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Article

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International Journal of Energy Economics and Policy

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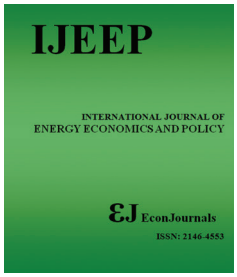
International Journal of Energy Economics and Policy (IJEEP)

Reference: Haque, Mohammad Imdadul (2020). Negating the role of institutions in the long run growth of an oil producing country. In: International Journal of Energy Economics and Policy 10 (5), S. 503 - 509.
https://www.econjournals.com/index.php/ijeep/article/download/9870/5760.
doi:10.32479/ijeep.9870.

This Version is available at:
http://hdl.handle.net/11159/7970



International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2020, 10(5), 503-509.

Negating the Role of Institutions in the Long Run Growth of an Oil Producing Country

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Received: 01 April 2020 **Accepted:** 06 July 2020 **DOI:** https://doi.org/10.32479/ijeep.9870

ABSTRACT

The Kingdom of Saudi Arabia has a dominant oil sector. It is assumed that enormous oil revenues put a curse of poor economic growth in predominantly natural resource based economy and the country becomes a rentier state. The study attempts to estimate the relationship between economic growth, oil rents and institutional quality. The study finds a cointegrating relationship between the variables. The study argues that the country is not experiencing the phenomenon of resource curse as oil rents are not negatively impacting economic growth in the long run. Using non linear ARDL method the study reports a higher rate of growth to a positive shock in oil rents as compare to negative shocks in oil rents. This hints at the resilience of the country as the country's growth rate is less effected with the fall in oil rents. It is also assumed that mere rent seeking economies tend to have poor quality of institutions. The study finds no significant relationship between institutional quality and the rate of growth for the country. Finally, the study recommends increasing the level of economic diversification and developing the quality of institutions.

Keywords: Rentier state, Resource curse, Oil rents, Institutional quality, Asymmetric relationship.
JEL Classifications: Q30 O43, O53

1. INTRODUCTION

The proponents of Rentier State Theory, Mahdavy (1970) and Beblawi and Luciani (1987) referred to those economies as rentier states which collect considerable quantity of external rents regularly which obliterate the need to make the domestic sector productive. In such economies a minute percentage of the population works to generate the rent as compared to the greater portion of population occupied to distribute and utilize the rent. Also in such economies, the government is the primary receiver of rent. These rents have an effect on the political structure as the need to tax the citizens to provide public goods is feeble. This absence of taxation make political accountability of the state unwanted. The economic structures also get altered as the growth of domestic economy is not a prerequisite for the growth in rentier state. Such rentier states simply distribute the revenue received from the trade of oil to its population. Subsequently, periods of boom in rentier states results in poor financial discipline and non-competitiveness in the non-oil sector which ultimately leads to fragile institutions (Kar, 1997). This is a sense is a curse on resource rich economies.

The concept of "resource curse" since its inception in early nineties has dominated the discourse on economic growth in oil exporting countries. It referred to the paradox wherein natural resource rich countries perform poorly when compared to countries which are poor in natural resource (Auty and Warhurst, 1993; Sachs and Warner, 1995). One of the key argument in favor of resource curse happening in resource rich countries is that rent seeking behavior in these countries make institutions weak (Frankel, 2012). But, this rent seeking provides stability in authoritarian regimes when compared to democracies (Andersen and Aslaksen, 2013). Another view is that bad quality of institutions promote resource curse (Mustapha and Masih, 2016). Voracious groups in countries with weak institutions are more susceptible to corruption (Tornell and

Lane, 1999; Mehlum et al., 2006). In fact, there is an opinion that better institution quality could not lessen the natural resource curse in oil exporting economies (Kakanov et al., 2018).

