

GOVERNANCE QUALITY IMPACT ON HEALTH ECONOMICS IN SELECTED COUNTRIES: THE PANEL DATA APPROACH

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Abstract

The purpose of this paper is investigating the theoretical relationship between the effectiveness of governance quality on health economics in selected middle-income countries, using panel data. The Results of the estimation by using the Method of Generalized Least Squares (GLS) & Generalized Method of Moments (GMM) in selected countries for the period 2002-2011 show that governance quality has positive & significant effect on the life expectancy as an index showing the health economics in the group of the selected countries.

JEL Classification: I18; I12; E24

Key Words: Regulatory Quality; Health Economics; Generalized Least Squares; Generalized Method of Moments

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1. Introduction

Several definitions have been provided in the "Health" economics literature. In World Health Organization's (WHO) point of view, health is not only the absence of disease and illness, but also the welfare of the entire physical, psychological and social. From perspective of the human capital theory; health, can be considered as a sustainable commodity like any other commodity economy. All people are born with healthy reserves who some less and some more, take advantage of it. Grossman believes that everyone, at the beginning of each period, for example in a particular year, has an inventory reserve of health. Over time, health inventory decreases with increasing age, this process is called aging as well as when stored inventory of health is less than the critical level, the individual; and then the person will wipe out. As other sustainable goods, health store can produce a stream of services which leads to satisfaction and utility obtained (Grossman, 1972).

Since, the importance of health as a fundamental right to life is no secret can be said that health is a capacity significance of health that gives value to human life. In other words, the health is a wealth. In view point of Kenneth, there is a fundamental difference between health economics goods and other goods. The main factors listed are government intervention, uncontrollable uncertainty in various aspects and external effects. Also, another important distinction between the health economics and other sectors of the economy, is a third-party agent factor. Health economics is the therapeutic third-party agent

by his administering purchase goods or service (goods can be drug, testing or surgery) can effect on market (Kenneth, 1963).

Although hygiene is recognized as a public good in which the private sector reluctant to invest in it; hence the government as trustee of the health sector could improve public health through health expenditure, improve the health rules. The other hand improved efficiency and quality of government regulation increases the quantity of human resources in the future through capital accumulation increased life expectancy, health, longevity and reduce the mortality rate of patients, as well as soaking through the long expected service life. Health expenditures reflect part of public expenditure which has been spent to improve public health and have many effects on economic growth and GDP¹ per capita.

Governance can be defined as the actions and means adopted by a society to promote collective action and deliver collective solutions in pursuit of a common goals. Health Governance therefore can be defined as the actions and means adopted by a society to organize itself in the promotion and protection of the health of its population (Ahmad, 2010).

Good governance in health systems promotes effective delivery of health services. Critical are appropriate standards, incentives, information, and accountabilities, which induce high performance from public providers (Lewis & Pettersson, 2009). The term governance is used in various senses in the

1. Gross Domestic product

health and public sector management fields. How hospitals are governed and their governing structure is common referred to as the “governing structure” and there are governing boards for hospitals (McKee and Healy 2002; Preker and Harding 2003; La Forgia and Couttolenc 2008).

In particular, economic policies such as the level of government expenditure, tax rates, and the level of interest rates, income and education subsidies, and the level of social benefits have a crucial impact on socioeconomic factors. In addition, economic policies can influence economic growth, human capital levels and thus productivity which in turn play an important role on health inequalities. Finally, economic policies can also influence the occurrence, frequency, duration and the strength of economic cycles which in turn influence socioeconomic factors and therefore health inequalities. One of the most important of these factors is inflation (Drakopoulos, 2010).

The purpose of this paper is investigating the theoretical relationship between the effectiveness of governance quality on health economics in selected middle-income countries, using panel data. In order to testing the following hypothesis, Static & Dynamic Panel Date (SPD & DPD) model has been used:

– Governance quality has significant and positive effect on life expectancy as an indicator health economics in selected countries.

The World Bank (WB) is used for data in the address of www.worldbank.org. In this paper, the meaning of the middle-income group of selected countries is Iran, Angola, Algeria, Colombia, China, Dominican Republic, Ecuador, Fiji, Argentina, Angola, Iraq, Jamaica, Jordan, Mexico, Peru, Russia, Thailand, Tunisia, Turkey, Serbia, Lebanon and Venezuela. In the following, after a review of the theoretical and research background, the model will be introduced and it is estimated; and then, finally, the political conclusions and recommendations will be presented.

