Does Health Expenditure Increase Economic Growth: Evidence from Tunisia

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Abstract
The role of health in human capital is now recognized, as is the role of capital in economic growth since Schultz (1961) and Becker (1964). The objective of this paper is to use some recent developments in non-stationary time series econometrics to explore the cointegration between health spending and economic growth in Tunisia over a period of forty-four years. This paper shows a positive relationship between health spending and economic growth. However, Tunisia needs to be able to provide more efforts in this vital sector, with complementarity between the private sector and the public sector to be ensured. This is the guarantee of an increase in real output in Tunisia.

Keywords: *health expenditure, economic growth, cointegration.*

JEL codes: *I18, I15, H51*

Introduction

Economists have examined the phenomenon of economic growth to better understand the mechanisms by which it operates, to identify its main determinants and to identify factors that favor the growth of income and production within economies national. Among these factors, we found the health factor that theorist's value and consider it as a variable of human capital (Wang, 2011).

Health was the major element of well-being in all phases of economic development and even more so because health is a superior good (Riley, 2012). Health spending contributed to economic development as health is the capital and therefore health investments can lead to an increase in labor productivity, which increases incomes and increases the welfare of the population (Mushkin, 1962). Since the study of economic growth is above all that of well-being, the relationship between health and economic growth is central. The nature of this connection, and in particular the

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sense of causality, is fundamental for economic theory because according to the sense of causality, economic analysis is not the same. If health is the cause of growth, then it is necessary to determine a growth or even development strategy based on public health policy. If the reverse is true, the main problem is the opportunity cost of these expenditures to other expenditures that are essential to economic growth. In addition, the health system is also a factor of economic production, regarding the human resources employed and its payroll, a number of financial resources devoted to it, and its contribution to maintaining the physical and mental capacities of the population Human Being, the main resource of the production sector. It is a major concern of governments in many countries and international organizations, all of which advocate health system reforms to reconcile societal values and economic imperatives in an environment marked by increased the needs of civil society and the rapid evolution of the supply of human and technological care (Romer, 1986).

On the one hand, in developed economies, the variable "health spending" can act through two channels: rising incomes can typically lead to increased demand for care. Thus, health being a superior commodity, its demand/income elasticity would be high. On the other hand, in developing economies, rising health expenditure is driven by demand and supply, but also by institutional factors. From this point of view, health is not a luxury good insofar as the income elasticity is less than unity.

We propose here to account for the impact of the increase in health expenditure on economic growth (GDP) in Tunisia. In other words, the question is whether there is a long-term relationship between health spending and economic growth, the econometric tool confirming or invalidating this relationship.

1. The relationship between health and growth

The role of growth on health

The nature of the effects of economic growth on health status is now known to all, but this relationship has long been reduced to a simple positive correlation between the increase in income, permitted by growth, and the improvement of health status. It appears that the relationship between wealth accumulation and health is much more complicated.

On the one hand, three "channels" for spreading growth have a positive influence on the health of a population: improving living conditions, improving care and the positive effects of certain aspects of urbanization. Economic growth appears to be an essential determinant of health status due to these different repercussions on factors playing a major role in the health of populations in developed countries. On

the other hand, economic development, liberalism, and new psychological pathologies also generate negative externalities on health status.

The role of health on growth

On the one hand, health can act on economic growth through rather positive direct effects such as rising labor productivity, investment in the future, reduced fertility, lower costs, and opportunities investment, the creation of significant wealth. On the other hand, there are some health-related negative effects on growth. These are expenditures and contributions that are very costly to the nation, the aging of the population causing serious distributions.

2. Health Expenditures and Economic Growth

Total health expenditures show the amount spent on the public and private sectors of health (WHO, 2002). The spending it generates follows an upward trend, which raises questions about the ability of countries with publicly funded health systems to sustain these expenditures over the long term. In addition, these expenditures include the provision of health services (preventive and curative), family planning activities, nutrition activities and emergency aid designated for health, but does not include water supply and sanitation.

