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Determinants of Healthcare Expenditures in GCC Countries: A Panel Data Analysis

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Abstract

This study aims to investigate the main factors that affected the government health expenditures in Gulf Cooperation Council (GCC) countries (Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), Oman, Qatar, Bahrain and Kuwait), during the period from 2005 to 2019. The study employs a panel data technique in order to monitor the pooled determinant variables of healthcare expenditures in these countries. The study's results indicate, by using FMOLS approach for panel data, that the average healthcare expenditures per capita in GCC countries have a positive and a significant relationship with the government revenues, the size of the population, and the governments' public debt. The positive and the significant relationships of governments' public debt may be explained even if the governments of the GCC countries suffer from a budget deficit; the GCC countries continue to increase the healthcare expenditure. The study suggests that the policymakers of the GCC countries must take into consideration those variables when they develop their healthcare policies. Also, the GCC countries urgently need to have high levels of foreign exchange reserves to maintain the expected level of spending on the healthcare sector, because their public revenues depend mainly on the oil revenues, which are fluctuating continuously.

Keywords: GCC, Healthcare Expenditures, Unit Root Test, Co-Integration, Regression Analysis

JEL Classification Code: I10, C33, O53

1. Introduction

1.1. Background

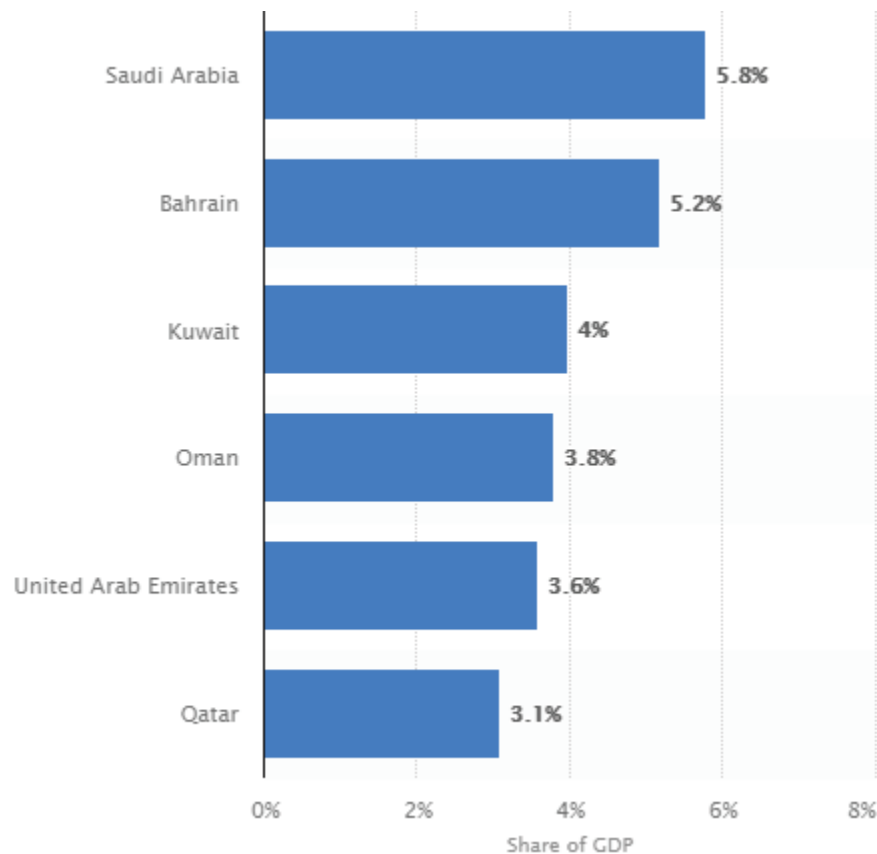
Government involvement in the healthcare sector is a common phenomenon worldwide. Governments spend, on average, 58.2% of their investments on healthcare (Çevik & Taşar, 2013). The expenditures are not only on healthcare, but also in regulating the healthcare industry and intervening in to public healthcare systems. Therefore, the government's influence on healthcare spending cannot be understated. In developing countries, governments aim to improve their

