The Impact of Government Health Expenditure on Economic Growth in Jordan – An Econometric Study

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Abstract

This study investigates the impact of government health expenditure on economic growth in Jordan using econometric methods and annual data covering the period 2000–2023. Recognizing that health is a fundamental component of human capital, the study highlights how public spending on the health sector influences both productivity and sustainable development. Health expenditure, once viewed as unproductive, has become a strategic investment that enhances individual well-being, reduces poverty, and strengthens economic performance. The research applies time-series analysis through the EViews 12 package to estimate the statistical relationship between government health expenditure and GDP growth. The findings reveal a strong positive correlation, where a 1% increase in health expenditure is associated with a 2.02% rise in GDP, supported by an R^2 of 86.6%, indicating that most of the variation in economic growth is explained by health spending. The Granger causality test, however, shows that the direction of causality runs from GDP to health expenditure, not vice versa, underscoring the bidirectional dynamics but highlighting that economic growth primarily drives spending capacity in the health sector. The study concludes that efficient allocation of resources to health is essential for fostering long-term growth and improving living standards. It recommends expansionary health investment policies, equitable distribution of healthcare services, and the development of infrastructure that directly benefits society. These measures would strengthen the role of health spending as a catalyst for economic growth and sustainable development in Jordan.

Keywords: *Government Health Expenditure; Economic Growth; Jordan; Human Capital; Public Policy; Econometric Analysis; Sustainable Development*

Introduction

Governments are constantly intervening to address public expenditure issues, aligning with the capabilities of states to distribute funds in a manner that can meet the needs of various sectors. Therefore, the study and analysis of the general structure of public expenditure is of great importance nowadays, especially if we consider that public expenditure is not just a part of the national income that is consumed, but rather as an effective tool that the state possesses in an attempt to bring about economic, social and political effects. Countries with different economic orientations seek to achieve a goal Basically, it represents the ability of the state to survive effectively, which is to drive economic growth, which in turn reflects the level of economic well-being of individuals, especially if the growth rate in the gross national product is greater than the rate of increase in the population, as it will have a clear impact on increasing the average income of individuals and its positive consequences that lead to the elimination of the manifestations of poverty and economic underdevelopment. This can only be achieved by regulating spending and investment in various economic sectors [1,2].

One of these sectors is the health sector, which was seen as an unproductive sector. Still, at present, spending on the health sector and health care has occupied a distinct position, especially if we consider that public expenditure on the health sector is

considered a basic engine to improve the health and living standards of individuals and its repercussions on achieving social and economic development. The interest of countries in the field of government expenditure on the health sector has become one of the priorities for those in charge of it, with the aim of obtaining an appropriate level of spending on this sector. Health is one of the basic requirements and a right of individuals in different societies today, and the economic and social aspects of health care are not so simple that their importance can be ignored, because economic growth is not an end in itself but is considered a means of increasing well-being, including improving the level of health care. [3] Considering that the enjoyment of individuals in any country in the world is one of the main goals of economic and social progress, which works to achieve the well-being of peoples and societies, in addition to being a fundamental right of individuals in all countries, and this is in accordance with international laws and conventions, many countries pay great attention to this sector to achieve highly efficient health care that can have repercussions on the health of society in the long term.

Due to the increasing demand for health services in all countries of the world, especially in light of the emergency conditions that humanity is exposed to, such as pandemics and natural disasters, or even those that are man-made, such as conflicts between countries, there has led to an increase in spending rates on the health sector. Jordan is one of the countries characterized by a high volume of spending within the same segment of the countries to which it belongs, as the budget of the Ministry of Health in 2023 amounted to an average of 711 million dinars, an increase from 79 million dinars in 2022, and Jordan spends about 8% to 9% of the GDP on the health sector annually, and this percentage almost reaches the levels of some developed countries, and this is due to the awareness of those in charge of this matter of the importance of directing spending towards this sector It is of great importance in the short and long term on production and productivity rates. Therefore, it has become clear that the importance of directing government spending towards precise goals, such as the health sector, as it represents a great necessity to know the extent of its contribution to the GDP and thus economic growth and sustainable development.

