A REVISIT TO THE RESOURCE CURSE DILEMMA IN THE MENA REGION, FOR 2008-2014

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Abstract: The interplay between oil rents, institution and economic growth is important for resource abundance economies as they are hypothesized to be suffering from 'resource curse', which denotes poor growth in the presence of abundant natural resource. The current paper aims to study the triptych relationship between economic growth, oil rents and institutions with an added dimension of sectoral contribution to growth. The Middle East and North African (MENA) region is an archetypal case of resource abundant region. Both the pattern of economic growth and institutional quality in the region is diverse and debatable. This study bases itself on 18 countries of the MENA region for the period 2004 to 2018, using various static and dynamic panel data methods including Arellano-Bond-Generalized Method of Moments. The main findings indicate that oil rents and institutions determine economic growth. We estimate two models: A first model relating GDP per capita with the sectoral shares on real value added and a second model relating GDP per capita with sectoral real values per capita. In the first model, the negative and insignificant effects of agriculture share, manufacturing share and service sectors share on GDP might indicate the relative unimportance of these sectors in the economies accruing oil rents, indicating the presence of a resource curse. In the second model, the level of industrial production per capita, positively related with Oil rents per capita, shows a positive and significant effect on real value added of Sectors and GDP per capita. These results confirm that oil rents per capita is not a curse but an important positive advantage for economic development. An important highlight of the result that differentiates this study with others is the positive impact of institutions. The study negates the presence of resource curse as oil rents are contributing positively to growth and concludes with the note that poor performance of some sectors in some countries in the MENA region is not exactly due to the quality of institutions; rather it is because of lack of diversification.

Keywords: Economic Growth; Oil Rents; Resource Curse; Institutions, Trade Openness, Diversification; Agriculture; Manufacturing; Service; System-GMM.
JEL codes: O43; O53; P48; R11

1. Introduction

Studying the effect of natural resources in resource-rich economies is decisive for sustainable development. Traditionally, natural resource endowment has been considered essential for the economic growth of a country.

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This view is evident in the writings of mainstream economists like Viner (1952) and Lewis (1955). In fact, natural resource endowment is considered vital for the 'take-off' process involved in the transition from a traditional to an industrial economy as evident in the case of Britain, the United States, and Australia (Rostow, 1961).

In addition, the 'Staples theory' and the 'Vent for surplus theory' re-echoed on the economic growth and development of resource-rich countries through the exploitation of natural resources and the expansion of international trade (Barbier, 2005; Marwah, 2015; Willebald et al.2015).

Later, this conventional wisdom was challenged as resource-rich economies have shown slower growth rates when compared to resource-poor countries (Sachs & Warner, 1997; Gylfason, 2001; Frankel, 2010). This led to the coining of the phrase 'resource curse' by Auty (1993) who argued that it may not be the case that natural resource endowment is always desirable as it can alter the economic structure of the country to such an extent that the endowment in fact turns into a curse. The argument is that in resource-rich countries resource rents inhibit economic activity in favor of easy rent seeking, leading to the weakening of the manufacturing sector that dismantles the mainstay of economic growth (Sachs & Warner, 1999). Similar studies attributed the resource curse to the appreciation of exchange rates, export price volatility, policy issues, and poor institutions (Sala-i-Martin & Subramanian, 2003; Collier & Hoeffler, 2004; Mehlum et. al. 2006).

Oil exporting countries are an archetypical case for natural resource-rich countries. In these countries, the windfall gains from oil exports and the subsequent increase in subsidies and consumption; the political economy of the country; and the failure of these countries to increase their growth rates have been highlighted by Gelb (1986). The rent-seeking nature of oil-producing states 'compete with production' if there is poor institutional quality as it aids 'grabbing' (Mehlum, 2006). The intention of oil-producing and rent-seeking countries is towards distributing the rents, which shifts the orientation of these economies to predation instead of production prohibiting structural changes and democratization (Beblawi & Luciani, 1987; Ross, 2001).

A study of growth rates comparison between resource-rich and resource-poor countries strengthen the argument on the resource curse. On one hand, the resource-rich countries like Nigeria, Ghana, and Angola showed comparatively poorer economic growth than resource-poor countries like Asian tigers—Korea, Singapore, Hong Kong, and Taiwan found resource-rich countries showed comparatively poorer economic growth than resource-poor countries (Sachs & Warner, 1995). Similarly, resource-poor countries like Singapore, South Korea, Taiwan, and Hong Kong have shown higher economic growth rates than resource-rich economies like Algeria, Venezuela, Iran, and Nigeria (Hassan et al. 2019). Contrarily resource-rich countries of Norway and Botswana give an entirely different viewpoint. Revenues from natural resources have led to strong growth rates for Norway and Botswana. Here institutions play an important role. Norway used oil rents for productive investments ensuring transparency and no corruption, while, Botswana used oil rents towards good institutions and institutional reforms (Acemoglu et al. 2002; Larsen, 2006; Kuc-Czerep, 2017; Tsani, 2013).

Institutions or institutional quality has been an important mainstay in the realm of the resource curse. It has been documented that oil-based economies show tendencies of institutional collapse, as were the case of Venezuela (Karl, 1997), Iran, and Libya (Kaznacheev, 2017). The fact that in oil-producing countries, oil rents boost economic growth subject to the condition of quality of institutions therein has been reported in many studies (Mehlum et al. 2006, Sarmidi et. al. 2014; Shadrokh & Zamanzadeh, 2017; Hassan et. al. 2019). Citing the case for Nigeria, Olayungbo and Adediran (2017) points out that abundance of the natural resources is responsible for poor governance. Abundant natural resources make the government less responsive to the people, less focused on building strong institutions and fail to implement policies that may accelerate economic growth. Similarly, poor quality of institutions, corruption, weak law, and order is considered as an important reason for poor economic growth in resource-rich countries. Similarly citing the case for Algeria, Akacem and Cachanosky (2016) states that natural resources matter less than institutions and identifies the wrong institutional framework as problematic rather than the presence of natural resources.

For the MENA oil-exporting countries oil rents – institution- diversification played an important role in economic growth. It has also observed that the oil rents in the MENA countries leads to poor governance, which further serves as an obstacle to the economic diversification efforts (Matallah & Matallah, 2016). Resource abundance positively impacts economic growth, however, dependence on natural resources particularly has a negative and insignificant effect on the GDP growth, indicating that resource dependency is a curse, when the quality of the institutions is low (Moshiri and Hayati, 2017). Poor quality of institutions have a negative impact on the economy of oil-rich countries, however improving the quality of institutions can mitigate the negative impact of oil wealth on economic growth (Costa & Santos, 2013; Shadrokh & Zamanzadeh 2017, Kakanov et. al., 2018, Hassan et .al., 2019, Olayungbo & Adediran, 2017).

Despite that MENA region is an oil-abundant economy, nonetheless, studies have characterized this region as having low and non-inclusive economic growth as well as poor institutions (Nabli & Arezki, 2012; De Melo & Ugarte, 2012). Nevertheless, oil-rich countries in MENA may not experience the classic problem of resource curse disease, as they had limited economic productive activities before the boom in the oil sector (Stevan, 1986). Moreover, Rosentein-Rodan's (1943) concept of a big push from the windfall revenues from petroleum products ensured enough availability of capital and forex (Doshi et al., 2015). Furthermore, the theory of Comparative Advantage that advocated that countries should emphasize on their specialization also favoured the emphasis on the oil sector (Majumder et al., 2020).

