1. Introduction

When workers are healthy, their physical and mental capacities are improved, which enhances worker productivity. A higher life expectancy encourages investment in education, innovation, and physical capital (Bloom et al., 2003, 2007; Cervellati and Sunde, 2013; Prettner, 2013); better health, particularly that of women, reduces fertility and stimulates an economic transition (Strauss and Thomas, 1998; Bloom and Canning, 2002; Schultz, 2002); and higher life expectancy encourages investment in education, innovation, and physical capital (Bloom et al., 2003, 2007). (Galor and Weil, 2000; Galor, 2011; Cervellati and Sunde, 2011; Cervellati and Sunde, 2015; Bloom et al., 2020). On the other hand, pandemics and epidemics can have devastating effects on economies and cause a great deal of human suffering (Bloom et al., 2022).

Poor health can have a direct impact on the labour force and productivity, leading to decreased economic output and growth. Studying the economic impact of poor health can help to understand the scale of this impact and identify strategies to address it. Therefore, this paper aims to empirically and comparatively examine the economic impact of poor health conditions in the Northern and Western African regions using a panel data regression framework — a study that is lacking in the literature.

The main premise behind this study is that the relationship between healthcare and economic in different regions can provide insights into the ways in which poor health affects the economies of these regions. This information can help policymakers and health practitioners better understand the costs associated with poor health and develop strategies to improve health outcomes and boost economic growth. The uniqueness of this study stems from the fact that a comparative study of the economic impact of poor health in Northern and Western African regions can also highlight differences and similarities in the ways in which poor health affects the economies of these regions. This information can be useful for identifying best practises and areas for improvement in health care systems, as well as for developing targeted interventions to improve health outcomes and boost economic growth.

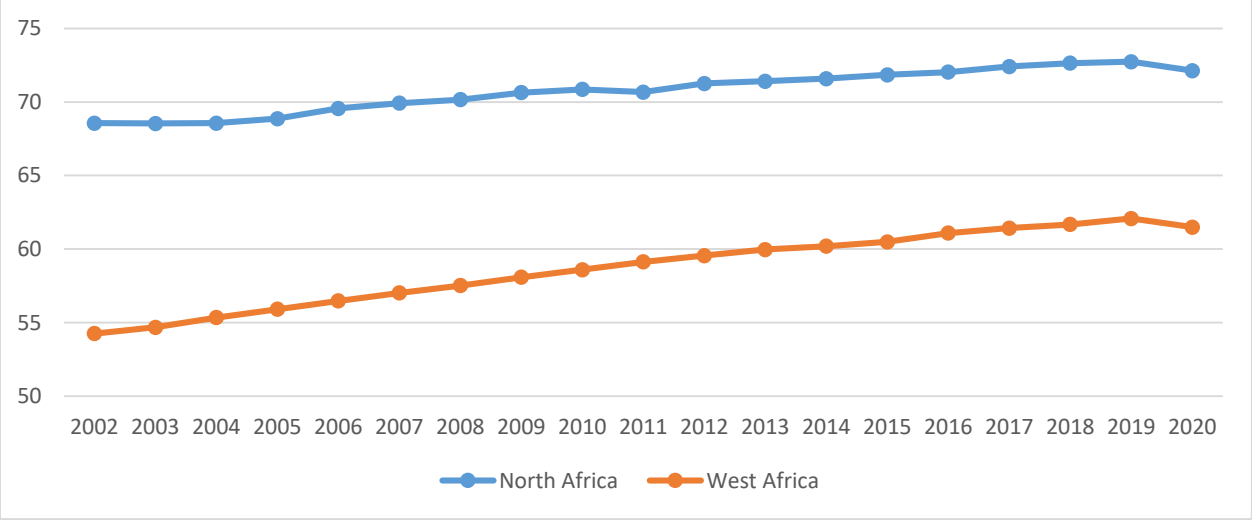
The structure of the rest of the paper is as follows. Section 2 provides stylized facts and a succinct literature review. Section 3 introduces the empirical methodology used in this paper and highlights its advantages over other methods. Section 4 introduces the data along with definitions and sources. Section 5 presents the empirical results. Section 6 summarizes and concludes.

