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Human Capital and Economic Growth Nexus: Evidence from GCC Countries

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Abstract: This research paper examines the short- and long-run relationship between human capital and economic growth in the six Gulf Cooperation Council (GCC) countries during the period 2000–2022. The study employs the pooled mean group/panel autoregressive distributed lag approach. The result reveals that human capital variables positively and statistically influence both short- and long-run economic growth. In particular, school enrollment, government expenditures on education and health, gross capital formation, foreign direct investment, and employment contribute positively to the economic growth of the GCC countries. The study suggests that the GCC governments should invest more in development of human skills and infrastructure in the health and education sectors, in order to promote and sustain economic growth.

Keywords: Economic growth, GCC countries, government expenditure, human capital, physical capital, panel ARDL, pooled mean group.

Introduction

Economic growth can be influenced by a wide range of macroeconomic factors, including labor, public spending, inflation, investment, and gross capital formation. However, only a few macroeconomic factors, including government expenditure on health and education, human capital, physical capital, and foreign direct investment (FDI), are selected in this study because the literature has found them to have the greatest impact on economic growth in developing countries (Borrescio-Higa & Valenzuela, 2021; Chen et al., 2022; Tackie et al., 2022). Furthermore, labor force, physical capital, and human capital are acknowledged as some of the most crucial elements of production. Since investing in human capital helps increase the efficiency and overall labor force of an economy, it is often associated with economic growth. It is claimed that as human capital grows, economic progress grows (Hussain & Das, 2023).

The Gulf Cooperation Council (GCC) countries as a region are characterized by accelerated growth among developing nations with an adequate supply of healthcare and education. Investing in health has shown results in improved health status since it is expected to lengthen life expectancy. Education has also boosted employment rates relative to the population. Over the last two decades, the GCC countries have made great strides in terms of health, education, and human development (World Bank, 2019).

Many studies have examined the relationship between human capital and economic growth using various analytical models in the context of cross-sectional or panel datasets (Adeleye et al., 2022; Almutairi, 2023; Bekele et al., 2024; Bokhari, 2017; Dankyi et al., 2022; Dinh & Phuc Nguyen, 2022; Elamin, 2024; Elheddad et al., 2021; Hamdan et al., 2021; Rahman & Alam, 2021). These studies have reported mixed results regarding the relationships between human capital and other macroeconomic variables on economic growth. In addition, these studies have attempted to identify growth determinants, but the results have been uncertain. This lack of certainty may be due to the heterogeneous nature of countries, use of differing methodologies and approaches, variation in data periods, and failure to select the precise variables. Therefore, the present study has included human capital, physical capital variables, and FDI as important economic growth determinants. It adds empirical value to the literature by using the recent panel dataset for the GCC countries. It also applies the panel autoregressive distributed lag (ARDL) and the pooled mean group (PMG) estimator.

Data and Methodology

The analysis uses data from the six GCC countries (Bahrain, Kuwait, Qatar, Oman, United Arab Emirates, and Saudi Arabia) during the period 2000–2022, resulting in a total of 138 observations. Macroeconomic variables are obtained from the World Bank database and official national statistics each GCC country. The functional relationship has been formulated to explore the nexus between human capital, physical capital variables, and economic growth as follows:

$$GDP = f(EM, SE, FDI, CF, EB, GEX, GHE) \quad (1)$$

where GDP is defined as real gross domestic product, which is used as proxy for economic growth. The explanatory variables are as follows: EM is employment level, SE is school enrollment, FDI is foreign direct investment, CF is gross capital formation, EB is life expectancy at birth, GEX represents government expenditure on education, and GHE refers to government expenditure on health. All data for these variables are converted to a natural log to eliminate any potential heteroscedasticity. Therefore, equation (1) can be rewritten as follows:

$$LGDP = \beta_1 LEM + \beta_2 LSE + \beta_3 LFDI + \beta_4 LCF + \beta_5 LEB + \beta_6 LGEX + \beta_7 LGHE + \varepsilon \quad (2)$$

The ARDL estimation method is unable to check bias in panel dataset models with individual effects as a result of bias generated by the relation among the white noise term and the mean differenced

independent variables; however, the PMG-ARDL approach solves this problem. This approach, put forward by Sarkodie and Strezov (2018), is a combination of the ARDL model and PMG estimator (Pesaran et al., 1999). Therefore, equation (2) can be expressed as follows:

$$\Delta y_{it} = \beta + \delta y_{it-1} + \varphi_i \sum_{i=1}^p \Delta y_{it-1} + \pi_i \sum_{i=1}^p \Delta LEM_{it-1} + \sigma_i \sum_{i=1}^p \Delta LSE_{it-1} + \gamma_i \sum_{i=1}^p \Delta LFDI_{it-1} + \tau_i \sum_{i=1}^p \Delta LCF_{it-1} + \omega_i \sum_{i=1}^p \Delta LEB_{it-1} + \rho_i \sum_{i=1}^p \Delta LGEX_{it-1} + \sigma_i \sum_{i=1}^p \Delta LGHE_{it-1} + \gamma_0 y_{it-1} + \gamma_1 LEM_{it-1} + \gamma_2 LSE_{it-1} + \gamma_3 LFDI_{it-1} + \gamma_4 LCF_{it-1} + \gamma_5 LEB_{it-1} + \gamma_6 LGEX_{it-1} + \gamma_7 LGHE_{it-1} + \aleph_i + \varepsilon_{it} \quad (3)$$