In fact, studies have empirically found a positive relationship between oil exports and economic growth (Khan & Haque, 2019). Nevertheless, a different strand of the literature shows that resource abundance increases economic growth (Lederman & Maloney, 2007). These studies have refuted the mere existence of the resource curse. In fact, Brunnschweiler (2008) opined that the abundance of natural resources is much less of a curse and more of a boon'**.** Country specific studies like on Algeria by Chekouri et al. (2017) and on Saudi Arabia by Haque (2020) found a significantly positive relationship between oil rents and economic growth and negated the presence of resource curse in oil abundant economy due to oil abundance.

It was further observed that increased trade openness tends to lower the probability of resource curse, as it leads to efficient reallocation of resources. Besides providing access to international markets with better prices, it also paves the way for superior extraction technologies and making the product more profitable. In fact, Majumder et al. (2020) in their study found that trade openness can possibly reduce the resource curse approximately by 25%. In a related study, Ampofo et al. (2020) found that a positive shock in trade openness leads to a positive effect on economic growth.

However, a study on the sectoral growth in these resource-rich countries gives a distinct perspective. Matallah & Matallah (2016) in their study reported that oil rents have a positive effect on economic growth, on the cost of the other sectors like agriculture, industry, and services.

This hints at the presence of the resource curse in the MENA region. The researchers took a cursory look at the countries (with and without oil rents) of the MENA region. Countries like Iraq, Kuwait, Saudi Arabia, Oman, Iran, UAE, Algeria had significant oil rents.

The service sector of these countries contributed more than 40% of the sum total of service, industry and agriculture sectors in 2018. Only for Iraq, it was 35%. And except for Iraq and Kuwait, there was an increase in the share of the service sector for the period 2004 to 2018.

Further, in these countries with substantial oil rents, the industry sector of these also contributed more than 40% of the sum total of service, industry and agriculture sectors in 2018. Only for Iran, it was 38.24%. But except for Iraq and Kuwait, there was a decrease in the share of the industrial sector for the period 2004 to 2018. The share of agriculture in the total of service, industry and agriculture was the highest for Algeria at around 10%, and it showed a decline or stagnated for all the countries with oil rents, except for Oman, Iran and Algeria (Table 1).

The counties with less than 6% of oil rents as a percentage of GDP, namely Egypt, Bahrain, Tunisia, Jordan, Morocco, Israel, Cyprus and Lebanon, had a service sector of more than 50 % of the entire service industry and agriculture sectors. The share of the service sector was even more than 75% for Israel, Cyprus and Lebanon, while it was more than 65% for Tunisia and Jordon. And the change in the share of service sector between 2004 and 2008 was positive for all the countries.

Nevertheless, the percentage of industry in the total of service, industry and agriculture sectors was less than 30% for the countries except for Egypt and Bahrain. The change in the share of the industrial sector between 2004 and 2008 was negative for all the nations.

Against this background, the present study aims to examine the relationship between oil rents, institutions and economic growth; revisit to the resource curse dilemma in the MENA region. The rationale for this study stems from the argument that whether oil rents and institutions encourage or discourage economic growth. Earlier, Haber and Menaldo (2011), Anderson and Ross (2012) asserted that the relationship between resource curse, oil rents, and institutional factors particularly political aspect depends on time and period of study. Therefore, this relationship may vary both across countries and over time as further observed by Malik (2015). Moreover, political unrest after 2011 in Tunisia, Egypt, Syria, and Libya had an economic underpinning and it pressurized other countries in the MENA region. As further and rightly observed by Mortiz (2016), the post Arab spring period after 2011 is an 'ideal opportunity' to reassess the relationship between growth-oil rents-institutions. Another aspect that this study aims to explore is the role of agriculture, manufacturing, service, and trade openness on economic growth in MENA countries.

Furthermore, the percentage of agriculture in the total service, industry and agriculture declined between 2004 and 2008 (Table 1). Hence, prima facie, both the type of countries (having substantial oil rents and not-substantial oil rents) have a more or less similar economic structure except for a more significant share of the service sector in countries with no oil rents and relatively more robust industry sector in countries with oil rents. Whether this is due to the presence/absence of oil rents needs further exploration

In spite of similar percentages by sector, between oil producers and non produces, we may notice higher values, of industrial and total production per capita, in countries with higher levels of oil rents per capita.

It is important to notice that real Value-Added per capita in Industry and Total is usually higher in the countries with a high value of Oil rents per capita. For example Kuwait, with around 16677 Dollars (at constant prices of year 2010) of Oil rents per capita in year 2018, has a high value of real Value-Added in Industry (21052) and Total (35816) while a country with lower value of Oil rents per capita have lower values of real Value-Added in Industry and Total.

The positive effect of Industry per capita on real GDP per capita is not only due to the direct effect of this sector on GDP per capita, but also to other indirect effects like the positive impact of Industry on the Services sector, as seen in several econometric studies. Guisan, Aguayo and Exposito(2001). with a sample of 132 countries of the World, estimated an impact of 0.82 on Services per each unit of increase in Industry. Other studies of intersectoral relationships also show a general positive impact of Industry on Services. Guisan and Exposito(2021), with a sample of 137 African countries in year 2017, estimated a coefficient of 1.35 for the effect on an increase of one unity in Industry on the development of Services.

Following this introduction, the rest of the paper is organized as data and method is covered in section two. The results are presented and discussed in section three. The study is concluded and policy recommendations were made in section four.

2. Data and Methods

2.1. Data

The paper aims at revisit the resource curse dilemma in the MENA region by examining the impact of oil rents and institutional quality on economic growth on one hand. Simultaneously, it also studies the effect of other important sectors on the economic growth of 18 Middle East and North African (MENA) countries. The study uses observations from 2004 to 2018 for GDP per capita, Oil rents (% of GDP) and institutional quality (a simple average of the World Bank governance indicators: control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, rule of law, voice and accountability). Other control variables are: Agriculture (value added % of GDP), Manufacturing (value added % of GDP), Service (value added % of GDP) and Trade (the sum of exports and imports of goods and services measured as a share of gross domestic product (% of GDP)) covering MENA countries. The data set were obtained from World Development Indicator (WDI) database.