2. Stylized Facts and Literature Review

- **Stylized Facts**

The Millennium Development Goals (MDGs), which were enacted in 2000, set the global goal of reducing all types of health casualties. Three of the eight objectives had to do with health. The Sustainable Development Goals (SDGs), an ambitious sustainable development agenda with 2030 as the target date, were adopted by the United Nations General Assembly after the Millennium Development Goals (MDGs) expired in 2015 and built upon prior accomplishments. There are 17 SDGs, and Goal 3—"the health goal"—has 13 targets that are directly related to people's personal health. Western Africa's population has a clearly worse health status than the majority of other developing regions. It is well known that infant and maternal mortality rates are extremely high and that birth weight life expectancy is low in the region. The fact that several of the countries in the region are experiencing conflicts, such as intertribal and civil wars, as well as a high prevalence of diseases like HIV/AIDS, malaria, and tuberculosis, makes the situation even worse.

Figure 1: Average Life Expectancy in Northern and Western African Countries



Source: *Author's construction using data from World Bank*

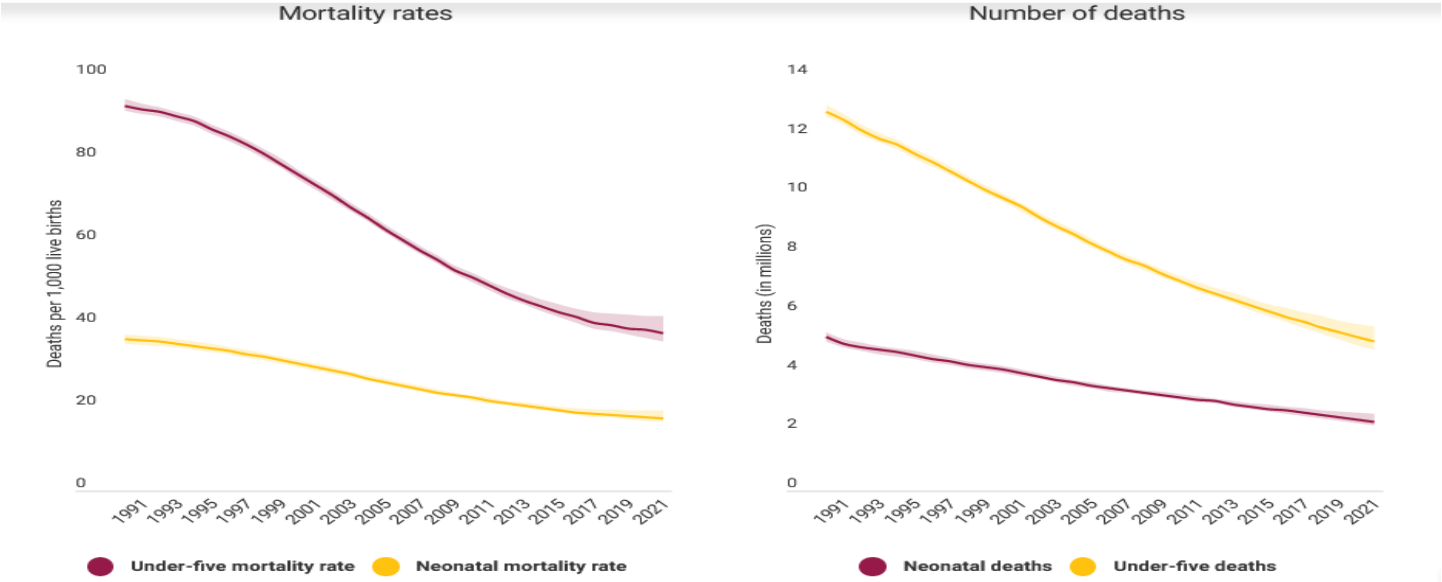
Figure 1 demonstrates that, in comparison to North Africa, the average life expectancy in West Africa has remained low, with potentially disastrous consequences for the economies of the

countries in the region. From 2002 to 2020, the average life expectancy in West Africa stayed between 54 and 62 years, whereas it was between 68 and 72 in North Africa.

The world made remarkable progress in child survival in the past three decades, and millions of children have better survival chances than in 1990—1 in 26 children died before reaching age five in 2021, compared to 1 in 11 in 1990. Moreover, progress in reducing child mortality rates has been accelerated in the 2000s period compared with the 1990s, with the annual rate of reduction in the global under-five mortality rate increasing from 1.8 per cent in 1990s to 4.0 per cent for 2000-2009 and 2.7 per cent for 2010-2021 (UNICEF, 2023).

