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Do Oil Rents Deter Foreign Direct Investment? The Case of Saudi Arabia

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ABSTRACT

The relationship between foreign direct investments (FDI) and natural resource endowment of a country is contentious. This study attempts to study this relationship for Saudi Arabia that is primarily an oil-producing country. In the process, it would also assess the role of institutions, trade openness, and domestic investments in attracting FDI. Using the methodology of cointegration over the data for the period 1984-2016, the study ascertains the presence of “resource curse” in terms of attracting FDI. The study discovers new findings as to the resource curse in attracting FDI are not because of institutional quality which has a positive relationship with FDI. The results also indicate the absence of crowding out of domestic investments. Finally, the study recommends channeling FDI to Greenfield projects with the maximum transfer of management and technology.

Keywords: Natural Resource, Institutions, Trade Openness, Crowding-out, Cointegration

JEL Classifications: E02; F21; O43; P33

1. INTRODUCTION

Foreign direct investment (FDI) is a “lasting interest” in a venture of another country. They are significant sources of capital for the host economies. It is different from simple capital inflows and is less prone to the crisis as there is a long-term association, there is the technological transfer, management control, and risk-sharing. FDI is generally seen as a determinant of economic growth. It aids in employment generation, income growth, and modernization. The positive effects can be summarized as human capital formation, technology spillovers, international trade integration, enterprise development, and competitive business environment. There are some associated costs also like weakening of the balance of payments with profit repatriation, negative environmental effects social disruptions and loss of sovereignty (OECD, 2002).

There is an argument between the relationship of FDI and natural resources like crude oil abundance is complex. This is because resource-abundant economies are rent-seeking in nature and

have an economic environment that hampers FDI inflows. These economies have a questionable institutional quality which hinders FDI inflows. Moreover, these economies have an easy flow of revenues owing to the extraction and exports of natural resources. Hence, they are not in a dire need of resources to finance its growth. In addition, FDI may not be promoted due to popularly known other reasons that can be a characteristic of any economy and not necessarily a natural resource-rich country. First, it may be feared that FDI would crowd out domestic investments. And second, FDI may be sensed as a threat to sovereignty. This issue is aggravated for economies of enclave nature and also where diversification is low.

Saudi Arabia is a major oil-exporting country. It has huge reserves of oil and enough wealth to fund its economic growth. It may have particular institutions that hinder the inflow of FDI to the economy. As far as the technical knowhow extract oil is concerned, it can simply purchase the expertise through contracts, rather than ownership sharing (Rogmans and Ebbers, 2013). Also, FDI

may have a limited impact on the extraction sector in “Enclave economies.” However, this may not be the case for Saudi Arabia as the entire oil sector industry is in government-controlled. Also, FDI may crowd out domestic investment. But, no evidence of crowding out is found in Saudi Arabia as FDI is mostly capital intensive and mainly in Saudi-owned joint ventures (Ramady and Saeed, 2007).

Figure 1 provides a graphical representation of FDI inflows as a percentage of the country's GDP. FDI inflows as a percentage of GDP ranged between a maximum of 8.49% and -1.36% with an average of 1.55%. There are lot of fluctuations in the FDI inflows and is continuously declining after reaching its maximum in 2009. The country is constantly trying to diversify and reform its economy particularly with the implementation of the National Transformation Plan (2020) announced in 2016. Attracting FDI is one of its strategic objectives. To increase FDI from SR30 billion to SR70 billion is one of the targets of this plan. Saudi Arabian General Investment Authority (SAGIA), the regulatory authority, recently in 2018 removed four more items from the prohibited list namely recruitment, media, real estate, and road transportation services.