In Tunisia, health spending has increased considerably over the past two decades. Over the period 1985 to 2014, total health spending increased from 143 million to 4918.2 million TND. Thus, health spending has increased in relative terms. The share of GDP attributed to health has risen from 3.2% in 1980 to 7% in 2014 (see table 1).

Table 1: Evolution of Health Expenditures

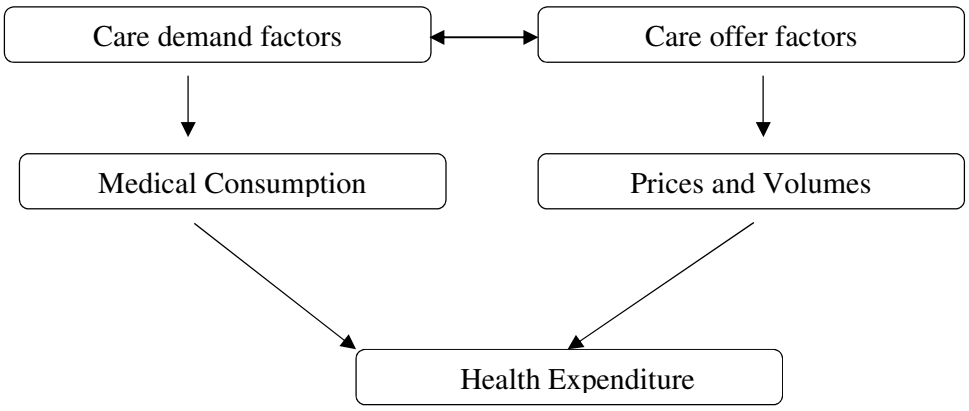
	1980	1985	1990	1995	2000	2004	2008	2009	2010	2011	2012	2013	2014
Health (MTND)	143,0	290,3	578	938	1489,5	2170	3083	3349,9	3650,3	4008,7	4208,5	4670,5	4918,2
% Health / GDP	3,2	4,2	5,3	5,5	5,6	5,6	5.6	6, 3	6,5	7,15	7,17	7,26	7,00
Health Expenditure per capita (TND)	----	39	72	105,5	155,8	217,5	300, 3	327,1	340,6	429,2	465,05	502,08	518,3

Source: World Bank (2014)

The rapid growth of health care spending continues to cause many controversies about its causes, challenges and solutions to contain them. However, the debate over the way public and private funding for social protection is rapidly being overcome. In spite of this mode of financing, expenditure growth is always more sustained than that of national wealth, which poses a problem for any system of private or public insurance financing (Bloom and Canning, 2005).

The rapid growth of health care spending continues to cause many controversies about its causes, challenges and solutions to contain them. Indeed, whatever this mode of financing, spending growth is always more sustained than that of national wealth. This poses a problem for any system of private or public insurance financing. Indeed, health remains a special good, a "superior" good whose share of expenditure increases faster than income. Many information asymmetries give caregivers, practitioners, and the power to induce some of this demand. Other, more traditional, factors are significant, such as the emergence of new treatments, new pathologies, and the aging of a population whose access to health goods and services is increasing, limitless. From a macroeconomic point of view, the literature shows that three types of traditional factors are advanced: demand factors, supply factors and institutional factors. In particular, health expenditures result from medical consumption, consumption of a certain amount of goods at a certain price (see figure 1).

