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The Role of Institutional Quality in Economic Efficiency in the GCC Countries

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Abstract

Advancements in productivity throughout history led to continuous improvements in standards of living; ultimately if current generations had not known more than their ancestors, their standards of living would not have been very different from their ancestors. Respectively, long term economic growth and development are largely dependent on understanding the sources of productivity. Recent literature has identified institutional quality as a significant factor in explaining different productivity levels across countries; therefore, this study provides insight from the Gulf Cooperation Council (GCC) region which has not been previously explored in this context. The main objective of this study is to investigate the association between institutional quality and economic growth for a developing high-income region with a distinct economic structure. The study also determines the total factor productivity (TFP) for Oman using the Solow model. Findings suggest different dimensions of institutional quality have a heterogeneous impact on productivity, while the indicator on contract enforcement and property rights had a positive impact on productivity, the indicator on regulatory quality had a negative effect. Ultimately, these findings provide a guide to policymakers in the GCC on factors that promote growth and those that hinder it.

Keywords

Institutional Quality, Economic Efficiency, Productivity, Solow Model, GCC

1. Introduction

The discovery of oil in the Gulf Cooperation Council (GCC) countries spurred economic development and dramatically transformed the region. Consequently, the GCC countries have become the highest-income countries in the MENA re-

gion and Arab world. However, the abundance of oil has led to common economic structural issues; namely high dependence on oil export revenue, reliance on expatriate labor and weak development of the non-oil private sector. In light of the sharp drop in oil prices in recent years, the GCC countries have prioritized policies aimed at economic diversification and improvements in productivity. Therefore, understanding the sources and determinants of growth in the region is vital for designing and implementing necessary economic policies in order to transition towards a knowledge-based economy and to diversify away from the hydrocarbon sector, thus, enhancing GDP. In addition, this region is not sufficiently studied in the literature as oil-rich counties are not usually "poolable" with other countries when empirically studying the economic variables and growth (Esfahani et al., 2014). Oil-abundant countries have distinct economic structures that necessitate a special consideration in economic-related empirical investigations (Al Abri et al., 2019). This study considers the region's unique characteristics while exploring the dynamic relationships between productivity and institutional quality indicators.

Recent literature on economic growth theory has identified institutional quality as a vital contributing factor of long run productivity. The reason is that the total factor productivity (TFP) figure is a residual that implies changes in economic efficiency where these changes are solely dependent on technological improvements, yet in reality there are numerous determinants influencing growth (Bosworth & Collins, 2003). Furthermore, previously the magnitudes of institutional quality were considered immeasurable, but in recent times qualitative indicators for institutional quality have been developed and are widely available. This study builds on the literature focusing on the causal relationship between institutional quality and economic growth (Fabro & Aixalá, 2009; Nawaz, Iqbal, & Khan, 2014; Nguyen, Su, & Nguyen, 2018; Tang & Bundhoo, 2017; Van Bon, 2019; Bouanza & Ngassa, 2021; Nganga, 2021) but it provides perspective for a developing high-income region with distinct economic structures, the GCC. It also contributes by focusing on deep-rooted factors (institutions) as the vital determinant of productivity and income growth. Institutions create incentives for both factor accumulation and innovation which foster technological change and efficiency of factors of production (North, 1990; Hall & Jones, 1999; Acemoglu et al., 2005; Dias & Tebaldi, 2012). For example, "good" institutions may result in 1) engagement in productive activities, 2) best allocation of factors among firms, 3) ideal distribution of factors among economic sectors, and 4) optimal utilization of available efficiency-enhancing technologies (Tebaldi & Elmslie, 2008; Hsieh & Klenow, 2007). Clearly, institutional quality influences TFP through both technological progress and efficiency gains.

The Solow model claims that growth is achieved as a result of an increase in capital and labor productivity as well as an increase in labor supply. The difference in growth rates between countries is due to the level of technological change known as TFP. Conversely, there are other factors such as external

shocks or political distresses that could influence growth. Then, the study retrieves data on TFP figures for the GCC courtiers from the PENN World Tables [PWT9.1] to empirically investigate factors that could have an impact on productivity of the GCC region by employing regression analysis. Unlike other GCC countries, TFP of Oman was not determined in the literature. Therefore, this study attempts to determine the TFP for Oman using Solow model on time-series data from 1992 to 2019. It employs a newly released cross-country TFP dataset [PWT9.1] formed by Feenstra, Inklaar, & Timmer (2015). This new release is 1) enhanced by unfixing the depreciation rate and across capital goods and 2) applies country-specific and year specific labor shares. Consistent with the literature, studied factors are institutional quality, human capital, trade openness, FDI and oil rents. However, this study provides a thorough analysis on the causal relationship between institutional quality and economic growth for the GCC countries. Unlike previous studies, institutional quality is measured by regulatory quality and the rule of law obtained from the Worldwide Governance Indicators.

