Corruption, Human capital and Economic development In the MENA region: Empirical Test

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Abstract: *This work tests the robustness of the relationship between human capital and control of corruption with four econometric methods. We will show in detail the importance of state intervention in its power to reduce this phenomenon (corruption) in the management of resources (public expenditure) countries since corruption as plague both social and economic, may hinder the economic development especially in the sectors of education and health. In part, we will try to study the effects of corruption control on the quality and yields of public education and health services for the MENA region during the fixed period (1984-2018).*

Keywords: *Corruption, Human capital, Economic growth, Public expenditure, Education, Health, Models with Panel data and MENA.*

I. Introduction

The relationship between corruption and economic growth has been the subject of some economic theorists relying on the development of analyzes of economic growth above the endogenous growth theory. Indeed, the new growth theory occupies an important place in recent research. By introducing the human capital that is one of the essential factors of economic growth, the nature of studies on the relationship between corruption, government spending and economic growth establishes a clean diagnosis in several countries. Moreover, since the seminal work of Solow (1956) and especially those carried out under the direction of Denison known as "growth accounting", the accumulation of factors - physical capital, human capital and labor - became one of the main determinants of economic growth. From these models, have been growing more modern analyzes that combine these three traditional factors other dimensions namely, technical progress and its externalities (Romer, 1990), the Research and Development (R &D), health. African countries, meanwhile, have not followed the same development dynamics. But worse, it was observed 35 years later, they are the only region in the world to accumulate delays in all economic, social and even political. " (New endogenous growth theory, Romer; 1986 & Lucas, 1988)

In addition, the starting point of these new theories which (the precursors works were those of Paul Romer (1986 and 1990) and Robert Lucas (1988) was the rejection of the hypothesis of diminishing returns on accumulative factors. The appearance of endogenisation growth is focused on the role of human capital accumulation in the endogenous process. Both Lucas (1988) shows that the growth rate of an economy depends on the efficiency of investment respectively in human capital in education and R &D (The contribution of the new growth theory). In recent decades, several authors have stipulated that corruption fostered economic growth by Nathaniel H. Leff (1964), Samuel P. Huntington (1968) and Francis T. Lin (1985), given that "pots-de Wine avoid administrative delays for business men. Similarly, the idea that questions the principles of good governance, did not last much, since this notion when she childhood in the management of public affairs, because of poor allocations and resource allocation. " At this level, Africa is losing in this area due to its very credible institutions and less reliable, while Asia with a centralized system and strong has achieved important results, even with higher corruption. "Good governance institutions of any state, is an important part of any policy against corruption."

In addition, we must examine the channels through which corruption can influence economic growth. Hence the existence of the idea to study the possible interaction between corruption and human capital, and to demonstrate their effect on economic growth. We will in this section treat direct and indirect influence of corruption on economic indicators and especially on economic growth. We will expand the impact of corruption on human capital, demonstrating that the effects of corruption on human capital and economic growth. A literature review on the impact of corruption on the macroeconomic aggregates of country and empirical applications illustrate the interaction between corruption and human capital on economic growth. Before

proceeding to the study of the effect of corruption on macroeconomic variables, we must highlight the relationship between human capital and corruption as a social evil. So the question that arises in this section is: To what extent growth and control of corruption they foster human capital indicator? To do this, we will test the relationship between human capital and growth on one hand and on the other hand the relationship between this indicators with corruption. And to explain this last relationship we used one of the institutional indicators (control of corruption) to show the weight of countries in the application of laws and institutional control in the sample of the area or region consideration.

II.   Literature Review

2.1. Corruption and human capital

2.1. a.   The consequences of the corruption of a point of view of some economists

By studying the causes and consequences of the performance of local governments in a climate of great corruption, Rotberg (2004) shows that it can harm economic growth through its impact on investment.

Indeed, the work of Mauro (1995) focus on the relationship between corruption and investment from the investment rate to GDP. According to Tanzi and Davoodi (1997), they showed that corruption is likely to increase public investment while reducing productivity, they proved that a high level of corruption is associated with lower maintenance costs and infrastructure which will have a negative impact on economic growth. However, corruption can reduce total investment and therefore reduces the quality of the infrastructure of nations into account, it also has effects on executions and infrastructure projects are treated equally by Laffon and N'Guessan (1999) and Laffon and N'Gbo (2000) in a model taking into account the expansion of networks for developing countries. This scourge can also have effects on the change in the structure of public expenditure. The most corrupt countries have less public expenditure on education (Mauro, 1998). This result was confirmed by Gupta, Davoodi and Alonso- Term (1998) "which show that anti-corruption policies reduce income inequality and poverty, and again, the high corruption can lower the share of public expenditure education and health ", but it increases military and government expenditures to the case of the State according to Gupta, Mello and Sharan (2000). In addition, Tanzi and Davoodi (1997) found that "for countries where the level of corruption is high, from the collection of tax revenue is lower."