citizens' social welfare. Healthcare spending is one of the methods that the government uses in bidding to improve their citizens' living standards (Ke, Saksena, & Holly, 2011). The justification for the government's intervention in healthcare is that it can subsidize the cost of care for the poor citizens and can ensure the best use of healthcare facilities. Unlike other public goods and services, the healthcare industry exhibits uncertainty since there is no accurate method of predicting future trends and, therefore, the required number of facilities. However, household or macroeconomic data is used in modeling healthcare expenditures. Especially in free market economies, government interventions in healthcare ensure, also, that effective healthcare insurance reduces the uncertainty facing the sector.

As shown in Figure 1 (Statista, 2020), GCC countries – Kingdom of Saudi Arabia (KSA), Oman, Qatar, Bahrain, Kuwait, and the United Arab Emirates (UAE)) – spend less than 5% of their GDP on healthcare. From Figure 1, it is worth noting that the Kingdom of Saudi Arabia (KSA) has the highest expenditure on health, while Qatar has the lowest. According to Khoja et al. (2017), in recent years, the GCC countries have experienced significant increases in demand for healthcare services due to the increased

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Source: (Statista, 2020)

Figure 1: Healthcare expenditure as a share of GDP among GCC countries in 2015.

numbers of reports of non-communicable diseases, a rise in their citizens' life expectancy and significant growths. In this regard, the GCC countries' healthcare sectors require significant investments to help them meet the high demand for their services.

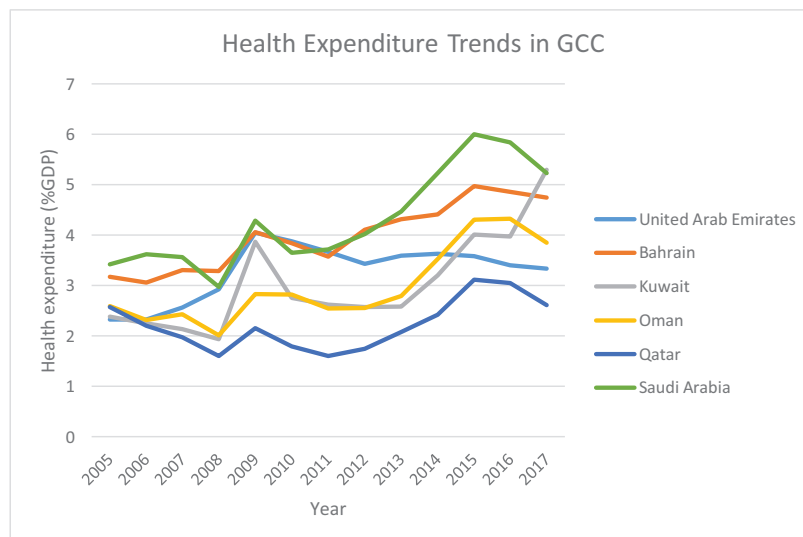
The high demand for healthcare in GCC countries is attributed mainly to lifestyle diseases such as diabetes caused by a combination of a high caloric diet and physical inactivity Khoja et al. (2017).

As shown in Figure 2, we obtained data about the healthcare expenditures trends in GCC countries. It is worth noting that, over the years, KSA has spent the most on healthcare expenditures as a percentage of GDP reaching as high as 6% in 2015. On the contrary, among the GCC countries, Qatar has spent the lowest on healthcare expenditures, reaching as low as 1.4% in 2011. Another trend, displayed in Figure 2, is that all the GCC countries show similar patterns in their healthcare expenditures. These include a gradual rise from 2010 to 2015 followed

by a slow decline in recent years. This finding suggests that, since healthcare represents a small percentage of their GDP, more efforts are still needed to improve the GCC countries' spending on public health countries.