The global under-five mortality rate declined by 59 per cent, from 93 deaths per 1,000 live births in 1990 to 38 in 2021 (Figure 2). Despite this considerable progress, improving child survival remains a matter of urgent concern. In 2021 alone, roughly 13,800 under-five deaths occurred every day, an intolerably high number of largely preventable child deaths.

Figure 2: Global mortality rates and number of deaths by age, 1990–2021



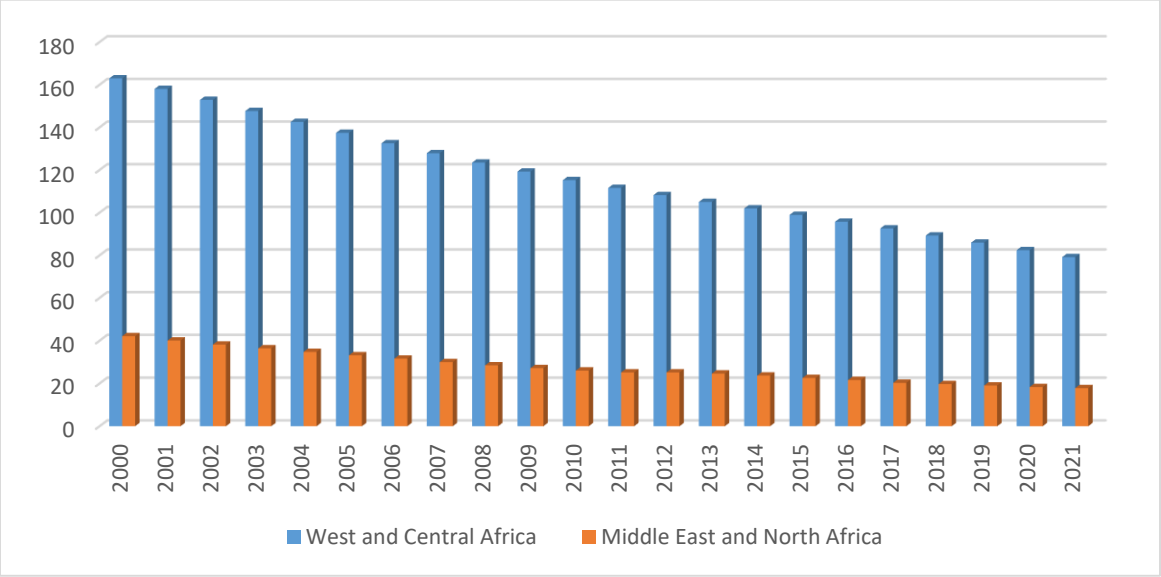
Source: *United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME), 2023.*

Note: The solid line represents the median estimate and the shaded area represents the 90 per cent uncertainty bound around the median value.

Under-five mortality rate is generally higher in West African countries compared to North African countries (Figure 3). According to the World Bank, in 2020, the under-five mortality rate in West

Africa was 83 deaths per 1,000 live births, while in North Africa it was 29 deaths per 1,000 live births. Several factors contribute to this disparity, including differences in healthcare infrastructure, access to clean water and sanitation, and nutrition. However, overall, North African countries tend to have more developed healthcare systems and higher levels of economic development, which contribute to lower under-five mortality rates.

