (5%), -2.66 (1%); with trend: -2.76 (10%), -2.93 (5%), -3.24 (1%); *, **, and *** significance at 10%, 5% and 1%.

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The results of the second-generation panel unit root (CIPS) from the table 4.2 above indicates that all the variables are integrated of the first order I (1) except the log of life expectancy which is stationary at level I (0).

Dynamic panel model ARDL

Table 4.3 shows the results of the panel ARDL considering PMG, MG and DFE in addition to Hausman test to determine which is the best method to achieve consistency and efficiency. According to the result of the Hausman test between PMG and MG with a P-value of (0.88) the null hypothesis of PMG being more efficient cannot be rejected therefore, PMG is more suitable. Furthermore, comparing the PMG with the DFE, with a p-value of (1.00) the null hypothesis cannot be rejected, meaning that the PMG is recommended since it is more efficient. Based the results of the Hausman test it can be concluded that PMG is the most efficient estimator, hence interpretation will be focused on this estimator.

Table 4.3: Results of Panel ARDL

	PMG		MG		DFE	
Long run Coeft	**Coeft**	**Std.Error**	**Coeft**	**Std.Error**	**Coeft**	**Std.Error**
Lnghepc	**-0.078*** (0.014)**	**0.034**	**-0.089 (0.167)**	**0.065**	**-0.125 (0.136)**	**0839**
Lnphepc	**0.336*** (0.000)**	**0.031**	**0.141 (0.438)**	**0.181**	**0.371 (0.012) ****	**0.147**
Lnlex	**1.892*** (0.000)**	**0.535**	**1.774 (0.404)**	**2.126**	**1.317 (0.380)**	**1.499**
Crp	**-0.023 (0.585)**	**0.043**	**-0.459 (0.131)**	**0.304**	**0.258 (0.267)**	**0.232**
ECM	**-0.449*** (0.016)**	**0.185**	**-0.727*** (0.000)**	**0.113**	**-0.263 (0.003) ****	**.088**
ΔLnghepc	**0.018 (0.251)**	**0.015**	**0.026 (0.295)**	**0.023**	**0.016 (0.428)**	**0.020**
ΔLnphepc	**-0.062 (0.379)**	**0.071**	**-0.052 (0.707)**	**0.139**	**0.013 (0.759)**	**.043**
ΔLnlex	**8.814 (0.504)**	**13.188**	**-8.674 (0.740)**	**26.167**	1.088 **(0.825)**	**4.908**
ΔCrp	**-0.051 (0.244)**	**0.043**	**0.112 (0.489)**	**0.163**	**-0.068 (0.176)**	**0.051**
Intercept	**-0.720 (0.064)**	**0.389**	**0.464 (0.938)**	**5.957**	**0.211 (0.894)**	**1.589**
Hausman test		**1.13**(0.88)		0.00(1.00)		

Source: Author's computation using Stata 13.1. **, and * indicates significance at 5% and 1%.**

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Based on the result of the pool mean group from table 4.3 above, public health expenditure is found to have negative and statistically significant impacts on economic growth, where 1% increase in public health expenditure leads to a 1% decrease in economic growth in the long run of the selected countries for the period under study. However, the result indicates that in the long run private health expenditure have positive and statistically significant impact of economic growth of WAMZ member countries, where 1% increase in public health expenditure leads to 33% increase in economic growth. This finding is in agreement with result of the studies by Oluseye (2020) and Raghupathi (2020). The negative effect of public health expenditure on economic growth is connected with high level of corruption in these countries where chunk of resources allocated to fund public health are usually diverted in to private pockets. The result also revealed that life expectancy has positive and significant effect on economic growth while control of corruption was found to be insignificant in the long run.

Estimated results also show that the sign of lagged error correction representations ($ECM_{t-1)}$ is negative and statistically significant; it is the speed of adjustment coefficient which shows convergence to toward long run equilibrium. The coefficient of ECM_{t-1} is –0.449 indicating that adjustments are corrected by 45% from short-run to long-run of the time span over every year. However, the result revealed that none of the variables was found to have significant impact on economic growth in the short run for the period under investigation.