The results of this Paper provide an understanding of factors that facilitated and those that hindered economic growth in the GCC region. A novel finding of this paper is that different indicators of institutional quality have heterogeneous impact on economic growth. The empirical results suggest different indicators of institutional quality have heterogeneous impact on economic growth, as regulatory quality of GCC negatively impacted total productivity, while the rule of law indicator had a positive effect on productivity. Moreover, the human development index had a quantitatively large and significant impact on TFP suggesting labor quality is an effective and important channel for productivity growth in the region. Findings also reveal that some indicators do not influence the productivity level alone; yet, the interaction terms with each other yields a significant impact on productivity.

The remainder of the Paper is organized as follows: section 2 provides an insight into the relevant literature on the topic of TFP and its determinants, section 3 is dedicated to describing the data sources and displaying data summary statistics, section 4 provides the analysis and results and section 5 concludes and provides policy recommendations.

2. Literature Review

2.1. The Neoclassical Growth Model

During the mid-1950s to mid-1980s, economic growth theory was largely influenced by the neo-classical model and is mainly attributed to Solow (1956). In simple terms, the model states that output is a function of capital and labor and is limited by the prevalent state of technology. In the medium term, the model predicts that the rate of economic growth can increase due to capital accumulation, however long run economic growth depends on the growth of the labor force as the model assumes decreasing marginal returns to factor accumulation.

In this model, output growth is decomposed into the contribution of labor and capital, while TFP is equivalent to the difference between the contribution of labor and capital. Solow's main contribution to the literature on economic growth is that long run growth is dependent on technological change rather than on the savings or investment rate. Nonetheless, the model suggests that a country's saving rate is indicative of investment in capital as higher levels of saving are correlated with capital accumulation but only in the short term since the economy eventually runs to diminishing returns as the ratio of capital per worker increases. It has been widely agreed that this is a comprehensive model on economic growth theory, however the model fails to provide an explanation on elements such as saving rates, population and level of technology since they are assumed exogenous (McCallum, 1996).

The model assumes output is a result of the following function:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha}, \ 0 < \alpha < 1 \tag{1}$$

where L_t stands for labor input and K_t is capital input; according to this function an increase in A_t leads to an increase in output without changing capital and labor inputs. The term A_t in this function stands for technological progress and it is a measure of productivity. Whilst, α stands for the elasticity of output with respect to capital and 1-α is the elasticity of output with respect to labor. Specifically, α measures the contribution of capital to output or GDP for a certain year, and 1-α measures the contribution of labor to GDP.

It is important to note the following two assumptions of the Solow model, namely constant returns to scale and decreasing marginal returns to factor accumulation. Constant returns to scale imply that doubling of inputs will lead to a doubling of output, on average:

$$A_t \left(\mu K_t\right)^{\alpha} \left(\mu L_t\right)^{1-\alpha} = \mu^{\alpha} \mu^{1-\alpha} Y_t = \mu Y_t \tag{2}$$

Meanwhile, decreasing marginal returns to factor accumulation refers to the fact that adding capital inputs while holding labor inputs constant leads to small increases in output as a result of output per worker decreasing:

$$\frac{\partial Y}{\partial K} = \alpha A_t K_t^{\alpha-1} L_t^{1-\alpha} \tag{3}$$

$$\frac{\partial^2 Y}{\partial K} = \alpha\left(\alpha-1\right) A_t K_t^{\alpha-2} L_t^{1-\alpha} < 0 \tag{4}$$

2.2. Other Growth Models: Determinants of TFP

Economists widely agree on the sentiment that a country's long-term growth is mainly determined by advancements in technology. Innovations in technology throughout history led to improvements in standards of living—if we had not known more than our ancestors then our standards of living would not have been very different from theirs. Nonetheless, in shorter time horizons, there have been deliberations on which portion of economic growth stems from technolo-

gical progress and which portion to other factors. Consequently, this section discusses the literature on other determinants of TFP.

