

# Does Good Governance Spur Economic Growth Outside the Hydrocarbon Sector? Empirical Evidence from Algeria (2002-2017)

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## Abstract

The current study aims to investigate the impact of good governance variables on economic growth outside hydrocarbon sector (Real GDP growth in all other sectors except hydrocarbon) in Algeria, based on annual time series data over (2002-2017) using the (ARDL) approaches. The results show the significant effect of control corruption index(CC),and government effectiveness index(GE) on economic growth in Algeria in both short and long run ,while there is the absence of any significant effect of rule of law index(RL) on economic growth neither in the short nor long run.

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**Keywords:** Good Governance, Economic Growth, ARDL approach

## I. Introduction:

Good governance means the good management of country's resources and the fighting of corruption. This has an important effect on fiscal variables (public spending and public revenues), whereas the public spending may be helpful to raise the economic growth by developing the institutions like maintaining the law and order, protection of property rights, controlling corruption, that may promote agregate demand, which immediately spurs economic growth.

Algeria is one of the developing countries that are well endowed with natural resources; especially on oil exports as a major source, this property makes Algeria's economic growth more vulnerable to oil prices fluctuations.

This study attempts to analyze the relationship between good governance (proxied by WGI: worldwide governance indicators) and economic growth outside the hydrocarbon sector (real GDP outside hydrocarbon sector as indicator), as such:

Does good governance affect economic growth outside hydrocarbon sector in Algeria?

In order to answer this , the following hypotheses are formulated:

H<sub>1</sub>: The control corruption index has a significant effect on economic growth outside hydrocarbon sector in Algeria.

H<sub>2</sub>: The government effectiveness index has a significant effect on economic growth outside hydrocarbon sector in Algeria.

H<sub>3</sub>: The rule of law index has a significant effect on economic growth outside hydrocarbon sector in Algeria.

## **II. Literature Review:**

Several studies have attempted to model the relationship between good governance and economic growth, by taking all the six sub-indices of governance constructed by World Bank with effort of Kaufmann,Kraay,and Mastruzzi (Kaufmann.D,Kraay.A,Mastruzzi.M, 2010),or by taking just some dimensions.

It is noted that most of these studies were based on cross-sectional data for groups of countries in a particular years. (Kaufmann.D,Kraay.A, 2003).Using the six sub-indices of good governance, they found a strongly positive relationship between the quality of governance and economic growth across countries, and this causal effect was running from good governance to higher per capita income.

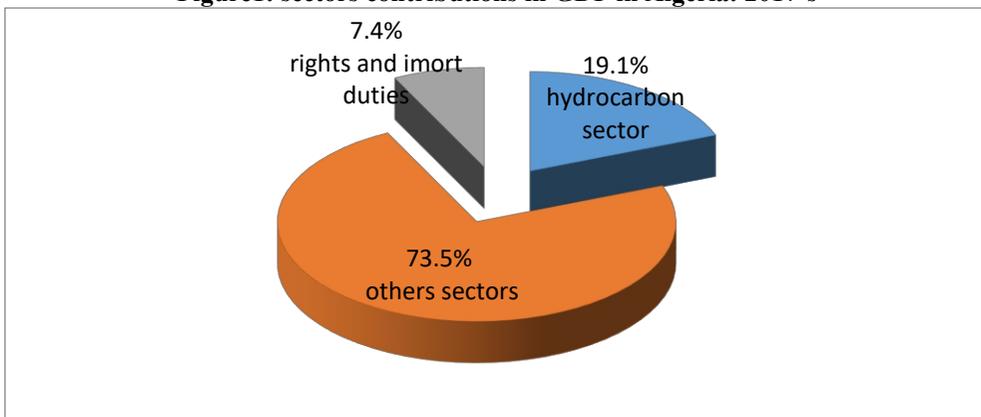
Some other authors such as (Rodrik.D, 2008) argues that there are many countries that are growing rapidly despite poor governance, and governance is generate not prerequisite for getting growth, and he also opines that as a rule broad governance reform is neither necessary nor sufficient for growth. Recently, (Brigulio.L, 2016) study the state governance in the small Island developing states by comparing these states among themselves, utilizing three indicators relating to political, economic and social governance which are: rule of law, the macro-stability sub-index of the economic resilience index ,and non-income component of the human development index respectively, he found that this three governance indicators are positively correlated with GDP per capita but negatively correlated with GDP growth.More recently (Jiandang Liu,Jie Tang,Bo Zhou,Zhijun Liang, 2018) investigates the impact of governance quality on economic growth in China,using panel data in provincial regions over the period 2001–2015,the results show that governance quality has a positive effect on economic growth, due to good governance strengthening the “helping hand” or weakening the “grabbing hand” of power.

