

“Influence of fiscal policy on GDP: an empirical study of GCC countries”

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INFLUENCE OF FISCAL POLICY ON GDP: AN EMPIRICAL STUDY OF GCC COUNTRIES

Abstract

The Gulf Cooperation Council (GCC) countries of late have made considerable attempts to achieve financial consolidation. However, this was limited to cuts in government expenditures. While scholars suggest the need for overall fiscal policy adjustments, countries should pay particular attention to efficient revenue generation and public debt management. In this paper, an attempt has been made to examine public finance of the GCC countries. The study has taken into account four significant components of public finance: public revenue, inflation, government expenditure and public debt. The co-integration rank test using the vector auto-regression method is employed to determine whether the chosen variables play any influential role in the GDP of the GCC economies. The results suggest that the effect of the consumer price inflation, total government revenue, revenue (percent of non-oil), and total government gross debt have a strong influence on the GDP of these economies. Thus, this means that the countries in the GCC region should focus on inflation, revenue, and public debt to have robust, viable and comprehensive development.

Keywords

finance, government, debt, revenue, expenditure,
inflation

JEL Classification

H50, H61, H63, H68

INTRODUCTION

Public finance plays a vital role for governments in the overall economic development of a nation. It is one of the important branches of the economics that examines the government expenditure and government revenue of public authorities. Given the importance of public finance, scholars around the world have undertaken studies involving various geographical regions and countries. This study is an attempt in the same direction by reviewing, analyzing and situating public finance in the Gulf Cooperation Council (GCC) countries.

The GCC countries are predominately oil-dependent economies, and the volatility in the global crude market has a direct impact on these economies. In an attempt to reduce this volatility, the countries have been continuously adjusting to comparatively lower oil prices. While it has a positive impact on the improvements in the fiscal and external-positions, however, at the same time, it has resulted in slowing down the growth.

Hvidt (2011) has found that the Gulf countries earn a considerable share of income from the oil and gas sector, somewhere between 62% and 80% of the state's income originates from crude oil. Also, it is for this reason that the countries have adopted an economic model that focuses on the state-led distribution and development of the capital with a narrow focus on the formation of the real economic capital.

With this enormous chunk of revenue from exports of crude, gas, and rents, the GCC countries have not taxed the residents to finance any

of their developmental works. However, in the current scenario, the situation is drastically changing. It might turn to be the 'production states', which is totally in contrast to their basic economic model where the vast chunk of revenue will now come from the taxes. According to Luciani (2015), in the dichotomy between the 'allocation states' and 'production states,' the gulf countries fit best in the 'allocation states' category. And this type of developmental model adopted by the Gulf countries has many shortcomings in terms of not focusing on creating employment opportunities, and little or almost negligible locals are involved in any significant skills improvement sector of the economy.

Also, the allocation states are tainted because of the means that the rulers of the state adopt for the legitimization of their decree (Hudson, 1977). As termed by Davidson (2003), a 'rentier pact' where the ruler distributes the oil wealth, including land, debt rebates, free public services, and highly paid public jobs among the loyal locals and expatriates to continue in power. As a result, the 'allocation state' model diminishes the backings for creating jobs and engaging residents in productive activities.

While the growth in the non-oil segment is improving in certain GCC countries, this signifies the importance of expanding the workforce to diversify the economy and develop the private sector. However, the financial sectors remained buoyant, and risks associated with financial stability are low as well.

In 2017, oil prices have shown retrieval, as the oil is trading around USD 60 per barrel, which is a decent increase when compared to the previous year's average price of USD 43 per barrel. According to the IMF oil price forecasts, the average prices will hover around USD 53 per barrel by 2022.

With these happenings, the GCC countries have attempted to make overall adjustments of the fiscal policy, thereby focusing on the public expenditure. However, as suggested by various scholars, these countries should pay particular attention to revenue generation and public debt management. In this paper, an attempt has been made to analyze public finance of the GCC countries, with the focus on significant components of public finance, i.e. public-revenue, inflation, government expenditure and public debt.

1. LITERATURE REVIEW

The GCC region has been of interest to many researchers around the world, and over the decades, many scholarships have been produced on varied dimensions. Various aspects of the country-specific and region-centric economy have been analyzed. Studies like Buiter (2008) discuss how financial integration amongst the GCC nations could be astonishing. Researchers further discuss how free flows of services, goods and people amongst the GCC nations make a stronger case for economic integration. Without any apprehension, the financial integration would be of substantial benefit to the GCC countries from both security and economic perspective that could subsequently lead to the deeper political integration.

With this background, the region is facing a severe crisis in terms of falling crude prices, as the data over the past decade suggest a clear picture of how the fall in oil prices affected the macroeco-

nomic environment in the GCC region, while in other countries, the fall in oil prices has augmented the fiscal space due to reduced energy subsidies (Schwab, 2017).

While there are many benefits that the GCC countries made out of the crude oil, however, Ethredge (1993) has shown how the blessings that oil brought to the GCC countries came with a cost. It was because of oil that the world powers have shown interest in the GCC regions, but this attention brought changes and conflict that the GCC region was never expecting and neither it was prepared. This was during that initial period when the British provided protection and secured the GCC way of living. Since then, the reliance on foreign powers for safety and peace has become the norm and continues.