In the above equation, δ is the coefficient of the past lagged value of the dependent variable; $\varphi_i, \pi_i, \sigma_i, \gamma_i, \tau_i, \omega_i$, and ρ_i denote the short-run coefficients; and γ_0 to γ_7 denote the long-run coefficients.

Research Results

Table 1 displays the results of the PMG-ARDL analyses, revealing the long- and short-term elasticities between economic growth (GDP), employment (EM), school enrollment (SE), FDI, gross capital formation (CF), life expectancy at birth (EB), government expenditures on education (GEX), and government expenditures on health (GHE) in the six GCC countries (Bahrain, Kuwait, Qatar, Oman, United Arab Emirates, and Saudi Arabia) from 2000 to 2022. The findings strongly indicate the presence of both long- and short-run cointegration among the GCC countries. The empirical findings reveal that employment level has a positive and significant impact on economic growth in the sampled nations. This implies that a 1% rise in employment level in the GCC countries leads to a 4.63% and 1.69% increase in long- and short-run economic growth, respectively, with a statistical significance of 1% and 5%, respectively. For FDI, the findings report that a 1% increase in FDI enhances economic growth by 0.004%, which is statistically significant in the long run but causes a nonsignificant 0.002% rise in economic growth in the short run. Further, school enrollment has a positive and significant effect on economic growth in the GCC countries: a 1% increase in school enrollment exerts a statistically significant 1.36% and 0.43% increase in long- and short-run economic growth, respectively.

Regarding gross capital formation, the findings documented a positive and significant effect on long- and short-run economic growth. More specifically, they demonstrated that a 1% surge in capital formation increased economic growth by 0.95% in the short run and 0.52% in the long run. The findings of GEX estimates (see Table 1) prove the positive correlation between government expenditures on education and economic growth in both the short and long run. These findings are statistically significant because they indicate that a 1% rise in government expenditures on education increases long- and short-run economic growth by 0.40% and 0.55%, respectively. Further, the estimated results demonstrate that life expectancy at birth and government expenditure on health have a significant and positive effect on economic growth. The positive coefficients of life expectancy and government expenditure on health indicate that these two factors have a direct association with economic growth; this means that if life expectancy and government expenditure on health rise, the GCC countries economic growth will increase, and vice versa. The error correction coefficient (ECT) of -0.088, as displayed in Table 1, suggests that about 9% of speed adjustment of departures from long-run equilibrium is corrected each year when disequilibrium occurs.

Table 1

Results of Long-run and Short-run Effects

Variables	Coeff.	Std. Error	T-test	Prob.
Long-run estimation				
EM	4.626	0.706	6.557	0.000***
FDI	0.004	0.002	2.003	0.092*
SE	1.361	0.146	9.310	0.000***
CF	0.520	0.125	3.417	0.001***

GEX	0.399	0.159	2.508	0.015**
LEB	2.334	0.938	2.488	0.016**
GHE	0.529	0.098	5.346	0.000***
Short-run estimation				
EM	1.687	0.717	2.351	0.022**
FDI	0.002	0.003	1.306	0.214
SE	0.426	0.166	2.563	0.023**
CF	0.951	0.149	6.353	0.000***
GEX	0.545	0.216	2.518	0.025**
LEB	2.925	0.207	14.132	0.000***
GHE	0.078	0.038	2.045	0.042**
ECT (-1)	-0.088	0.032	-2.699	0.009***

Note: ***, **, and * indicate significance at 1%, 5%, and 10% level, respectively

Source: Author's calculation from the EViews.

Conclusion

This research paper analyzed whether government expenditure on education and health, employment, school enrollment, life expectancy, and FDI have any significant impact on GDP in the GCC countries during the period 2000–2022. The results revealed that all human and physical capital variables significantly positively influence the economic growth of the six GCC countries studied. The results have important policy implications since they are conceptually and empirically consistent. This research paper suggests that human capital variables can boost economic growth when combined with government spending on education and health. On the other hand, the GCC countries must continue to promote budgetary restraint, economic diversification, and greater job creation driven by the private sector in order to achieve more sustainable growth. Building and developing human capital, and investing in improving education, training, and research, are crucial factors given their vital role in fostering economic growth by enhancing and developing productivity and efficiency.