Conclusion and Policy Recommendations

This study empirically investigates the impact of health expenditure on economic growth of West African Monetary Zone (WAMZ) member countries from 2002 to 2019, the study used Real Gross Domestic Product per capita as proxy for economic growth while the independent variables adopted are general government health expenditure per capita and general private health expenditure per capita, in addition life expectancy and control of corruption were used as control variables. All data were sourced from World Bank Development indicators (WDI2020) and World Governance Indicators (WGI2020). The study applied econometrics techniques of Cross-sectional dependence test, panel unit root tests and dynamic panel Autoregressive Distributed Lag model.

The cross-sectional dependence test results from pesaran (2004) CD indicates that the countries are cross sectional dependent and only second-generation panel unit test is suitable for testing stationarity of the variables. The results of the cross-sectionally augmented version of the IPS, the CIPS revealed that that all the variables used are integrated of the first order I (1), except the log of life expectancy which is stationary at level I (0). The Hausman test result revealed that PMG is the most efficient and suitable estimator than MG and DFE versions of the dynamic panel ARDL. According to the result of the PMG public health expenditure was found to have negative and statistically significant impact on economic growth while private health expenditure has positive and

statistically significant impact on economic growth of WAMZ member countries for the period under study. The result also revealed that life expectancy has positive and significant impact on economic growth of WAMZ member countries while control of corruption was found to have insignificant impact on economic growth of the countries. Based on the empirical result, the study recommends that government and policy makers of WAMZ member countries should increase budgetary allocations to public health, Put measures to reduce the various bottlenecks such as corruption and political issues that hinder the proper disbursement of funds for health purpose and also establish an effective health insurance programs that will subsidize private health care which could greatly improve healthcare accessibility.

REFERENCE

Babatunde, O. L. (2014). Analysis of the Growth Impact of Health Expenditure in Nigeria. *IOSR Journal of Economics and Finance*, *3*(1), 77–84. https://doi.org/10.9790/5933-03117784

Bilgili, F., Ulucak, R. (2018), Is There Deterministic, Stochastic, And/ Or Club Convergence In Ecological Footprint Indicator Among G20 Countries? *Environmental Science and Pollution Research.* 25(35), 35404-35419.

Breusch, T., Pagan, A. (1980), The LM test and its application to model specification in econometrics. *Review of Economic Studies*. 47(1), 239-254.

Ebhotemhem, Wilson And Hezekiah, O. (2021). Impact of Public Health Expenditure on the Nigerian Health Sector Performance: Empirical Investigation. *Frontiers in Neuroscience*, *14*(1), 1–13.

Esen, E., & Çelik Keçili, M. (2022). Economic Growth and Health Expenditure Analysis for Turkey: Evidence from Time Series. *Journal of the Knowledge Economy*, *13*(3), 1786–1800. https://doi.org/10.1007/s13132-021-00789-8

Ibukun, C. O., & Osinubi, T. T. (2020). Environmental Quality, Economic Growth, and Health Expenditure: Empirical Evidence from a Panel of African Countries. *African Journal of Economic Review*, *8*(2), 119–140.

Kao C, Chiang MH.(2000). *On the estimation and inference of a cointegrated regression in panel data. In: Baltagi B., editor. Nonstationary panels, panel cointegration, and dynamic panels (advances in econometrics.* Amsterdam: JAI Press; 2000; p. 161–178.

Lawanson, O. I., & Umar, D. I. (2021). The life expectancy–economic growth nexus in Nigeria: the role of poverty reduction. *SN Business & Economics*, *1*(10), 1–26. https://doi.org/10.1007/s43546-021-00119-9

Lv, Z., & Zhu, H. (2014). Health care expenditure and GDP in African countries: Evidence from semiparametric estimation with panel data. *The Scientific World Journal*, *2014*. https://doi.org/10.1155/2014/905747

Magweva R, & Sibanda, M. (2020) Inflation And Infrastructure Sector Returns In Emerging Markets Panel Ardl Approach. *Cogent Economics & Finance*. 8:1, 1730078

Ndaguba, E. A., & Hlotywa, A. (2021). Public health expenditure and economic development: The case of South Africa between 1996 and 2016. *Cogent Economics and Finance*, *9*(1). https://doi.org/10.1080/23322039.2021.1905932

Nwakanma, P. C., & Nnamdi♀, K. C. (2013). HealthCare Financing and Health Profile in West African Countries. *EL Code H51, I10, O55*, 1–24.

