ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 6, pp. 17453-17459, June, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

OPTIMIZATION OF HEALTH EXPENDITURES AS HUMAN CAPITAL

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DOI: http://dx.doi.org/10.24327/ijrsr.2017.0806.0358

ARTICLE INFO

Article History:

Received 18th March, 2017
Received in revised form 10th April, 2017
Accepted 06th May, 2017
Published online 28th June, 2017

Key Words:

Health Expenditure, Economic Growth, Armey Curve

ABSTRACT

Economic growth and development is the most important economic objective for under developed and developing countries. Since the capital regarded as the engine of the growth while regarded only as a physical means of production, which can be expressed as machinery and equipment until the 1960s, human education, vocational skills and experience were also formed by the human capital and it is started to be evaluated more important than the physical capital. Because the skills and professional skills that employees get are the most important factor explaining the superiority of developed countries. Especially countries like South Korea, Taiwan and Singapore, which showed rapid economic growth and created Asian miracles, gave importance to primary and secondary education and increased compulsory primary education period to 9 years. In addition, these countries have increased the quality of their education and have also taken care of higher education.

In the literature, it has been understood how to increase human capital accumulation with the understanding of the importance of human capital and it is seen that education and health are the two main components. Priority is spent exclusively on education, health spending on life, as well as health parameters.

One of the main areas of study in economics is the effectiveal location of resources. Mean while, studies have been carried out on how much public pending should be performed and how much this distribution should be. While a factor of production remains constant, it is known that increasing use of other factors will reduce marginal returns. Armey Curve created by Richard Armey is one of the tools developed to reveal the role of the state in the economic process. The Armey curriculum reflects the basic logic of a positive relationship between public expenditure and Gross Domestic Product (GDP), and a negative relationship after a certain point.

In this research, the Armey curve will be used for the first time in health expenditures, so that economic growth will be tried to be explained through the optimization of health expenditures. OECD statistics, including Turkey, will include countries with sufficient data (n> 30); If the health expenditure percapita can be optimized with the model to be established, the position will be determined according to the optimum health expenditures of Turkey and other OECD countries, and in case of optimization, the contribution to the country's economy will be tried to be calculated.

INTRODUCTION

Economic growth and development have been tried to be explained through the concept of human capital since the 1960's, and from the 1970's on, the human factor has become the focus of economic analysis. Human capital exclusion is an important shortcoming in the underdeveloped countries, with the development of physical capital investments, the lack of necessary resource transfers to education and health. Because the information and professional skills that employee have, are the most important factor explaining the superiority of developed countries.

Petty, while trying to determine the importance of labor in economic development, tried to figure out the importance of natural resources and capital in growth, as well as labor, and proved labor was 3/5 more efficient than capital and natural resources[1]. According to Sir James Steuart, the primary task of education is to increase the productivity of food producers, to create an agricultural surplus and to free their labor for other occupations[2].

According to Adam Smith, capital accumulation will lead to business division and specialization and technical development that come with them. The enlargement of the market, increase of division of labor and specialization, will create internal and

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external economies, thus, the law of increasing efficiency will apply, not the decreasing productivity in labor.

Smith argued that the most important difference between a civilized and developing nation and a non-civilized nation is the quality of labor force. Although these economists presented significant contributions on human capital, Theodore W. Schultz was the person who theoretically presented the concept. Schultz defined the characteristics of human capital as follows[123:]

Human capital is composed by making investment on human. Human capital cannot be separated from the individual. Physical capital can be expropriated; but human capital cannot be separated from the person.

Human capital is the innate or later acquired skills.

Human capital cannot be seen; but the effects of it can be observed. These effects are two types:

Internal effects involve welfare and economic efficiency of individuals and their families, schooling, vocational education, and higher education. These effects affect to the person himself.

In external influences, which are a bit of analytical concern, the density of human capital plays a key role. New studies have proven positive effects on economic growth.

Role of Human Capital on Economic Development

The main factor of growth is capital both in underdeveloped and developed countries. The capital / output ratio is very important in determining the growth strategy. However, it is important whether underdeveloped or developing countries can optimize the distribution of their resources. Underdeveloped countries seeking to accelerate their economic growth want to increase their physical capital investments. As a result, a small amount of additional resources are allocated for education and health. Thus, the concepts of capital including human and non-human wealth should be used separately. It is misleading to base only on non-human capital. As a result of Harberger's studies on Chile, it has been determined that technical progress is a key element in the rapid development and expenditure made to improve labor quality is of primary importance in achieving this goal[4].But economists have not recognized the important role of human capital accumulation in the economy for a long time. The concept of capital, on the other hand, includes human capital as well.