1.2. Problem Statement

Previous studies have focused on health outcomes and have paid little attention to the factors that determine government spending and interventions in healthcare. Most studies on government expenditure on healthcare have focused mainly on low-income countries with few studies relating to Arab states (Odubunmi et al., 2012; Piatti-Fünfkirchen et al., 2018). By investigating the factors that determine healthcare expenditures, this may help to gain a crucial understanding of the main factors concerning healthcare expenditure. In addition, it may help to identify priority areas that require close attention when making decisions on which healthcare sector needs funding.



Source: The world data bank

Figure 2: Healthcare expenditure trends in GCC countries

1.3. Aims and Objectives

This study's general aim is to investigate factors that determine GCC countries' government expenditure on healthcare. More precisely, the study investigates various ways in which the government intervenes to improve healthcare provision for its citizens. In addition, the study investigates how these interventions affect spending in the sector.

This study's main objectives are:

- To investigate the main determinants that improve GCC countries' government expenditures on the healthcare sector.
- To investigate the specific significance of government revenues, size of population and public debt on the GCC countries' per capita healthcare expenditures.

1.4. Significance of Research

Various factors influence the governments' decisions on the types of interventions and the amounts of expenditure sustaining these interventions. The rapid growth in expenditures in healthcare has been a concern to governments and households (Baltagi et al., 2017). The growing expenditures mean that the cost of healthcare is becoming increasingly high, especially for out-of-pocket payments (Shahrawat & Rao, 2012). Consequently, this study responds to calls for government intervention. In addition, this study is vital in identifying healthcare needs that require regulation in order to ensure that the services and products meet health requirements. More specifically, this study

will identify the critical measures that the GCC countries' governments need to take in order to ensure that this sector's expenditures are controlled. This study is significant in understanding country-specific factors that inform the GCC countries' government decisions to invest in order to meet specific needs in the healthcare sector. Also, this study's results will improve the understanding of healthcare system characteristics and government fiscal space, which are the factors that determine how much is set aside for healthcare expenditures.

2. Literature Review

2.1. Economic Growth and Healthcare Expenditure

Previous studies have shown that there is a relationship between economic growth and healthcare expenditures. Nghiem and Connelly's (2017) findings on convergence and healthcare expenditures determinants show that healthcare plays a significant role in the development of a country's economy since good healthcare ensures that the country has a healthy and productive workforce. The researchers explain that healthy workers are less likely to be absent from work due to sickness and, hence, if all other factors hold good, they are more effective in carrying out their jobs. Therefore, it follows that, by increasing investments in healthcare to ensure improvements in the quality of healthcare, governments can improve the economy and, hence, improve the country's economic growth. In economies where there is high economic production due to a healthy workforce,

there are usually similar high investments in healthcare expenditures. In their publication on Microeconomics principles and policies, Baumol and Blinder (2015) support these views. They noted that improved incomes increased the demand for healthcare services. The increased income can be explained from either the effects of income substitution or the increased need for the government to invest in better healthcare services for its citizens in order to sustain economic growth, which is affected by the level of the inflation rate from the other side.

Many authors from different countries agreed that there is a relationship between the inflation and economic growth. Some studies suggested that a low inflation rate is needed to stimulate the economic growth, while other studies suggested that a high inflation rate is needed to grow the economy faster (Dinh, 2020).

Additionally, due to an increase in the “diseases of affluence” such as strokes and diabetes, healthcare expenditures may increase as income increases. Moreover, the increased income leads to the general population’s improved health and results in an aging population as life expectancy increases. Due to high healthcare expenditures to address certain ailments associated with older citizens, governments need to spend more on their healthcare. Therefore, there is a twofold effect. Firstly, in order to increase income generation, the government needs to invest in healthcare in order to increase productivity. Secondly, as incomes increase, the government is required to invest to address diseases that arise as a result of a wealthier economy.

