

Oil Resources and Institutional Quality impact on the Development process: cases of Kuwait and Venezuela

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Abstract:

The Analysis of natural resources impact on economic growth and development is due to the beginning in specialization of many economies in the production of energy resources such as oil, gas and minerals. Empirical studies have not yet reached a common conclusion about this relationship. 40% of them found that natural resources have a negative impact on economic growth, 20% have a positive effect, and 40% have no significant results. In this study, we try to re-examine this relationship in Kuwait and Venezuela during the period 1990-2014, using the VECM model that explains the impact of oil resources and the institutional quality on the HDI in the long term. The results indicate that the government effectiveness index has a positive impact on the human development index in both Kuwait and Venezuela during the study period. This is justified by the fact that natural resources served an important aspect of development issues in the sample countries with varying percentages.

Keywords: Natural Resource Curse - institutional Quality - Economic and Social Development- Kuwait - Venezuela.

Jel Classification Codes: H75 ;I31 ;L51 ;O11 ;O13 ;O43 ;Q35.

I. Introduction:

Traditional economic logic shows that increasing stocks of natural resources offers high opportunities for economic growth and development, while a lot of empirical studies prove that natural resources often hamper the economic growth rather than promote it, the famous studies done by **Sachs and Warner in 1997 and 2001** show that after studying many economic variables, indicates that the increase in natural resource intensity in one unit leads to a decline of about 01% in annual economic growth, where this result is called natural resource curse, and has been fertile field for a large number of studies, where results were interesting by introducing a set of conditional variables, but were criticized by many researchers such as **Manzano and Rigobonin 2001**, who focus on accumulated debt, and by **Stijns in 2002**, who emphasizes learning processes.

Economic growth is a weak indicator of welfare. It is conceivable that even if natural resources are a scourge of economic growth in its narrow sense, it may lead to improvements in other aspects of well-being, such as reducing poverty, malnutrition and infant mortality, the question is how much growth income will be distributed to the poorer parts of society. In 2000, **Thomas, Daclam, Dhareshwar, Kaufman and Lopez** pointed to the success of many countries (characterized by low per capita income growth), in recent decades, in providing food security and ensuring basic food needs, while high rates of per capita national income were recorded in other countries, however, they failed in achieving these purposes. Thus, the relationship between the abundance in natural resources and underdevelopment remains unknown and is a priority in the study.

The research paper focuses on Kuwait and Venezuela issue, being OPEC members specialized in the production and sale of Oil, which suffer from oil resource curse. They have a large global reserve of crude oil; their economies are characterized by fragile growth rates related to oil market fluctuation, where increasing of oil prices allow good economic conditions, but once a crash in the oil market that leads to lower oil prices, begins disturbances in the internal and external financial balances, these countries often resort to borrowing from the International Monetary Fund, also the index of the reliance on oil prices that Sachs and Warner still use in their study, continues to show that natural resource producers suffer from direct dependence on these resource markets, such as the oil markets of Kuwait and Venezuela, which continue to suffer from economic fragility and have not succeeded in achieving economic diversification, oil exports continue to dominate the majority of their total exports.

However, we can note that there is a large development process financed by revenues from oil exports, where these countries have succeeded in providing a certain level of well-being by building schools, hospitals, airports, ports, roads, and many important infrastructure. It is also noticeable that these countries still suffer from corruption and poor quality of state institutions. For example, **Chekouri S.M., Benbouziane M., Chibi A. (2017)** found out that an increase in oil rents significantly increase corruption in Algeria, and they have also noticed a significant positive effect between oil rents and democratic accountability.

On the other hand, the major studies point at the effect of natural resources on economic growth Measured by GDP or GDP per capita, however the new concept of well-being is developed and takes into account many issues like Education, health and purchasing power. This new interaction between oil curse, natural resources and national well-being, in its large concept, prompts to re-ask the question

about the relationship between oil resources, institutional quality and economic welfare in these countries. The matter which requires an answer is:

How do oil resources abundance and institutional quality affect national welfare in Kuwait and Venezuela?