2. Theoretical basics

Good governance is considered as one of the most important issues discussed in development literature. This issue enjoys a special status to establish and institutionalize civil society in policy regarding to the granting of aid, especially in developing countries. The issue of good governance was introduced to achieve sustainable human development emphasizing on eliminating poverty, creating jobs, sustaining livelihoods, protecting and regenerating the environment. In good governance, three main groups of the government, civil society, and the private sector participate in conducting activities, and sometimes it is far higher than usual participation. The correct communication and interaction provide the context of good governance in different sizes. Various definitions and features for good governance are presented by different individuals and

international institutions. This paper considers the proposed definitions and features of World Bank as its basis. The World Bank defines governance as a method of power in economic and social resource management for achieving sustainable development (Boinger, Nelson, and Sarwa, 1992). According to this definition, member countries should improve resource allocation mechanisms, processes of policy formulation, selection and implementation of them, and the relationship between citizens and government. The bank proposed the following three distinct factors:

- The shape of political regime;
- The process of exerting authority in economic and social resources management for development;
- The government capacities to design, develop, and implement policies and the executive duties.

Also, the World Bank defines good governance based on six features and assesses the status of good governance in different countries once every two years during the period from 1996 to 2002 and annually from 2002 on based on these proposed features. These features are as follows:

(1) VA-capturing perceptions of the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

(2) PV-capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

(3) GE-capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation of them, and the credibility of the government's commitment in such policies.

(4) RQ-capturing ability perceptions of government to formulate and implement sound policies and regulations which permit and promote private sector development.

(5) RL-capturing perceptions of the extent in which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

(6) CC-capturing perceptions of the extent to which public power is exercised for private interest, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.

In this definition, governance for achieving its community development is more appropriate. The more positive features, such as the RL, VA, and GE in a society are, the less corruption, political instability and violence, and additional regulation

there would be. On the other hand, the World Bank believes that good governance is a kind of governance in which the public institutions act in a responsible, transparent, accountable manner and in a way which will lead to poverty reduction and economic growth. From the bank's perspective, there are many reports that reveal the existence of bad governance which are known as the main reasons for the failure of the governments and undermining market operations. The World Bank has calculated statistics related to the various characteristics of good governance with approximation and error through utilization of standard unobserved components models. It should be noted that although these figures have some measurement errors and are approximate, they can show ranking of countries in terms of being poor, average, good, or critical. The range of calculated indices is between 2.5 and -2.5 for most countries, and the more calculated index is close to 2.5, the more situation of that country is appropriate and vice versa (Kaufmann, Kraay, & Mastruzzi, 2002, 2004, 2005, 2006a, 2006b, 2007a, 2007b, 2007c).

Today, preservation, expansion and promotion of health in the human societies are construed as the most fundamental and key policies to establish social development and justice in the countries. Since healthy human is, on one hand, focused on the sustainable development and, on the other hand, health is a necessary subject for benefiting of human beings from the blessing of development, paying attention to the health and effort to preserve, promote and develop it is always regarded as a priority. Discussion of health is a multidimensional subject which several and diversified factors/elements leave impact on its provision, development or destruction, and all individuals, systems and organizations in the society play a role in the creation and, also, reception of consequences of the health (Minnesota, 2002).

Experience around the world has demonstrated that attention to governance is important to the ability of health systems to fulfill essential public health functions. Health governance concerns the institutions and linkages that affect the interactions among citizens/service users, government officials and health service providers. There is general agreement that good health governance is characterized by responsiveness and accountability; an open and transparent policy process; participatory engagement of citizens; and operational capacity of government to plan, manage, and regulate policy and service delivery. However, explorations of health system strengthening through the governance lens are few (Brinkerhoff, Fort & Stratton, 2009).

Many studies have been conducted on the effect of the quality of governance and its relationship to health economics. Filmer and Pritchett (1999) provide a good survey of studies linking public spending with health outcomes. In their own work, they find that the two are very tenuously related. According to their

results, doubling public spending from three to six percent of GDP would improve child mortality by only nine to 13% (Filmer and Pritchett, 1999).

