

Original Article

Human Capital and Economic Growth in North African Countries: The Role of Institutional Quality

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Abstract: This paper aims to study the association between institutional quality, human capital, and economic growth in 4 North African countries. Annual panels over the 2000 to 2021 period are examined using the System GMM. The results show that institutional quality and human capital can fuel economic growth. Interestingly, institutional quality and human capital have a significant positive interactive impact on the economic growth of North African countries. The results of this study have policy implications that call for co-development policies to be carefully considered in order to raise the standard of these nations' institutions and human resources. To ensure sustained economic growth, policies should carefully consider economic growth strategies.

Keywords: Institutions, Human Capital, Economic Growth.

JEL Classification: F24; F35; F21.

I. INTRODUCTION

This paper studies the role of institutional quality on human development–growth nexus in the north African countries. We aim to address the following research question: Does institutional quality (economic freedom) matter in the human development-growth nexus?

In contemporary theories of growth, the development of human capital and the quality of institutions are identified as important factors of economic growth. Furthermore, the existence of good-quality institutions is an important precondition for human capital to contribute significantly to economic growth, as human and social capital exerts a direct positive effect on productivity. Furthermore, the role of institutional quality in the link between human development and growth is still unresolved, as China has experienced special economic growth without having high-quality political and economic institutions, the so-called “China Paradox”.

Consequently, this study explores the effect of institutional quality and human capital on economic growth in North African countries. Sadly, there is a dearth of empirical research on how institutional quality and human capital interact to affect these nations' GDP growth. Also, we examine the related growth effects of institutions and human capital. In fact, we study whether institutional quality can be a positive moderator for the effects of human capital on economic growth in the region. In line with endogenous growth theories, Tang and Zhang (2016) define human capital as the host nation's capability for absorption.

Furthermore, the World Bank has been working on human capital projects in Africa to support the continent's nations in building their human capital during the Millennium Declaration era. The World Bank (20108) recognizes that human capital development plays a key role in ending extreme poverty and strengthening social inclusion. This requires investment in nutrition, health services, quality education, skills acquisition and access to jobs.

This study adds to the body of literature in multiple ways. Firstly, it provides positive findings to the empirical literature on the relationships between human capital and the quality of institutions on the impacts that were previously disregarded. Second, in terms of research implications, Policymakers need to give major concern to the development of policies linked to institutional reforms on the one hand and the development of human capital on the other hand to stimulate economic growth in North African countries. Institutional transformation and human capital development must be mutually reinforcing, enabling these countries to move from uncertain low economic growth trajectories to more inclusive and sustainable economic growth. Third, compared to previous research, this article uses more advanced techniques for modeling panels to offer solutions to the problems of simultaneity bias, reverse causality and possible omitted variables. This method is based on the System Generalized Moment Method (System GMM) estimator.



The remainder of this paper is structured as follows: Section 2 provides an overview of the background literature. Section 3 describes the data and the empirical methodology. The empirical results are offered in Section 4, and finally, Section 5 presents the conclusions and comments on policy implications.

II. LITERATURE REVIEW

In the literature on long-term growth, there is broad consensus that the accumulation of human capital and knowledge plays a crucial role in the process of economic development. Empirical evidence on the subject has shown, moreover, that one of the explanatory causes of growth gaps between countries lies in differences in terms of quantitative and qualitative endowments of human capital.

Human capital is an intangible asset that can advance skills development for worker employability and business productivity. It can grow, shrink or become useless. It is subject to different effects and comes from different origins, including, but not only, learning organized in the form of education and training. The four elements (knowledge, qualifications, skills and other personal qualities) can be united in different ways depending on the individual and the context in which they are used.