While a factor of production remains constant, it is known that increasing use of other factors will reduce marginal outputs. In that case, the increase in national income, which occurred in western countries at a higher rate than the increase in production factors such as nature, labor and physical capital, was born from additional investments made in the human factor. It is not possible to imagine that a combination of production investments, which is considered ideal for one country in terms of the proportion of investments in education and other production, is also ideal for another country.

In developed countries that are rich in natural and physical capital, it has been found that when educational expenditures are constantly increased, marginal output does not decrease, in many cases it actually increases or at least remains constant[5.]

LITERATURE SEARCH

The theory of human capital, developed by Gary Becker and colleagues in the mid-20th century, recognized education and health as two basic thresholds. This theory has influenced the view of economists long time that countries have an important share in explaining the differences in income because of income differences in economic growth. Schultz, who studies the connection between education and economic development, presents three different ratios:

1. An education-labor ratio that shows the amount of human effort (as labor input: teachers and students) that is educated relative to the total workforce.
2. An education-income ratio that composes the link between sources allocated to education and consumer income.
3. An educational-investment ratio that shows the relationship between the sources of education and the sources of non-human reproducible physical capital.

These three rates gave similar results. Between 1900 and 1956 the sources allocated to education in the United States rose three and a half times in these aspects:

- The ratio to consumer income as dollar,
- The ratio to the gross physical capital accumulation as dollar,
- The ratio to the employed workforce in terms of labor input (by counting the number of students who give up their teachers and the benefits of continuing to the school).

As a result of this study, a 1% increase in real income per person will lead to a 3.5% increase in the amount of sources allocated to education. However, the capital created by education has increased much more than the stock of reproducable physical capital. While the capital stock of education, which was established between 1900 and 1957 at the price of 1956, increased 8.5 times, this ratio was realized as 4.5 times in physical capital stock.

In other words, as the economic growth increased, it was determined that there was an inconvenience between the income increase and the benefit increase obtained from this kind of capital, and the income increased in faster manner. Hence, doubts have arisen whether the rate of capital can be considered as pre-condition of economic growth. Schultz's view is that, in estimating all capital income ratios, only part of the existing capital is taken into account and the other part, the human capital, is left uncovered. The scientific and technical knowledge of mankind is a means of production and in this sense capital. In this respect, it cannot be concluded that all the capital stock has decreased relative to the income according to aforementioned estimations. One of the countries where the

[1]KURTKAN, A.; Sosyolojik Açıdan Eğitim Yolu İle Kalkınmanın Esasları, İ.Ü. Yayın No: 2262, İktisat Fakültesi Yayın No:388, İstanbul, 1977.a.g.e., s.63,64-66.

[4]SCHULTZ, T. W.; "Investment in Man: An Economist'sView", Readings in the Economics of Education, UNESCO, France, 1968, s.69-76.

[3]YUMUŞAK, İ. G.; BeşeriSermayeTeorisiveBeşeriSermayeninİktisadiGelişmedekiRolü, (İ.Ü.SosyalBilimlerEnstitüsüİktisatAnabilim Dalı-DoktoraTezi), İstanbul, 2000.s.28,29.

4 Schultz, "Investment in Man: An Economist's View", a.g.m., s.71.

[5] A. Kurtkan, a.g.e., s.76.

national income increased faster than the sources was the USA. Income in this country has increased at a much higher rate than all the elements used for production (land, physical capital stock to be reproduced, etc.).

According to Schultz, as the capital stock develops and its use increases, the rate of capital income can be expected to increase. The trend has been like this for a long time. Schultz made evaluations in his study on relation between capital ratio and annual income[6]of Kuznets (Table 1) and national welfare estimations of Goldsmith including the factor of land (Table 2).

Table 1

Great Britain	Capital/Income Ratio
1875	4.6
1905	6.5
ABD	Capital/Income Ratio
1879	2.8
1909	3.4

Source: T. W. Schultz, "Investment in Man: An Economist's View", Readings in the Economics of Education, UNESCO, France, 1968, s.72.