Figure 1: Factors influencing Health Care Spending



3. Review of the literature

In developed economies and developing economies, the relationship studied between health expenditure and economic growth is summarized by homogeneous results. At the empirical level, some existing studies exist such as Mehrara and Musai (2011) which examined the causal relationships between health expenditure and economic growth (GDP) for Iran using annual data for the period 1970-2008. The technique of cointegration (1996), allowing the existence of a potential structural breaks in the data, is applied to empirically examine in the long term the movement between health expenditure and growth. The result suggested that there is a long-term relationship between these variables, health spending in

Iran has increased at a faster rate than GDP, and the income elasticity for health expenditure is higher than unity (1.93). On the one hand, Arısoy et al., (2010) found a positive relationship between health spending and economic growth. Thus, a similar study in Turkey conducted by Eryiğit et al., (2012) from 1950 to 2005 confirmed a positive relationship between health spending and economic growth. By applying non-linear least-squares (2SLS) estimates, Bloom et al. (2004) used a sample of 104 countries during the period 1960-1990 to examine the relationship between health and economic growth, they proved a positive correlation. This is because good health had a positive and statistically significant outcome on economic growth.

On the other hand, Yumuşak and Yıldırım (2009) used the same method of conducting a study in Turkey over the period 1980-2005. They found a negative relationship between health spending and economic growth. The use of a sample of developing economies and the panel co-integration causality vector error correction model (VECM) over a period of 1990 to 2009, Elmi and Sadeghi (2012) have shown that there is a short-term relationship ranging from GDP to health spending and a long-term bi-directional relationship.

Using cointegration techniques applied to a panel of 21 countries, Dergerd and Reimers (2005) found a long-term relationship between health spending, GDP per capita and proxies for medical progress.

To study the causality between health spending and economic growth, Wang (2011) considered international data from 31 countries from 1986 to 2007. On the one side, the panel regression estimate shows that growth in health spending will stimulate economic growth. However, economic growth will reduce growth in health care spending. On the other side, the estimation of quantile regression, in low-growth countries, growth in health expenditure will reduce economic growth. Considering Aguayo-Rico and Iris (2005), they suggested that health capital had a significant effect on economic growth, particularly with a variable that captures all the determinants of health by using of ordinary least square (OLS) regression. Thus, using the multiple regression of least common square, Bakare and Sanmi (2011) studied the relationship between health care spending and economic growth in Nigeria. Their results showed a significant and positive relationship between health care spending and economic growth. They recommended that Nigerian decision-makers have an interest in continuously increasing the percentage of health budget allocated each year. Similarly, Oni (2014) employed the method of Multiple OLS regression to verified the relationship between health expenditure and economic growth in Nigeria over the period 1977 to 2010 and asserts that total health expenditure, labor force productivity, and gross capital formation is among the important determinants of economic growth in Nigeria. Also, Temitope and Bola (2013) used the cointegration method over the period from 1970 to 2010 found a positive relationship between and economic growth in Nigeria.

4. Methodology

We will use recent developments in time series econometrics to analyze the causal relationships between economic growth and health expenditure.

4.1. Definition of the cointegration method

The economic theory assumes the existence of a long-term relationship between two or more variables even if this relationship seems to be non-existent in the short term. Among the different estimation methods proposed in the literature, that of Engel and Granger (1987) is the standard method for estimating the parameters of a cointegration relation. According to these authors, the economic interpretation of cointegration can be explained by the states in which two or more series have an equilibrium relation during the long term. For this equilibrium relation to be realized, the time series must be stationary and integrated in the same order.

4.2. The methodology of cointegration

The methodology adopted is a three-step approach: Unit root tests, Johannsen cointegration tests, Granger causality tests as part of a vector model with error correction.

First step: Unit root tests: ADF test (1981)

A temporal series is said to be stationary if it has no tendency, or seasonality, and more generally no factors that change over time. To test the stationarity of the series, the ADF (Augmented Dickey-Fuller) test on the unit roots is used to determine whether the series is stationary or not. In our paper, we will use the unit root test of Dickey Fuller (1979) to study the stationarity of the different variables in level and first difference. We will present a simple Dickey Fuller test strategy to test the non-stationarity conditional to the specification of the model used.