Political and economic factors have an important role in the weak development of resource rich economies (Auty, 1990). The growth rate in economies rich in natural resources is poor because corruption, weak governance, rent seeking (Sachs and Warner, 1997). But recent empirical researches have three different opinions on the relationship between economic growth, oil rents and institutions. First, for countries rich in resources, institution is the fundamental cause of economic growth (Acemoglu and Robinson, 2008; Benghida, 2017; Hassan et al., 2019). In fact, institutions have been attributed for high economic growth in a natural resource rich country of Botswana (Acemoglu et al., 2002) and Norway (Tsani, 2013). Second, abundance of natural resources has no direct effect on economic growth. Contrarily it retards economic growth indirectly through the effect of quality of institution (Isham et al., 2005). Nigeria, an oil dominant country is cited as a case where quality of institutions hinders economic growth (Olayungbo and Adediran, 2017). Third, natural resource abundance has a positive effect on economic growth after the economy attains a threshold level of institutional quality (Sarmidi et al., 2014; Shadrokh and Zamanzadeh, 2017).

Saudi Arabia, a predominantly oil exporting country has been called as an example of a rentier state suffering from resource curse (Looney, 1990; Aytac et al., 2016; Bajwa et al., 2019). In oil exporting countries resource curse have even been called as institution course although Saudi Arabia and other GCC countries were not an example of it (Selim and Zaki, 2014). But studies on economic growth, oil resource and institutional quality specific to Saudi Arabia are missing in literature. The country finds its reference in few studies on resource curse and institution quality. To quote them; Matallah and Matallah (2016) in their study on the 11 MENA countries found that oil rents lead to economic growth in these countries. But these oil rents derail economic diversification as it encourages rent seeking. And good governance is the solution. In another study on 33 countries by Shadrokh and Zamanzadeh (2018), which opined that oil revenues impact on growth is dependent on institutional quality. And, in a study on 35 oil exporting countries Hassan et al., 2019 found that oil wealth impacts the growth and institutional quality removes the negative impact on oil abundance on economic growth in the long run. This study aims to fill the literature gap by studying the relationship between economic growth, oil rents and institutional quality for Saudi Arabia, specifically. Towards this, the study first proceeds with some stylized facts on oil rents and institutional quality in the country.

1.1. Oil Rents in Saudi Arabia

The oil rents as a percentage of GDP from 34.40% in 1984 to 19.43% in 2016.During this time period it peaked to 54.26% in 2008 (WDI, 2019). In 2016, the oil revenues were 333800 million riyals (64.96%) as compared to non oil revenues at 180000 million riyals (35.03%). In 2016 the oil exports including crude oil and refine products were of 510729 million riyals (74.18%) as compared to 177694 million riyals (25.81%) of non-oil exports. In 2016, the oil sector GDP at 2010 constant prices was 1138298 million riyals (43.98%) as compared to the non-oil sector GDP of 1428628 (55.20%) (SAMA, 2019).

Economic growth can be measured by many a factor like GDP, GDP per capita and likewise. Theoretically GDP is measures through aggregating consumption, investment, government expenditure and trade. This study aims to study the rate of growth and not exactly the volume of GDP. Hence the growth rate is to be considered over in this study. To study the crude oil related parameter, there can be two indicators. First is, crude oil price and the second is oil rents. The first is mere an indicator of the market and an individual country does not have much of a control over it. The study proposes to use oil rents as it would be a better reflector of the entire extraction processes the reason being that it also takes into consideration the cost of oil production in the country.

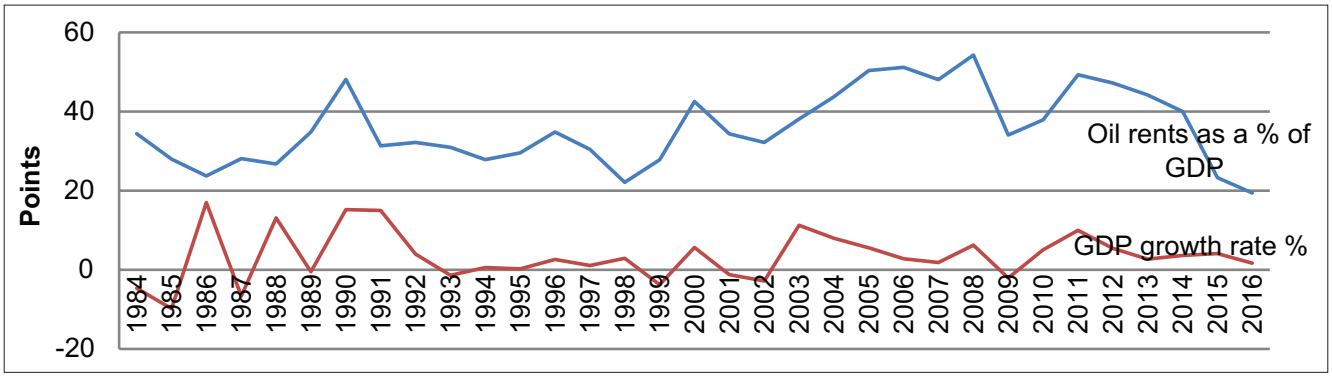
1.2. Institutional Quality in Saudi Arabia

