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**Openness, Human Capital and Economic Growth in
MENA: Theoretical foundations and application to
Dynamic panel data**

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Abstract:

Several econometrical recent studies carried on international comparison data puts into question the opinion according to which education as a human capital indicator would encourage growth. This result comes in a context of opening to the outside. The evaluations are made on data of dynamic panel with the generalized moment's method GMM, with a tertiary schooling rate as indicator reflecting the human capital.

This human capital coefficient varies stochastically from a country to the other according to national features. Several among them permit to explain these differences of quality: educational infrastructures, capacity to provide education in an equal way, initial endowment in human capital in case of opening. We introduce several variables related to the structural, institutional features and to the development of the human capital to test their effects on growth in the M.E.N.A zone during the period 1994-2006. Most of the found results show the existence of a relation between the policies of opening, structural, institutional, human capital factors and the growth in these countries.

Key words: Human Capital, Growth, Opening to the outside, GMM, M.E.N.A

I- INTRODUCTION

The choice of subject is included in our new nail current attack. Indeed, there has been a debate as to the theoretically and empirically. In addition, the emergence of new and more effective empirical method allows us to identify the link between human capital and growth in a context of economic openness.

The historic economic study, which focuses on human capital, is a major concern for economists. The link between human capital and economic growth also offer numerous theoretical and tentative answers, more or less innovative - to explain the differences in growth between nations.

In one of the founding texts and initiator of such work was undoubtedly R.Solow (1956) shows that the growth of an economy tends to be canceled as and when it is closer to its steady state. This property follows directly from the basic assumption of the model that the marginal returns to factors of production are decreasing.

Other theoretical approaches have come to oppose the neoclassical conclusions arguing that the convergence process is actually not legitimate, rather than being bridged the gap between nations is widening. Indeed, the current challenge the idea of the exogeneity of the economic growth that the starting point of these new theories, are the precursors work were those of Paul Romer (1986, 1990) and Robert Lucas (1988) the assumption of diminishing returns on accumulative factors was rejection. The lighthouse is part and endogenous growth and a particular interest is the role of human capital accumulation in the process. Lucas (1988) and Romer (1990) show that the rate of growth of an economy depends on the efficiency of investment in human capital respectively in education and R & D.

The founders canonical models emerged in the second half of the 80s, are those of Romer (1986) and Lucas (1988). Rebelo (1990) subsequently proposed a simplified version of AK-suite. The first Survey devoted to endogenous growth is that of Sala-i-Martin (1990), which became a textbook co-signing with Barro (1995). Also include the names of Azariadis and Drazen (1990), which address the issue of development through multiple equilibria models, and Grossman and Helpman (1991), who are interested in the innovation described by stochastic processes.

Empirical studies that have sought to verify the relevance of any of these theories are numerous. An important point to remember: the implications of the Solow model are broadly confirmed by statistical data. In particular, the convergence is empirically verified when taking into account differences in factor endowments between countries, we speak in this case of conditional convergence.

Furthermore, by introducing human capital as a factor in the additional neoclassical production model, some authors have shown that the implications of the latter were strengthened by. Recent empirical literature show a set of results is based on the dominant reference theoretical models of neoclassical growth. The role of human capital in the growth process has also been verified through its ability to accelerate the upgrading vis-à-vis the more advanced nations and develop the activity of technological innovation. All these results, however, were derived from data in cross country with Mankiw, Romer and Weil (1992) and Barro (1991)...

We propose in this article to study the interrelationship between human capital and growth in a context of economic liberalization in the MENA region. The justification for such an approach lies in the fact that human capital accumulation is strongly influenced by the degree of openness of the economy. The peculiarity of this work is, however, considered the concept of opening plays a very important role in the development of those countries where they can catch up with technologically advanced countries and improve their competitiveness. This study is subject to the interactions between macroeconomic variables

II- THEORETICAL REVIEW OF THE LITERATURE

1- The model of the neoclassical growth

The only difference in this interpretation is that in the model with constant returns to scale [of Solow], the steady state growth rate per capita is determined solely by external factors, but now [with increasing returns] the balanced growth per capita can be positive, even in the absence of exogenous technical progress.

Solow brings, in 1956, a response to the dire predictions of Harrod¹ the exogenous growth model reached the state of economic equilibrium automatically over time. In the Solow model, the returns to scale are constant, there are diminishing returns with respect to each factor of production factors between the elasticity is positive and contained and the savings rate is constant.