## **III.The good governance index and economic growth outside hydrocarbon sector in Algeria: facts and indicators**

The Algerian economy is a sensitive economy to fluctuation in oil prices, oil sector contributes significantly to the gross domestic product

(GDP). In 2017, the hydrocarbon sector form 19.1% of the GDP compared to 73.5% for the various sectors (public administration, services, services outside of public administration, construction works sector, industry and agriculture), 7.4% for the rights and import duties, as shown in the following figure:

**Figure1: sectors contributions in GDP in Algeria: 2017's**



**Source:** author using Central Bank of Algeria data.

The high rise in oil prices, promoted the government to pursue an economic policy based on the expansion of public spending through the adoption of a series of programs to support growth since 2001.

Although this policy has allowed the restoration of macro-economic balances, it hasn't eliminated dependence on the hydrocarbons sector and remains so sensitive to external shocks .The explanation for this situation is not the low level of investment but the irrational use of public expenditures, the poor performance of institution (the bureaucracy, corruption,...), and the absence of transparency in the conduct of these expense (Aidaoui, 2016).

During the period of implementation of the economic recovery program 2001-2004, the average economic growth rate reached 4.7%, while during the implementation of the supplementary program to support growth 2005-2009, and the growth consolidation program 2010-2014, it reached an average of 2.9%.

If we distinguish between the growth rates realized from hydrocarbons sector and non-oil sector, we noted that during 2002-2005, growth rate within the hydrocarbons sector were positive, while in 2006'and, 2009' it was negative, due to the deterioration in oil prices, especially with the beginning of the financial crises in late 2007'.

As for, the growth rates achieved outside the hydrocarbons sector, they were also positive except the agricultural sector which recorded fluctuating rates. The following table shows the evolution of average growth rates during 2001-2014.