Government stability refers to the ability of the government to perform its declared plan and capability to be in power. Investment profile considers factors influencing the risk to investment. Corruption impacts negatively economic and financial situation and makes government and businesses inefficient. Bureaucracy provides strength and quality to institutions and maintains the functioning of the country. Institutions constitute of certain rules like “Contract Viability/Expropriation, Profits Repatriation, and Payment Delays,” subject to constraints like corruption, and have enforcement nature like bureaucracy and all these happens in an environment when the government is stable.

International Country Risk Guide (ICRG) provides measure for many aspects on institutions. Government stability itself is an aggregate of three items namely Government Unity, and Legislative Strength and Popular Support. Each item is graded on a score of 0-4, where 0 indicates the highest risk and 4 as the lowest risk. Investment profile is an aggregate of three items namely contract viability/expropriation, profits repatriation, and payment delays. Each item is graded on a score of 0-4, where 0 indicates the highest risk and 4 as the lowest risk. Corruption is measured on a scale of 0-6. The lower the value, the higher is the corruption. Bureaucratic quality is measured on a scale of 0-4, where a higher value indicates better governance. Figures 1 and 2 provides a graphical representation of the actual data.

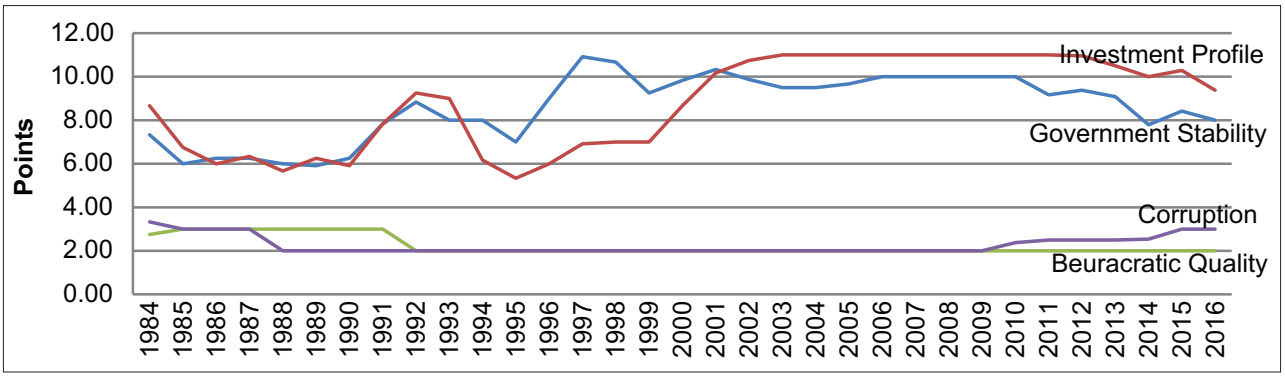
The importance of oil revenues in the growth of Saudi Arabia has been established by many a studies like Sultan and Haque (2018), Haque and Khan (2019). But, recent climatic conventions and related policies have increased awareness on the hazards of using non-renewable and polluting aspects of oil consumption. On the other hand, there has been many a descent improvement in the usage of low-carbon using and alternate sources of energy. This has somewhat dented the demand for crude oil (Tagliapietra, 2019). This accompanied with the fall in international oil prices in 2014 has sincere need for genuine economic reforms towards economic diversification and get rid of the rentier state model of growth and development. Towards this, the study aims to study the asymmetric impact of oil rents on the economic growth of Saudi Arabia. In the process it

Figure 1: Graphical representation of the data on growth rate and oil rents



Source: WDI database

Figure 2: Graphical representation of the data on institutions



Source: International Country Risk Guide database

also tests the hypothesis that institutional quality impacts the economic growth in the country.