The notion of conditional convergence is one of the important results in this model we will treat attempting account human capital as an exogenous variable. The exogenous growth model is based on the following assumptions:

- The market of perfect competition.
- The full employment of productive resources.
- The remuneration of the factors according to their marginal productivity.
- The price flexibility.
- The constant returns, etc..

Formally, the marginal product of capital tends to zero, the marginal product of capital (KMP) is a strictly positive but decreasing capital stock function. $F'(k_t) > 0$ and $F''(k_t) < 0$ More, k_t for all the conditions called "Inada" are checked $\lim_{k_t \rightarrow 0} F'(k_t) = \infty$, where k_t approaches ∞ and $\lim_{k_t \rightarrow \infty} F'(k_t) = 0$ if k_t tends toward 0.

1 R. Solow (1956): "A Contribution to the Theory of Economic Growth in Reading with Modern Theory of Economic Growth", edited by JE Stiglitz and H. Uzawa, the MIT Press, 1969. Universidad de Valencia (January).

2- The new theories of endogenous growth

Models of endogenous growth, emphasizing the fact that most of the publications that offer this field of economic literature are merely variants of the canonical formalization. In the first model of Romer (1986) endogenous growth due to the presence of an externality that is the source of increasing returns to scale. This external effect is very traditionally derived from private investment in physical capital in a process such as "learning by doing" the Arrow (1962).

In the second model, Romer (1990) identifies the source of increasing returns is a broadening effect of the range of inputs capital goods, which evokes a deepening of the Smithian division of labor extended to inter-firm size the Young (1928), but considered strictly identical firms. Lucas (1988) itself chose, unlike previous models, incorporate knowledge of human capital.

The heart of the model lies in that the bypass third Inada condition that prevents the extinction of the long-term growth, resulting in a functional form ensuring linearity of accumulation of individual skills level individual human capital, so that the externality driven by the human capital modifies the degree of homogeneity of the macroeconomic production function to associate increasing returns, without being itself the cause of endogenous growth. Most endogenous growth models with human capital merely duplicate the scheme proposed by Lucas (1988).

3- The main transmission channels

Among the main transmission channels of openness on economic growth, we include:

- Technology Diffusion.
- Effect s scales.
- Sectoral reallocation.
- Opening and competition between countries.
- Reduction of economic distortions

Economic openness interacts here with the gap in human capital. This simple interaction is also found in the model developed by distortions Berthélemy, et al. (1998). The technology gap between countries may become binding if it is too large. Krogman (1987),

Grossman and Helpman (1991) and Pautrel (1997) focus on the impact of economic liberalization on the economy depends human capital accumulated by the economy that justifies the existence of multiple equilibrium: by baseline characteristics of the country. According to Krugman (1987), when economic liberalization coincided with a low technological level of the country, the international competition can lead to dispaissions essential business dynamism of the economy and sustainable amputated. productive capacity of the country. According Pautrel (1997), economic openness may allow less developed countries to have access to global knowledge, a low level of human capital can help to capture the knowledge acquired abroad and used them.

According to Grossman and Helpman (1991) and extension of Eicher (1996), the subsequent sectoral reallocation of economic openness can lead to a significant decline in investment in the motor areas or even, in extreme cases, the abundant essential for the economy, which allows us to address the different empirical models and their results and interpretation activities. In a context of technological diffusion model Pissardiès (1997) shows that imitation is easier when the innovative and imitative economies adopt a policy of trade liberalization.

Depending on the model of Feder (1983), in the opening and competition from context, competition encourages companies to increase their productivity which is an advantage in terms of economic growth.

Krugman (1987), the effects of competition in some cases lead to the closure of businesses drive economic growth. Rajhi (1995) determines the impact of competition degree of competitiveness of countries that open.

III- REVIEW OF THE EMPIRICAL LITERATURE

The approximation of the steady state of human capital, Islam (1995) chose the human capital variable from Barro and Lee (1993), which provides information on the average number of years of schooling at primary secondary and higher in the general population aged over 25 years. Studies and Bouoiyour Towfik (2007), the impact of FDI on local productivity for 18 industries manu Moroccan factor over the period 1987 to 1996, gives the following results: trade openness and FDI can start to produce significant effects on the Moroccan firms impacts if they are accompanied by a development of a highly qualified work.