Similarly, from studying the relationship between healthcare expenditures and economic growth in Nigeria, Odubunmi, Saka and Oke (2012) show that there is a relationship between government spending on health and the growth of the country’s economy. In addition, there is a developing relationship between foreign aid, GDP and healthcare expenditures. Although it is essential to secure foreign aid in order to improve healthcare, the findings show that usually such aid is redirected to help with meeting other policy requirements. Nevertheless, the findings show that government expenditure, which is used to improve healthcare, has a direct relationship with an improved economy. An increasing allocation of budget toward the improvement of healthcare for the general population both improves health outcomes and promotes economic growth. Keehan et al. (2012) show similar results from connecting projections and actual economic growth with spending on healthcare and by analyzing national healthcare expenditures. Their findings indicate that, as the economy begins to improve, the spending on health tends to remain relatively constant as health coverage expands. However, as economic growth continues to accelerate, government investments on healthcare increase exponentially. Health

legislation, such as the USA Affordable Care Act, means, also, that the government is required to increase spending on health in order to meet the cost.

Therefore, there is a positive relationship between economic growth and healthcare investment. In order to achieve sustained economic growth and to ensure a healthy workforce, the government must increase investments on healthcare. Eventually, this leads to economic growth. Additionally, as the economy grows, government expenditures on healthcare increase with the need to spend more to address emerging diseases. All in all, the achievement of economic stability requires the government to invest in healthcare since this is a critical component of the country’s economic growth.

The comprehensive use of technology in national economy, and the application of new innovative organization processes must inform a policy based on new trends, current incentives and models, aimed at economic growth, sustainable development and rational use of energy (Nurlanova, 2020). And for combating infectious and preventable diseases, the governments must depend mainly on the use of medical informatics systems in the provision of medical services (Afroz et al., 2019).

2.2. Determinants of Healthcare Expenditure

Various factors determine government expenditure on healthcare. By using the revised System of Health Accounts (SHA) data, Piatti-Fünfkirchen, Lindelow, and Yoo (2018) studied government spending on healthcare in East and Southern Africa. Their results indicate that there is a positive relationship between government revenues and government health expenditures. However, it is worth noting that, in most countries, government spending on healthcare increases at a slower rate than the increase in GDP. Government expenditures on healthcare reflect the overall allocation of resources and the degree of prioritization that is given to healthcare. The countries’ allocations of available budgets to healthcare are usually a function of their capacity to raise revenue and their willingness to prioritize healthcare. Also, in most developing countries, donor funding is a significant component of healthcare expenditures. The study’s results are identical to those of Barkat, Sbia, and Maouchi (2019) who examined and analyzed 18 Arab countries’ short and long-term determinants of healthcare expenditures. A key finding is that income is a primary factor in healthcare expenditures. As with individuals, who spend more on healthcare as their net income increases, governments spend more as their revenues increase. Other factors, which were found to increase healthcare expenditures, include the aging population and progress in medical technology. As stated previously, the aging population is more susceptible to an increase in certain age-related diseases (Baumol &

Blinder, 2015) and, therefore, this increase leads to greater government expenditures to address those diseases.

By the same token, from applying a time series analysis to examine the effect of the various factors on Iran's healthcare expenditures, Razaei et al. (2016) show that the GDP per capita increased both the government's and individuals' expenditure on healthcare. As GDP increases, there was a notable increase in the number of citizens living in urban areas. As the number of urban dwellers increases, governments increase their investments in healthcare facilities within cities, thereby increases the expenditure on healthcare. However, an increase in the urban population means that the government must reduce the physician-to-population ratio in order to improve healthcare outcomes. An increase in GDP means that government revenues increase and, consequently, the government has more funds to invest in the sector. Against this background, it is appreciated that GDP and the degree of urbanization are critical determinants of healthcare expenditures. This study's findings are consistent with the WHO report (2019), which identifies several determinants of government spending on healthcare. The WHO report states that, in line with global sustainable development goals, governments need to increase their spending on healthcare in readiness to increasing GDP. For example, global spending on healthcare increased from \$7.6 trillion in 2016 to \$ 7.8 trillion in 2017. In middle-income countries, governments have increased their healthcare spending in a bid to modernize their healthcare facilities, to address a growing population, and to keep pace with rising GDPs.