This study identifies the controversial rent-seeking nature of an oil-exporting country like Saudi Arabia as a probable problem which may disrupt the allocation of resources, leading to a fall in productive activities resulting in a reduction in economic efficiency which is detrimental to economic efficiency. This can discourage FDI inflows. The aim of this study is to assess whether the adverse economic cost related to abundant natural resource endowment affects the inflow of FDI. Towards this, the study tests the hypothesis of whether oil rents, institutional quality, domestic investments, and trade openness significantly impact FDI.

2. LITERATURE REVIEW

Dunning (1980) is of the opinion that natural resources attract resource seeking FDI. Economies with high growth rates, a business-friendly environment, and a greater percentage of international trade attract more FDI (Elimam, 2017). But the role of institutions plays a critical role in natural resource-rich countries (Sachs and Warner, 1995; Haque, 2020). Besides convention

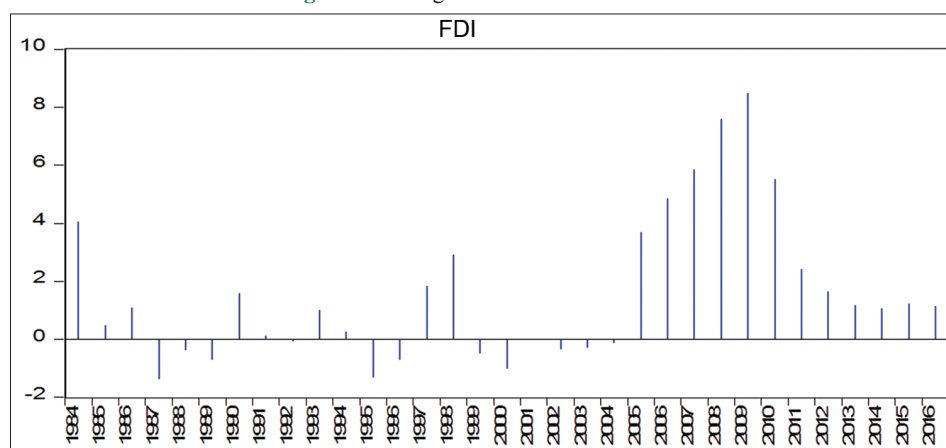
factors like GDP, trade openness, inflation, exchange rate, and likewise, institutional quality has a critical role in attracting FDI, particularly in oil-rich countries. Also, non-diversified and oil-rich economies may sense FDI as a threat to economic sovereignty and hence set many local ownership restrictions (Lopez-Carlos and Schwab, 2007).

Abdel-Rahman (2007) studied the determinants of FDI for Saudi Arabia for the period 1958-2000. The manufacturing sector comprising of the petrochemical sector was the largest recipients of FDI. The study found GDP and socio-political risk has positively a significant impact on FDI. But, exports, domestic investments, had a negative impact on FDI. The results implied that FDI had a “crowding-out” effect on domestic investments indicating a probable “crowding-out” effect. Also, as the variable sociopolitical risk was significant it validates the inference that FDI tends to increase because of lower risk in the country. The socio-political factors were the indicators of ICRG. Other factors attracting FDI were wage rates and the cost of capital.

Mina (2007) studied the reasons for FDI flows to the GCC countries, for the period 1980-2002. The results indicated that oil reserves, oil prices, and oil production, had discouraged FDI inflows, nevertheless, oil production relative to oil reserves, which measure the relative degree of oil utilization encouraged FDI. The study further found that institutional quality, infrastructure, and trade openness have a positive relationship with FDI while human capital had a negative relationship with FDI. Rule of law indicator of ICRG is used as a proxy for institutions. The study laments declining FDI flows to these countries in spite of their awareness to diversify the economy and income.

Khayat (2017) studied the location determinant of FDI in MENA countries including Saudi Arabia for the period 1960-2012. Except for fuel exports, the other proxies of natural resources like oil rents, oil reserves, oil production, and oil production relative to oil reserves had a negative relationship with FDI. The study also looked into the interaction between these indicators with Institutional quality proxy by the Investment profile of ICRG. The interaction term between natural resources and investment profiles also had a negative impact on FDI as natural resources diluted the

Figure 1: Foreign direct investment inflows



Source: Authors calculation

positive effects of institutions. Other variables like trade openness, GDP, inflation, and investment profile had a positive impact on FDI. Infrastructure and human did not impact FDI inflows.

