Public Healthcare Expenditure and Environmental quality in Iran

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Abstract: In this paper we examine the role of environmental quality and income in determining health expenditures for period of 1967 to 2010 in Iran. We take a cointegration and ARDL approach in order to explore the possibility of estimating both short-run and long-run impacts of environmental quality. We find that health expenditure, income, sulphur oxide emissions and carbon monoxide emissions are cointegrated. While short-run and long run elasticities reveal that income, sulphur oxide emissions and carbon monoxide emissions exert a statistically significant positive effect on health expenditures. We find SPM emissions have a statistically significant positive impact on health expenditures in short-run and long run.

Key-Words: Economic Growth, Health expenditure, Environmental quality, Iran, ARDL.

1 Introduction

Environmental consequences of global warming and greenhouse gas emissions increase the concerns of the consumption of fossil fuels. Environmentalists as well as policy makers are concerned about the air pollution. In Iran country, the high concentration of human population, traffic, and industrial activity intensifies the concentration of the pollutants and hence increases the environmental risks of exposure [1].

Over the past decade epidemiologic studies in Europe and worldwide have measured increases in mortality and morbidity associated with air pollution. As evidence of the accumulated health effects of air pollution has accumulated, WHO and European governments have begun to use data from these studies to inform environmental policies [2].

According to the WHO definition of health, all these outcomes are potentially relevant for health impact assessment. Recently, a committee of the American Thoracic Society identified a broad range of respiratory health effects associated with air pollution that should be considered “adverse”, spanning outcomes from death from respiratory diseases to reduced quality of life, and including some irreversible changes in physiologic function. In general, the frequency of occurrence of the health outcome is inversely related to its severity. This suggests that the total impact is likely to

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exceed that contributed by the less frequent, more severe outcomes, and, in some cases, may be dominated by the less severe, but more frequent, ones [3].

Among the broad categories of mortality and morbidity there are a wide variety of specific outcomes that could be assessed, and should be considered for health impact assessment. With regard to morbidity, both acute and chronic conditions were deemed pertinent. As discussed in the earlier WHO guideline document, and also below, the choice of health outcome will ultimately depend on the objective of the health impact assessment. For example, some assessments focused on mortality only, and others on several indicators, both mortality and morbidity, for a number of cardio-pulmonary diseases [4].

Health is one of the most important factors that determine the quality of human capital, a necessary factor for economic growth. In line with the above, a consensus of opinion have been formed among researchers recognizing health as a public good, the demand and supply of which cannot be left at the mercy of invisible hands or profit maximizing individual as well as on considerations of utility maximizing conduct alone . Hence, the need for the government to play a major role in delivering good and qualitative healthcare services that is accessible and affordable for the teeming population.

The recognition of the importance of the above led the World Health Organisation (WHO) to propose at the 2010 World Health Assembly, issues that will address financing of health, which will ensure qualitative and affordable healthcare services [5]. The pattern of health financing is therefore closely and indivisibly linked to the quality of health outcomes (health status), capable of achieving the long term goal of enhancing nation’s economic development [6].

Section 2, is a review of the literature. Section 3 is an explanation of the model and estimation procedure. Section 4 analyses the results and finally, Section 5 however concludes the paper with the policy implications.

2 Literature survey

The literature that examines the determinants of health expenditures is growing. The literature has examined several determinants of health expenditures, including income, population ageing, number of practicing physicians, female labour force participation rate, the proportion of health care publicly funded, amount of foreign aid, urbanization rate, among other non-economic factors.

The main source of environmental cost is air pollution. While air pollution leads to environmental damage which has to be borne by the society, air pollution that negatively affects human health has negative repercussions on labour productivity. This affects industrial output and indeed national output, thus affecting growth of firms and the economy.

Hansen and Selte [7] examined the relationship between air pollution and human health effects. Their main focus was on investigating the impact of deteriorating health due to air pollution, which leads to more sick leaves, on labour productivity. They used data from Oslo and employed a logit model. They found that an increase in small particulate matter increases number of sick leaves, which negatively impacts trade and industry in Oslo.

Karatzas [8] studied the relationship between per capita health expenditure and economic factors, demographic factors, and health stock, for the USA over the period 1962 to 1989. His main findings were that per capita income, income distribution, number of physicians, number of nurses, and per capita expenditure on health administration had a statistically significant positive effect on per capita health expenditures, while the heath price index, number of hospital beds, and the US cities with population of over one hundred thousand inhabitants had a statistically significant negative effect on per capita health expenditures.

