Descriptive Analysis of Economic Diversification, Price and Revenue Dynamics in Oil and Energy in the Arab World

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Abstract

The present paper looks at the descriptive side of the economy of oil and energy in the Arab countries. It addresses the contours of these economies in relation to diversification and trading patterns and shows the limited diversification but high concentration of exports towards oil and gas in part of these countries. The paper addresses also the dynamic processes of gas and oil revenues with their time trends. It also attempts linking revenues to international oil prices before tackling the current status of renewable energy. The attained outcomes show clearly how non-oil exporters are exhibiting patterns that are different from the exporting countries of the Gulf. This latter set of economies is benefiting from oil price stability during the past recent years and ensuring thus, a stable revenue formation in comparison with other economies in the region. With regard to renewable energy, non-oil exporting countries are more active in the search of new energy alternatives.

Keywords: Oil, Gas and exhaustible sources of energy, trade concentration, other sources of energy

Introduction

Arab countries produce and export a large share of oil and gas to world markets. It is important to focus on these sectors to find out about their economic effects not just on revenue generation but also on the use of alternative sources of energy. With the development of non-renewable energies and the major debates and actions undertaken by oil exporting countries, including those in the Gulf, this paper aims at characterizing the main trends affecting both fossil sources and non-renewable energies. This article follows those by Driouchi and El Alouani (2014) and Driouchi (2014).

The present paper is organized in four sections. The first section introduces an overall description of the situation of oil and gas in each Arab country. This is followed by the analysis of the dynamic patterns of net revenues from these natural resources. The relationships between net revenues and prices are then introduced to show how oil and gas market indices drive revenues from these commodities. A final section focuses on how Arab countries have been considering renewable energy for development.

I. Literature Review

The readers need to keep in mind that the Middle East as one of the major players in oil production has both been blessed and cursed from this resource (Elbadawi, 2009). To this author, the oil curse strongly affects economic diversification with Arab countries depending on oil exportations instead of produced goods. This situation led to Arab economies being highly disturbed by the oil demand that has been unpredictable and particularly volatile (Elbadawi, 2009). Further developments as in Gray (2011) are found in the article focusing on rents from natural resources (Driouchi and El Alouani, 2014).

While it can be used for exports and local consumption, it has now become a drag to economic and social development of the region. One aspect of the so-called “oil curse” comes from the drastic changes in oil price. Many oil-exporting countries were overconfident in the golden years where prices rose and did not prepare for the drops that happened in the following years. These economies are therefore dependent on the oil price swings lacking long-term economic stability (Tétreault, 2004). While the empirical aspects of oil rents is discussed in the corresponding chapter, the focus is placed here on the analysis of oil and gas as sources of energy both in the producing and exporting countries but also in the world.

Al Moneef (2006) discusses the impact of the petroleum sector on Arab economies. The paper identifies linkages and channels of transmission of the oil sector on the rest of the economy. The results show the impact depends on the size of economy, the stage of development of oil, the degree of economic openness besides prices and the revenue cycle. To the author, sustainable growth in the Arab countries relies on a proper development and a good management of the oil sector.

In their paper, Fattouh and El-Katiri (2012) affirms that the Arab countries exported and produced considerable amounts of oil and natural gas reserves. They have enough reserve to supply the world for another hundred years. To the authors these resources have benefited the Arab economies despite of the difference of management of each government. This paper uses four aspects to analyze the role of the oil and natural gas in the development of the Arab countries. The results estimate that natural resources had also negative impacts on the Arab countries that depend on their oil resources and lost the economic diversification. On the other hand, the natural resources intensified conflicts between countries and created others nationally and bilaterally.

Hvidt (2013) analyzes the economic diversification of the Gulf Cooperation Council (GCC) countries. He employs a comparative analysis of the past records and future trends of economic diversification efforts in the Gulf Cooperation Council (GCC) countries. The economic diversification is the key to more stable and sustainable income levels. However, past attempts to diversification were not very successful. The paper investigates the possibility to realize the diversification plans with the numerous structural barriers that exists. The road to the diversification economy can be interrupted when the countries are under pressure. The politically difficult reforms slowdown this process of diversification.

Khatib (2014) claims the MENA region the richest with regards to natural resources. However, these countries face challenges to use investment funds to sustain the output needed to supply the increasing demand. The growing demand pushed the countries with few natural resources to become importers. In addition, the MENA region depends on foreign skilled labor and technologies. The Arab spring, the armament and local conflicts encouraged the involvement of foreign powers in the regional affairs.

Esfahani, Mohaddes and Pesaran (2014) use quarterly data for nine oil economies to present a long-run model for major oil-exporting countries. It extends the stochastic growth model used by Binder and Pesaran by adding the oil exports as an additional factor in the capital accumulation process. The findings presented two cases where the effect of the oil income on the economy's growth rate will disappear and another one where the oil impact on the long-run is part of the equation. In addition, the results show there is a relation between the real output, foreign output and real oil income for six oil economies.