It is based on the least squares estimation of the following three models:

$\Delta X_t = \rho X_{t-1} - \sum_{j=2}^{p} \varphi_j \Delta X_{t-j+1} + \varepsilon_t$; Process without trend and without constant

$X_t = \rho X_{t-1} - \sum_{j=2}^{p} \varphi_j \Delta X_{t-j+1} + c + \varepsilon_t$; Process without trend and constant

$X_t = \rho X_{t-1} - \sum_{j=2}^{p} \varphi_j \Delta X_{t-j+1} + c + \beta t + \varepsilon_t$; Process with trend and constant

With ε_t i.id. $(0, \sigma_\varepsilon^2)$

It consists of checking the null hypothesis H0:$|\rho| = 1$ against the alternative hypothesis H1: $|\rho| < 1$

2nd step: Johansen cointegration test: Estimates of the long-term equation

The development of cointegration theory dates back to Granger (1986) who studied the interdependence between international financial markets in the context of non-stationarity of time series. Later, Engel and Granger (1987) showed that a linear combination of two or

more non-stationary series could be stationary. If this combination exists, the non-stationary series is called cointegrated.

This cointegration can be interpreted as a long-term equilibrium relationship between the variables studied.

The study of cointegration makes it possible to test the existence of a stable long-term relationship between two non-stationary variables, including delays and exogenous variables. The analysis of cointegration makes it possible to clearly identify the true relationship between two variables, by looking for the existence of a cointegration vector and by eliminating its effect if necessary. Two series x and y are said to be cointegrated if the two following conditions are satisfied: they are assigned a stochastic trend of the same order of integration, and a linear combination of these series makes it possible to reduce to a series of integration order inferior.

Finally, the Johansen cointegration test uses two statistics: the trace statistic and the maximum eigenvalue. The asymptotic distributions of these statistics are nonstandard.

Step 3: The error correction model (Error Correction Model)

The error correction model (VECM) is a method for correcting the endogenous (dependent) variable, which is based on the level of the explanatory variables, but also on the deviation of these variables from the framework of the equilibrium relation. This step of determining and estimating the error correction model is carried out after verification that all the variables are integrated in the same order; the error correction term (EC) is included at this level to study the dynamic behavior of the model. This term refers to the speed of adjustment of any unbalanced case to long-term equilibrium. The error-correction model can be constructed in two simple ways:

- using the two-step approach of Engle-Granger
- using the Hendry one-step method

At the theoretical level, the identification of causal relationships between economic variables provides elements of reflection conducive to a better understanding of economic phenomena. Practically, "causal knowledge" is necessary for a correct formulation of economic policy. The presence of a cointegration relation between two variables generates the existence of a causal relation between them in at least one direction. This causal relationship can be analyzed using the Granger causality test based on the error correction vector model (VECM). According to Granger's theorem of representation, any cointegrated system implies the existence of an error correction mechanism that prevents the variables from deviating too much from their long-term equilibrium. In our case, if the four variables studied, namely: (GDP, HE, K, L) are cointegrated, we deduce that there is an error correction mechanism.

An error-correction model is a special form of step-delayed autoregressive models. It may be interpreted in this respect as a model of adjustment. Like the adjustment model, the coefficient of the error term is relevant only when it is significant and between -1 and 0.

Note

It is noted that the method of Engel and Granger (1987) allows us to estimate a two-stage STM easily. The disadvantage of this approach is that it makes it possible to distinguish several cointegration vectors, in other words when the number of variables is greater than two (N> 2), up to N-1 cointegration relations can be obtained; the approach of Engel Granger allows us to obtain only one cointegration relation. To solve this problem, Johansen (1988) proposed a multivariate approach to cointegration based on the maximum likelihood method that will be used in our empirical study.

4.3. Description of model and data

The model that we will use uses Tunisian macroeconomic variables to test the existence of an effect of health expenditure on economic growth and to have the possibility to make long-term forecasts.

