IOSR Journal of Humanities And Social Science (IOSR-JHSS)
Volume 26, Issue 4, Series 7 (April. 2021) 60-67
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Human capital and Economic Growth in GCC Region

Fatma Mabrouk[1] & Hiyam Abdulrahim[2]
Department of Economics-College of Business Administration
Princess Nourah bint Abdulrahman University
Riyadh- Saudi Arabia

ABSTRACT
This paper examines the relationship between economic growth, human capital development and productivity in Gulf Cooperation Council Countries. Using macroeconomic data from World Bank, United Nations Development Program and KOF Globalization Index (published by Swiss Economic Institute), the study tries to explore how human capital development and productivity can contribute to enhance the economic growth. Results display that human capital and productivity have a positive and significant effect on economic growth. More than that human capital is related with an increase in productivity, supposing that human capital (Human Development Index) in large definition is productivity enhancing rather than just education (Education Index).
KEY WORDS: O15, E24, O47
JEL Classification: Human Development, Labor Productivity, Economic Growth

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Date of Submission: 14-04-2021 Date of Acceptance: 28-04-2021

I. INTRODUCTION

Human capital is a key factor for the economic growth, development and competitiveness of a country besides other factors. The importance of human capital works through multiple pathways at the individual, firm and national level. It has a prominent role in modern growth theory; endogenous growth models suggest that human capital may generate economic growth in the long term (Schwerdt, 2009). However, economic growth refers to the increase in the number of goods and services produced by an economy over time, where human capital is the main contributor to all production process.

Human capital participates in economic growth through its productivity, which reflects skills, education, and capabilities. As long as the human capital is well developed, an immediate consequence will be the increasing growth rate of the economy. The growth rate of output depends on the rate of accumulation of human capital and innovation, whose source is the stock of human capital, where education level influences labor productivity. Moreover, some studies exhibit a much greater role of human capital in explaining productivity differential between countries than in supporting growth. In this context, this study aims to reveal the contribution of human capital development and productivity to the economic growth in the Gulf Cooperation Council region (GCC) using Human development index (HDI), and a vector of control variable to control the economic, social and political environment during the period 2000-2017.

HDI which introduced by the United Nation Development Program (UNDP) is one of the earliest measurement related to human capital. The index is created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI can also be used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with different human development outcomes. These disparities can inspire government actors in their policy priorities. The HDI is a brief evaluation of the average performance in the essential measurement of human development: a long and healthy life, being knowledgeable and an adequate standard of living. It is the geometric mean of normalized indexes for each of the three dimensions. It is based on four groups of areas: investment in education, the use of human capital stock, the productivity of human capital and demographics and also employment of human capital.

The second index used in this study is the KOF Globalization Index, a composite index measuring globalization for every country along the economic, social and political dimension. The original index was introduced by Dreher, (2006) and updated in Dreher et al. (2008). It distinguishes between de facto and de jure

[1] FMMabrouk@pnu.edu.sa
[2] HAALRahim@pnu.edu.sa

measures along the different dimensions of globalization. It is based on 43 variables and is used to examine the globalization effect on economic growth (Gygliet al., 2019).

The significance of this study is on its contribution to the literature written on human capital development and economic growth, hence it focuses on human capital productivity and the economic, social and political dimensions using the globalization index. Proxies for human development considered in this paper are not adequately used in the previous empirical studies particularly for GCC countries. For coming up with scientific findings of this study, an econometric model is used based on panel data extracted from the World Bank and KOFs indicators for the period 2000-2017. The study is structured in five sections, first section is an introduction followed by literature review, methodology, analysis and discussion and conclusion sections.