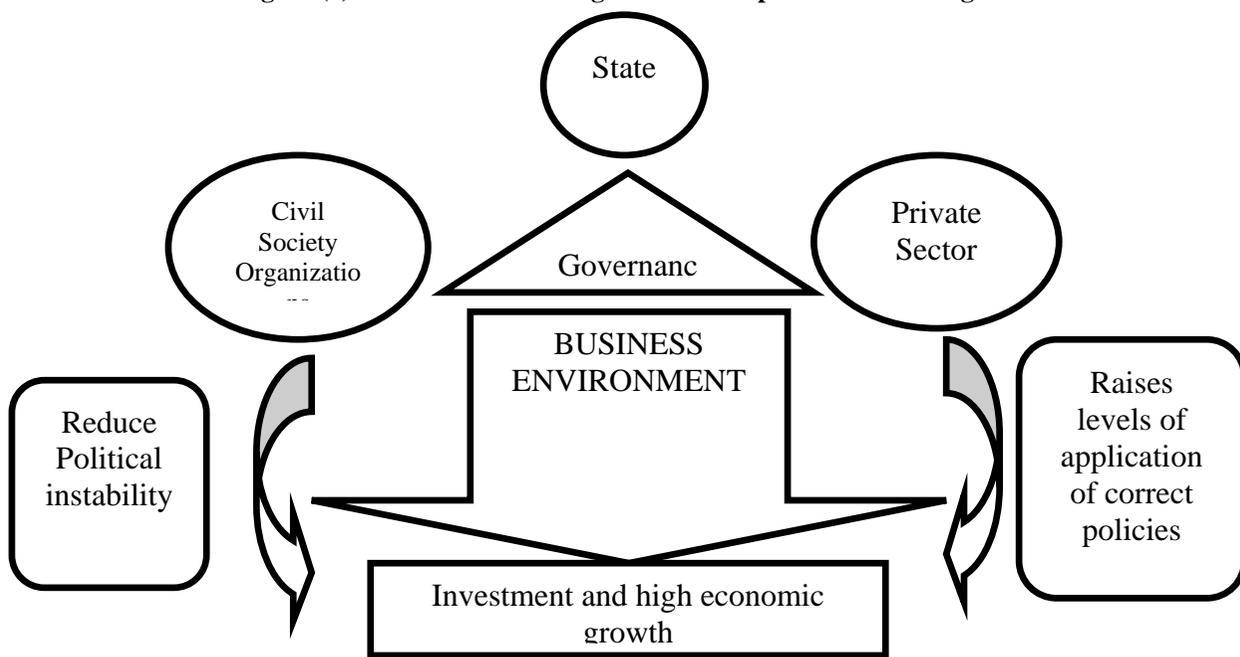
**Table: Average Growth rate**

Year average growth rate%	Economic Recovery Program 2001-2004	Supplementary Program to support Growth 2005-2009	growth consolidation Program 2010-2014
Hydrocarbons Sector	+3.5%	-1.5%	-3%
Non-Oil Sector	+5.5%	+6.4%	+6.5%
GDP%	+4.7%	+2.9%	+2.9%

**Source:** annual reports of Algeria bank.

Studies of the World Bank have reported a correlation between the improvement of governance indicators and the high rate of economic growth in most countries.

**Figure (2): The mechanisms of governance impact on economic growth**



**Source:** (Ahmed Jasim Mohammad, 2011, p. 15)

World Bank study by Kaufmann.D,Kraay.A,Mastruzzi.M, (2010) had produced a composite index compiled from sub-indices produced by 31 competent authority in this field, it covered more than 200 countries in the world since 1996.This indicators is called: worldwide governance indicators (WGI), which contains six sub-indices, each of them measured one of the dimensions of the good governance.

This indicators score range from -2.5 to +2.5, negative scores are the worst, while the positive one (towards +2.5) reflect the best cases of good governance(Kaufmann.D,kraay.A,Mastruzzi.M, 2008).

#### **IV. Research Methodology:**

##### **4.1. Data collection:**

Time series data from 2002-2017 of the related variables were collected from (World Bank, 2018) data, and annual rapports of Algeria bank. The variables are:

- Real GDP annual growth rate outside hydrocarbon sector as indicators of economic growth. and as proxy variables of good governance,we have:
- Control corruption index: capturing perceptions of extent to which public power is exercised for private gain, including both small and big forms of corruption.
- Rule of law index: capturing perceptions of the extent to which agents have confidence in and abide by the rule of society, and in particular of contract enforcement, property rights, and the likelihood of crime and violence.
- Government effectiveness index: capturing perceptions of the quality of public services, the quality of the civil services 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.

##### **4.2. Model Specification:**

Since the objective of this study is to examine the causality between good governance and economic growth outside hydrocarbon sector, and if good governance spurs non-hydrocarbon economic growth in Algeria, the study adopts the following model:

$$Y_t=f(CC,GE,RL)$$

Where:

Y<sub>t</sub>: economic growth outside hydrocarbon

CC: conrol corruption index

GE: government effectiveness index

RL: rule of law

Since the objective of this study is to investigate the (short/long run) impact of good governance on non-hydrocarbon economic growth in Algeria, we used the error correction model (ECM) and co-integration analysis, and employed the Auto-Regressive Distributed Lag (ARDL) approach.

The (ARDL) representation of equation is specified as:

$$\Delta \text{RGDP}_t = \alpha_0 + \alpha_1 \text{RGDP}_{t-1} + \alpha_2 \text{CC}_{t-1} + \alpha_3 \text{GE}_{t-1} + \alpha_4 \text{RL}_{t-1} + \sum \phi_{1i} \Delta \text{RGDP}_{t-i} + \sum \phi_{2i} \Delta \text{CC}_{t-i} + \sum \phi_{3i} \Delta \text{GE}_{t-i} + \sum \phi_{4i} \Delta \text{RL}_{t-i} + U_t \dots\dots\dots (1)$$

Where:

- Δ: the first difference operator
- α<sub>0</sub>: drift parameters
- α<sub>i</sub>: long run parameters
- φ<sub>ji</sub>: short run parameters
- U<sub>t</sub>: error term

Before estimating the model, we tested the stationarity of time series under study using (ADF) and (PP) test, which test the null-hypothesis (H<sub>0</sub>): "there is a unit root "which means non-stationarity of time series.