Economists consistently confirm that human capital is a determining factor in economic growth, regardless of the state of economic situations (see Solow, 1956; Nelson and Phelps, 1966). With the appearance of new growth theories discussed by Lucas (1988), Romer (1986) and Barro (1997), human capital development has become one of the important factors for strengthening economic growth through technological advances by decreasing inequality and achieving productivity gains (Čadil et al. 2014). On the other hand, labour productivity mainly depends on the new skills and knowledge developed by the education system; it has the power to change the population into labour as a productive input into the production function (Barro, 1991). Additionally, employing a skilled workforce appears to be crucial to achieving high business productivity. Human capital consequently constitutes a potentially crucial determinant in enhancing economic growth.

Romele (2013) showed that In order to grow human capital, a significant amount of money must be invested consistently in capacity building through the use of government programs for skill development and raising the workforce's educational attainment. In fact, the development of human capital positively affects the development of physical capital in the economy. Investments in human capital can also reduce income inequality in society (Heckman and Jacobs, 2010) and ensure higher labor force size and promote inclusive and sustainable economic growth (Deere and Vešovice, 2006). For his part, Lucas (1988) emphasized the essential role of human capital in economic development for developing countries.

In fact, many empirical studies have shown the positive effect of human capital on economic growth. For example, Qadri and Waheed (2013) showed evidence of a positive human capital contribution in overall and sectoral production and economic growth in a cross-section of 106 countries. However, its magnitude is similar in the agricultural and industrial sectors, greater than that associated with the services sector. As for Jaiyeoba (2015), he found a positive link between human capital and economic growth in Nigeria. For his part, Pelinescu (2015) reported a positive impact of humans on economic growth in European Union countries.

Likewise, Teixeira and Queiros (2016) showed a link between the development of human capital and economic growth in the countries of the Organization for Economic Cooperation and Development, countries in transition and Mediterranean countries. As for Fang and Chang (2016), they pointed out a positive link between human capital and long-term economic growth in 16 countries in the Asia-Pacific region. In their analysis of 35 sub-Saharan African (SSA) nations, Ogundari and Awokuse (2018) discovered that human capital contributes positively to economic growth, while the influence of health is comparatively more than that of education. Similarly, Han and Lee (2020) discovered that human capital accounts for 0.5% of economic growth over the period, indicating that it significantly contributes to economic growth in Korea. They suggested that policies aimed at enhancing the human capital of older or female employees contribute to the growth of human capital.

As for Ogbeifun and Shobande (2022), they showed that human capital plays a vital role in economic growth for a panel of 24 OECD countries. On their side, Ali et al. (2022) noted that for countries with higher incomes as well as the Organization of Islamic Cooperation as a whole, human capita has a beneficial and important link with economic growth (OIC). However, there is little evidence of a relationship between human capital and economic growth in OIC lower-income nations. More recently, Shaban and Shahbaz (2023) found that India's cultural diversity and human capital have significant effects on regional economic growth in India.

The relationship between institutions and economic growth has been the subject of much research and debate among economists. One of the most influential studies on this topic is the work of North et al. (2009), who claimed that the key to economic development is the development of inclusive institutions that limit state power and protect the property rights of individuals and businesses. They argued that inclusive institutions, such as the rule of law, constitutional limits on state power,

and an independent judiciary, are necessary for economic growth because they create a stable and predictable environment in which individuals and businesses can make long-term investments. Another important contribution to this literature is the work of Acemoglu and Robinson (2012), who showed that the key to economic growth is the development of institutions that promote economic and political competition. They pointed out that institutions that provide opportunities for individuals and businesses to compete for resources and power are more likely to generate economic growth than those that concentrate power in the hands of a few people. They also maintained that institutions that promote economic and political competition are more likely to be inclusive and protect the property rights of individuals and businesses.

The definition of institutions assumed by North (1990) is the most used in institutional economics. According to North (1990), Institutions are the guidelines that govern social relationships within a community, or to put it more technically, and they are the limitations that humans created. Consequently, institution's structure incentives in human exchanges, both in the political, economic and social domains. Furthermore, institutions have the nature of reducing uncertainty in everyday life (North, 1990). Acemoglu et al. (2005) characterized institutions as a fusion of three interconnected ideas:

- Economic institutions: These include the factors that govern the incentive structure in society and the distribution of resources. For example, the structure of property rights, barriers to entry, and all contract types.
- Political power: The collective decisions made by society result in economic institutions. Multiple organizations with competing interests make up a society. The distribution of political power determines the quality of economic institutions.
- Political institutions: They are legal instruments enabling the functioning of public authorities and the state. The first of these instruments, which guarantees the national sovereignty of a country, is the constitution.