In her paper, El-Katiri (2014) summarizes the main traits of an oil rich guardian. The author affirms that the main difference with the resource rich economies is the management that creates the difference in making its population among the wealthiest in the world. On the other

hand even for the guardian state faces some problems related to the oil resource. The considerable amounts of money that are directed to the economy become drivers to a great tendency to waste and an absence of market incentives. The research affirms that these negative points make the self-generating economic growth difficult in resource rich economies.

Hawila, Mondal, Kennedy and Mezher (2014) explain that even if oil resources are important to the development of a country its supply remains limited and a polluting source of energy. The study suggests substituting the natural resources with renewable ones to preserve the environment. Also, it indicates that the use of renewable energy technologies depends on the development strengths of these countries. The research assesses the readiness of north african countries to use renewable energies based on infrastructure, human capital and institutions. The results showed that Morocco has the highest score regarding the readiness to use renewable energies to substitute oil energy sources.

In their research, Bhuttoa, Bazmib, Zahedic and Klemešd (2014) claim that the renewable energy gained a lot of interest for the Gulf Cooperation Council countries as an initiative to address the limited oil resources and reduce the pollution engendered by oil resources. Reducing greenhouse gas emissions and pollution are part of the agreement of the United Nations Framework Convention on climate change and the Kyoto Protocol. The research investigates the benefits of investing in renewable energies. The results show that the GCC progresses toward sustainability with new policies and strategies issued to support the use of renewable energies.

II. Descriptive Analysis of oil and gas

This is achieved through looking at the patterns of diversification and concentration of exports in the Arab economies through the observed trends over 1991-2009 period. This description is complemented by analyzing the shares of oil and gas in trade.

1. Trade Concentration and Diversification

The tables below show respectively the major trends taking place respectively in trade concentration and diversification. When looking at concentration based on the number of commodities, the countries showing significant decreases are Egypt, Lebanon, Qatar, Tunisia, Yemen, Morocco, Oman and Syria. On the other hand, Jordan, Sudan and Kuwait exhibit increasing trends with all the remaining countries having no trends over the study period (1991-2009). These results are shown in table 1.

Table 1: Trade Concentration

Country	Intercept	Coefficients	R^2
Algeria	0.529 -27.074	0.005 -1.535	0.207
Egypt	0.34 -10.187	-0.015 (-2.682)	0.444
Jordan	0.133 -14.651	0.003 -2.129	0.335
Lebanon	0.117 -28.271	-0.001 (-2.578)	0.424
Mauritania	0.51 -35.36	-0.003 (-1.522)	0.204
Palestine	0.166 -15.312	0.002 -1.117	0.121
Qatar	0.601 -57.788	-0.009 (-5.570)	0.775
Sudan	0.442 -10.308	0.037 -5.107	0.743

Tunisia	0.207 -74.984	-0.005 (-10.794)	0.928
Yemen	0.865 -59.689	-0.01 (-4.431)	0.685
Bahrain	0.41 -21.391	-0.004 (-1.244)	0.146
Iraq	0.966 -161.12	-0.0002 (-0.244)	0.006
Kuwait	0.608 -46.3	0.01 -4.52	0.694
Libya	0.804 -43.625	0.001 -0.512	0.028
Morocco	0.174 -40.124	-0.001 (-2.633)	0.435
Oman	0.758 -24.197	-0.022 (-4.200)	0.662
Saudi	0.713 -51.716	0.003 -1.518	0.203
Syria	0.629 -24.589	-0.042 (-9.751)	0.913
UAE	0.499 -17.48	-0.006 (-1.346)	0.167

When looking at trade diversification, Algeria, Egypt, Qatar, Tunisia, Yemen, Kuwait, Bahrain, Oman, Saudi Arabia, Syria and UAE exhibit a decreasing pattern. The other countries have a constant level of diversification. No country is showing increase in diversification. These results are shown in table 2.