A significant determinant of TFP is institutional quality. This can be measured by many factors such as regulatory quality, the rule of law, or level of corruption. The theory behind this notion is that poor institutional quality results in lack of constraints on certain politicians and elites which distorts the incentive for investments in the economy. Furthermore, Chen & Dahlman (2005) identify factors such as the effectiveness of regulations in influencing entrepreneurship and the effectiveness of the judicial system in promoting low transaction costs, which are important for encouraging creativity and incentives for innovation. An empirical study by Balcerzak & Pietrzak (2016) used data from 2000-2010 for EU countries found a significant and positive relationship between improvements in productivity and institutional quality. Additionally, Tebaldi (2016) used several factors for institutional quality such as quality of government, law and order, corruption and a democratization index for 63 countries between 1960 and 2011 and found these variables to be significant determinants of TFP growth. Ultimately, the findings of these studies propose that good institutional quality spur TFP growth. However, this relationship could change depending on the variable used as a proxy for institutional quality as well as the characteristics of the studied region.

Institutions influence economic growth and development of countries to a great extent as they govern the framework for all economic activity in a country. Accordingly replacing or refining existing rules and laws are crucial to improving institutional capacity. This study uses two measures of institutional quality: regulatory quality and rule of law, both of which are taken from the Worldwide Governance Indicators (WGI) project by the World Bank. The regulatory quality index illustrates whether a government is capable of devising and enforcing prudent regulations and policies that encourage the development of the private sector. This index is constructed using various variables such as business regulatory environment, extent of market dominance, ease of doing business, excessive protections, and barriers to entry for new competitors. It is evident from **Figure 1** which benchmarks the GCC countries' score on regulatory quality with the median of countries in the same income group that GCC countries lag behind in terms of regulatory quality. As of 2020, the United Arab Emirates scores the highest in terms of regulatory quality index with a score of 1.08, whereas Saudi Arabia has the lowest score at 0.26.

Whilst the rule of law indicator measures a different dimension of institutional quality which is the quality of contract enforcement in a society, property rights as well as probability of violence and crime. Some of the variables used in constructing this index include: the speed of the judicial process, confidence in judicial system and police force, intellectual property rights protection, and efficiency of legal frameworks in challenging regulations. Variables such as intellectual property rights are more important than ever for countries transitioning

to knowledge-based economies as they alter the incentives to innovate. Similar to the previous indicator, Figure 2 shows that GCC countries lag behind their peers in the same income group, with Qatar having the highest score of 1.00, whilst Saudi Arabia scores the lowest with 0.24.

Another major determinant of TFP is human capital accumulation as the theoretical literature postulates a positive relationship between human capital (labor skills) and productivity (TFP), innovation, and technological change. Improved human capital enables the implementation of new foreign technology or the creation of domestic technological inventions (Romer, 1990). Unlike the Solow (1956) model, the Romer economic growth model assumes endogenous technological change whereby market incentives result in intentional investments in human capital by individuals. Nevertheless, the adoption of foreign technology depends on factors such as the quality of the educational system and

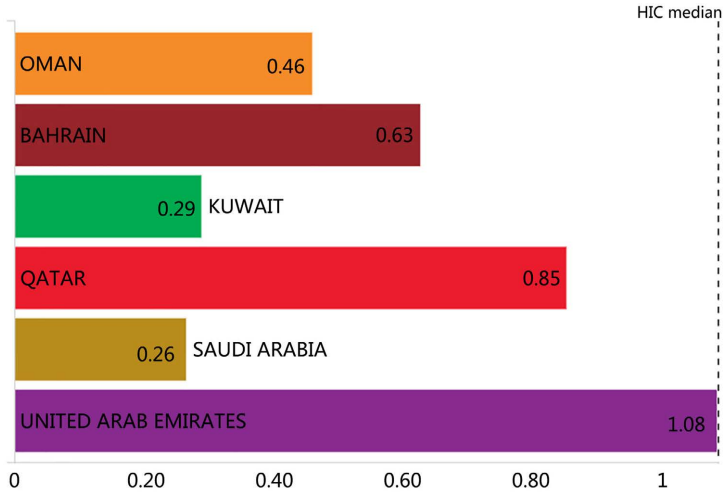

Figure 1. Regulatory quality index (2020). Source: Worldwide Governance Indicators, World Bank.