Several economists show that the quality of institutions plays a vital role in the economic performance of countries. Interested in the role of institutions in the process of economic growth, Knack and Keefer (1997) affirmed the existence of a positive relationship between the different indicators of institutional quality (political stability, bureaucracy, property rights) and economic performance. Hall and Jones (1999) showed that differences between countries in institutional development and policies adopted by governments could be a fundamental determinant of differences in productivity and capital accumulation. Furthermore, Raiser (1997) revealed forward the idea that the poor quality of institutions could explicate the weakness of economic performance in the countries of the former USSR through their influence on social capital.

The literature also showed several benefits of institutional quality. For example, good institutions can have an effect on improving education, reducing inequality and reducing public consumption, which could increase economic growth (Tavares and Wacziarg, 2001). Institutional quality increases the level of economic growth, particularly through its impact on investments (Busse and Hefeker, 2007). Reuveny and Li (2003) supposed that the quality of institutions plays a role in reducing income inequalities. As for Mauro (1995), Shleifer and Vishny (1993) emphasized the negative interaction that exists between the level of corruption and economic growth and showed that the structure of institutions and the political process determine the level of corruption, which is detrimental to economic growth.

Other economists have used history to demonstrate the impact of the quality of institutions on the current state of different economies. Engerman and Sokoloff (2002), based on historical facts from the two Americas, confirmed that the former European colonial powers adopted different strategies of colonial exploitation, which led to different institutional trajectories in these countries, with a more developed (Canada and the United States) than the South. Acemoglu and Robinson (2008) showed that previous institutions have a long-term effect on economic performance. They also argued that because colonial origin affects the quality of modern institutions, there is a strong correlation between it and the state of the economy today.

Rodrick et al. (2004) showed that institutional quality plays an important role in explaining income gaps between rich and poor countries. In the same line of thinking, Acemoglu and Robinson (2012) explained that the difference in income and living standards between rich and poor countries is based on the existence of "inclusive" political and economic institutions which, according to them, represent the key to the prosperity of nations by creating a virtuous circle of innovation and economic expansion. For their part, Méon and Sekkat (2004) indicated that improving institutional quality in MENA countries will lead to an increase in the entry of foreign direct investment and exports of manufactured products and will also allow the participation of these countries in the world economy.

Ouedraogo et al. (2021) analyzed economic development in Africa through the examination of the role of institutional quality in the development of human capital using a panel of 49 African countries over the 1996-2018 period. The results showed that improving institutional quality encourages access to primary, secondary and higher education in general and for women. In particular, controlling corruption, government effectiveness, and political stability are the main determinants that

promote the development of human capital. The findings suggested that promoting these particular dimensions of institutional quality is crucial to improving human capital development in Africa.

For their part, Uddin et al. (2021) studied the effect of institutions, human capital and economic growth in a panel of 120 developing countries over the 1996-2014 period. They demonstrated how institutions and human capital development contribute to economic success. It is noteworthy that in emerging nations, GDP growth is significantly impacted negatively by the interaction between institutional quality and human capital development. They concluded that increasing investments in the development of human capital would hinder economic progress when there are weak or dysfunctional institutions present because the extra capital has a tendency to be misdirected toward socially undesirable endeavors. They also confirmed that the prosperity of a country presupposes the existence of solid institutions, a necessary condition to create an environment to facilitate the development of the private sector, reduce poverty and provide useful services to the population.

