The Effect of Corruption on Economic Growth in Arab Oil and Non-Oil Countries for the Period 2007-2017

SAIDI Amer Berrezoug [1*], MARIF Mohamed [2]

[1] University of Dr. Tahar Moulay in Saida, LMEPE Laboratory, Algeria,
amerberrezoug.saidi@univ-saida.dz

[2] University of Dr. Tahar Moulay in Saida, LMEPE Laboratory, Algeria,
mohamedmarif@yahoo.com

Abstract:

The purpose of the research is to compare the impact of corruption on economic growth between Arab oil-producing countries and non-oil-producing Arab countries for the period of time from 2007 to 2017 using cross-sectional data which was processed and analyzed by the Eviews 10 program. The obtained results indicate that there is a difference in the impact between the two groups. Where is a positive effect of corruption on economic growth in Arab oil-producing countries , and a negative effect of corruption on economic growth in Arab non-oil countries This confirms and supports the idea of the existence of two current that explain the relationship between corruption to economic growth.Where the first current suggests that corruption contributes to increasing growth, however the second current supporters that corruption impeds growth.

Keywords: Economic growth, Hausman test, Corruption, Cross-Sectional Data

1. INTRODUCTION

Corruption is an old phenomenon which has a global dimension and complex and rapid spread. Which makes it a difficult problem that haunts societies because it takes broad dimensions in which many factors overlap and cannot be distinguished. As the development of illegal activities and practices that took many different forms and Upward curves that will cause many problems that threaten human societies, systems and people since to

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[*] **Corresponding author**

thretens their stability, social and political security, and undermin their economic prosperity and development. Corruption differs from one country to another according to degree, whether they are developed or developing countries like African and Arab oil economies, which are often traditional rentier economies characterized by poor management of oil revenues, high levels of corruption, and poor development performance.

 The breadth and size of corruption on the one hand, and the complexity of its mechanisms and the intertwining of its circles on the other hand, have increased researchers' interest in studying it. Especially, from the aspect related to the extent of its impact on economic growth, which is a major challenge in the policies adopted by countries, as thes economists Barro and Sala-i-Martin (2004) pointed out « the existence of economic growth differences over the past decades, which was interpreted and translated as differences in living standards that currently exist between countries ». which identify the factors that could enhance or impede growth, which is the main goal of the growth theory, that prompted most institutions international activities in the field of development, like the World Bank, has put good governance at the center of its policy, as corruption is among of the other aspects of low institutional quality and a major factor of impediment to development. The pioneering studies in the field of corruption dating back to Leff (1964) and Leys (1968) have concluded that by improving efficiency, corruption will have positive effects on economic activity, as confirmed by Huntington (1968) and Lui (1986), while Mauro (1995) found a negative impact of corruption on investment and growth. This is also confirmed by the results of studies done by Tanzi and Davoodi (2000), which showed that corruption negatively affects spending and investment, followed by Tanzi and Svensson (2005), which is among the studies whose results concluded that corruption impedes economic growth. .

 Based on the aforementioned, this study aims to determine the impact of corruption on economic growth in some Arab countries (Algeria, Bahrain, Egypt, Jordan, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, the United Arab Emirates, Sudan, and Mauritania) for the period extending from 2007-2017 by relying on the quantitative analysis method and by applying standard methods using Panel data models that mix data between time series and cross sections. These countries are among the developing world countries that suffer from corruption problems that its consequences are reflected on the economic and social aspects .in addition, to find the difference that exists in the impact of corruption on economic growth
between oil and non-oil countries.

Based on the previous statement, we can raise the following research questions:

1.Are there differences in the impact of corruption on economic growth between oil and non-oil Arab countries?

To answer these research questions, we set the following hypotheses:

1.There is an influence of corruption on economic growth in the Arab countries under study.

2.There is a difference in the impact of corruption on economic growth between oil and non-oil Arab countries.