The importance of the study comes through clarifying the theoretical and practical aspects of the subject of the study and the impact of spending in this sector on economic growth in Jordan, and the study adopted annual data to interpret the relationship between the study variables for the period 2000-2021 in an effort to reach results that may contribute to clarifying a specific picture needed by those interested and researchers in this field [4]. Referring to the objectives of the study, one of the most important goals that the study seeks to achieve lies in identifying the extent of the impact of government spending on the health sector on growth Economics in Jordan, with a focus on the nature of health spending, in addition to analyzing the causal relationship between spending on the health sector and economic growth, and analyzing the results that will be reached, to try to assist decision makers in identifying appropriate policies that may lead to improved expenditures on the health sector.

Literature Review

Certainly, public spending is considered one of the important fiscal policies that John Keynes talked about in many of his studies, through which it was possible to achieve many goals, and the focus was clear according to the modern theory of economic growth on the importance of public spending in all its forms such as spending on social infrastructure, technological progress, human capital and the external sector [5,6,7,8,9]. As the human element is an important element in all the policies of States, the focus has become clear in these States on giving more attention to the affairs and conditions of individuals, especially their health. Due to the high pace of expenditure on the health sector compared to the gross national product, it has been found that it is necessary to develop foundations and policies that distinguish the state of expenditure on the health sector from the rest of the sectors [10,11,12]. Many researchers have tried to highlight them as determinants of the size of spending on the health sector.

One of these studies that dealt with the subject of spending on the health sector is a study [13], where the researcher pointed out that spending on the health sector is part of public spending and its importance in supporting economic development and economic growth, and that the relationship between spending on the health sector and public expenditure is strong, especially that the individual enjoys good health, and the goal of the study was to identify the reciprocal relationship between health expenditure and economic growth in Libya for the period 2000. 2019. The study showed that the volume of public expenditure on health was twice as high as that of public expenditure, as well as a weakness in comparison to GDP. The study suggests an increase in expenditures in the health sector, as it established the linkage between economic growth and public spending in the health sector as both reciprocal and equilibrium-balanced. In Africa, the study [14] tracked the association between healthcare spending and economic growth from 48 African nations between 2000 and 2015 and in a database cross-sectional regression framework, and the results indicate the economically negative and significant growth factors in Africa, such as maternal and infant mortality rates, as well as the positive life expectancy at birth, and economic growth correlation. The major takeaways from this study are that public expenditure on health should increase and become much more adequate and effective to make health improvements, take advantage of growth factors, and create a public-private partnership framework to provide low-cost, high-impact services that improve population health.

A study [15] dealt with the relationship between expenditure on the health sector and economic growth in developing countries for the period 1995-2013, and the per capita share of GDP was used as an indicator of economic growth, and the per capita share of health expenditure as an indicator of health care expenditures. In addition, economic growth leads to in turn health care expenditures, and spending on the health sector leads to increased economic growth. A study [16] indicated that increasing the monitoring of the growth of healthcare-related expenditures is a matter of concern for many countries, although the enjoyment of good health by individuals in any society is one of the basics of physical condition that leads to increased productivity rates, but with the increase in

the rate of business and the increase in health difficulties, it requires more health expenditures through governments, as there has been a great variation in the amount of spending on care between countries. The main objective of this paper is to provide long-term growth in the healthcare service, and the researcher considered that this study will have results that may contribute to guiding government policies in the field of healthcare more effectively. In a study [17], the aim was to estimate the best healthcare expenditure in the growing economy of a group of OECD countries for the period 1990-2009 for a range of variables as a percentage of GDP, and empirical evidence indicated that when the ratio of healthcare expenditure to GDP is below the optimal level of 7.55%, an increase in the volume of expenditure on the health sector will lead to better economic performance, and that any level above this Rate More spending won't lead to better health care. It was found that the real level of health expenditure in the OECD countries is 5.48% of GDP with an economic growth rate of 1.87%, and the recent economic contractions played a prominent role in reducing the volume of expenditure on the health sector, which had a prominent impact on specific segments of society, thus enhancing the volume of spending on the health sector, which will inevitably lead to enhancing the growth of human capital and consequently the size of economic growth. In a study [18], the causal relationship between carbon dioxide emissions and healthcare expenditure on the one hand and economic growth on the other hand was tested, and applied to 51 countries divided into three income groups, and the study spanned the period 1995-2013.