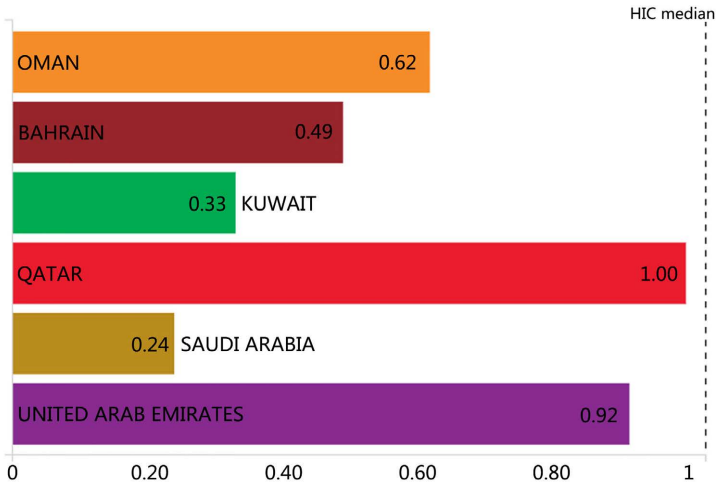

Figure 2. Rule of law index (2020). Source: Worldwide Governance Indicators, World Bank.

investment in research and development (R&D) and not only the number of years of education. This infers that in countries with low expenditure on education, human capital may not have a positive impact on productivity. Empirical studies on the relationship between human capital and productivity use different measures on educational attainment and results from these studies are mixed. Miller & Upadhyay (2000) use years of schooling as a measure of human capital for 83 countries for the years 1960-1989 and find that it has a positive impact on total factor productivity for most countries. However, they find a negative relationship between human capital and TFP for low-income countries. A paper by Erosa et al. (2010) uses a qualitative (expenditure on schooling) as well as a quantitative (years of schooling) measure on TFP in a cross-country study and conclude that accumulation of human capital intensely magnifies differences in TFP across countries.

The literature also identifies several channels in which trade and FDI impact TFP growth (see (de Mello, 1999; Makki & Somwaru, 2004; Madsen, 2009)). The channels through which trade and FDI affect productivity are transfer of technology and knowledge, exposure to international competition and utilization of comparative advantage (Boughanmi et al., 2021; Zaibet et al., 2022). A seminal paper in this field by Coe & Helpman (1995) estimates the impact of a country's R&D capital stock and its trading partners' R&D capital stock on TFP growth and finds a significant and positive impact of both factors on the growth of a country's TFP levels. Furthermore, the study found that the relationship between the spillover of foreign R&D and domestic productivity is bigger in countries with a larger degree of trade openness. Similarly, by using data for over 135 years for OECD countries, Madsen (2007) finds an empirically robust relationship between TFP and imports of knowledge. In fact the study found that 93% of growth in TFP was driven solely due to imports of knowledge in the past century for these countries. In terms of the relationship between FDI and productivity, Bijsterbosch & Kolasa (2010) found empirical evidence on the positive impact of FDI inflows on productivity levels in central and eastern European countries. However, the study also found that the positive impact of FDI inflows depends on the absorptive capacity of the receiving country.

Recent literature on economic growth theory has recognized that variations in a country's endowment of natural resources such as oil play an important role in explaining differences in productivity between countries. Sachs & Warner (1995) find that countries with a high ratio of natural resource exports as a share of GDP tend to have lower economic growth. This negative relationship persisted after controlling other factors important for economic growth. The transmission channel for lower economic growth is due to the fact that an accelerated rise in national income due to natural resources may lead to less awareness of the need offor proper management of financial resources and strong institutional quality. Another channel, is that income from natural resources results in a misleading sense of security which in turn undermines the importance of economic policies

aimed at stimulating productivity. An empirical study by Papyrakis & Gerlagh (2004) examined the relationship between growth and resource abundance in United States and found that resource abundant states experienced lower rates of investment, R&D expenditure, schooling and higher levels of corruption which resulted in overall lower economic growth.