2. Literature Review

There are so many research studies that dealt with the relationship between corruption and economic growth which is considered as one of the greatest challenges that may be faced by many countries in different domains especially economic and social aspects .In fact, there are many factors that determine to which extent these countries may achieve the economic growth that would guarantee a certain standard of living for members of society, among them corruption which is considered as the most influential one. Many different investigations vary in determining the corruption's effects on the economic growth, in one hand, some studies confirm that corruption has a negative impact on growth by placing restrictions on the investment process and creating imbalances in government spending, and in other hand, there are other studies which prove that corruption has a positive impact on economic growth through bribery practices that reduce Bureaucratic obstacles and increase the productive efficiency of economic agents. The following investigations have dealt with this problem :

2.1 Méon, P.-G., & Sekkat, K. (2005).

This study examines the impact of corruption on growth, investment and the quality of governance for a sample of 63 to 71 countries between the years 1970 and 1998. Governance worsens when the indicators of the quality of governance deteriorate, and this is what supports the owners of the idea of sand the wheels against corruption and opposes the owners of the idea of greasing the wheels, which assumes that corruption helps compensate for poor governance. (Méon, P & Sekkat, K 2005)

2.2 Hadhek. Z.(2011).

This article aims to study the impact of corruption on investment and economic growth in 11 countries in the Middle East and North Africa during the period between 2000-2009, using the dynamic Panel data model.

The results of the pilot test indicate a positive impact of political institutions on investment and growth on the one hand. And to the existence of a negative impact of corruption on investment and economic growth on the other hand. (Hadhek, Z 2011)

2.3 SHERA, DOSTI, & GRABOVA.(2014)

This study focuses on researching the impact of corruption on economic growth in 99 developing countries for the period 9309-9330 using Panel models. The results reveale a negative relationship with statistical significance between corruption and economic growth. As for the education index, investment and trade openness, their impact is positive, while the impact of government spending and the inflation rate is stated negative. The study also shows that corruption decreases the number of investors and reduces the expected return on public spending. (Shera,A., Dosti, B., & Grabova,P, 2014)

2.4 Anh, Minh, &Tran-nam.(2016)

This study examines the impact of corruption on economic growth in Vietnam 2000-2012, using the Ordinary Least Squares (OLS) method, and the study comes to prove the negative impact of corruption on economic growth, while capital Human (education) and investment had a positive impact on economic growth. (Anh.N, Minh.N,Tran-nam.B, 2016)

2.5 Linhartova & Zidova.(2016)

This article focuses on researching the impact of corruption on economic growth in the European Union in the period 1999-2014, using Panel models. The empirical study proves the validity of the hypothesis related to the negative impact of corruption on economic growth, government spending and investment positively affect economic growth. (Linhartova.V., Zidova.E, 2016)

2.6 Girijasankar. M; Shrabani. S (2016).

This study examines the relationship of corruption and its negative effects on growth for a sample of 146 countries for the period between 1984 to 2009 by examining the effects using multiple regression to assess the relationship after controlling the economic and institutional factors.The findings were contrary to what was stated in the literature on the negativity of the relationship between growth and corruption. New conclusions have

emerged showing that corruption is not necessarily an impediment to economic growth for some countries, but rather is considered a stimulator. Thus ,it reinforces the hypothesis of greasing the wheels.

The researcher used the method of generalized moments on Panel data, whose results indicated that corruption is a stimulator for growth in countries with high levels of corruption, by reducing administrative procedures. (Girijasankar, M., & Shrabani, S 2016)

Ondo, A. (2017)

This study aims to identify the impact of corruption on the economic growth in African countries belonging to the Economic and Monetary Group of Central Africa (CEMAC), as the researcher relied in his study on cross-sectional data for the period between 2005 and 2015 in order to show that corruption contributes to economic growth. In the context of CEMAC countries, by overcoming and easing obstacles by reducing the administrative burdens that impede and inhibit the process of accessing public services such as health, education and other services like gas and electricity.

The results show that there is a positive relationship between corruption and economic growth, and this supports the idea that corruption plays the role of grease, that plays an important role in the resilience of rigid and difficult management wheels, which makes the process of circumventing administrative burdens and laws possible in these countries under study. The researcher adds the importance of distinguishing between the effects of corruption on growth and transmission channels. (Ondo 2017).