2. MATERIAL AND METHODS

This study attempts to examine the relationship among GDP growth rate, oil rents and institutions for Saudi Arabia. The sturdy uses yearly data from 1984-2016. The data for GDP growth rate percentage and oil rents as a percentage of GDP is taken from World Development Indicators (WDI). WDI measures GDP growth rate as "Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars." Towards this the study uses GDP growth rate expressed in percentage form. WDI measures oil rents as a percentage of GDP is measured as "the difference between the value of crude oil production at world prices and total costs of production." The data for institution is taken from ICRG. The variable Institutions is the sum of four items out of 12 indicators published by ICRG. The four items are Government stability, Investment profile, corruption, and Bureaucratic quality. It has been used as a proxy for institution quality by Olayungbo and Adediran (2017) and Hassan et al., 2019.

All the data is first transformed to log value before further analysis. The growth rate has some observations in negative form. Hence the study applies the procedure followed by Busse and Hefeker (2007) to compute the log of negative numbers. Using the given formula:

$$\log x = \left(x + \sqrt{\left(x^2 + 1 \right)} \right)$$

To comprehend the association between GDP growth rate % (GR), oil rents as a % of GDP (OR) and institutions (INST) the following linear equation is postulated

$$Ln\ GR = f(Ln\ OR,\ Ln\ INST)$$

The study plans to apply the autoregressive distributed lag (ARDL) approach proposed by Pesaran et al. (2001) and its modification developed by Shin and Yu (2014) which accommodates for asymmetrical nature of relationships between the variables. The augmented Dickey Fuller (ADF) test is computed to ascertain the necessary condition of performing ARDL which is that of no variable should be stationary at level 2. The log of the actual data is used for further analysis. Cointegration is estimated using the following equation:

$$\Delta \ln GR_t = \beta_0 + \beta_1 \ln GR_{t-1} + \beta_2 \ln OR_{t-1} + \beta_3 \ln INST_{t-1} + \sum_{i=1}^{p} \varphi_i \Delta \ln GR_{t-i} + \sum_{j=0}^{q} \varphi_j \Delta \ln OR_{t-j} + \sum_{k=0}^{p} \varphi_k \ln INST_{t-k} + \varepsilon_t$$

Here β_i are the long run multipliers and ε_t is the white noise error term. This equation is estimated and is tested for the presence of long run relationship using F-test for joint significance using the following hypothesis:

H_0: $\beta_1=\beta_2=\beta_3=0$

H_0: $\beta_1\neq\beta_2\neq\beta_3\neq0$

Pesaran et al. 2001 provides two asymptotic critical bounds are where the lower value assumes that the repressors is I(0) and the upper value assumes the repressor is I(0). If the F-statistic value is more that the upper bound value, it indicates there is cointegration. If the F-statistic value is less than the lower bound value, it indicates that there is no cointegration. And if the value is between the two bound values then the result is inconclusive. Once cointegration is established the long run estimation is done through:

As the study hypothesizes that the impact of oil rents in a primarily oil exporting country is asymmetric is nature, hence equation 1 is modified as:

$$\ln GR_t = \delta_0 + \delta_1\left(\ln OR_t^+\right) + \delta_2\left(\ln OR_t^-\right) + \delta_3\left(\ln INST_t^+\right) + \delta_4\left(\ln INST_t^-\right) + \varepsilon_t$$

Here, δi represents the long run parameters. The asymmetric impact of OR includes positive changes in OR+ and negative changes in OR- The asymmetric impact of INST includes positive changes in INST+ and negative changes INST.