Using the Dynamic Simultaneous Equation Model and the Generalized Method of Moments model, the results confirmed that there is a causal relationship between healthcare expenditure and GDP per capita in the three groups, and that the causation of carbon dioxide emissions tends to health expenditure in all countries except low-income countries. The study [19] The results of the study found that there is a positive effect of public expenditure on the health sector on economic growth, and this effect is convergent for the two groups of high-income and low-income countries, while there is an inverse effect of spending on health care services on economic growth, and the explanation for this is due to the efficient exploitation of infrastructure The causal relationship is reciprocal in the short term, but in the short term, it tends to move from health spending to economic growth, not the other way around. While a study [20] tested the causal relationship between GDP per capita and health care spending, in the public and private sectors and at the level of 26 Indian states for the period 1981-2005, and using the Panel Convergence Methodology, the study found that there is a direct relationship between GDP and health spending, with a causal relationship in one aspect of health expenditure to GDP. A study [21] employed the Toda and Yamamoto (1995) causality test to test the causal relationship between GDP per capita and its share of health care expenditure in the Organization for Economic Co-operation and Development (OCED) countries in the period 1990–2009. The study [22] reported The researcher studied the determinants of spending on the health care sector in the United States of America for the period 1960-2012 , and it was noted that the increase in spending on health care is one of the biggest challenges, and that there will be increases

in a larger volume in the years following the study, and this study is considered the first study that used the self-regression method with distributed time gaps to determine the factors most affecting the study proved that the average per capita income and the ratio of their age 65 years and older to the number of the population and the volume of health expenditure on research and development are integrated We calculate the method of limits or scope, and they have a positive and significant impact on the average per capita health expenditure, and the study came out with a result contrary to previous studies, which is that income elasticity is equal to 0.95, which indicates the importance of health care in the United States of America, which is necessary and not luxurious, and that there are additional factors This gives the government a role in intervening in supporting health insurance premiums for certain groups, and the study recommended improving the level of the medical care program and increasing health literacy among the elderly by providing health-related information and facilitating access to preventive health care.

The study [23] aimed to analyze and classify the relationship between economic growth and health and to study the short-term and long-term causation of many Asian countries that have annual data for at least 24 years, using the combined integration test and the Granger test of causality, and the natural logarithm of all variables represented in life expectancy and real growth of GDP was taken. There are two parts to the causal relationship between economic growth and health: the long-term effects and the growth distortions endemic to various countries. One issue noticeable among Asian countries is the one-directional causality of economic growth to health and a neglect of causality in the other direction. One of the most striking in this neglect is the decreased health expenditure and the sector's baffling underperformance. In the study (along with the period from 2012 to 2021), explained the impact and effectiveness of health sector indicators, and physician investment, by health spending ratio and declining effectiveness, and by the investment framework’s underinvestment ratio in the sector. In recommending, the spending objectives have to be unified, and drawn in a segment of health expenditure. The policies, or the instruments of which are gross government expenditure and gross the product quota, are the best candidates. In addition, the economic investment in the health industry should be geared towards also broadening the bank’s gross value quota. The study examined the relationship between public health outcomes and economic growth in Nigeria in the context of Wagner's theory of increased state activity, and found evidence of a long-term relationship between health sector expenditures and economic growth and appeared in the results of the Granger-Causality test The study concluded that although there is no causal relationship between public health expenditures and GDP, public health expenditures and GDP still have evidence of a long-term connection, so the health insurance base should be expanded to cover the needs of the More people and more resources for the health sector, and this could generate the desired impact of health care expenditures on economic growth in Nigeria.

In a study [26] that discussed the impact of health spending on economic growth in middle-income economies in the short and long term, it was noted that health spending

would improve the health of individuals, which in turn would stimulate human capital growth, increase productivity, and boost the economy. The results of the two models of the overall sample revealed that health spending had no impact on economic growth due to the small amount of health spending, and the study divides the main data set into two groups based on average expenditure The study applied the CS-ARDL technique to both models of these subgroups, and the results show that all variables are not explained in both models of the first subgroup, while for the second subgroup, all variables are not explained in both models of the first subgroup, while for the second subgroup, all variables are not explained in both The two models exclude long-term government health spending with economic growth, suggesting that increased government health spending may affect economic growth in the long term, so lower-middle-income countries should prioritize public health spending and develop alternative sources of financing, while supporting growth-oriented policies and cooperation with the private health sector.