3. The Relationship Between Corruption and Economic Growth

Economic growth is a major goal in the policies adopted by all countries of the world through which their economic well-being is achieved. Several definitions of economic growth came as it was defined as the increase in the average per capita real gross national income for a specific period of time. (Adjima.M & al, 2006)

It is also achieved througts the amount of the long-term increase in domestic production, as growth considers the increase in the volume of gross production and it is a progressive, cumulative phenomenon. (lacaillon 1972)

It is also assumed that increase in the volume of production of goods and services provided to a country or state ; so, that the increase in economic growth is preferred over the rate of population growth because it increases the standard of living of individuals. (Sakri.A, 2005, p. 05)

The rise or fall of economic growth is controlled by a set of factors and determinants that will negatively or positively affect this economic indicator, which is reflected in the standard of living of individuals and the degree of development or backwardness of countries similar to the phenomenon of corruption, which is one of the most important factors. Affecting economic growth, as International Transparency defines it as "the abuse of power for private purposes." (Transparency 2004)

Whereas the World Bank defines it as "the abuse of public power in order to obtain private gain". (World Bank development 1997)

For Tanzi, believes that corruption is that behaviour which deviates from the basic duties related to public office in order to achieve a personal or collective interest. (Antara.B;Mustapha.A, 2009, p. 26)

It is clear for us that through the definitions of corruption previously provided that it is a phenomenon that deserves a great attention and in-depth study to know its various effects on the different fields ; especially, on economic growth, in which many studies have confirmed that there is a variation in this effect.Bisides, we do find many studies

that confirm the existence of a positive impact of corruption on the economic growth however, there are other studies that show the presence of a negative impact of corruption on economic growth. Among them, there is some studies that support the idea that corruption has a positive effect on economic growth, represented by the study of Leff (1964), which concludes that corruption may increase the possibility of avoiding administrative strictness and overcoming bureaucratic obstacles. Followed by the study of Leys (1968), which concludes that corruption can improve efficiency and remove restrictions and obstacles imposed by the state on investment that would disrupt economic decisions leading to economic growth. This is what is confirmed by Huntington's study (1968), while Lui (1985) supports these views and the results added to this idea that corruption leads to lower waiting costs, and this increases the effectiveness of decision-making among officials.

Thus, corruption becomes a desirable thing while it emerges. The results of the Mallik and Saha study (2016), which investigates the relationship between economic growth and corruption for a sample of 146 developed and developing countries. It confirmes that there is no negative impact of corruption on economic growth. As for the studies that show the negative impact of corruption on economic growth, we find the Mauro study (1995) that concludes corruption inhibits investment and there will be a decline in economic growth and lack of its acceleration. Followed by the research study of Tanzi and Davoodi (2000), which shows that corruption negatively affects spending , investment and economic growth. This is confirmed by Ndikumana (2009) study .L; Baliamoune-lutz M., whose results indicate that corruption has a negative effect on domestic investment and a positive effect on public investment and negatively on private investment.Followed by the study of Dridi, M. (2013), whose results highlight that corruption negatively affects economic growth through its impact on human capital and political instability .Then comes Agostino Study. Agostino.G et All (2016), showing that countries that have insecurity and political repercussions have more negative effects of corruption on economic growth than the countries in which there is some stability, under the pretext that these countries have high military burdens.

4. Methodology

In order to get a deep insight in this research study, the researchers have choosen a target sample which involves twelve (12) Arab countries (Algeria, Bahrain, Egypt, Jordan, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, United Arab Emirates, Sudan, Mauritania) during the period time 2007 to 2017. These countries are divided into two groups. The first group, includes oil-exporting Arab countries and the second group, includes non-oil-exporting Arab countries. Two main variables were used by the researchers :
-Dependent variable represented by the growth rate of the gross domestic product variable (DGP) obtained from the World Bank database.
-Independent variables represented by the human capital variables (HC) (measured by the enrollment rate in secondary education), private investment (INV) (determined by gross fixed capital formation) and openness trade (Opt)

(which is the sum of imports plus exports as a percentage of GDP),government spending (GS) were obtained from the World Bank database.While the Civil liberty variable(CL) obtained from Freedom House, which is measured on the basis of the Global Index of Civil Freedom ,which involves from 1to7 scales ; so that scores (6 and 7) refer to the countries where there is no respect for the laws and whose citizens live in fear and opression. While the lower scores (1 and 2) refer to the countries that respect freedom of expression, assembly, religions ,and association). However, for the corruption variable (CPI), was obtained from Transparency International data, which was measured by the Corruption Perceptions Index, which ranks countries on a scale from 0 to 100 (0 refers to the most corrupted countries and 100 refers to the most cleanest countries). Logarithm has been introduced into human capital and private investment.