II. LITERATURE REVIEW

The term of human capital is relatively modern, it is mainly attributed to Professor Gary Becker from Chicago University in his book published *Human Capital* (1964). The Global Human Capital Index Report (Samans et al. 2017), defines Human capital as the knowledge and skills people possess that enable them to create value in the global economic system. Essays (2018), argued that human capital as not solely through formal education and skilling, it can be enhanced over time, growing through use and depreciation through lack of use across people's lifetimes. It is intimately related to growth as it increases the nation's capacity to produce goods and services. It enhances job opportunities, increases earnings level to lifts the living standards and deals with individuals who learn special skills and knowledge through education at school, training and experience in the labor market. Hoffman and Averett (2010), denotes that human capital stands for the skills that workers possess and bring to the labor market, these skills are the basis for the earnings they receive. The most important characteristic of these skills is that they don't just arise by themselves, but rather are the result of costly investments that increase an individual's productivity.

International Labor Organization (2019), indicates that investing in people's capabilities will provide them with the opportunity to realize their full potential and to achieve the lives that they have reason to value. It is the cornerstone of a reinvigorated social contract and goes far beyond investing in human capital, to the broader dimensions of human development, including the rights and entitlements that widen people's choices and improve their well-being. Becker (1964), argues that economic analysis explaining why, throughout history, few countries have experienced very long periods of persistent growth in income per person. For if per capita income growth is caused by the growth of land and physical per worker, diminishing returns from additional capital and land eventually eliminate further growth. Becker's opinion is that the puzzle, is not the lack of growth, but the fact that the United States, Japan, and many European countries have had continuing growth in per capita income during the past one hundred years and longer. According to Becker (1964), the answer lies in the expansion of scientific and technical knowledge that raises the productivity of labor and other inputs in production. The efficient application of scientific knowledge in production of goods has significantly improved the value of education, technical schooling, and on the job training as the development of knowledge has become embodied in people, scientists, scholars, technicians, managers, and other contributors to output.

In the same line of thought, Adeyemi and Ogunsola (2016) analyss the impact of human capital development on economic growth for Nigeria during 1981-2013. The outcomes show that government expenditures on education is statistically significant and positively connected to economic growth while expenditure on health is significantly negative. Expenditure on research and development is positive but not significant, while expenditure on training and school enrolment rate is statistically significant but has a negative relationship with economic growth.

Similarly, Wilson and Briscoe (2004), explored the impact of education and training on economic growth, the conclusion is that the investment in education and training effect positively and significantly national economic growth. Education is certainly a key determinant of economic growth for both developed and developing countries: its effect is probably more marked in developing nations. Countries which have managed persistent growth in income have also had large increases in the education and training of their human capital. In an excellent study for the United States, Denison (1985) finds that the increase in schooling of the average worker between 1929 and 1982 explains about one-fourth of the rise in per capita income during this period. The economic data of Japan, Taiwan, and other Asian economies in recent decades intensely illustrate the importance of human capital to growth. Lacking natural resources, they import practically all their sources of energy and facing discrimination form the West, these so-called Asian tigers grew rapidly by relying on a sell trained, educated, hard-working, and conscientious labor force. The same idea was developed by Grossman and Helpman (1994), a variety of products in the economy can be explained technological growth as endogenous factor, which implicate important investment on research and development. Physical capital affects enormously the growth income per capita in the early steps of development process, however, the accumulation of knowledge through continuing education and training contribute to the higher steps of development process. In the same vein, Moore et al. (2018), indicates that labor productivity increases can also be an engine for massive

economic growth and new job creation. The study denotes that equip workers with the right skills and reinvest al driven productivity gains in as many economic sectors as possible create incentives that benefits. These can be reinvested into the national and regional societies and affected by the transition to sustain new labor demand. Human capital contributes to economic growth through their productivity when they engage in the labor force and produce goods and services.

Pelinescu (2015), argues that the slow investment in human capital should influence the sustainable development of the country. She mentions that one of the most important factors of economic growth is human capital through its decisive influence on production through labor productivity and the rate affect contributing to increase competitive advantage through innovation and diffusion of technology. The study found that there is positive relationship statistically significance between GDP per capita and innovative of human capital (number of patents) and qualification of employees (secondary education). Also found that there is negative relation between education expenditures and GDP per capita. Funke (2000) uses a model that incorporates aspects of the classical theory of economic growth with the new theories of economic growth emphasize the existence of different effects of human capital in the stage of development of the country.