Additionally, in those countries, an increase in donor funding increases healthcare expenditures. Therefore, as a country's GDP increases, more people tend to live in urban areas and, thus, there is more urbanization. In a bid to reduce the physician-to-population ratio, governments increase expenditures on healthcare in order to improve health outcomes. Additionally, in line with sustainable development goals, governments have increased their healthcare expenditures to keep up with growing GDP and in readiness for the increasing size of the population and a better quality of life.

3. Methodology and Results

This study's main objective is to investigate the significant determinants of GCC countries' per capita healthcare expenditures over the period from 2005 to 2019. In this section, we present the panel data analysis and econometric models along with the findings. Some of the main statistical tests included unit root tests (Pesaran and Shin; Levin, Lin, and Chu) and co-integration tests (Kao Residual Cointegration Test; Johansen Fisher Panel Cointegration Test).

3.1. Econometric Model

For our methodology, we employed a balanced panel econometric model to determine healthcare expenditures. A vital benefit of this model is that it allows simultaneous cross-sectional analysis (integrating data from different countries) and the analysis of time series involving data from different periods. The data employed in this study were extracted from the GCC countries' Central Bank reports and from World Bank reports. Equation 1 below represents the general mathematical form of the econometric model.

$$\begin{aligned} HEXP &= f(GRE, POPN, GDEB) \\ HEXP &= \alpha + GRE + POPN + GDEB + \varepsilon \end{aligned} \quad \dots(1)$$

Where:

HEXP = per capita healthcare expenditure;

GRE = Government revenues;

POPN = Population; and

GDEB = Government debt.

3.2. Panel Data Approach

We use a balanced panel approach in which all entities have measurements in all time periods. Therefore, the total number of observations is equal nT . However, when each entity in a data set has different numbers of observations, the panel data is not balanced. The basic concepts of panel data models attempt to examine, either the group (individual-specific) effects, time effects, or both in order to deal with heterogeneity (individual effect) that may or may not be observed. These are either fixed effect or random effect. A fixed-effect model examines if intercepts vary across group or time period. On the other hand, a random-effect model explores differences in error variance components across individuals or time periods (Park, 2011). Therefore, the panel data approach uses the following techniques.

3.2.1. Pooled Ordinary Least Squares (POLS)

POLS assumes the coefficients remain constant in terms of a cross-time and cross-section. As shown in equation 2 below, if individual effect ui (cross-sectional or time specific effect) does not exist ($ui=0$), Ordinary Least Squares (OLS) produces efficient and consistent parameter estimates.

$$y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad (U_i=0) \quad \dots(2)$$

In the model, t represents a particular year, while i represents a GCC country. Therefore, as shown in equation 3 below, for our model:

$$HEXP_{it} = \beta_0 + \beta_1 GRE_{it} + \beta_2 POPN_{it} + \beta_3 PGDP_{it} + U_{it} \quad \dots(3)$$

Where $i=1, 2, \dots, N$ and $t=1, 2, \dots, T$.

However, POLS take no account of the heterogeneity effects while the fixed-effect model takes explicit account of them.