The model is given by: PIB: f (K, L, HE). This is a Cobb-Douglas production function augmented by health expenditure.

$$\mathbf{GDP= AK^{\alpha}L^{\beta}HE^{\gamma}e^{U_t}}$$

With

-GDP: the Gross Domestic Product at constant price 1990

-A: the technical progress that is supposed homogeneous

-K: physical capital in constant dinars

- L: working in unity

-DS: health expenditure at constant price

The transformation of this model into Log gives us:

$$\mathbf{logGDP_t = \alpha logk_t + \beta logL_t + \gamma logHE_t + U_t}$$

The data used for these four variables (GDP, K, L, HE) come from the National Institute of Statistics (NIS), IQS (Institute of Quantitative Studies) and the World Bank (WDI) of Tunisia for a period of forty-four years of 1970-2014.

5. Empirical results:

5.1. Stationarity test

Table 2: Results of the ADF test

Variable	Degree of differentiation	ADF test statistics*	Critical Value **	Decision
LGDP	Level	11.00421	-1.949319	I(1)
	First difference	-1.989117	-1.949856	
LHE	Level	-2.521704	-3.526609	I(1)
	First difference	-7.655756	-3.529758	
LK	Level	-3.093766	-3.533083	I(1)
	First difference	-6.834712	-3.529758	
LL	Level	-0.575259	-2.936942	I(1)
	First difference	-5.926373	-2.938987	

* The appropriate model is chosen from the Dickey-Fuller test strategy.

** The critical value is read from the MacKinnon table.

*** The number of delays is determined by the information criteria of Akaike and Schwarz.

According to Table 2, the hypothesis of the presence of a unit root detected by ADF in all cases of the series is accepted since the calculated statistic is greater than the critical value, indicating that the four series are non-stationary in level. On the other hand, the first-difference stationarity is verified because t-statistic is less than the critical value of the ADF, whence the series are integrated of order 1 (I (1)). Therefore, the correct method of stationization is, therefore, the use of the first differences of each series. From this, we can wonder about the existence or not of cointegration relation between the variables from which the cointegration test. This test makes it possible to see if the variables of the model evolve together at the same rate.

5.2. Specification of the error correction model and the cointegration rank test

After having established the presence of unit roots in each variable in the series, we will study in the following the co-integration relationships between the variables; these relations are carried out in the framework of a VECM according to the procedure of Johansen (1991). But before any estimation of the VECM, it is necessary to fix the number of delays to be concluded there and to specify the deterministic part since the rank tests are sensitive.

5.2.1. Test of number of delays

The choice of the number of delays to be introduced is conditioned by the short-term part of the VECM. Then the number of delays must be decided before the rank test. One uses the Wald test which is based on the traditional criteria of AIC, and Schwartz and one derive the number of delays. In our series, we found two delays.

Table 3: Test on the number of delays

	AIC	BIC
1	-18.00280	-17.14970*
2	-18.30987*	-17.07286
3	-18.28150	-16.66060
4	-18.13383	-16.12903
5	-17.85293	-15.46423

5.2.2. Test of the row of cointegration

To estimate the cointegration space and test its rank, the VECM is estimated by Johansen's maximum likelihood method. This test tells us the number of cointegration relationships. This method allows us to estimate the different eigenvectors associated with the different variables in the model. Hence, the first high eigenvalues can be qualified as cointegrating, so if the number of cointegrating vectors is unity, this means that only the first eigenvector allows a stationary linear combination of the different variables. This combination reflects long-term equilibrium deviations, which means that the VECM will no longer contain a short-term part. We will estimate the version of the model: which implies the absence of constant in the deterministic part of the VECM. The first lesson that can be drawn from the table below is that the trace statistic shows the existence of a single cointegration relation.