According to Schultz, if the issue is confined to specific estimates of the US economy, it will be clear that there is no increase in income when more physical capital is used. Between 1919 and 1957, physical capital ratio increased by 1.8%, while total income grew by 3.1%. These calculations, however, education, developable capabilities, health and new information, as well as capital estimates.

Thus, the decline observed in the rate of capital income may be more. It may even be a mistake due to neglect of the human capital.

Table 2

	National welfare Zenginlik	Net National income	
Year	(milyon $)	(milyon $)	Ratio
1909	145	29	5.0
1949	898	237	3.8

Source: T. W. Schultz, a.g.m., s.73. .,5 j Schultz, "Investment in Man: An Economist's View", a.g.m., s.72,73.

As a result of calculations that show a significant difference between the resources used to generate additional income and the income growth, Schultz stated that income grew much faster than labor and capital. Schultz stated that between 1889 and 1919, labor and physical capital increased at the same ratio of 67% (for the private sector in the national economy), while between 1919 and 1957 increased together with hourly work and physical capital and indicated that this rate was lower than the increase rate of income which was realized as 32%.When explained by the human wealth hypothesis, the result will be evident as rapid and large accumulation of human wealth, excluded from working hours and physical capital, which are regarded as basic measures.

According to Schultz, who stated that the initial stage of human investments is education; education after eight years is a big and growing form of capital formation. Schultz first addressed the "human capital return rate" approach within the framework of measuring the effect of education on economic development.

With the empirical studies of Edward F. Denison, the direction and content of human capital and income and growth has been theoretically proven. In his study, Denison identified the sources of the increase in national income in the period 1909-1929-1957 and 1960-1980 (projection) of the United States. In this study; in the 1929-1957 period, only 0.92 percent of the US annual growth rate of 2.93 percent could be explained by labor and capital inflows, while 2.01 percent, or 2/3, was unexplained, which was explained by Denison as a result of the increase in factor productivity. In another study involving the period of 1929-1982, Denison determined that %73 of economic growth as the result of developing of human capital and added that, contribution of physical capital on economic growth was %17 and soil remediation was %0. Regarding to education, Denison identifies these contributions as a result of the fact that the continuation of the individual to school leads to a loss of labor but in long term its income is more to economic growth. Furthermore, since 1929, it is concluded that %75 of development in productivity in US derives from human capital[78].

Nevertheless, in 1967 Denison identified the contribution of education on growth as %15 after 1950 in US while this amount was the same as Schultz's result using the human capital return rate approach. George Psacharopoulos, who has been working on the calculation of the return of education which enables international comparisons, has tried to determine the effect of education on economic growth by using the methods of Schultz and Denison. According to this; the increase in the level of education of the workforce is becoming an important factor for the level of economic development of both developed and developing countries[91011.]

Psacharopoulos, who considers education expenditure as investment and at the same time expanding the production capacity of educated developing countries and increasing the efficiency of infrastructure and physical investments, has attributed the most important factor restricting the development of developing countries to the inadequate development of human capital. Psacharopoulos-Woodhall, in their view that education contributed more to the economic growth of countries with a smaller human capital stock than other countries, has in fact attributed the rapid growth of countries to the effects of literacy as well as education. According to Psacharopoulos, who stated that in developed countries the gap between physical capital and human capital has narrowed gradually and a rate of 10% was an indicator for balance; in developing countries, human capital had a superior advantage over physical capital. However, aforementioned superiority has begun to decrease as a result of investments in developing countries' human capital.

In the 1960s, the rate of return of human capital in developing countries was 20%, but in the 1970s it was 15%. The return rate of the physical capital is 15% and 13% for the same periods (Table 3).

[6] T. W. Schultz, "Education and Economic Growth: Return to Education", a.g.m., s.278.
T. W. Schultz, "Education and Economic Growth: Return to Education", a.g.m., s.278,282.
A. Kurtkan, a.g.e., s.66,67.

[9] A. Kurtkan, a.g.e.,s.64.
[8] 1. G. Yumuşak, a.g.e.,s.30,31.
[9] S. Akbulak. "HğitiminHkonomik Büyümeye Htkisi : Sorunlar ve Çözüm Önerileri''. Finans Dünyası. Aralık 1999. s. 100.101.
[10] 1. O. Yumuşak, a.g.e.. s.37.38.
[13] H. Dursun. "İnsan Sermayesi ve Hkonomik Büyüme''. Hazine Dergisi. S: 10. Nisan 1998. Ankara, s.96.