3.2.2. Fixed Effects Least Squares Dummy Variables

The model allows heterogeneity among the six GCC countries. Therefore, as shown in equation 4 below, this ensures that each country has its own intercept.

$$HEXP_{it} = \beta_{it} + \beta_1 GRE_{it} + \beta_2 POPGR_{it} + \beta_3 INF_{it} + \beta_4 PGDP_{it} + U_{it} \quad \dots(4)$$

3.2.3. Fixed Effects Regression Model (Least Square Dummy Variables)

Each country's intercept is different from the other country's intercept. However, as shown in equation 5 below, a country's intercept does not vary over time (time invariant).

$$HEXP_{it} = \beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \dots + \beta_5 D_{5i} + \beta_6 GRE_{it} + \beta_7 POPGR_{it} + \beta_8 INF_{it} + \beta_9 PGDP_{it} + U_{it} \quad \dots(5)$$

3.3. Findings

In this section, we present the key findings along with an analysis of their implications. This section covers unit root test results, co-integration test results, and estimation results.

3.3.1. Unit Root Tests

There are several unit root tests. For example, Levin-Lin-Chu's (2002) is one of the panel unit root tests built on the premise that all observations have a homogenous level of integration. On the other hand, we used Maddala and Wu's (1999) test to devise the various specifications of panel unit root test. This is because they employed distinct panel unit root processes. Im, Pesaran and Shin (2001) created a similar (IPS) test. However, Hadri (2000) suggested a different hypothesis for a stationarity test of the panel observations against the existence of a unit root. Against this background, we choose to use Levin-Lin-Chu's (2002) (LLC) and Im-Pesaran-Shin's (IPS) tests. These tests have a null hypothesis that there exists Seraj et al.'s unit root test, which, as shown in equation 6 below, accords to the ADF specification as follow (Seraj et al., 2020)

$$\Delta y_{it} = \alpha y_{it-1} + \sum \beta_{ij} \Delta y_{it-j} + X_{it} \delta + v_{it} \quad \dots(6)$$

Where y_{it} presents the pooled variable, X_{it} presents exogenous variables in the model, and v_{it} presents the error terms, which are assumed to be mutually independent disturbances.

We adopted two approaches and used Levin, Lin and Chu's and Pesaran and Shin's unit root tests. Table 1 summarizes the results.

Table 1 shows that the null hypothesis for the variables (HEXP, GRE, DEBT, and POPN) has a unit root. For healthcare expenditures per capita (HEXP) the p-values are less than 0.05. This indicates that, at this level, the series is stationary using both the Levin, Lin, and Chu and Pesaran and Shin approaches. For government revenue (GRE) p values are greater than 0.05. This indicates that the series is not stationary at this level because, using both the Levin, Lin, and Chu and Pesaran and Shin approaches, the p values are less than 0.05 in the first difference.

Similarly, the series of public debt (DEBT) is not stationary at the first level (with Individual effects) while, at this level, it is stationary with individual effects and individual linear trends. However, after taking the first difference, it is stationary (with Individual effects). Finally, for population number (POPN), it is stationary from the onset and, using both the Levin, Lin, and Chu and Pesaran and Shin approaches, does not require checking at the first level of difference. Generally, at different degrees of $I(0)$ and $I(1)$, all series were found to be stationary.

3.3.2. Co-Integration Test

Cointegration tests are done to check either integration or long-term association between variables. Panel techniques may be better at detecting cointegration relationships since, when estimating cointegrating coefficients, a pooled levels regression combines cross-sectional and time series information in the data.

After ensuring that, at different degrees of $I(0)$ and $I(1)$, the model variables are stationary as shown in the previous section, we conducted two cointegration tests, namely, Kao Residual Cointegration Test (No deterministic trend) and Johansen Fisher panel cointegration test.

3.3.2.1. Kao Residual Co-integration Test

In order to investigate a co-integration relationship between our variables, we employed Pedroni's (1999) techniques. Pedroni cointegration test is presented in equation 7 below (Ageliki, et al., 2013):

$$y_{it} = \alpha_i + \delta_{it} + \beta_{1i} X_{1i,t} + \beta_{2i} X_{2i,t} + \dots + \beta_{mi} X_{mi,t} + \varepsilon_{it} \quad \dots(7)$$

Where:

t: number of observations $t=1, \dots, T$.

n: the number of countries in the panel, $i=1, \dots, N$.

m: presents the number of regression variables $m=1, \dots, M$.

