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The effect of world governance indicators on economic growth in MENA region by using panel data models-

Realized by:

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Abstract:

World economy cannot exist without the interdependence of the countries; more or less advanced processes of regional integration prove this fact. Both of economic openness and good governance have been related to growth, the aim of this paper is to search about the link of the trade and financial openness and the quality of its governance in MENA region.

Key words: Economic Growth, MENA region, World governance indicators ,dynamic Panel.

Introduction :

The issue of good governance is one of the topics that have been widely used by governmental and international and regional organizations. It has become a prerequisite for the promotion of political, economic and social development. It is also an effective tool for confronting the challenges facing the state and society.

The good governance provided by an appropriate and sound environment through mechanisms of the rule of law, transparency, accountability and participation is a process adapted to the renewed data provided by the international community as a result of globalization and its political, economic, social and cultural effects

The lack of governance in the state and society has led to the emergence of standards of good governance, where it occupies a high position within the organs

of the state and its political institutions, economic and civil society institutions, and the MENA countries are among the countries that occupied the rule of high priority economic, political and social, Most of these countries achieve development, despite the potential and resources available, due to the failure of economic reforms to comply with institutional reform.

Problematic study:

This study focuses on the reality of the MENA economy and economic development as a priority in all fields, because it provides a suitable environment and sound, and therefore the problem of study came As follows:

what is the effect of world governance indicators on the economic growth in MENA region?

What is Economic Growth?

Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. It can be measured in nominal or real terms, the latter of which is adjusted for inflation. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used.

What is Governance?

Governance consists of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.

The World Governance Indicators: (http://www.govindicators.org)

1-Voice and Accountability(VA): Voice and Accountability measuring the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media (Kaufmann, 2007).

2-Political Stability and the Absence of Violence(PS): It measures perceptions of the likelihoood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.

3-Governmental Effectiveness (GE): measures the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4-Regulatory Quality(RQ): measuring the ability of the government to formulate and implement sound policies and regulations

that permit and promote private sector development.

5-Rule of Law(RL): Rule of Law measures the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.

6-Control of Corruption (CC): measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ”capture” of the state by elites and private interests.

The variables used in our models are the world governance indicators .The dependent variable of our subject is the economic growth, presented by GDP per Capita. We have set a panel data model based on 14 countries (Algeria, Bahrain, Egypt ,Jordan, Iran ,Lebanon ,morocco ,Mauritania ,Oman ,Qatar ,Saudi Arabia ,Tunisia United Arab Emirates ,Yemen)in the period (1996-2014) to look further on the relationship among the variables.

1-The pooled model:

We will start by disregarding the space and the time dimensions of the pooled data and just estimate the usual OLS regression. By stacking the 19 observations for each country one on the top of the other, thus giving in all 209 observations for each of the variables in the model (for GDP , CC,GE,PS,RL,RQ and for VA), the OLS outputs are shown in the Figure 1 .

Figure N°1: Result of the pooled model (OLS)

Dependent Variable: GDP
Method: Panel Least Squares
Date: 04/07/18 Time: 23:18
Sample: 1996 2014
Periods included: 19
Cross-sections included: 11
Total panel (balanced) observations: 209

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CC	0.042696	0.028098	1.519520	0.1302
GE	0.090246	0.035136	2.568471	0.0109
PS	-0.062672	0.015848	-3.954501	0.0001
RL	0.169950	0.028999	5.860478	0.0000
RQ	0.024176	0.027825	0.868842	0.3860
VA	-0.008133	0.024986	-0.325492	0.7451
C	0.686203	0.021815	31.45504	0.0000

R-squared	0.687211	Mean dependent var	0.690239
Adjusted R-squared	0.677920	S.D. dependent var	0.173628
S.E. of regression	0.098537	Akaike info criterion	-1.763843
Sum squared resid	1.961342	Schwarz criterion	-1.651898
Log likelihood	191.3215	Hannan-Quinn criter.	-1.718583
F-statistic	73.96699	Durbin-Watson stat	0.456259
Prob(F-statistic)	0.000000		

Interpretation of the outputs:

By examining the outputs of the pooled regression. We will see the coefficients of GE, PS and RL, significant but the coefficients of CC , RQ and VA not significant and the R^2 is reasonably high (almost 69% of GDP variation is explained by this regression), GDP is positively related to CC , GE,RL, and RQ but it is negatively related to PS and VA.