For their part, Uberti and Knutsen (2021) used panel data over the 1955-2010 period and an indicator reflecting the protection of property rights (an indicator of institutional quality) to study the link between institutions, human capital and economic growth. They pointed out that property rights protection and human capital are positively associated with economic growth because they encourage investment and innovation. In countries where property rights are not clearly defined and protected, individuals and businesses are less likely to invest in long-term projects or make large purchases because they cannot be sure that their investments will be safe. This can lead to a lack of economic development and slow economic growth.

As for Abdulwahab (2023), he investigated the impact of human capital development and the quality of institutions in the countries in Sub-Saharan Africa between 2002 and 2021. He argued that institutional quality and human capital development have a statistically low impact on economic growth in these countries. He also recommended that various authorities should improve the quality of health care, make the education system more efficient, and allocate adequate resources to productive sectors to promote economic growth.

More recently, Doré and Teixeira (2023) studied the degree to which Brazil's economic development is influenced by institutional quality and human capital over the 1822-2019 period. They suggested that human capital (measured by years of schooling) has a positive impact on economic growth in Brazil. They also revealed that institutional quality does not have a decisive effect on economic growth in Brazil.

Taken as a whole, the effect of institutional quality and human capital on GDP growth are exposed in the literature to be mixed, whereas their influence on North African countries is attracting increasing attention between economists and analysts. In fact, this paper is interested in similar reflexions and efforts to identify the potential complementarities among institutions and human capital in North African countries over the 2000-2021 period.

III. DATA AND EMPIRICAL METHODOLOGY

A) Data

In fact, this article studies 4 North African countries, Tunisia, Morocco, Algeria and Egypt, over the 2000-2021 period. The choice of countries selected for this study is mainly inspired by the availability of reliable data during the sampling period. The dependent variable is economic growth measured by the growth rate of real GDP per capita at prices in 2015 US dollars. The key variable of interest (human capital) and other control variables are attained from the World Development Indicators database (World Bank, 2024).

At the macroeconomic level, human capital thus appears to be a factor of growth. Mankiw et al. (1992) found that differences in human capital between countries help explain a large part of their differences in terms of economic growth. The literature uses school enrollment rates as a proxy for human capital. While the total number of students enrolled in elementary education is used in some research, the gross enrollment rate in secondary school is used in others (see Qaisar, 2001 and Nyamongo et al., 2012). In both cases, these approximations generated positive coefficients in support of the theory. In this study, we use the school enrolment, tertiary (% gross), because data are relatively available. Higher education rates lead to greater human capital, which should be positively associated with economic growth (Gemmel 1996). This variable should have a positive impact on economic growth.

Additionally, the extended model will contain the following institutional variable: The index of economic freedom from the Fraser Institute. Economic freedom is measured in five different categories: (1) the size of government, (2) the legal structure and security of property rights, (3) access to sound money, (4) freedom of international trade and (5) regulation of credit, labor and commercial activities. On a scale of zero to 10, where zero represents the least freedom, and ten represents the greatest, the overall domain ratings are all expressed. In actuality, economic growth is strengthened to a greater extent by economic freedom (Doucouliagos and Ulubasoglu, 2006). We, therefore, expect a positive coefficient. Besides, data are obtained from Gwartney et al. (2023).

Our baseline regression model contains the explanatory variables common to most empirical growth literature:

- Initial GDP per capita was comprised in the model to capture conditional convergence in the spirit of the neoclassical theory of economic growth (Barro and Sala-i-Martin, 1995). Numerous studies have shown that GDP per capita can be a good indicator of general development and the sophistication of institutions (La Porta et al. 1998). A negative coefficient is expected, representing the existence of conditional convergence between North African countries;
- The inflation rate is defined as the growth rate of the consumer price index (CPI) to measure the effect of price instability on economic growth. Elevated inflation rates may lead to a decline in price competitiveness, which may have adverse effects on the external sector's contribution to economic growth. The Aydin group (2016).
- Government expenditure as a proportion of GDP is used to calculate the size of the government. Regarding the direction of the connection between public spending and economic growth, there is no agreement in the research. Empirical research has demonstrated that the impact of public spending on economic growth can vary depending on its type and quality (Devarajan et al., 1996; Gupta et al., 2005).