Figure 3: Under-five mortality rate by UNICEF region

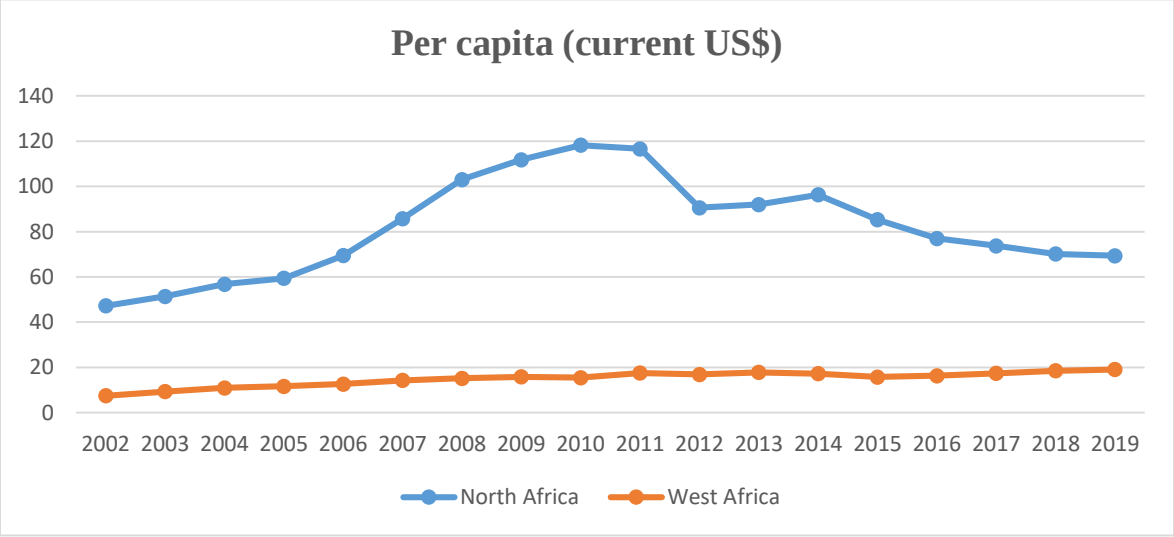


Source: *Author's construction using data from WHO (2023)*

More and more people throughout the world are realising the significance of health as a crucial component of individual and national development and economic prosperity. This is evident from a number of measures implemented by African nations to increase health investment in order to achieve the health Millennium Development Goals (MDGs). Through initiatives like the 2001 Abuja Declaration on increasing government funding for health by allocating 15% of the budget to the sector, the 2006 Addis-Ababa Declaration on community health in the African Region, and the 2008 Ouagadougou Declaration on maternity health care and health systems in Africa, African leaders have expressed trust through actions. According to the recommendations of the High-Level Taskforce on Innovative International Financing for Health Systems (HLTF), low-income countries should set aside at least US$ 44 per capita by 2009 in order to provide a basic set of healthcare services. Except for a few countries, more than a third of African nations have failed to fulfil both the Abuja target and the HLTF proposal.

As shown in Figure 4, notwithstanding the low level of health expenditure in most African countries, the average health expenditure in North Africa is higher on the continent. Government health expenditure in Africa has been very appalling, leading to inadequate access to healthcare services for many people. Despite efforts by some African governments to increase their healthcare budgets, the overall situation remains challenging as many countries face significant economic and political challenges. According to the World Health Organization (WHO), in 2021, the average government health expenditure as a percentage of total government expenditure in African countries was 9.7%. The average government health expenditure per capita in African countries was $98 in 2021. The low level of government spending on health, combined with a lack of funding from other sources, has resulted in poorly equipped and understaffed healthcare facilities, limited availability of essential medicines and technologies, and a shortage of skilled healthcare workers. Addressing these challenges will require sustained efforts and a commitment from governments, development partners, and the private sector to increase funding for the health sector and improve the efficiency and quality of healthcare services.

Figure 4: Average domestic general government health expenditure in Northern and Western African countries



Source: *World Health Organization Global Health Expenditure database, 2022.*

- **Literature Review**

Since wealthy nations typically have healthier populations, there appears to be a connection between a society's health status and its economic success. Numerous studies have been conducted on the linkages between economic growth and health, with a variety of findings. In a thorough investigation, Acemoglu and Johnson (2007) looked into how health, as measured by birth weight, affected economic growth. The study took advantage of the significant increases in life expectancy brought about by global health initiatives, more efficient public health initiatives, and the introduction of novel chemicals and medications starting in the 1940s. The situation, known as the global epidemiological transition, was claimed to have improved life expectancy across a number of nations and regions. According to the study, after the global changes previously mentioned, disease-specific mortality saw significant decreases. The estimation revealed no appreciable impact of life expectancy on global GDP. Notable was the relative drop in GDP per capita and GDP per person in the working age population in nations where life expectancy was rising rapidly. Between countries that were initially poor, middle-income, and rich, there was no convergence in income per capita. The findings of the study were supported by neoclassical growth theory, which proposed that as population increased due to increased life expectancy, capital-to-labor and land-to-labor ratios initially decreased, resulting in a decrease in per capita income. Ultimately, it was thought that higher output would make up for this as more people joined the LF and as more money was amassed. In the meanwhile, if the benefits from increased life expectancy are insufficient and some production variables, like land, are provided inelastically, the compensation might not be complete. Investments in health and physical capital were found to have a favourable impact on economic growth and the accumulation of physical capital in China, according to Gong et al.'s (2012) study. The underlying assumption was that the benefits of productivity outweighed the displacement impacts of health investments on physical capital. Barro (2013) used the techniques of major innovations in growth theory to investigate the relationship between growth and health. The study reported a two-way causal relationship between health and the economy using data from 1960 to 1990. In JED 23,3 256, a generation-overlapping model with family altruism, Kunze (2014) conducted a theoretical exposition on the relationship between life expectancy and economic growth. In this model, investments made by both the private and public sectors in children's human capital serve as the primary driver of endogenous growth. It came to the conclusion that there might be a non-linear link between growth and life expectancy. It was concluded that an increase in life expectancy may be beneficial to growth when it begins at a low