Table 1: Sectoral composition of economies

Country	Year	Oil rents as % of GDP	Real Value Added per capita				Sectoral % on GDP		
			Agriculture per capita	Industry per capita	Service per capita	Total	Agriculture as %	Industry as %	Service as %
		i	ii	iii	iv	ii+iii+iv	ii/v*100	iii/v*100	iv/v*100
Iraq	2004	65.8	271.01	2194.58	1747.20[a]	4212.79	6.43	52.09	41.47
	2018	44.8	59.98	3400.80	1913.03	5373.81	1.12	63.28	35.60
	Change in sectoral composition						-5.32	11.19	-5.87
Kuwait[b]	2010	48.8	174.12	25486.37	18147.26	43807.74	0.40	58.18	41.42
	2018	44.1	150.64	22052.37	15612.67	37815.68	0.40	58.32	41.29
	Change in sectoral composition						0.00	0.14	-0.14
S. Arabia	2004	42.2	514.32	12767.60	5712.12	18994.04	2.71	67.22	30.07
	2018	28.9	479.66	11975.45	8413.78	20868.90	2.30	57.38	40.32
	Change in sectoral composition						-0.41	-9.83	10.24
Oman	2004	37.7	279.75	11796.05	5725.00	17800.80	1.57	66.27	32.16
	2018	26.7	400.26	9529.36	6855.25	16784.87	2.38	56.77	40.84
	Change in sectoral composition						0.81	-9.49	8.68
Iran	2004	25.2	409.84	2565.55	2740.48	5715.86	7.17	44.88	47.95
	2018	20.4	520.12	2489.56	3500.32	6510.01	7.99	38.24	53.77
	Change in sectoral composition						0.82	-6.64	5.82
UAE	2004	20.1	798.16	33097.88	25323.92	59219.96	1.35	55.89	42.76
	2018	16.6	283.36	20365.19	20679.87	41328.42	0.69	49.28	50.04
	Change in sectoral composition						-0.66	-6.61	7.28
Algeria	2004	22.2	301.29	2535.24	1334.80	4171.32	7.22	60.78	32.00
	2018	15.6	481.66	1994.95	2223.86	4700.47	10.25	42.44	47.31
	Change in sectoral composition						3.02	-18.34	15.31
Yemen	2004	34.9	103.63	563.00	297.35	963.97	10.75	58.40	30.85
	2018	4.3	60.14	218.35	202.01	480.50	12.52	45.44	42.04
	Change in sectoral composition						1.77	-12.96	11.20
Egypt	2004	10.2	322.97	727.79	974.12	2024.88	15.95	35.94	48.11
	2018	5.6	376.64	926.52	1381.67	2684.83	14.03	34.51	51.46
	Change in sectoral composition						-1.92	-1.43	3.35
Bahrain[c]	2006	4.0	79.59	10539.23	10908.07	21526.89	0.37	48.96	50.67
	2018	2.4	60.92	8872.80	12389.91	21323.63	0.29	41.61	58.11
	Change in sectoral composition						-0.08	-7.35	7.43
Tunisia	2004	3.1	334.75	1034.32	1776.13	3145.19	10.64	32.89	56.47
	2018	2.0	394.30	1022.34	2676.09	4092.74	9.63	24.98	65.39
	Change in sectoral composition						-1.01	-7.91	8.92
Jordan	2004	0.0	115.60	920.38	1989.34	3025.32	3.82	30.42	65.76
	2018	0.0	112.22	841.47	2037.55	2991.23	3.75	28.13	68.12
	Change in sectoral composition						-0.07	-2.29	2.36
M	2004	0.0	313.11	625.43	1179.92	2118.46	14.78	29.52	55.70

	2018	0.0	428.32	808.74	1724.16	2961.23	14.46	27.31	58.22
	Change in sectoral composition						-0.32	-2.21	2.53
Isreal	2004	0.0	482.16	5569.73	17845.76	23897.65	2.02	23.31	74.68
	2018	0.0	399.90	6390.29	24326.94	31117.13	1.29	20.54	78.18
	Change in sectoral composition						-0.73	-2.77	3.50
Cyprus	2004	0.0	751.23	3880.08	14150.77	18782.08	4.00	20.66	75.34
	2018	0.0	381.41	2938.77	17431.94	20752.12	1.84	14.16	84.00
	Change in sectoral composition						-2.16	-6.50	8.66
Lebanon	2004	0.0	322.64	775.97	4128.05	5226.66	6.17	14.85	78.98
	2018	0.0	272.49	745.71	4487.28	5505.48	4.95	13.54	81.51
	Change in sectoral composition						-1.22	-1.30	2.53

Notes: 1. The data on agriculture, industry and services are in constant 2010 US$. The data in column ii is derived by dividing agriculture at constant 2010 US$ by the year's population; The data in column iii is derived by dividing industry at constant 2010 US$ by the year's population; The data in column iv is derived by dividing service at constant 2010 US$ by the year's population; 2. a:-Iraq's data on service sector is available 2007 onwards.3. b:-Kuwait's data is available 2010 onwards4. c:-Bahrain's data is available 2006 onwards5. The data agriculture, industry and services at constant 2010 US$ is not available at Qatar and Libya
6. All the is taken from World Bank statistics where Industry includes Manufacturing, Non-Manufacturing Industries and Building. *Oil % = Oil rents as % of GDP

2.1. Model 1: production per capita depending on sectoral shares and oil rents share

The methods of data analysis employed to achieve the objective of this study, in section 3, include: descriptive statistics, pooled OLS model, fixed effects model and random effects model. In addition, the linear dynamic model and the Generalized-Method of-Moments (GMM) dynamic panel estimator proposed and developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998) are used. This method is considered better owing to its ability to deal with persistent data, and elimination of endogeneity and heterogeneity problems.

The relationship between the variables of interest can first be express in the following form:

$$GDP_{it} = f\,(OILR, INST, AGR, MANF, SERV, TRADE) \ldots\ldots. (1)$$

Transforming equation (3.1) above into a linear stochastic form

$$GDP_{it} = \alpha_0+\alpha_{i1}OILR_{it}+\alpha_{i2}INST_{it}+\alpha_{i3}AGR_{it}+\alpha_{i4}MANF_{it}+\alpha_{i5}SERV_{it}+\alpha_{i6}TRADE_{it}+u_{it} \quad (2)$$

Where, i = [1,…..,N] and t=[1,…..,T],

GDP represents the economic growth, given by total production per capita , OILR stands for % of oil rents, INST denotes an institutional quality or governance, AGR is the agriculture (% of GDP), MANF symbolizes manufacturing sector contribution to GDP, SERV is the service sector (% of GDP), TRADE denotes the sum of exports and imports of goods and services (% of GDP).

The Random effects model is specify as:

$$y_{it} = \alpha_i \quad \sum_{k=1}^{k} B_k x_{xit} + \mu_{it}$$

for i=1,……., N. and t=1,……T

On the other hand the fixed effects model is expressed as:

$$\sum_{k=1}^{k} B_k x_{xit} + (\alpha_i + \mu_{it})$$

for i=(1,…….,N) and t= (1,……,T)

Where y_{it} stands as the dependent variable observed for individual i at time T, which in this study stands for GDP, x_{it} is the time-variant 1 x K regressor matrix containing other explanatory variables of interest (OILR, INST, AGR, MANF, SERV, TRADE), α_i is the unobserved time-invariant individual effect and μ_{it} is the error term.

GMM estimation

It has however documented in the literature that Fixed and Random effect models tend to give biased and inconsistent estimates. Therefore, using instrumental variables (IV) methods or GMM tend to produce consistent parameter estimate for a finite number of time periods (T) and large cross-sectional dimension (N) (Arrellano and Bond, 1991; Arrellano and Bover, 1995 and Blundell and Bond, 1998).