Bloom et al. [9] examined the effects of health on economic growth by using the panel data for 1960-90 for different counties with the help of non-linear regression. In their production function physical capital (labor) and human capital (education, and health) were used as input. The findings showed that health had a positive and significant effect on economic growth. The result also showed that one year increase in a population‘s life expectancy leads to 4 percent increase in output. Furthermore, this study identified that the increased government expenditures on health had a large and positive impact on labor productivity.

Jerrett et al. [10] investigated the relationship between environmental quality (proxied by total pollution emissions and government expenditures devoted towards defending environmental quality) and health care expenditures. They used crosssectional data from 49 counties of Ontario, Canada. They found that countries with higher pollution have higher per capita health expenditures, and countries that spend more on defending environmental quality have lower expenditures on health care.

Rico, et al [11] studied the impact of health on economic growth. They used capital growth, labor force participation rate, schooling, and life style, environment, and health services as independent variables. They used simple ordinary least square (OLS) method to estimate this relationship. All variables were found to be positively related to economic growth. This study also shows that improved health standards raise the economic growth thus reducing poverty.

Narayan and Narayan [12] examined the role of environmental quality in determining per capita health expenditures used a panel cointegration approach in order to explore the possibility of estimating both short-run and long-run impacts of environmental quality. The empirical analysis is based on eight OECD countries, namely Austria, Denmark, Iceland, Ireland, Norway, Spain, Switzerland, and the UK for the period 1980–1999. They found that per capita health expenditure, per capita income, carbon monoxide emissions, sulphur oxide emissions and nitrogen oxide emissions are panel cointegrated.

Wang et al [13] study apply the method of Granger causality which is more accurate than classical correlation analysis method to determine whether the main air pollutants:Nitrogen oxides (NOx), SO2 (Sulphur Dioxide), CO (carbon monoxide), TSP (total suspended particulates), PM10 (particulate matter smaller than 10 microns) and the mortality of respiratory diseases of the residents in Beijing have causal relationship. After ensuring NOx, SO2 and CO as the responsible substances, used the time series method to construct the autoregressive integrated moving average model (ARIMA) of the pollutants, so that we could predict the amount of the pollutants from 2005 to 2008. Then used the predicted value of pollutants as the input of the neural network model and obtain the output as the change of the death rate of respiratory diseases from 2005 to 2008. In the end, reducing the amount of pollutants by 10% and inputting the data in the neural network model, we make the prediction to evaluate the level of the pollutants and concluded that NOx is the most important pollutant to control.

Akram et al. [14] showed that human capital played an important role in continuous economic growth in Pakistan by using secondary data and cointegration techniques. They used age dependency, trade openness, life expediency, health expenditures, infant mortality rate, investment percentage of GDP, per capita GDP and secondary school enrollment. This study showed the per capita GDP was the dependent variable and all others were independent variables. Their findings showed that trade openness, health expenditure, secondary school enrollment, investment, life expectancy and mortality rate were positively related to economic growth. They suggest that in Pakistan, people have lower per capita income that is why they spend less on health facilities; therefore, the government must increase the wages of labor to facilitate their life.

Rao et al. [15] used the annual data from 1981 to 2005 to analyse the causal relationship between health care expenditure and real income in five ASEAN countries using the standard Granger causality tests. In general, the causality results are mixed among five ASEAN countries. Specifically, the study observed that there is bilateral causality between health care expenditure and real income in Indonesia and Thailand, while only unilateral causality running from real income to health care expenditure was detected in Malaysia and Singapore. Nevertheless, the causal relationship between health care expenditure and income is neutral for the Philippines.

Samudram et al. [16] examined the long-run as well as the causal relationship between health care expenditure and real income in Malaysia using the Cointegration tests alone. For the sake of brevity, the study covered the annual sample from1970 to 2004 and they found that health care expenditure and real income are positively related in the long-run. In addition, they also surmised that health care expenditure and real income are bilateral causality in Malaysia.