level and detrimental to growth when it begins at a high level, demonstrating that the emergence of this phenomenon is critically dependent on the presence of intergenerational transfers in the form of bequests. Ogunleye (2014) used panel data collected every five years between 1980 and 2005 to examine the impact of infant mortality and life expectancy on economic growth in SSA nations. The study used GMM estimation and found that health indicators were extremely low and unable to have a significant impact on the expansion of the region's economies. Usman et al. (2015) look at the long-term relationship between economic growth and health in Nigeria from 1961 to 2012. They discover a long-term connection between economic growth and health, as indicated by life expectancy and crude death rate measurements. Further evidence employing the Granger causality test reveals a one-way causal relationship between health, as assessed by life expectancy and the crude mortality rate, and economic growth.

Ogundari and Awokuse (2018) evaluated the relationship between health and economic growth and further looked at which of health and education contributed more to economic growth in SSA. They found that, while both health and education had a significant positive impact on the region's economic growth, health had a bigger impact.

Although the empirical literature reviewed so far shows that there has been no concordance in findings, the literature also indicates that no author has empirically and comparatively examined the differentials in the economic impact of poor health conditions in the Northern and Western African regions. The main premise behind this study is that the relationship between healthcare and economic growth in different regions can provide insights into the ways in which poor health affects the economies of these regions.

3. Methodology

3.1 Model specification

The augmented Solow growth model developed by Mankiw et al. (1992) and adopted from Bloom et al. (2004) serves as the foundation for the current study. Here is the empirical model:

$$\boldsymbol{G}\mathbf{DPPC} = \int(\mathbf{GDPPC}_{\boldsymbol{it-1}};\ \mathbf{LF};\ \mathbf{LE};\ \mathbf{SSE};\ \mathbf{HE};\ \mathbf{TOP};\ \mathbf{FDI}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{1}$$

where LE is for life expectancy, SSE is for gross secondary enrollment, HE is for health expenditure, LF is for labour force, TOP is for trade openness, and FDI is for foreign direct investment. GDPPC stands for gross domestic product per capita, which was used as a proxy for economic growth. According to Bloom et al. (2004), the model is described as an aggregate production function as follows:

$$\mathbf{GDPPC} = \boldsymbol{LF^{\emptyset}}\ \boldsymbol{e^{\beta_1 SSE+\beta_2 LE+\beta_3 HE+\beta_4 \mathrm{TOP}+\beta_6 \mathrm{FDI}}} \ldots\ldots..2$$

If Eqn (2) is linearized by taking the logarithms to obtain Eqn (3) whose regress and is the percentage change in GDPPC for country *i* at time *t*,

Percent Change in

$$\mathbf{GDPPC}_{it} = \alpha_{it} + \beta_1 log\mathbf{GDPPC}_{it-1} + \beta_2 logLE_{it} + \beta_3 logLF_{it} + \beta_4 logSSE_{it} + \beta_5 logHE_{it} + \beta_6 logTOP_{it} + \beta_7 logFDI_{it} + \eta_i + \varepsilon_{it} \ldots \ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots\ldots..\ldots\ldots\ldots 3$$

where ι = 1, 2,..., 15 and ι = 1, 2,..., 6 which stands for countries, t = 1, 2,...,22 which is the years covered by the study, α, is the intercept, η is the country specific effects and ε represents error term.