Table 3 Return of Physical and Human capital (%)

	1960's	**1970's**
	Human physical	Human physical
Developing countries	20 > 15	15 > 13
Developed countries	8 < 10	9< 11

Source: H. Dursun, "İnsanSermayesiveEkonomikBüyüme", HazineDergisi, S: 10, Ankara, Nisan 1998, s.97.

Given the approach that education is both a cause and result of economic growth, Wheeler has reached the conclusion that in 1980, an average increase of 20-30% literacy will lead average increase of 8-16% in GDP. In 1982, Marris stated that the physical capital, which was not supported by educational investments, had less influence on economic growth. In addition, Gary S. Becker, considering that a theory may be composed by evaluating and combining in all aspects for common effects of several human capital, has made explanations that most of return of human capital increase in the later period following the years of investments. According to him, the reason of this is the cost of aforementioned investments at early ages and this reduces income[12][13].

However, in 1980, a study was conducted by Hicks on the relationship between life span and economic growth and literacy and economic growth. According to the results of the study involving 33 developing country data in 1960-1977 period, twelve of the 83 countries have literacy rates and average life span above the average of 83 countries, which rises proportionally with the economic growth rates of the countries in question. As such, Hicks has drawn attention to a positive relationship between economic growth and the development of human resources as a measure of literacy and lifetime[14].

Numerous researches throughout the world have shown that the education has so much return to the economy. In some countries, over 30% of individual returns have been achieved. In particular, the average of developing countries is above 10% for every level of education, which is the point of equality where the decision to increase physical investment is made. Furthermore, many studies conclude that, return in women education is higher than men and return of elementary education is mostly higher than high school and university education. The estimates made by the World Bank determine that in the general of developing countries, social gain ratio in elementary school (cost and benefit that are not directly met by individual) is % 24, in secondary education it is %15 (private return (%19), %13 (private return %22) in higher education. But these ratios ignore the effects of education on production and health[15].

Recent theoretical discussions on growth literature focus on the role of human capital in the economic growth process. According to the OECD (1998), human capital includes information, talent and other individual qualifications compatible with economic activities. Here, not only are they limited to educational opportunities, but also all human investments that enhance people's abilities have been emphasized.

Considering education and health as two main components of human capital, it can be said that investment in these areas may directly affect the human capital level of individuals. For this reason, it is a well known fact that any investment in human beings will contribute to economic growth in the short or long term. When we look at countries with high levels of economic development, it is generally seen that the education and health levels of these countries are also high.

As a matter of fact, according to Barro's (1996) evaluations, health is an asset that generates motor and capital of the economy. From this expression of Barro, we can consider health as a determinant of human capital. On the other hand, Mushkin (1962) explains the human capital formation by taking advantage of health services. Grossman (1972), Bloom and Canning (2000) explain that healthy individuals have more effective knowledge and consequently, higher levels of productivity. Hamoudi and Sachs (1999) emphasize that there is a simultaneous cycle between health and wealth.

According to the World Bank 1993 report, health problems are important obstacles to economic development. The main outcome of the health report is that the relationship between health and economic growth needs to be addressed in broad manner.

Bloom, Canning and Sevilla (2001) state that human capital should be defined not only as talents but also in terms of health; they emphasize health as one of the basic dynamics of growth. Empirical findings on the relationship between human capital and growth reveal that the developments in education and health affect economic growth by increasing technological innovations, productivity and production.

Today, the theoretical relationships between human capital and economic growth are mainly covered by the models presented by Lucas (1988), Romer (1990) and Mankiw *et al*. (1992). The first two are known as internal and the other as external growth model. Mankiw *et al*. (1992) extended the Solow model by adding human capital as an external variable to the production function. This model is known as extended Solow model. But, extended Solow model which also includes human capital, handles human capital as an additional and ordinary input. Human capital is modeled in a similar way to physical capital. New growth theory, which has been accelerated with Romer (1986), internalized the sources of the growth so that the growth rate could be determined in the model. The internal growth literature has identified two main approaches to how human capital should be incorporated into economic growth models.