Fraumeni (2012), states that human capital productivity depends on how human capital is defined. It is a valuable measure as it apprehends the prospective population potential. Individuals who attain a higher level of education will have higher human capital than others who don't obtain this education. Also individuals in the future could live longer and healthy life with good health care, and thus will be abler for work and productivity. Salkind (2004), pointed that the cognitive-developmental model of human development stresses the individual's active rather than reactive role in the developmental process and the individual's role in the social and cultural context within which he or she develops. The basic assumptions of the model: Development occurs in a series of qualitatively distinct stages, second these stages always follow the same sequence, but they do not necessarily occur at the same times for all individuals and third, these stages are hierarchically organized, such that later stages subsume the characteristics of earlier ones.

Basically, neoclassical models indicate that the non-recurring increase in the stock of human capital leads to an associated non-recurring increase in productivity growth, while endogenous growth models suggest that the same non-recurring increase in human capital can lead to a permanent increase in productivity growth. In the short term, both models produce very similar results. In the long run, newer growth models involve higher returns on human capital investment. Based on Summers and Heston (1991) database, and Barro and Lee (1996) educational attainment statistics, Hall and Jones (1999) experiment differences in output per worker across different countries. Results display that differences in physical capital and educational attainment clarify only a small amount of the differences in output per worker.

Human Capital Development in GCC countries

According to the new World Bank's Gulf Economic Monitor (2019), economic growth in the Gulf Cooperation Council (GCC) region is expected to increase from 2.0% last year to 2.1% in 2019, before accelerating to 3.2% in 2020 and stabilizing at 2.7% in 2021. The report suggests continuing amendment aimed to improve the business environment in the region. However, to attain more sustainable growth, the GCC countries must support fiscal consolidation, economic diversification and stimulate job creation induced by the private sector, especially for women and young people. The report illustrated the economic growth and factors affecting it of the GCC countries for the years 2019 and 2020 as follows:

Bahrain: Growth is estimated at 2% in 2019, expected to reach 2.2% in 2020. Non-oil growth is expected to slow to 2.4%, due to front-loaded FBP fiscal measures and tapering mega-project investments. Growth will proceed in the future as efficiency gains from reforms materialize.

Kuwait: Growth is forecast at 1.6% in 2019 due to OPEC+ oil output cuts in the first half of the year. The economy is expected to grow at around 3% by 2020 as higher government spending supports the non-oil sector.

Oman**:** Growth is projected to slow to 1.2% in 2019 as Oman's commitment to the December 2018 OPEC+ output cut constrains oil production. There will be a high increase in growth to 6% during 2020 as the government envisages to significantly augment investment in the Khazzan gas field. The potential boost from the diversification investment spending would continue supporting growth in 2021 and the medium term.

Qatar**:** Growth is expected to reach 3% in 2019, accelerating to 3.2% in 2020 and to 3.4% by 2021, as the country continues construction operations in preparation for the 2022 World Cup. In addition, higher infrastructure spending on Qatar National Vision 2030 projects aimed at diversifying the economy should help boost investor confidence.

Saudi Arabia**:** Growth is supposed to slow moderately to 1.7% in 2019, as higher government spending offsets the impact of oil production cuts implemented in the first semester of 2019. It should then recover to over 3% in 2020 as oil production cuts are reversed, and as large infrastructure projects generate positive spillovers to private sector growth.

United Arab Emirates: Growth in the UAE is forecast at 2.6% in 2019, jumping to 3% in 2020 as the country pushes infrastructure investments ahead of Dubai's Expo 2020. Economic growth is expected to reach 3.2% by 2021 supported by the government's economic stimulus program, hosting Expo 2020, and improved growth prospects in trading partners.

Figure 1 shows that the average Human Capital Index (HCI) of the GCC region in 2018 is about 60%, vary among countries. The highest score of HCI is that of Bahrain, followed by United Arab Emirates. Saudi Arabia and Kuwait consequently, come at the least of the GCC countries. These minor differences in the HCI among GCC countries refer mainly to the relevant implemented policies and programs oriented to education, health and other sub-indicators of the index.