The Solow (1956) increased, tested by Mankiw, Romer and Weil (1992) finds a strong relationship between human capital and growth. A model estimation Ben Habib and Spiegel (1994) for a sample of developing countries, conducted over the period 1920-1980 shows the non-significance of the coefficients of the model. The role of human capital in so growth depends according Varoudakis (1997), the degree of openness of the economy.

As an approximation of the steady state of human capital, Islam (1995) chose the human capital variable from Barro and Lee (1993), which provides information on the average number of years of schooling at primary, secondary and higher in the general population aged over 25 years. According to studies Bouoiyour and Towfik (2007), the impact of FDI on local productivity for 18 sectors of the Moroccan manu factorial industry over the period 1987-1996, gives the following results: trade openness and FDI can start to produce significant effects on the Moroccan firms impacts if they are accompanied by a development of a highly qualified work.

IV- METHODOLOGY AND EMPIRICAL VALIDATION TEST

1- Sample and study period

Our sample consists of 100 countries divided in five zones and created a database of proper international macro economic data in "CD in 2004 and institutional CODEBOOK World Bank: International Country Risk Guide, The PRS Teorell, Jan, Sören Holmberg Borothstein & (2007).

In this framework, we tried to compare the performance of regions (Asia, sub-Saharan Africa, Latin America and OECD) with that of the MENA region.

2- The Arellano and Bonde model (1991)

$$Y_{i,t} - Y_{i,t-1} = \theta Y_{i,t-1} + \beta X_{i,t} + \eta_t + \varepsilon_{i,t} + \mu_t$$

$$Y_{i,t} - Y_{i,t-1} = \theta Y_{i,t-1} + \Phi K_{i,t} + \varphi Z_{i,t} + \eta_t + \varepsilon_{i,t} + \mu_t$$

With:

- $Y_{i,t}$: growth rate of GDP per capita at time t.
- $K_{i,t}$: time t the vector of variables stand ardes growth in.
- $Z_{i,t}$: Vector institutional growth variables at time t.
- η_t and μ_t are respectively the unobservable and identifiable factors that affect all countries in the sample at time t.
- The second equation is defined as: $X_{i,t} = (K_{i,t}, Z_{i,t})'$ and $\beta = (\Phi, \varphi)$.

3- Estimates

In this estimation framework which will be devoted initially to provide descriptive statistics for the entire sample. In a second time, will be presented the main results of the estimates in this trial of empirical validation to finish by some comments in all based on the results of the MENA region

* Descriptive statistics of variables

The descriptive statistics of the endogenous variable and explanatory and correlations between variables are presented in the following table Statistics descriptive variables:

Table 1

Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
GDP g / head	1818	1.25126	0.1466839	-52.09713	100.8401
Linvest	1554	9.803836	0.0255178	7.399662	12.28769
L pop	1899	7.045401	0.0154164	5.378398	9.107346
Lkh	1128	1.048727	0.0173771	-.941574	1.988335
Open	1786	66.27373	0.8410226	8.959347	275.2324
Icg_qog	1624	.5820333	0.0061292	.0416667	1

In order to detect a possible relationship between the different variables, different correlation coefficients will be presented in the following table to test the correlation between these variables.

- A high correlation coefficient (close to 1 in absolute value) indicates a strong correlation between the variables.
- A low coefficient of correlation (close to 0) indicates a low correlation between the variables. Variable Observations Mean Standard Deviation Minimum Maximum GDP g / head

Table 2: Correlations between variables

Variables	GDP g / head	Linvest	Lkh	Lpop	Open	icrg_qog
GDP g / head	1.0000					
Linvest	0.1997	1.0000				
Lkh	0.1476	0.6994	1.0000			
Lpop	0.1080	0.5732	-0.0147	1.0000		
Open	0.1270	-0.1046	0.1154	-0.3733	1.0000	
icrg_qog	0.1109	0.6492	0.5989	0.0133	0.1152	1.0000

Usually, the values that are greater than or equal to 0.5 indicates that the variables are strongly correlated positively or negatively depending on the effect of variable into consideration the other. According to the table that shows the different correlation coefficients, there is a strong positive correlation between **Linvest** and **Lkh** of (**0.6994**), and other correlations are weakly correlated **GDP g / head** and **Lpop** of (**0.1080**). Also, there are negative correlations between dependent and independent variables.

* Results and Commentary

The relationship between human capital and economic growth in a context of openness has attracted great interest in the literature for several years.