3. Data

The constructed panel data set for this study includes data for all GCC countries for a period of 27 years from 1992 to 2019. Data sources are the PENN World Tables, the Worldwide Governance Indicators project, the United Nations Development Program (UNDP), and the World Bank. Data on the dependent variable—total factor productivity has been calculated using variables from the PENN World Tables (PWT9.1). The PWT data set includes national accounts economic time series data, and its monetary variables are denominated in a common set of prices in a common currency which allows for consistent comparisons across all countries in the data set. Furthermore, the data from the PWT used in this study are in growth accounting format—a quantitative method first introduced by Solow (1956) to breakdown factors that contribute to economic growth, namely capital, labor and technology (**Table 1**).

The institutional quality figures are obtained from the Worldwide Governance Indicators project. Governance in this context is defined as the institutions and traditions by which authority in a country is exercised. Data on these indicators are available from 1996-2018 and each indicator is compiled using the views of a large number of experts, businesses and citizens. The study chose to use the following most common dimensions of institutional quality; rule of law and regulatory quality. Rule of law refers to the quality of contract enforcement, property rights and the extent to which citizens abide by rules. Regulatory quality, on the other hand, provides insight on the ability of the government to formulate and implement thorough policies that promote private sector development.

Furthermore, the study used the Human Development Index (HDI) taken from the United Nations Development Program (UNDP) as a measure for human capital. The HDI is a composite index which measures three dimensions—life expectancy, knowledge in the form of expected as well as mean years of schooling and finally standards of living. Countries with a score closer to 1 are considered to have higher levels of human development; data for HDI in 2018 indicates that all GCC countries fall under the group of countries with the very high human development. **Table 2** shows that HDI level for CGG countries ranges from about 80% (for Kuwait) to 87% (for the United Arab Emirates).

Finally, data on oil rents, trade openness and FDI inflows are all obtained from the World Bank. The oil rents variable is measured as the difference between the value of crude oil production at world prices and total costs of production as a percentage of GDP. Income from natural resources such as oil is considered an economic rent because they are not produced, and are only considered

Table 1. Descriptive statistics.

Variable	Obs	Mean	Standard Deviation	Min	Max
TFP	140	1.26	0.33	0.77	2.11
HDI	135	0.79	0.04	0.67	0.86
Regulatory Quality	100	0.35	0.31	−0.31	0.91
Rule of Law	100	0.41	0.25	−0.15	0.96
Oil Rents (%)	140	29.46	15.94	1.81	61.23
Trade (%)	143	100.82	30.75	56.09	210.16
FDI (%)	147	2.42	4.15	−5.29	33.57

Table 2. Human development index (2019).

HDI Rank	*Country*	*HDI*
31	United Arab Emirates	0.866
40	Saudi Arabia	0.854
45	Qatar	0.848
42	Bahrain	0.852
60	Oman	0.813
64	Kuwait	0.806

Source: United Nations Development Program (UNDP).

liquidation of a given country's capital stock. Ultimately, when a government uses oil rents for current consumption rather than investment in new capital, it is borrowing against its future. Trade as a percentage of GDP is used as a measure of trade openness, and is calculated as the sum of exports and imports of goods and services measured as a share of GDP. FDI is measured as net inflows of FDI as a share of GDP, FDI inflows include but are not limited to, sum of equity capital and other long-term capital.

4. Empirical Strategy

The baseline specification presented by regression (i) in Equation (5) aims to examine the relationship between certain economic factors, institutional quality, human capital, oil rents, trade openness, and FDI, on TFP growth. Regression (ii) in Equation (6) introduces an interaction term between oil rent and trade openness to test the hypothesis that the effect of oil rent variable on productivity depends on the value of trade and vice versa. Regression (iii) in Equation (7) assumes an interaction term between trade openness and FDI in their relationship with TFP. The inclusion of interaction terms to the baseline regression provides additional understanding of the relationships among the studied variables. In this study, results confirm that some variables in the regression model do not influence the productivity level alone; however, the interaction terms among them have a significant impact on productivity. In addition, these interaction terms improve the significance levels of the other independent variables in the model as well as improving the R-squared figure suggesting better fit to the data. Ulti-

mately, the equations are specified as follows:

Regression (i)

$$\begin{aligned}\mathrm{TFP}_{it} = {} & \beta_0 + \beta_1 \mathrm{RegQual}_{it} + \beta_2 \mathrm{RuLaw}_{it} + \beta_3 \mathrm{HDI}_{it} + \beta_3 \mathrm{HDI}_{it}2 \\ & + \beta_4 \mathrm{Oil}_{it} + \beta_5 \mathrm{Trade}_{it} + \beta_6 \mathrm{FDI}_{it} + \mu_{it}\end{aligned} \tag{5}$$

