The Impact of Health Expenditure and Economic Growth on Human Development in Algeria: An Empirical Study (2003-2020)

أثر الإنفاق الصحي والنمو الاقتصادي على التنمية البشرية في الجزائر: دراسة ميدانية (2003-2020)

Dr. Yousfi Imane

1-Setif 1 University, Algeria, iyousfi@univ-setif.dz

Received on: 10/02/2022 Accepted on: 04/05/2023

Abstract:

This study examines the effect of government health expenditure, private health expenditure and economic growth on human development index (HDI) in Algeria by using the Ordinary Least Squares Method (OLS) over the period 2003-2020. The Eviews and (SPSS) softwares are used to manipulate and analyze the data. The findings of this study reveal that first, public health expenditures have an insignificant impact on human development which can be confirmed by the low budgets spent by the Algerian government on health during the study period. Second, private health expenditure tends to have a positive and significant impact on human development and finally, the findings indicate that economic growth has a positive and significant impact on the human development in Algeria.

Key words: Human Development-Health Expenditures-Economic Growth-Algeria-OLS.

الملخص:

هدفت هذه الدراسة إلى تحديد أثر كل من الإنفاق العام والإنفاق الخاص والنمو الاقتصادي على التنمية البشرية في الجزائر خلال الفترة الممتدة من 2003 إلى 2020، ولتحقيق ذلك تم استخدام طريقة المربعات الصغرى وتم تحليل النتائج باستخدام كل من Eviews و SPSS. أظهرت نتائج الدراسة عدم وجود أي علاقة معنوية إحصائيا بين معدل التنمية البشرية ومعدلات الإنفاق العام ولعل ما يؤكد هذه العلاقة المبالغ المتواضعة التي تم رصدها لتنمية قطاع الصحة خلال فترة الدراسة، من جهة أخرى تبين وجود علاقة موجبة ومعنوية بين كل من النمو الاقتصادي ومعدلات الإنفاق الصحي الخاص على معدلات التنمية البشرية في الجزائر .

الكلمات المفتاحية: التنمية البشرية؛ الإنفاق الصحي؛ النمو الاقتصادي؛ الجزائر؛ طريقة المربعات الصغرى.

Introduction:

The past decades have seen substantial progress in many aspects of human development. Most people today are healthier, live longer, are more educated since, they have more access to goods and services. Even in countries facing adverse economic conditions, people's health and education have greatly improved. And there has been progress not only in improving health and education and raising income, but also in expanding people's power to select leaders, influence public decisions and share knowledge.

Human development approach, at the first time, has stated by Amartya Sen and MahbubulHaq in the 80 decade, it is telling that, the human development is the process of expanding the real freedoms that people enjoy it (Gustav , 2004).

In recent decades, human development is used as one of the most important indices to measure the level of countries development. Furthermore, in economic planning, human development is the main concern of the developed and developing countries as well. Yet much more remains to be done in expanding choices and improving well-being for all people in all countries and communities, and for generations yet to come.

The human development approach is as relevant as ever to making sense of our changing world and finding ways to improve people's well-being. Human development is an evolving idea, not a fixed, static set of precepts. And as the world changes, analytical tools and concepts will also continue to evolve. Yet the core insight at the center of the human development approach remains constant and as valid today as it was two decades ago: Development is ultimately best measured by its impact on individual lives.

One way to enhance the human development is to improve health conditions by allocating more capital and expenditures to this field, since improvement in health results in human capital increase. This increase will happen through capital health accumulation, and health improvement through longevity and increased labor productivity. In studies of health and human development in different standards, different criteria for health are considered. These criteria can be cited, including government health expenditure.

As the Algerian economy continues to register a poor performance with real GDP growth at -5.5 % in 2020 (from 0.8% in 2019), but this decrease could be caused by the real decline in the country's potential, particularly in natural resources like hydrocarbons prices, as well as the impact of the Covid 19 pandemic crisis. This may prevent the government from allocating more recourses and expenditures to enhance the human development through improving health, education and other life conditions. Health expenditure is too much low in many developing countries and it is of uppermost importance to increase the means available for health assistance affordable for all the population of those countries. Based on these facts, this paper tries to examine the effect of government and private health expenditures on human development in Algeria.