Hypotheses of the study:

- Kuwait and Venezuela may suffer from the phenomenon of oil resources curse, due to the economies of their countries depending on the oil export, and the failure to diversify their economies outside this sector.
- Revenues of the oil sector improve living conditions and increase welfare in the case of low levels of economic corruption and bureaucracy and improve institutional quality.

In a study given by Richard M. Auty (2006) on the economy of Chad and Mauritania, he focused on the role of the accounting system to provide a national saving rate as an index of policy sustainability in Resource-Abundant low -income countries. He concluded that early attention by economists to influence natural capital on economic growth gave a means of complacency and neglect during the nineteenth century. Evidently, since the 1960s, the economic performance of low-income countries has been inversely associated with a wealth of natural resources. This relationship is not inevitable because economic policy is important. The accounting system can help to improve the policies and performance of low-income and resource-rich countries by promoting the sound management of natural resources, and also by providing a political sustainability indicator in the form of a net saving rate. In addition to a set of measures such as a capital fund to sterilize rent, initiatives to increase the transparency of revenue streams and a careful assessment of alternative uses of additional public sector revenues; it can improve efficiency that shifts natural resource rents into alternative forms of capital to maintain increased social welfare (Auty, 2007).

Christa N. Brunnschweiler and Erwin H. Bulte (2008), in a critical study of the phenomenon of natural resource curse, concluded that despite the popularity of this subject in research in economical and political science, it can interpret the measure of resource abundance better than its interpretation of the resource dependence measure, in many estimates, which combine the natural resources abundance, resources dependence, institutional variables, and constitutional variables. They found that: resources abundance, constitutional articles and institutions determine resources dependence; this latter dependence does not affect growth while resources abundance positively affects the growth and institutional quality (Brunnschweiler & Bulte, 2008).

In another study given by ERWIN H. BULTE, and RICHARD DAMANIA (2005) tried to explore the relationship between natural resources and development in their broad sense by estimating a set of regression equations that showed the impact of natural resources on indicators of human well-being such as the Human Development Index. The prevalence indicator of infant malnutrition and mortality in more than 80 countries, in line with works on the relationship between resource abundance and economic growth, it was found that due to the level of primary income, resource-intensive countries suffer from low levels of human development, while the researchers found a weak evidence if a direct relationship between resources and social welfare, and there is an indirect relationship through institutional quality. These results indicate that resource curse is a more comprehensive phenomenon than previously considered, and that there are major differences between

the effects of different types of resources on various aspects of governance and human well-being (Bulte, Damania, & Deacon, 2005).

PB Eregha and Ekundayo Peter Mesagan (2016) conducted a study on African oil producing countries. The study examined the interaction of various institutional quality indicators with abundant oil resources to determine whether good institutions can defeat resource curse or enhance oil resources in rich African countries over the period 1996-2013. Three variations of the panel data models were analyzed in this study which included the pooled OLS, fixed effect and random effect. The fixed effect model was estimated by the within estimator also called entity Demeaning estimator. The random effect estimator was measured with the GLS. The result showed that institutional quality has significantly boosted per capita income growth, leading to questioning the institutional quality of these countries, but surprisingly, the interaction variables were negative, indicating the fact that the quality of institutions will not be able to abolish the resource curse in these countries. Therefore; it is appropriate to enhance the quality of institutions to support growth and to promote sound resource management in these countries (Eregha & Mesagan, 2016).

The idea saying that there is resource curse - meaning that countries with natural resources tend to be economically and politically bad - has gained widespread resonance especially in Medias. This hypothesis seems paradoxical, because many resource-rich countries are despotic or seem to have squandered wealth. However, recent research has raised doubts about if there is a real relationship between natural resources and economic growth or democracy. There is an alternative type of research that argues that natural resources affect economic and political outcomes, but whether that is positive or negative, depends on institutions in the country, it means, countries with weak economic and political institutions will suffer from the *curse*, but countries with better institutions will not (MORRISON, 2015).