2.1. b. Contribution: Seka (2005)

The scourge "*corruption*" as a brake on economic growth through its negative impact on the accumulation of human capital according Seka (2005). However, another school of thought reversed the relationship between corruption and economic growth, showing that a climate conducive to corruption generates incentives to work and leads to greater productivity.

In fact, Shibata (2001) showed that "spending driven by the public authorities, despite the adverse environment for good governance determined a supported increase in GDP and a gradual accumulation of capital." Mauro (2001), in a study on the determination of causality between the level of economic growth and the index of corruption, shows that the correlation is not always negative. The idea that corruption can be considered in some cases as a stimulating measure of labor and production, is rejected by the work of Del Monte et al (2001). Studies of Celentani and Ganuza (2002) confirm that: "the existence of an extensive corruption climate encourages the emergence of opportunistic behavior, justified by the collection of future earnings." This information asymmetry is the main determinant of corruption by Laffont and Meleu (2001), the subject of new research Rijckeghen Van et al (2001). This and justified by poor governance that prevails in most of the poorest countries in the African continent. For this reason, we are trying to work the following to specify the nature of the relationship between the control of corruption and economic growth in some countries, especially the countries in the OECD area as an example, while clarifying institutional aspects in this area.

2.2. Corruption, growth and human capital: Empirical test

2.2.a. Theoretical model

In an environment of corruption, the lure of easy money by unsavory practices less deserving students can bring the most deserving to hastily stop studying to join the band of wealthy mafia, and this by pure imitation, under desired immediate benefits. Also in the public service, some officers in certain functions do they not want promotion; they manage to not stand for examinations that could help them start grade, as this would prevent them from having access to cash situations, why they refuse to do further training to increase their human capital ; in a word, they refuse knowledge, perfection to remain in mediocrity.

2.2.b. Empirical work

Human capital is the set of knowledge and know-how of a nation, its link to growth is the work of presqu'évident according Stockey (1999), Barro (1997). Indeed, it would be very interesting to clarify how the impact of the control of corruption on human capital while considering the direct and indirect effects of corruption control on yields and quality of services for developing sectors education and health by applying four estimation methods. According Seka (2005), this is to show how corruption affects also the not growth through investment, but rather through its negative impact on human capital formation. The relationship goes from corruption to human capital and growth; this type of link between corruption and human capital to this day remains less defended by scientific research. The author has clarified how corruption could undermine the human capital formation by discouraging youth to undertake too long study, which could have a negative impact on futures growth. In our work, we changed the indicator of corruption, instead of working with the IPC as Seka (2005), we chose the control of corruption indicator and the same approach as that of Seka to show direct effect of control of corruption on human capital and the effect of spending on education and health to human capital and therefore the indirect effect of corruption control on spending two sectors. Our study tests, first, the direct and indirect effects of structural variables on human capital, and then we will focus on the articulation of institutional indicator (control of corruption) on human variation for the OECD region. We therefore adopt working in this case by four methods namely the fixed effects method, the random effects of the GMM method differences and system GMM method to compare results well find following the methods adopted.

III.   Methodology and Data Analysis

3.1. Empirical model and data description: Specification Model

We start from the idea that human capital is one of the determinants of growth and, in agreement with the literature (Becker 1993; Lucas 1988). Under this paragraph, we used two types of variables namely economic variables and other institutional order. We explain the nature of the effects of these variables on human capital, we use a model then fixed or random effect well to study the effects of human capital variables, during a well determined period while updating data and used while changing the variables endogenous and exogenous variables. In fact, we therefore seek to quantify the impact of corruption on human capital which represents the enrollment rate to higher education, is the endogenous variable and corruption, one of the explanatory variables. This model was developed by Seka (2005). We estimate the impact of structural variables (*GDP*, *PEE, PERD, IR, PEH and De*) and corruption indicator (C) on human capital (HK) while using the fixed effects method. Then we do a regression by GMM first difference, and then we adopt the same regression using the system GMM method. Finally, we will compare the different methods found for the OECD region.