There are studies where a significant relationship between both economic and financial factors and tax revenue, i.e. GDP, risk premium, FDI and cap-

ital to asset ratio, was found (Basheer, Ahmad, & Hassan, 2019). Also, researchers have found the fiscal response of countries to changes in the debt-to-GDP ratios and found a positive relationship between primary surplus and public debt (Small, Brown, & Bacarreza, 2019).

According to a study, financial repression and inflation are used as tools to lessen the internal claims on the public sector to reduce high economic debts (Eichengreen, El-Ganainy, Esteves, & Mitchener, 2019). The debt promotes development when used for investments and it could cause harm to the development when used for consumption. This all depends on the political circumstances of a nation: whether the debt is for investment or for consumption (Bhattarai, 2016).

Another study points out that there is a negative relationship between GDP per capita and an increase in military spending. The research also shows empirically, that there is an inverse relationship between conflict and development (Khan & Haque, 2019). The scholars have found that higher levels of public debt and inflation rates have a significant positive impact on development (Onafowora & Owoye, 2019).

It has also been observed that the debt variables have no significant influence on the economic output, while the debt service variables depress the economic output (Afonso & Ibraimo, 2020). The scholars have also analyzed the case for maximization of finance for development using public-private partnerships (PPP) and have found some success stories in the Middle East nations (Arezki & Belhaj, 2019).

Some studies have also found that the increasing income dependence has positive effects; however, the decreasing income dependence has a negative impact on the economic development of many GCC members (IMF, 2008). The study also observed that the reliance on the increasing export has an adverse effect and decreasing oil export dependence has a favorable effect on the economic development of the region (Maalel & Mahmood, 2018). Besides, the IMF study has revealed that the non-oil economy in the GCC countries appears to have improved slightly in 2017 (Adedeji, Baltabaev, & Zhu, 2017).

According to the BP Energy Economics (2018) report, clean energy is the latest new thing in the world of fast growing energy demand, which accounts for a 40 percent increase in primary energy. By 2040, the energy mix is expected to become highly diversified the world would ever witnessed.

There are studies that highlight the steps taken by the GCC member countries to expand the environs and decrease the destruction of the ecology. These countries are planning to shift to clean energy. However, the government does not support clean energy, while high-government support is for the fossil fuel prices and electricity generated from it (Al-Maamary, Kazem, & Chaichan, 2017).

Similar concerns are raised by Al-Maamary, Kazem, & Chaichan (2016) that the GCC members are lagging behind in establishing the renewable energy power stations, while there are exceptions such as the UAE, which has taken initiative of the setting of Masdar City, and Oman has also taken solar energy initiatives.

In addition, there are countries like Oman that have established institutions: TANFEEDH that aims to identify the resources and sets a time-frame that would be required to implement initiatives that are expected to drive economic diversification. Also, the periodic reports are generated whereby the concerned authorities can monitor the progress in implementing the initiatives to ensure the public is continuously updated on the progress of various diversification initiatives (TANFEEDH, 2017).

2. AIMS

The aim of this paper is to investigate public finance in the GCC region, analyze public finance using variables such as consumer price inflation, total government revenue, public debt, and assess their impact on the GDP of these countries.

3. METHODOLOGY

This study uses a methodology similar to that of Rosoiu (2015), which uses the co-integration rank test through vector auto-regression (VAR) meth-

ods, which are employed to determine whether consumer price inflation, total government revenue, revenue (percent of non-oil), and total government gross debt have an impact on GDP or not on controlling the economy of GCC countries. In this study, the data available from the World Bank and IMF databases have been used. However, due to the non-availability and continuity of the updated data in the GCC countries, the study could not include other variables to make a holistic study.

An attempt has also been made to study the trends in terms of public revenues, expenditure and debt of the GCC countries to provide a brief comprehensive understanding of public finances in the Gulf region. The study uses multivariate regression to analyze the impact of variables, such as public revenue, non-oil revenue in %, public debt and inflation, nominal GDP of the GCC countries. Besides, the study also evaluates the validity of the below mentioned regression equation:

$$GDP = \beta (Public Rev) + \\ + Revenue(\% \text{ of non-oil}) - \\ - Public debt - Inflation,$$

where β is a measure of volatility.

4. RESULTS

There is an urgent need to study public finance, especially in Gulf countries, where limited research is being done to examine what the respective governments provide in the form of public goods and services, such as roads, military forces, health services, education and many others. At the same

time, the primary purpose of public finance is to generate revenue for the government to finance its various undertaken activities.

Besides, public finance warrants the equitable distribution of wealth in the country and assists the governments in regulating economic activities. In this paper, public finance is examined using three parameters, namely public expenditure, public debt and public revenue.

4.1. GDP of GCC countries

The GDP growth in the GCC countries is shown in Table 1. Usually, the GDP growth on an annual basis is the nominal GDP growth rate, which is adjusted for inflation for the particular period. Based on the data from national authorities and IMF projections, Oman took the lead in 2019, followed by Kuwait and the UAE at 4.2%, 3.8% and 3% of real GDP growth, respectively. By comparison, countries including Qatar, Bahrain and Saudi Arabia will lag behind.