Regression (ii)

$$\begin{aligned}\mathrm{TFP}_{it} = {} & \beta_0 + \beta_1 \mathrm{RegQual}_{it} + \beta_2 \mathrm{RuLaw}_{it} + \beta_3 \mathrm{HDI}_{it} + \beta_3 \mathrm{HDI}_{it}2 + \beta_4 \mathrm{Oil}_{it} \\ & + \beta_5 \mathrm{Trade}_{it} + \beta_6 \mathrm{FDI}_{it} + \beta_7 \mathrm{Oil}_{it} * \mathrm{Trade}_{it} + \mu_{it}\end{aligned} \tag{6}$$

Regression (iii)

$$\begin{aligned}\mathrm{TFP}_{it} = {} & \beta_0 + \beta_1 \mathrm{RegQual}_{it} + \beta_2 \mathrm{RuLaw}_{it} + \beta_3 \mathrm{HDI}_{it} + \beta_3 \mathrm{HDI}_{it}2 + \beta_4 \mathrm{Oil}_{it} \\ & + \beta_5 \mathrm{Trade}_{it} + \beta_6 \mathrm{FDI}_{it} + \beta_7 \mathrm{Oil}_{it} * \mathrm{Trade}_{it} + \beta_{78} \mathrm{Trade}_{it} * \mathrm{FDI}_{it} + \mu_{it}\end{aligned} \tag{7}$$

where TFP stands for total factor productivity, RegQual is regulatory quality, RuLaw is rule of law, HDI is human development index, Oil is oil rents, Trade is trade openness, FDI is foreign direct investment and μ_{it} is the error term. In addition, after visual inspection of the variables, a quadratic (squared) term for HDI has been added to the linear regression model as the simple scatter plot (Figure 3) reveals a kind of a curvilinear relationship between HDI and TFP; which has been confirmed by the results of this Study, as discussed in the results section.

5. Results and Discussion

The Study employed a fixed effects Ordinary Least Squares (OLS) model, as the Hausman test rejected the null hypothesis (Chi2(6) = 101.83 and Prob(chi2) = 0.00). In a fixed effects model, the time-invariant characteristics are unique to each country and must not correlate with other countries' characteristics in the sample. Table 3 displays the regression results for the three regression models. Column 1 in Table 3 presents results of regression (i) which is the baseline model. Column 2 in Table 3 shows findings of regression (ii) in Equation (6). Column 3 in Table 3 displays estimates of regression (iii) in Equation (7). The last raw of Table 3 provides the R-squared figure of the three models.

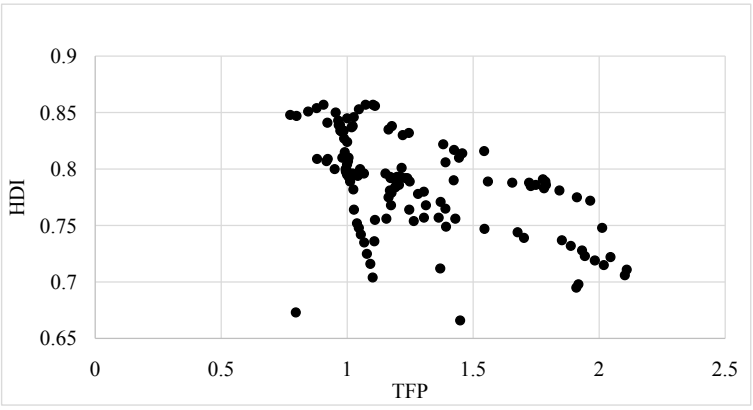

Figure 3. Scatterplot for TFP and HDI.

Table 3. Regression results.