The term "governance" has entered the health sector literature in at least three different ways, paralleling and influenced by these other bodies of work. As in the corporate and public sector literature, part of the health sector literature has looked at governance from the perspective of relationships among actors as they influence the behavior of specific organizations such as hospitals (Harding and Preker 2003) or mandatory health insurance institutions (Savedoff and Gottret 2008). Much as the corporate and public sector literature was extended to include broader social goals, another stream of work in the health sector has emphasized the broader notion of governance, particular using the concepts of stewardship or steering (WHO 2000, Saltman and Ferrousier-Davis 2000). Finally, as in the international development literature, researchers have begun to try measuring governance of the health sector – in some cases as part of the broader governance measurement effort (e.g. the World Bank's CPIA includes a component that specifically measures the quality of health sector governance) and in other cases as a focus in its own right (Murray and Evans 2003).

Brinkman et al. (2010) assess the potential effects of the global financial crisis on food consumption, nutrition, and health by examining various transmission channels. Focusing on the effect of high food prices on food consumption, they show that a food consumption score—a measure of diet frequency and diversity—was negatively correlated with food prices in Haiti, Nepal, and Niger; and argue that a large number of vulnerable households in developing countries reduced the quality and quantity of their food consumption, and faced the risk of malnutrition as a result of the global financial crisis (Brinkman et al., 2010).

Those topics are addressed in Schieber (1997), Savedoff and Gottret (2008) and Savedoff and Fuenzalida (2008) and among others. It attempts instead to identify what we do and do not know about effective solutions to advance good governance and performance in health, drawing heavily on the existing work of many researchers, specialists, and practitioners.

Social determinants of health as one of the main areas of health economics is an argument which comes in this context. Although health care can improve the health of individuals, economic and social conditions which determine the source of disease, plays a key role in improving the health of people (Wilkinson and Marmot, 2003). The concept of social determinants of health which is provided by the World Health Organization (WHO), implies to a situation in which people are born, grow, live and grow old and inequality in these cases leads to inequalities in health of individuals (Gontijo, 2010).

Also, Public Expenditure Tracking Surveys (PETS) and Public Expenditure Reviews (PERs) are means to track funds and scrutinize the flow of public resources in health across layers of the administrative hierarchy (Engberg-Pedersen et al. 2005; Savedoff 2008).

In the following Knowles, S. and Owen, P.D. (1997), by examining the effect of health education and the workforce efficiency, realized that the index health (life expectancy) in 22 high-income developed country is not meaningful. Perhaps the reason for this is that these criteria inside sample are immutable. Therefore was regarded hygienic spending as an index health and its relation to per capita income has been tested. The conclusion was that there is a strong relationship between income and health, as well as income and education.

In addition to steady by Rivera and Currais, L. (1999), about health spending and economic growth done, health care spending per capita is used as an indicator for the health of the community. In this paper, the health care spending is used as an indices for health and it is estimated the correlation between health and economic growth in OECD countries in the 1990-1960 period and in their study has been pointed out to analyze the role of health investment in

human capital accumulation as well as shown that education is the only factor affecting the performance and productivity of the workforce.

Another argument is eloquently made in Filmer et al. (2000). Commenting on the weak links that several studies have found between public spending on health and health status, the authors argue, "...changes in the price or availability of government interventions may induce a private supply response that can mitigate any actual impact on health outcomes." Thus, if an increase in public spending on health "crowds out" private sector provision of such services then the likely impact of an additional unit of public spending on health status may be minimal. Gupta et al. (1999) find that countries with high corruption have high child and infant mortality rates (Rajkumar and Swaroop, 2008).

3. Materials and Methods

In this paper for evaluating the effectiveness of different variables that affect health economics and for investigating the relationship between governance quality and health economics in selected middle-income countries, according to theoretical basis Model (1) has been used.

$$LE_{it} = \beta_0 + \beta_1 LGDP_{it} + \beta_2 GG_{it} + \beta_3 EN_{it} + \beta_4 INF_{it} + U_{it} \quad (1)$$

Where LE is Life Expectancy as an index for health; $LGDP$ is the logarithm of real gross domestic product; GG means governance quality; EN is human capital (enrollment, secondary (% gross)); INF is inflation rate; the symbols U , i and t show respectively error term, countries and periods. In order to study the statics/ stagnation or lack of stagnation of the variables, Panel Unit Root test has been used. Results obtained from the test of Im, Pesaran and Shin (IPS) for all used variables have used in Table (1). On the basis of results of static test, the variables LE and INF are static in level as well as $LGDP$, EN and GG are static by one difference. Therefore, the null hypothesis of a unit root is rejected. The Cointegration test results indicate that the null hypothesis based on absence of co-integration relationship between variables in the model is rejected. So, there is long-run relationship among the variables used in the models.

