

## WAGNER'S LAW VS. KEYNESIAN THEORY: THE CASE FOR GCC COUNTRIES



Mohammad Alawin<sup>1\*</sup>  
Anwar Al-Shriaan<sup>2</sup>  
Ebrahim Merza<sup>3</sup>

<sup>1,2,3</sup>Economics Department, Kuwait University, Kuwait.

<sup>1</sup>Email: [mohammad.alawin@ku.edu.kw](mailto:mohammad.alawin@ku.edu.kw)

<sup>2</sup>Email: [dr.alshriaan@ku.edu.kw](mailto:dr.alshriaan@ku.edu.kw)

<sup>3</sup>Email: [ebrahim.merza@ku.edu.kw](mailto:ebrahim.merza@ku.edu.kw)



(+ Corresponding author)

### ABSTRACT

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The relationship between government expenditure and economic growth is continually discussed. In some cases, one factor affects the other, and in other cases, the relationship does not exist. This paper provides further evidence on this relationship in the case of the Gulf Cooperation Council (GCC) countries during the period from 1992–2020. This research tests the view of Wagner's hypothesis that economic growth positively affects government expenditure. It also tests the opposite direction, which is the Keynesian view. Utilizing a panel data regression, the results prove a weak effect of both views for the GCC economies. Government expenditure is highly affected by changes in oil prices. Some governments cut their expenditure as a result of a drop in oil prices and others maintain current expenditure levels, at least in the short run. The form of government spending and the current structure of government finance in GCC economies prevent these two views from being valid.

**Contribution/Originality:** The originality of this paper lies in the examination of the validity of Wagner's law studies that investigate the relationship between government expenditure and economic growth in GCC countries from 1992 to 2020 utilizing a panel data regression.

## 1. INTRODUCTION

The connection between government expenditure and economic growth has been studied across many countries. However, the nature of this relationship is still not confirmed. Some studies hold that the relationship goes from the growth of the economy to government expenditure. In other words, they confirm Wagner's law. Other studies hold that the relational effect goes from public expenditure to economic growth, the Keynesian theory. Other studies found no relationship of any kind. With the special economic structure of the GCC countries, which depend heavily on oil revenues to cover their expenses, it is vital to check which view is applicable to them.

Wagner's law, or Wagner's hypothesis, anticipates that with economic development and progress, government expenditure will have a higher share of the gross domestic product (GDP). In other words, this law specifies that social benefits and services will increase as the country's income level grows. On the other hand, the Keynesian view is that government expenditure is crucial for the growth of the economy. One of the main goals of any country is to speed up the economic growth to solve problems such as poverty, unemployment, low production, and low standard of living. Therefore, the public role becomes an important step, along with the private sector, to stimulating the economy and solving societal problems.

According to [Musgrave \(1959\)](#), an increased share of public expenditure as a result of an increase in income could be attributed to three reasons: (1) an increase in some expenditure items related to social life, such as retirement programs and environmental programs; (2) expenditure on different investment projects, including spending on technology advancements; and (3) government debt service increasing due to the increasing amount of loans that the government signs to cover the generous expenditure on welfare and the cost of contingency circumstances.

Keynesian theory indicates that the government should increase its expenditure to improve the performance of the economy. According to Keynesian principles, demand from consumers, government, or investors is the primary driving force in any economy. Accordingly, to solve economic problems of high unemployment, low production, and recession, the government should adopt an expansionary fiscal or monetary policy.

These two different views raise the argument of whether government spending can affect economic growth, or does the causal relationship go in the other direction. This is tested for the GCC countries in this study. These countries adopt very generous welfare programs while observing fluctuations in their growth rates at the same time. Testing the validity of these hypotheses for the GCC countries will be important for forming future policies.

The remainder of this paper is organized in the following order: Section 2 provides a review of studies on both views of the relationships between economic growth and government expenditure; Section 3 gives a theoretical introduction to the empirical model; Section 4 explains the development of the government expenditures in GCC countries; Section 5 presents the data and the methodology; Section 6 analyzes the empirical results of the study; and Section 7 contains the conclusions.