3.2. Econometric methods

3.2.1. The ordinary least square model (MCO)

The assumptions used to use the method of ordinary least squares (OLS) have a disadvantage that it assumes no heterogeneity. Especially, given the particular nature of panel data, this technique proves biased, although the estimates are consistent. Unlike the ordinary least square method, the panel data used to monitor an individual i (i = 16) over a period T (T = 35), which means that the data is doubly indexed. We note as well in general:

$$HK_{i,t} = \alpha + \gamma \, Z_{i,t} + \delta X_{i,t} + \varepsilon_{i,t} \qquad \text{(E)}$$

This equation becomes:

$$HK_{i,t} = \alpha + \gamma C_{i,t} + \delta_1 GDP_{i,t} + \delta_2 PEE_{i,t} + \delta_3 PERD_{i,t} + \delta_4 IR_{i,t} + \delta_5 PEH_{i,t} + \delta_6 Deth_{i,t} + \varepsilon_{i,t} \qquad \text{(E')}$$

With $\varepsilon_{i,t} = \alpha_i + \mu_{i,t}$ or α_i and $\varepsilon_{i,t}$ are uncorrelated random disturbances.

The estimate of the equation allows us to adopt a specification in terms of mistakes made model.

Two types of estimates are then considered:

➢ Estimate fixed effects

➢ Random effects estimate

• Fixed effects model and Random effects estimate model

- Using fixed effects led to assume the existence of specific fixed effects for each individual (country).

  The inclusion of a specific effect is performed at the level of the residue, errors are always homoskedastic.

- The method of random effects is an extension fixed effects it is assumed that the constant (α_i) in the model follows a law: $\alpha_i = \alpha + \mu_i = \mu_i$ with iid. Instead of assuming a constant for each individual

3.2.b. Method Generalized Moments (GMM) In Dynamic Panel

The method "of Generalized Moments" dynamic panel was introduced by Holtz-Eakin, Newey and Robsen (1988), and Arellano Bond (1991) and Arrelando and Bover (1995). It is characterized by several very specific benefits in the nature of the data panel and in the solutions it provides. Indeed, the GMM dynamic panel method allows to provide solutions to the problems of simultaneity bias, to reverse causality and omitted variables .This method allows to control both individual and temporal effects and specific bearing bias endogéniété of the variables especially when there are one or more delays of the dependent variable included as an explanatory variable.

There are two variants of GMM dynamic panel estimators namely GMM estimator in first differences and GMM system estimator. According Blundel and Bond (1998), has the system GMM estimator that combine first difference equations with the level equations in which the variables are instrumented by their first differences, which appears more powerful than the one that was advanced by Arellano and Bond (1991). GMM estimator in dynamic panel, it combines two tests:

➢ The tests for over-identification Sargan / Hansen.

➢ Testing Arrelano Bonde and autocorrelation such that the two hypotheses H0 and H1; With H0: no autocorrelation of errors of the difference equation

In our empirical work, it is clear that the lagged variables exist and persist according to our theoretical development, so it will be necessary to distinguish between the nature of explanatory variables.

The dynamic model is a model in which one or more delays of the dependent variable are included as explanatory variables. Unlike GMM dynamic panel, standard econometric techniques like the MCO does not provide unbiased estimates of such a model, because of the presence of the lagged dependent variable to the right of the equation. This results in biased estimates. The method is based on GMM orthogonality conditions between the lagged variables and the error term, both in first differences in level.

When the dynamic model is expressed in first differences, the instruments are level, and vice versa. In the model to estimate the use of lagged variables as instruments differs depending on the nature of the explanatory variables:

For exogenous variables, their current values are used as instruments. For the predetermined or weakly exogenous variables (variables which can be influenced by past values of the dependent variable, but which remain uncorrelated with future realizations of the error term), their lagged values of at least one period can be used as instruments and for endogenous variables and their lagged values of two periods and more can be valid instruments. The validity of selected instruments can be confirmed or denied, based on tests of Hansen and Sargan.

Thus, the variables that can be influenced by the past of the dependent variable but which remain uncorrelated with future realizations of the error term. The topic model, known to both a problem of endogéniété variables, and a correlation between the delayed and the endogenous variable residues. All convergence models is dynamic and, therefore, it introduces an additional endogéniété in the explanatory variables.

In total, dynamic models are treated in first differences by the generalized method of moments. In this framework, Anderson and Hsiao (1982) propose to use the lagged first differences of the endogenous variable as instruments.