Tang [17] investigated the health-income nexus for Malaysia using the cointegration and causality tests. However, the empirical evidence between health care expenditure and real income for Malaysia remains controversial. He used the annual data from 1960 to 2007 to re-assess the relationship between health care expenditure and real income in Malaysia. Unfortunately, the author found that health care expenditure and real income are not cointegrated, but the author found the evidence of two-ways causality between the variables.

Narayan et al. [18] investigated the relationship between health and economic growth in five Asian

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countries by using panel data from 1974-2007.They used investment, exports, imports, education and R&D while using the co-integration technique. They showed that health, investment, exports, education, and R&D had positive impact on economic growth. They also found that imports had a statistically significant but negative effect while education had an insignificant effect on growth. They suggested that improved the economic growth can be achieved by improving health facilities.

Peykerjou [19] studied the relationship between health and economic growth in 15 member countries of Organization of Islamic Cooperation (OIC) for 2001-2009. The objective of this study was to examine the effects of different health indexes on the economic growth. The results showed that increase in economic growth in OIC countries was also due to increase in life expectancy. It was also observed in this study that there was a negative relationship between fertility and economic growth in these OIC member countries.

Tekabe [20] studied the impact of school enrollments, the fertility rate (total births per woman), mortality and life expectancy rates on growth in low income countries and sub Saharan African. He found that mortality and fertility rates had influenced economic growth. He also concluded that there was no causal relationship between per capita income and health while there was a bidirectional relationship between per capita GDP and mortality rate. This study also suggested that simultaneity exists between per capita GDP and health.

Edwards [21] used data from a household survey and logit model to examine gas stove adoption, firewood consumption, and the resulting effects on the health of young children in Guatemala. The findings suggest that cooking with firewood has significant negative impacts on children's respiratory health. We also find strong evidence that these impacts go well beyond respiratory problems and have much broader health effects.

3 Data, Specification Models and Methodology

3.1. Data

Time series data are annual and for the period 1967–2011.

The health expenditures and GDP are measured in US dollars at 1995 prices based on PPP. SPM, Sulphur oxide emissions, carbon dioxide emissions, and carbon monoxide emissions are measured in kilos. All data are obtained from the WDI, and were converted into natural logarithmic form before the empirical analysis [22].

3.2 Model

Relationship between health expenditures and economic and social factors, has taken various forms. This bivariate formation has been expanded by several recent studies Karatzas [8] to include additional socioeconomic factors as determinants of health expenditures. Thus, they model the relationship within a multivariate framework.

HE measured is a linear function using the following equation:

$$\mathrm{HE_t = f(GDP_t, SPM_t, , SO2_t, CO_t)} \tag{1}$$

Here, HE is the real health expenditures in US dollar PPP terms, GDP is the real income in US dollar PPP terms and Spm, SO2 and CO are in kilos.

All variables are converted in natural logarithmic form to allow us to interpret them as elasticities. The Eq. (1) can be written as follows:

$$\mathrm{LnHE_t} = \alpha_0 + \alpha_1 \mathrm{LnGDP_t} + \alpha_2 \mathrm{LnSPM_t} + \alpha_3 \mathrm{LnSO2_t} + \alpha_4 \mathrm{Ln\ CO_t} \tag{2}$$

All the variables transformed to natural logarithms for the purpose of the analysis. We have used Microfit 4 and Eviews 8 to conduct the analysis.

We expect an increase in income and deterioration in environmental quality through more emissions to positively impact health expenditures. As countries grow they have more to spend on health care is well known, and empirical studies support this relationship. On the other hand, when environmental quality declines, it negatively impacts peoples' health. A deterioration in health demands more expenditures on health.

Moreover, pollutants such as sulphur, carbon monoxide and nitrogen dioxide have been found to be related to health events. It follows that SPM emissions, sulphur oxide emissions and carbon monoxide emissions all deteriorate the quality of the environment through polluting the air, thus negatively impacting human health. This implies that the demand for health care should increase

3.3 Estimation Procedure

This section outlines the application of ARDL techniques for co integration developed by Pesaran et al. [23] to establish the long run relationship among health sector performance outcome, institutions, healthcare expenditure and other explanatory variables. Econometric theory

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suggests that if the variables are co integrated, there will be at least one linear combination of variables in the model. One implication is that most of the time, series data are non-stationary in nature, and the application of OLS techniques will result in spurious outcomes. This data requires that before the application of ordinary least squares (OLS) to estimate the relationship, it is necessary to establish the order of their integration: I (0) or I(1).