(δ_0, δ_1, δ_2, δ_3, δ_4) represents cointegrating vector to be estimated and OR^+, OR^-, $INST^+$ and $INST^-$ represent partial sums of positive and negative changes of OR and INST on GR.

$$OR^+ = \sum_{i=1}^{t}\Delta OR_i^+ = \sum_{i=1}^{t}\max\left(\Delta OR_{i,}\,0\right)$$

$$OR^- = \sum_{i=1}^{t}\Delta OR_i^- = \sum_{i=1}^{t}\min\left(\Delta OR_{i,}\,0\right)$$

$$INST^+ = \sum_{i=1}^{t}\Delta INST_i^+ = \sum_{i=1}^{t}\max\left(\Delta INST_{i,}\,0\right)$$

$$INST^- = \sum_{i=1}^{t}\Delta INST_i^- = \sum_{i=1}^{t}\min\left(\Delta INST_{i,}\,0\right)$$

Finally, the nonlinear ARDL is stated as:

$$\Delta GR_t = \delta_0 + \delta_1 GR_{t-1} + \delta_2 OR_{t-1}^+ + \delta_2 OR_{t-1}^- + \delta_2 INST_{t-1}^+ + \delta_2 INST_{t-1}^- + \sum_{i=1}^{a}\theta_{1i}\Delta GR_{t-i} + \sum_{i=0}^{b}\theta_{2i}\Delta OR_{t-i}^+ + \sum_{i=0}^{c}\theta_{3i}\Delta OR_{t-i}^- + \sum_{i=0}^{d}\theta_{4i}\Delta INST_{t-i}^+ + \sum_{i=0k=1}^{e}\theta_{5i}\Delta INST_{t-i}^- + \varepsilon_t$$

Here, a,b,c,d and e denote the order of lag. δ_0, δ_1, δ_2, δ_3, δ_4 denotes long term positive and negative shocks of OR and INST on GR. θ_1, θ_2, θ_3, and θ_4 denote short-run positive and negative effect of OR and INST on GR.

3. RESULTS

Table 1 below gives the results of stationary tests using augmented Dickey Fuller (ADF) tests. GR is stationary at level, while INST and OR are non-stationary at level but become stationary at first differencing. As different variables are integrated at different order (0 and 1) hence the ARDL model is fit for anlaysi.

Table 2 depicts the results for Bounds test. For both the models, the F-statistics is more than the upper bound level at 95% confidence level. This indicates presence of cointegration for both the models.

Table 3 depicts both the ARDL and NARDL model results. INST is not significantly impacting GR at lag 1 to both positive shocks and negative shocks. Meanwhile OR impacts GR s at lag 1 to both positive shocks and negative shocks.

Table 4 depicts the asymmetric long run asymmetric relationship of GR, with INST and OR per capita. This study is primarily interested in the long rum impact of oil rents and institutional factors on the growth rate of the country. There is a significant and positive relationship between oil rents and growth rate. If there is 1 unit positive change in oil rents it will lead to 2.73 units change in growth rate. And a one unit negative change in oil rents it leads to 2.21 unit change in growth rate. The variable institution is not significantly related to the growth rate.

The Breusch-Godfrey LM test results indicate that there is no issue of serial correlation. The Jarque-Bera results indicate that

Table 1: ADF results

	Test statistic	P-value	test statistic	P-value	test statistic	P-value
	GR		OR		INST	
Constant	–7.726903	0.0000	–2.113847	0.2408	–1.400094	0.5689
Constant, linear trend	–7.626898	0.0000	–2.113847	0.6216	–1.990066	0.5829
None	–5.057078	0.0000	–0.580204	0.4581	0.332311	0.7749
	GR(–1)		OR(–1)		INST(–1)	
Constant	–13.12658	0.0000	–5.116389	0.0002	–5.058744	0.0003
Constant, linear trend	–12.91581	0.0000	–5.345103	0.0008	–4.993064	0.0019
None	–13.36794	0.0000	–5.208738	0.0000	–5.121674	0.0000

Source: Author's calculation

Table 2: Bounds test for nonlinear cointegration

	F-statistic		Lower bound 95%	Upper bound 95%	Decision
ARDL model	19.44667	10%	2.63	3.35	Cointegration
		5%	3.1	3.87	
		2.5%	3.55	4.38	
		1%	4.13	5	
Asymmetric ARDL model	16.16613	10%	2.37	3.2	Cointegration
		5%	2.79	3.67	
		2.5%	3.15	4.08	
		1%	3.65	4.66	

Source: Author's calculation

the error terms are normally distributed. The Breusch-Pagan-Godfrey result indicates that the model is free from the problem of heteroscadisticity. The Ramsey test indicates that the model is correctly specified [Table 5].