## 2. LITERATURE REVIEW

Wagner's law has been heavily studied in the previous literature. Different results were obtained as a result of testing different time periods or applying different methodologies. [Hazarika and Nayak \(2022\)](#) analyzed the validity of Wagner's law in the governments of India. The aim of the study was to understand the reasons behind the huge increases in public spending over the past decades. The study covers the period from 1980–2020 with panel data that included 20 large governments. The methodology used mainly involved testing for the panel unit root and cointegration. The results of the empirical models proved the weakness of the validity of Wagner's law for the Indian case. Other results of the study showed that an increase in the reliance on transfers has become a lifestyle for many states, and as a result, the fiscal deficit has expanded over time.

The levels of spending by the Austrian government, as in many other European countries, have grown during the past century. [Neck and Getzner \(2007\)](#) studied the reasons for that behavior. Specifically, they tested two theoretical explanations for the expansion in spending of the public sector. The first theory was Wagner's Law, which implies a direct relationship between output and government expenditure. The second theory was Baumol's cost disease. This theory makes a connection between the growth of the public sector and the increases in the costs and expenditures of the public sector compared to the private sector. The empirical results proved the validity of the "cost disease" for the Austrian economy, but Wagner's Law could not be proven to be valid for this economy. [Jaén-García \(2018\)](#) analyzed different issues related to Wagner's law and the level of government spending in Spain. He tested Wagner's law using employment in the public sector as a proxy for government spending. The empirical results rejected the law. The paper believed that different factors, other than GDP, could affect government spending.

Contrary to the previous results, [Akitoby, Clements, Gupta, and Inchauste \(2006\)](#) tested if any relationship exists between government expenditure and economic growth in a number of developing countries. Their main result showed that the growth of the economy and the government expenditure were cointegrated in 70% of the sampled countries. This provided a solid case to support the legitimacy of Wagner's law.

Similar results were found by Islam (2001), who tested Wagner's law on US public spending for a long annual time series data set. One critical question posed by Islam was whether Wagner's law would cause the government sector to grow at a rate higher than the rate of the economic growth. Islam examined this issue using some econometric techniques, such as cointegration tests. The tests proposed a relationship between the government sector and economic growth, as Wagner's law dictates. The results strongly supported the law for the American economy.

Abizadeh and Gray (1985) emphasized that Wagner's law depends on the nature of the economy. In particular, the law does not hold for poor economies but does hold for rich economies. Oil-exporting countries (rentier economies) present a special case regarding the connection between economic growth and government spending. A rentier economy is an economy supported mainly by expenditure from the rent accumulated from abroad (Beblawi & Luciani, 1987). In a rentier economy, governments have complete control of the export revenues from the rent-producing sector; oil is the main export in the case of GCC countries. This control creates the main link between this sector and the other parts of the economy.

Finally, this paper presents a thorough discussion that shows the debate surrounding Wagner's law. One group favors Wagner's law, and the other disfavors this law, essentially supporting the Keynesian theory of the classical role of government intervention. The third option is a group that favors neither.

#### *a. Studies Favoring Wagner's Hypothesis*

Many studies support Wagner's hypothesis. For example, Chang (2002) tested this law for a number of emerging and well-developed industrialized economies and found that the hypothesis in most of these economies is valid. Also, Taşseven (2011) proved a relationship between output and government expenditure in Turkey during the period from 1960–2006. When studying Armenia and Spain, Sedrakyan and Varela-Candamio (2019) revealed a positive connection between government expenditure and output.

#### *b. Studies Favoring the Keynesian Theory*

Ram (1987) examined the government expenditure and economic growth relationship for 63 economies from 1950–1980. His findings did not support Wagner's hypothesis but favored the Keynesian hypothesis. Mose, Kalio, Kiprop, Kibet, and Babu (2014) tested the effect of expenditure by governments on economic growth in some African countries for the period from 1980–2010. Their findings confirmed the classical Keynesian view that investment expenditure promotes economic growth. They proposed that increasing spending by the government is an appropriate policy to promote economic growth.

#### *c. Mixed Results*

Some research found no connection between economic growth and government expenditure. In other cases, it was found in only part of a sample. Durevall and Henrekson (2011) examined Wagner's hypothesis in Sweden and the UK using data covering nearly 200 years. The outcome showed that Wagner's hypothesis is not true for these countries, which was an unexpected result for the researchers. Chang, Liu, and Caudill (2004) examined Wagner's hypothesis for 12 industrialized economies in Asia, Europe and North America, and the results were mixed. In Pakistan, Muhammad, Xu, and Karim (2015) found no evidence for Wagner's law. Finally, in Nigeria, an oil-exporting country, Babatunde (2011) examined Wagner's law for the period from 1970–2006 and found no connection between government expenditure and output in the long run.