3.2 Estimation technique – Fixed effects

Fixed effects estimation technique is unique because it allows for controlling for the effects of variables that are considered to be fixed, or time-invariant, over the period of observation. Fixed effects models are commonly used in panel data or longitudinal studies like this, where the same units are observed over time. In such cases, variables that are considered to be fixed can confound the relationship between the dependent and independent variables. The fixed effects technique accounts for these time-invariant variables by including unit-specific intercepts in the model. By controlling for the effects of these time-invariant variables, fixed-effects models provide a more accurate estimation of the causal effect of the independent variables on the dependent variable.

They also help to address the issue of omitted variable bias, which can arise when important variables are not included in the model. It is on this basis that the study adopts this estimation technique.

3.3 Data sources and measurement of variable

The study utilized data on 15 Western and 6 Northern African countries from 2000 to 2021.

Table 1: **Variable Description and Measurement**

Variable	Measurement	Source
GDP per capita	Constant 2010 US dollars	World Bank, 2023
Life expectancy	Measured by number of years a new born is expected to live	World Bank, 2023
Secondary school enrollment	School enrollment, secondary (% gross)	UNESCO, 2022
Health expenditure	Government health expenditure per capita (current US$)	WHO, 2022
Labour force	% of total population ages 15-64	ILO, 2021
FDI	Net (BoP, current US$)	World Bank, 2023
TOP	Trade (% of GDP)	World Bank, 2023

Source: Author's compilation, 2023

3.4 Rationales for inclusion of variables and their data transformation

Percentage change in gross domestic product Per capita (GDPPC): Output (y), which is expressed as Y/L in the Solow growth model and its revision by Mankiw et al. (1992), which served as the study's premise, is used as a stand-in for economic growth because it is expressed in per capita terms. It also takes into account welfare and is grounded in earlier literature, as demonstrated by Bloom et al.'s (2004) work. Since the GDP per capita is expressed in US dollars, data on it was logged.

Lagged GDPPC: Lagged GDPPC was included to captures convergence effect as used by Yamarik (2011).

Life expectancy (LE): Because a longer life expectancy can be typically linked to a better health status, as in Bloom et al. (2004), Barro (1996), etc., life expectancy (LE) is often used as a proxy for health outcomes. Data on life expectancy was not logged because it's already measured in percentage.

Labour force (LF): Because it plays a significant role in the production process, the labour force (LF) was utilised in this study. The population was a close variable in the majority of empirical growth models, such as Bloom et al.'s (1998). Data on labour force was not logged because it's already measured in percentage.

Trade openness (TOP): Trade openness (TOP) gauges how much a country participates in the world trading system. It is often calculated as the ratio of GDP to the total of exports and imports. As seen in Saibu (2004), Mathew (2014), Mputu (2016), etc., it can also be expressed as a percentage and is typically taken into account in growth models.

Secondary school enrollment (SSE): The rate of secondary school enrollment is a key factor in determining the level of education in a nation; hence, secondary school enrollment (SSE) was used in the current study as a stand-in for education. The work of Benhabib and Spiegel (1994) also stressed the significance of human capital stock, which mostly consists of health and education. Data on SSE was not logged as it is already in percentage.

Health expenditure (HE): HE was added because it represents the amount of money spent on health production. As may be observed in Yang (2020), Wang (2015), and other research on economic growth, HE has been considered. Data on HE was logged as it is measured in current US$.

Foreign direct investment (FDI): In the balance of payments, it is the entire addition of equity capital, reinvestment of earnings, other long-term capital, and short-term capital. Due to its basic significance in the creation of goods and services, it is typically taken into account in economic growth models, such as those developed by Ayanwale (2007) and Giwa et al. (2020), among others. Data on FDI was not logged because most of the values are negative, logging data on FDI would result to having too many missing values.

4. Results and discussion

4.1 Pre-estimation analyses – descriptive statistics and Variance Inflation Factor (VIF) analyses

Table 1 presents the descriptive statistics of the observations of the data sets of the study variables. Among the statistics presented are measures of central tendency and dispersion among others.

Table 1: Descriptive statistics

North African Countries						West African Countries				
Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Obs.	Mean	Std. Dev.	Min.	Max.
GDPPC	132	4322.43	3047.50	1678.98	13729.3	330	1052.274	695.9755	356.295	3318.93
LE	126	70.51	4.57	56.77	76.474	315	58.19557	5.938868	45.05	76.593
SSE	83	69.55	20.57	34.57	107.59	201	41.63628	21.06289	6.487	114.715
LF	120	49.93	2.38	44.78	53.33	300	66.14507	8.148914	47.11	81.03
HE	111	8.80e+10	1.66e+11	5.30e+09	7.50e+11	266	7.97e+09	1.75e+10	3.60e+07	8.00e+10
TOP	130	62.31	27.22	.76	114.34	305	60.2468	21.30711	16.3522	132.383
FDI	126	-	2.19e+09	-1.10e+10	2.50e+09	299	-	1.19e+09	-	5.40e+08

Source: Author's computation, 2023, using STATA.