The first is the Lucas (1988) model, which accepts the accumulation of human capital as a motor of growth. The other is Romer (1990) model, focusing on the role of human capital stock in innovation process and technological adaptation. It is worth noting that an important part of the theoretical literature explaining the relation between human capital and economic growth concentrates on the relation between education and growth. However, developments in health can also have an impact on economic growth.

In order to be able to explain the relationship between health and economic growth, it is necessary to first understand the health phenomenon. Health is important not only in the sense

[12] S. Akbulak, a.g.m.,s. 101.
[13] 1. G. Yumuşak, a.g.e.,s.36,37.
[14] S. Akbulak, a.g.m.,s. 101.
[15] F. Stewart, "Eğitim ve Uyum: 1980'lerin Deneyimi ve 1990'lar İçin Bazı Dersler", Piyasa Güçleri ve Küresel Kalkınma, Çev: İdil Eser, Yapı Kredi Yayınları, 1.Baskı, İstanbul, 1995, s. 195.

that there is not a disease but also in the context of capabilities that the individuals may develop in their own lives. In this framework health is an asset that individuals have, and it helps raise the level of welfare. On the other hand, health has an instrumental value. In other words, it may affect economic growth from different channels. For example; it reduces the loss of production caused by labor diseases to minimum, decreases the absenteeism among school children, and improves learning. In addition, health allows the use of natural resources that are partially or completely unavailable due to disease. Finally, health allows use of financial sources that are allocated for treatment in different ways.[16]

Sachs (2001) summarizes the contribution of health to economic growth and development process as follows. According to him, perhaps the most important economic impact of health is on human capital and entrepreneurship capital. Health, as it is influenced by previous economic policies and institutions, affects the human capital and technology level of the society, resulting in an increase in per capita income and a decrease in poverty.[17]

Today, research results from both developed and developing countries prove that economic growth has improved health and that improvements in health have also have an important impact on economic efficiency and growth.(AtunveFitzpatrick, 2005:6)In the literature, the relationship between health expenditures and economic growth has been examined through health indicators such as life expectancy at birth, the number of beds of health institutions, the number of health institutions and the number of persons per health personnel. In this study, it will be tried to determine the amount of health expenditure per person who maximizes the per capita national income by using the Armey curriculum based on the logic of the optimization of public expenditures, for the OECD countries with Turkey and adequate funds, and this health expenditure will be calculated on the per capita national income.

Model and Analysis

The impact of the public sector on economic growth is generally centered around two main approaches. The first view suggests that as the size of the public sector increases, the efficient distribution of resources deteriorates, private sector investments are excluded and consequently the productivity is reduced and economic growth is negatively affected. While basic public spending positively affects the growth, an increase in public spending beyond basic functions can lead to a decrease in the positive effect on growth. According to the second view, the public should undertake active roles to mobilize the physical and human capital resources required for economic growth and development. According to the theoretical literature on the effect of the public sector on economic growth, the private sector offers all the goods and services that the state produces and markets when public expenditures are zero, and thus growth rate is realized at low level. Then, as public spending increases, growth also increases at a certain amount, but spending on optimal levels affects growth negatively. Therefore, there is an inverse U-shaped relationship between the size of the public sector and the economic growth rate. There are no direct studies on Turkey that are based on optimal public expenditures in the literature. Karras (1996) calculated the optimal public sector size as 16% (± 3%) in the study on 118 countries that also includes Turkey. For Turkey, this rate is determined as 12%. Most of the work done in Turkey on public sector expenditure and size is due to the Wagner law and Keynesian hypothesis testing.[18]

The Armey curve shows the relationship between the public sector size in the economy (public expenditure / GDP ratio) and real GDP (or real GDP growth rate).In the absence of the public sector, very low output is produced (G0). This output level can be theoretically zero. The increase in public spending initially leads to an increase in GDP, and then at a certain point economic growth reaches a maximum (G *). At the point where economic growth is at its maximum, the marginal productivity of public expenditures is equal to the marginal productivity of private sector spending, and the economic contribution of public expenditures is zero. Beyond this point (P *) the increase in public spending due to the decreasing law will lead to a decrease in growth rate (Figure 1). For this reason, it is possible to increase the output at these points only by the downsizing of the state. Further increases in public spending mean economic stagnation and smalling of state.