II –Methods and Materials:

We applied unrestricted vector autoregressive (VAR) model to examine the relationship between Development indicator, Oil revenue and institutional quality indicators. This technique was popularized by Sims (1980). The VAR model provides a multivariate framework where changes in a particular variable are related to changes in its own lags and the lags of other variables. This is a reduced-form of VAR since the dependent variable is expressed in terms of predetermined lagged variables. The advantage of VAR approach is that unknown relationships between variables are considered as endogenous in the system as the variables relationship is simultaneously determined

In light of previous research papers, especially ERWIN H. BULTE, and RICHARD DAMANIA (2005) ; Christa N. Brunnschweiler and Erwin H. Bulte (2008), the VAR used to know the effect of oil rent and institutional quality on national development in Kuwait and Venezuela could be simplified as follows:

$$HDI_t = \beta + A_1HDI_{t-1} + \dots + A_pHDI_{t-p} + BZ_t + \varepsilon_t$$

Where (HDI) is the Human Development Index and it is defined as a statistical tool used to measure a country's overall achievement in its social and economic dimensions. The social and economic dimensions of a country are based on the health of people, their level of education attainment and their standard of living. HDI_t is a vector of endogenous variables, β is an intercept, z_t

is a vector of exogenous variables, A_1 and B are coefficient matrices, P is the lag length and t is an unobservable zero-mean white noise. For an unrestricted VAR model, vectors of endogenous variables are arranged according to Cholesky decomposition. In this sequence, the variables that appear first are considered exogenous while those appearing last are considered endogenous. In this context; oil revenue (XH) is the first exogenous variable and it is measured as a proportion of oil resources revenues of GDP which expresses the difference between the value of the production of oil resources at world prices and the total cost of production followed by (RL) captures perceptions of the extent to which agents have confidence in and abide by the rules of society. In particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence, (GE) captures perceptions of 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, and (RQ) captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. All of (RL), (GE) and (RQ) give the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

The data source of HDI is provided by United Nations Development Program and for XH, RL and GE is the World Bank open database.

III- Results and discussion:

1- Results of the time series stationarity:

In time series analysis, verification of the time series properties of data is necessary before any further analysis. The results of the stationary test using Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) are presented in Table 01 and Table 02 in Appendix (01). The null hypothesis of both tests (ADF and PP) is non-stationary against the alternative hypothesis of a stationary variable (Kegomoditswe & Tsuyoshi, 2015). The results of ADF and PP tests for time series in table 01 and 02 are stationary at their first difference. Hence, variables are concluded to be integrate of order 1, technically known as I (1) process.

1- Lag selection:

Proper lag selection is important for VAR specified type of analysis. Therefore, lag order selection criteria such as sequential modified LR test statistic (LR), Akaike information criterion (AIC), Hannan-Quinn information criterion (HQC), Final prediction error (FPE) and Schwarz information criterion (SC) were used. The results details are presented in Table 03 Appendix (02), and majority of lag selection criteria identified the optimum lag of 1. Although HQ, FPE and AIC suggest the optimum lag to be 1, SC criteria suggest lag 0. Based on majority view we have selected lag 1 for further analysis. For the table 4, Appendix (02), all of HQ, FPE, AIC and AIC suggest optimum lag of 1.

2- The impact of oil resources and institutional quality on the Human Development Index in Kuwait and Venezuela:

From table 5 Appendix (04), we note that $D(\text{HDI}, -1)$ affect $D(\text{HDI})$ negatively, but this effect is not statistically significant because its t-student value equal to -3.257 which is less than the critical value $t=1.96$. $D(\text{XH}, -1)$ Affects $D(\text{HDI})$ positively but its effect is too insignificant at 05%. The

institutional quality indicators affect $D(HDI)$ in different manner. $D(GE,-1)$ has a positive proportional significant effect on $D(HDI)$, so an increase of one unit in $D(GE,-1)$ increase $D(HDI)$ by 0.26 unite. Finally, $D(RQ,-1)$ has a negative insignificant effect on $D(HDI)$.