Lastly, CUSUM and CUSUM square graphs indicate that there is no structural break in the data and that the model is stable (Figure 3). The lower portion of Figure 3 plots adjustment patterns to the dynamic effects of positive and negative changes in oil rents. Growth rates respond to both positive and negative shocks. The shock smoothens itself after a period of approximately 5 years.

Table 3: Nonlinear ARDL estimation results

Variable	ARDL model		NARDL model	
	Coefficient	Prob.*	Coefficient	Prob.*
GR(–1)	–0.393693	0.0196	–0.439201	0.0114
OILR	3.334905	0.0119		
OILR_POS			3.942349	0.006
OILR_NEG			3.19427	0.0153
INST	–1.941047	0.3991	–5.542507	0.1424
C	–4.091813	0.5267	17.73353	0.1068
Model selection	AIC,4 lags, automatic ARDL(1, 0, 0)		AIC,4 lags, Automatic ARDL(1, 0, 0, 0)	
R-squared	0.271777		0.311096	
Adjusted R-squared	0.193753		0.209036	
F-statistic	3.483249		3.048167	
Prob (F-statistic)	0.028866		0.033973	

Source: Author's calculation

Figure 3: Post-estimation graphs

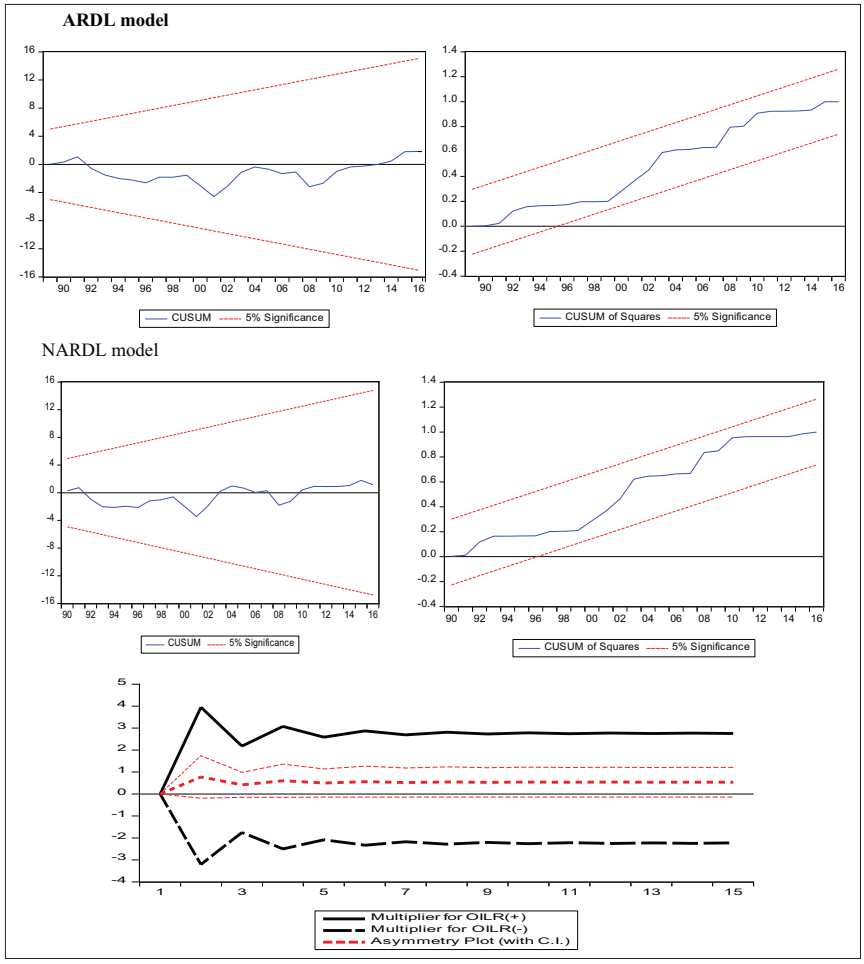


Table 4: Long-run asymmetric relationship

Variable	Coefficient	Std. Error	t-statistic	Prob.
OR_POS	2.739262	0.864657	3.168034	0.0038
OR_NEG	2.219474	0.830250	2.673259	0.0126
INST	–3.851100	2.510021	–1.534290	0.1366
C	12.32179	7.259142	1.697417	0.1011