Then, we estimated the (ADRL) approach as follows:

- Step1: is to test if there is a long run relationship between variables under study using Bounds test.
- Step2: is estimate the (ARDL) model represented in equation (1).
- Step3: is to estimate the (ARDL)-(VECM) represented in the following equation:

$$\Delta \text{RGDP}_t = \phi_0 + \sum \phi_{1i} \Delta \text{RGDP}_{t-i} + \sum \phi_{2i} \Delta \text{CC}_{t-i} + \sum \phi_{3i} \Delta \text{GE}_{t-i} + \sum \phi_{4i} \Delta \text{RL}_{t-i} + \zeta \text{ECT}_{(t-1)} \dots\dots\dots (2)$$

Where:

- ζ: the speed of adjustment of parameters from short to long run equilibrium following a shock to system
- ECT<sub>(t-1)</sub>: Residuals obtained from equation (2).

## V. Results and Discussion:

### 5.1. Unit Root Test:

In order to test the stationarity of time series, we have used the augmented ducky fuller (ADF) and Philips-Peron (PP) tests. The following tables summarize the results obtained in both tests:

**Table (1): ADF AND PP Tests**

variables	ADF		PP		Results
	level	1st Diff	level	1st Diff	
RGDP%	-0.811194	-2.757769*	-0.743648	-4.430504*	I(1)*
CC	-2.72525***	/	-4.055196*	/	I(0)***
GE	-3.867194**	/	-2.696553***	/	I(0)***
RL	-2.733832	-2.844743*	-2.597928	-4.128608*	I(1)*

Source: author

Note: \*, \*\*, \*\*\* significance level at 1%, 5%, and 10% respectively.

From the table above, we noted that each of real GDP growth outside hydrocarbon (RGDP %) and rule of law index (RL) are stationary at: I (1) at 1% significance level, while the control corruption index(CC) and government effectiveness index(GE) are stationary at :I(0) at 10% significance level. In

this context, we cannot apply the Johansson-co integration approach since the time series wasn't stationary at the same level. So we have use the Auto-Regressive Distributed Lag(ARDL) approach which doesn't require that the time series be co-integrated at the same level, which is appropriate with the current results, and we can also applied the bounds test were the time series can be stationary at: I(0) or I(1) or both I(1)and I(0),but not stationary at :I(2).

**5.2. The Auto-Regressive Distributed Lag (ARDL):**

After determining the stationary level of time series under study, we have applied the (ARDL) approach in Algeria based on annual time series data from 2002-2017.

▪ **Step1:Bounds Test**

In order, to investigate if there is a co-integration relationship between variables under study using bounds test. We have estimated the (ARDL) model considering the economic growth outside hydrocarbon as a dependant variable, and the good governance variables (CC ,GE, RL index) as independent variables. The null hypothesis in this test is:

H<sub>0</sub>:"no co-integrated relationship between variables' --► means no long run relationship between variables.

$$\begin{cases} H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0 \\ H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0 \end{cases}$$

If F-Statistics was more than upper bound I(1),so we reject (H<sub>0</sub>) and accept (H<sub>1</sub>),and vice versa if F-Statistics was less than lower bound I(0).

The following table shows the results of bounds test:

**Table (2): bounds test results**

	F-Statistics		Result
	<b>19.134002</b>		There is a long run relationship
critical value at K=3	Lower bound I(0)	upper bound I(1)	
1%	3.42	4.84	
2.5%	2.87	4.16	
5%	2.45	3.63	
10%	2.01	3.1	

**Source:** author

**Note:** K: number of independent variables in the model.

From table-2-, we see that the F-Statistics is more than upper bound, so we reject H<sub>0</sub> and accept H<sub>1</sub>, which means the existence of a long run relationship between variables under study.

▪ **Step2:ARDL model estimation**

From the precedent text-bounds test-,we have investigated that there is a long run relationship between variables under study evidenced by F-Statistics value, so we can use the (ARDL) approach to estimate this relationship, as the results show in the following table:

**Table (3): ARDL estimation results**

Variables	Coefficients	std deviation	T-statistics	Prob
RGDP(-1)	0.413462	0.285153	1.449969	0.1851
CC	7.321510	6.018723	1.216456	0.2585
CC(-1)	7.835453	5.139998	1.524408	0.1659
GE	-17.99315	8.413710	-2.138551	<b>0.0649</b>
GE(-1)	-13.16182	9.537712	-1.379977	0.2049
RL	0.932391	5.932255	0.157173	0.8790
RL(-1)	5.328919	6.499652	0.819878	0.4360
R <sup>2</sup> =0.72				

Source: author

From table-3-,we see that just the GE index was significant at 10% in the long run, while all others variables doesn't have a significant effect in the long run.

