

Studying the Relationship Between Human Capital and Economic Growth in the UAE for the Period (1970-2019)

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Abstract: The aim of this research is to test the relationship between human capital and economic growth in the United Arab Emirates for the period (1980-2019) using Toda-Yamamoto 1995 causality), and the research revealed that Human capital and economic growth have no direct or indirect causal relationship.

Keywords: United Arab Emirates, human capital, economic growth, Toda-Yamamoto causality, resource curse, oil economy.

Introduction:

To overcome the alleged "resource curse," the UAE and other states have worked since the 1970s to move to economies less dependent on oil: A successful transition to a diverse economy is essential and desired to avoid negative and unsustainable long-term development results. Oil economies have not always been successful at diversifying their economy, despite the significant amount of money available for investment. One factor could be the displacement of human capital due to the abundance of oil. However, it is astonishing that we still know so little about the effects of labor and human capital development on oil economies, as well as whether or not it aids or hinders the processes of diversification, structural transformation, and sustainable growth in these nations. A lack of workers A predominantly oil-driven development resulted in labor market distortions, which were marked by ingrained employment and migratory patterns. Because of this combination of human capital, the area was unable to build and maintain a post-oil economy during the first oil boom (1973-1986). In order to develop oil production and the corresponding construction in the Gulf, it was necessary to import international firms and labor. Additionally, national bureaucracies had to be expanded in order to distribute and manage oil production earnings and to provide public employment. These two tendencies split the local population's labor market. Additionally, foreigners, both skilled and unskilled, who predominate the private sector workforce are, whereas the public sector accounts for the majority of local employment. The region lacks the indigenous capacity to establish and sustain a post-oil economy as a result of the region's huge economic expansion during the first oil boom, and the dependence on foreign labor has only grown due to the nature of economic growth dependent on natural resource earnings. Most crucially, there were fewer incentives to promote the development of diversified local human capital as a result of being able to import foreign labor and knowledge while yet offering high-paying public positions to locals.

2014,1-2): EWERS)¹

1- Literature review on the relationship between human capital and economic growth:

Human capital has numerous definitions, The Organization for Economic Cooperation and Development's definition of human capital is accepted by the majority of researchers, international organizations, and institutions (OECD). The information, skills, abilities, and attributes that are embodied in people and that enable the development of personal, social, and economic well-being are referred to by the Organization for Economic Co-operation and Development (OECD) as human capital (2001). (OECD: 2001,18) The World Bank employs a capital notion that is essentially the same (2018). Humans "grow healthy knowledge, skills, and capabilities throughout their lives to realize their potential as contributing members of society," according to the definition given in 2018 14 World Bank The World's different interpretations. The World Bank and the Organization for Economic Cooperation and Development have different definitions, with the latter incorporating The health dimension describes the connection between the characteristics of human capital and potential production. There are many significant and frequently cited books on the empirical study of human capital and its implications on economic growth, including Borensztein (1998) and Benhabib and Spiegel (1994). The modeling of human capital effects primarily takes into account theoretical and empirical factors, as well as the class of endogenous growth models.²

Romer (1986) and Lucas made innovative contributions to the development of endogenous growth models (1988). As an alternative to the neoclassical growth model from Solow (1956) and Swan (1956), several models were introduced. The World Bank and the Organization for Economic Cooperation and Development are that the latter takes into consideration The relationship between the qualities of human capital and potential production is the health dimension.

(The Solo-Swan design) These models' primary traits are their emphasis on the development and consolidation of information, whether this knowledge takes the shape of ideas, technological advancement, or human capital (2020, 4-5: Bentour)In the 1990s, special attention was paid to the work of Barro (1991) to economic growth is a function of human capital. Barro (1991) reported that the outcomes of 98 nations demonstrated that the amount of primary education as determined by education rates has a favorable effect on economic growth (Barro:1991,407)

In 129 countries between 1960 and 1985, the success rate of adult education was shown by Barro & Lee (1993). They maintained that education has a direct, beneficial impact on economic growth and is an explanatory variable. (Barro and Lee, 1993, p. 28)

According to Galbraith (1996), improvements brought about by donors and investments in people rather than increasing capital investment account for the majority of the industrial growth of their nation, the United States. Through training, education, and medical care, one can invest in human capital and rely on The individual is influenced in part by the rate of return on their personal human capital. As a result, human capital is a means of production wherein more investment results in increased output.