1.2 Problem Statement

This paper comes to examine the effect of health expenditures on human development in Algeria. On this basis, the main study question is: "do health expenditure and economic growth have an impact on human development in Algeria?" The researcher renders econometrically-determined answers to the following sub questions derived from the basic problem:

1. Does the government health expenditure have an impact on human development in Algeria?

2. Does the private health expenditure have an impact on human development in Algeria?

3. Does the economic growth have an impact on human development in Algeria?

1.3 Study Objectives

In this study the following objectives are addressed and highlighted:

1. To deal with the effects of government health expenditures on human development in Algeria.

2. To determine the impact of private health expenditures on the human development.

3. To detect the impact of economic growth on the human development.

1.4 Study Importance

The importance of this study stems from the following:

1. The importance of the subject itself, since, recently, there has been an increasing discussion in policymaking, academic papers and circles of the relevant roles of human development;

2. Even though the relationship between human development and health expenditures has long period of research and voluminous literature contributions can be found, this area is still far from definite answers. There are many reasons for such case. One of the most important reasons is in lack of appropriate datasets.

The rest of this paper is organized as follows: section two discusses the related literatures to the studies. Then, a brief review on the experimental and theoretical studies is done for analyzing the relationship between health expenditures and human development in the next section. After that the study model and data used in this study are discussed in section three. Section four presents the results and

discussions and finally, the last section concludes the research by providing the main findings and recommendations.

1.5 Previous Empirical Studies

Many models have been developed to examine the link between government expenditures and public goods and the social development outcomes of this spending. This area of research has been especially important as developing countries work towards achieving the Millennium Development Goals. Although a wide array of development indicators have been used in this literature, the empirical evidence on the relationship between public spending and development outcomes has largely confirmed the hypothesis that a greater allocation of public funds towards education and health does not have a significant impact on indicators such as educational attainment and infant mortality.

The role of human capital in fostering economic development is well recognized in the literature. Thus, the justification for higher government expenditure on human capital development is often based on its impact on individuals' lifetime incomes (i.e., the social rate of return) (see, for example, (Anyanwu, 1998)); (b) economic growth; (MANKIW , ROMER, & WEIL , 1992)) and (Barro, 2013).

(Admen & Slimani, 2021) in their study "The Impact of Health Expenditure on Economic Growth in Algeria", they aim to investigate the impact of health expenditure on the economic growth in Algeria during the period 1960-2016. Using data from the World Bank database, the Autoregressive Vector model and Granger causality are used, the study findings show that health expenditure positively affects economic growth in the short term; which means that the study hypothesis is proved. The results therefore reveal the increasing importance of investment in the health sector in order to improve economic growth indicator in Algeria.

(Prasetyo & Pudjono, 2013) in this study of "Measuring Government Expenditure Efficiencies Towards Peace and Human Development" the researchers investigate the efficiency level of government expenditure in 82 countries towards the human development and peace index of the respective countries by using Data Envelopment Analysis (DEA) approach during 2007-2011. They found that only few countries that always being positioned in the efficient frontier during the sample period, namely: Japan, Nigeria, and Norway. By using Malmquist index approach, they also found that Cyprus has the largest government expenditure efficiency improvement.

(Freire & Kajiura, 2011), in an article entitled "Impact of Health Expenditure on Achieving the Health" they examine the role of health care expenditure in achieving the millennium development goals, they concluded that market failure in providing health, social and personal savings, which is referred to capital, provided government involvement in this important field. The UN Millennium Development also has a strong emphasis on development of health indicators. This has caused the supply of health and education needs to be put on the shoulders of government. In this research, positive and significant effect of government spending on health variables confirmed and the most important variable is the per capita income and that three-quarters of the development goals with the private sector and public health expenditure can be explained. Therefore, proposed that developing countries to achieve the Millennium Development Goals should be increase consistent with their health expenditure per capita income and the proportion of the population

(Opreana & Mihaiu, 2011) in a study entitled "Analysis of the relationship between health systems and human development levels in Europe" have shown that there is a correlation between health expenditure and human development. They have mentioned that life expectancy and longevity are as one component of the

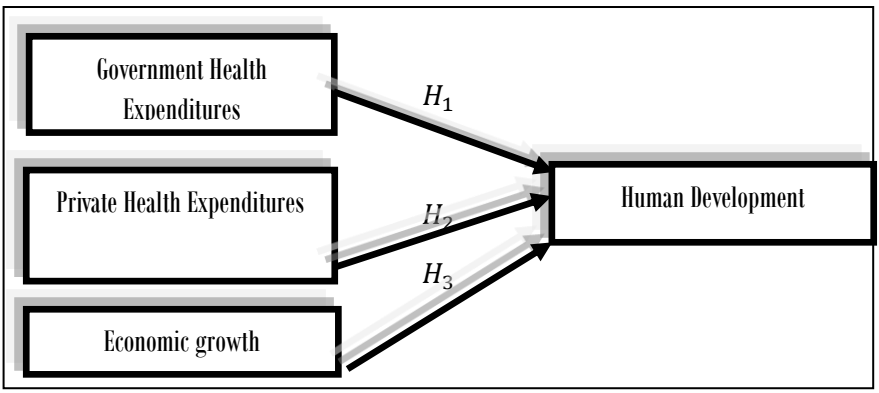
human development index, so there is strong correlation between health and attempts to make the health and human development. Also, Health expenditure in public and private sectors were count in and concluded that in countries where private sector funding to further, efficiency of public health expenditure is larger. The findings of this study show that: The cost for the health will increase human development and human development itself will increase health promotion too. So, there is bilateral relationship between health expenditure and human development.