5. Materiels and Methods

The model of this study represented below, is a linear relationship that studies the direct impact of corruption on economic growth. According to what was suggested by Ondo (2017), which in his turn based on what was assumed by Mauro (1995) and Pelligrini and Gerlagh (2004) of endogenous growth. where economic growth (DGPit) is determined by corruption (CPIit) and the standard variables of economic growth (X1) and institutional variables (X2), and accordingly, economic growth (DGPit) becomes the internal variable of the model, which is defined by the growth rate of GDP . Thus ,the relationship is set as follow:

$$DGP \ it = \alpha_0 + \alpha_1 CPI \ it + \beta X1it + \beta X2 \ it + \varepsilon_{it} \ \dots\dots\dots\dots\dots\dots. \quad (1)$$

DGP it : Economic Growth   CPIit :Corruption
X1it: Standard Variables for Economic Growth (HC, INV, GS, Opt)
X2it: Institutional Variables (CL, CPI)
Based on the variables adopted in this research study and described in the methodology, the following equation is determined:

$$Dgpit = \alpha i + \alpha_1 CPIit + \beta_2 HCit + \beta_3 INVit + \beta_4 CLit + \beta_5 \ Opt \ it + \beta_6 GSit + \varepsilon_{it}..(2)$$

α: basic individual effect; $(\beta_1 , \beta_2 , \beta_3 , \beta_4 , \beta_5 , \beta_6)$ parameters estimated;
ε_{it}: the term of the error
i :is the individuals of the panel , t: represent the index of time; i=1 …10, t=2007....2017

6. Results

We test the specifications (homogeneity, heterogeneity) by estimating the equation 2 by using Panel data static through set of steps, where the first step includes Fisher's homogeneity test, which enables us to accept or reject the homogeneity hypothesis of the model to be measured for all countries under study. The second step, is an estimation of the individual effect specifications, where the estimated models differ from one country to another according to the value of the constant, and from here we get two models, which are fixed effect models and random effect models.

The third step, is to determine whether the model has a fixed effect or a random effect, through the Hausman test (1978), where if the statistical probability of the latter is less than 5%, a random effect model is used.

For the fourth step, we will verify that there is no autocorrelation and heterogeneity of variance.

Then we divide the overall Panel data into two groups: the first group is composed from Panel data for oil Arab countries, and the second group is composed of Panel data for non-oil Arab countries.

The findings indicate that the model has individual effect characteristics according to the homogeneity test for Arab countries and according to the statistical result of Hausman's test (1978) which supported the hypothesis that the model has a fixed effect (chi2 = 55.41> prob).

After we have got acquainted with the approved model, the dummy indicator was included to obtain two PANEL groups. From the estimation of the economic growth equation for the Arab oil and non-oil countries, and by estimating the model, the results obtained are as follow:

Table N° (01) : The Results of Estimated Economic Growth Equation of The Arab Oil and Non-Oil Countries

	Abbreviation	Arab Oil Countries	Arab Non-Oil Countries
Growth rate of GDP per capita	Dgp	Coefficient	Coefficient
Constant	Cst	1.717719	2.985433**
Corruption	CPI	0.010550*	-0.061839*
Civil Liberty	CL	0.183344***	0.021309

Government Expending	GS	-0.008498**	-0.011432*
Human Capital	HC	-0.011481***	-0.004217*
Private Investment	INV	0.332290***	0.222681***
Commercial Opening	Opt	-0.290059**	0.022637

Source :Prepared by the researchers based on the output of Eviews 10
Note: *** significant is at 1% error level ; ** significant at 5% error level ; * significant at 10% error level.