Yazdanian (2014) studied the determinants for 14 oil-producing countries including Saudi Arabia for the period 1986 and 2007. It found GDP, oil production, and trade openness, and oil production has a significant and positive impact on FDI while the impact of oil price, exchange rate, and the inflation rate was negative and significant. The study justified the increase of FDI with an increase in oil production stating reasons that increase in production requires more investments and transfer of technology to the extraction and processing sector. The study justified the fall in FDI with an increase in oil prices stating increases the revenues of the exporting country discouraging the inflow of FDI.

Gawad and Muramalla (2013) find a positive relationship between crude oil production and FDI for UAE, Kuwait, and Saudi Arabia. The study finds different results for different oil crude oil-related parameters and their relationship with FDI. First, the product of oil is significantly related to FDI for UAE but not for Kuwait and Saudi Arabia. The refinery capacity is significantly related to Saudi Arabia but not to the UAE and Kuwait. And third, the export of crude oil is significantly related to none of these three countries.

Rogmans and Ebbers (2013) in their study on OPEC countries including Saudi Arabia for the period 1987-1997, oil price and GDP per capita, and manufacturing exports are found to be significant determinants of FDI, while the variable composite risk and oil and gas reserves are not significant. But for the period 1998-2008, oil price along with GDP per capita, manufacturing exports are important determinant of FDI as they are positively related. But composite risk and oil and gas reserves are negatively related to FDI. The authors recommend the results of the second time period as it has a higher R square value.

Binkhamis (2016) reports that for Saudi Arabia FDI is required for economic diversification and employment generation is the greatest benefactor of FDI in Saudi Arabia. Certain social, political, and localization of workforce factors are factors hindering FDI flows. But steady economic growth, stable exchange rates, low inflation, openness to foreign capital and strong banking sector help to attract FDI. Also, the country has been successful in attracting despite being subjected to acts of terrorism and conflicts. The fall in oil prices has created a further need for FDI.

Mahmood and AlKhateeb (2018) studied the relationship of FDI with financial market development, domestic investment, and oil price for the period 1970-2015. The effect of financial market development was captured by total credit by banks to GDP ratio. Results of the study indicate that oil price and FMD positively impact FDI, while domestic investment negatively impacts FDI. This implied that domestic investment is a substitute for FDI and there is a “crowding-out” effect. Economic growth measured by GDP growth rate had an insignificant effect on FDI.

Belloumi and Alshehry (2018) studied the causal relationships between FDI, domestic investment, and economic growth in Saudi

Arabia over the period 1970-2015. The results indicate negative bidirectional causality between FDI and non-oil GDP growth, negative bidirectional causality between local investments and non-oil GDP growth. The study also found bidirectional causality between local investments and FDI. This implies that FDI inversely impacts local investments. This hints at the “crowding out effect.” The result also supports that financial development and trade openness has a positive impact on FDI

Eissa and Elgammal (2020) finds a positive relationship between oil price and FDI. The rationale behind the result as opined by the study is that marginal investments in the oil and petrochemical industry become more remunerative with higher crude oil prices and hence it attracts FDI. Further, it leads to increased revenue to the government promoting economic stability which attracts further FDI. The study also found a negative relationship between oil reserves and FDI. The result is justified with the argument that because of huge oil reserves these countries have sufficient financial resources to continue with its economic growth and hence restrict FDI to protect its resources. The study infers that GCC states lack the motivation to attract FDI and they restrict FDI channeled ownership of firms fearing losing of resources due to uneven control of ownership.