#### *d. Literature on GCC*

Turning to the GCC countries, a number of studies have examined the validity of Wagner's hypothesis for Saudi Arabia, and mixed results were found. Alshahrani and Alsadiq (2014) studied the effect of some types of

government expenditures on the growth of the Saudi economy from 1969–2010. Their findings indicate that public investments and healthcare expenditure have a stimulative long-run impact on economic growth. Ageli (2013) examined Wagner's law from 1970–2012 for the part of GDP that depends on oil and the part of non-oil-related GDP. The main conclusion of the study contradicted the previous results and showed strong evidence supporting Wagner's hypothesis. On the other hand, Alrasheedy and Alrazyeg (2020) studied the Wagner and Keynes views of the nature economic growth and government expenditure relationship for the 1970–2017 period. The study revealed that the effect between economic growth presented by per capita income and government expenditure is insignificant. In other words, there was no support for either the Wagner or the Keynesian approach.

For Kuwait, Burney (2002) examined Wagner's law for the 1969–1994 period. The results did not support Wagner's law. Merza and Alhasan (2016) found an opposing result for Kuwait using more recent data (1979–2012). The results show that Wagner's hypothesis is true with regard to the relationship between output and government expenditures in education, health, and infrastructure sectors. Finally, Al-Faris (2002) tested the connection between public expenditures and the growth in the GCC economies for the 1970–1997 period. The results prove the validity of Wagner's hypothesis. However, the Keynesian theory was not supported for this sample.

In summary, the relationship between government expenditure and the growth for many economies, especially GCC countries, is important to examine. This paper attempts to determine the true relationship between the variables for the GCC countries from 1992–2020.

### 3. THEORETICAL INTRODUCTORY TO THE MODEL

This paper tests the validity of the Keynesian and Wagner hypotheses using data for the GCC countries. This research investigates the behavior of government expenditure in terms of a number of independent variables, including GDP growth as the main variable. In addition, the paper tests for the panel causality between government expenditure and GDP growth. The causality direction will help to determine the form of panel regression.

If we run a panel regression in which GDP growth is the dependent variable and the panel causality test indicates a causality direction going from GDP growth to government expenditure, this will confirm the Wagner's law theoretical model. Conversely, if we run a panel regression in which government expenditure is the dependent variable and the panel causality test indicates a causality direction going from government spending to economic growth, this will confirm the Keynesian model for the GCC countries.

According to the literature, the following variables are included in the empirical models testing the Wagner and Keynesian hypotheses: government expenditure in logarithmic form, real GDP growth, broad money supply as a share of GDP, oil exports as a share of the total exports, trade openness as the logarithm of total exports, and the value of imports as a share of GDP.

The share of oil exports to total exports is included as a vital variable due to the nature of the GCC countries, where the export of natural oil is the core source of national income; the oil revenues represent about 90% of the total government revenues for some GCC countries. Consequently, we believe omitting this variable from the empirical model would cause model misspecification. We expect the coefficient of that variable to have a positive sign, indicating that the amount of government spending and the growth of the economy will increase with increased oil revenues. Regarding openness to trade, a positive relationship is expected between this variable and government expenditure. The GCC countries' trade system is characterized as a liberalized system. The ratios of exports and imports in these countries to GDP is relatively high. In short, promoting exports and giving incentives for trade means higher spending by the government.

Another independent variable is money supply as a percentage of GDP. An increase in the money supply is expected to stimulate government expenditure because part of an increase in money supply comes from printing new money as a source of revenue. Some countries resort to this as an easy option for revenues. Population is also

included as an explanatory variable. According to Abeng (2005), population represents an important factor of government expenditure. Abeng expected the impact of this demographic factor to be positive on the level of government spending. Generally, increases in population growth create pressure on government expenditure for education, health, infrastructure, and welfare programs. This would explain the expected strong impact of population on government spending and growth. It also emphasizes the importance of including this variable in our models.

#### 4. DEVELOPMENTS OF GOVERNMENT EXPENDITURES IN GCC COUNTRIES

This section analyzes the developments of government expenditures in GCC countries. Specifically, it includes an analysis of the ratio of government spending to GDP (G/GDP) over the study period. This analysis should shed some light on the behavior of government spending in the study sample. Figures 1–6 show the developments of government spending.