5.2.3. Test of number of cointegration

Table 4: Test of the number of cointegration

H_0 : r	λ_{trace}	Critical Values at 5%	Number of cointegration equations
0	50.12160	40.17493	No**
1	17.71226	24.27596	At most 1 **
2	6.143104	12.3209	At most 2 **
3	0.506584	4.129906	At most 3

The result of table 4 of the trace analysis shows a cointegration relationship in the confidence interval of 5% of the likelihood test. The results of tests of the null hypothesis of absence of cointegration were rejected (50.12160> 40.17493) at the level of 5%, which explains the existence of a cointegration relation.

5.2.4. Estimation of an error correction model: Vector Error Correction (VEC)

An error-correction model is a special form of step-delayed autoregressive models. It may be interpreted in this respect as a model of adjustment. As with the adjustment model, the coefficient of the error term is relevant only when it is significant and ranges between -1 and 0. The quality of the results is acceptable about the expected signs and the coefficient of determination. Note that the variable at the top of the appendix corresponds to the dependent variable. The variables in each row represent the independent variables. Each independent variable contains three numbers. The first corresponds to the coefficient of the variable associated with it, the second which is in brackets, the standard deviation, the third expresses the Student's t. Finally, the numbers that are of greater interest are those of the error correction term 'CointEq1'. Note that their parameters are all significant.

The results of Appendix 1 of VECM show that in the case of a short-run imbalance, GDP growth adjusts more slowly than labor and capital (K, L). Indeed, the rate of convergence of GDP growth is about -15%, D (LK) 14%, D (LL) -7% and D (HE) -21%. The error correction term is negative and significantly different from zero for the values of D (LGDP), D (LL) and D (LHE). These are intangible expenses which only the State can assume in this case expenditure on education and health. Through its expenditure, the state seeks a collective interest of the mass for happiness or collective being so that one can both work and create wealth because an unhealthy man and not study can neither work nor create wealth.

In order for investments to be made in the right direction, each must find his place in the active life. Therefore, Tunisia has devoted and still devotes a good deal of its financial energy to developing education and care, but the results time to be credible because there are also good people well educated and well educated but unfortunately they are hot. Therefore, the development of human resources sometimes led to and sometimes even negative results.

In the positive sense, care and education are supported by national savings. Failing this, the State must take on debt to assume its responsibility for the growing expenditure of care and education. If the result is negative, or there are both illnesses treated or graduates unemployed, then the debt would play a role of foreclosure about national savings. However, the idea of the State to ensure intangible

investments if they lead to positive results and to which cases for the developing countries like Tunisia, the debt would then play the role of complementarity.

In hypothesis 1, it is strictly essential especially for health in the load becomes very burdensome to bear that the state in front of the economic and social crisis that is currently developing. So the only recommendation to alleviate the burden on the state, especially regarding health care, is to establish a better income policy that enables vulnerable citizens to protect themselves and their family's health. The National Social Health Insurance Fund is struggling to assume its responsibility to ensure the health of economic agents regarding care, protection, operation ... which is becoming more and more expensive in an economic and social context where the crisis tends to grow more and more.

In principle the origin of public spending such as infrastructure, rules, hospitals should come from national savings, saving is positive is an index of growth, then it is enough to have reliable statistics and Each economic agent, each political leader, can direct investments in the right direction and the balance can be reached at any time of the year, which regulates the mechanisms of supply and demand in a given area, any area of the economy including in the field of care.

The model we are going to present justifies our comment, and it includes some variables including gross domestic product, capital, labor and health spending.

$$\mathbf{\log GDP_t = 0.43 \log HE + 0.21 \log K + 0.78 \log L}$$

Health expenditure with a positive sign means that it has a positive effect on economic growth. Its coefficient reflects that a 1% increase in health spending leads to a 0, 43% increase in economic growth. In fact, GDP growth and health expenditure are moving in the same direction. This result corroborates that of a large number of health economics research (Bloom et al., 2004, Arısoy et al., 2010; Wang 2011; Bakare and Sanmi 2011; Eryiğit et al., 2012; Temitope and Bola, 2013; Oni, 2014) which indicates that the variation in per capita health care spending could be mainly explained by changes in per capita GDP. Thus, high health spending increases the supply of labor and productivity, which ultimately leads to higher incomes (World Health Organization, 2011).