B) Empirical Methodology

The objective of our empirical analysis is to study how institutional quality affects human capital and GDP growth in the North African region. To this end, we employ a specification similar to that of Uddin et al. (2021) by considering the next model:

$$Growth_{i,t} = (\alpha - 1)y_{i,t-1} + \beta_1 HK_{i,t} + \beta_2 IEF_{i,t} + \beta_3 (IEF_{i,t} \cdot HK_{i,t}) + \beta_4 X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

The subscript “ t ” represents the periods, whereas i represents the country, growth is the real GDP growth rate per capita, IEF represents a proxy for institutional development, HK represents a proxy for human capital, and X is the matrix of the control variables, μ_t is a time specific effect, η_i is an unobserved country-specific fixed effect and $\varepsilon_{i,t}$ is the error term. Eq. (1) forms the basis for our estimation. ($\alpha - 1$) is the convergence coefficient.

The hypothesis that we wish to verify in this study is that the quality of the host country's institutions affects the development of human capital and, therefore, economic growth. To this end, we add an interaction term created as the product of IEF and HK (i.e. IEF*HK), used as an additional explanatory variable in equation (1).

The role of institutional quality in affecting human capital and, hence, economic growth is assessed using the coefficient β_3 . In fact, if β_3 is positive and statistically significant, high institutional quality could enhance the marginal effect of human capital on economic growth. This suggests that there is a complementarity between institutional quality and human capital. On the other hand, if β_3 is negative and statistically significant, a bad quality institution could reduce the marginal effect of human capital on economic growth. In other words, a negative interaction offers evidence of substitutability between institutional quality and human capital.

In order to estimate equation (1), we use the Generalized Method of Moments (GMM) on a dynamic panel (Arellano and Bond, 1991; Blundell and Bond (1998)). The GMM method has, among other things, the advantage of controlling endogeneity between variables. Depending on the type of explanatory variables, different instrumentation strategies are employed: (a) present variables serve as instruments for purely exogenous variables; (b) values lag by at least one period are utilized as instruments for barely exogenous variables; and (c) values lag by two or more periods may be used as legitimate instruments for endogenous variables.

The orthogonal requirements between the delayed endogenous variable and the error term form the basis of the GMM estimator that Arellano and Bond (1991) presented. It contributes to the resolution of the simultaneity bias, causal reversal, and omitted variable issues. It also makes it possible to correct the endogeneity of all the explanatory variables of the model. In order to reject particular individual impacts, the estimator makes use of the initial difference GMM method using delayed values of the dependent variable as instruments.

Further on, Blundell and Bond (1998) propose the system GMM estimator. They blend level equations, whose variables are instrumented by their initial differences, with the initial distinction equations. Blundell and Bond (1998) demonstrated that the System GMM estimator outperforms the initial difference one via Monte Carlo simulation. Certainly, when the instruments are weak, the first difference GMM estimator provided biased results in finite samples.

We apply the two-step estimation technique. The use of this technique is explicated by the fact that the estimator found is more efficient than the one-step one (Roodman, 2009). Certainly, the two-step estimation is more precise than the one-step one since it takes into consideration the structure of the error variance-covariance matrix.

Two tests are used to determine how well the System GMM estimation is working. First, the validity of lagged variables as instruments can be tested using the Sargan/Hansen overidentification test. Secondly, the Arellano and Bond (1991) autocorrelation test, wherein the lack of the second-order synchronization of errors (AR test) is the null hypothesis. In our study, we note that Hansen's overidentification test does not allow us to reject the hypothesis of validity of lagged variables in level and difference as instruments. On the autocorrelation test, we observe the presence of a first-order effect (AR1), which is consistent with the hypotheses formulated, and an absence of second-order autocorrelation (AR2). The findings from the estimation technique are presented in Table 1.