For estimating Eq.1 using random and fixed effects estimator (static panel), first, it is necessary to determine the estimation methods type of panel data. Therefore, to determine the presence (absence) of separate intercept for each of the countries, the F-statistics were used. According to The amount of calculated F-statistics in Table (2), rejected the null hypothesis based on Ordinary Least Squares (OLS) method with a confidence level of 99 percent. As a result, constrained regression (ordinary least squares) is not valid and different intercepts (using fixed

effects or random methods) should be considered in the models. Then for testing the model enjoying the fixed effects or random estimation method, the Hausman test was used. This testing was performed by using software EViews. 7. According to The amount of X^2 statistics obtained from the calculation for the regressions in Table (2), the null hypothesis based on use of random effects is rejected with a probability of 99 percent. Thus, fixed effects method confirmed for estimating models, which its results are presented in Table (2).

Addition to estimating models by using random and fixed effects estimator, the empirical model in this paper is estimated by using Generalized Method of Moments (GMM) relying on dynamic panel models on the 2002 - 2011 period. GMM estimator, particularly in recent empirical studies of macroeconomic and financial studies has been used widely. Using this method to estimate has many advantages. For example, Beck, Levine and Loayza (2000) recognize that is very convenient using this estimator in order to eliminate the variance of time series data. GMM estimator to estimate the unobserved individual specific delays in model (Which is done by inserting the lag of the dependent variable as an explanatory variable in the model), this estimator gives a better control of the endogenous explanatory variables of the model. The results of estimating the models by using estimator (GMM) are presented in Table (3).

4. Results & Conclusion

Results obtained from estimation of Function in the middle-income selected countries during 2002-2011 period (Table 2 & 3) show that:

Governance quality (simple mean of six indexes of good governance) has significant and positive effect on life expectancy as an index of health economics. Therefore, the hypothesis about a significant positive correlation between the governance quality and health economics in selected middle-income countries cannot be rejected. Also, per capital LGDP has significant and negative effect on life expectancy as an index of health economics. Income is an important economic and social determination of health.

Inflation has significant and negative effect on life expectancy as an index of health economics. In addition, one of the problems associated with inflation, is rising poverty. Economic problems and poverty could be the cause of many diseases and psychiatric problems. Low self-esteem, anxiety and mental disorders are some of these effects. Poor person loses his self-esteem due to lack of appropriate standing within the community, and therefore placed at risk for mental disorders.

Represents the gross enrollment rate in secondary education as human capital Has a significant and positive effect on life expectancy as an indicator of economic health in middle-income countries are selected. With the increase in the gross enrollment rate in secondary education, the quality of the labor force has increased, leading to greater efficiency and productivity of the workforce and the resulting increase in life expectancy. Different ideas about the relationship between education and health as the indicator of human capital there. Sarjen test statistic from a distribution with degrees of freedom equal to the number of constraints is higher than specified, the null hypothesis that the residuals are correlated with instrumental variables denies. Based on the results of the test instrument parameters used in the model are valid. The results confirmed the validity of the interpretation.

Determining factor in the model shows that over forty percent changes indicator of economic health (life expectancy) in selected middle-income countries is explained by the independent variables.

5. Offers

- Based on the results of this paper is to improve the quality of governance impact on the economy, health (life expectancy), the following suggestions are offered:
- Enhance the quality of regulation and consumer satisfaction.
- Avoid increasing health care costs due to advances in technology and service coverage.

- Raising the share of government and public health insurance fund.
- Adopt policies to increase life expectancy and improve the health of communities of ways, including:
 - Increase the efficiency of government spending on health care;
 - Equitable distribution of health facilities and services;
 - Greater use of new technologies in health systems;
 - Greater access to health services for all groups in society;
 - Raising the state's share in financing health insurance and the public;
 - Create a fair field of financial participation in the financing of the health system.