Carril-Caccia et al. (2019) in their study supports the presence of “oil curse” on FDI for oil abundant countries. The study estimates that a percentage point increase in oil rents decreases the number of projects by an average of 3%. The relationship is different for oil abundant-poor capital countries and oil abundant-capital rich countries. In the former, the countries tend to attract FDI to process its resources. But in the oil abundant rich countries, the country has enough financial resources to further its growth. Such countries are empowered enough to sustain the autarkic type of policies and prefer rent-seeking behavior. They do not tend to actively pursue FDI and put local ownership conditions which become potential barriers to FDI inflows.

3. METHODOLOGY

The study plans to study the relationship between FDI, oil rents, trade openness, domestic investment, and institutional quality. The basic model this study uses is

$$\ln FDI_t = \alpha_0 + \beta_1 \ln OR_t + \beta_2 \ln GFCF_t + \beta_3 \ln rTO_t + \beta_4 \ln INST_t + \varepsilon_t(1)$$

Where \ln indicates log form; FDI indicates Foreign Direct Investment as a percentage of GDP, OR indicates oil rents as a percentage of GDP, GFCF indicates gross fixed capital formation as a percentage of GDP; TO indicates trade openness as a percentage of GDP, and INST indicates institutional quality. All the variables except the institutional quality are taken as a percentage of gross domestic product (GDP). GFCF is taken as a proxy for domestic investment. And, all variables are taken in log form.

The choice of the variables is based on earlier studies. Oil rents were used by Khayat (2017); and Carril-Caccia et al. (2019). Trade openness was used by Mina (2007); Abdel-Rahman (2007); and Yazdanian (2014). ICRG indicators as a proxy for institutions was

used by Gemayel (2004); Mina (2007); Abdel-Raman (2007); Rogmans and Ebbers (2013); and Khayat (2017). Domestic investments have been used by Abdel-Raman (2007); Belloumi and Alshehry (2018); and Mahmood and AlKhateeb (2018). The study uses annual data from 1984 to 2016. The data for FDI inflows as a percentage, trade openness as a percentage of GDP and oil rents as a percentage of GDP is taken from the annual report of the World Development Indicators database of the World Bank. The data for institutions is taken from ICRG. This data is a sum of four indicators namely “Government Stability, Financial Risks, Corruption and Bureaucratic Quality.”

The study plans to start with a simple graphical representation of the variables used. As normally, time-series data of economic nature are non-stationary at level, the study plans to test for stationarity by the Augmented Dickey-Fuller (ADF) test. If the data is stationary at level, the study would use the ordinary least squared (OLS) method. If the variables are stationary upon first differences, the study would be using Johansen cointegration method. But, before proceeding with the cointegration test the lag order of the variables is ascertained using the vector autoregressive framework. Next, the presence of cointegration is determined using trace statistics and maximum Eigenvalue. The presence of the long-run equilibrating relationship and a short-run relationship would then be ascertained using the vector error correction model (VECM) framework. Finally,

the residual analysis would be performed on the robustness of the model.

4. RESULTS

Table 1 provides a descriptive statistic of the data used. The inflows of FDI and the magnitude of oil rents, trade openness, and institutional quality can be visualized in Figure 1. FDI inflows as a percentage of GDP ranged between a maximum of 8.49% to -1.36% with an average of 1.55%. As is evident, FDI inflows form a very minuscule portion of the GDP of Saudi Arabia. Oil rents as a percentage of GDP ranged between a maximum of 70.62% and 49.25% with an average of 63.82. This signifies the huge contribution of oil rents to the economy. Trade openness as a percentage of GDP ranged between a maximum of 96.10% and 65.08% with an average of 73.13%. This implies that Saudi Arabia is favorably open economy. The data for institutions is proxy by country risk indicators provided by International Country Risk Guide (ICRG). A graphical representation of the independent variables is provided in Figure 2.