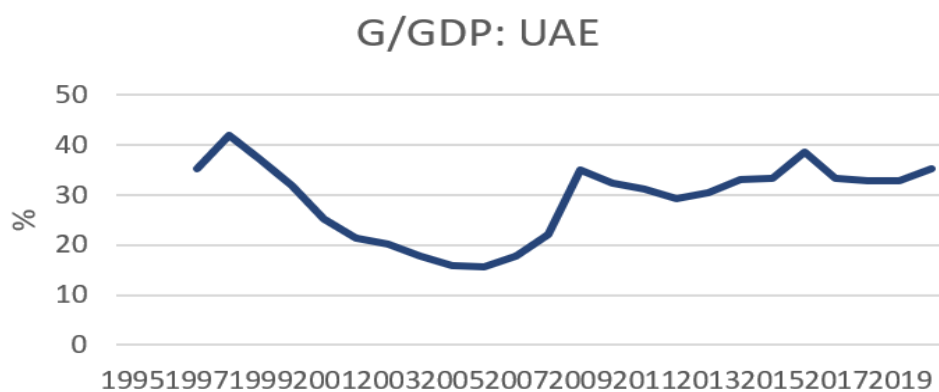


Figure 1. Government spending as a ratio of GDP in the UAE.

Source: World Bank database.

Figure 1 shows government spending as a ratio of GDP in the UAE. In 2006, the G/GDP ratio in the UAE dropped to its lowest value (15.6%), after reaching its highest ever ratio (41.9%) in 1998. This happened because of cuts in government expenditure and the high growth rates in GDP due to high oil prices. These low rates in 2005 and 2006 stopped once the global recession started in the US and spread around the world due to the bubbles in the prices of the housing sector. The decrease in GDP caused the G/GDP ratio to reach 35% in 2009 and to continue at such levels during the following years.

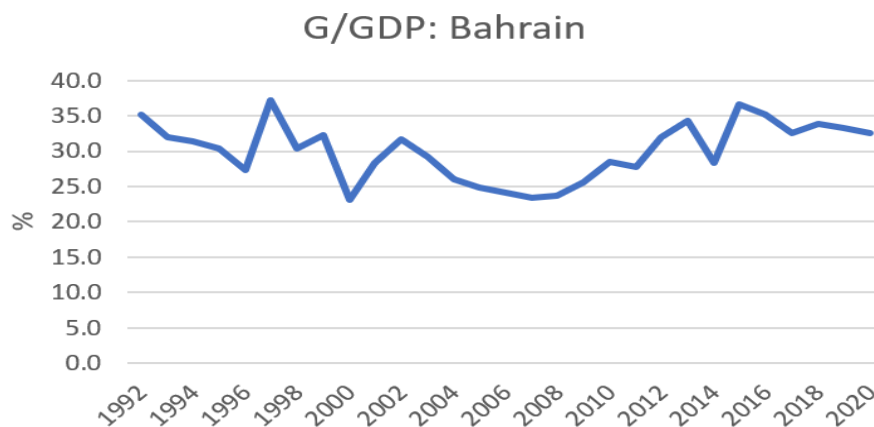


Figure 2. Government spending as a ratio of GDP in Bahrain.

Source: World Bank database.

Figure 2 shows the government spending as a ratio of GDP in Bahrain. The minimum G/GDP ratio was recorded in 2000 at 23.1%. The maximum ratio was recorded in 1997, reaching 37.2%. The ratio of debt to GDP in Bahrain is considered to be the second least volatile ratio in the GCC group, after Saudi Arabia.