As a result, the increase in health spending leads to an increase in the life expectancy of the population and a decline in mortality as a result of improved health status. This improvement in health status leads to increases in labor productivity, increases production by reducing the number of working days lost due to illness, increasing productivity and consequently economic growth. Indeed, health is an asset that is not only highly valued by individuals but can also help to strengthen economic growth. First, healthier people produce more efficiently, then, as mortality declines,

the population grows, which boosts the economy, and finally, a longer life expectancy is more conducive to investing in the economy human capital. For these positive effects of health spending on growth to play their full part, certain social and political conditions must be met, including the adoption of a new definition of old age, effective development of health systems, and the implementation of reforms in education and pension systems. In developing countries, such as Tunisia, health expenditure is very effective in increasing health status (life expectancy) and therefore in the lifetime of the population, which promotes growth economically. However, our results contradict those of (Kurt, 2015; Yumuşak and Yıldırım, 2009), suggested a negative relationship between health spending and economic growth.

The coefficient of capital is significantly positive means that it acts positively on economic growth. A 1% increase in capital leads to an increase of 0, 21% of GDP. This result is consistent with that found by Aguayo-Rico and Iris (2005), Oni (2014). Health is a capital, and therefore investments in health are an important source of economic growth, the World Human Organization report is the macroeconomic and health commission 2001, which states that "the extension of coverage of health services essential to the worlds poor could save millions of lives each year, reduce poverty and stimulate development and the promotion of global security" (World Human Organization, 2001). Theoretically, health is a determining factor of human capital, labor productivity, so regarding health expenditure as an investment in human capital and consequently the engine of growth. The labor coefficient is significantly positive, meaning that it acts positively on economic growth. A 1% increase in labor leads to 0, 78% increase in economic growth. This result confirms these of (Arabi and Abdalla, 2013). Hence, health spending ensures a good quality workforce that translates into an increase in economic output, thereby increasing economic growth. Moreover, healthy workers are physically and psychologically more energetic and robust, more productive and better paid. Healthy workers are also less likely to be absent because of their health problems or those of their families. Illness and disability reduce hourly wages to a substantial extent, which is particularly detrimental in developing countries where a high proportion of the workforce carries out manual labor. Even when it does not prevent them from working, the disease reduces the productivity of individuals, shortens their period of activity and increases the number of days lost due to illness (World Bank, 2008). Hence, improvements in health status lead to certain increases in labor productivity. This positive effect of health on labor and thus growth is now well recognized and recognized: health improvement increases production reducing the number of working days lost due to illness, increasing productivity and work for organization, providing more opportunities for better-paid jobs and extending working life. Finally, it encourages investment in human capital, which is a factor in gaining

productivity, which promotes economic growth. However, our results contradict those of (Triplett and Bosworth, 2004, 2007; Harper et al., 2012) who finds a negative relationship between labor productivity and economic growth.

Conclusion

The results of the unit root test and the Johansen cointegration indicate that the series associated with the variables (GDP, K, L, HE) are stationary in first difference. The four variables are cointegrated, which evolve in the same direction and thus display a long-term relationship. Health, as we know, is one of the cornerstones of the development process. It is a product of it: all economically advanced societies invest in health that would be the counterpart of well-being. But health is also a major determinant of development. This type of relationship justifies the reforms undertaken insofar as health expenditure is consubstantial to economic growth. To consider that better health would be a good instrument of growth is somewhat naive. Because health and growth would be indissociable; there is no need to instrumentalize health to establish its value, i.e., health spending helps to stimulate economic growth.

This work shows a positive relationship between health spending and economic growth. However, Tunisia needs to be able to provide more efforts in this vital sector, with complementarity between the private sector and the public sector to be ensured. This is the guarantee of an increase in real output in Tunisia. This work comes at the right time to support the idea that good health generates some positive effects such as the demographic dividend and the improvement of labor productivity, increased growth.