	Total Factor Productivity (TFP)		
	Regression (i)	Regression (ii)	Regression (iii)
$RegQual_{it}$	−0.328*** (0.113)	−0.270** (0.105)	−0.242** (0.103)
$RuLaw_{it}$	0.219* (0.116)	0.395*** (0.117)	0.300** (0.121)
HDI_{it}	72.089** (31.130)	110.222*** (30.472)	98.066*** (29.965)
Oil_{it}	−0.001 (0.003)	0.029*** (0.009)	0.023** (0.009)
$Trade_{it}$	−0.0003 (0.002)	0.002 (0.002)	0.0009 (0.002)
FDI_{it}	−0.016** (0.006)	−0.011* (0.006)	−0.068*** (0.025)
$HDI*HDI_{it}$	−45.599** (19.859)	−69.639*** (19.412)	−61.565*** (19.115)
$Oil*Trade_{it}$		−0.0003*** (0.0001)	−0.0002*** (0.000)
$Trade*FDI_{it}$			0.0004** (0.000)
Constant	−27.120** (12.009)	−42.705*** (11.840)	−37.938*** (11.646)
R-Squared	0.159	0.369	0.312

Significance levels: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Standard errors are shown in brackets.

The regulatory quality variable had a significant and expected negative relationship with TFP in all three regressions. Regulatory quality is indicative of a government's ability to implement sound and thorough policies that foster productivity and development of the private sector. Since the GCC countries are oil-exporting and relatively small states that heavily rely on the hydrocarbon sector which is mostly owned by the government. Private non-hydrocarbon sector in this region does not seem to be a viable contributor to total productivity, and therefore economic growth (Al Abri et al., 2019). Moreover, some GCC countries have undertaken fiscal reforms that damaged the performance of private non-hydrocarbon sector such as increasing wages of the public sector jobs which led to a sudden shift of workers from private to public sector. This implies that there is a need to implement more sound policies to promote private sector productivity in the GCC region. On the other hand, the rule of law variable is positively correlated with TFP in all three regressions signifying decent property right laws and contract enforcement in GCC countries. On average, a 1 percent increase in the quality of rule of law leads to an increase of 0.3 units in TFP

which is considerable given the range of TFP values in the sample (0.77 - 2.11). Good quality laws and institutions are imperative for promoting low transaction costs and efficient markets which in turn lead to productivity growth.

Moreover, the Human Development Index (HDI) had a considerable and positive relationship with TFP in all three regressions, alluding to the fact that GCC countries' investments in human capital had an immense impact on productivity growth. Quantitatively, a 1-unit improvement in the HDI (proportion ranges from 0 to1) leads to an increase of 0.93 units in TFP, on average considering all regressions and adjusting for the proportion effect. This finding suggests that there is capacity for higher levels of productivity in these countries if governments continue investment in high quality education in order to move towards a knowledge-based economy and diversify away from hydrocarbon sector.

Moreover, GCC countries have high oil rents due to the fact that they enjoy low costs of oil extraction (between $9 and $20) compared to other countries (Mirzoev et al., 2020). Despite this, the oil rents variable had an inconsequential impact on productivity growth. This finding is in line with previous literature Papyrakis & Gerlagh (2004), and suggests that revenue from oil exports in GCC countries is not bringing about improvements in productivity.

Based on the sample, results show that trade openness is insignificant in explaining the variations in TFP in all regressions, suggesting it is an ineffective channel for TFP growth in the GCC region. **Table 1** shows that the trade openness indicator for GCC countries averaged 100.8%, much higher than an average of 50% for emerging economies. Although quantitatively, the region has a high degree of trade openness; this is due to large hydrocarbon exports and reliance on imports as there is a lack of domestic production (IMF, 2018). Likewise, the GCC region's non-hydrocarbon exports lack quality and sophistication compared to the average of other emerging market economies, where export sophistication measures the share of knowledge-intensive products in the basket of exports (Hausmann, Hwang, & Rodrik, 2006). This finding is in line with previous literature (Sachs & Warner, 1995), where a high percentage of oil exports hampers domestic productivity growth. Although the trade variable alone is found not to enhance productivity in the region, the inclusion of the interaction term between trade and oil rents as well as trade and FDI yields a significant outcome as discussed below.

Similarly, the coefficients for FDI in all three regressions are significant and negative estimates, but small in magnitude, suggesting expansion in FDI does not lead to noteworthy productivity growth. The composition of FDI inflows in the GCC region are mainly concentrated in three sectors—real estate, petroleum and chemicals which do not lead to significant spillovers in knowledge, thereby not affecting productivity growth. Additionally, this finding could also indicate low absorptive capacity in GCC countries to realize productivity gains from FDI inflows.