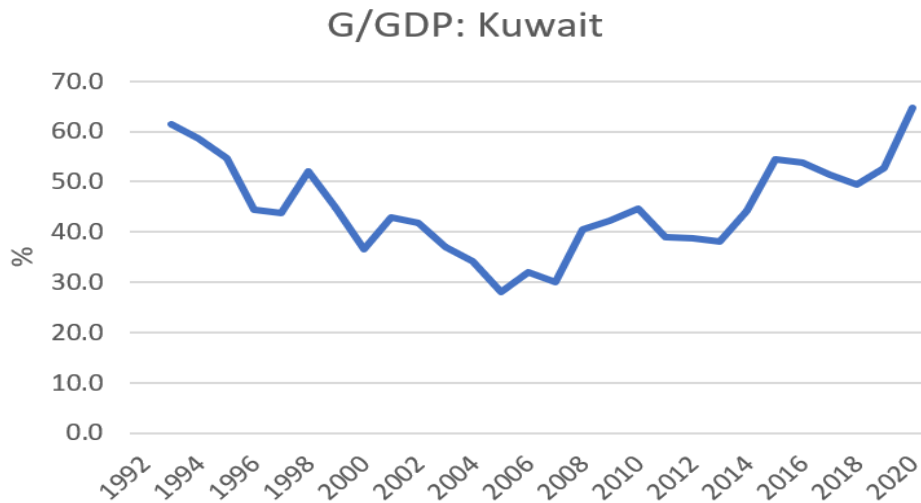


Figure 3. Government spending as a ratio of GDP in Kuwait.  
Source: World Bank database.

Figure 3 shows the government spending as a ratio of GDP in Kuwait. The data for the Kuwaiti economy shows something very interesting. The time span data started with a high percentage of G/GDP ratio of 61.4% in 1992. The ratio continued to decrease until it reached its lowest level of 28.1% in 2005. The reason for this decline is attributed to the jump in the value of GDP when the prices of oil spiked before they crashed during the global recession that started in the US in 2007 and spread throughout the world. The ratio increased again, reaching its highest ever percentage of 64.8% in 2020. The reason for this increase goes back again to fluctuations in the oil prices and to the huge increases in the volume of government expenditures, especially during the COVID-19 pandemic, which started at the beginning of 2020. It is worth noting that the rate of 64.8% recorded in 2020 is considered to be the highest rate among all GCC countries in the data set.

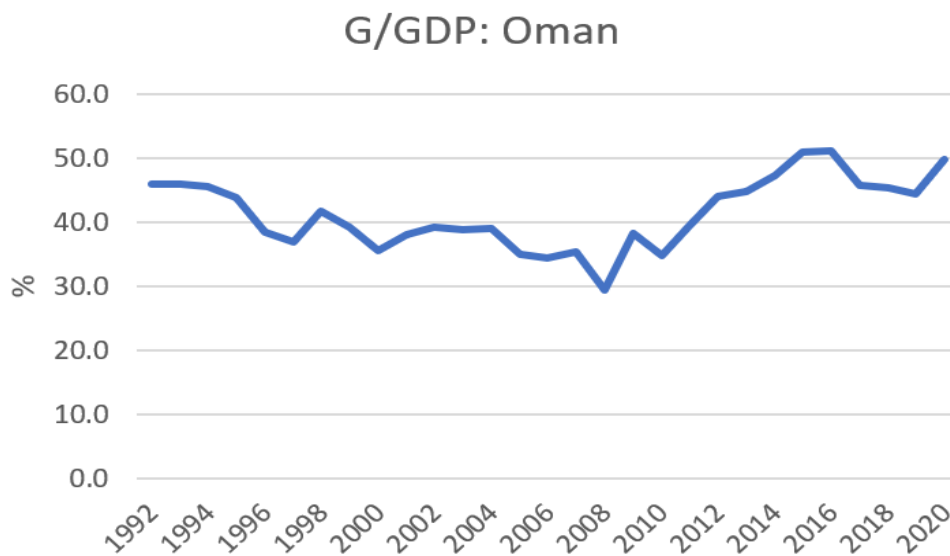


Figure 4. Government spending as a ratio of GDP in Oman.  
Source: World Bank database.

Figure 4 shows the government spending as a ratio of GDP in Oman. This country experienced a moderate fluctuation in the ratio of the G/GDP percentage. The lowest rate of 29.3% was recorded in 2008, immediately

before the crash in oil prices that caused the Omani GDP to decrease. After that, government expenditure as a percentage of GDP continued to increase, reaching its highest ever rate of 51.2% in 2016. After that, the rate did not drop below 44.5%.