▪ **Step3:Vector Error Correction Model:VECM-ARDL**

As the existence of a long run relationship between variables(co-integrated relationship exist),we can estimate(VECM) in order to estimate the speed of adjustment of parameters from short to long run equilibrium following a shock to system( $\zeta$  in equation2) as noted in the following table:

**Table (4): ECM estimate results**

Variables	Coefficients	std deviation	T-statistics	Prob
D(CC)	7.321510	3.444331	2.125669	<b>0.0662</b>
D(GE)	-17.99315	5.595959	-3.215383	<b>0.0123</b>
D(RL)	0.932391	4.743587	0.196600	0.8490
ECT <sub>(-1)</sub>	-0.586538	0.144108	-4.070114	<b>0.0036</b>

Source: author.

From results in table-4-,we see that error correction coefficients is significant at 1%(prob=0.0036),which means that there is a correction from short term to long term with adjustment speed up to 58.65%,so the model correct 58.65% of fluctuation in economic growth rate outside hydrocarbon sector.

Also, we noted that both CC index and GE index have a significant effect on economic growth in the short term.

**Table (5): long run coefficients**

Variables	Coefficients	std deviation	T-statistics	Prob
CC	25.841420	13.275730	1.946516	<b>0.0875</b>
GE	-53.116754	22.309064	-2.380950	<b>0.0445</b>
RL	10.675037	8.360949	1.276773	0.2375

Source: author.

We noted that the CC index and GE index have a significant effect on economic growth outside hydrocarbon in Algeria in both short/long run, while the RL index doesn't have any significant effect on non-hydrocarbon economic growth rate either short or long run.

## **VI. Conclusion:**

The failure of the development process experienced by some developing countries in the early 1990's in twentieth century, led to the emergence of a new global trend that calls for attention to the governance quality system and their relationship to economic development. The proponents of this approach attribute the failure in the development process to the absence of good governance mechanisms in developing countries and invite them to take attention to the governance quality. Algeria as one of the developing countries, has adopted these reforms advocated by the world bank.

The current study has investigated the relationship between three indexes of the good governance: Control Corruption (CC), Government Effectiveness (GE), and Rule of Law (RL) on non-hydrocarbon economic growth rate in Algeria, the following results were obtained:

- Existence of co-integration relationship between variables under study, which means the existence of long run relationship among them.
- The significant effect of CC and GE indexes on economic growth rate outside hydrocarbon sector in Algeria in both short/long run.
- The absence of any significant effect of RL index on economic growth rate outside hydrocarbon sector in Algeria in both short/long run.

## **References:**

1. Ahmed Jasim Mohammad. (2011). The extent of management authority signs availability and its impact on economical development in Iraq. *gul of economic journal*, N19 , 15.
2. Aidaoui, F. (2016). governance is a strategic bet to rationalize public spending in algeria. *Algerian journal of globalization and economic policies* , vol 7:183-184.
3. Brigulio, L. (2016). good governance and economic growth-A focus on small Island developing states. *presentation prepared for seminar at the faculty of social studies and humanities*. Mauritius university.
4. Jiandang, Liu., Jie, Tang., Bo, Zhou., & Zhijun, Liang. (2018). The Effect of Governance Quality on Economic Growth: Based on China's Provincial Panel Data. *Economies* , 6, 56 , 1-23.
5. Kaufmann, D., Kraay, A. (2003). *Governance and growth: causality with way? Evidence for the world, in brief*. Washington: the world bank.

6. Kaufmann,D.,kraay,A.,Mastruzzi,M. (2008). Aggregate and individual governance indicators 1996-2017. *working paper 4654,world bank,june 2008-2009.*
7. Kaufmann,D.,Kraay,A.,Mastruzzi,M. (2010). The world wide governance indicators:methodologie and analytical issues. *Draft policy research working paper.*
8. Rodrik,D. (2008). *Thinking about governance,.* governance,growth,and development decision making,the world bank.