GDP at current prices is the market value of services and goods produced in a country during a given year. As Figure 1 shows, Saudi Arabia leads and is well ahead of other GCC countries in terms of GDP at current prices, followed by the UAE and Qatar.

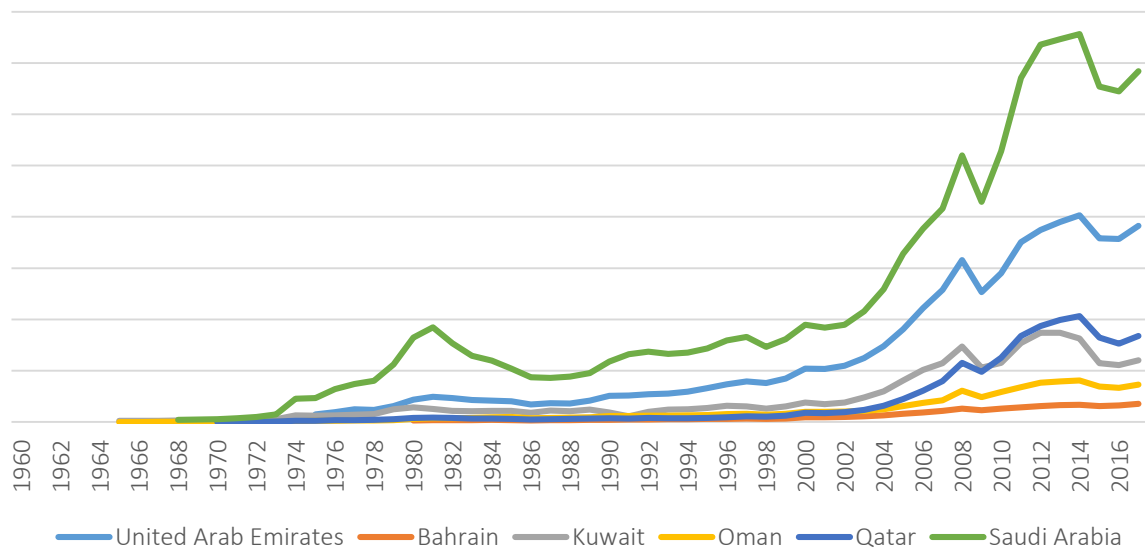
While the nominal GDP is computed at the current market price, all the changes in market prices that would have taken place in that year as a result of deflation or inflation are included. The crucial distinguishing feature between real values and nominal values is that the real value of GDP is adjusted for inflation, while the nominal values of GDP are not. And as a result, the nominal GDP would often be higher than the real GDP.

Table 1. Growth in real GDP (%)

Source: International Monetary Fund dataset (average 2000–2014 to 2019) (IMF, 2019).

| Countries | Average | | | | IMF projection | |
|----------------------|-----------|------|------|------|----------------|------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Bahrain | 5.1 | 2.9 | 3.2 | 3.2 | 3.0 | 2.3 |
| Kuwait | 4.8 | −1.0 | 2.2 | −2.5 | 1.3 | 3.8 |
| Oman | 3.7 | 4.7 | 1.8 | −0.3 | 2.1 | 4.2 |
| Qatar | 11.2 | 3.6 | 2.2 | 2.1 | 2.6 | 2.7 |
| Saudi Arabia | 4.1 | 4.1 | 1.7 | −0.7 | 1.7 | 1.9 |
| United Arab Emirates | 4.8 | 3.8 | 3.0 | 0.5 | 2.0 | 3.0 |
| GCC | 4.9 | 3.6 | 2.1 | −0.2 | 1.9 | 2.6 |

Source: Author's plot (World Bank and OECD data).

**Figure 1.** Gross domestic product (current USD)

According to the IMF estimates and projections, nominal GDP in the GCC region will be USD 1,646 billion, and Saudi Arabia, followed by UAE, will lead the region at USD 759 and 428 billion, respectively (see Table 2).

Also, as an indicator, it measures the real annual economic growth of all economic segments

except the oil division. Besides, this is the most critical macro-economic pointer that shows the overall state of the national economy over the consecutive years. According to the IMF estimates and projections, Qatar would lead the region in terms of non-oil GDP annual percentage change at 4.1, followed by Oman and the UAE by 2019 (see Table 3).