From the above literatures it's obvious that the studies that have been done regarding economic growth and development, human capital in the most cases is considered as education and, less attention has been paid to the health. But in recent studies, health is not only considered as a component of human capital, but also, simultaneously and independently health has entered into the field of the growth models and its effects. Therefore, this study tries to investigate the effect of health expenditures on human development as well as it intends to look into the impact of economic growth on human development in Algeria, so the researcher in this paper makes a novel attempt to investigate this subject empirically in a developing country.

1.6 Study Model

To reach the main objectives of this study the following model in figure (1) is developed and the relations between the dependent and the independent variables are empirically tested and examined in the next section.

Figure 01: Study Model



1.7Research Hypotheses

Based on the theoretical framework and previous studies, aiming for achieving the study objectives, the following alternative hypotheses are developed and empirically tested:

The main hypothesis:

$\boldsymbol{H_1}$**:** There is a positive effect of Health Expenditure on human development. In order to test this hypothesis it is divided to the following sub-hypotheses:

$\boldsymbol{H_{1-1}}$: There is a positive effect of government expenditure on human development.

$\boldsymbol{H_{1-2}}$: There is a positive effect of private expenditure on human development.

$\boldsymbol{H_{1-3}}$: There is a positive effect of economic growth on human development.

3-Theoretical Frame Work

In this section, the researcher gives an overview of the human development, economic growth and the health expenditures in Algeria.

3-1 Human Development

Human development index (HDI) is an alternative measure other than the purely economic indicators that seen people as the real wealth of a nation. UNDP (1990) defined human development as the process of widening people's choices and

the level of their achieved wellbeing. The development of HDI was inspired of the capabilities approach proposed by Amartya Sen that focus on what people are able to do and be so that they have more freedom to live the kind of life which they find valuable (Nussbaum & Sen, 1993). In fact, we can say that human development has two aspects: One aspect is related to human capabilities, such as improved health, knowledge and skills and other aspects of their capabilities to the opportunities and benefits purposes, such as being active in political, social and cultural issues (Ranis, 2004).

Human Development Index (HDI) is a composite index based on three indicators: Longevity, as measured by life expectancy at birth; educational Attainment, as measured by a combination of adult literacy and mean years of schooling; and standard of living, as measured by expenditure per capita (PPP rupiah). The index value is between 0 and 100". Therefore, the HDI is a composite index that was based on three indicators. First, health that is measured by life expectancy, Second, education that is measured from two combinations of factors, namely the literacy rate and the length of the school. Third, the standard of living, which is measured by income per capita. Index value is between 0 and 100 (Fattah & Muji, 2012).

Based on this index, countries are classified with high human development (Human Development Index greater than 0.8), countries with medium human development (in the range of indicators 0.8-0.5) and countries with low development (human development index of less than 0.5) (Razmi, Abbasian, & Mohammadi, 2012).

3.1.1 Algeria's HDI Value and Rank

Algeria's HDI value for 2012 is 0.713 in the high human development category positioning the country at 93 out of 187 countries and territories. Between 1980 and

2012, Algeria's HDI value increased from 0.461 to 0.713, an increase of 55 percent or average annual increase of about 1.4 percent. The rank of Algeria's HDI for 2011 based on data available in 2012 and methods used in 2012 was– 92 out of 187 countries. In the 2011 HDR, Algeria was ranked 96 out of 187 countries. Algeria's HDI value for 2019 is 0.748 which put the country in the high human development category positioning it at 91 out of 189 countries and territories. Between 1990 and 2019, Algeria's HDI value increased from 0.572 to 0.748, an increase of 30.8 percent. Table 1 reviews Algeria's progress in each of the HDI indicators. Between 1990 and 2019, Algeria's life expectancy at birth increased by 9.9 years, mean years of schooling increased by 4.4 years and expected years of schooling increased by 5.0 years. Algeria's GNI per capita increased by about 30.0 percent between 1990 and 2020 (ANDP, 2020, p. 2). Algeria's Human Development Index - HDI worldwide rank is presented in table (1).