The same remarks had been noticed in table 6. Appendix (04), so $D(GE,-1)$ affect $D(HDI)$ positively and the effect is proportional and statistically significant. So, an increase of one unit in $D(GE,-1)$ increase $D(HDI)$ by 0.509 unite. For the other exogenous variables as $D(HDI,-1)$, $D(XH,-1)$ and $D(RL,-1)$ affect have an insignificant effect on $D(HDI)$. We conclude that the government effectiveness has the same positive impact on development process in both Kuwait and Venezuela, so the government institutions use the oil revenue to finance the development issues like Education, Health and power parity of citizens, but the direct link between oil revenue, other institutional quality and development remains unknown and needs further studies.

3- Short run causality:

The Wald test (also called the Wald Chi-Squared Test) is a way to find out if explanatory variables in a model are significant. "Significant" means adding something to the model; variables that add nothing can be deleted without affecting the model in any meaningful way. The test can be used for a multitude of different models including those with binary variables or continuous variables.

The null hypothesis for the test is: *some parameter = some value*. For example, you might be studying if Y is affected by X . " X " would be your parameter. The value could be zero (indicating that you don't think Y is affected by X). If the null hypothesis is rejected, it suggests that the variables in question can be removed without much harm to the model fit.

The appendix (05) in table 7 shows that Chi-Squared value of $D(GE)$ is significant at 05%. We conclude that the parameter of this variable is different to zero and the null hypotheses is rejected, so we can say that $D(GE)$ causes $D(HDI)$ in the short run. However, for the RQ variable, we note that the probability of *Chi-square* is greater than the critical probability at 5%, and therefore, we cannot reject *the nihilistic hypothesis*, so we say that $D(RQ)$ does not causes $D(HDI)$. The same thing in appendix (05) in table 8, we note that the probability of the variable $D(GE)$ is less than the critical probability value at 5%, and therefore, we reject *the nihilistic hypothesis* and accept the alternative one and say that $D(GE)$ causes $D(HDI)$. Concerning the probability values for $D(XH)$ and $D(RL)$, they are greater than the critical probability values at 5%. Therefore, *the nihilistic hypothesis* cannot be rejected, so $D(XH)$ and $D(RL)$ does not cause $D(HDI)$.

4- The Evaluation of the stationary of used VAR models:

In this section, we have to test the VAR models stationary. For that, we run a set of tests to examine some statistical problems like normality, autocorrelation, Heteroscedasticity of residues. We start by normality test to know if residuals have a normal distribution, we use Jarque-Bera test, the probability of the Jarque-bera statistic as shown in appendix (06) figure 1 is 0.7522114 and 0.977427 in figure 2. Both values are not statistically significant at 5%, so we accept the null hypothesis. Thus, the residues have a normal distribution. At last, we conclude that both models do not suffer from abnormal distribution of residuals. The Breusch-Godfrey test for residual autocorrelation shows that the probability of *Chi-Square(1)* statistic in appendix (07), table8, is 0.0686, and 0.7719 in table 09, which are greater than the critical probability at 5%; this result leads us to reject *the alternative hypothesis* and conclude that the autocorrelation does not exist between the residues. Concerning the residual Heteroscedasticity, we run the Breusch-Pagan-Godfrey test and note that in Appendix (08)

table 10 and 11, the probability value of Obs*R-squared is 0.2284 and 0.1613, which are greater than the critical probability at 5%. Thus, we accept the null hypothesis, and conclude that there is no problem of heterogeneity of residues.