Unlike in a static panel data model, the dynamic panel data model incorporates lag(s) of the dependent variable as a regressor. However, inclusion of endogenous covariates often leads to the violation of strictly exogenous assumption (where x_{it} may correlate with U_{it}). This means that the independent variable can correlate with the past and possibly current error terms. Although, it is sometimes argued that exogenous covariates are at least conditional on individual and time specific effects, however in many area of economic inquiry this is not often the case (Bun & Sarafidis, 2013). Study by Beshley and Case (2000) reveals that policy variables are generally not strictly exogenous, but are concurrently estimated with the outcome variable of interest. Even if one assumes that the covariates are not concurrently estimated, they may still be influenced by past value of the outcome variable. In this study, a one lag of the regressant is included as a regressor to account for an endogeneity problem and to address the tendencies of random and fixed effect models to be bias and inconsistent. Thus, the dynamic model, for y_{it} is written as:

$$\sum_{j-1}^{p} \alpha_j y_{i,t-j} + x_{xit}\beta_1 + w_{it}B_2 + V_i + \mu_{it})$$

$$\sum_{j-1}^{p} \alpha_j y_{i,t-j}$$

The results of this approach are presented in section 3.

2.3. Model 2: production per capita depending on industry and oil per capita

Production per capita is an important indicator of economic development. Guisan(2018) analyzes many factor from demand and supply sides, including not only supply of primary inputs (mainly stock of capital and labor) but also equations related with intermediate inputs, having into account the effects of domestic production of Agriculture and Industry on Services, and foreign trade of goods. Countries with high values of industrial production per capita usually increase also its capacity to export and import. Thus industrial production per capita is a variable of great importance to foster economic development.

In cases that there are not problems of scarcity of primary inputs nor low level of demand, economic development depends greatly of the evolution of intermediate inputs.

From this approach, of intermediate inputs, we estimate equation 6 showing the positive impact of Oil rents per capita on industrial production per capita, with data of table 1: one estimation for the 16 countries in the initial year and another one for the 16 countries in year 2018. Besides, we estimate equation 7 showing the positive impact of real value added of industrial production on

QHI = F(OILH, and other variables) (6)

QHS = f (QHS(L), D(QHA+QHI) (7)

QHT = QHA+ QHI + QHSE (8)

Where QH means real production per head, and the final letters A, I, S, T are, respectively: Agriculture, Industry, Services and Total). Y(L) is the lagged value of the explained variable (for Y=QHS) and DX=X-X(L) is the increase of (X=QHA+QHI), measured by the difference between the value of the variable in year 2018 and the initial value (with the initial year in 2004 or another one indicated in table 1).

Section 4 presents the results of the estimation of equations (6) and (7) with a mixed dynamic model that relates de variable Y with its lagged value Y(lagged) and the increase of the exogenous variables.

3. Result and Discussion: Model 1 of economic growth depending on shares

The table 2 presents the descriptive statistics for all the variables included in the study covering 18 MENA countries, over the period of 2004-2018.

Table 2: Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max	Observations
GDP per capita	17161.6	18241	709.9	85076.1	N=270, n=18, T=15
Oil rents %	19.27	19.33	0.00	67.52	N=268, n=18, T=15
Institution	-1.80	4.43	-11.96	7.04	N=270, n=18, T=15
Agriculture %	4.80	4.23	0.0942	14.26	N=257, n=18, T=14
Manufacturing %	15.73	14.20	1.3205	111.08	N=251, n=18, T=14
Service %	25.88	20.62	4.0473	106.78	N=227, n=16, T=14
Trade	94.20	31.88	30.25	191.87	N=253, n=17, T=15

Source: Authors computation using STATA 12

The MENA region provides an example of a heterogenous group of countries. It consists of three type of countries. The first type is of oil producing and exporting countries with a substantial portion of oil rents like Saudi Arabia, Iran, Qatar, Libya, Kuwait, Bahrain, Iraq, Algeria, and Yemen. The second types of countries do have oil, but the rents accrued from them are quite low. The countries are Egypt, Bahrain, and Tunisia. The third category is of countries that have limited oil resources/rents like Cyprus, Israel, Lebanon, Jordon and Morocco.

From the table 2 above, GDP per capita as the dependent variable is shown to have a minimum and maximum value of 709.97 and 85,077.15 respectively. In addition, as the average value is 17,162 and the standard deviation (SD) is 18,242 it indicates a low variation of the individual sample country's economic growth from the mean, revealing that MENA countries have almost similar growth pattern during the study period. Oil rent (OILR) has a minimum and a maximum value of 0.000 and 67.53 respectively, with an average value of 19.27 and SD of 19.34, signifying that there is very low dispersion of oil rents across the MENA countries from the mean. This indicates that most MENA countries are heavily oil dependents, still there other few MENA countries with no oil rents.

The table further reveals that institutional quality (INST) has a minimum and maximum value of -11.96 and 7.05 respectively, with an average value of -1.80 and SD of 4.43, reflecting high variations of institutions from its mean across the MENA countries. This means that among the MENA countries, some have good governance; still others have weak institutional qualities or bad governance indicators during the period of the study. The control variable Agricultural sector (AGR) reveals a minimum value of 0.094 and maximum value of 14.27, as well as a mean and SD values of 4.81 and 4.23 respectively. Furthermore, the manufacturing (MANF) has a minimum and maximum value of 1.32 and 111.08, also has an average value of 15.73 and SD of 14.20. The other control variable is the service (SERV) that has a minimum and maximum value of 4.05 and 106.78 respectively, with a mean of 25.89 and SD of 20.62. These portray that agriculture, manufacturing and service performance or contribution to economic growth is generally low across the MENA countries, with the SD showing that it is a common trend across MENA region. This may resulted from the dominance of oil sector as the major contributing sector to economic growth of most MENA countries. Finally, the table reveals that Trade (TRADE) has a minimum and maximum value of 30.25 and 191.87. Whereas, the average value of 94.21 and SD of 31.89, reinforcing that MENA countries as a whole depends on importation and exportation as a driver for economic growth.

Oil producing countries in the MENA region can be categorized into two categories. The first category is of the countries whose GDP growth rates approximate oil rents, and both follow almost the same pattern. In this category, the countries are Saudi Arabia, Qatar, Oman, UAE, Libya, Kuwait and Bahrain. The next category is of countries like Algeria, Yemen, Egypt, and Tunisia where the movements of per capita GDP per se do not correspond with oil rents. Among non-oil exporting countries Cyprus shows fluctuating growth; Jordon, Lebanon and Morocco shows nearly constant growth; and Israel shows strong growth rates. Figure 1, in the Annex, gives a graphical presentation of oil rents and GDP per capita of the samples countries under study.

Moreover, among these MENA countries, institutions have a positive value for three oil-producing countries namely Oman, Qatar, and UAE and for two non-oil producing country, Cyprus and Israel. Two other oil-producing counties, Kuwait and Bahrain, have both positive and negative institutional values. The remaining eleven countries have negative values for institutional indicators. Figure 2, in the Annex, gives a graphical presentation of institutional quality of the samples countries under study.