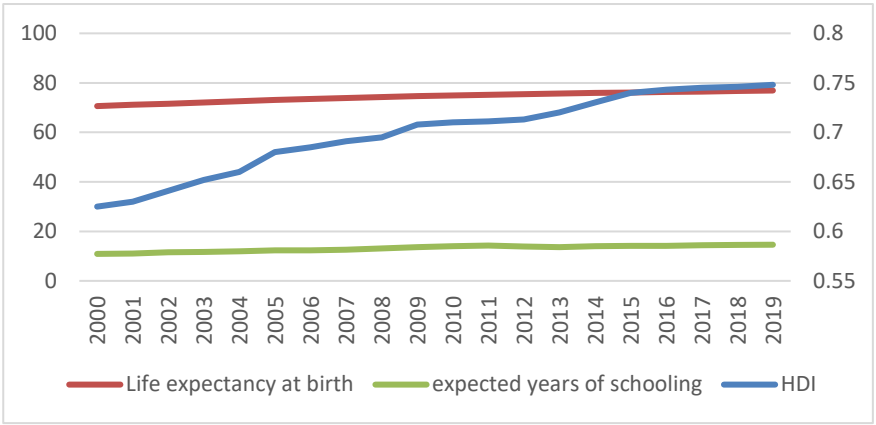
Table 01: Algeria: Human Development Index - HDI rank (worldwide)

Year	HDI rank (worldwide)	Year	HDI rank (worldwide)
2002	108	2013	94
2003	103	2014	91
2004	102	2015	90
2005	104	2016	90
2006	100	2017	91
2007	104	2018	91
2010	84	2019	91
2011	93	2020	89
2012	93		

Reference: (United Nations Development Programme, 2022).

Figure (2) reviews Algeria's progress in each of the HDI indicators. Between 1980 and 2012, Algeria's life expectancy at birth increased by 13.8 years, mean years of schooling increased by 5.8 years and expected years of schooling increased by 5.3 years. Algeria's GNI per capita increased by about 20 percent between 2000 and 2019.

Figure 02: Trends in Algeria's HDI component indices 2000-2019.



Reference prepared by the researcher

Many factors influence the levels and changes in human development, ranging from aspects of the macro economy which in turn are affected by developments in the international economy - to micro factors operating in individual households. Some of these factors are discussed in this paper as follows:

3-2 Health Expenditures

Public expenditures are categorized into productive and unproductive expenditures. This implies that productive expenditures have a direct positive effect on economic growth while unproductive expenditures have an indirect effect or no effect. Again, with productive (and development) expenditure, there may be some components, such as spending on economic overheads, which involve a very long gestation period. Quantitative analysis may even fail to capture returns on such expenditure in the short run.

Spending on health is generally regarded as productive spending with a comprehensive role in the economy. Returns from this spending are often accounted for in terms of appreciable progress in education and health constraints. Progress in education constraints generates private and social returns, where private returns

include empowerment and higher individual earnings. Over the last three decades, a plethora of empirical studies have established that individual earnings are associated with more schooling.

Social returns, on the other hand, may result in the renovation of society harnessing human resources. Educational attainment promotes awareness, and truly educated citizens help build a peaceful nation. Besides, education helps improve the health awareness of people and enhance social and political participation ((Hill & King, 1991) and (Currie & Moretti)).

Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation (Pelzman, 2018).

3-3 Health Expenditure and Human Development

Health expenditure can improve human development through the following ways: economic growth, reduce mortality rates and improve the learning process. Economic growth is the process of increasing the capacity of economic generation, which in turn will raise production and income level. Health promotion makes human capital increase through capital health accumulation. On the other hand, health promotion improves labor productivity through increased longevity and reduced working days due to illness which will affect the production subsequently the economic growth.

The relationship between health expenditure and sustainable development seems generally in three ways:

- Health as a contributor to the achievement of sustainability goals;
- Health as a potential beneficiary of sustainable development;
- Health as a way of measuring progress across all three pillars of sustainable development policy.

The Algerian government has announced the launching of a five-year public investment plan in 2010 until 2014. This program is the continuation of previous economic plans covering the period from 2004 to 2009 and the general dynamic of national reconstruction through economic growth revival launched in 2001. The total financial commitments represent an amount of 21.214 billions of Algerian Dinars (286 billion, US Dollars).

This five-year public investment plan' stretching from 20 I 0 until 2014 will be focused on both the completion of previous projects for an investment amounting 9.700 billions of AD (130 billion US Dollars) and the launching of new projects for the amount of 11.534 billions of AD (156 billion US dollars).