References

1. Grossman, M. (1972), "The Demand for health: a Theoretical and Empirical Investigation. National Bureau of Economic Research", Columbia University Press, New York, pp. 1-119.
2. Kenneth, J. A. (1963), "Uncertainty and the Welfare Economics of Medical Care", the American Economic Review, Vol. 53, NO. 5, pp. 941-973.
3. Ahmad, A. M. (2010), "Governance in Health Sector", World Health Organization.
4. Lewis, M. and Pettersson, G. (2009), "Governance in Health Care Delivery: Raising Performance", Policy research working paper 5074, The World Bank Development Economics Department & Human Development Department, pp: 1-71.
5. McKee, M. and Judith H. (Eds.) (2002), "Hospitals in a Changing Europe", Buckingham, UK: Open University Press.
6. Preker, A. S. and A. Harding (Eds.) (2003), "Innovations in Health Service Delivery: The Corporatization of Public Hospitals", Washington, DC: World Bank.
7. La Forgia, G. M.; Ruth Levine, A. D. and Magdalena R. (2004), "Fend for Yourself: Systemic Failure in the Dominican Health System", Health Policy, Vol. 67, No. 2, pp. 173-186.
8. Brinkman, H. P. S.; Sanogo, I.; Subran, L. and Bloem, M. W. (2010), "High Food Prices and the Global Financial Crisis Have Reduced Access to Nutritious Food and Worsened Nutritional Status and Health", the Journal of Nutrition, Vol. 140, No. 1, pp. 153-161.
9. Minnesota Department of Health. Gastroenteritis Outbreak Summary, (2002), Available Online at www.health.state.mn.us.
10. Savedoff, W. D. and Fuenzalida, H. (2008), "Promoting Accountability in Health Care Financing Institutions", in Implementing Health Financing Reforms: Lessons from and for Countries in Transition, Joseph Kutzin, Reihnard Busse, and Jonas Schreyögg (Eds.), Maidenhead: Open University Press.
11. Savedoff, W. D. and Gottret P. (Eds.) (2008), "Governing Mandatory Health Insurance", Learning from Experience, Washington, DC: World Bank.

12. Schieber, G., Ed. (1997), "Innovations in Health Care Financing. Proceedings of a World Bank Conference", Washington, DC: World Bank.
13. Wilkinson, R. and Marmot, M. (2003), "Social Determinants of Health: the Solid Facts; Second Edition", International Center for Health and Society, EUROPE, ISBN: 92890 13710, pp: 1-33.
14. Gontijo, J. V. (2010), "Estado cognitivo e funcional de idosos de uma Instituição de Longa Permanência do município de Divinópolis-MG", pp: 1-64.
15. Engberg-Pedersen, P.; Kaiser, K.; Kisunko, G.; Kushnarova, I. and Lindelow, M. (2005), "Public Expenditure Tracking Surveys: A Stocktaking", Mimeo, Washington, DC: World Bank.
16. Savedoff, W. D. (2008), "Public Expenditure Tracing Surveys: Planning, Implementation and Uses", Mimeo, Washington, DC: Social Insight and World Bank.
17. Boininger, E.; Nelson, J. M., and Sarwar, K. L. (1992), "Governance and development: Issues and constraints", Washington, D.C.: CQ Press.
18. Kaufmann, D.; Kraay, A. and Mastruzzi, M. (2002), "Governance matters II: Updated indicators for 2000/01". (World Bank Policy Research Working Paper. Washington, D.C. (2772)).
19. Kaufmann, D.; Kraay, A., and Mastruzzi, M. (2004), "Governance matters III: Governance indicators for 1996, 1998, 2000, and, 2002", World Bank Economic Review, Vol. 18, pp. 253-287.
20. Kaufmann, D.; Kraay, A. and Mastruzzi, M. (2005), "Governance matters IV: Governance indicators for 1996-2004", World Bank Policy Research Working Paper. Washington, D.C., pp. 3-30.
21. Kaufmann, D.; Kraay, A. and Mastruzzi, M. (2006), "Measuring governance using perceptions data", In S. R. Ackrman (ed.), Handbook of economic corruption. New York, Edward Elgar.
22. Kaufmann, D.; Kraay, A. and Mastruzzi, M. (2006), "Governance matters V: Aggregate and individual governance indicators for 1996-2005", World Bank Policy Research Working Paper, Washington, D.C. No. 4012.
23. Kaufmann, D., Kraay, A., and Mastruzzi, M. (2007), "The worldwide governance indicators project: Answering the critics", World Bank Policy Research Working Paper. Washington, D.C. No.4149.
24. Kaufmann, D., Kraay, A., and Mastruzzi, M. (2007), "Growth and governance: A reply/rejoinder". Journal of Politics, Vol. 69, No. 2, pp. 555-562.
25. Kaufmann, D., Kraay, A., and Mastruzzi, M. (2007), "Governance matters VI: Aggregate and individual governance indicators for 1996-2006", World Bank Policy Research Working Paper, Washington, D.C. No.4280.
26. Filmer, D., and Pritchett, L., (1999), "The impact of public spending on health: does money matter? Social Science and Medicine", Vol. 49, No. 1, pp. 1309–1323.
27. Rajkumar, A. S. and Swaroop, V. (2008), "Public Spending and Outcomes: Does Governance Matter?", World Bank, Washington, DC, United States, Journal of Development Economics, Vol. 86, pp. 96–111.
28. Filmer, D., Hammer, J. and Pritchett, L. (2000), "Weak links in the chain: a diagnosis of health policy in poor countries", The World Bank Research Observer, Vol. 15, pp. 199–224.
29. Gupta, S., Verhoeven, M. and Tiongson, T. (1999), "Does higher government spending buy better results in education and health care? Working Paper 99/21". International Monetary Fund, Washington, DC.
30. Brinkerhoff, D. W., Fort, C. and Stratton, S. (2009), "Good Governance and Health: Assessing Progress in Rwanda", TWUBAKANE, Decentralization and Health Program Rwanda, pp: 1-49.
31. Harding, A. and Preker, A. S. (2003), "A Conceptual Framework for the Organizational Reforms of Hospitals," in A.S. Preker and A. Harding, eds. Innovations in Health Service Delivery: The Corporatization of Hospitals. Washington, DC: The World Bank. pp. 23-78.
32. Savedoff, W. D. and Gottret, P. (eds.) (2008), "Governing Mandatory Health Insurance: Learning from Experience", Washington, DC: World Bank.
33. World Health Organization (2000), "The World Health Report 2000: Health Systems – Improving Performance". Geneva: World Health Organization.
34. Saltman, R. and Ferrousier-Davis, O. (2000), "The concept of stewardship in health policy," Bulletin of the World Health Organization, Vol. 78, No. 6, pp. 732-739.
35. Murray, Ch. J.L. and Evans, D. B. (eds.), (2003), "Health Systems Performance Assessment: Debates, Methods and Empiricism", Geneva: World Health Organization.
36. Drakopoulos, S. (2010), "Economic Policies, Socioeconomic Factors and Overall Health: A Short Review", University of Athens. MPRA Paper, No. 21553. <http://mpa.ub.uni-muenchen.de/21553/>.
37. Rivera, B., and Currais, L. (1999), "Economic Growth and Health: Direct Impact or Reverse Causation?", Applied Economics Letters, pp. 761-764.
38. Knowles, S., and Owen, P. D. (1997), "Education and Health in an Effective-Labor Empirical Growth Model", Economic Record, Vol. 73, No. 223, pp. 314-32.
39. Beck, T. Levin, R. and Loayza, N. (2000), "Finance and the source of growth", Journal of Financial Econometrics, Vol. 58, pp. 26-310.