Estimation results

The study first employs standard OLS estimation (Pooled effects), fixed effects and random effects estimations in the regression analysis.

The table 3 below reports that both oil rents and institutional quality bear a positive and statistical significant relationship with the GDP per capita in all the three models (Pooled, Fixed and Random effects models). This implies that a rise in GDP per capita, is associated with a corresponding increase in the levels of oil rents and institutional quality in MENA countries. The table further shows that agriculture and manufacturing have an inverse relation to GDP per capita and their impact is found to be significant at 1% levels in all the models. This suggests that a percentage increase in AGR or MANF will decrease GDP by certain percentage. In the same vein, service and trade possess a negative and statistical insignificant relation to GDP per capita, except in the pooled effect model, where trade though negatively related to GDP, but statistically significant at 1% probability level.

Table 3: Panel Regression results: Dependent Variable GDP

Variables	Pooled Effects	Fixed Effects	Random Effects
Constant	38989.74 (0.000)***	27651.4 (0.000)***	29304.25 (0.000)***
OILR	215.8162 (0.000)***	290.9512 (0.000)***	275.8357 (0.000)***
INST	2811.699 (0.000)***	1358.311 (0.001)***	1698.781 (0.000)***
AGR	-1496.812 (0.000)***	-1183.875 (0.003)***	-1323.181 (0.000)***
MANF	-290.376 (0.000)***	-242.0657 (0.000)***	-248.6091 (0.000)***
SERV	-81.42591 (0.067)	-45.57028 (0.285)	-42.60146 (0.305)
TRADE	-95.78258 (0.002)***	-40.10653 (0.182)	-37.33855 (0.200)
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R-Square	0.7027	0.5985	0.6485
F-test (P-value)	75.64 (0.000)***	11.03 (0.000)***	81.37 (0.000)***
Breusch & Pagan LM test	Chisq = 324.41		Prob > Chisq=0.000***
Hausman Test	Chisq = 4.48		Prob > Chisq= 0.6122

Note: Values in parentheses represent p-values. ** and *** denote significance at 5% and 1% respectively. Source: Authors computation using STATA 12.

The R-square values in the Pooled, fixed and random effects models signify that the explanatory variables included in the models (OILR, INST, AGR, MANF, SERV, TRADE) have accounted for 70%, 60% and 65% variations in GDP per capita over the sample periods. The F-statistics test is also significant at 1% levels (p-values=0.000) in all the models revealing that the coefficients of the explanatory variables jointly have a significant impact on GDP in all the models. Post-estimation results conducted to determine robustness of the model between pooled and random effect models using Breusch & Pagan Lagrangian Multiplier test established the chi-square value of 324.41 with a statistical significant value at 1% probability level. This reinforces that random effect model is the appropriate model. In other word, there exist country-specific effects in the data.

Random effects model results for each 5 models are presented in table 4. MENA economic growth is still positively and significantly influence by the oil rents at 1% level of significance. In a sharp contrast, AGR, MANF and SERV are significant and inversely related to GDP (See column (a)). Column (b) shows that oil rents and institutional quality are positive and statistically significant to economic growth at 1% level of significance. This implies that beside oil rents, governance is another determinant of economic growth in MENA countries. Column (c) reveals that AGR%, MANF% and SERV% have negative and significant relation to the rate of economic growth, and this unexpected signs of AGR, MANF and SERV may be attributed to the fact that oil sector leaves no room for investment in other crucial sector of the economy in MENA countries

Table 4: Random effects model results

	Dependent variable				
	GDP (a)	GDP (b)	GDP (c)	TRADE (d)	INST (e)
Constant	24641.42 (0.000)***	17845.62 (0.000)***	28902.68 (0.000)***	69.78057 (0.000)***	-2.674162 (0.009)***
OILR%	209.981 (0.000)***	58.66837 (0.142)		0.7430462 (0.000)***	0.0452223 (0.000)***
INST		1026.345 (0.000)***		0.0762501 (0.931)	
AGR%	-1387.56 (0.000)***		-1452.628 (0.000)***	-1.740267 (0.034)**	
MANF%	-197.9665 (0.000)***		-154.5615 (0.001)***	-0.307171 (0.006)***	
SERV%	-85.66626 (0.012)**		-103.0244 (0.004)***	0.8337031 (0.000)***	
TRADE					
R^2	0.3458	0.5454	0.4850	0.2096	0.0920
F-Stat.	54.7 (0.000)	20.3 (0.000 9	29.9(0.000)	134.0 (0.000)	32.4 (0.000)

Note: Values in parentheses represent p-values. ** and *** denote significance at 5% and 1% level. Source: Authors computation using STATA 12

Furthermore, the choice between fixed and random effect models are made using Hausman test. The Hausman test result established a statistical insignificant chi-square value, which implies that random effect model is the best and most appropriate model. Therefore, the study focuses on the random effect model for further empirical estimation.

Based on the result in column (d) oil rents and service sector play a significant positive role on trade, this suggests that oil sector and service are the major contributing sector to export and import in MENA countries. Followed closely is the institutional quality that shows to have positive and statistically insignificant relation to trade. On the contrary, AGR and MANF are inversely and significantly related to trade, this result reinforces that bulk of exportations and importation of goods and services in MENA countries are accounted by oil and service sectors. Column (e) shows that there is positive association between oil rents and governance. This highlights the fact that an increase oil rents promotes institutional quality or governance in MENA countries.

GMM estimation results from table 5, display that oil rents and institutional quality bear a positive and significant linked to the rate of growth of GDP per capita. This highlighted the significant role of oil rents and institutional quality in promoting economic growth in MENA countries. The table further shows a positive and insignificant effect of trade on economic growth (see column (a) and (b)). In column (a) and (c), AGR, MANF and SERV are inversely and significantly associated with GDP. This finding corroborates the results from Pooled, Random and Fixed effects models. Column (d) established that oil rents, institutions, manufacturing and service are positive and significantly influence trade, only agriculture has a negative and significant impact on trade at 1% significant level. Column (e) portrays a positive and significant relationship between oil rents and institutions.

GMM estimation.

Table 5: Linear Dynamic panel data estimation (GMM)

	Dependent Variable				
	GDP (a)	GDP (b)	GDP (c)	TRADE (d)	INST (e)
Constant	38977.87 (0.000)***	15544.25 (0.000)***	51996.15 (0.000)***	75.79281 (0.000)***	-2.251848 (0.000)***
OILR	183.6295 (0.000)***	435.1115 (0.000)***		0 .138098 (0.007)***	0.0229179 (0.000)***
INST	2486.96 (0.000)***	3766.153 (0.000)***		2.026262 (0.000)***	
AGR	-2079.548 (0.000)***		-4232.866 (0.000)***	-1.489401 (0.000)***	
MANF	-452.559 (0.000)***		-390.2232 (0.000)***	0.2161306 (0.020)**	
SERV	-264.8793 (0.000)***		-324.3133 (0.000)***	0 .7339058 (0.000)***	
TRADE	20.32934 (0.065)				
Sargan test	1880.4 P>Ch2 (0.000)***	2328.379 P> Ch2 (0.000)***	1003.96 P> Ch2 (0.000)***	1073.866 P> Ch2 (0.000)***	3593.471 P> Ch2 (0.000)***
Wald test	5104.47 P> Chi2 (0.000)***	3613.61 P> Chi2 (0.000)***	3312.34 P> Chi2 (0.000)***	643.04 P> Chi2 (0.000)***	64.33 P> Chi2 (0.000)***

Note: Values in parentheses represent p-values. *** denote significance at 1% level.