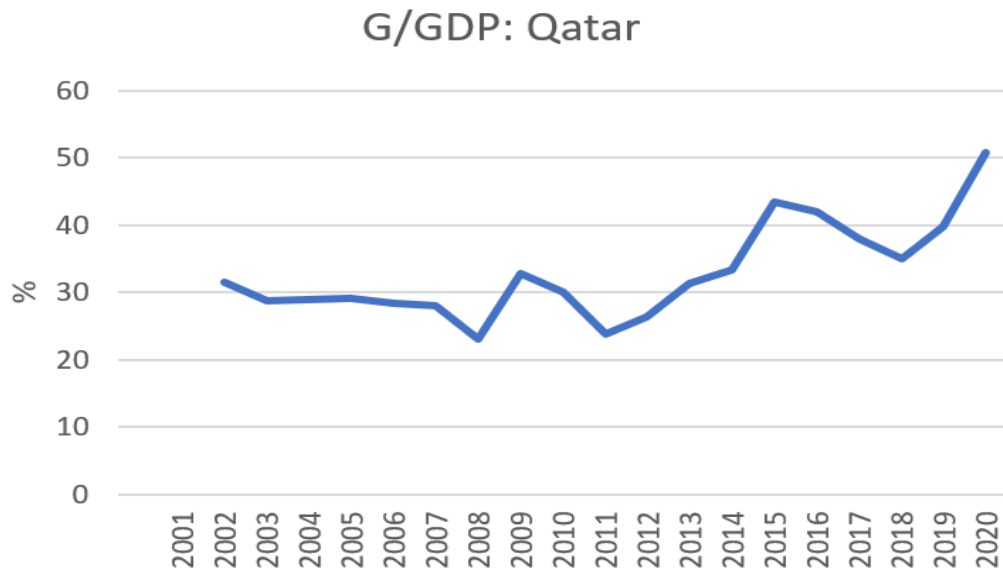


Figure 5. Government spending as a ratio of GDP in Qatar.

Source: World Bank database.

Figure 5 shows the government spending as a ratio of GDP in Qatar. The Qatari economy witnessed big fluctuations in its government expenditure to GDP ratio from 2000 to 2020, the years of available data. The same story applies here, when the minimum value of 23.0% was recorded in 2008. The reason for the decline is that the oil prices were at their highest levels before the global financial crisis. The high oil prices caused the Qatari GDP to increase to unprecedented levels causing the G/GDP ratio to reach its lowest level. After that, this ratio started to increase until it reached its highest level in 2020, with a ratio of 50.7%. The main reason for this high ratio is the huge government expenditure on the FIFA World Cup that will be held in Qatar near the end of 2022. The rates of government expenditure started to accelerate in 2014. Since then, the ratio of G/GDP has shown an increasing trend. This ratio is expected to decrease after the World Cup tournament is over.

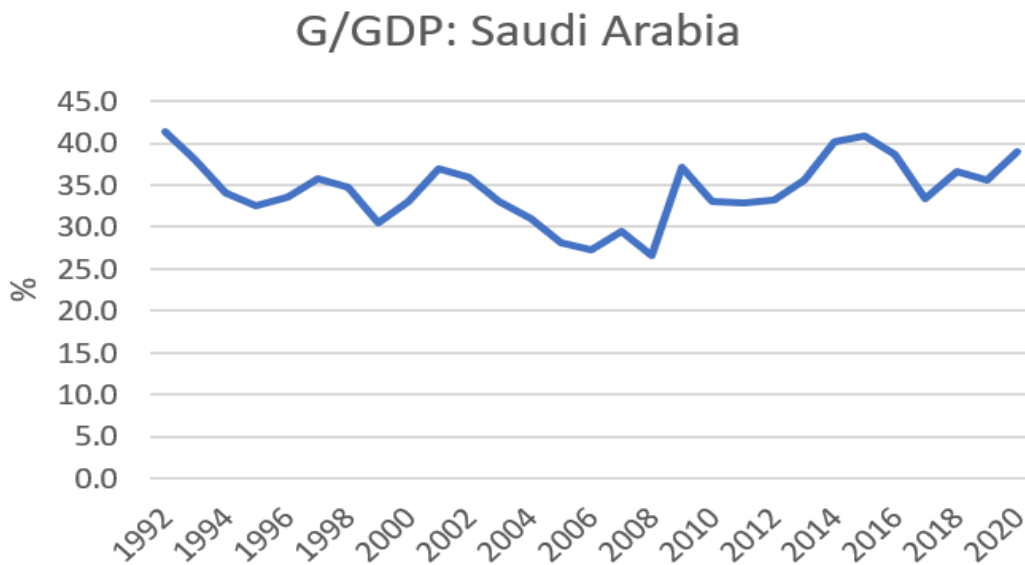


Figure 6. Government spending as a ratio of GDP in Saudi Arabia.