Table 1. The results of panel unit root test in selected countries during 2002-2011 period

Results	The P-Value of IPS Test by One Difference	The P-Value of IPS Test	Variables
I ₀	-	0.0000	LE
I ₁	0.0000	0.5093	LGDP
I ₁	0.0000	0.1222	GG
I ₀	-	0.0000	INF
I ₁	0.0000	0.3777	EN

Source: calculated by EVEIWS.7 software

Table 2. Results of estimation the impact of Regulatory Quality on Health Economics (life expectancy) by using GLS method in middle-income selected countries

Dependent Variables: Life Expectancy		
Independent Variables	Coefficients	T-Statistic
C	72.57366	83.41135
LGDP	(-1.006161)	(-12.89464)
GG	0.273040	9.121731
INF	(-0.045676)	(-6.838138)
EN	0.112120	8.709841
R-Squared	0.454138	
D.W	0.208590	
Included Observations	159	
F(21,133)	350.108373	
P-Value	1.0000	

Source: calculated by EVEIWS.7 software.

Table 3. Results of estimation the impact of Regulatory Quality on Health Economics (life expectancy) by using GMM method in middle-income selected countries

Dependent Variable: Life Expectancy		
Independent Variables	Coefficients	T-Statistic
LE(-1)	0.997521	244.7776
LGDP	(-0.077546)	(-3.16466)
GG	0.009820	3.947515
INF	(-0.001676)	(-4.985795)
EN	0.001984	3.891221
J-Statistic	20.85528	

Source: calculated by EVEIWS.7 software.

* J-statistic means the Sarjen statistic used to test the correlation between the residuals and instrumental variables.