From the results shown in Table No. 1, we conclude that there is a positive and statistically significant relationship between corruption and economic growth at the limits of 10 % in the oil-producing Arab countries, while there is a negative relationship between corruption and economic growth in non-oil Arab countries and statistically significant at the limits of 10% . This confirms the validity of the two hypotheses which conclude that there is an effect of corruption on economic growth in Arab countries, and there is also a difference in this effect between oil and non-oil Arab countries. However,the effect was positive for oil- Arab countries and this is consistent with the study Ondo.A (2017) and Girijasankar.M; Shrabani.S (2016) and Hadhek.Z (2011).Which proves that corruption is not necessarily an obstacle to economic growth for some countries, but rather is considered a stimulator . Thus, it reinforces the hypothesis of grease the wheels by overcoming and reducing obstacles, and administrative burdens that inhibit the process of accessing public services. The effect was negative for non-oil Arab countries, and this is confirmed by the study of Agostino.G et All (2016), Dridi, M, Méon, P.-G., & Sekkat, K. (2005), Tanzi and Davoodi (2013). (2000) which illustrates the negative impact of corruption on growth and supports the idea of sanding the wheels of economic growth.

From Table 1, We notice also the existence of a negative statistically significant relationship between government expenditure and economic growth at limits of 5% for oil- Arab countries and at the limits of 10% for non-oil Arab countries. As well as, between human capital and economic growth at the limits of 1% and 10%, respectively, for Arab oil and non-oil states, which indicates the extent of the future vision weakness and economic

outlook for Arab countries. In addition, to non-directed government expenditure to the areas that society could benefit from it. This expenditure may be the source of support to social policies. For the negative relationship between economic growth and human capital, it indicates that Arab countries do not use their workers ressources and do not exploit them perfectly, whether it comes to financing new promising ideas or supporting creative projects. Therefor, these countries do not benefit from the outputs of education for which they set a significant budget from their government expenditure. Which means   that the workforce that have educational certificates do not contribute in creating the additional value of society in the form of gained knowledge and experiences to support the creation of wealth and economic growth.So, it is just an unexploited workersforce that costs arm and leg for nothing.

The results shown in Table No. 1 indicate also the existence of a positive relationship between civil liberty and economic growth in all countries, which is significant at the limits of 1% for oil states and non- significant for non-oil states, which indicates the improvement of civil liberty in these countries in the light of protectionist social policies. The results also indicate a positive relationship between private investment and economic growth, which is significant at the limits of 1% for oil and non-oil countries, which expresses a good recovery of private investment through of directed projects to strengthening the infrastructure and basic structures. So, concerning trade openness, we notice that it has a negative impact and significant at the limits of 5% on economic growth for oil-Arab countries, and it has a positive and insignificant effect on non-oil Arab countries

7. CONCLUSION

This study examines a comparison of the relationship between corruption on economic growth in oil and non-oil Arab countries by using panal data for the period between 2007 and 2017. The obtained results indicate that there is a difference in the effect of corruption on economic growth ; so, this effect differs accordingly betwen these countries differenciation. We distinguish that there is a negative impact on economic growth for non-oil Arab countries and this is due to the fact that this group

of country has a difficulty in providing the necessary financing to achieve the development process.Infact, it depends on other sources such as tourism and relaying on foreign debt, taxes and other sources to finance its needs.

This leads to the emergence of problems and the possibility of circumventing to obtain other sources of financing. Moreover, a new face of corruption form raises in this country.While it has a positive impact on economic growth in Arab oil states, and this explains why corruption may support economic growth by overcoming obstacles and reducing administrative and bureaucratic burdens that would impede the investment and access to public services. Consequantly, Oil Arab countries are   mainly relaying on the oil-rents as a source of direct income to cover their needs and government expenditure to create surpluses and financial reserves for involving them in expanding private and public investment operations and implementing basic structures and infrastructure in various sectors that can play a positive role in achieving economic growth.