IV. EMPIRICAL RESULTS

Table 1's estimation findings demonstrate the positive and substantial relationship between human capital and economic growth. This result shows that enrollment in the tertiary school has a significant effect on the growth rate in the North African countries. This impact would encourage policymakers to pay particular attention to education and scientific and technological research. This result is consistent with that of Oketch (2006) and Ogundari and Awokuse (2018), who pointed out that human capital makes a significant impact on per capita GDP growth in North African countries.

Additionally, the measure of the economic freedom coefficient is statistically significant and has a positive sign, indicating that higher levels of economic freedom lead to more effective economies and, hence, stronger economic growth. This finding is consistent with the study of De Haan and Sturm (2000) and Brkic et al. (2020), who argued that greater economic freedom fosters economic growth.

Moreover, we pointed out that the institutional quality-human capital interaction impact is positive and significant on economic growth. The implication of this result is that in the presence of high-quality institutions, the effect of human capital on economic growth is improved in North African countries. We can then infer that the quality of institutions serves as a complementary factor to human capital in promoting economic growth, which is consistent with the conclusions of Doré and Teixeira (2023).

The empirical causal association between these variables inspire that policymakers must prioritize improving institutional quality and human capital development, and should implement strategies to boost economic growth, such as the diversification of the economy, particularly in sectors with higher added value. Investments in research and development activities create high incomes and new job opportunities for people in North African countries.

In fact, most of the findings about the other explanatory variables are consistent with expectations. In this study, the lagged GDP per capita is used to verify the convergence theory. According to the estimates, the estimated coefficient is significant and negative at the traditional testing level. This outcome is in line with the neoclassical model, which proposed that if per capita income is inadequate at the outset, the economy will eventually move toward its long-run position. The conditional convergence hypothesis, according to which growth is quicker in developing nations than in developed nations, is therefore supported by this data. This outcome supports the findings of Sachs and Warner (1997) as well as Barro and Sala-i-Martin (1997). The outcome additionally validates a noteworthy adverse impact of inflation on the growth of real GDP. This finding suggests that increased macroeconomic instability through variations in inflation has a detrimental impact on global economic growth in the North African region. Therefore, this result corroborates the work of Aydin et al. (2016). Furthermore, it is revealed that government spending exerts a positive and significant effect on economic growth. This finding is consistent with the study of Poku et al. (2022).

Table 1. The growth effect of intuitional quality and human capital

Variable	
Initial GDP per capita	-0.471*** (0.008)
Human capital	0.246** (0.041)
IEF	0.121* (0.081)
IEF*Human capital	0.02* (0.071)
Inflation	-0.421** (0.047)

Government spending	0.771* (0.062)
Constant	0.182* (0.098)
AR(2) test (p-value)	0.825
Hansen-J-Test (p-value)	0.287

Notes: The dependent variable is real GDP growth. Annual data from 2000–2021. Robust standard errors are in parentheses below the coefficients. * $p < 0,1$; ** $p < 0,05$; *** $p < 0,01$.

V. CONCLUSION

In four chosen North African nations, the study has revealed valuable insights into the dynamic linkages between the quality of institutions, human capital, and economic growth. To do this, an empirical study over the 2000-2021 period was directed using the System GMM estimators. The results confirm that human capital and institutional quality both significantly contribute to economic growth. Consequently, it may be concluded that there is enough data that support the notion that human capital and institutional quality are crucial for economic success. The findings also advise that institutional quality and human capital have a positive complementary effect on economic growth. Furthermore, the results indicate that government spending positively influences economic growth. On the other hand, inflation affects economic growth negatively.

Based on empirical results, we recommend that to enhance economic growth in North African countries, there is an urgent need to consider co-development policies, such as strengthening institutional quality and human capital development. Our findings demonstrated that, in order to ensure that these nations have sustainable growth trajectories, governments need to make sure their governing institutions support the expansion of important financial and economic sectors and vice versa. With a strong co-development policy initiative aimed at strengthening institutional quality and capital development, the countries of the region will be able to bring economic benefits to their populations.

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