Arellano and Bond (1991) add to that list of instruments delays in the endogenous variable by showing orthogonality residues. So we will use the generalized method of moments (GMM) based on dynamic panel data that are used as instruments are coming are coming out, which reported a double result either an aggregation or a summary measure of quality human capital.

3.2.c. The principle of the GMM

• *GMM estimator in first differences:* The GMM estimator in first differences OF Arellano and

Bond (1991) is to take for each period the first difference of the equation to estimate to eliminate individual specific effects. We are getting:

$$\Delta HK_{i,t} = \alpha + \beta \Delta HK_{i,t-1} + \gamma \, \Delta Z_{i,t} + \delta \Delta X_{i,t} + \Delta \varepsilon_{i,t} \qquad (E'')$$

The next step is to instrument the endogenous variable delayed by its past values of 2 periods and more. However, this method does not identify the effect of invariant factors over time. Moreover, Blundel and Bond (1998) showed using Monte Carlo simulations that the system GMM estimator is more efficient than in first differences, it gives biased results in finished samples when instruments are low.

- *System GMM*: The GMM in Blundell system and Bond (1998), combines the first-difference equations with the equations level. The instruments in the equation in first differences are in level, and vice versa. We use the Stata 15; the Hausman test led us to adopt the random effects model. The model used in the empirical study of the relationship between corruption and human capital. It also provides a simple description of the data set used.

$$\Delta HK_{i,t} = \alpha + \beta \Delta HK_{i,t-1} + \gamma \, \Delta Z_{i,t} + \delta \Delta X_{i,t} + \Delta \varepsilon_{i,t} \qquad (E^*)$$

$$With, \quad HK_{i,t} = \alpha + \beta HK_{i,t-1} + \gamma \, Z_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$

Y endogenous variable; X and Z are exogenous variables; (α, β, and δ) the parameters to be estimated; $\varepsilon_{i,t}$ le terme d'erreur and CV is a vector of control variables from the empirical literature KH determinants.

α_i is a term common fixed effect (constant).

$\varepsilon_{i,t}$ is the disturbance term, i denotes the country with i = 1,2, ..., N; N is the number of countries

and t denotes time periods t = 1, 2, ..., T; T is the number of time periods.

The main dynamic panel tests, based on the following assumptions to accept.

➢ Sargan test: H_0. The instruments are valid.

➢ Absence of serial correlation of residuals.

*H_1: Order 1 negative correlation residues.

*H_0: order correlation N° 2 tailings.

- *Model Description:* To empirically investigate the role played by the control of corruption in determining human capital, the following simple model is used:

$$HK_{i,t} = \alpha + \beta \, HK_{i,t-1} + \gamma C_{i,t} + \delta CV'_{i,t} + \varepsilon_{i,t} \qquad (E\text{-}1)$$

Thus, the model that will be used as a benchmark to evaluate the role played by the control of corruption

in determining human capital, takes the following form:

$$KH_{i,t} = F\,(KH_{i,t-1}, C_{i,t}, \; CV'_{i,t}, \varepsilon_{i,t}) \qquad (E\text{-}2)$$

This function will be developed and it becomes:

$$HK_{i,t} = \alpha + \beta \, HK_{i,t-1} + \gamma C_{i,t} + \; \delta_1 GDP_{i,t} + \delta_2 PEE_{i,t} + \delta_3 PERD_{i,t} + \delta_4 IR_{i,t} + \delta_5 PEH_{i,t} + \delta_6 Deth_{i,t} +$$
$$\varepsilon_{i,t} \qquad (E-3)$$

We established a proper macroeconomic database, using international macroeconomic series available

in World Development Indicators (WDI 2013) and The Worldwide Governance Indicators (WGI 2013). Studies by Barro (1991, 1997) and Ben-Habib and Spiegel (1994) point out that the level of education was an important determinant of future economic growth. We will expect that investment in human capital improves productivity of individuals and their well-being.
The enrollment rate, higher education (% gross) are used by Pierre Roche Seka (2013) in his survey of African countries.

We retained in our study different macroeconomic performance indicators for the OECD region as:

-The indicator of human capital: This is logarithm of human capital (HK) of the country (i) time (t): The endogenous growth theory suggests a positive relationship between human capital and economic growth. Indeed, a well-trained and educated population can act positively on technological innovation and promoting economic growth (Lucas, 1988) and is also corruption negatively on human capital accumulation according Seka (2005).