Perron's [24] procedure is characterized by a single exogenous (known) break in accordance with the underlying asymptotic distribution theory. Perron uses a modified Dickey-Fuller (DF) unit root tests that includes dummy variables to account for one known, or exogenous structural break. The break point of the trend function is fixed (exogenous) and chosen independently of the data.

However, Perron [25] points out that they have a correct size asymptotically and is consistent whether there is a break or not. Moreover, they are invariant to the break parameters and thus their performance does not depend on the magnitude of the break.

Structural break tests can be divided into three categories. The Chow test is used within the first category. It tests whether the series has a break in the tested date. The tests in the second category look for the presence of a break in the series, which may exist at any time within the sample period.

Chow test looks for the following. Whether splitting data from the possible break point and estimating two generated sub-samples separately by least square gives signicantly better than using the whole sample at once; if the answer is yes, the null hypothesis of no break is rejected. The resulting statistics would be; F-statistics, log likelihood ratio or the Wald statistic.

In the first step of the ARDL analysis, we test the presence of long run relationships. General to specific modelling approach has been used. The number of lags of first differenced variables so selected is based on Akaike Information Criterion (AIC). Second, the long run relationship was estimated, followed by the short run coefficients thus using the error correction representation of the ARDL specification with a view to establishing the speed of adjustment to equilibrium. The ARDL specification of equation 3 decomposed into model 1and 2 can be stated as follows:

$$\begin{aligned}\Delta LnHE_t = a_0 &+ \sum_{i=1}^{n} a_{1i}\Delta LnHE_{t-i} + \sum_{i=1}^{n} a_{2i}\Delta LnGDP_{t-i} \\ &+ \sum_{i=1}^{n} a_{3i}\Delta LnRSPM_{t-i} \\ &+ \sum_{i=1}^{n} a_{4i}\Delta LnSO2_{t-i} + \sum_{i=1}^{n} a_{5i}\Delta LnCO_{t-i} \\ &+ \lambda\, ECM_{t-1} + u_t \qquad (3)\end{aligned}$$

a_0, a_1, a_2, a_3, a_4 and a_5 denote the error correction dynamics while a_1, a_2, a_3, a_4, and a_5 correspond to the long-run relationship in baseline Equation 2.Where ECM_{t-1} is the error correction term which is expanded from the following estimated cointegration equation:

$$\begin{aligned}ECM_t = LnHE_t - a_0 &+ \sum_{i=1}^{n} a_{1i}\Delta LnHE_{t-i} + \sum_{i=1}^{n} a_{3i}\Delta LnGDP_{t-i} \\ &+ \sum_{i=1}^{n} a_{2i}\Delta LnSPM_{t-i} + \sum_{i=1}^{n} a_{5i}\Delta LnSO2 \\ &+ \sum_{i=1}^{n} a_{5i}\Delta LnCO_{t-i} \qquad (4)\end{aligned}$$

In the ARDL bounds testing approach the first step is to estimate Equation 3 by Ordinary Least Square (OLS).

4. Results and Descriptive Statistics

Table 1 presents some descriptive statistics of the selected variables over the period 1984-2012. The summary common statistics contain the means, median standard deviation (Std. Dev.), maximum and minimum of each series after transformation in logarithms form.

Table1 Descriptive statistics for different variables

Variables	HE	GDP	SPM	SO2	CO
Mean	**23.46518**	**25.4306**	**11.8121**	**13.30733**	**14.69564**
Std. Dev.	**1.608451**	**0.40903**	**0.87793**	**0.747736**	**0 .98786**
Maximum (Year)	**25.78517**	**26.1540**	**13.3933**	**14.33316**	**16.07930**
Minimum (Year)	**21.03075**	**24.4768**	**9.92324**	**11.59686**	**12.59833**
N. Observation	**44**	44	44	44	44

Source: Author's calculation using Eviews 8

In this empirical study we used unit root tests to ensure that no variable is integrated at I (1) or beyond. We have used the ADF unit root test to check for stationarity. The results in Table 2 indicate that all variables are non-stationary at their level form and stationary at their first differences.