Table 1: Unit root test results

var.		Levin, Lin and Chu statistics/ p-values		Pesaran and Shin	
		level	1st diff	level	1st diff
HEXP	Individual effects	-2.34985		-0.49689	-4.54829
		-0.0094		0.3096	0.0000
	Individual effects, individual linear trends	-1.67188		0.79433	-4.54829
		0.0473		0.7865	0.0000
	none	3.57581			
		0.9998			
GRE	Individual effects	-2.83681		-2.0056	
		0.0023		0.0224	
	Individual effects, individual linear trends	-0.37104	-5.61157	0.26079	-2.89372
		0.3553	0.0000	0.6029	0.0019
	none	-0.07287	-7.57498		
		0.471	0.0000		
DEBT	Individual effects	0.23771	-2.76954	0.69562	-2.57795
		0.5939	0.0028	0.7567	0.005
	Individual effects, individual linear trends	-2.84774		-0.99113	-1.17865
		0.0022		0.1608	0.1193
	none	1.0837	-4.20769		
		0.8608	0.0000		
POPN	Individual effects	-4.51581		-3.3002	
		0.0000		0.0005	
	Individual effects, individual linear trends	-9.48518		-4.58402	
		0.0000		0.0000	
	none	11.6587			

Where the structure of the estimated residual is expressed in the following equation:

$$\varepsilon_{it} = \psi \varepsilon_{it-1} + v_{it} \quad \dots(8)$$

Where ψ represents the autoregressive coefficient of the residual in the previous equation.

Then, we applied the Kao Residual Cointegration Test. Table 2 shows that the p-value of the cointegration test was 0.0689. This finding indicates that there is cointegration at the 10% level of significance.

3.3.2.2. Johansen Fisher Panel Co-integration Test

Johansen (1988) proposes two different approaches to determine the presence of cointegration vectors in

Table 2: Kao Residual Co-integration Results

Kao Residual Cointegration Test (No deterministic trend)		
	t-Statistic	Prob.
ADF	-1.484388	0.0689
Residual variance	12308.34	
HAC variance	8364.822	

non-stationary time series. These are the likelihood ratio trace statistics and the maximum eigenvalue statistics. The trace statistics and maximum eigenvalue statistics are shown in equations 9 and 10 below:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i) \quad \dots(9)$$

$$\lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \quad \dots(10)$$

For the trace test, the null hypothesis checks the at most r cointegration vector against the alternative hypothesis of full rank $r=n$ cointegration vector. The null and alternative hypothesis of maximum eigenvalue statistics checks the r cointegration vector against the alternative hypothesis of $r+1$ cointegration vector. By using Johansens' (1988) test for cointegration, Maddala and Wu (1999) considered Fisher's (1932) suggestion to combine individual tests. For testing for cointegration in the panel, they propose an alternative to the two previous tests that combines individual cross-section tests for cointegration. If π_i is the p-value from an individual cointegration test for cross-section i , then, under the null hypothesis for the whole panel: $-2\sum_{i=1}^n \log_e(\pi_i)$ is distributed as X^2_{2N} . Eviews reports X^2 value based on MacKinnon-Haug-Michelis (1999) p-value for Johansen's cointegration trace test and the maximum eigenvalue test Morshed (2010).

From the results in Table 3, it is noteworthy that Johansen cointegration analyzes the integration of data in two main ways by including the trace test and the max-eigen test. Table (3) shows, also, the four central hypotheses. The first hypothesis is that there is no integration of data (None) and, therefore, is rejected since the p-value = 0 (less than 0.05); this indicates the presence of integration. Hypotheses 2, 3, and 4 are all rejected because in each case the p-value is less than 0.05. There is a higher number of cointegration equations among the variables. From both the trace and max-eigen tests, it is concluded that, at the 0.05 level, the selected series has more than three cointegration equations.