Research Methodology and Study Procedures

In this study, the researcher works on using time series methods to estimate the regression coefficients through which the nature of the statistical relationships between the independent and dependent study variables can be determined, where expenditure on health has been identified as a dependent variable in this study, while economic growth has been adopted as an independent variable, and the Eviews-12 data package will be relied on to come up with some numerical indicators about the amount of the effect of the independent variable on the dependent variable according to the following equation.

$$GDP = a + h.x + e$$

Whereas:

Gross domestic product: GDP

Fixed limit: a

Rate of spending on health: h.x

Random Error: e

According to the above relationship, the researcher will study the impact of government health expenditure on the growth of the GDP in Jordan for the period between 2000-2023, and it has been estimated by the micro-sales method, and the analysis reaches the following conclusion.

$$GDP = 12.619 + 2.022h.x$$

Table 1 shows the results of the analysis according to the relationship between GDP = a + h.x + e, which examines the impact of government health expenditure on the gross national product.

Table 1. The results of the analysis of the relationship between GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.61934	1.009301	12.50304	0.0000
LNHEALTH	2.022088	0.181674	11.13030	0.0000
R-squared	0.867025	Mean dependent var		23.84000
Adjusted R-squared	0.860026	S.D. dependent var		0.598356
S.E. of regression	0.223864	Akaike info criterion		-0.065167
Sum squared resid	0.952183	Schwarz criterion		0.034311
Log likelihood	2.684256	Hannan-Quinn criter.		-0.043578
F-statistic	123.8837	Durbin-Watson stat		0.373399
Prob(F-statistic)	0.000000			

It can be seen in Table 1 that if health expenditure increases by 1%, the GDP will increase by 2.02%. The t-statistic resulting from the estimation is equal to 11.13030, which is greater than the t-table, which is equal to 2.101; thus, we reject the null hypothesis that assumes B2=0 and move on to the alternative hypothesis. The coefficient of determination R2 explained that 86.6% of the change in the dependent variable (GDP) from the study sample is due to the independent variable (h.x). According to the above estimate, the rest of the change is explained by other factors that were not mentioned in the study. The result was F-statistic = 123.8837, which corresponds to the probability. Finally, if health expenditure is zero, the GGNP will increase by 12.61934.

Table 2 illustrates the self-correlation test. According to the test results, the result obtained of 0.21 indicates that the model is free of the problem of self-binding of residues, and thus the estimated model is fully compatible with the least squares method. This is evident from the data in Table 2.

Table 2. Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.719704	Prob. F(2,16)	0.2106
Obs*R-squared	3.538593	Prob. Chi-Square(2)	0.1705

In Table 3, which shows the test of the homogeneity of the error limit, the results of the analysis indicate that the estimation does not suffer from any problem in the error limit variance. This can be shown in Table 3.

Table 3. Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	1.673100	Prob. F(1,18)	0.2122
Obs*R-squared	1.700901	Prob. Chi-Square(1)	0.1922
Scaled explained SS	1.366455	Prob. Chi-Square(1)	0.2424

The relationship between the two variables and the determination as to whether the direction of the causation is from health expenditure to GDP or the other way around is shown in the Granger causality test in Table 4. From the analysis, we can conclude that there is no causal relationship from health expenditure to GDP, but there is one from GDP to health expenditure.

Table 4. Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
D(LNHEALTH) does not Granger Cause D(LNGDP)	19	0.00263	0.9597
D(LNGDP) does not Granger Cause D(LNHEALTH)		4.18614	0.0576

Findings and recommendations

The study found that spending on health has the potential to contribute to GDP, as when spending on health is increased by 1%, it affects the GDP by 0.5%, thus contributing to achieving economic growth, and this is naturally reflected in various activities. The study also showed the trend of causation, which was trending from GDP to spending on health If the results of the estimation are compatible with the conditions for obtaining the best estimate according to the least squares method (OLS), confirming the impact of health and the health level in contributing to the growth of GDP according to Data for the period 2000-2023 in Jordan

The recommendations of the study were to emphasize the special importance of health spending and its impact on economic growth. The need to encourage spending and investment in the health sector, working to adopt an expansionist policy while emphasizing the need to achieve economic efficiency and equitable distribution of various health services. In addition, the trend towards building infrastructures with a direct and greater impact on the various segments of society has clear effects on the standard of living and economic growth.

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