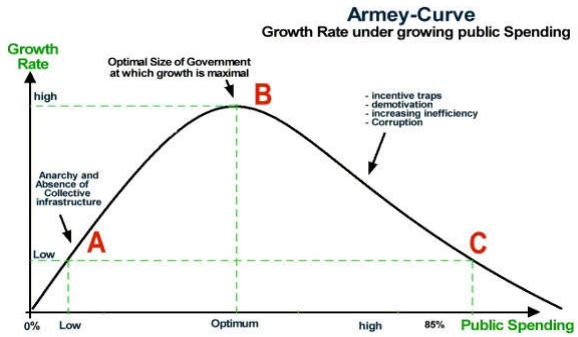

Figure 1 Armey Curve

In this study, the Armey curve will be used for the first time to optimize health spending, and through a nonlinear parabolic model, the increase in real per capita health spending on the purchasing parity of 22 OECD countries with sufficient funds, including Turkey, will increase economic growth and the contribution to economic growth will be determined at this point.

In this model, based on the data of 22 OECD countries between 1975 and 2014,
GDPC = per capita income according to OECD purchasing parity
HEXPC = Per capita health expenditure according to OECD purchasing parity.
Model Armey curve is constructed with logic as follows:
GDPC=β1 HEXPC + β2HEXPC2

That is, as health expenditure increases, per capita national income will increase but will decrease as the square increases. If the first derivative of the curve equals zero, then the optimal

[16]ÇETİN, M., ECEVİT, E. (2011). Sağlık harcamalarının ekonomik büyüme üzerindeki etkisi: OECD ülkeleri üzerine bir panel regresyon analizi. Doğuş Üniversitesi Dergisi, 11 (2), 166-182.ss.

[17]ÇETİN, M., ECEVİT, E. (2011). Sağlık harcamalarının ekonomik büyüme üzerindeki etkisi: OECD ülkeleri üzerine bir panel regresyon analizi. Doğuş Üniversitesi Dergisi, 11 (2), 166-182.ss.

[18]PAMUK, Yalçın; DÜNDAR, Uğur; KAMU HARCAMALARININ OPTİMAL BOYUTU: TÜRKİYE ÖRNEĞİ. Hacettepe UniversityJournal of Economics&AdministrativeSciences / Hacettepe Üniversitesi Iktisadi ve Idari Bilimler Fakültesi Dergisi . 2016, Vol. 34 Issue 3, p23-50. 28p.

per capita health expenditure is HEXPC * = - β1 / 2β2.

In the statistical analysis with Eviews 8, the coefficients and the model were found meaningful and the explanatory level (R2) was over 85% for both 22 countries. It is even over 97% for 21 countries and close to 89% for Turkey. It can be concluded that the model is a very descriptive and good model. Coefficients were determined by using the following Eviews result table and the per capita health expenditure for Turkey was found as 1109,754 USD.As of 2013, the per capita health expenditure is 941 USD. Therefore, if per capita health expenditure is increased to about 1109 USD according to current capital structure and production relations, per capita income will be maximized in terms of health expenditures.

Table 4 Eviews Model Results for Turkey

Dependent Variable: TURKEYGDPC
Method: Least Squares
Date: 06/12/16 Time: 02:57
Sample (adjusted): 1975 2013
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TURKEYHEXPC	30.14536	2.050317	14.70278	0.0000
TURKEYHEXPC*TURKEYHEXP...	-0.013582	0.002676	-5.076030	0.0000

R-squared	0.889955	Mean dependent var	7764.308
Adjusted R-squared	0.886981	S.D. dependent var	4722.683
S.E. of regression	1587.689	Akaike info criterion	17.62787
Sum squared resid	93267945	Schwarz criterion	17.71318
Log likelihood	-341.7434	Hannan-Quinn criter.	17.65848
Durbin-Watson stat	0.125141		

CONCLUSION AND SUGGESTIONS

As a result of the study, the relationship between per capita health expenditures and per capita national income of 22 OECD countries, including Turkey, was analyzed by Armey curve logic by using OECD statistics. As result, parabolic model was statistically meaningful, the coefficients were meaningful and the explanatory level was high. The optimal amount of health expenditure was calculated for the 22 countries according to the existing capital structure and development levels. It was found that only South Korea is above this point and Korea and Japan were close to the optimal expenditure level, which maximized the national income per capita. When the optimal per capita health expenditure is achieved, it is determined that the national income will increase by 2.31% for Turkey. Korea and Japan will have the lowest growth rate of 0,06% and 0,01%, respectively, since the actual level of health expenditure is very close to the optimal point.