Figure 1: Human capital index in GCC countries 2017

Sources: Authors, Based on HCI Report, World Bank .2018

World Bank (2019), indicated that the most pressing challenges slowing human capital formation in the GCC are related to learning outcomes and adult survival rates. Children born today in the GCC will only attain between 58% and 67% of their full health and learning capacity and therefore potential productivity. The report suggests four approaches to enhancing human capital in the GCC: (1) Investing in early childhood development to give children a strong learning foundation, (2) Preparing youth for the future by improving learning outcomes, linking education to labor market needs, and reducing major health risk factors like smoking, inactivity, and unhealthy diet, (3) Improving human capital of the adult population by emphasizing lifelong learning, increasing female labor force participation, reducing the skills mismatch, and preventing chronic diseases and injuries , and (4) Implementing policies to help change social norms and behaviors.

Methodology and Analysis

1. Econometric framework

In this paper, we implement an econometric model, using annual data from 2000 to 2017 for the six Gulf Cooperation Council Countries: Bahrain, Kuwait, Oman, Saudi Arabia and United Arab Emirates. The objective is to test the impact of human capital and productivity in economic growth. The model is presented as follow:

$$\boldsymbol{Growth = Human\ Development + Productivity + X + \varepsilon_{it}}$$

Growth is defined as the GDP per capita, human development is measured by Human Development Index and Education Index. We consider GDP per person employed as a proxy for productivity. We suppose that human development and productivity have a positive and significant impact on economic growth.

To control the economic, social and political context, we contemplate a vector of variable noted **X** and referred to the KOF Globalization Index which measures the economic, social and political dimensions of globalization.

The economic index contains both trade and financial aspects. De facto trade is identified based on trade in goods and services. De jure trade includes customs duties, taxes and trade restrictions. De facto financial involves foreign investment in various categories. De jure financial contains investment restrictions, openness of the capital account and international investment agreements.

The social index composed by three components, each with its own de facto and a de jure side. First, interpersonal contact is measured within the de facto segment by international telephone connections, tourist numbers and migration. Within the de jure segment, it is calculated with reference to telephone subscriptions, international airports and visa restrictions. Second, flows of information are determined within the de facto segment by international patent applications, international students and trade in high technology goods. The de

jure segment measures access to TV and the internet, freedom of the press and international internet connections. Third and final section, cultural proximity is measured in the de facto segment from trade in cultural goods, international trademark registrations and the number of McDonald's restaurants and IKEA stores. The de jure area focuses on civil rights, gender equality and public spending.

Concerning political index, regarding the de facto segment measured by the number of embassies and international non-governmental organizations, along with membership in UN peacekeeping missions. The de jure segment contains variables concentrating on involvement in international organizations and treaties. Three models are estimated successively. (Table 1 summarizes variables definitions and data sources).

Table 1: Variables-Definition and sources

Variables	Definitions	Sources
Growth	GDP per capita	WDI (2018)
Productivity	GDP per person employed	WDI (2018)
Human Development	- Human Development Index - Education Index	UNDP (2018)
Economic Environment	Economic Globalization Index	KOF Globalization Index (2018)
Social Environment	Social Globalization Index	KOF Globalization Index (2018)
Political Environment	Political Globalization Index	KOF Globalization Index (2018)

Sources: Authors

2. Descriptive statistics

Tables 2 and 3 report the descriptive statistics and correlations matrix. Summary statistics of selected variables (Table 3) displays that the average GDP per capita in GCC Countries is higher than the median and right skew which justify the use of the Log to make the distribution more symmetric. The average GDP per capita is about 35.000 US $ and reaching a maximum level of 70.000 US $. However, these GDP per capita is highly volatile, with a standard deviation of 17.800 and a large coefficient of variation which is equal to 0.5. Concerning KOF data, indexes seem to be homogeneous with an average ranging between 55 (Political issue) and 73 (for economic issue). In addition, these indicators seem to be volatile, with a standard deviation of 8 for economic index, 6 per cent for social index and 9 per cent for political index. The correlation matrix presented in Table 4 in Appendix indicates that GDP per capita is positively correlated with human development indicators and productivity.