More than 40 % of these resources are allocated for human development. 1500 health related infrastructures (172 hospitals) and 5000 national education's structures, including high school, universities and other training institutions are part the targets set out by the new five-year plan.

The Five-year public investment plan intends on lowering the percentage of unemployment under 10 % by 2014. For this end, 350 billion AD are assigned to fostering job creation. Overall, the five-year economic plan has set itself to focus on the qualitative aspects of progress and growth. Therefore, its main priority is to support sustainable growth and human (World Bank, 2022).

Moreover, two million housing units are to be built within the timeframe of the plan. One million houses will be connected to the natural gas network and 220.000 rural households will be endowed with electricity. In Addition, 35 dams are to be realized as well as 25 water transfer systems with the objective of increasing the quantity of and the accessibility to available drinking water.

Accordingly, this paper aims at exploring the impact of public and private expenditures on human development as well as it intends to investigate the impact of economic growth on the human development in Algeria.

3-3 Economic Growth and Human Development

Economic growth is essential for human, which finds its theoretical underpinnings in Sen's capabilities approach that holds "a person's capability to have various functioning vectors and to enjoy the corresponding well-being achievements" to be the best indicator of welfare (Amartya, 2000).This perspective shifts the analysis of development to the vector of not only attributes (as is the more traditional utilitarian or even the original basic needs view of human welfare.

Income growth clearly strikes one as the main contributor to directly increasing the capabilities of individuals and consequently the human development of a nation since it encapsulates the economy's command over resources (Amartya, A Decade of Human Development, 2000).

At a macro level, the distribution of the increased income from economic growth will also have a strong impact on human development. Since poorer households spend a higher proportion of their income on goods which directly promote better health and education, economic growth whose benefits are directed more towards the poor will have a greater impact on human development, via increased food expenditure as well as on education (Raniss, Stewart, & Ramirez, 2000).

3-4 Economic Growth in Algeria

From 2001 until 2012, Algeria GDP Growth Rate averaged 3.8 Percent reaching an all-time high of 6.7 Percent in December of 2003 and a record low of 2.0 Percent in December of 2006. Algerian economy is highly dependent on petroleum and natural gas exports. The medium-term growth is favorable, at 3.9% in 2011 and 3.6% in 2012 (see figure 3). Thanks to the exploitation of its natural resources, hydrocarbons in particular, Algeria has registered tangible progress over the last 20 years, notably in respect to the modernization of its economic and social infrastructure, poverty reduction, lower unemployment and improved human development.

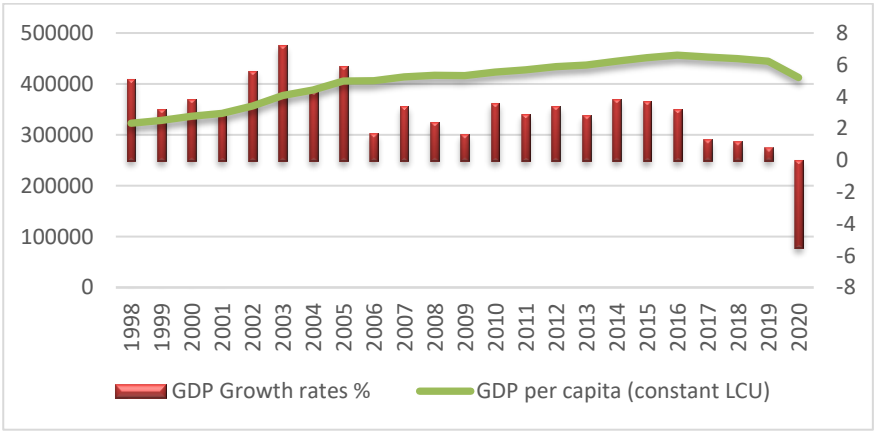
In 2019, Algeria's economic growth rate slowed for the fifth consecutive year amid prolonged social mobilization and political transition, denting consumer and business confidence and spending. At the sector level, the structural deterioration in the hydrocarbon industry continued, with a decline of 4.9% in the industry, while the non-hydrocarbon sector grew by a modest 2.4% in real terms.