Table 2. Nominal GDP (USD billions)

Source: International Monetary Fund dataset (average 2000–2014 to 2019).

| Country | Average | | | | IMF projection | |
|----------------------|-----------|---------|---------|---------|----------------|---------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Bahrain | 20.5 | 31.1 | 32.2 | 34.9 | 37.8 | 39.7 |
| Kuwait | 103.3 | 114.6 | 110.9 | 120.4 | 135.3 | 140.1 |
| Oman | 45.9 | 68.9 | 66.8 | 74.3 | 82.6 | 85.6 |
| Qatar | 92.9 | 164.6 | 152.5 | 166.3 | 183.8 | 193.9 |
| Saudi Arabia | 436.3 | 654.3 | 644.9 | 683.8 | 748.0 | 759.2 |
| United Arab Emirates | 241.9 | 357.9 | 348.7 | 377.4 | 411.8 | 427.8 |
| GCC | 940.7 | 1,391.5 | 1,356.0 | 1,457.1 | 1,599.4 | 1,646.4 |

Table 3. Oil exports: growth in crude and non-crude GDP (%)

Source: International Monetary Fund dataset (average 2000–2014 to 2019).

| Country | Average | | | | IMF projection | |
|----------------------|-----------|------|------|------|----------------|------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Non-oil GDP | | | | | | |
| Bahrain | 7.4 | 3.6 | 4.0 | 4.4 | 3.6 | 2.8 |
| Kuwait | 6.6 | 0.0 | 2.0 | 2.5 | 3.0 | 3.0 |
| Oman | 7.0 | 4.3 | 1.5 | 2.0 | 3.0 | 3.5 |
| Qatar | 12.6 | 8.2 | 5.6 | 4.0 | 4.1 | 4.1 |
| Saudi Arabia | 6.5 | 3.2 | 0.2 | 1.0 | 2.3 | 2.1 |
| United Arab Emirates | 6.3 | 3.2 | 2.7 | 1.9 | 2.8 | 3.3 |
| GCC | 6.9 | 3.5 | 1.6 | 1.8 | 2.7 | 2.7 |

Table 3 (cont.). Oil exports: growth in crude and non-crude GDP (%)

| Country | Average | | | | IMF projection | |
|----------------------|-----------|------|------|------|----------------|------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Oil GDP | | | | | | |
| Bahrain | 0.4 | −0.1 | −0.1 | −2.2 | 0.3 | 0.0 |
| Kuwait | 4.0 | −1.7 | 2.3 | −6.0 | 0.0 | 4.5 |
| Oman | 1.4 | 5.2 | 2.1 | −2.8 | 1.0 | 5.0 |
| Qatar | 10.4 | −0.5 | −1.0 | 0.2 | 1.0 | 1.2 |
| Saudi Arabia | 2.1 | 5.3 | 3.6 | −3.0 | 0.9 | 1.7 |
| United Arab Emirates | 2.5 | 5.4 | 3.8 | −2.5 | 0.0 | 2.4 |
| GCC | 2.9 | 4.0 | 2.9 | −2.8 | 0.6 | 2.2 |

4.2. Public revenue

Public finance is supposed to directly support public service delivery by increasing public revenues while minimizing the associated public risks, thereby ensuring fiscal sustainability (Liu & Li, 2017). Due to the lack of data, 2011 had to be chosen. Figure 2 shows that Kuwait leads the rest of GCC countries in terms of government revenues (GDP percentage), followed by Saudi Arabia and Oman. While the rest of the GCC members, including Qatar, the UAE and Bahrain, still lagged behind.

At present, Gulf countries are not facing any significant problems due to the continuing natural gas and crude oil production. However, in the long run, the key for a production and diversification that is sustainable for the GCC would reduce the dependence on public revenue from the gas and oil sectors. It was suggested that the Singapore development model be used as it is characterized as the most desired model for a well-diversified service-oriented economy (Cummings, 2018). In this

regard, the GCC would still be dependent on oil and gas as projected by the World Bank and the IMF. However, Table 4 shows that Saudi Arabia would lead in terms of crude oil production at 10.15 million barrels per day and Qatar would lead in the natural gas production 4.29 among all the GCC countries.

4.3. Consumer price inflation

Alsamara, Mrabet, and Dombrechtb (2018) have found an unequal influence of import cost on inflation. As Table 5 shows, Bahrain will face the highest price rises, followed by Kuwait in 2019, which will be a matter of grave concern for the respective governments.

4.4. Public expenditure

Public expenditure is a financial outlay made by the government of a particular country to achieve the collective needs and desires, such as public services, government salaries, infrastructure, etc. In GCC countries (see Figure 3), Kuwait was the

Source: Author's plot (World Bank national accounts data).

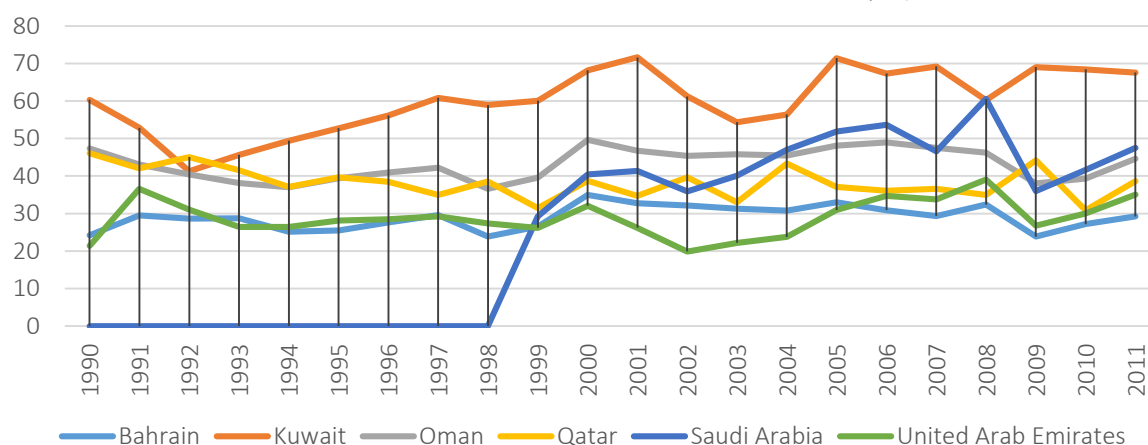
**Figure 2.** Government revenue (% of GDP)