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Remark : Abreviation

OCOM= Opt   HK=HC   DGOV=GS

6. Appendices

Appendice N° 01 : The Pooled Least Squares Estimation

Dependent Variable: DGP?
Method: Pooled Least Squares
Date: 03/07/20   Time: 11:13
Sample: 2007 2017
Included observations: 11
Cross-sections included: 12
Total pool (balanced) observations: 132

Variable	Coefficient	Std. Error	Statistic	Prob.
C	2.153738	1.142312	1.885420	0.0619
HK?	-0.005644	0.002192	2.575218	0.0113
CPI?	0.007804	0.031879	0.244803	0.0807
CL?	0.054288	0.025068	2.165606	0.0324
DGOV?	-0.006736	0.002602	-2.588223	0.0109
OCOM?	-0.198345	0.073108	-2.713025	0.0077
INV?	0.299443	0.039696	7.543435	0.0000
Fixed Effects (Cross)				
_1--C	-1.557941			
_2--C	2.481722			
_3—C	-1.195541			
_4—C	0.561404			
_5--C	-0.961593			
_6--C	-1.116954			
_7--C	2.359224			
_8—C	0.653993			
_9--C	0.138865			
_10--C	1.700264			
_11--C	-1.513709			
_12--C	-1.549735			

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.990754	Mean dependent var	8.739809
Adjusted R-squared	0.989375	S.D. dependent var	1.088386
S.E. of regression	0.112187	Akaike info criterion	1.411178
Sum squared resid	1.434791	Schwarz criterion	-1.018069
Log likelihood	111.1378	Hannan-Quinn criter.	-1.251437
F-statistic	718.5716	Durbin-Watson stat	0.855340
Prob(F-statistic)	0.000000		

Source :Prepared by the researchers based on the output of **Eviews 10**

Appendice N° 02 : Fixed -Effects Estimation

Dependent Variable: DGP
Method: Panel Least Squares
Date: 03/07/20   Time: 11:21
Sample: 2007 2017
Periods included: 11
Cross-sections included: 12
Total panel (balanced) observations: 132

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.153738	1.142312	1.885420	0.0619
CPI	0.007804	0.031879	0.244803	0.0807
DGOV	-0.006736	0.002602	-2.588223	0.0109
HK	-0.005644	0.002192	-2.575218	0.0113
INV	0.299443	0.039696	7.543435	0.0000
OCOM	-0.198345	0.073108	-2.713025	0.0077
CL	0.054288	0.025068	2.165606	0.0324

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.990754	Mean dependent var	8.739809
AdjustedR-squared	0.989375	S.D. dependent var	1.088386
S.E. of regression	0.112187	Akaike info criterion	-1.411178
Sum squared resid	1.434791	Schwarz criterion	-1.018069
Log likelihood	111.1378	Hannan-Quinn criter.	-1.251437
F-statistic	718.5716	Durbin-Watson stat	0.855340
Prob(F-statistic)	0.000000		

Source :Prepared by the researchers based on the output of **Eviews 10**

Appendice N° 03 : The Random -Effects Estimaion

Dependent Variable: DGP
Method: Panel EGLS (Cross-section random effects)
Date: 03/07/20   Time: 11:25
Sample: 2007 2017
Periods included: 11
Cross-sections included: 12
Total panel (balanced) observations: 132
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.794719	1.026581	3.696465	0.0003
CPI	0.051134	0.031027	1.648047	0.0102
DGOV	-0.006690	0.002589	-2.584613	0.0109
HK	-0.001990	0.002091	-0.951823	0.3430
INV	0.217644	0.034283	6.348374	0.0000
OCOM	-0.177510	0.070495	-2.518034	0.0131
CL	0.058684	0.024729	2.373081	0.0192

Effects Specification		S.D.	Rho
Cross-section random		0.602773	0.9665
Idiosyncratic random		0.112187	0.0335

Weighted Statistics			
R-squared	0.368451	Mean dependent var	0.489679
Adjusted R-squared	0.338137	S.D. dependent var	0.162889
S.E. of regression	0.132518	Sum squared resid	2.195130
F-statistic	12.15434	Durbin-Watson stat	0.606549
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	-0.346318	Mean dependent var	8.739809
Sum squared resid	208.9222	Durbin-Watson stat	0.006373