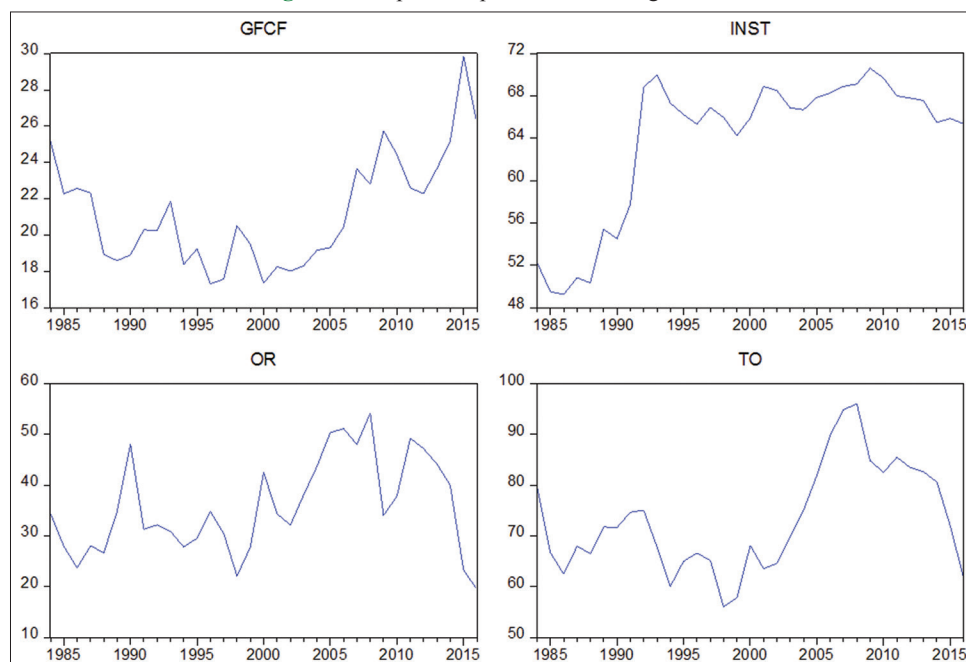
The data is first subjected to stationary testing using the ADF test. All the variables of FDI, oil rents, trade openness, and institutions have a unit root at the level. At first difference, all the variables become stationary (Table 2). This rationalizes the application of Johansen method of cointegration to study the long-run relationships between the variables.

Table 1: Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
FDI	1.558659	1.059269	8.496352	-1.369183	2.532733	1.217231	3.705317
OR	35.79015	34.37750	54.26021	19.43406	9.425121	0.308469	2.052603
GFCF	21.23824	20.45216	29.85240	17.30892	3.04697	0.773990	3.104182
TO	73.13138	71.70802	96.10263	56.08838	10.45878	0.491605	2.396251
INST	63.82828	66.70833	70.62500	49.25000	6.830147	-1.19137	2.826032

Source: Author's calculation

Figure 2: Graphical representation of regressors



Source: Authors calculation

Next, the study uses the vector autoregressive framework to determine the lag order. The study identifies lag 1 at the optimum lag using the likelihood ratio (LR) criteria (Table 3). This is chosen out of parsimony as it is the lowest lag indicated.

The results of both Trace statistics and Max-Eigen statistics signify the occurrence of a long run cointegrating relationships between the variables (Table 4). Normalized cointegrating coefficients estimate the long run relationship.

$$\ln FDI_t = 63.86456 - 13.24239 \ln OR_t^{**} + 23.37919 \ln TO_t^{**} + 5.957046 \ln INST_t^{**} + 4.351675 \ln GFCF_t \quad (2)$$

[8.31629] [-7.78931] [-5.77213] [1.90636]

The results indicate that all the three variables are significantly associated with FDI, except for domestic investment. Except for oil rents, the other two variables namely trade openness and institutional quality have a positive relationship with FDI inflows. A 1% increase in oil rents decreases FDI inflows by 13.24%.