Source: World Bank database.



Figure 6 shows the government spending as a ratio of GDP in Saudi Arabia. The expenditure program in Saudi Arabia relative to its income fluctuated the least among all GCC countries. A minimum value of 26.7% was recorded in 2008, similar to all GCC countries, due to the oil price hikes. A maximum ratio of 41.4% was recorded at the beginning of 1992. However, similar ratios were also recorded at the end of the study period.

## 5. DATA AND METHODOLOGY

Data on all variables were obtained from the World Bank's Open Data. The study period is from 1992 to 2020, and it covers the GCC economies: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The original data are in US dollars. To test the impact of different independent variables on government expenditure, the panel model approach will be used to provide a better insight into the relationships among the variables. Using the panel data regression involves the application of both the random effects and fixed effects models as the first step. The next step involves using the Hausman test to determine which model is the most suitable. A further step involves testing the causality among the variables to give further confirmation of the nature of their relationships.

In the fixed effects model, the coefficients of the model are non-random, and in the random effects model, the coefficients are not fixed. The fixed effects model uses a regression in which the group means are non-random. In the random effects model, the group means are not fixed but are a random sample from a population. The general models for both views are:

$$G_{it} = \alpha_0 + \alpha_1 (Y)_{it} + \alpha_2 (M)_{it} + \alpha_3 (Oil)_{it} + \alpha_4 (OPEN)_{it} + \alpha_5 (POP)_{it} + u_{it} \quad (1)$$

$$Y_{it} = \beta_0 + \beta_1 (G)_{it} + \beta_2 (M)_{it} + \beta_3 (OIL)_{it} + \beta_4 (OPEN)_{it} + \beta_5 (POP)_{it} + \varepsilon_{it} \quad (2)$$

The first model is for testing Wagner's law. In this model,  $G$  is the dependent variable (economic growth) and is measured by the logarithm of government expenditure in each country ( $i$ ) at time ( $t$ ). Five independent variables are included: Country income ( $Y$ ) is measured by growth in real  $GDP$ ; money supply ( $M$ ) indicates the broad money supply divided by  $GDP$ ; oil exports ( $OIL$ ) are measured by oil rents as a share of  $GDP$ ; the degree of openness to trade ( $OPEN$ ) is measured as the total of imports and exports as a share of  $GDP$ ; and population ( $POP$ ) indicates the total population in logarithmic form. The error correction terms are  $u$  and  $\varepsilon$ . In the second model, which represents the Keynesian theory, income ( $Y$ ) measured by growth in real  $GDP$  is the dependent variable, and the independent variables are as discussed previously.

## 6. EMPIRICAL RESULTS

The Wagner and Keynesian hypotheses (Equations 1 and 2) are tested using the fixed effects and random effects models. The results of the exploration of the effects of the different independent variables on government expenditure produced by these two models are reported in Table 1.

Table 1. Fixed effects and random effects results.

[Dependent variable: economic growth (G)]		
Variables	Fixed effects	Random effects
Constant	-3.4745 *** (-5.6122)	1.9820 *** (9.758)
Country income (Y)	0.0009 (0.3167)	0.0168 *** (7.8778)
Money supply (M)	-0.0017 (-1.3247)	0.0080 *** (14.428)
Oil exports (OIL)	0.0019 * (1.9596)	0.0075 *** (8.8682)
Openness to trade (OPEN)	0.0006 (0.7009)	0.0044 *** (7.4173)
Population (POP)	2.0948 *** (19.654)	1.0499 *** (46.710)

Note: The t-statistics are reported in parentheses.  
\* Significant at 10%; \*\*\* Significant at 1%.



To decide which model will be considered, the Hausman test is run, which has a null hypothesis that the best model is the random effects model. The results show that the chi-squared statistic is 278.3. Therefore, the null hypothesis is rejected, and the fixed effects model is favored. The main conclusion from the results in Table 1 is that economic growth has a positive effect on government spending; however, the result is statistically insignificant. The oil exports and population coefficients were statistically significant with the expected signs.

One possible explanation for the result of the rejection of Wagner's law could be the structure of the finance of the governments in the GCC countries. For example, if there is a boost in economic activities, the governments cannot directly benefit from domestic growth, as is the case in developed countries. This holds primarily because government expenditure programs in the GCC are more closely related to the volume of oil revenues.