Source: Authors computation using STATA 12.

The diagnostic test using Wald test criterion proved that, the Wald test is statistically significant at 1% level in all the three models. This means rejection of the null hypothesis and accepting the alternative hypothesis, which concludes that there is joint significant of all the coefficients in the models. Furthermore, the Sargan test was also found to be statistically significant at 1% level, indicating that the over-identifying restrictions are invalid. Therefore, the instruments used in the three GMM models are valid.

In Arellano-Bond GMM estimation a lagged dependent variable is included as a regressor in all the models. It is aimed at addressing endogeneity problems and to overcome an observed limitation of fixed and random effects over its tendency to produce bias and inconsistencies estimates. In Arellano-Bond the first difference of the regression equation is taken to remove the individual countries specific effects. Arellano-Bond GMM estimation results in table 6 displays that oil rents and economic growth on one hand, and institutions and growth on the other hand are positively related.

Table 6: Arellano-Bond- GMM estimation result

	Dependent Variable				
	GDP (a)	GDP (b)	GDP (c)	TRADE (d)	INST (e)
Constant	9525.334 (0.001)***	2475.169 (0.061)	9413.605 (0.007)***	41.37463 (0.000)***	-0.6876396 (0.000)***
GDP(-1)	0.5178354 (0.000)***	0 .5291103 (0.000)***	0.5828217 (0.000)***		
TRADE(-1)				0.4797438 (0.000)***	
INST (-1)					0.8101011 (0.000)***
OILR	351.0498 (0.000)***	282.5173 (0.000)***		0.5454221 (0.000)***	0.0138367 (0.009)***
INST	884.1002 (0.007)***	-332.9428 (0.277)		-0.7971756 (0.504)	
AGR	-471.4061 (0.217)		-923.5062 (0.048)**	-2.149897 (0.053)	
MANF	-197.8583 (0.000)***		-68.4161 (0.291)	-0.170733 (0.356)	
SERV	-22.57585 (0.461)		-165.1805 (0.000)***	0.349911 (0.004)***	
TRADE	-.4287565 (0.982)		85.27278 (0.000)***		
Sargan test	234.8336 P>Ch^2(0.000)***	237.1254 P>Ch^2(0.000)***	230.0564 P>Ch^2(0.000)***	170.7626 P>Ch^2(0.000)***	86.71512 P > Ch^2 (0.5785)
Wald test	456.95 P>Chi^2(0.000)***	242.24 P>Chi^2(0.000)***	231.58 P>Chi^2(0.000)***	181.39 P>Chi^2(0.000)***	344.62 P>Chi^2(0.000)***

Note: Values in parentheses represent p-values. *** denote significance at 1% level.
Source: Authors computation using STATA 12.

The coefficients of oil rents and institutions are statistically significant at 1% levels, indicating that rise in oil rents and institutions lead to a corresponding increase in the level GDP per capita. However, AGR, MANF, SERV and TRADE bear a negative relation with GDP, still the impact of AGR, SERV and TRADE are statistically insignificant, only MANF is statistically significant at 1% level (see column (a)).

Column (b) shows that while oil rents are positive and significant to GDP, Institutions are negative and statistically insignificant. Column (c) reveals that TRADE is positively related to GDP, and it is statistically significant at 1%. However, AGR, MANF and SERV are inversely related to GDP, the only difference is that while, AGR and MANF are statistically insignificant, SERV is significant at 1% level. Column (d) indicates that oil rents and SERV have significant positive impacts on TRADE. While INST, AGR and MANF are negative and insignificantly related to trade, the result in column (e) establishes that oil rents are positive and statistically significant to institutional quality at 1%. level.

In addition, past levels of GDP, trade and institutions tend to reinforce their current levels as indicated by the 1-lagged coefficients, which are found to be statistically significant at 1% level. This signifies that the current trend of GDP per capita growth, trade (sum of import and export) and institutional quality experience recently in MENA countries are partly due to their past behaviors.

Diagnostic test using Sargan confirms that all the models except that of column (e) are statistically significant at 1% level, revealing that the over-identifying restrictions are invalid, thus, the instruments are valid. Moreover, Wald tests for all the models are found to be statistically significant at 1% level, suggesting that the coefficients are jointly significant.

The results of this study concur with the findings of Lederman and Maloney (2007) and Brunnschweiler (2008) that resource abundance increases economic growth. The result is also in accordance to the findings of Matallah and Matallah (2016) that oil rents have a positive effect on the economic growth, and that agriculture, industry and service sectors have either insignificant coefficients or unexpected signs. The positive impact of institutions on economic growth is also in agreement with the findings of Mehlum et al. (2006), Sarmidi et al. (2014), Shadrokh and Zamanzadeh (2017), and Hassan et al. (2019) that oil rents boost economic growth subject to the condition of quality of institutions.

The result of this study differs with the characterization of the MENA region having poor economic growth and poor institutions by Nabli and Arezki (2012), and De Melo and Ugarte (2012). The findings of this study also disagrees with the observation of Matallah and Matallah (2016) that oil rents lead to poor institutions in the MENA countries. A significant point of difference between the current study and many other studies is the positive contribution of institutions towards economic growth in MENA and/or oil producing countries. This contradicts the findings of many studies like Shadrokh and Zamanzadeh (2017), Kakanov (et al. 2018), Olayungbo and Adediran

(2017), and Hassan (et al. 2019) as the later studies report that poor quality of institutions have a negative impact on oil-rich countries.

4. Results of the estimation of production of Services as a function of Industry.

The estimation of equation (6) shows a positive impact of the increase of production of Industry and Agriculture on the production of Services. Besides other missing variables also contribute to increase QHS.

We estimate equation 6, relating Industrial value-added per capita (QHI) with Oil rents per capita (OILH), in 16 MENA countries, with two regressions: Equation 6.1 for year 2018 and equation 6.2 for the initial year (one year of the period 2004-2010). A more complete model should include also other variables that have impact on industrial manufacturing and in building, because the dependent variable includes not only energy industries, but also manufacturing industries and building activities).

Table 7. Equation 6.1: Industry per capita related with Oil per capita in year 2018

Dependent variable QHI: Method Least Squares Included observations: 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2499.194	983.9422	2.539980	0.0236
OILH	1.389536	0.199288	6.972484	0.0000
R-squared	0.776413	Mean dependent var		5910.792
Adjusted R-squared	0.760443	S.D. dependent var		6976.533
S.E. of regression	3414.635	Akaike info criterion		19.22600
Sum squared resid	1.63E+08	Schwarz criterion		19.32257
Log likelihood	-151.8080	Hannan-Quinn criter.		19.23094
F-statistic	48.61553	Durbin-Watson stat		2.389601
Prob(F-statistic)	0.000007			

Note: Estimation with data from table 1 in year 2018. OILH is calculated applying the % of Oil Rents to Total value-added per capita.