While a 1% increase in Trade openness increases FDI inflows by 23.37% and a 1% increase in institutional quality increases FDI by 5.77% of FDI inflows.

$$\Delta \ln FDI_t = \phi_1 ECT_{t-1} + \sum_{i=1}^k \beta_{1i} \Delta \ln FDI_{t-i} + \sum_{i=1}^k \beta_{2i} \Delta \ln OR_{t-i} + \sum_{i=1}^k \beta_{3i} \Delta \ln TO_{t-i} + \sum_{i=1}^k \beta_{4i} \Delta \ln INST_{t-i} + \sum_{i=1}^k \beta_{5i} \Delta \ln GFCF_{t-i} + \alpha_0 \quad (3)$$

Upon establishing the cointegrating relationship between the variables the study proceeds with estimating the vector error correction model using equation 3. The results indicate that the error correction term is significant and negative. This satisfies the necessary condition of ECT. As the ECT has a value of -0.64 , it indicates that any disequilibrium is corrected to the tune of 64% in a year.

There is also a short-run relationship between the variables. The short-run coefficients of oil rents at lag 1 is significant at 5% level of

Table 2: ADF test results

Variables	FDI		OR		INST	
	t-stat	Prob.	t-stat	Prob.	t-stat	Prob.
Constant	-2.102595	0.2451	-2.113847	0.2408	-2.752264	0.0773
Const, Linear Trend	-2.857493	0.1903	-1.918611	0.6216	-1.788993	0.6857
None	-1.695323	0.0848	-0.580204	0.4581	1.056090	0.9199
	D (FDI)		D (OR)		D (INST)	
Constant	-4.680520	0.0008	-5.116389	0.0002	-4.071998	0.0037
Const, Linear Trend	-4.604664	0.0048	-5.345103	0.0008	-3.127797	0.1218
None	-4.766548	0.0000	-5.208738	0.0000	-3.897193	0.0003
	TO		GFCF			
	t-stat	Prob	t-stat	Prob	t-stat	Prob
Constant	-1.605433	0.4683	-1.783351	0.3816		
Const, linear trend	-1.584185	0.7761	-2.728461	0.2327		
None	-0.579875	0.4582	-0.000565	0.6751		
	D (TO)		D (GFCF)			
Constant	-4.393527	0.0016	-6.436475	0.0000		
Const, linear trend	-4.329688	0.0090	-6.701027	0.0000		
None	-4.466255	0.0001	-6.517703	0.0000		

Source: Author's calculation

Table 3: Lag structure

Lag	LogL	LR	FPE	AIC	SC	HQ
0	59.34644	NA	1.62e-08	-3.748031	-3.512290	-3.674200
1	141.4549	130.2410	3.26e-10	-7.686546	-6.272102	-7.243560
2	162.7288	26.40902	4.98e-10	-7.429576	-4.836428	-6.617434
3	215.8354	47.61275*	1.17e-10	-9.367957	-5.596107	8.186661
4	280.4466	35.64757	2.61e-11*	-12.09977*	-7.149212*	-10.54931*

Source: Author's calculation

Table 4: Cointegration statistics

No. of CE(s)	Trace				Max-eigen			
	Eigen value	Statistic	Critical value	Prob.**	Eigen value	Statistic	Critical value	Prob.**
None*	0.952352	158.4812	69.81889	0.0000	0.952352	88.27347	33.87687	0.0000
At most 1*	0.808146	70.20774	47.85613	0.0001	0.808146	47.87959	27.58434	0.0000
At most 2	0.444677	22.32815	29.79707	0.2806	0.444677	17.05793	21.13162	0.1693
At most 3	0.147802	5.270220	15.49471	0.7795	0.147802	4.638157	14.26460	0.7866
At most 4	0.021559	0.632064	3.841466	0.4266	0.021559	0.632064	3.841466	0.4266