The cointegration test approach to modelling relies on the assumption that the variables are stationary at levels or at first difference i.e. (1(0) or 1(1). Therefore, the times series properties of the variables used in the model were investigated using Augmented Dickey Fuller, and Philip Peron. The results of the ADF and the PP tests for the variables under investigation are presented in Table 2 and 3.

Table 2 Augmented Dickey-Fuller Stationary Test Results

Variable	Constant No Trend	Critical Value	Variable	Constant No Trend	Critical Value
Ln HE	-0.688153	-2.931404	ΔLn HE	-5.845948**	-2.933158
Ln GDP	-0.489263	-2.938987	ΔLn GDP	-3.848338**	-2.936942
Ln SPM	0.248523	-2.931404	ΔLn SPM	-11.96908**	-2.933158
Ln SO2	-3.691310	-2.936942	ΔLn SO2	-5.717579**	-2.936942
Ln CO	-4.536092	-2.931404	ΔLn CO	-3.351691**	-3.196411

The number inside brackets denotes the appropriate lag lengths which are chosen using Schwarz Criterion.
* Denotes for 5% significance level
**Denotes for 10% significance level

Source: Author's Estimation using Eviews 8

Table 3 Perron Stationary Test Results

Variable	Constant	Trend	λ	T Statistics	Critical Value
L HE**	4.640728	-0.188033	0.6	-4.591494	-4.24
L GDP*	3.862284	2.703640	0.6	-3.82914	-3.66

*Denotes for 10% significance level
λ= 26/44=0.6
Source: Author's calculation using Eviews 8.

The maximum lag order two was set. With that maximum lag lengths setting, the ARDL (2, 0, 2, 0, 0, 2) model is selected using AIC.
When testing for cointegration, the VAR model with two lags, as suggested by AIC and HQIC is considered.
As can be seen from Table 3, 4 the Null Hypothesis of no cointegrating relationship against alternative of at most one cointegrating relationship cannot be rejected in any of the models at a 5% level of significance, suggesting that there is cointegrating relationship among variables.

Table 4 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.611192	94.09897	69.81889	0.0002
At most 1*	0.469474	56.31214	47.85613	0.0066
At most 2 *	0.388613	30.95669	29.79707	0.0366
At most 3	0.182536	11.27567	15.49471	0.1951
At most 4				

Trace test indicates 3 cointegrating eqn (s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon- Haug-Michelis (1999) p-values

Source: Author's calculation using Eviews 8

Table 5 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.611192	37.78683	33.87687	0.0162
At most 1	0.469474	25.35546	27.58434	0.0939
At most 2	0.388613	19.68102	21.13162	0.0788
At most 3	0.182536	8.061929	14.26460	0.3725
At most 4	0.077201	3.213740	3.841466	0.0730

Trace test indicates 3 cointegrating eqn (s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's calculation using Eviews 8

Therefore, the null hypothesis of no co integration cannot be accepted at the 5% significance level and hence, there is a co-integration relationship between the variables in the model. The null hypotheses of no cointegration are rejected, implying long-run cointegration relationships amongst the variables. The health expenditures, GDP, SPM, SO2 and CO are stationary over the period 1967- 2010. These variables share a common trend and move together over the long run.
The long-run and short-run elasticities for the impact of income, sulphur oxide emissions, SPM emissions, and carbon monoxide emissions on health expenditures are generated using ARDL estimators.
The long run estimates are described in Table 6. All estimated coefficients can be interpreted as long-run elasticities, given that variables are expressed in natural logarithms.
The Dummy variable is included in the model to differentiate the structural break between the

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periods of GDP. We set the dummy variables to DUMMY=1 for observation 1992 to 2010 when Iran experienced as a Stability Exchange rate and set the dummy variables to DUMMY=0 before break observation.

Table 6 Long-run Estimation Results

Dependent Variable: Ln HE			
Variable	**Coefficient**	**T-Ratio**	**Prob**
ln GDP	0.19	2.3908	[.023]
Ln SPM	-1.58	-2.9967	[.005]
Ln SO2	1.04	4.7589	[.000]
Ln CO	1.73	4.2691	[.000]
DUM92	0.45	5.4980	[.000]
T	-0.14	-39.7115	[.000]

Note** significant at 5 % level, *** significant at 10 % level
Source: Author's calculation using Microfit 4