-Institutional indicator of corruption (C): This is the corruption in the country (i) time (t): This indicator measures the use of the prerogatives of power for personal gain, particularly the enrichment of individuals having a position of power. (Worldwide Governance Indicators, 2013). The (C) is a corruption indicator was used in the vast majority of empirical studies on the relationship between corruption and education (Gupta S, Davoodi, H, and Tiongson, E. (2000), Selçuk Akçay (2006) , Rajkumar and Swaroop (2008), Daniel Suryadarma (2008), Jacquely .Pless R (2009)).

- Structural indicators: It is a vector of control variables (CV ') derived from the empirical literature of human capital.

- GDP (the annual growth rate of the country's GDP (i) at time (t): To study the effects of corruption on growth, empirical work Mauro (1995) used as measures of economic growth. Andersen (2003) says that the GDP growth rate per capita is a good indicator for measuring economic growth. We will choose to use the GDP growth rate (annual %) as a proxy for economic growth. This indicator has the advantage of being available on the CD-ROM from the World Bank for the majority of countries and for a long duration

- PEE: It's public spending as a percentage of GDP for education in the country (i) time (t): Mauro (1997) shows that public expenditure on education as a percentage of GDP are highly negatively correlated with corruption (corruption is high more less is spent on education).

- PERD: This is public expenditure as percentage of GDP R & Development of the country (i) at time (t). Davoodi and Gupta (2000) show, in the same context, that the most corrupt countries spend less on education.

- IR: This is the igorance rate of the country (i) at time (t): Vinaya Swaroop (2002) regresses, on a sample of 57 countries corresponding to two years 1990 and 1997, the rate of primary school completion on GDP per capita, the share of public expenditure on primary education in GDP, the Governance indicator measured by the index of corruption, the interaction between these two variables and a control list of variables including the rate of adult literacy, Gini coefficient, level of urbanization, the proportion of the elderly population 12 and a dummy variable for East Asia, the proportion of Muslims in the population. It concludes that that is the rate of public expenditure on education corrected corruption, ie the product (expenditures of primary education / GDP) * Corruption matters. When the interaction term is not considered,

- PSH: It's public spending as a percentage of GDP in the country's health (i) at time (t). According to Gupta, Davoodi and Tiongson (2000) examined the effect of corruption on the provision of public health services.

- Deth: This is the mortality rate of the country (i) at time (t): Gupta, Davoodi, and Alonso-Terme (1998) also concluded that anti-corruption policies reduce income inequality and poverty. Thus, the authors conclude that corruption can: Increasing the cost of services of education and public health and reduce the quality of services of public health and education. In conclusion, Gupta, Davoodi and Tiongson (2000) analyzed, based on a sample of countries, the effect of corruption on the provision of public education services.

 * The assumptions and empirical approach: We will see the effect of the institutional indicator (control of corruption) on the human variable in the fixed effects method. Then we regression equation (E') by the method random effects and the methods we use, respectively (GMM) in differences and (GMM) in system. Finally, we will make a comparison between the results found according to the method used and the area considered.

*Assumptions:

H1: The use of fixed effects led to assume the existence of specific fixed effects for each individual (country). The inclusion of a specific effect is performed at the level of the residue, errors are always homoskedastic.

H2: The application instrumental variable proposed in this section does not improve the accuracy of the estimator. It is held, just for the popularization of the method. The choice of instruments may not be

relevant. In practice it comes to make changes instruments to hold, until the achievement of significant results.

H3: The qualities and yields two basic social sectors namely the sectors of education and health in economic development of the countries take consiederation the rate of illiterate representing the (1-literate rate: the rate ignorance) noted related education (IR) and child mortality (total) related to the health sector noted (Deth).

IV.   Presentation of results for the MENA region

Table N°1: KH, C and GDP: Panel Data Regression (Dependent Variable: HK) for the MENA   region