Table 2: Summary statistics

Variable	Average	Median	Minimum	Maximum	Standard deviation	Coefficient of variation	Skewness	Kurtosis
GDP per capita	35204,7	28372,8	15875,6	69679,1	17813	0,505985	0,618338	-1,13776
GDP per person employed	127398	131718	70523,4	193337	36606	0,287336	0,0581959	-1,17168
HDI	0,806519	0,8035	0,704	0,863	0,033953	0,0420977	-0,533208	0,173602
Education Index	0,648852	0,646	0,475	0,787	0,063009	0,0971086	0,0255392	0,114084
KOFEcGI	73,2027	72,0112	58,3453	86,6353	7,91696	0,108151	0,0799557	-1,04187
KOFSoGI	68,3101	69,0173	49,6771	77,7974	6,23744	0,0913107	-0,869984	0,257206
KOFPoGI	55,5736	57,2256	38,3293	68,9433	8,89979	0,160144	-0,252084	-1,26365

Sources: Authors' calculations

Table 3: Correlation matrix

GDP per capita	GDP per person employed	HDI	Education Index	KOFEcGI	KOFSoGI	KOFPoGI	
1	0,7113	0,4489	0,0377	0,2234	0,2981	0,2746	GDP per capita
	1	-0,0383	-0,3185	-0,4235	-0,3056	0,2500	GDP per person employed

	1	0,8973	0,4633	0,7323	0,4859	HDI
		1	0,3591	0,6139	0,4027	Education Index
			1	0,6474	-0,0597	KOFEcGI
				1	0,3670	KOFSoGI
					1	KOFPoGI

Sources: Authors' calculations

III. RESULTS AND DISCUSSIONS

Model (1) examines the relationship between growth and productivity using HDI as an indicator for Human development and omitting the time and countries effects. Model (2) tests the same relationship but taking into account the time and countries effects. Finally, model (3) analyses the relationship using Education Index as an indicator for Human development and taking into account the time and countries effects. The idea is to eliminate the other dimension of HDI (health and income). All the variables are introduced in logarithm to make certain forms of curved relationship to linear or more nearly linear. A one-step dynamic panel is used in order to correct reverse causality and endogeneity between human capital and economic growth. We maintain the possible causality problem and we suppose that the processes can work simultaneously, so that there is a bi-directional causality between human capital and economic growth (Sianesi and Van Reenen, 2000; Ben Mim and Mabrouk, 2014). The relevance of the GMM estimator is based on the validity of two tests: the Sargan test of instrument identification validity and the tests for first- and second-order autocorrelation of the residuals from equations in differences, AR (1) and AR (2). The test for autocorrelation does not reject any specification. The overall identification Sargan test confirms the validity of all instruments used in any estimation. The tests results on Sargan, AR (1), AR (2), Wald tests, and time-countries dummies, indicate that all estimations are stable and robust.

The results of the model (1) are presented in Table 4. We note that human capital and productivity have a positive and significant effect on economic growth. In accordance with expectations, an improvement in the level of human capital and productivity contribute significantly to increase economic growth. Human capital is considering as an important factor in growth and the inefficiency and insufficiency investment on it can influence the sustainable development of the countries (Pelinescu, 2015). Results are similar when we take into account countries and time dummies model (2) and when we use Education Index instead of Human Development Index.