In 2020, the Algerian economy is expected to show a significant contraction in real GDP in 2020 due to the dual shock of containment measures and the decline in hydrocarbon export revenues due to the COVID-19 pandemic. In this context, the authorities have taken several measures to provide immediate relief to families and businesses and announced far-reaching structural reforms to shift to a model of economic development led by the private sector, while maintaining support for the weakest and most vulnerable segments of the population. 1079/5000 Translation results in 2019, Algiers' economic growth rate is the fifth in a row in terms of social and political transformation, which weakened consumer confidence at a depth level, the structural deterioration in the hydrocarbons industry continued, with a decline of 4.9% in the industry, while the public sector grew by a modest 2.4% in real

terms. In 2020, the Algerian economy showed a significant contraction in real GDP in 2020 due to the shock to containment measures and the decline in hydrocarbon export revenues due to the COVID-19 pandemic crisis. This is the economic growth of economic units (World Bank, 2022).

From the following figure, we note that the GDP growth rates are constantly declining, as they recorded a rate of 0.8 and -5.48 in 2019 and 2020 respectively, this is due to the epidemic's economic crisis which also comes after five consecutive years of underdevelopment in GDP growth (2015-2019) in Algeria, driven by a shrinking hydrocarbon sector, a public-sector-led growth model and mazes, and a private sector struggling to become the new engine of economic growth. The hydrocarbon industry, which interpreted 20% of GDP, 41% of tax revenues and 94% of export revenues in 2019, is experiencing a structural decline.

Figure 03 GDP - growth rates (%) form 1998-2020



Reference prepared by the researcher based on the World Bank data.

1.1Operational Definitions of Study Variables

Human Development may be defined as "a process of enlarging people's choices." At all levels of development, the three essential choices for people are, to live a long and healthy life, to acquire better knowledge and to have access to

resources needed for a decent standard of living. If these essential choices are not available, many other opportunities to improve the quality of life will remain inaccessible. The human development index is used in this study as a proxy for the human development in Algeria.

Public or Government Health Expenditure: is the recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. In this paper total public Health Expenditure to GDP ratios are used as estimators for public Health Expenditure**.**

Private Health Expenditure: is the sum of expenditures on health by prepaid plans and risk-pooling arrangements, firms' expenditure on health, non-profit institutions serving mainly households, and household out-of-pocket spending. In this paper total private Health Expenditure to GDP ratios are used as estimators for private Health Expenditure**.**

Economic Growth: is the growth at the level of national income. There are various measures of national income, but the one used is the Gross Domestic Product (GDP). We measure growth as the percentage change in GDP. However, it is very important that we only take the percentage change of the real GDP. Economic growth tends to follow a cyclical pattern. There is may be boom periods when economic growth is faster, but these may well be followed later by periods when the economy slows soon down. This pattern is known as the trade cycle. So, in the current paper the growth rate of the domestic product is considered as an estimator for the economic growth.

4. Methodology and Data

This study is a descriptive analysis survey of time series relationship between government health expenditure, private health expenditure, economic growth and human development over the period 2003-2020 in Algeria._ The data used in the empirical analysis were sourced from the World Bank. This paper follows the below design process model:

$$HDI = C + \alpha\ PBE + ß\ PRE + \eta\ EG$$

So that, C is a constant, PBE represents public health expenditure, PRE is private health expenditure, EG is growth rate of GDP, and HDI is the growth rate of human development index.

4.1Unit Root Test

The unit root test examines the stationarity of the data, the data series are stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or lags between the two time periods

(Gujarati N. D., 2004).To single time series the early work that used the unit root is backed to (Dickey and Fuller, 1979). Consider the following model:

$$Y_t = \rho Y_{t-1} + u_t, \qquad -1 \le \rho \le 1$$

Where, u_t is a white noise error term.

It is known that if $\rho = 1$, that is, in the case of the unit root, (equation 10) becomes a random walk model without drift, which is known a nonstationary stochastic process (Gujarati N. D., 2004).

To test the stationarity of the data the *eviews software* can be used by simply choosing a unit root test, if the ADF is employed the results gives two values: computed ADF and critical or tabulated ADF values. If the computed ADF values exceed the critical or tabulated values, then the null hypothesis that the variable

has a unit root (nonstationary) must be accepted. However, if the computed ADF values are less than the critical or tabulated values, then the null hypothesis must be rejected, and the variable will be stationa.

4.2Autocorrelation

The term *Autocorrelation* may be defined as "correlation between members of series of observations ordered in time or space. The Durbin-Watson statistic is a test for first-order serial correlation. It measures the linear association between adjacent residuals from a regression model. If there is no serial correlation, the DW statistic will be around 2. The DW statistic will fall below 2 if there is positive serial correlation (in the worst case, it will be near zero). If there is negative correlation, the statistic will lie somewhere between 2 and 4.