Reg. *Variables*	Eq. (1)	Eq. (2)	Eq. (3)	Eq. (3)
HK$_{i,t-1}$	-----	-----	0.5005) ** (2.62)	(0 .8943) *** (18.33)
Cst	(1.978053) *** (5.91)	(2.4153) *** (9.88)		0.119631 (1.17)
GDP	(0.03881) * (1.79)	(-0.01841) ** (-2.08)**	(0.00013) * (1.77)	0.000097) * (1.86)
C	(-0.00927) (-0.63)	(-0.00713) (-0.76)	(0.0028) (0.77)	(-0.001444) *** (-0.5)
PEE	(0.04062) * (1.90)	(0.00818) (0.67)	(-0.0004) (-0.12)	(-0.00223 (-1.52)
PERD	(0.27557) (1.42)	(0.0768) (0.76)	(0.0177) (0.42)	(0.01880) (0.94)
IR	(-6.58e-10) (-1.05)	(-3.73e-10) (-0.69)	(0.06963) (1.52)	(-0.08518) ** (-2.14)
PEH	(-0.10288) (-0.66)	(-0.88299) *** (-11.86)	(0.04312) ** (2.83)	(0.06513) ** (3.95)
Deth	(-0.79609) *** (-6.97)	(0.05513) ** (1.82)	-0.39995) *** (-1.24)	.005607 (0.14)
N.Obs.	544	544	503	516
F.	13.93	-----	6500.46	3789.42
T.Wald	7470.62	358.60		
Sargan- T □$^□$□□	-----	-----	2.05	1.54
Prob >chi2	0.00000	0.00000	0.979	0.981

- ✦ **Equation 1 :** We use the fixed effects method
- ✦ **Equation 2 :** We use the random effects method.
- ✦ **Equation 3 :** The method of **GMM** difference**:** Arellano-Bond test for **AR (2)** in first differences:
  z = 1.99 ;Pr > z = 0.147, Hansen test of over identification restrictions χ^2 **(8) = 6.96; Prob >**χ^2 **= 0.541**
- ✦ **Equation 4 :** The method of **GMM** system: Arellano-Bond test for **AR(2)** in first differences:
  z = 1.60; Pr > z = 0.109, Hansen test of over identification restrictions χ^2 **(7) = 5.65; Prob >** χ^2 **= 0.581**

➢ ***** Significant at 1%, ** Significant at 5%, * Significant at 10%.**

4.1. The empirical results

To empirically assess the role played by the control of corruption in determining the human capital, according to the method used. The empirical test focuses on the impact of control of corruption on human capital as well as the direct effects of spending on areas of education and health to human capital and the indirect effect of control corruption on public spending for both sectors.

4.2. The results of human capital

The table (1) presents the results obtained while estimating the human capital model based on four estimation methods namely the fixed effects method, the random effects method, the GMM method in first differences and GMM system method for the area considered.

➢ *The fixed effects method*

- The results obtained from equation (Eq1) show that the Corruption (C) has a positive and no significant effect for the MENA area. In other words, corruption is significantly positive with human capital. According to Mironov (2005), the residual corruption positively affects capital accumulation and productivity in developing countries and also Gupta, Davoodi and Tiongson (2000) show the rate of dropout are five times higher in the country with a high level of corruption. In addition, Seka (2005) evaluated the effect of corruption on growth and accumulation of human capital. Similarly, the result empirical literature confirms the work of Mauro (1995) for corruption, while showing in the first place it is considered the decisive source of the failure of the majority of investment projects and therefore a failure of growth was a necessary but insufficient condition for economic development.

- GDP annual growth rate is positively correlated and significant at (10%) with the human factor in the MENA region. According Gyimah-Brempong and Camacho (2005), regional differences of the effect of corruption on growth and income distribution to affect the allocation of corruption on growth directly and indirectly by reducing investment in physical capital.

- Corruption and government spending: The corruption can affect the structure of public spending, which is important for growth. Research Mauro (1998) showed that more countries are corrupt; they spend less on education and health. Since it is generally assumed that these categories of expenditures foster growth, corruption in this context may also have a negative effect on economic growth.

In this context, the relationship between spending on education and human capital is significant at 10% for the MENA area, thus indirectly corruption a positive effect on public expenditure allocations to education that does not confirm the The idea of Mauro (1998) and the study of Gupta, Davoodi, and Alonso-Terme (1998).

Besides, Elley (1992), Hanushek (1995), Mingat and Tan (1992, 1998), Hanushek and Kimko (2000) found that public education resources do not have much effect on school performance. Their estimates show that the effects of different types of resources are either statistically insignificant or, more frequently, statistically significant but not the expected sign. In other words, an increase in resources actually produces low academic achievement tests.

Despite the important contributions made by the studies found so far in the empirical analysis, they do not arrive at definitive conclusions: sometimes the ratio between the estimated results of the education sector and public spending is weak sometimes it is significant. Pritchett (1996) offers an explanation: any negative or insignificant effects of public spending on educational outcomes could be explained by the inefficiency of public spending associated with high levels of corruption. This result was confirmed by Vinaya Swaroop (2002).