Table 2: Trade Diversification:

Country	Intercept	Coefficients	R^2
Algeria	0.836 -118.79	-0.005 (-4.792)	0.718
Egypt	0.699 -42.739	-0.009 (-3.585)	0.588
Jordan	0.58 -32.505	0.003 -1.079	0.114

Lebanon	0.631 -92.808	-0.001 (-1.001)	0.1
Mauritania	0.825 -51.054	-0.003 (-1.169)	0.132
Palestine	0.603 -85.941	0.002 -1.755	0.254
Qatar	0.847 -110.15	-0.006 (-5.211)	0.751
Sudan	0.824 -135.15	-0.001 (-1.089)	0.116
Tunisia	0.661 -73.964	-0.013 (-8.780)	0.895
Yemen	0.859 -212.84	-0.009 (-13.247)	0.951
Bahrain	0.788 -122.72	-0.009 (-8.521)	0.889
Iraq	0.817 -74.411	0.002 -1.608	0.223
Kuwait	0.85 -173.11	-0.005 (-6.818)	0.837
Libya	0.821 -136.15	-0.001 (-1.298)	0.157
Morocco	0.709 -62.165	-0.003 (-1.664)	0.235
Oman	0.787 -64.143	-0.008 (-3.878)	0.625
Saudi	0.833 -153.98	-0.006 (-7.489)	0.861
Syria	0.786 -58.138	-0.018 (-7.943)	0.875
UAE	0.662 -65.436	-0.01 (-5.886)	0.793

The share of oil and gas in total commodity exports in most of the Arab countries still dominates. This share is represented in table 3 which indicates the share of oil and natural gas in the selected countries' total commodity exports. According to the data represented in the table below,

Algeria, Kuwait and Jordan maintained a stable share of oil and natural gas in their total commodity exports. However this stable evolution declined in 1996 to regain its stable evolution in the following year for Algeria and also in 1991 and 1998 for Kuwait with 80.36 and 89.13 for the respective years. For Jordan we record an increase from the stable trend to 0.09, 0.1 and 0.07 in years 1992, 1994 and 1998 but the stable values quickly became an increasing trend starting 2003. Tunisia recorded a clear decrease in the share of oil and natural resources in the first 9 years to reach its lowest value 7.16 in 1999 but it continued to increase to its highest value in 2008 with 17.31. On the other hand, Oman and Saudi Arabia exhibit decreasing numbers for the share of oil and natural gas in total commodity exports. But the numbers fluctuate in an increasing trend for Morocco and Egypt.

The shares indicate that, except for Oman in the last decade, none of the oil abundant countries of the region have managed to increase the share of their non-oil exports. More detailed analysis is undertaken in the section dealing with energy.

Table 3: Share of oil and natural gas in total commodity exports

	Algeria	Egypt	Jordan	Kuwait	Morocco	Oman	S. Arabia	Tunisia
1991	96.90	53.48	0.02	80.36	2.51	87.40	92.87	14.32
1992	96.04	43.45	0.09	94.53	3.15	83.74	87.01	15.10
1993	95.76	49.07	0.02	95.07	2.66	78.90	91.08	11.46
1994	96.15	38.17	0.10	93.87	2.08	76.48	90.07	9.48
1995	95.08	35.83	0.03	94.67	2.20	78.59	86.76	8.47
1996	92.80	46.25		95.22	1.63	80.42	88.57	10.51
1997	97.17	44.32	0.04	95.05	1.94	76.39		9.07
1998	97.01	28.53	0.07	89.13	1.46	68.05	84.27	6.44
1999	97.14	36.03	0.03	90.64	2.70	76.93	88.53	7.16
2000	98.08	40.93	0.04	93.29	3.66	82.49	91.45	12.09
2001	97.61	39.02	0.04	92.04	4.22	80.49	86.09	9.24
2002	96.84	32.55	0.01	91.20	3.64	77.25	88.05	9.34
2003	98.04	42.14	0.24	91.54	2.59	76.82	88.23	9.99
2004	98.14	41.69	1.13	93.03	4.49	81.56	87.85	9.58
2005	98.40	50.71	0.17		5.05	84.38	89.47	12.93
2006	98.05	55.10	0.83	94.98	3.76	82.95	89.16	12.98
2007	98.38	51.41	0.68	94.45	3.81	79.66	88.10	16.19
2008	98.14	43.13	0.12	94.60	4.19	77.46	89.52	17.31

2009	98.31		0.27		3.28	67.64	84.61	13.63

Source: Dogruel & Tekce, 2011 based on COMTRADE data

According to oil data published by the Energy Information Agency (EIA) in 2011, the daily global world oil production is 88.76 million barrels. The Middle East accounts for the largest share of production among all world regions through 31% contribution. North America accounts for 20%, Eurasia for 11%, Africa, Asia, and Oceania for 9%, and Central and South America, and Europe for 5%. Arab countries provide most of the world's oil reserve leading to a large number of oil companies in the area. It is debatable though whether these companies have a positive or negative impact on Arab economies (ERF, 2012).

Knowledge about the crude oil produced in each country is fundamental to understanding the global oil market and how global events can affect it. The top 10 world oil producers in 2011 are in order: Saudi Arabia, United States, Russia, China, Iran, Canada, United Arab Emirates, Mexico, Brazil, and Kuwait. Besides the Arab countries listed above, Iraq, Libya, Algeria, Qatar, Oman, Egypt, Syria, Yemen, are other important oil producers and suppliers. In addition to the high production, the Arab world has important reserves in oil and natural gas that are among the largest in the world.