Despite the great difficulty we faced in estimating models that explain the impact of oil resources on the human development index, with the existence of indicators that measure the institutional quality of government, on the other hand, the lack of studies that touched on this subject. However, we have succeeded to a certain extent in estimating two models in which we tried to explain how is the impact of oil resources on the human development index in the case of institutional variables reflecting the extent of good governance standards practices in the management of their economies abundance in petroleum resources that generate huge financial returns, in other words, have these countries succeeded in optimizing the flow of oil resources to serve the development and well-being of their people? In our estimation of the two models, we observed that the *GE* variable, which reflects government effectiveness, i.e., the effectiveness of government intervention in the economy through its economic policies, is the only variable that deals with the institutional quality of government, which has a statistically significant relationship, in interpreting the impact of the institutional quality on the HDI, the results led us to judge that the effectiveness of the government had a positive effect for both Kuwait and Venezuela. There is also a disparity, for example, the Government of Kuwait cannot be compared to the Government of Angola or Nigeria. The wealth management of these countries requires improvements in governance, transparency and institutional capacity, as is evident in renting economies, the existence of weak institutions increases greed and waste of resources, Angola, for example, is characterized by a low level of institutionalization, because of the war in one hand, and on the other hand, because of the natural resources abundance, so it urgently needs to improve the factors that enable it to achieve good governance (Obiageli, 2007).

Concerning Kuwait, it has been able to make its oil wealth rationally and harness it to serve the prosperity of its society and to support humanitarian issues in its regional and international environment, since December 1961, it has initiated the establishment of the Kuwait Fund for Arab Economic Development, which was intended to provide economic assistance to Arab and African countries, and quickly grew to become one of the largest financial institutions in the Third World (Motairi, 2015), Kuwait has very high levels of economic and financial strength as its sovereign rating is *Aa2*, also, Kuwait's per capita GDP in terms of purchasing power was about \$ 40,000 in 2012, a level similar to that of Germany, and the national income is boosted by large oil donations, besides, reserves are equal to 92 years of current production. The alleviation in regional political tensions and the continuous improvement in the quality of political, administrative and legal institutions in Kuwait and the transparency of the government's balance sheet will exert upward pressure on Kuwait's sovereign rating. However, downward rating pressures can emerge if the local or regional political environment deteriorates significantly, or if a prolonged period of decline in oil prices leads to a continued deterioration in Kuwait's internal and external financial accounts, leading to the depletion of net foreign assets (Steffen & Thomas, 2013). The study revealed that there is scope for improving the overall effectiveness of the Kuwaiti government. While a proper assessment of spending effectiveness requires accurate information about government objectives and allocation of expenditure, survey indicators help to evaluate broadly the effectiveness of public expenditure, the Global Governance Index of the World Bank ranks Kuwait 51st and 53rd out of 100 in terms of

government effectiveness and fighting bribery, the lowest in the *Gulf Cooperation Council*. Besides, Transparency International's Corruption Index ranks Kuwait 44th Of the 100 countries, like Saudi Arabia, as the lowest of the rest of the *GCC*. Also, the World Economic Forum's Global Competitiveness Report ranks Kuwait 60th in terms of overall quality of infrastructure, but worse at 31 and 37 respectively, in terms of exaggeration on government spending and quality of primary education. The effectiveness of the government in Kuwait lags behind similar countries per capita income and similar countries in GCC (Fund, 2018).

Venezuela had two major phases in growth experience, with high growth rates during the 1950-1970 period and a significant decline in growth in the next 30 years. Although Venezuela is an oil-rich economy, the level of growth is mainly to the development of real GDP in the economic sector outside the hydrocarbons (Betty & Amaia, 2005).

During the period 1989-2004, Venezuela experienced considerable political volatility and the absence of long-term policy commitments. Financial and fiscal policies were unorganized, and inflation remained high at 61% for regional standards. Bureaucratic autonomy has been severely eroded, efficiency has fallen almost entirely. The petroleum policy was incoherent and shortsighted, and decentralization of public services was volatile and incoherent (Francisco, González, & Rosa, 2006).