### 6.1. How Does Government Expenditure Affect Economic Growth?

To test the validity of the Keynesian approach, a regression was run on a number of independent variables using economic growth as the dependent variable. The results are reported in Table 2.

**Table 2.** Fixed effects and random effects results.

[Dependent variable: country income ( $Y$ )]		
Variables	Fixed effects	Random effects
Constant	-34.8685 (-1.400)	1.9276 (0.2380)
Economic growth ( $G$ )	1.0882 (0.3167)	8.2169 *** (4.8706)
Money supply ( $M$ )	-0.1939 *** (-4.6100)	-0.1373 *** (-6.3038)
Oil exports ( $OIL$ )	0.0024 (0.0672)	-0.0169 (-0.5114)
Openness to trade ( $OPEN$ )	0.0161 (0.5428)	-0.0129 (-0.5770)
Population ( $POP$ )	5.7242 (0.7044)	-11.0406 *** (-5.9356)

**Note:** The t-statistics are reported in parentheses.  
\*\*\* Significant at 1%.

To compare the two models in Table 2, the chi-squared statistic in the Hausman test is calculated as 39.667, which indicates rejection of the null hypothesis of the random effects model being the best model. Therefore, the fixed effects model is the considered to be the most appropriate model. The main question was whether the Keynesian theory is valid for the GCC countries during the study period. The results in Table 2 show that government expenditure affects economic growth positively, as theoretically expected. However, the result is insignificant in the case of the fixed effects model. Surprisingly, the government expenditure coefficient is positive and significant, according to the random effects model. Upon further investigation, the insignificance of the impact of government expenditure on economic growth is not a surprising result. Barro (1989) argued that output growth is negatively associated with government expenditure because government expenditure has some distortion effects. These findings are also consistent with the results of other studies on the GCC countries (e.g., Alrasheedy & Alrazyeg, 2020). As shown in Table 2, oil exports, openness, and population have positive effects on economic growth, but they were insignificant in the fixed effects model. Population was significant in the random effects model. Money supply had a negative and significant effect on economic growth in both models.

### 6.2. The Causality Test

What might the causality test suggest for the connection between government expenditure and economic growth? Will it be a unidirectional causality from government spending to economic growth, confirming the Keynesian view, or will it go from economic growth to government spending, confirming Wagner's hypothesis?

The findings of the pairwise Granger causality revealed that none of the variables cause others. This result is consistent with the results of the fixed effects model presented by Equations 1 and 2. The results reported in Tables 1 and 2 show that the impacts of both government expenditure on the growth of the economy and the growth of the economy on government expenditure were positive but insignificant.

Regarding the Keynesian view, the causality results are consistent with previous studies, such as Ageli (2013) and Alrasheedy and Alrazyeg (2020), who found a weak effect of government spending on economic growth. Part of this outcome could be attributed to the nature of the use of public funds and public investments. For example, in many cases, unproductive governmental investment spending was found. In other cases, government spending is associated with crowding-out effects.

## 7. CONCLUSION

The purpose of this paper is to examine the relationship between economic growth and government spending for the GCC economies from 1992 to 2020. It is of interest to examine whether Wagner's law or the Keynesian view is valid for these countries. Wagner's hypothesis assumes economic growth to positively affect government spending. In the Keynesian view, government spending is assumed to positively affect economic growth. Using panel data regression, the results show that neither view was valid for the GCC countries. Furthermore, the findings of the pairwise Granger causality test revealed that none of the variables cause the others. The analysis of the ratio of government spending to GDP shows huge fluctuations. The fluctuations in government expenditure are highly affected by the GDP levels, which are mainly affected by changes in the international oil prices. It was noticed that some countries cut their government expenditure due to a decrease in oil prices. On the other hand, others want to continue working on their development projects without any cut, as such an action would cause an increase in debt. In addition, unproductive government consumption could be one possible reason for the weak effect on the growth of the economy. On the other hand, the nature of the finance budget, which is heavily dependent on oil income, prevents much benefit from domestic growth. This puts pressure on GCC governments to reform the structure of their finances, especially to diversify the sources of their income and rationalize their expenditure.

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**Authors' Contributions:** All authors contributed equally to the conception and design of the study.

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