VIF is used to ascertain the presence of multicollinearity among the variables because of its robustness. Variance Inflation Factor (VIF) and correlation tests are both commonly used to assess the collinearity between predictors in a multiple regression model. However, VIF measures the degree of multicollinearity, while correlation tests only measure the strength of linear association between two variables. Using the rule of thumb that the VIF values cannot be greater than 10, the VIF result presented in Tables 2 indicates that there is no presence of multicollinearity among the explanatory variables as all the values are below 4, with the highest value being 3.12 for life expectancy (LE) in Northern Africa.

Table 2: Variance Inflation Factor (VIF)

Variable	North Africa		West Africa	
	VIF	1/VIF	VIF	1/VIF
LE	3.12	0.320512	2.52	0.396265
SSE	2.75	0.363636	2.44	0.409425
logHE	2.46	0.406504	2.13	0.470018
logTOP	2.04	0.490196	1.63	0.613853
LF	1.75	0.571428	1.56	0.640600
FDI	1.32	0.757043	1.25	0.797979
Mean VIF	**2.24**		**1.92**	

Source: Author's computation, 2023, using STATA.

The results obtained are represented in Table 3. Lagged GDPPC was positive and significant and this implied divergence in the growth of the economies of the countries in the region. The

coefficient values of 0.047and .277 implied that it was inelastic. Additionally, because convergence has not yet been attained, there is still potential for expansion in the economies of the two regions. More of the revenue generated the year before could still be added to the economy. This finding is in line with Apanisile and Akinlo's (2014) findings that the amount of economic growth in the preceding year significantly influences economic growth today. Overall, positive and significant GDP per capita of the past year can have a positive impact on the current economic growth by boosting consumer spending, improving business confidence, attracting foreign investment, and improving public finance. LE (life expectancy at birth) had a significant and positive impact on economic expansion in Northern African countries. Economic growth increased by 0.043% as a result of an increase in life expectancy in the North African region. This is in line with economic theory and the exposition of the augmented Solow model by Mankiw et al. (1992). This finding supports those of Ogundari and Awokuse (2018). Whereas the impact of life expectancy as a proxy for health conditions had no significant impact on economic growth in Western African countries, Ogunleye (2014) reported a similar result of no significant relationship between LE (life expectancy at birth) and economic growth in West Africa.

When the impact of life expectancy on economic growth is positive and significant in Northern Africa, it suggests that an increase in life expectancy in this region is associated with an increase in economic growth. This positive relationship could be driven by a number of factors such as increased investment in health care and education, which leads to a more productive and healthier workforce, and higher levels of human capital. In contrast, when the impact of life expectancy on economic growth is insignificant in West Africa, it suggests that there is little or no relationship between these two variables in this region. This could be due to a variety of factors such as poor health care infrastructure, low levels of investment in health and education, and other factors that negatively impact health and economic outcomes in the region.

SSE, as a proxy for education, had a positive and significant impact on economic growth in both regions. The results show that an increase in secondary school enrollment will increase GDP per capita in the Northern and Western regions by 0.004% and 0.002%, respectively. Bloom et al. (2014) found similar study.

Higher enrollment rates can lead to increased economic growth through several mechanisms. For example, a higher enrollment rate may lead to a more educated workforce, which can lead to increased productivity and innovation and, therefore, economic growth. Additionally, a higher enrollment rate can lead to a reduction in poverty, which can also have positive effects on

Table 3: Estimated model results

Variables	North Africa		West Africa	
Depv.: *logGDPPC*	**Fixed effect**	**Random effect**	**Fixed effect**	**Random effect**
laglogGDPPC	.047 (.031)	.098* (.047)	.277*** (.033)	.676*** (.037)
LE	.043*** (.006)	.039*** (.007)	.009 (.005)	-.001 (.003)
SSE	.004** (.001)	.007*** (.001)	.002** (.001)	.003*** (.001)
LF	.010 (.006)	-.002 (.006)	-.011*** (.004)	-.005*** (.002)
logHE	.141*** (.023)	.114*** (.017)	.057** (.028)	.091*** (.011)
FDI	-5.59e-12 (4.91e-12)	2.48e-12 (6.29e-12)	-1.75e-11 (6.71e-12)	2.03e-12 (9.20e-12)
logTOP	-.064** (.023)	-.040*** (.014)	-.050 (.035)	-.063 (.039)
_cons	.643 (.686)	1.455 (.969)	4.002*** (.619)	.695 (.362)