Table 8. Equation 6.2. Industry per capita related with Oil per capita in years 2004-2010

Dependent Variable: QHI. Method Least Squares. Observations 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2392.219	1443.497	1.657238	0.1197
OILH	1.405431	0.215256	6.529131	0.0000
R-squared	0.752779	Mean dependent var		7192.450
Adjusted R-squared	0.735121	S.D. dependent var		9654.762
S.E. of regression	4968.962	Akaike info criterion		19.97628
Sum squared resid	3.46E+08	Schwarz criterion		20.07285
Log likelihood	-157.8102	Hannan-Quinn criter.		19.98122
F-statistic	42.62956	Durbin-Watson stat		2.189821
Prob(F-statistic)	0.000013			

. Note: Estimation with data from table 1 in years 2004-2010. OILH is calculated applying the % of Oil Rents to Total value-added per capita.

The coefficient of OILH is positive and significant in both samples.

Regarding the missing variables it is important to notice that countries with low levels of oil rents may have also a high and increase value of QHI if they develop manufacturing industries independent of oil production and also if they got resources, from tourism or other sources, to increase sustained development of building activities.

Guisan and Exposito(2015) estimated a model with countries of Asia-Pacific for the period 2000-2010, including several MENA countries, and found a positive and significant impact of Manufacturing per capita on Total Production per capita, and Guisan(2017) estimated, for the same period, a model with 38 African countries, including several MENA countries, and also a found a positive and significant impact of Manufacturing on economic development.

Equation 7 was estimated with data of real valued of Services in year 2018, depending on its lagged value in the initial period of table 1, and the increase of the sum of real value-added of Agriculture and Industry (measured as the difference between the value of the variable in year 2018 and in the initial year).

Table 9. Equation 7. Value of Services per capita depending on Industry per capita, 2018

Dependent variable QHS. Method: Least Squares. Included observations 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHS(L)	1.316429	0.031819	41.37293	0.0000
(QHA+QHI-QHAL-QHIL)	0.926907	0.086465	10.71999	0.0000
D9*QHS(L)	-0.279500	0.049588	-5.636392	0.0001
R-squared	0.990795	Mean dependent var		7866.021
Adjusted R-squared	0.989379	S.D. dependent var		7770.119
S.E. of regression	800.7663	Akaike info criterion		16.37638
Sum squared resid	8335946.	Schwarz criterion		16.52124
Log likelihood	-128.0110	Hannan-Quinn criter.		16.38379
Durbin-Watson stat	1.408367			

Note: Estimation with data from table A1. QH is real value-added per capita in Agriculture (QHA), Industry (QHI) and Services (QHS). D9 is a dummy variable equal to 1 in country 9 (Kuwait) and zero in the other countries of the sample.

The dummy variable, D9, for country 9 (Kuwait) to have into account a different value of the coefficient of the lagged valued of the dependent variable (QHS(L). The goodness of fit is very high, indicating that possible missing variables are highly correlated with the included explanatory variables.

The coefficient of the lagged variable is equal to 1.04 in the case of Kuwait and 1.32 in the other countries. This indicate that there are other missing variables that also contribute to increase real value-added of Services, besides the important role of Industrial value-added per capita.

The coefficients are positive and significant. As the increase of QHA has been small or negative in the countries of the sample, the increase of the explanatory variable D(X) (for X=QHA+QHI) has been due mainly to the increase of QHI.

OIL production per capita (OILH) has a positive effect both on the lagged value of services (QHS(L) which depends on QHI(L)) and the increase of X=QHA+QHI.

Effect of OILH and QHI on economic development: Thus in the identity (9), OILH has an important positive impact on economic development measured by Total value-added per capita, given its positive effects both on QHI and QHS.

The results are not contradictory with those of model 1 because the important question for development of value-added of Services per capita is not the share of industry or manufacturing on GDP per capita, but its real value per capita.

5. Conclusion and recommendation

The current paper studies the nexus between economic growth, oil rents and institutions in 18 countries of the oil rich MENA region for the period 2004 to 2018. Oil rents and institutions are found to be determining the economic growth in the sample countries.

The insignificant effects of agriculture share, service sectors share, and trade openness indicate the relative unimportance of these sectors in the economies accruing oil rents, points at the dependence on oil revenues. This hints at the poor diversification process.

The negative impact of the manufacturing sector share is an unexpected finding of this study and is identified as the scope of future research. Nevertheless, this probably hints at the undiversified nature of the non-oil economy. The insignificant coefficient of trade openness in the absence of oil rents hint at furthering the export basket diversification. Further supporting this is the positive and significant effect of oil rents and service to trade, indicating that bulk of exportation and importation of goods and services are derive from oil and service sector.

This might explain that majority of MENA countries are oil dependent economies and the oil sector is growing at the expense of other sectors such as agriculture and manufacturing sectors, in cases where there is a low values of manufacturing per capita. This implies that the countries with a dominant oil sector diminish the share role of other non-oil sectors of agriculture, manufacturing and service sectors.

Further, an important highlight of the result that differentiates this study with others is the positive coefficient of institutions. This implies that institutions are now positively affecting economic development. This allays the fear that institutions work detrimentally in tandem with oil rents to negatively impact the growth rates in oil abundant countries. This study negates the idea that abundance of natural resources is not necessarily a curse for oil abundant countries.

In fact, model 2, shows that high oil rents per capita have a positive and significant effect on Industry, Services and Total production per capita: oil production per capita is not a curse but usually it is an important positive advantage for oil production countries.

In line with the recommendation of Brunnschweiler (2008), this study cautions against 'gloomy predictions' for resource rich countries. Nevertheless, the study refrains from making general policy recommendations for the entire MENA region in accordance with the dictum that 'one size does not fit all'. Specific country wise studies are prescribed to reach for recommendations of sustainable and increasing economic growth. Nevertheless, further improvement upon the agriculture sector, strengthening in the manufacturing sector, innovations in the service sector, and befitting trade openness to ensure positive impact on growth are obvious recommendations of this study. Moreover, diversification seems to be the most important way out from this impasse.