In this section, we will analyze this joint study focusing on the impact of structural and institutional variables on economic growth in different regions by focusing on the MENA region and this means a study panel data dynamics for classical growth equation on a sample de100 country during the period 1994-2006. First, we make estimates for the sample as a whole. Thereafter, the estimates are made by introducing dummy variables, regional, and in which the same regressions are performed. This will allow us to determine whether the effects of the explanatory variables (institutional and economic) on growth have the same effects in different regions.

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* Presentation of results

We proceed, first, by estimating the growth equation base including explanatory variables commonly used in previous work with variables including **Lpop**, **L invested**, **LKH** and **open**

Then we will introduce in the regressions following a variable indicator of governance (**Icg**) and synthetic variables (**Lopenkh**, **Lopenide**, **Lidekh** and **Lopenidekh**) are introduced. The results are presented in the following table:

Table 5: *Effects of structural, institutional and human capital variables on economic growth of the total sample and also parts: MENA, Asia and America.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	2.900518 (3.47)***	2.469877 (1.88)*	7.188755 (3.21)***	4.42117 (1.75)*	1.5447 81 (1.54)	1.59234 (0.97)**	1.5448 (1.54)	1.592344 (0.97)**
Lkh	.5818158 (2.48)**	.2770615 (0.97)	2.364954 (2.04)**	1.257953 (1.06)	.65046 84 (2.38) **	.2736955 (0.79)	.39503 (1.15)	.4404343 (1.05)
Lpop	.7521417 (3.14)***	1.029292 (4.10)***	.6516804 (2.44)**	.9718747 (3.77)***	.96451 04 (3.49) ***	1.111061 (3.48)***	.96451 3.49)***	1.111061 (3.48)***
Open	-.0078004 (-3.62)***	-.0043042 (-1.66)*	.0075992 (1.16)	.0035688 (0.53)	- .00806 6 - 2.83)** *	.0005031 (0.13)	-.0081 -2.83)***	.0005031 (0.13)
Linvest	-1.00321 (-4.68)***	-1.128377 - 4.99)***	- 1.052241 (- 4.04)***	-1.03058 -4.06)***	- 1.1165 4 - 4.53)** *	-1.03997 -3.17)***	-1.117 - 4.53)***	-1.03997 -3.71)***
Icrg_qog	2.176328 (4.85)***	2.316275 (3.60)***	3.602225 (6.66)***	1.803731 (2.64)***	2.7695 96 (5.42) ***	1.824474 (2.32)**	2.7696 5.42)***	1.824474 (2.31)**
Mena		-.5461093 (-1.98)**						

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America		.1241937 (0.42)						
Asia		-.4327842 (-1.47)						
Africa		-.650024 (-1.74)*						
Lopenkh			- 2.402653 (- 2.26)**	-1.18881 (-1.09)				
Lopenkhmena				-.969487 (-3.42)***				
Lopenkh asia				-.722359 (-2.28)**				
Lopenkh afrique				-.965131 (-2.52)**				
Lopenkh amérique				-.153743 (-0.47)				
Lopenfdi					.25543 (1.72) *	-.166738 (-0.93)		
Lopenfdi mena						-1.20323 (- 3.77)***		
Lopenfdi asia						-.741697 (-2.12)**		
Lopenfdi afrique						-.840364 (-1.89)*		
Lopenfdi amérique						-.077269 (-0.24)		
Lopenfdikh							.25544 (1.72)*	-.166738 (-0.93)
Lopenfdikh mena								-1.20323 (- 3.77)***
Lopenfdikh amérique								-.741697 (-2.12)**
Lopenfdikh asiq								-.840364 (-1.89)*

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Lopenfdikh afrique								-.077269 (-0.24)
N.obs (pays)	785	785	701	790	728	733	728	733
T.Wald	77.13	91.09	77.83	72.92	64.13	54.73	64.13	54.73
SarganTestChi 2(125)	284.13	275.09	262.59	251.75	303.33	246.23	303.33	246.23
Prob>chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

- The dependent variable is the growth rate of real GDP per capita.
- The words in parentheses are t-Student.
- *, **, ***: significant at the 10%, 5% and 1% respectively.

* Interpretation of results

After completing estimated using the Generalized Method of Moments (GMM) As we mentioned above, we interpret the results.

❖ The first regression

From the first regression, we note that all variables used in estimating the standard equation of economic growth have all signs that do not corroborate with the theoretical literature and are generally significant: domestic investment (linvest) and openness (open) are negatively significant at 1%, which is consistent with literature Haddad and Harrison (1993) have shown that the technology gap hinders the external effects.