Source: Author's calculation

Table 5: Residual diagnostics

Diagnostic test	ARDL model		NARDL model	
	Test statistic	P-value	Test statistic	P-value
Breusch-Godfrey LM	2.435314	0.2959	2.274211	0.3207
Jarque-Bera	3.115156	0.210646	1.355904	0.507656
Breusch-Pagan-Godfrey	2.435314	0.2959	5.522089	0.2378
Ramsey RESET test	0.023506	0.8793	0.333755	0.5684

Source: Author's calculation

4. CONCLUSION

This study finds a cointegration relationship between economic growth, oil rents and institution quality over the period 1984-2016 for a primarily oil producing country. It indicates a long run relationship between the three items. The results of ARDL model indicates the oil rents have a positive and significant relationship with economic growth. The results points to the absence of resource curse as oil rents are not negatively impacting economic growth. Using non linear ARDL method the study reports a higher rate of growth to a positive shock is oil rents as compare to negative shocks in oil rents. This hints at the resilience of the country as the country's growth rate is less effected with the fall in oil rents Also, as indicated in Figure 1 the oil rents as a percentage of GDP has decreased over the years. It decreased from 34.40% in 1984 to 19.43% in 2016. This indicates that the country is moving away from its dependence on oil. The diversification of the economy is actually happening.

This can be helpful to the structural reform going on in the country, particularly with the announcement of Vision 2030 in 2016. The sharp fall in the crude oil prices in 2014 have forced a predominantly oil exporting country like Saudi Arabia to launch aggressive reforms to reduce its dependency away from oil. In fact the country launch its ambitious Vision 2030 program which among other things called for increasing the share of non-oil exports from 16% to 50% by 2030; raise the non-oil government receipts from 163 billion to 1 trillion Saudi Riyal by 2030; and improve private sector contribution from 40 to 65% by 2030. Other examples of ongoing measures to improve diversification are like using its public ınvestment fund for small and medium enterprises. In addition, opening many an avenues to the private sector and attempting fiscal prudence through revision of domestic energy prices are some examples of positive reforms undergoing in the country. The study also agrees with the observation of Selim and Zaki (2014) who opine that enormous oil rents have been instrumental in fostering a stable regime in Saudi Arabia and other countries of GCC as these rents have been distributed to the population through high paid jobs, and other welfare leading to stability and high per capita income.

But the study finds no significant relationship between institutional quality and the rate of growth during for the period of its study. Institutional quality does not have a significant role in the economic growth of Saudi Arabia. In fact, the theoretical foundation suggests that quality of institutions lead to higher economic growth. And this goes by the premise that institution quality signifies government stability, investment freedom, bureaucratic quality and absence of corruption. This finding goes against the findings of Benghida (2017) and Hassan (et al., 2019) which found institutional quality positively impacts the economic growth. It also goes against the finding of (Isham et al., 2005; Olayungbo and Adediran (2017), who proposed that institutional quality hinders economic growth as in the current study the sign of the coefficient is not negative and significant.

There can be two probable reasons for institutions not impacting the growth in Saudi Arabia. First, the quality of institutions is not good. But as seen in Figure 2, the quality of institution is not poor. On an average for the period 1985-2016 the item government stability and investment profile had an average score of 8 out of 12; and corruption and bureaucratic quality had an average score of more than 2 out of 4. This indicates a fair performance of institutional quality parameters. The second reason could be as suggested by (Sarmidi et al., 2014, and Shadrokh and Zamanzadeh, 2018), that the quality of institutions needs to reach a certain threshold only after which it positively impacts the growth of the country. It implies that for Saudi Arabia has not reached the threshold point after which institutions start positively contributing to economic growth.

Finally the study recommends processes to reduce the oil rents as a proportion of GDP in the country and increase the level of economic diversification. Nevertheless, this study admits that it is subject to certain limitations of data. Before establishing the exact relationship between economic growth and institutions, institutional data from other sources like Worldwide Governance Indicators of the World Bank should also be used to estimate its relationship with economic growth. Estimating the relationship with a different set of indicators of institutional quality period would be the scope for future research. And despite the results of the study the researchers believe in the need to develop the quality of institutions.

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