Beginning with the long-run results, our main findings can be summarized as follows. First, we notice that all variables are statistically significant determinants of health expenditures. Although the SPM variable appears with a negative sign. Second, income, sulphur oxide emissions and carbon monoxide emissions have a statistically significant positive impact on health expenditures.
We find that a 1% increase in income increases health expenditures by around 0.19%. It is to be noted that in the long run an increase in level of income is assumed to be a reducing function of poverty and consequently improve living standard, demand for better health services that result into reduce infant and under-five mortality rate.
1% increase in CO emissions and sulphur oxide emissions increases health expenditures by around 1.73%and 1.04%, respectively.
The table 7 shows the short run estimation of variables. The ECM coefficient for model is statistically significant and negatively signed, this further lend credence to the cointegration among the variables under investigation.

Table 7 Error correction model (ECM) for short-run elasticity ARDL (2, 0, 2, 0, 0, 2) selected based on Akaike Information Criterion

Dependent Variable: D Ln HE			
Variable	**Coefficient**	**T-Statistic**	**Probability**
D Ln GDP	0.21	2.3556	[.025]
D Ln SPM	-2.47	-2.4340	[.021]
D Ln SO2	1.15	4.6093	[.000]
D Ln CO	1.91	4.2850	[.000]
ECM (−1)	-1.10	-20.9085	[.000]
The Short-Run Diagnostic Test Results			
R-Squared	**.95031**		
Akaike info Criterion	16.8698		
Schwarz Criterion	6.4437		
F-Statistic	63.7519	[.000]	
Durbin-Watson	1.7280		
Serial Correlation LM	1.4592	[.227]	
Autoregressive Heteroscedasticity Test	.013829	**[.906]**	
JB Test for Normality Of Errors	2.2872	[.319]	

Note: **shows a percent level of 5%, ***shows a percent level of 10%.
Source: Author's calculation using Microfit 4

The Error Correction Mechanism coefficient is about -1.10. These suggest that about 1.61% of last year disequilibrium respectively is corrected in the current year. Hence, when growth rate is above or below its equilibrium level, it adjusts by approximately 1.61% within the first year to ensure full convergence to their various equilibrium levels.
We observe interestingly that the magnitude of the impact of sulphur oxide emissions is small compared with the magnitude of the impact of carbon monoxide emissions. For instance, while a 1% increase in sulphur oxide emissions increases health expenditures by 1.15%, the corresponding increase from a 1% increase in carbon monoxide emissions is 1.91%.
The model indicates that a 1% increase in GDP, increase health expenditure by approximately 0.21%. The coefficient of SO2 and CO is positively signed and significant. The coefficient on SPM shows a negative impact on health expenditure in Iran. The elasticity of SPM emissions with respect to output -2.47.

5 Conclusion

This paper aims at revealing the magnitude of the income elasticity and the impact of non-income determinants of health expenditures in Iran using the time series on GDP, environmental quality, over the period 1967-2010 in Iran using ARDL approach to VECM tests. The long run and short run estimated elasticity coefficient of government healthcare expenditure and SPM are negatively, implying essentiality of government financial commitment and institutions in the path to achievement of better health outcome. Also the estimated coefficients of SPM are negatively significant both in the short run and in long run.

Most previous studies of the developed countries empirically found health care to be a luxury good. The GDP variable exerts statistically significant and positive effects on health care. However, the policies aiming at encouraging health expenses are required to build up a healthier and productive society to support the Iran's economic growth and development.

Health has been categorized as public good, which cannot be left at the mercy of invisible hand. Government investment on health and education should be sustained rather than been left at the mercy of market due to its roles in human capital development necessary for development. This should be corroborated with adoption of policies that can ensure total overhauling of our institutions capable of driving investment in heath infrastructures, ensuring sustainable urban planning as well as reorientation of the individuals in term of altitudes, trust, respect for rule of law and accountability, thereby embedded in our human capital ethical value required of a health worker.

The fact that pollution damages environment, as correctly pointed out by one referee of this journal, implies that health management policy should include considerations for the use of cleaner fuels in Iran which is potentially at the expenses of (1) expenditures on defending environmental quality to a certain standard, and (2) expenditures on other sectors, such as education. This implies that if the proportion of health expenditure goes to caring for those affected from deterioration in environmental quality, then there is less funds available to cater for upgrading environmental quality and, if this process continues, it is likely to lead to more pressures on government budgets.

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