Table 4. Oil and natural gas production (million barrels/day)

Source: International Monetary Fund dataset (average 2000–2014 to 2019).

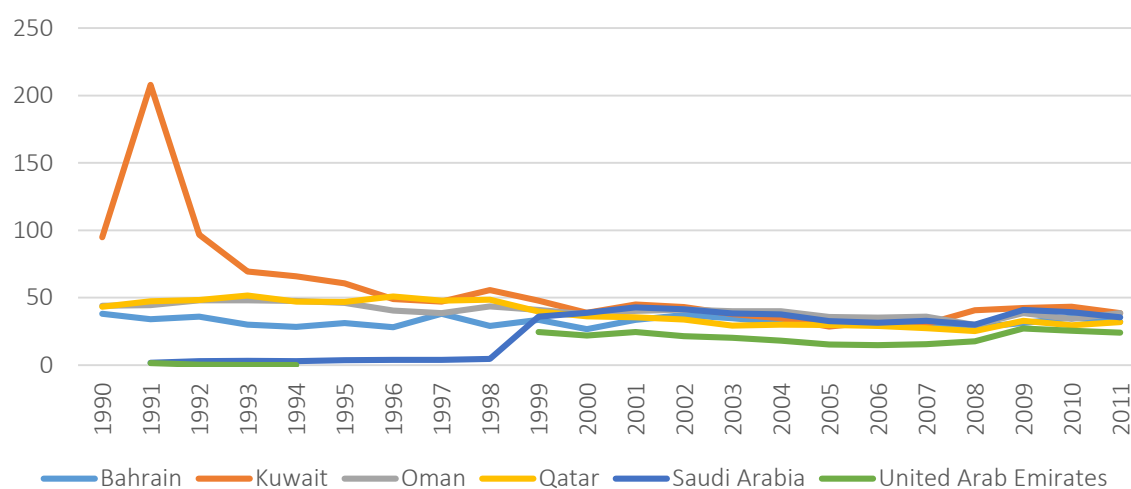
| Country | Average | | | | IMF projection | |
|-------------------------------|-----------|-------|-------|-------|----------------|-------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Oil production | | | | | | |
| Bahrain | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Kuwait | 2.44 | 2.86 | 2.95 | 2.71 | 2.71 | 2.83 |
| Oman | 0.85 | 0.98 | 1.01 | 0.97 | 0.97 | 1.02 |
| Qatar | 0.74 | 0.64 | 0.65 | 0.61 | 0.61 | 0.62 |
| Saudi Arabia | 8.78 | 10.19 | 10.46 | 10.01 | 10.05 | 10.15 |
| United Arab Emirates | 2.42 | 2.88 | 3.03 | 2.93 | 2.93 | 3.02 |
| GCC | 15.43 | 17.74 | 18.30 | 17.43 | 17.47 | 17.83 |
| Natural gas production | | | | | | |
| Bahrain | 0.26 | 0.37 | 0.37 | 0.37 | 0.38 | 0.38 |
| Kuwait | 0.22 | 0.26 | 0.27 | 0.24 | 0.24 | 0.25 |
| Oman | 0.50 | 0.67 | 0.68 | 0.73 | 0.73 | 0.79 |
| Qatar | 1.88 | 3.93 | 3.97 | 4.17 | 4.24 | 4.29 |
| Saudi Arabia | 1.59 | 2.01 | 2.10 | 2.20 | 2.25 | 2.33 |
| United Arab Emirates | 0.84 | 1.02 | 1.05 | 1.05 | 1.05 | 1.05 |
| GCC | 4.86 | 8.26 | 8.44 | 8.77 | 8.90 | 9.11 |

Table 5. Consumer price inflation (average year, %)

Source: International Monetary Fund dataset (average 2000–2014 to 2019).

| Country | Average | | | | IMF projection | |
|----------------------|-----------|------|------|------|----------------|------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Bahrain | 1.7 | 1.8 | 2.8 | 1.4 | 2.9 | 4.9 |
| Kuwait | 3.2 | 3.7 | 3.5 | 1.5 | 2.5 | 3.7 |
| Oman | 2.5 | 0.1 | 1.1 | 1.6 | 2.5 | 3.5 |
| Qatar | 4.3 | 1.8 | 2.7 | 0.4 | 3.9 | 3.5 |
| Saudi Arabia | 2.2 | 1.3 | 2.0 | -0.9 | 3.7 | 2.0 |
| United Arab Emirates | 4.1 | 4.1 | 1.6 | 2.0 | 4.2 | 2.5 |
| GCC | 3.0 | 2.0 | 2.1 | 0.2 | 3.6 | 2.5 |

Source: Author's plot (World Bank & OECD data).