- Quality and yields services to sectors of education and health : The mortality rate is negatively articulated and meaningful to (1%) to human capital for the MENA region. Knowing that the link between human capital and corruption is significant. Besides, Gupta, Davoodi and Tiongson (2000) show that a high level of corruption has a negative impact on the infant mortality rate and the dropout rate in primary school. Infant mortality rates in countries with high corruption levels are about a third higher than in countries with a low level of corruption, and dropout rates are five times higher. According to Gupta, Davoodi and Tiongson (2000), a high level of corruption has a negative impact on the mortality rate.

These results were confirmed by the study of Gupta, Davoodi, and Alonso-Terme (1998), with different indices of corruption perception. The work concluded that anti-corruption policies reduce income inequality and poverty.

➤ *The random effects method.*

-The results of equation (Eq 2) show that the link between the Corruption (C) and human capital (HK) is négative (-0.01841) and significant at 5% for the MENA area. In this context, according Seka (2005) shows that corruption has a negative impact on human capital accumulation. Similarly, the result empirical literature confirms the work of Mauro (1996) for corruption, while showing in the first place it's considered as the decisive source of the failure of the majority of investment that stimulates growth projects economic.

Indeed, for a relative change in one of the corruption percent, enrollment in upper varies month by 0.5 percent (when C increases, corresponding to a decrease of corruption, enrollment in higher education increases) for the MENA area.

-The GDP growth rate is negatively correlated and significant to (1%) with the human factor in the MENA area. This idea has collaborated with Barro's theory (1990).

-Corruption and Public Expenditure: Research Mauro (1998) showed that more Countries are corrupt, they spend less on education and health. Since it is generally assumed that these categories of expenditures foster growth, corruption in this context may also have a negative effect on economic growth.

In this context, the relationship between spending on education and human capital is not significant for the MENA area. Knowing that the link between human capital and control of corruption. The corruption indirectly affect negative on allocations of public expenditure on education which confirms the idea of Mauro (1998) and the study of Gupta, Davoodi, and Alonso-Terme (1998).

-Quality and yields services to sectors of education and health: The mortality rate is linked positively with human capital and significant respectively (5%) for the MENA area. Knowing that the link between human capital and control of corruption is positively significant. This means that corruption to a negative indirect effect on the mortality rate which confirms the result of Gupta, Davoodi and Tiongson (2000) that show infant mortality rates in countries with a high level of corruption about one third higher than in countries with a low level of corruption, and dropout rates are five times higher.

➤ *The GMM difference method*

The results of the equation (Eq 3) show that the link between (C) and (HK) is negative and non-significant for all MENA countries. In other words, corruption significantly with the human capital that does confirm the review of the empirical literature of Mauro works (1995, 1996).

-The growth rate (GDP) is positively correlated and significated at (10%) with the human factor in the MENA area. This idea confirme the literature Barro (1992).

- Corruption and Public Expenditure: The relationship between spending on education and human capital is negatively significant at 5% for the MENA area, knowing that the link between human capital and corruption is negatively significant, thus indirectly Corruption has a negative effect on allocations of public expenditure on education which does not confirm the study of Gupta et al. (1998).

In addition, spending on health to affect positively and significantly (5%) to human capital for the MENA area. Indirectly, corruption has a negative effect on health spending. This idea supports the work of Mauro (1998).

-Quality and yields services to sectors of education and health: The mortality rate is linked negatively with human capital and significant respectively (1%) for the MENA region. Knowing that the link between human capital and control of corruption is negatively significant. This means that corruption to a positive indirect effect on the mortality rate which does not confirm the result of Gupta, Davoodi and Tiongson (2000).

➢ *The System GMM method*

-The results of the equation (Eq 4) that Corruption (C) has a negative effect on human capital (HK) and significant at (10%) for the MENA area. The work of Seka (2005) confirms the results found for the MENA area in which corruption is negatively on human capital accumulation. Indeed, for a relative change in one of the corruption control percent, enrollment in upper varies month by 2 percent (when C increases, corresponding to a decrease of corruption, enrollment in higher education increases) for MENA countries.

- The growth rate (GDP) is negatively correlated and significed (10%) with human capital (HK) in the MENA region. This idea does not confirm the literature.

-Corruption and Public Expenditure: The link between education spending and human capital is negatively not significaed for MENA, knowing that corruption has a negative and not significant effect on human capital, therefore, corruption is negatively significant with public spending on education.