Source: Author's computation, 2023, using STATA.

economic growth. However, it's important to note that the relationship between school enrollment and economic growth is complex, and there may be other factors that influence both variables. Additionally, while higher enrollment rates are generally seen as a positive, it's also important to consider the quality of education being provided and the equity of educational opportunities, as these factors can also impact economic growth.

A negative and significant impact of the labour force (LF) on economic growth in West Africa is found. A percentage increase in labour force participation rate reduced GDPPC in west Africa by 0.011%. This suggests that the labor force plays a crucial role in driving economic growth, and a decrease in the size or productivity of the labor force can have a detrimental effect on the region's economy. This could be due to factors such as a decline in the working-age population, low levels of education and skills training, limited access to job opportunities, and poor working conditions.

Changes in GDPPC were positively and significantly impacted by health expenditure (HE). Countries in Northern and Western Africa experienced growth increases of 0.141% and 0.057%, respectively, for every percentage point increase in HE. Additionally, it supports the findings of Piabuo and Tieguhong (2017) for central African nations and Aboubacar and Xu (2017) for sub-Saharan Africa. HE may increase aggregate demand, create jobs for construction workers for hospital facilities, equipment suppliers, computer programmers for automations, and others, thereby directly contributing to economic growth while also improving health and increasing labour productivity.

Trade openness (TOP) has significantly and negatively impacted the expansion of the economy in North Africa. The findings suggested that the region's governments would face slower growth the more they engaged in global trade. A percentage rise in trade specifically reduced growth by 0.047%. This contradicts Keho's (2017) findings for Cote d'Ivoire. This suggests that the liberalisation of trade or the removal of trade barriers such as tariffs and quotas may not necessarily lead to positive economic outcomes for the region. Increased trade openness can lead to increased competition from imports, which can hurt domestic industries and lead to job losses.

5. Summary and conclusion

The study assessed the comparative economic impact of poor health conditions in the Northern and Western African regions. Data on GDPPC, LE, LF, SSE, HE, FDI, and TOP for 15 West

African countries and 6 North African countries from 2000 to 2021 were obtained from the World Bank, UNESCO Institute for Statistics (UIS), WHO, and ILO. The results of the fixed effects analysis revealed that the health outcome (life expectancy) impacted significantly and positively on the economic growth of Northern African countries. On the other hand, life expectancy had no significant impact on the economic growth of West African countries. This difference is attributed to different factors, such as health systems. The quality and accessibility of health systems can also impact the relationship between life expectancy and economic growth. In Northern African countries, there may be stronger and better-developed health systems that contribute to higher life expectancy and, in turn, to greater economic growth. Economic and institutional factors: The quality of institutions and the overall economic environment can also play a role. In West African countries, there are less favourable economic and institutional conditions that limit the impact of life expectancy on economic growth. Cultural and social factors: Cultural and social attitudes towards health and economic development can also play a role in the relationship between life expectancy and economic growth. SSE and HE had positive and significant effects on the growth of the economies of both regions. LF had a significant negative effect on the economies of West African countries. On the other hand, TOP had a significant negative effect on the economies of North African countries.

Based on the results of the fixed effects study, it can be concluded that life expectancy has a positive and significant impact on economic growth in Northern African countries but no significant impact on economic growth in West African countries. This conclusion suggests that the relationship between life expectancy and economic growth may differ between regions and that it is important to consider the specific contextual factors in each region when examining this relationship. It also highlights the importance of considering the role of health in economic development and the need for policies and interventions that address health outcomes in order to promote economic growth. In order to achieve significant economic growth in all regions of Africa, the study recommends prioritising improved public health through efficient national health policies such as widespread adoption of the National Health Insurance Scheme, increased government healthcare spending, an improvement in beneficial international trade that should include strengthening the concerned agencies, a more favourable investment environment, and improved "ease of doing business.

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