From the beginning of the last decade to the end of 2014, Venezuela has benefited from historically high oil prices, enabling public spending to increase on ambitious programs. The government has established a variety of public companies and nationalized many private companies in sectors such as oil, gas, mining, cement, banking and telecommunications. Large social programs called *misiones* have been implemented to provide basic services and transfer resources to previously excluded areas of the population. Economic growth and redistribution policies have significantly reduced poverty from 50% in 1998 to about 30% in 2013, the level of the *Gini Inequality Index* fell from 0.49 in 1998 to 0.40 in 2012, it is among the lowest in the region (World-Bank, 2019).

However, the collapse of world oil prices, together with inadequate macroeconomic and microeconomic policies, has had a major impact on Venezuela's economic and social performance. Besides, the country's dependence on the oil and gas sector has increased sharply (oil now accounts for 96% of exports), and Venezuela during the economic boom has not been able to accumulate enough savings to make the overall macroeconomic adjustment.

IV- Conclusion:

In our study of the impact of natural resource revenues and the institutional quality of government on economic development in Kuwait and Venezuela, and after testing the hypotheses proposed, we have reached a number of important results that explain the problem of research, as following:

- The concept of well-being is not limited to income only, first, economic growth and development were two sides of a single coin, where welfare was seen as an improvement in the living conditions of the population, but studies have shown that well-being is a much broader concept than income. Many countries have achieved high levels of National income, whereas their population suffers from unfair distribution of income, this is one of the most important criticisms of income indicators such as the national income per capita index. In this sense, well-

being has begun to take an expanded concept that goes beyond income to deeper dimensions; as a result, development has become the art of human happiness on this planet and the provision of increasing and changing needs over time.

- The oil resources are one of the most important pillars on which the economies of Kuwait and Venezuela are based, because of their profits as one of the main producers of this material, which made their economies affected by the fluctuations and of supply and demand on oil, as well as the geopolitical reasons of security unrest, tensions in oil-rich areas, and other climatic causes of temporary disruption of oil supplies from time to time.
- Regarding the phenomenon of *natural resource curse*, we found that the oil resources exported by the two countries had a positive affect during the study period on the Human Development Index.
- Concerning the effect of oil resources and the institutional quality of government, there was a positive impact of the effectiveness of the government on the human development index in both countries. The revenues of oil resources have had a positive and insignificant effect. This can be explained by the fact that Kuwait, like its counterparts in the GCC, it exploited oil revenues in the service of the economic and social development, and made live its people in great prosperity such as those of the developed countries. In Venezuela, thanks to the ongoing reforms of government institutions, the spread of economic corruption and the lack of economic and political freedom began to decline. This has had a positive impact on development in Venezuela, but government institutions still relatively weak compared with its counterparts in Kuwait.

Despite the difficulties faced by Kuwait and Venezuela, which are characterized by fluctuations in the oil market. Prices in the last two years have been characterized by continuous decline. It is not easy to control the market as in the past, because of the expiry of the traditional oil era and the beginning of Rock Oil era, under the leadership of the United States, which is dumping the market to the limit, we see that the power base has begun to change, undermining the role of these two countries in addition to the rest of *OPEC* members in directing the oil market, The rest of the members are still making great efforts in the development of their economies and the welfare improvement of their people, but cautiously, because oil revenues are not as abundant as in the past, so we see that Kuwait and Venezuela have undertaken many measures that would rationalize spending, and push the investment outside of oil, to save their economy, it also aims to overcome the challenge that is the improving of the quality of its government institutions in the future so that it can exploit all foreign trade flows from the oil sector to other sectors in a manner that ensures the welfare of their communities.

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Appendix:

1- stationary tests for Kuwait VAR model:

Table (01): Unit root results.

	ADF (level)	ADF (1st difference)	PP (level)	PP (1st difference)	Order of integration
HDI	-3.705944	-6.685267*	-3.703310	-11.34901*	I (1)
XH	-2.753421	-3.240252*	-2.447610	-3.811161*	I (1)
GE	-1.073782	-3.628121*	-1.084601	-2.958487*	I (1)

*Indicate rejection of the null hypothesis of non-stationary of the variables at 5% significance level.