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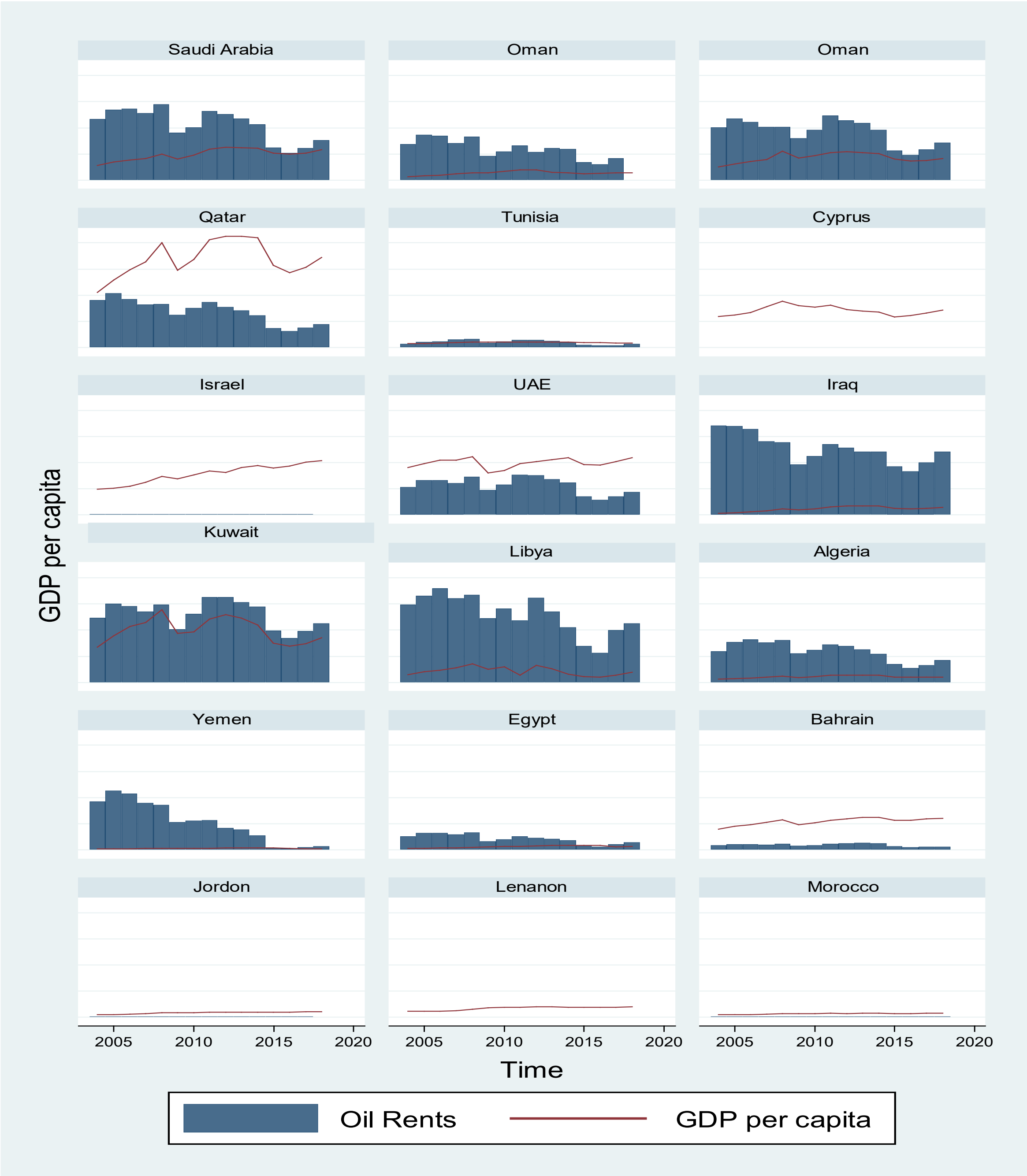
Data Availability: The data used is available online at https://data.worldbank.org/

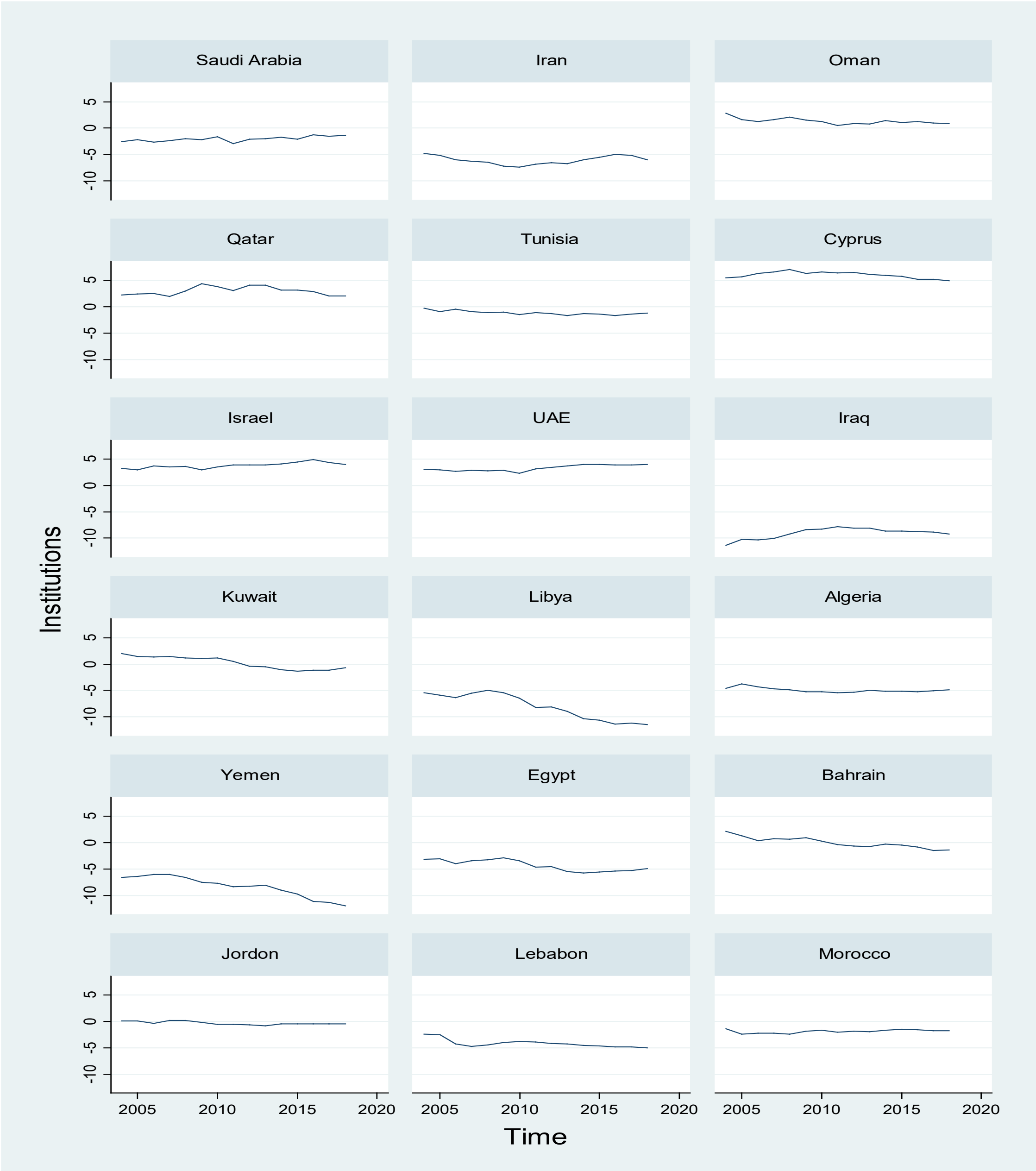
Annex. Figures 1 and 2

Figure 1: Oil rents % and GDP per capita in MENA countries



Source: Authors visualization using STATA 12

Figure 2: Institutional performance of MENA countries



Source: Authors visualization using STATA 12