Ogunjima, Joshua; Adebayo, A. (2018). Munich Personal RePEc Archive Health Expenditure , Health Outcomes and Economic Growth in Nigeria. *Munich Presonal RePEc Archive*, *94989*, 1–18.

Ojapinwa, T. V, & Yussuff, R. O. (2012). Public Health Expenditure And Ojapinwa, T. V, & Yussuff, R. O. (1857). Public Health Expenditure And Health Outcome In Nigeria : The Impact Of Governance, 8(13), 189–201.Health Outcome In Nigeria : The Impact Of Governance. *European Scientific Journal*, *8*(13), 189–201.

Ojo, T. J., Odusanya, I. A., & Ojo, S. I. (2022). Health Expenditure, Education and Economic Growth in Nigeria. *Open Journal of Social Science and Humanities (ISSN: 2734-2077)*, *3*(1), 01–17. https://doi.org/10.52417/ojssh.v3i1.308

Oluwaseun, K. (2019). The Effects of Health Care Expenditures on Health Outcomes in West Africa: Analysis of Selected 14 Countries from 2000 to 2018. *Student Theses & Publication*, 4671. https://thekeep.eiu.edu/theses/4671

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Pesaran, M.H. (2004), General Diagnostic Tests for Cross Section Dependence in Panels. *Working Paper, No. 0435, Faculty of Economics*. Cambridge: University of Cambridge.

Pesaran, M.H. (2007), A simple panel unit root test in the presence of cross section dependence. *Journal of Applied Econometrics*, 22(2), 265-312

Pesaran, M. H., Shin, Y., & Smith, R. (2001). Bound Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16, 289–326. doi:10.1002/jae.616

Piabuo, S. M., & Tieguhong, J. C. (2017). Health expenditure and economic growth - a review of the literature and an analysis between the economic community for central African states (CEMAC) and selected African countries. *Health Economics Review*, *7*(1), 1–13. https://doi.org/10.1186/s13561-017-0159-1

Raghupathi, V., & Raghupathi, W. (2020). Healthcare Expenditure and Economic Performance: Insights From the United States Data. *Frontiers in Public Health*, *8*(May), 1–15. https://doi.org/10.3389/fpubh.2020.00156

Saheed O. Olayiwola, T. A. B.-A. and S. O. A. (2021). Public Health Expenditure and Economic Growth in Nigeria: Testing of Wagner's Hypothesis Saheed. *Frontiers in Neuroscience*, *14*(1), 1–13.

Sethi, N., Mohanty, S., Das, A., & Sahoo, M. (2020). Health Expenditure and Economic Growth Nexus: Empirical Evidence from South Asian Countries. *Global Business Review*, 1–15. https://doi.org/10.1177/0972150920963069

Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). Modeling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. In Horrace, W., & Sickles, R. (Eds.), The Festschrift in honor of Peter Schmidt (pp. 281–314). *New York, NY: Springer.* doi:10.1007/978-1-4899-8008-3_9

Tekabe, L. F. (2012). Health and Long Run Economic Growth in Selected Low Income Countries of Africa South of the Sahara : Cross Country Panel Data Analysis. *Independen*, 59. http://sh.diva-portal.org/smash/get/diva2:579350/FULLTEXT01.pdf%0Ahttp://urn.kb.se/resolve?urn=urn:nbn:se:sh:diva-17778

Tiehi, T. N., & Konan, H. (2017). Public Health Policies and Economic Growth: Experience of the WAEMU and the CAEMC Countries. *Modern Economy*, *08*(11), 1328–1339. https://doi.org/10.4236/me.2017.811089

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