In general, corruption reduces the share of education expenditure in GDP and increases that of non-productive expenditures include military spending (Mauro (1997, Meier 2005, Gupta, de Mello and Sharan (2001)). Thus, Mauro (1997) shows that the most corrupt countries spend less on education. The author also shows that in the countries where the position of the Corruption Perceptions Index improved by 6 to 8, the expenditure on Education increases of 0.5 percent of GDP. These findings are confirmed by Davoodi and Gupta (2000) and Gupta Tiongson and Davoodi (2000).

-Quality and yields services to sectors of education and health : The Mortality is linked negatively with human capital and not significant for the OECD area. Knowing that the link between human capital and corruption is negatively. This means that corruption to a positive indirect effect on the mortality rate which does not confirm the result of Gupta, Davoodi and Tiongson (2000).

In total, the estimate with the GMM method in system for all countries MENA remains the most effective with results that describe the review luttérature and the majority of empirical work. Countries with higher levels of corruption are more likely to lead to poor fiscal policies resulting in waste and misallocation of state revenue, and misappropriation of spending at the expense of education. More corruption is high less is spent on education. So the corruption reduces the effectiveness of spending, the resources often fail in their entirety to schools and universities. In general, the model can suffer from some shortcomings, particularly the almost certain existence of omitted variables (we have considered that some explanatory variables). The fact remains that the results are robust to any point of view.

V.   Conclusion

The debate on the notion of corruption continues to continue in time to find a similar definition that can accurately describe this scourge. So corruption occurs when the briber gives a hidden service to the corrupting action to influence the briber who enjoy and for which the authority has been corrupting the institutional failures in some countries may lead to instability of their growth economic. Indeed, the driving force of the most important economic growth is human capital, closely followed by constraints on the executive or the institutions will. As reiterated Pritchett (2001) that "the poor quality of education in many developing countries, it is the consequence of the increase in the average number of years of education may have little capital generated human. "

This work focuses on the evaluation of the role of one of the indicators of institutional quality corruption (corruption control) in determining human capital and economic growth in the first place, and to answer some questions linked to empirical data reported in the new literature. Indeed, the analysis in this work takes as an example the MENA area which consists of 17 countries over the period 1984-2018. The main results of this chapter can be summarized as follows: First, control of corruption plays an important role in human capital factor, since appear to have a significant effect on human capital (HK), the specification of the various control variables. Moreover, institutional quality indicator (corruption) may be considered as a determinant of human capital. Then the found results can be considered as a possible explanation for the failure of studies using indices other than the proxy corruption perception index to find a strong relationship between human capital and other indicators namely governance indicator (institutional indicator) and other determinants of structural indicators. Then we studied the weight of power and efficiency of application within a certain country of the world in the fight against corruption on the one hand by a governance indicator and also to have an idea the determinants of human capital indicators that the explanatory power of human capital model and give an

explanation for this model, including our empirical study we need to add other explanatory variables. Seka (2005) tested the relationship between the Corruption Perception Index (CPI) and the higher education level (SCOL) as human capital accumulation representative variable. The estimation results show a negative bond and highly significant between the index of corruption and enrollment in higher education. The author concludes that the propensity of young people to stop too early studies is even more important that corruption is widespread in the economy and especially in the education sector. Mo (2001) shows that the average number of years of education is significantly lower in the most corrupt countries. Gerlagh and Pellegrini (2004), however, find no significant relationship between these two variables.In total, we have proven the corruption control effect on economic growth as conceived by the economic literature, and we tried to verify empirically the nature of relationship between the control of corruption and capital factor Human to distinguish between different types of corruption existing after the fight against this scourge. To do this, we will show in detail the importance of the intervention of the state by its power (good governance) to reduce this phenomenon (corruption) in the management of resources (public expenditure) countries since corruption as a scourge to both social and economic, can slow down the economic development especially in the sectors of education and health. As part of this work, we tried to study the effects of corruption control on the quality and yields of public education and health services. Starting from the fact that social services are often characterized by deficiencies in the market, and to correct these deficiencies, the state intervenes in the provision, financing and regulation of these services, it was found that control corruption in the public sector can positively affect the level of education and the quality of public health, as measured by the rate of tertiary schooling and child mortality rates. Corruption is essentially a problem of governance. Increased government accountability and transparency, extensive public participation in decision making, public sector and civil society institutions strengthened and more rigorous enforcement of existing regulations will have the effect of improving the quality governance and help the fight against corruption.

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