Note: Government expenditure includes interest as a share of GDP.

Figure 3. Government expenditure (% of GDP)

leader in government expenditures (% of GDP) in the early nineties, and then for decades, almost all GCC countries were in the range of 50 to 111. Also, according to Al-Faris (2002), country's income is an extrapolative factor for the growing role of the government, and empirical investigations do not support the hypothesis that public spending causes revenue for the country.

Public expenditure, especially in the education sector, will have long-term beneficial results for GCC countries. Studies were conducted that suggested an educational institution that would facilitate frequent industrial visits and promote students to have live projects. According to Pandow and Salem (2020), the implementation of these recommendations would augment the employability of the youth.

4.5. Public debt

Public debt is a financial obligation of the government. Pandow (2018) suggests that there is a little indication that public debt has a causative impact on the economic growth and is significant in justifying that the undesirable relationship between growth and debt is often used to defend the policies that assume debt has a negative causative impact on the development of a country.

Besides, as is evident from Table 6, by 2019, Bahrain would cross public debt of 102 percent of GDP, which will be the highest in the Gulf region and would be a matter of grave concern for the government of Bahrain. By comparison, the rest of the countries' public debt will remain at the two-digit figure, with the highest at 52% of GDP in the case of Qatar, followed by Oman, Kuwait

and Saudi Arabia. However, the UAE would be the only country in the region that has the lowest public debt to GDP ratio at 19%.

5. DISCUSSION

According to the IMF estimates, the GCC zone would have a nominal GDP of USD 1,646 billion, and Saudi Arabia, following by the UAE, would have a nominal GDP of USD 759 billion and USD 428 billion, respectively. Also, as mentioned in the above sections, Bahrain faces the highest price rises, followed by Kuwait for 2019, and this is a matter of grave concern for these governments.

With regard to public expenditure in the GCC countries, as can be observed from the above, Kuwait leads in terms of government expenditure (% of GDP) in the early nineties, and then over decades, almost all GCC countries are in the range of 50 till 2011. Since 2019, Bahrain has crossed public debt to the tune of 102 percent of GDP, which will be the highest in the Gulf region. By comparison, the rest of the countries' public debt will remain at the two-digit figure and peak at 52% of GDP in the case of Qatar, followed by Oman, Kuwait and Saudi Arabia. However, the UAE would be the only country with the lowest public debt to GDP ratio at 19%.

As Figure 4 shows, lower crude prices rendered by the GCC economies demand an urgent attention of policy makers so to rely less on the public sector as the key driver of growth.

The descriptive statistic of each variable can be found in Table 7. According to the table, the mean

Table 6. Public gross debt (% of GDP)

Source: International Monetary Fund dataset (average 2000–2014 to 2019).

| Country | Average | | | | IMF projection | |
|-----------------------------------|-----------|------|------|------|----------------|-------|
| | 2000–2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Bahrain ¹ | 28.3 | 66.0 | 81.5 | 90.3 | 94.9 | 102.0 |
| Kuwait ¹ | 13.4 | 4.7 | 9.9 | 20.6 | 26.7 | 32.4 |
| Oman ¹ | 11.6 | 15.5 | 33.3 | 44.2 | 46.8 | 48.3 |
| Qatar | 30.9 | 34.9 | 46.5 | 54.0 | 55.4 | 52.0 |
| Saudi Arabia ¹ | 36.5 | 5.8 | 13.1 | 17.3 | 20.0 | 23.8 |
| United Arab Emirates ² | 11.0 | 18.7 | 20.7 | 19.5 | 19.0 | 19.3 |

Note: ¹ Central government. ² Banking system claims exclude debt raised by federal and Emirati governments in the international markets.

Source: Author's plot (World Bank and OECD data).