On the other hand, Bils & Klenow (2000) made it clear that the claim that education directly affects economic growth is unsupported by any unique case of the positive association between education and production. Additionally, Pritchett (2001) demonstrated that changes in formal schooling only partially

¹ **Keywords:** United Arab Emirates, human capital, economic growth, Toda-Yamamoto causality, resource curse, oil economy,

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account for the disparity in economic growth rates between nations. According to Temple (2001), who supports Pritchett's claim, it is very difficult not to agree with Pritchett's assertion that massive investments in education have produced very little return, particularly in emerging nations.

In contrast, Gemmell (1996) asserts that in order to explain economic growth, it is important to include both the human capital's educational attainment and its pace of increase. (Abu Bakar et al., 2014: 136)

Bloom & et al (2004) attempted to investigate the impact of human capital on economic growth by using a two-stage least square approach and it was discovered that education and life expectancy contribute positively to economic growth. 1-7, 2004: Bloom & et al.

Khan (2005) tried to analyze the relationship between human capital and economic growth in 72 developing countries for the period (1980-2002).)

Al-Yousif (2008) studied the relationship between spending on education and economic growth in the Gulf Cooperation Council countries for the period (1977-2004) using the analysis of the Granger-causality test within the ECM error correction model. The study reached several conclusions, including first There is strong support from the time series data used in the study to the view that the causal relationship between education and economic growth is a two-way relationship and thus refutes the hypothesis of much of the existing literature that causation is from the human capital of economic growth. The results are specific to each country and differ according to the alternatives used to measure human capital. Third, based on the previous conclusions, the results indicate that the nature of the relationship between education and economic growth cannot be generalized across countries. Finally, the author believes that refining the human capital measure can enhance the methodology used in studying the issues at hand and thus deepening our understanding of the relationship between education and development in general.

2- Standard model, data sources and study methodology:

2-1 The Model Used: The Empirical Economic Aspect The growth model is developed on the basis of the neoclassical model originally proposed by Solow (1956) and extended by Mankiw et al. (1992) Mankiw & et al. incorporates a human capital model in which, according to our hypothesis, education causes economic growth. The general form of this model can be presented as:

$$\ln(y_t) = \alpha + \alpha \ln(h_t) + \beta \ln(k_t) + \delta \ln(L_t) + \epsilon it \dots \dots \dots (1)$$

where Y is total GDP and t is time; H human capital stock, K capital stock, and L total employment, are the three obvious factors used to produce such GDP, respectively, and the contribution of the three factors of production is determined by the parameters α , β , and γ , respectively. A is a technical advance and is an exogenous variable.

2-2 Data sources: - The data of the time series of the United Arab Emirates covering the period (1980 - 2019) were used in this study. The data was extracted from (Penn World Table) available on the website www.ggdc.net/pwt

2-3 Measurement Methodology:

Granger's causal relationship:

Granger introduced the concept of causation into econometrics in 1969, where he proposed a new method of causation, which was later called Granger causality. Granger's causality is based on the wisdom that the cause precedes the effect. Cause and effect relationship) Granger's contributions led to the clarification of the concept of co-integration between two or more variables from a statistical point of view, which is the

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existence of a long-term equilibrium between these two variables, and it has become used, especially in cases where long-term relationships affect the current value of the studied variables.