2- Stationary tests for Venezuela VAR model:

Table (02): Unit root results

	ADF (level)	ADF (1st difference)	PP (level)	PP (1st difference)	Order of integration
HDI	-3.647140	-3.647140*	-3.647140	-16.81713*	I (1)
XH	-3.152384	-5.500262*	-3.152387	-5.500262*	I (1)
GE	-3.643629	-5.917679*	-3.598380	-10.52661*	I (1)
RL	-3.425456	-5.500262*	-1.841670	-5.500262*	I (1)

*Indicate rejection of the null hypothesis of non-stationary of the variables at 5% significance level

3- Lag selection

3-1 Lag selection criterion (Kuwait).

Table (03): Lag selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	1.929623	NA*	1.72e-05	0.376432	0.521121*	0.285226
1	20.41084	20.16133	1.45e-05*	-0.074699*	0.648747	-0.530730*

* Indicates lag order selected by the criterion at 5% level significance.

3-2 Lag selection criterion (Venezuela) :

Table (04): Lag selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	6.616309	NA*	7.61e-06	-0.436052	-0.274416	-0.495895
1	26.90385	23.66880	4.61e-06*	-1.150642*	-0.342464*	-1.449858*

* Indicates lag order selected by the criterion at 5% level significance.

4- The impact of oil resources and institutional quality on the Human Development Index in Kuwait and Venezuela:

Table (05):Kuwait VAR model

Vector Autoregression Estimates	
Sample (adjusted): 2004 2014	
Included observations: 11 after adjustments	
Standard errors in () & t-statistics in []	
	D(HDI)
D(HDI(-1))	-0.688533 (0.21138) [-3.25727]
D(XH(-1))	0.004463 (0.00305) [1.46466]
D(GE(-1))	0.269335 (0.13549) [1.98783]
D(RQ(-1))	-0.225366 (0.13755) [-1.63844]
C	-0.018611 (0.01544) [-1.20563]
R-squared	0.733853
Adj. R-squared	0.556422
Sum sq. resids	0.011011
S.E. equation	0.042838
F-statistic	4.135984
Log likelihood	22.37899
Akaike AIC	-3.159816
Schwarz SC	-2.978954
Mean dependent	-0.002545
S.D. dependent	0.064320

Table (06): Venezuela VAR model

Vector Autoregression Estimates	
Sample (adjusted): 2004 2014	
Included observations: 11 after adjustments	
Standard errors in () & t-statistics in []	
	D(HDI)
D(HDI(-1))	-0.299728 (0.25946) [-1.15522]
D(XH(-1))	0.003145 (0.00263) [1.19623]
D(RL(-1))	0.020410 (0.19181) [0.10641]
D(GE(-1))	0.509581 (0.21052) [2.42064]
C	0.003241 (0.01785) [0.18158]
R-squared	0.716150
Adj. R-squared	0.526916
Sum sq. resids	0.012737
S.E. equation	0.046074
F-statistic	3.784473
Log likelihood	21.57795
Akaike AIC	-3.014172
Schwarz SC	-2.833311
Mean dependent	-0.000727
S.D. dependent	0.066987

Source: Prepared by the researchers based on Eviews 9 outputs

5-Wald testing of short run causality:

Table (07): Results of the Wald test

		The nihilistic hypothesis	Chi-square	Probability
Kuwait	D(XH)	D(XH) does not cause D(HDI)	2.145243	0.1430
	D(GE)	D(GE) does not cause D(HDI)	3.951478	0.0468
	D(RQ)	D(RQ) does not cause D(HDI)	2.684471	0.1013