References

- Adeleye, B. N., Bengana, I., Boukhelkhal, A., Shafiq, M. M., & Abdulkareem, H. K. (2022). Does human capital tilt the population-economic growth dynamics? Evidence from Middle East and North African countries. *Social Indicators Research*, 162(2), 863–883. <https://doi.org/10.1007/s11205-021-02867-5>
- Almutairi, N. T. (2023). Does investment in human capital via education stimulate economic growth in an oil-rich country? A case study of Saudi Arabia. *Journal Knowledge Economy*. <https://doi.org/10.1007/s13132-023-01265-1>
- Bekele, M., Sassi, M., Jemal, K., & Ahmed, B. (2024). Human capital development and economic sustainability linkage in Sub-Saharan African countries: Novel evidence from augmented mean group approach. *Heliyon*, 10(2), Article e24323. <https://doi.org/10.1016/j.heliyon.2024.e24323>
- Bokhari, A. A. H. (2017). Human capital investment and economic growth in Saudi Arabia: Error correction model. *International Journal of Economics and Financial Issues*, 7(4), 104–112. <https://dergipark.org.tr/en/pub/ijefi/issue/32006/353521>
- Borrescio-Higa, F., & Valenzuela, P. (2021). Does education mitigate the effect of population aging on health expenditure? A panel data study of Latin American countries. *Journal of Aging and Health*, 33(7-8), 585–595. <https://doi.org/10.1177/08982643211002338>

- Chen, H., Tackie, E. A., Ahakwa, I., Musah, M., Salakpi, A., Alfred, M., & Atingabili, S. (2022). Does energy consumption, economic growth, urbanization, and population growth influence carbon emissions in the BRICS? Evidence from panel models robust to cross-sectional dependence and slope heterogeneity. *Environmental Science and Pollution Research International*, 29(25), 37598–37616. <https://doi.org/10.1007/s11356-021-17671-4>
- Dankyi, A. B., Abban, O. J., Yusheng, K., & Coulibaly, T. P. (2022). Human capital, foreign direct investment, and economic growth: Evidence from ECOWAS in a decomposed income level panel. *Environmental Challenges*, 9, Article 100602. <https://doi.org/10.1016/j.envc.2022.100602>
- Dinh, S. T., & Phuc Nguyen, C. (2022). Foreign financial flows, human capital and economic growth in African developing countries. *International Journal of Finance & Economics*, 27(3), 3010–3031. <https://doi.org/10.1002/ijfe.2310>
- Elamin, A. A. H. (2024). The impact of human capital on economic growth in Saudi Arabia. *International Journal on Humanities and Social Sciences*, 54, 160–177. <https://doi.org/10.33193/IJoHSS.54.2024.677>
- Elheddad, M., Bassim, M., & Ahmed, R. (2021). FDI and economic growth in the GCC: Does the oil sector matter?. *Economics and Business Letters*, 10(3), 178–190. <https://doi.org/10.17811/eb1.10.3.2021.178-190>
- Hamdan, B., Ali Hussein, I., & Serdouk, F. (2021). Human capital and its impact on economic growth in the GCC countries. *Roa Iktissadia Review*, 11(1), 31–53. <https://roair.info/index.php/roair/article/view/224>
- Hussain, I., & Das, R. C. (2023). Human capital formation and economic growth relationships: Panel data insights for the Indian states. *Regional Science Inquiry*, 15(1), 57–71. [https://www.rsijournal.eu/ARTICLES/June_2023/RSI_Jun_2023_XV_\(1\).pdf](https://www.rsijournal.eu/ARTICLES/June_2023/RSI_Jun_2023_XV_(1).pdf)
- Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446), 621–634. <https://doi.org/10.1080/01621459.1999.10474156>
- Rahman, M. M., & Alam, K. (2021). Exploring the driving factors of economic growth in the world's largest economies. *Heliyon*, 7(5), Article e07109. <https://doi.org/10.1016/j.heliyon.2021.e07109>
- Sarkodie, S. A., & Strezov, V. (2018). Empirical study of the environmental Kuznets curve and environmental sustainability curve hypothesis for Australia, China, Ghana and USA. *Journal of Cleaner Production*, 201(10), 98–110. <https://doi.org/10.1016/j.jclepro.2018.08.039>
- Tackie, E. A., Chen, H., Ahakwa, I., & Atingabili, S. (2022). Exploring the dynamic nexus among economic growth, industrialization, medical technology, and healthcare expenditure: A PMG-ARDL panel data analysis on income-level classification along West African economies. *Frontiers in Public Health*, 10, Article 903399. <https://doi.org/10.3389/fpubh.2022.903399>
- World Bank. (2019). *Building the foundations for economic sustainability: Human capital and growth in the GCC* (Issue 4). <https://documents1.worldbank.org/curated/en/261591556548229456/pdf/Building-the-Foundations-for-Economic-Sustainability-Human-Capital-and-Growth-in-the-GCC.pdf>