The interaction term between oil rent and trade openness in regression (ii)

shows a significant negative relationship with total productivity confirming the hypothesis that the effect of oil rent variable on productivity depends on the value of trade and vice versa. The negative relationship is consistent with our earlier findings and justifications. For most GCC countries, increase in trade is mainly driven by increase in oil exports leading to revenue growth, thus expenditure expansion given the nature of revenue recycling nature in these economies. Consequently, an increase in expenditure leads to higher imports mainly due to government projects which are largely in infrastructure and consumption growth due to higher aggregate demand. It is obvious that resultant revenue gain from oil/trade expansion is not sufficiently invested in productivity-oriented projects, rather investments are oriented toward large projects with lower economic rewards which in turn hinders TFP growth. Similarly, GCC countries hardly invest in research and development (R&D) projects with less than 1% real R&D spending as percentage of GDP (World Bank, 2019).

In addition, the interaction term between trade openness and FDI as indicated by regression (iii) declares a significant positive association with total productivity. Although, it is found that trade openness alone does not have a significant influence on total productivity, it has a noteworthy impact on productivity when it is combined with the value of FDI indicating dependence between trade openness and FDI in their relationship with the TFP. FDI is mostly attracted by petrochemical upstream oil industry which is the main driver of trade. This indicates that trade development escalates oil-oriented FDI which works as a vital channel for knowledge and technological diffusion among countries, which fosters TFP growth.

In addition, these interaction terms improve the significance levels; for example, oil rent is not significant at the baseline regression; however, it turns significant when interaction terms are considered. Moreover, by considering the R-squared figure of the three regressions, it is obvious that the goodness of fit has improved when interaction terms are included suggesting better fit to the data.

6. Conclusions and Policy Implications

Countries heavily dependent on oil revenue have prioritized policies aimed at economic diversification and improvements in productivity. The objective of this study is to examine the sources and determinants of productivity growth in the Gulf Cooperation Council (GCC) countries as it gives a direction for implementing the necessary economic policies to transition towards a knowledge-based economy and diversify away from the hydrocarbon sector. Specifically, this study investigates the causal relationship between institutional quality and economic growth for a developing high-income region, the GCC.

The results show that institutional quality along with human capital have a significant effect on TFP growth for the GCC countries, indicating they are an effective transmission channel for productivity growth. They also provide an

understanding of factors that facilitated and or those that hindered economic growth in the GCC region. Nonetheless, the indicator measuring contract enforcement and property rights were positively correlated with TFP, whilst the indicator on the quality of policies aimed at fostering the private sector is negatively correlated with TFP. The novel finding of this study is that different indicators of institutional quality have heterogeneous impact on economic growth. Moreover, human capital indicator has the highest impact on productivity growth for the GCC countries suggesting labor quality is an effective and important channel for productivity growth in the region. It implies that for GCC countries to effectively enhance productivity, innovation, and technological changes, it is vital to profoundly invest in human skills and labor quality. Conversely, when separately examining the indicators on trade openness, FDI and oil rents, findings indicate these variables do not lead to noteworthy changes in productivity suggesting they may not be effective channels for TFP growth in the region. However, the interaction terms between these variables show significant outcomes indicating their impact on TFP is reaped when they are combined together indicating dependency between these variables in their relationship with the productivity growth. This finding confirms that some variables in the regression model do not influence the productivity level alone; however, the interaction terms among them have a significant impact on productivity.

There are several policy implications emanating from these findings. First, in order for the GCC economies to become more productive and move towards knowledge-based economies, the private sector must play a bigger role as well as dependence on the public sector must diminish. Therefore, the quality of regulations governing the private sector must be improved as it currently hinders productivity in GCC economies. In a fast-paced environment, certain regulations become obsolete and generate unnecessary burdens for business owners, hence governments must become more dynamic in administering current regulations and setting new ones. In addition, policies set by governments must be coherent across all public sector entities to reduce bureaucracy. The second implication that although the indicator on rule of law (i.e. contract enforcement and property rights) had a positive relationship with TFP, it remains quantitatively small suggesting there is room for improvement in this regard. Finally, investments in improving human capital made by GCC governments had an immense and positive impact on productivity. However, for this channel to remain relevant in a dynamic world there must be focus on developing skills for future jobs.

The analysis of this study can be extended to account for other variables that may influence the total productivity, especially of developing oil-exporting countries, and if such impact differs between expansions and contractions periods of the business cycle. Moreover, it is essential to further investigate the impact of various dimensions of institutional quality as its impact on productivity found in this study is heterogeneous.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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