4.3 Multicollinearity Test

Multicollinearity originally it meant the existence of a "perfect," or exact, linear relationship among some or all explanatory variables of a regression model. Tolerance (TOL) and variance inflation factor (VIF): the larger the value of VIF, the more "troublesome" or collinear the variable Xj. As a rule of thumb, if the VIF of a variable exceeds 10, or the tolerance less than 0.1, which will happen if, R^2 exceeds 0.90, that variable is said to be highly collinear.

4.4 Model Estimation Results

The results and the discussion are provided as follows:

4.4.1 Unit Root Results

From table (2) it is evident that all the time series are compatible with the hypothesis that stationarity characterizes the variables at the level in this study. Since, the ADF absolute computed values are greater than the absolute critical values, at the level for all variables, where all the statistics are significant at 5% significance level as it shown in the table below.

Table (2): Unit Root Test Results

Variables	Lag	Calculated ADF	Critical value of ADF
Human Development	1	-4.123216	-2.666593
Economic Growth	1	-3.006848	-2.666593
Public Health Expenditure	1	-2.666593	-1.658978
Private Health Expenditure	1	-2.665511	-1.666593

4.2.2. Autocorrelation Results

Figure (4) clarifies the decision toward the Autocorrelation based on the Durbin Watson test, and shows that DW statistics is equal to 2.18. Which indicates the absence of Autocorrelation in the study model (DW statistics are located in the zone of no autocorrelation). This result indicates that the researcher can apply the Ordinary least square method to investigate the impact of the independent variables on the dependent one but after testing the collinearity between the independent variables.

Figure (4): Durbin- Watson Test for the Estimated Model

Evidence of positive Autocorrelation	Indecision	No Autocorrelation 2.18	Indecision	Evidence of positive Autocorrelation

0 $D_l = 1.40$ $D_u = 1.69$ 2 4- D_u =2.30 4- D_l=2.60 4

4.2.3 Multicollinearity Test

Table (3) reveals that all the variables have VIF less than 10 and a TOL more than 0.1, which indicates that there is no multicollinearity problem and the independent variables are not highly correlated.

Table (3): The Multicollinearity Test Results

Variables	TOL	VIF
GDP	0.903	1.108
PUB	0.846	1.182
PRV	0.842	1.187

4.3 Results and Discussion

As it shown in table (4) the explanatory power of all the equations of the OLS model as reflected in their R^2 and F statistic is fairly well. R^2 is equal to 0.70, which means that the used independent variables explain about 0.70 of the changes in the dependent variable in other words this model takes the most important variables that may affect the human development index.

According to the described equation above, this model is estimated by using ordinary least squares method. As it mentioned in table (4), most estimated coefficients are statistically significant at 5% level so that all relevant control variables are statistically significant (accordingly, H_{1-2} and H_{1-3} are accepted) and this result is consistent with finding of the ((Barro, 2013), (Freire & Kajiura, 2011) and (Admen & Slimani, 2021) except the public expenditure variable which is insignificant at 5% level, which means that H_{1-1} is rejected this finding is inconsistent with the earlier works of (Prasetyo & Pudjono, 2013).

Therefore, the empirical results show that public health expenditures have a positive but insignificant impact on human development, this finding for the insignificant impact of health expenditures on human development can be confirmed by the low budgets spent by the Algerian government on health. But in the last five years investment plan Algeria launched an important allocation of financial resources to the health sector this may in turn increase the human development in the long run, as increasing health expenditure is reducing mortality and increasing life expectancy, so by these channels it can be said that government health expenditure is effective on human development. Indeed, healthy people may have longer life and also can work better with higher production rate and more educational opportunities is granted for him since he is a rather educations cost to

treat costs. All these have effects on the components of the human development index and causes promotion to the index.

However, private health expenditure tends to have a positive and significant impact on human development. In other words, by increasing percentage of private expenditure on health, human development increases at the level of 4.487016 percent. Moreover, the findings indicate that economic growth has a positive and significant impact on the human development in Algeria as an increase in economic growth generates an increase in the human development index by 0.006348.

Table (4): Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	182.5062	286.8147	0.636321	0.5356
Private Expenditure	4.487016	1.860634	2.411553	0.0292**
Public Expenditure	0.277070	0.576519	0.480591	0.6377
Economic Growth	0.006348	0.001980	3.205542	0.0059**
F-statistic	7.703502			
R-squared	0.703291			
Durbin-Watson stat	2.18			

"**" and "*" indicate that the coefficients are significant at 5%, and 10% respectively.

5. Conclusion

Health is both a resource for, as well as an outcome of, human development. The goals of human development cannot be achieved when there is a high prevalence of debilitating illness and poverty. Accordingly, the aim of this paper has been to examine the effect of government, private health expenditure and economic growth on human development index (HDI) in Algeria using the ordinary least square method.