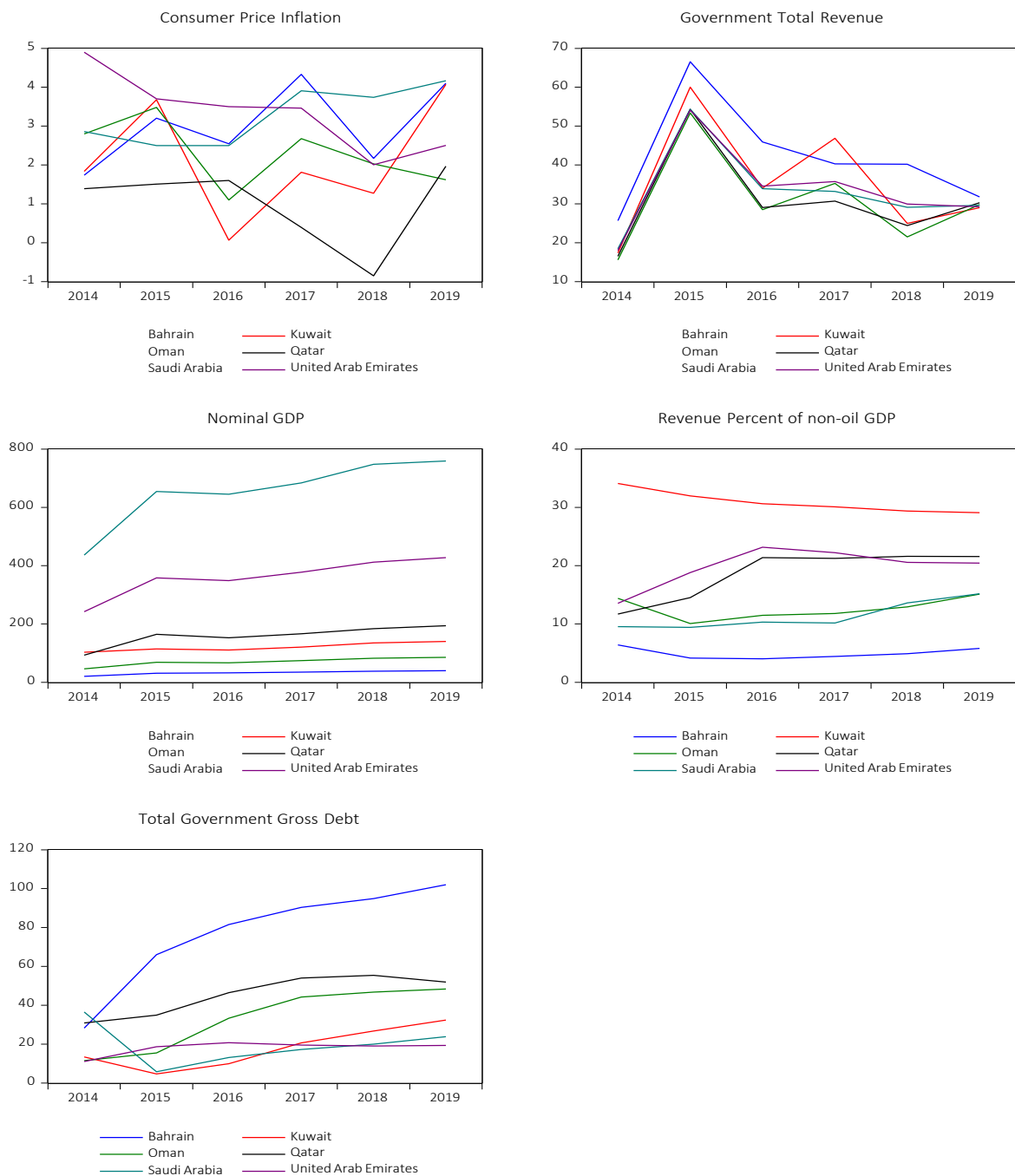


Figure 4. Graphical plot of economic multi-variables of the GCC countries

inflation in the GCC region will be around 2.5 by 2019, while the government revenue percentage of GDP will be approximately 34%, with the average nominal GDP at 15%, and % of non-oil revenue at 16% and GDP to public debt at 35%.

Based on multivariate regression analysis, the following results were found (see Table 8). The t-stat

for the regression is 16.67, r-squared is at 0.832 and p-value is 0.000; this indicates the strong evidence against the null hypothesis, which in this case was because the consumer price inflation, total government revenue, revenue (percent of non-oil), and total government gross debt have no effect on the nominal GDP, which in this case can be rejected due to the low p-value.

Table 7. Descriptive statistics of each variable used in the study

Source: Author's analysis.

| Statistics | CONSUMER_PRICE_INFLATION | GOVERNMENT_TOTAL_REVENUE | NOMINAL_GDP | REVENUE_PERCENT_OF_NON_OIL | TOTAL_GOVERNMENT_GROSS_DEBT |
|--------------|--------------------------|--------------------------|-------------|----------------------------|-----------------------------|
| Mean | 2.507665 | 34.21927 | 15.35833 | 16.37806 | 35.23900 |
| Median | 2.502184 | 30.49266 | 20.74846 | 14.45349 | 27.48876 |
| Maximum | 4.900021 | 66.52833 | 87.31866 | 34.08851 | 102.0100 |
| Minimum | -0.852273 | 15.57131 | -64.41118 | 4.027559 | 4.653454 |
| Std. dev. | 1.288774 | 12.82574 | 32.14934 | 8.623919 | 25.59878 |
| Skewness | -0.389216 | 0.761882 | -0.403206 | 0.421478 | 1.154649 |
| Kurtosis | 2.886063 | 2.911298 | 3.265735 | 2.185420 | 3.524359 |
| Jarque-Bera | 0.928408 | 3.494586 | 1.081374 | 2.061174 | 8.411717 |
| Probability | 0.628635 | 0.174245 | 0.582348 | 0.356797 | 0.014908 |
| Sum | 90.27595 | 1231.894 | 552.8999 | 589.6102 | 1268.604 |
| Sum Sq. dev. | 58.13282 | 5757.490 | 36175.30 | 2603.019 | 22935.41 |
| Observations | 36 | 36 | 36 | 36 | 36 |

Table 8. Multivariate regression analysis

Source: Author's analysis.