Source: Prepared by the researchers based on Eviews 9 outputs

Table (08): Results of the Wald test

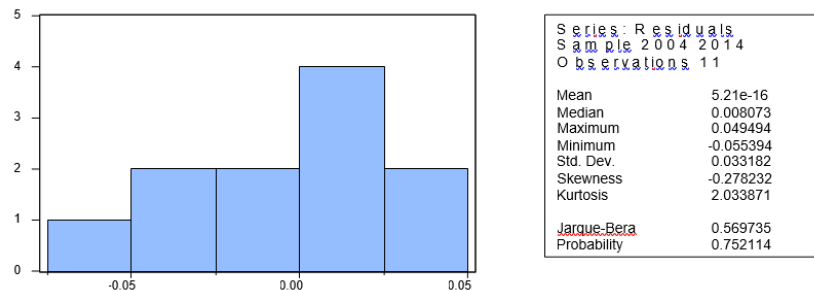
		The nihilistic hypothesis	Chi-square	Probability
Venezuela	D(XH)	D(XH) does not cause D(HDI)	1.430971	0.2316
	D(RL)	D(RL) does not cause D(HDI)	0.011323	0.9153
	D(GE)	D(GE) does not cause D(HDI)	5.859479	0.0155

Source: Prepared by the researchers based on Eviews 9 outputs

6- Results of Model validation testes:

6-1- Results of normal distribution residues test:

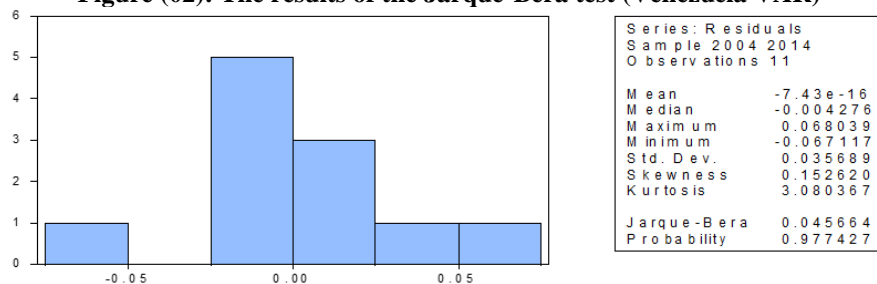
Figure (01): The results of the Jarque-Bera test (Kuwait VAR)



Source: Prepared by the researchers based on Eviews 9 outputs

6-2 Results of normal distribution residues test:

Figure (02): The results of the Jarque-Bera test (Venezuela VAR)



Source: Prepared by the researchers based on Eviews 9 outputs

7- Results of Breusch-Godfrey test of autocorrelation of residues:

Table (08): Results of the Breusch-Godfrey test of (Kuwait VAR)

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.164697	Prob. F(1,5)	0.2012
Obs*R-squared	3.323471	Prob. Chi-Square(1)	0.0683

Source: Prepared by the researchers based on Eviews 9 outputs

Table (09): Results of the Breusch-Godfrey test of (Venezuela VAR)

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.045844	Prob. F(1,5)	0.8389
Obs*R-squared	0.099939	Prob. Chi-Square(1)	0.7519

Source: Prepared by the researchers based on Eviews 9 outputs

8- Results of Breusch-Pagan-Godfrey test of heterogeneity of residues:

Table (10): Results of Breusch-Pagan-Godfrey test of heterogeneity (Kuwait VAR)

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	5.889188	Prob. F(8,2)	0.1532
Obs*R-squared	10.55206	Prob. Chi-Square (8)	0.228
Scaled explained SS	1.622896	Prob. Chi-Square(8)	0.9905

Source: Prepared by the researchers based on Eviews 9 outputs

Table (11): Results of Breusch-Pagan-Godfrey test of heterogeneity (Venezuelan VAR)

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.003525	Prob. F(3,8)	0.1921
Obs*R-squared	5.148033	Prob. Chi-Square(3)	0.1613
Scaled explained SS	4.068833	Prob. Chi-Square(3)	0.2541

Source: Prepared by the researchers based on Eviews 9 outputs

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