As, the majority of the literatures on public spending and human development find a small if not insignificant relationship between expenditures and human development measures. This study finds that public health expenditures have an insignificant impact on human development; this finding can be confirmed by the low budgets spent by the Algerian government on health. But in the last five years

investment plan Algeria launched an important allocation of financial resources to the health sector this may in turn increase the human development in the long run, as increasing health expenditure is reducing mortality and increasing life expectancy, so by these channels it can be said that government health expenditure is effective on human development. Indeed, healthy people may have longer life and also can work better with higher production rate and more educational opportunities is granted for him since he is a rather educations cost to treat costs. All these have effects on the components of the human development index and causes promotion to the index.

However, the study reveals that private health expenditure tends to have a positive and significant impact on human development. In other words,

Moreover, the findings indicate that economic growth has a positive and significant impact on the human development in Algeria.

Based on the findings of this paper the researcher recommends the following:

1. More public health expenditures must be allocated to the health sector in order to increase the human development and to enhance the wellbeing in Algeria.
2. Governors would have to implement efficient measures where the increases of public health expenditures must be accompanied with efficient implementation, and continuous control and supervision.
3. Algeria must encourage the private health sector as this later affects Algerians' human development positively.

References:

1. Amartya, S. (2000). A Decade of Human Development. Journal of Human Development, 1(1).
2. Barro, R. J. (2013). Health and Economic Growth. ANNALS OF ECONOMICS AND FINANCE, 14(1), 329–366.
3. Freire, C., & Kajiura, N. (2011). Impact of Health Expenditure on Achieving the Health-Related MDGs. MPDD Working Papers. Retrieved 02 06, 2022, from www.unescap. org/pdd/publications/workingpaper/wp_11_19.pd
4. MANKIW , G. N., ROMER, D., & WEIL , D. N. (1992). A Contribution to the Empirics of Economic Growth. Quarterly Journal of Economics, 107, 407– 37.
5. Pelzman, D. (2018). Economics Of The Middle East And North Africa (Mena) (2 ed.). (W. Publisher, Ed.)
6. Admen, M., & Slimani, S. (2021). The Impact of Health Expenditure on Economic Growth in Algeria. International Journal of Economics and Finance, 13(02), 25-34.
7. ANDP. (2020). Human Development Report 2020, The Next Frontier:Human Development and the Anthropocene. Retrieved 11 18, 2021, from http://hdr.undp.org/ sites/default/files/Country-Profiles/DZA.pdf
8. Anyanwu, J. C. (1998). Empirical Evidence on The Relationship Between Human Capital and The Income of Nigerian Women. Journal of Economic Management, 3(1), 45-67.
9. Currie, J., & Moretti, E. (n.d.). Mother's education and the intergenerational transmission of human capital: evidence from college openings. Quarterly Journal of Economics, 118(04), 1495-1532.
10. Fattah, s., & Muji, A. (2012). Local Government Expenditure Allocation toward Human Development Index at Jeneponto Regency, South Sulawesi, Indonesia. Journal of Humanities and Social Science, 5(6), 40-50.
11. Gujarati, N. D. (2004). Basic Econometrics (4 ed.). McGraw-Hill Companies.
12. Hill, M. A., & King, E. M. (1991). Women's education in developing countries: an overview. In Women's Education in Developing Countries: Barriers, Benefits and Policy. Washington: World Bank.
13. Nussbaum, M., & Sen, A. (1993). The Quality of Life. Oxford: Clarendon Press.

14. Opreana, A., & Mihaiu, D. (2011). Correlation Analysis between the Health System and Human Development Level within the European Union. International Journal of Trade, Economics and Finance, 2(2), 99-102.
15. Prasetyo, A. D., & Pudjono, A. S. (2013). Measuring Government Expenditure Efficiencies Towards Peace and Human Development. In proceeding of: International Conference on Information and Social Science (ISS). Nagoya, Japan.
16. Ranis, G. (2004). Human Development and Economic Growth",. Yale University: economic growth center, Center Discussion Paper No. 887.
17. Raniss, G., Stewart, F., & Ramirez, A. (2000). Economic Growth and Human Development. World Development, 28(2), 197-219.
18. Razmi, M. J., Abbasian, A., & Mohammadi, S. (2012). Investigating the Effect of GovernmentHealth Expenditure on HDI in Iran. Journal of Knowledge Management, Economics and Information Technology, 5.
19. United Nations Development Programme. (2022). Human Development Reports. Retrieved 02 07, 2022, from https://hdr.undp.org
20. World Bank. (2022). Retrieved 02 10, 2022, from https://data.worldbank.org/country/DZ