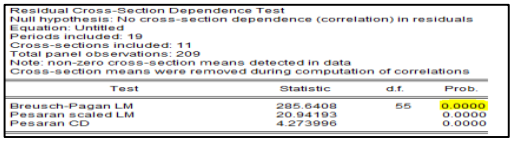
The messing ointment is the estimated value of Durbin –Watson statistic is quite low(dw=0.456259), suggesting the existence of perfect positive correlation in the residuals.in the other hand, it is known that the low Durbin-Watson statistic could be explained by the specification errors like: excluding variable or choosing incorrect functional form.

So after initiating a pooled OLS model, we moved to a Cross-section SUR model because of the existence of the autocorrelation in our Model, thus the autocorrelation problem was solved.

Cross section dependency in pooled model:

The existence of autocorrelation could be tested with “the Breusch-Pagan LM” test, and as it is shown in the figure2: the p value of the test‘s statistic is too small (0.0000) which lead to the rejection of the null hypothesis, so there is a cross section dependence in residuals.

Figure N°2: Autocorrelation test in pooled model



Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 19
Cross-sections included: 11
Total panel observations: 209
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	285.6408	55	0.0000
Pesaran scaled LM	20.94193		0.0000
Pesaran CD	4.273996		0.0000

Because of the existing correlation between the cross sectional units residuals the use of the SUR model become a necessary step, as it is proven by a lot of economists this model allows for the heterogeneity between individuals by providing their dependency, the result of the estimation of the previous regression using the model SUR are shown in the figure below:

Figure N°3: Result of pooled regression (using the SUR model)

Dependent Variable: GDP
Method: Panel EGLS (Cross-section SUR)
Date: 04/07/18 Time: 23:26
Sample: 1996 2014
Periods included: 19
Cross-sections included: 11
Total panel (balanced) observations: 209
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CC	0.033825	0.006474	5.224482	0.0000
GE	0.065460	0.009052	7.231818	0.0000
PS	-0.046291	0.004321	-10.71420	0.0000
RL	0.163074	0.005475	29.78420	0.0000
RQ	0.025791	0.005834	4.420839	0.0000
VA	-0.010239	0.006155	-1.663633	0.0977
C	0.682953	0.007244	94.27703	0.0000

Weighted Statistics

R-squared	0.955183	Mean dependent var	9.875507
Adjusted R-squared	0.953852	S.D. dependent var	7.990757
S.E. of regression	0.974815	Sum squared resid	191.9533
F-statistic	717.5337	Durbin-Watson stat	1.545218
Prob(F-statistic)	0.000000		

The results that could be drawn from the previous estimation is that We will see the coefficients of CC , GE,RL, PS and RQ significant but the coefficients of VA not significant and the R^2 is reasonably high (almost 96% of GDP variation is explained by this regression), GDP is positively related to CC , GE,RL, and RQ but it is negative related to PS and VA .

The Durbin-Watson statistic (1.545218) unlike the first estimation tells that the serial correlation between residuals could absent in this case which is proven by the LM test ,there is no cross section dependency in this pooled regression using the SUR model ,the output of the test are represented in figure N° 4:

Test autocorrelation GLS :

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in weighted residuals
Equation: Untitled
Periods included: 19
Cross-sections included: 11
Total panel observations: 209
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	22.86688	55	1.0000
Pesaran scaled LM	-4.112582		0.0000
Pesaran CD	-0.131442		0.8954

The estimated model also assumes that the intercept value of MENA contries are the same it is mean the absence of individuality, the true picture of the relationship between GDP and all variables cannot be well explained across the 14 countries; we should take into account the specific nature of each country.

2- Hausman test:

The Hausman test in order to know whether the FEM or the ECM gives the efficient estimators and thus considered as the best model to describe the phenomena.

Figures N°5: Outputs of Hausman test

Correlated Random Effects - Hausman Test
Equation: FIXED_EFFECT
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	21.269955	6	0.0016

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CC	-0.011028	-0.012415	0.000005	0.5298
GE	-0.035782	-0.018911	0.000037	0.0056
PS	-0.001852	-0.007750	0.000009	0.0536
RL	0.042713	0.069480	0.000050	0.0001
RQ	0.028009	0.042001	0.000020	0.0019
VA	-0.048302	-0.039624	0.000012	0.0115

If we get a statistically significant P-value , we shall use fixed effect model , otherwise Random effect model . So from the table above, and based on the p_value (0.0016<5%), we reject the null hypothesis

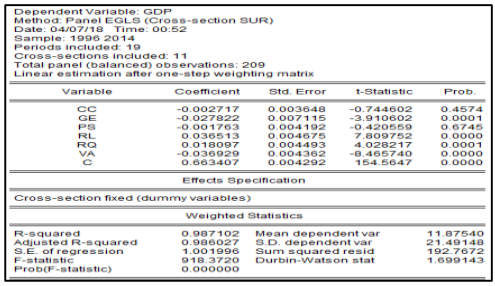
and we choose the fixed effect estimation for our model.