Table 4: Results

	Economic Growth		
	Model 1	***Model 2***	***Model 3***
Economic Growth (-1)	0,8156***	0,6104***	0,7894***
	(0,0294)	(0,0299)	(0,0254)
Productivity	0,2047***	0,3897***	0,2345***
	(0,0308)	(0,0306)	(0,0262)
Human Development	1,2229***	1,5690***	0,5092***
	(0,2123)	(0,1458)	(0,0658)
Economic Index	0,1988***	0,1628***	0,1992***
	(0,0539)	(0,0327)	(0,0375)
Social Index	−0,1885***	−0,3771***	−0,5220***
	(0,0577)	(0,0513)	(0,0684)
Political Incex	−0,0717**	0,1894***	0,2564***
	(0,0320)	(0,0254)	(0,0335)
Test for AR(1) errors	-1,6939	-1,7720	-2,0651
	[0,0903]	[0,0764]	[0,0389]
Test for AR(2) errors	0,3941	0,2591	0,1981

	[0,6934]	[0,7955]	[0,8429]
Sargan over-identification	93,7626	108,1860	107,1310
	[0,5456]	[0,1861]	[0,2056]
Time dummies	No	Yes	Yes
Countries dummies	No	Yes	Yes
Wald Test	[0,0000]	[0,0000]	[0,0000]
Number of Observation	108	108	108

Source: Authors' calculations. Generalized method of moments. 1-step dynamic panel. The values in (.) are the Robust Std. Err. * p<0.1; ** p<0.05; *** p <0.01. The values in [.] are the p-value.

But the impact is higher in specification (2) compared to the others, as the HDI is considering human capital in broader, more global context. This result approves Sianesi and Van Reenen (2000) findings that human capital is related with an increase in productivity, supposing that human capital in large definition is productivity enhancing rather than just education.

Regarding to control variables, economic index is significantly positive in all estimations. The coefficient is almost the same in specifications (1) and (2) and this confirm that differences between GCC countries is rooted in other education dimensions. Education sector remains a top priority for the region. The results is confirming the effect of different collaborative efforts to formulate similar regulations in various fields. Many GCC government's initiatives are introduced in education sector to formulate similar regulation implementations of favorable policies to enhance the economic growth (Mahboob et al., 2017). Other explication is the financial markets evolutions and oil prices fluctuation push the GCC countries to diversify economic sources by considering human development as a key resource and adjust both the political and social scopes. Concerning political factors, when we take into account countries and time dummies in the model the impact becomes positive and more significant. This result can be explained by the big challenge facing the six countries concerning political reforms. As mention by Abraham (2015), that the political transition proceeds with the measurements of countries to deal with the globalization challenges and to convert traditional societies into custom modern civilizations through integration agreements. Unfortunately, social index is significantly negative, possible explication is that the percentage of non-national in the GCC countries is important and can affect the social harmony because of many nationalities with different cultures which are living is the same region. Concurrently with these social and economic developments, GCC countries are witnessing unrestrained educational progress, which has heightened the political awareness of the younger generations, displaced by interactions based on education, occupation status and professional contribution.

IV. CONCLUSION AND POLICY RECOMMENDATIONS

Regarding the importance of human capital development to the economic growth, this study has explored the causal relationship of human development and productivity on economic growth of GCC countries during the period 2000-2017. Relatively modern proxies are used for human development: HDI, economic index, social index and political index, in addition to productivity indicator. Descriptive analysis and correlation matrix showed high volatile and variations among GDP per capita in GCC countries, while there is homogeneity for economic, social and political indexes. The three developed regression models used to analyze the relationship between human development and economic growth in GCC countries, revealed that human development and productivity have a positive and significant effect on economic growth. However, higher impact and significance of human development are showed when time dummies and country dummies are used. The positive significant relation of economic index on GDP per capita found by the study, is attributed mainly to polices adopted to improve education in these countries. Economic diversification policies and political reforms implemented by GCC countries, have contributed to the positive significance relation of political index on economic growth as it is stated by the study. Heterogeneity in social components of the GCC countries residences, nationals and non-nationals may explain the negative significance of the social index on economic growth exposed by the analysis. In accordance, findings suggest that GCC countries have to continue improving the education system, with more emphasis on the quality of education. In addition to adoption of more inclusive policies enlarging the participation of national human capital in the process of economic growth. The results strongly recommend that deeper studies to be carried out on the effect of each one of the three indexes; economic, social and political on economic growth in GCC countries.

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