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3. Johnson, E. A. J.;"The Place of Learning, Science, Vocational Training and "Art" in Pre-Smithian Economic Thought", Readings in the Economics of Education, UNESCO, France, 1968, s.25-36.

Table 5 Optimal and Realized Health Expenditure for 22 OECD Countries

Ülke	YIL	HEXPC* (USD)	HEXPC (USD)	GDPC	β1	β2	GDPC*(USD)	GDPC ARTIŞ	GDPC ORANSAL ARTIŞ
AUSTRIA	2013	7051,671672	4553	43439,23	14,08924	0,000999	49676,34729	6237,116763	0,125555
BELGIUM	2013	5514,971731	4256	40794,31	15,60737	0,001415	43037,10218	2242,788896	0,052113
CANADA	2014	7265,350785	4429	42727,12	13,87682	0,000955	50409,98254	7682,865918	0,152408
DENMARK	2013	7160,295015	4553	43715,82	14,07714	0,000983	50398,23769	6682,421513	0,132592
FINLAND	2014	6763,860169	3517	41545,09	15,96271	0,00118	53984,76918	12439,67913	0,230429
GERMANY	2014	8760,93617	5002	44150,2	12,35292	0,000705	54111,57182	9961,368798	0,184089
ICELAND	2014	6538,973137	3903	41324,53	15,09195	0,001154	49342,92782	8018,400953	0,162504
IRELAND	2012	5108,210863	3663	45081,74	19,18644	0,001878	49004,19061	3922,455474	0,080043
ISRAEL	2013	10690,82639	2428	33134,02	15,39479	0,00072	82291,51359	49157,49595	0,597358
ITALY	2014	4793,36202	3126	35202,02	16,70966	0,001743	40047,7248	4845,707509	0,120998
JAPAN	2013	3811,659794	3768	35227,6	18,48655	0,002425	35232,21968	4,62248067	0,000131
KOREA	2014	2254,88806	2440	31806,5	28,40257	0,006298	32022,30798	215,8099789	0,006739
NETHERLAND	2013	5837,644928	5217	46496,2	16,1119	0,00138	47027,77565	531,576174	0,011303
NEW ZELAND	2013	3832,616511	3328	32520,5	17,26977	0,002253	33094,20282	573,6990163	0,017335
NORWAY	2014	12525,32872	6177	67384,73	14,47928	0,000578	90678,87081	23294,13841	0,256886
PORTUGAL	2013	3194,826807	2584	26118,6	16,97092	0,002656	27109,57508	990,9785357	0,036555
SPAIN	2013	3845,035895	2898	32885,42	18,21009	0,002368	35009,22485	2123,804705	0,060664
SWEEDEN	2013	5832,869091	4904	45594,4	16,04039	0,001375	46780,74752	1186,346959	0,02536
SWITZERLAND	2013	8757,461538	6466	55725,02	13,66164	0,00078	59820,64343	4095,620866	0,068465
UNITED KINGDOM	2013	3660,118291	3235	37426,98	20,73091	0,002832	37938,79144	511,8147896	0,013491
USA	2013	10033,09804	8713	50449,4	10,23376	0,00051	51338,15869	888,7560049	0,017312
TURKEY	2012	1109,754086	941	16340,18	30,14536	0,013582	16726,96822	386,7874034	0,023124

If the per capita health expenditure were optimal for this model, our national income per capita would increase by 2.31% Below are the optimum (economic growth maximized) and actual per capita health expenditures of other OECD countries. As you can see, Korea and Japan have the health expenditure closest to the optimum point. Korea is the only country that has surpassed optimal health expenditure. This situation which is called as Korean miracle where income per capita was half of Turkey in1975 and now it is the twice, is clearly seen in this model.

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How to cite this article:

Murat Binay and Veysel Ulusoy.2017, Optimization of Health Expenditures as Human Capital. *Int J Recent Sci Res.* 8(6), pp. 17453-17459. DOI: http://dx.doi.org/10.24327/ijrsr.2017.0806.0358

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