3-Fixed Effect Model (FEM) :

in order reconsider the individuality of each country the FEM is among the ways to make it happened by allowing the intercept to vary for each country while the slope coefficient is constant.

Therefore , the following table summaries the fixed effect model results:

Figure N°6: Estimation of FEM



Dependent Variable: GDP
Method: Panel EGLS (Cross-section SUR)
Date: 04/07/18 Time: 00:52
Sample: 1996 2014
Periods included: 19
Cross-sections included: 11
Total panel (balanced) observations: 209
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CC	-0.002717	0.003648	-0.744602	0.4574
GE	-0.027822	0.007115	-3.910602	0.0001
PS	-0.001763	0.004192	-0.420559	0.6745
RL	0.036513	0.004675	7.809752	0.0000
RQ	0.018097	0.004493	4.028217	0.0001
VA	-0.036929	0.004362	-8.465740	0.0000
C	0.663407	0.004292	154.5647	0.0000

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.987102	Mean dependent var	11.87540
Adjusted R-squared	0.986027	S.D. dependent var	21.49148
S.E. of regression	1.001996	Sum squared resid	192.7672
F-statistic	918.3720	Durbin-Watson stat	1.699143
Prob(F-statistic)	0.000000		

The p-value associated to the t-statistic is extremely small for the variables GE, PS , RL,RQ and VA so the slope coefficient is statically significant and in the same time has the expected positive signs "the GDP is positively related to RL and RQ". Moreover, the R^2 is reasonably high (almost 99% of GDP variation is explained by this regression), however this increase in R^2 can be due to the introduction of dummy variables.

Cross section dependency in FEM:

The knowledge of the existence of autocorrelation between the residuals of my cross sectional units in a necessary step that

we will need in the following estimation, as it is shown in the figure 7 the p value associated to LM statistics is" 1 " which is extremely high so we accept the null hypothesis "there is no cross-dependence in residuals".

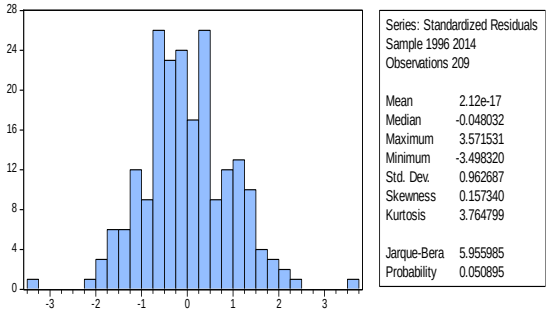
Figure N°7: autocorrelation in FEM

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in weighted residuals
Equation: FIXED_EFFECT
Periods included: 19
Cross-sections included: 11
Total panel observations: 209
Cross-section effects were removed during estimation

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	10.64629	55	1.0000
Pesaran scaled LM	-5.277769		0.0000
Bias-corrected scaled LM	-5.583325		0.0000
Pesaran CD	0.344326		0.7306

p-value associated to LM statistics is" 1 " which is extremely high so we accept the null hypothesis "there is no cross-dependence in residuals".

Normality test :



According to skewness and kurtosis coefficients the residuals have a normal distribution , we enhance this evidence with jaque bera test which probability is bigger than 0,05 thus the null hypothesis is accepted and it conclude that the residuals have a normal distribution.

Based on the autocorrelation and normality tests, we conclude that the fixed

effect model is appropriate to be interpreted on the case of our subject.

From the table above, both of control of corruption and political stability are insignificant. While some variables have a positive effect on the economic growth (Rule of law, regulatory quality) and others have a negative effects (Governance effectiveness and voice and accountability).

$\widehat{GDP}$=0,663407-0,027822GE+0,036513RL+0,018097RQ-0,036929VA

Conclusion:

The establishment of the principles of good governance today is a real demand for the MENA countries, for their opportunities to achieve positive gains at the level of stable economic growth, as it helps the effective use and utilization of financial resources by addressing corruption in all its forms and types and enhancing the values of transparency.

References:

-kaufman, Daniel . la gouvernance dans le monde: constats et implications pratiques. institut de la banque mondiale,2007.

-C.W.J GRANGER, “Panel data econometrics”, Oxford University Press, USA, 2003.

-the world bank, "governance for development in the middle east and north Africa", MENA development report, 2009

-http://www.govindicators.org