| Summary | Coefficient | Std. error | t-statistic | Probability |
|--------------------|-------------|--------------------|-------------|-------------|
| C(25) | 36.72694 | 2.191276 | 16.76053 | 0.0000 |
| R-squared | 0.832755 | Mean dependent var | | 15.35833 |
| Adjusted R-squared | 0.832755 | S.D. dependent var | | 32.14934 |

Note: Dependent Variable: NOMINAL_GDP

Method: anel Least Squares

$$NOMINAL_GDP = C(GOVERNMENT_TOTAL_REVENUE) + REVENUE_PERCENT_OF_NON_O - \\ -TOTAL_GOVERNMENT_GROSS_D - CONSUMER_PRICE_INFLATION$$

Besides, VAR model specifications used in this paper can be as follows:

VAR model:

$$NOMINAL_GDP = C(1,1) \cdot NOMINAL_GDP(-1) + C(1,2) \cdot NOMINAL_GDP(-2) + \\ C(1,3) + C(1,4) \cdot CONSUMER_PRICE_INFLATION + C(1,5) \cdot GOVERNMENT_TOTAL_REVENUE + \\ C(1,6) \cdot REVENUE_PERCENT_OF_NON_OIL + C(1,7) \cdot TOTAL_GOVERNMENT_GROSS_DEBT$$

Table 9. Vector auto-regression estimates

Source: Author's analysis.

| Variables | NOMINAL_GDP |
|-----------------------------|--------------------------------|
| NOMINAL_GDP(-1) | 1.49E-15 (1.1E-15) [1.41211] |
| NOMINAL_GDP(-2) | 1.46E-16 (7.7E-16) [0.18909] |
| C | -2.62E-13 (1.1E-13) [-2.42507] |
| CONSUMER_PRICE_INFLATION | 4.87E-15 (1.2E-14) [0.40170] |
| GOVERNMENT_TOTAL_REVENUE | 1.000000 (3.0E-15) [3.4e+14] |
| REVENUE_PERCENT_OF_NON_OIL | 1.000000 (2.7E-15) [3.8e+14] |
| TOTAL_GOVERNMENT_GROSS_DEBT | -1.000000 (1.5E-15) [-6.7e+14] |
| F-statistic | 9.00E+29 |

Note: Standard errors in (), and t-statistics in [].

The study also employed vector auto-regression estimates to measure the equation set above; Table 9 show the details.

Johansen's Trace and Maximum Eigenvalue tests have been used to check the co-integration between variables. Test results can be found in

Table 10. Cointegration rank test

Source: Author's analysis.

| Unrestricted cointegration rank test (trace) | | | | |
|---|------------|-----------|----------------|---------|
| Hypothesized | | Trace | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical value | Prob.** |
| None * | 1.000000 | 641.4874 | 3.841466 | 0.0000 |
| Unrestricted cointegration rank test (maximum eigenvalue) | | | | |
| Hypothesized | | Max-Eigen | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical value | Prob.** |
| None * | 1.000000 | 641.4874 | 3.841466 | 0.0000 |

Note: Max-eigenvalue test indicates 1 co-integrating eqn.(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis' (1999) p-values.

Table 10. Therefore, the variables are assumed to have a long-run relationship having a trace stat of 641, a critical value of 3.84 with a p-value of 0.000 at a 5% significance level.

CONCLUSION

Based on the above analysis, it has been concluded that the consumer price inflation, total government revenue, revenue (percent of non-oil) and absolute government gross debt have a statistically significant influence on the GDP of the select countries. Thus, it was found that the variables, which include inflation, government revenue and public debt, have a definite role and influence the nominal GDP of the GCC economies.

The study also points to more robust evidence for a long-term relationship between independent variables, which include inflation, public debt and revenue, and the dependent variable, which in this case is nominal GDP.

Besides, an upward trend in expenditures was found in all GCC economies, which is necessary as long as expenditure are effectively utilized for productive purposes. Also, the focus should be on augmenting public revenue generation and making economies less dependent on oil revenues. The study's findings indicate that GCC countries need to make substantial efforts to address the non-oil growth, as suggested by Gill, Izvorski, Eeghen, and De Rosa (2014), and Cherif and Hasanov (2014). Moreover, diversification and promotion of the private sector needs to be stressed, and this is consistent with the findings of Moradbeigi and Law (2016), and Hakro and Pandow (2019).

Since this paper analyzes and situates GCC countries in terms of public revenue, expenditure, inflation and public debt, other constituents of a public fiscal management structure, such as public financial administration and federal finance, were not included in the study. The time period is also limited in this study. Further research can be improved by incorporating public financial administration and federal finance dimensions.

AUTHOR CONTRIBUTIONS

Conceptualization: Rashid Khalil.

Data curation: Bilal Ahmad Pandow.

Formal analysis: Rashid Khalil, Bilal Ahmad Pandow.

Investigation: Rashid Khalil.

Methodology: Rashid Khalil.

Software: Bilal Ahmad Pandow.

Supervision: Bilal Ahmad Pandow.

Writing – original draft: Rashid Khalil.

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