Without substantive innovation, policymakers need to be able to rationalize health expenditure, notably through objective management. The latter consists of allocating budgetary resources not only by policy area but also by a clear and measurable objective, verification of the achievement of objectives about the resources devoted to them. In addition, boosting the sector through a public / private partnership is materialized by the acceleration (pre-financing) of project implementation, an innovation that benefits the community by the dynamism and creativity of the private sector, a cost approach global, a guarantee of performance over time and an optimal allocation of risk between the public and private sectors, each bearing the risks that it has the best control. As such, the partnership contract complements and enriches the range of public procurement tools (Dergerd and Reimers, 2005).

Health financing must enable the mobilization of the resources necessary for the implementation of preventive measures and medical care that respond to the needs

of the population. It is clear that resources available to households, public authorities or third-party payers are, in most developing countries, very insufficient. Their growth is a priority objective, but it can only be conceived in relation to an improvement in the provision of care, which is the only way to stimulate the desire to seek treatment.

Finally, it is not a matter of controlling health expenditure per se, but rather of seeking greater efficiency in the face of public funding constraints so that they do not undermine the objectives of economic growth and social justice by the public authorities to our social model.

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Appendix 1: Vector Error Correction Estimates

Vector Error Correction Estimates
Date: 19/09/17 Time: 19:52
Sample (adjusted): 1970 2014
Included observations: 43 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LGDP (-1)	1.000000
LL(-1)	-0.788015 (0.09752) [-7.67635]
LK(-1)	-0.210543 (0.08669) [-2.21028]
LHE(-1)	-0.439800 (0.04901) [-8.36192]

Error Correction:	D(LGDP)	D(LL)	D(LK)	D(LHE)
CointEq1	-0.150432 (0.02721) [-4.93797]	-0.079768 (0.01819) [-3.28638]	0.145421 (0.28107) [0.43881]	-0.217722 (0.03455) [-5.21838]
D(LGDP(-1))	0.408737 (0.20573) [1.98673]	-0.171987 (0.13753) [-1.25058]	1.035150 (2.12547) [0.48702]	0.558608 (0.26124) [2.13828]
D(LL(-1))	0.004854 (0.25782) [0.01883]	-0.000410 (0.17234) [-0.00238]	0.618216 (2.66359) [0.23210]	0.016391 (0.32738) [0.05007]
D(LK(-1))	-0.010434 (0.01661) [-0.62814]	-0.001009 (0.01110) [-0.09084]	-0.103862 (0.17160) [-0.60524]	-0.023572 (0.02109) [-1.11758]
D(HE(-1))	-0.374523	0.090812	-0.067921	-0.572312

	(0.16941) [-2.21078]	(0.11324) [0.80191]	(1.75019) [-0.03881]	(0.21512) [-2.66049]
R-squared	0.246845	0.077086	0.018142	0.208471
Adj. R-squared	0.158239	-0.031492	-0.097370	0.115350
Sum sq. resids	0.007230	0.003231	0.771650	0.011657
S.E. equation	0.014582	0.009748	0.150651	0.018516
F-statistic	2.785862	0.709959	0.157060	2.238714
Log likelihood	112.2273	127.9352	21.15572	102.9115
Akaike AIC	-5.498835	-6.304367	-0.828499	-5.021102
Schwarz SC	-5.285558	-6.091090	-0.615222	-4.807825
Mean dependent	0.027579	0.011538	0.012985	0.035405
S.D. dependent	0.015894	0.009598	0.143812	0.019687
Determinant resid covariance (dof adj.)		9.38E-14		
Determinant resid covariance		5.42E-14		
Log likelihood		374.2950		
Akaike information criterion		-17.96384		
Schwarz criterion		-16.94011		

Source: Authors Computation Using Eviews 7.0 Version