Definition of causal relationship Granger: - We say about the random variable (X) that it causes the change in the random variable (Y) if there is information in the past (X) that is useful to predict (Y) and this information does not exist in the past (Y), then we have Here are two postulates:

1. The causal relationship applies only to random variables
2. The past and the present can cause the future and vice versa

In order to overcome the shortcomings of the Granger test (1969), an effective and developed methodology was presented by the two worlds (toda-yamamoto 1995), which is relatively more effective in dealing with small and large sample sizes and ignores the order of co-integration for relative variables. Moreover, it does not believe in pre-testing the time series. For co-integration properties as long as the order of integration in the series does not exceed the length of the actual model for delays (time-gaps) is performed (toda-yamamoto 1995) there is no direct Granger test for causality and the level VAR test. This methodology reduces the associated risks that are incorrectly identified in the time series of the order of cointegration and the existence of cointegration relations (preferred: 2018, 35-36) for this purpose VAR is estimated not by its "true" lag order but by its lag order (k + d), where d is the maximum possible order of integration of the variables. Next, Granger's causality is tested by applying hypothesis tests in VAR while ignoring the additional delays k + 1, ..., k+d. (e tal:2014,138) & Bakar)

***Stages of applying the Toda-Yamamoto methodology: The application of the Toda-Yamamoto causality test includes several stages:**

Determining the greatest degree of integration (Dmax) The first step is to study the stability of time series in order to determine the degree of integration of each series and thus extract the greatest degree of integration. This is done by using several unit root tests such as the Augmented Dick Fuller (ADF) test or the Philips-Perron (PP) test.

Determining the optimal slowdown period (P): It is obtained by estimating the VAR model for the variables in their levels (original series). The optimal deceleration period is also determined by the following statistical criteria: AIC criterion, Schwartz criterion SIC, Hanen HQ criterion... where the lowest value is chosen for each criterion that corresponds to the optimal time lag.

Causality test: This is done based on the MWald test in order to test the delegated constraints on the parameters of the developed autoregressive vector (VAR (K), where K is equal to the degree of integration plus the optimal delay period: K=Dmax +P, as this test follows Chi-squared distribution with P number of degrees of freedom.

The model VAR (P + D max) is expressed for four variables as follows:

$$k_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i k_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{1t} \dots \dots \dots (1)$$

$$L_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i L_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{2t} \dots \dots \dots (2)$$

$$h_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i h_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{3t} \dots \dots \dots (3)$$

$$Y_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i k_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{4t} \dots \dots \dots (4)$$

$$Y_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i L_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{5t} \dots \dots \dots (5)$$

$$Y_t = \alpha + \sum_{i=1}^{P+D_{max}} \beta_i h_{t-i} + \sum_{j=1}^{P+D_{max}} \gamma_j Y_{t-j} + \varepsilon_{6t} \dots \dots \dots (6)$$

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Whereas Y_t , K_t , L_t and h_t The variables under study, ε_{1t} ε_{3t} ε_{2t} ε_{4t} ε_{5t} ε_{6t} are the white error of all the six equations and are not linearly related, t expresses time (Wafa and Mustafa: 2019, 303-304).

2-4 Presenting and commenting on the results according to the methodology used in the study:

A-Unit root test: The dormancy test is used to determine the degree of inactivity of the economic time series, and this contributes to determining which appropriate methods can be employed to test the relationships between economic variables.

Dickey-Fuller Augmented).

Table (1)

Expanded Dickey-Fuller Test Results (ADF)

The original level, the first difference, the second difference

The second deference		The first difference		The original level		
Constant +general trend	constant	Constant +general trend	constant	Constant +general trend	constant	variables
		-5.038435*** (0.0012)	-5.1378*** (0.0001)	-3.33891* (0.0754)	0.30984 (0.976)	LnY_t
-4.668*** (0.0033)	-4.69268*** (0.0006)	-1.48539 (0.8167)	-0.573252 (0.8646)	-1.876047 (0.6466)	-2.219674 (0.2030)	$Ln h_t$
		-3.232765* (0.0938)	-3.297408** (0.0222)	-2.21661 (0.4669)	-0.503004 (0.8794)	$Ln K_t$
-10.37043*** (0.0000)	-10.11766*** (0.0000)	-3.110207 (0.1189)	-1.141974 (0.6883)	-2.469566 (1.000)	-2.128303 (0.2353)	$Ln L_t$

Note: * Stable for 10%, ** Stable for 5%, *** Stable for 1%, between parentheses is a p-value, Source: Table prepared by the researcher based on the appendix data (1)

B - Choosing the optimal deceleration period:

To determine the optimum number of time lag time, it is done through the following statistical criteria: AIC criterion, Schwartz criterion SIC, Hanen HQ criterion, LR test and FPE test, where the lowest value for each criterion is chosen, which corresponds to the optimal time lag. Deceleration period two (2) years

Table (2)
Choosing the optimal deceleration gap

HQ	SC	AIC	FPE	LR	LogL	Lag
-7.151608	-7.035214	-7.212968	8.66e-09	NA	130.2269	0
-21.64410	-21.06213	-21.95090	3.47e-15	469.5667	404.1408	1
-22.30508*	-21.25754*	-22.85733*	1.46e-15*	47.33844*	436.0032	2
-21.76187	-20.24876	-22.55956	2.17e-15	13.56337	446.7923	3
-21.47782	-19.49914	-22.52096	2.78e-15	15.76227	462.1167	4

Source: Prepared by the researcher, eviwes 7

C- The test's findings (Toda-Yamamoto 1995) are as follows: - The toda-yamamoto test findings are shown in Table 3 and demonstrate that the human capital variable (h) has no impact on economic growth because the p-value is higher than 5% and exceeds (0.7385) Therefore, we reject the alternative hypothesis, which assumes that human capital has a cause-and-effect relationship with United Arab

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Emirates economic growth, and accept the null hypothesis, which argues that there is no relationship between human capital and economic growth.

The test also showed that the physical head variable (k) had a statistically significant effect on economic growth, as the p-value was significant at (10%). It lacks efficiency and optimal economic allocation, as most investments are concentrated in the real estate and logistics sector. We also note that the labor component (L) causes economic growth and is linked with a statistically significant relationship at a significant level (5%) and the p-value is (0.0101).

Table (3)

Toda -Yamamoto. test results

The decision	P-Value	Df	Chi-squared statistic	Null hypothesis
accept the null hypothesis	0.7385	2	0.606285	h does not cause y
accept the null hypothesis	0.3130	2	2.32323	y does not cause h
reject the null hypothesis	0.0878*	2	4.865282	y does not cause k
accept the null hypothesis	0.8743	2	0.268681	k does not cause y
reject the null hypothesis	0.0101**	2	9.180688	y does not cause l
reject the null hypothesis	0.0972*	2	4.661298	l does not cause y

Where *, ** and *** indicate (rejection of the null hypothesis) at 10%, 5% and 1%, respectively.

The UAE economy depends on unskilled labor, especially from Southeast Asia, who work mostly in the field of construction and construction, so the delegations of unskilled labor force with low wages to increase economic growth in this Gulf economy. These results reflect the state of most of the Gulf economies. Despite the large investments in human capital, it does not contribute to their economic growth in an important way. Their economies are still far from diversifying their domestic output and depend mainly on oil and natural gas exports to generate their national income. The sector is still The private sector is ineffective and its investments are concentrated in non-productive areas such as real estate, construction, tourism, services and trade, away from investments in manufacturing and high-tech industries with high added value.

Conclusions and recommendations

First, the conclusions:

The standard aspect showed that the human capital (H) was not significant in its relationship with the economic growth of the United Arab Emirates during the period (1980-2019).

The work variable (L) affects economic growth in a statistically significant way due to the UAE economy's dependence on expatriate workers to work in labor-intensive sectors. Low-skilled employment in the private sector constituted 48%, according to the 2019 annual economic report for the Arab Emirates.

3- The capital (K) had an effect on economic growth at a statistically weak morale level, which may be due to the inefficiency and unproductivity of investment as a result of capital misallocation.

Second, the recommendations:

1- If the UAE wants to achieve sustainable economic growth and benefit from its human resources, it must work on privatizing public institutions to push skilled local workers to go to the private sector.

2- Legalizing expatriate workers and focusing on attracting a highly productive skilled workforce

- 3- Encouraging the private sector to invest in advanced manufacturing and technological industries and forming a partnership with the public sector
- 4- Supporting the establishment and development of small and medium private companies to employ young people in order to diversify the economy and form a competitive economy
- 5- The support of the private sector working in the field of manufacturing industries and advanced technology should be conditional on good performance and should gradually decrease with the development and success of the project.

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