Source :Prepared by the researchers based on the output of **Eviews 10**

Appendice N° 04: The Hausman Test

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	55.412020	6	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CPI	0.007804	0.051134	0.000054	0.0000
DGOV	-0.006736	-0.006690	0.000000	0.8661
HK	-0.005644	-0.001990	0.000000	0.0000
INV	0.299443	0.217644	0.000400	0.0000
OCOM	-0.198345	-0.177510	0.000375	0.2821
CL	0.054288	0.058684	0.000017	0.2849

Cross-section random effects test equation:
Dependent Variable: DGP
Method: Panel Least Squares
Date: 03/07/20   Time: 11:27
Sample: 2007 2017
Periods included: 11
Cross-sections included: 12
Total panel (balanced) observations: 132

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.153738	1.142312	1.885420	0.0619
CPI	0.007804	0.031879	0.244803	0.8070
DGOV	-0.006736	0.002602	-2.588223	0.0109
HK	-0.005644	0.002192	-2.575218	0.0113
INV	0.299443	0.039696	7.543435	0.0000
OCOM	-0.198345	0.073108	-2.713025	0.0077
CL	0.054288	0.025068	2.165606	0.0324

Effects Specification				
Cross-section fixed (dummy variables)				

R-squared	0.990754	Mean dependent var	8.739809
Adjusted R-squared	0.989375	S.D. dependent var	1.088386
S.E. of regression	0.112187	Akaike info criterion	-1.411178
Sum squared resid	1.434791	Schwarz criterion	-1.018069
Log likelihood	111.1378	Hannan-Quinn criter.	1.251437
F-statistic	718.5716	Durbin-Watson stat	0.855340
Prob(F-statistic)	0.000000		

Source :Prepared by the researchers based on the output of **Eviews 10**

Appendice N° 05 :The Model of Arab Oil Countries

Dependent Variable: DGP

Method: Panel Least Squares

Date: 03/07/20   Time: 11:51

Sample: 2007 2017 IF PP=1

Periods included: 11

Cross-sections included: 7

Total panel (balanced) observations: 77

Variable	Coefficient	Std. Error	Statistic	Prob.
C	1.717719	1.758735	0.976679	0.3324
CPI	0.010550	0.040548	0.260197	0.0795
CL	0.183344	0.053447	3.430411	0.0011
DGOV	-0.008498	0.003427	-2.479498	0.0158
HK	-0.011481	0.003925	-2.925034	0.0048
INV	0.332290	0.059595	5.575841	0.0000
OCOM	-0.290059	0.109271	-2.654496	0.0100

Effects Specification			
Cross-section fixed (dummy variables)			

R-squared	0.990337	Mean dependent var	9.176160
Adjusted R-squared	0.988525	S.D. dependent var	1.141244
S.E. of regression	0.122254	Akaike info criterion	-1.212695
Sum squared resid	0.956544	Schwarz criterion	-0.816987
Log likelihood	59.68875	Hannan-Quinn criter.	-1.054415
F-statistic	546.5717	Durbin-Watson stat	1.072321
Prob(F-statistic)	0.000000		

Source :Prepared by the researchers based on the output of **Eviews 10**

Appendice N° 06 : The **Model of Arab Non-Oil Countries**

Dependent Variable: DGP
Method: Panel Least Squares
Date: 03/07/20   Time: 11:54
Sample: 2007 2017 IF PP=0
Periods included: 11
Cross-sections included: 5
Total panel (balanced) observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.985433	1.169184	2.553433	0.0142
CPI	-0.061839	0.049759	-1.242778	0.0220
CL	0.021309	0.023587	0.903420	0.3712
DGOV	-0.011432	0.005683	-2.011620	0.0504
HK	-0.004217	0.002155	-1.956529	0.0568
INV	0.222681	0.043738	5.091252	0.0000
OCOM	0.022637	0.110006	0.205779	0.8379

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.987411	Mean dependent var	8.128917
Adjusted R-squared	0.984550	S.D. dependent var	0.623741
S.E. of regression	0.077531	Akaike info criterion	-2.099432
Sum squared resid	0.264484	Schwarz criterion	-1.697965
Log likelihood	68.73437	Hannan-Quinn criter.	-1.944181
F-statistic	345.1074	Durbin-Watson stat	0.809642
Prob(F-statistic)	0.000000		

Source :Prepared by the researchers based on the output of **Eviews 10**