3.3.3. Estimation Results

Once we found a co-integration relationship, we used the Pooled Least Square (PLS) techniques. The use of PLS can lead easily to biased estimations, which result from the endogeneity and serial correlation problems. On the other hand, by using panel data techniques, we found that FMOLS and DOLS to be efficient methods to remove these problems.

This is where the DOLS technique is a parametric one that is mostly used to acquire long-run coefficient of the parameter estimate, which takes account of the lagged and the lead values of the variables. On the other hand, FMOLS is used to remove the impact of autocorrelation by employing a non-parametric transformation to the model residuals obtained from the co-integration regression (Seraj et al., 2020). Hence, as shown in Table 4 below, we used the FMOLS technique for our estimation test.

From the results in Table 4, it is worth noting that, after considering the regression tests, GCC countries' per capita healthcare expenditures were affected both positively and significantly by government revenue, population and debt variables.

The result suggests that, when developing models to estimate healthcare expenditures, governments should consider primarily the country's population and the levels of government revenue and debt. Additionally, the coefficients of the independent variables correlate positively with per capita healthcare expenditures per capita, and this suggests that a corresponding rise in healthcare expenditures accompanies increases in government revenue, debt levels and the population.

The positive relationship between government revenue and healthcare expenditures can be explained by Keehan et al.'s (2012) findings. These show that, in order to sustain

Table 4: Results of the estimation by FMOLS

Panel Fully Modified Least Squares (FMOLS) constant (level)		
GRE	1.952	R2=0.88
	(0.0000)	
DEBT	2.0532	
	0.0378	
POPN	71.9039	
	(0.0000)	

Table 3: Johansen Fisher panel co-integration results

Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)				
Hypothesized	Fisher Stat.*		Fisher Stat.*	
No. of CE(s)	(from trace test)	Prob.	(from max-eigen test)	Prob.
None	250	0.0000	185.3	0.0000
At most 1	129	0.0000	87.59	0.0000
At most 2	69.21	0.0000	57.93	0.0000
At most 3	33.55	0.0008	33.55	0.0008

* Probabilities are computed using asymptotic Chi-square distribution.

the country's economic growth, it is accompanied by increased government expenditure on healthcare to ensure that the workforce remains healthy.

Meanwhile, the positive relationship between population and healthcare expenditures can be explained by Baurnol and Blinder's (2015) findings. These show that a larger population is likely to include older people who have a high susceptibility to diseases. The implication is that this category of people attends hospital more frequently resulting in higher healthcare expenditures. The WHO report (2019) explains that the positive relationship between debt and healthcare expenditures is often due to countries taking external loans to revamp and modernize crucial healthcare infrastructure. In this respect, countries with high debt levels are more likely to increase investments in healthcare with a view to improving public welfare.

4. Conclusion

The main goal of this study was to explore the GCC countries' different determinants of healthcare expenditures in the period from 2005 to 2019. The underlying goal was to examine how government debt, population, and government revenue influenced healthcare expenditures. In order to achieve these objectives, we used econometric models and carried out regression analysis on the data. The results, obtained from using FMOLS, showed that healthcare expenditures had a positive and significant effect on variables related to government revenues, population, and government debt.

5. Limitation and Recommendations

An essential limitation of this study is that the analyzed data sample relates to the only six GCC countries. The limited data indicated that the trends concerning healthcare expenditures might not be applicable to governments in other parts of the world. Consequently, we recommend that future studies should sample countries from different continents in order to minimize the spending bias caused by cultural views on healthcare. The study's other limitation was the requirement of having an extensive understanding of statistical concepts in order to conduct and interpret the results from the various tests. The study suggests that policymakers of the GCC countries must take into consideration those variables when they develop their healthcare policies. Also, the GCC countries urgently needed to have high levels of foreign exchange reserves to maintain the expected level of spending on the healthcare sector, because their public revenues depend mainly on the oil revenues, which are fluctuating continuously.

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