Source: Author's calculation

Table 5: Vector error correction model

Variables	Variable code	Coefficient	Std. Error	t-Statistic	Prob.
ECT	C(1)	-0.647670	0.143009	-4.528880	0.0003
D(LNFDI(-1))	C(2)	0.311568	0.179337	1.737329	0.0994
D(LNOR(-1))	C(3)	6.257740	1.699912	3.681213	0.0017
D(LNINST(-1))	C(4)	1.450924	3.362337	0.431522	0.6712
D(LNTO(-1))	C(5)	-2.662157	3.300008	-0.806712	0.4304
D(LNINV(-1))	C(6)	3.853642	2.074458	1.857662	0.0797
D(LNFDI(-2))	C(7)	0.176716	0.125897	1.403653	0.1774
D(LNOR(-2))	C(8)	2.449706	1.355813	1.806817	0.0875
D(LNINST(-2))	C(9)	-9.168902	3.388060	-2.706240	0.0145
D(LNTO(-2))	C(10)	2.088210	3.073134	0.679505	0.5055
D(LNINV(-2))	C(11)	2.832393	2.104945	1.345590	0.1951
	C(12)	0.051660	0.108130	0.477762	0.6386
R-squared		0.821578	F-statistic		7.534956
Adjusted R-squared		0.712543	Prob(F-statistic)		0.000102

Source: Author's calculation

Table 6: Residual analysis

Item	Test	Test statistic	P-value
Normality	Jarque-Bera	1.672310	0.433374
Serial correlation	Breusch-Godfrey LM	1.437858	0.4873
Heteroskedasticity	Breusch-Pagan- Godfrey	13.97852	0.5272

Source: Author's calculation

significance. The short-run coefficient of trade openness at lag 2 is also significant. But, the short-run coefficient of trade openness is not significant. Moreover, the overall model significant R-squared value of 0.82 (Table 5). The model is also free from the issues of serial correlation and heteroscedasticity as the p-values of the associated test statistics are greater than 0.05. Also, the error terms are normally distributed at the P-value of Jarque-Bera is more than 0.05 (Table 6).

5. CONCLUSION

The results indicate that oil rents discourage FDI. The result of this study supports the findings of Khayat (2017) and Carril-Caccia et al. (2019). This establishes the presence of 'resource curse' in oil abundant countries in terms of attracting FDI. The results also indicate that institutional quality encourages FDI. The results of this study support the finding of Abdel-Rahman (2007), Mina (2007), Khayat (2017), but contradicts the findings of Rogmans and Ebbens (2013) finds no significant relationship between institutional quality and FDI. As institutional quality is positively related to FDI inflow, it indicates that against many studies the oil rents do not lead to discouraging FDI via the institutional effect.

The results indicate the absence of 'crowding-out' of domestic investment because of FDI in the country. These results contradict the findings of Abdel-Rahman (2007), Mahmood and AlKhateeb (2018), and Belloumi and Alshehry (2018). This leads to the recommendation that Saudi Arabia invites FDI in Greenfield projects with a maximum inflow of technical and managerial expertise. This will definitely aid the ongoing structural reform process which basically aims at diversifying away from oil.

The study confirms the conventional determinants of FDI and also discovers new findings. Though oil rents have a negative

association with FDI inflows it is not because of the traditional "Dutch disease" phenomenon as institutions are having a positive role in attracting FDI to the country. The results also hinted at the absence of "crowding-out" of domestic investments. Whatever hindrance is to FDI may be because of the other argument of an abundance of revenues which invalidates the need for more resources to fund growth.

Nevertheless, this study suffers data limitations as the data on ICRG is available only from 1984 until 2016 making the period of study small. This restricted the incorporation of many other variables like GDP, inflation, exchange rate into the model as an econometric methodology is not able to provide results for more independent variables when the sample size is low. Also, as the institutional data is subjected to high aggregation, the scope of future research would be repeating the research with individual indicators of the composite measure of ICRG.

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