For variables logarithm of the population (Lpop) and the governance index (icg_qog) are significant to 1% and positively correlated with the growth rate. While human capital (Lkh) is negatively and significantly correlated to 5%, so the population growth is retarding economic growth hence the need to maintain a low level.

❖ **The second regression**

In the second regression, we did our regression by region for the different effects of standard variables.

First, we note that all variables are significant except (LKH) (Lpop) and (icg_qog) are positively correlated and significant at 1%. While (Linvest) and (open) are negatively correlated and significant respectively at the 1% and 10%. Indeed, the majority of our sample are embryonic countries into the WTO, which confused with the results found.

While their effect by region are negatively correlated with economic growth in areas: MENA and Africa and significant at 1% and 10%. For other regions: Latin America and the countries of Eastern and South Asian, standard variables have positive and negative effects, respectively, but are not significant. In other words, a specific effect for these areas as the reference is the OECD (developed area).

In total, the parameters associated with human capital (Lkh) is not significant. In fact, several studies using a panel data approach, the direct effect of human capital on growth is hardly found, the effect of human capital on growth is not robust because the human capital indicator qualitative variable is the theoretical and empirical literature are not well approximated this indicator.

❖ **The third regression**

In the third regression was includes synthetic variable (Lopenkh) to show its effect on the entire sample. Note that all variables have the expected signs, they are significant except the aperture (open), but it has a positive effect on growth that is consistent with the theoretical literature. Thus, the indicator used opening depends largely on issues outside the realm of trade policy, and Rodriguez & Rodrik (2000) show that the effect of openness on growth highlighted by Sachs & Warner overlaps is the influence of geographical factors.

For other macroeconomic variables, they have the expected sign, positive variables (lcr_goq), (Lpop) and (Lkh)

Variable (linvest) has negative sign space that most nations are considered developing countries which their consumption is higher than their income that is to say the lack of equity.

According to the results of the regression, we also note that the synthetic variable (Lopenkh) which describes the impact of economic openness on human capital has a negative and significant effect at the 5% (0.024). It can be seen well after the introduction of (Lopenkh) an indirect effect of openness on human capital.

❖ Fourth regression

In the fourth regression, According to the results of the regression, we note that the synthetic variable (Lopenkh) puts on the effect of openness on human capital and are indirect effect on economic growth. Or from the regression, there is a non-significant effect of this variable (Lopenkh) on economic growth and its indirect effect is negative and insignificant.

While the indirect effect of the synthetic variable (Lopenkh) on different regions has a negative and significant effect of 1% (0.001) for the MENA countries and the threshold of 5% (0.012) for the area of sub-Saharan Africa and the South Asian Opcit.

❖ The fifth regression

In this case, we see that the variables are significant at 1% (Lpop, Linvest and Open) and 5% (LKH), our institutional variable (Icrg_qog) which has a positive direct effect of 2768 on economic growth and significant 1%.

Many publications have found data showing a positive effect on political stability. Barro (1991) and Barro and Sala-i-Martin (1995) include a measure of revolutions and political assassinations, but it is not always significant.

The introduction of synthetic variable (Lopenfdi) in the model, we can see that the effect on growth is positive and significant at 10%, which is consistent with the theoretical literature Caseilli 1996; Hojou, 2003 Miyamoto, 2003). The authors show that FDI positivement2 affects growth.

Also, Cantwell (1989) states that "externalities are more likely to occur in areas with a technological advantage in the past."

❖ Sixth regression

In the sixth regression, the introduction of synthetic economic variable in different regions, making the effect of the variable (**Lopen fdi**) negative and insignificant, while its negative effect on the region's growth and significant at 1% for MENA countries and 5% for

East and South Asian has a negative and significant effect of 5%, explained by most of the imports are products of consumption and that the majority of exports are semi-finished products.

Except for the countries of Latin America that the effect of the variable (Lopenfdi) is negative and insignificant.

❖ **Seventh regression**

In this regression, the introduction of the variable (Lopenfdikh) gives a positive effect (.2554391) on economic and significant growth of 10%, which is consistent with the theoretical literature of Romer (1990)], the accumulation knowledge in the form of "technology" or "human capital" and [Lucas (1988)] that the level of knowledge is integrated into the workforce and not physical capital] is generally associated with the concept of technical progress can be defined as "increasing the knowledge that men have, laws of nature applied to the production"

In this state, **FDI** promotes more contacts with strangers and finding new ways of doing things than does trade Opcit.

❖ **Eighth regression**

In the eighth regression we see that all macroeconomic variables have the expected signs and are significant except the population and human capital are insignificant.

According to the results of the regression, we note that the synthetic variable (**Lopenfdikh**) shows the effects of FDI and openness on human capital and are indirect effect on economic growth.

Or from the regression, there is a non-significant effect of this variable (**Lopenfdikh**) on economic growth,

* The comments

Work on this topic adopt the traditional augmented Solow model especially in the provision of Mankiw, Romer and Weil (1992) and also with Berthélemy et al (1998) on successive five-year periods. Moreover, Barro (1994), in his attempt, adopted as an indicator of human capital, the rate of secondary schooling. But in our work, we used the generalized method of moments (GMM) and a rate of tertiary education by introducing any institutional valid (Icrg_qog). It is for these the results obtained with the estimation of the generalized method of moments (GMM) release another way of estimation and interpretation of the regressions.

Indeed, our sample was composed by a diversification of regions such as MENA, OECD region, the area of Latin America and South - East region - Asian offers more economy-wide including opening to the outside, the human capital and other variables of structural and institutional nature.

At this stage the MENA region is the case of our work is heterogeneous, since the difference persists over several angles especially on the economic front in particular on the social, educational and political. Following an estimation (GMM), the results show an advantage in interpreting the regressions. It uses the effectiveness of using this software despite the absence of certain data for the full sample and also for the MENA region. Despite the results found for the South Zone - East - Asian, the East Asian economies have successfully developed their international trade and attracting foreign investment through their policy environments (investment climate) and institutional capacity and human resources to absorb foreign capital by several reforms, these countries have been able to exploit the opportunities of global integration to develop their exports and imports for industrialization and development. That these economies were able to take advantage of the positive impact with developed countries. To learn from the different experiences in the world we must take into account specificities of the regions.

Indeed, each country and each region differ in fundamental levels, political, legal and economic institutions, economic structures, implementation of macro-economic policy, industrial organization, characteristics of the factors of production and openness to the outside

V- CONCLUSION

In our attempt to empirical validation, we tried to see the effect of macroeconomic variables (open, ...), human and institutional capital on economic growth while of showing their importance in different regions of the world and especially in MENA.

The econometric results of the various tests give only a retrospective light of the economic situation in the sample of countries studied. They show that the effect of openness, human capital on growth is positive throughout the MENA region.

The obtained results are encouraging for all the countries studied, since the quality of governance and indicators that we used appeared clearly relevant in explaining economic growth.

We also led to highlight a clear positive correlation between human capital (Lkh) and economic growth and the opening also is considered a prime through which improvement is conducted to encourage economic growth channel, confirming and work J.C.Bérthélmy, A.Varadoukis and S. Above, Barro and Sala-i-Martin (1995) and Mankiw, Romer and Weil (1992).

These results appear consistent with previous studies that support the existence of a positive impact of institutional variables on economic growth such as democracy, the quality of regulations, effective governance, political stability have all positive and significant effect on economic growth of a country.

We conducted a first step, a preliminary descriptive analysis of the data that are analyzed in dynamic panel data conducted across 100 countries over the period 1984-2002 on the effect of these variables (openness, human capital ...) on economic growth.

For many countries the area into consideration, it is necessary to make structural adjustment measures to transform traditional industries to more competitive sectors. To increase competitiveness must achieve economies of scale, develop human capacities and encouraging research and development. Similarly, the developed countries should pay attention to the advantage of consistency of their policy development policies adopted by MENA countries.

Moreover, taking into account the regression of macroeconomic variables, human capital and institutional variable does not seem to marginalize their effect differs from one

region to another depends on the effects of other macroeconomic variables and such that foreign direct investment, investment.

Therefore, the results show a positive and significant effect of human capital on economic growth in an open and through another variable (FDI) for the MENA context, this means that the opening is the development of a catalyst countries including the human capital that reflects a positive and significant direct effect on growth.

- Supporting governance structures contributing to the maintenance of political and economic stability.

- Improving aid effectiveness and coherence of national and regional development policies.

Taking into account the relative importance of policy coherence at national and regional level is an avenue of research that may provide relevant and practical information on the development prospects of developing countries information.

Overall, we note that the direct effect of variables on economic growth especially significant for the opening set which also has an indirect positive effect on MENA and almost on the other regions. These results are in accordance with consistent results Berthelemy, top and varadoukis (1998) and Barro and Sala-I-Martin (1995).

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