The GCC works to secure energy supply for long term and this will lead to economic savings. They launched an electricity grid that shows an example for both the development of renewable energy and commercial electricity trading. This can lead to an efficiency in using energy, the rise of new efficient power plants and enlarge their exports with new valuable products (El-Katiri, 2011).

Saudi Arabia is the largest producer and exporter of total petroleum liquids in 2010, and is the second largest crude oil producer in the world. It is an important member of OPEC and its first oil producer followed by Iran, Iraq, and Emirates.

Oil revenues in Saudi Arabia account for 80 to 90% of the total revenues, for 40% of the GDP, and 90% of export earnings. Saudi Arabia is also the biggest consumer of petroleum in the Middle East. Up to 2008, the power needs for transportation, industry and domestic use were drawn from oil and natural gas at 56% and 44% respectively. Its oil consumption doubled from 2000 to 2009 that is due to the growth of industrial sector and the subsidization put on oil prices. Saudi Arabia has 20% of the world's proven oil reserves. It holds the world's largest oil field, the "Ghawar" field with 70 billion barrels of estimated remaining reserves. The Saudi Aramco, the national oil company, estimates that the average depletion for Saudi oil fields is 29%. As for the natural gas, the country has the fourth largest reserve in the world. However, most of this gas is of the associated type of gas, found in the same fields as crude oil or with petroleum deposits. In the past decade, natural gas exploration has been reconsidered as means for diversifying the sources of energy demand in order to free oil for export, and also for fueling the growing economy especially the petrochemical sector and for use in the water desalination. The exploration aims at finding fields of non-associated gas that is easy to develop.

United Arab Emirates is classified seventh in proven reserves in both oil and gas in the world. Although it has successfully worked on diversifying the economy until it has reduced the portion of oil and gas in GDP to 25%, it remains strongly dependent on oil and gas with a bigger emphasis on oil and increasing investment in natural gas projects. UAE exports oil to Asian markets, mainly Japan at 40% of its exports, South Korea, and Thailand. Most the electricity generated in UAE is based on natural gas of which UAE is a net importer, mainly from Qatar through the 2008 long-term Liquefied Natural Gas (LNG) contract. The government then is pushing the gas exploration efforts forward in order to reduce the importation amount and cover the increasing demand on natural gas by an increasing population and an expanding economy.

The development of the natural gas sector has been restrained by the high capital cost and the high sulfur content within the gas sources. Currently, UAE is looking into diversifying the sources of electricity generation by considering nuclear power and renewable sources of energy. In fact, the government has contracted in 2009 to build four nuclear reactors with a total capacity of 5.6 GW. Solar and geothermal projects are currently either on the phase of construction or planning to provide power for UAE and are part of Abu Dhabi's plan to make 7% of electricity generation from renewables by 2020. UAE is gaining reputation in the field of renewables, especially after the establishment of Masdar City, the first zero emission city in the world.

In Qatar**,** oil and gas account for 85% of export earnings, 70% of revenues, and 50% of GDP. Qatar has the highest per capita income and the lowest unemployment among Arab countries. It is a large oil and gas producer with the third largest reserves in natural gas in the massive offshore North Field. It exports its oil to Asian economies, principally Japan. As for the natural gas, 70% of its exports are in the form of LNG destined to Japan, North Korea, and India at 57 % of total exports, to Belgium, UK, and Spain that accounts for 33%, and recently to UAE and Oman. Consumption in both oil and gas never out passes the production rates, which makes Qatar a net exporter of these two resources. 75% of energy consumption is from natural gas, the remaining 25% from oil. Besides being the world leading LNG exporter, Qatar is among the three countries in the world, besides South Africa and Malaysia, to have Gas-to Liquid (GTL) facilities to turn gas into fuel liquids such as diesel.

Iraq has the world's fourth largest petroleum reserves, however only a small fraction of it is developed. According to the Iraqi ministry, the production of oil was at 2,360 thousand bbl/ day in 2010 while the potential is at 13,225 thousand bbl/ day. Efforts are now directed towards bringing investment into the field of oil and gas after the years of war and sanctions have drift

them away in order to reach its full production potential as well as modernizing and expanding the current oil infrastructure, reopening and rehabilitating the export pipelines that have been closed since the war. The economy is largely based on the oil sector that accounts for 90% of the government revenues and 80% of foreign exchange earnings, and two thirds of the GDP. The total energy consumption is based on oil at a 96% level. Most Iraqi oil exports are destined to China, India, and South Korea, the United States, and Europe, while gas exports remain controversial.

In Libya, hydrocarbon sector is the pillar of economy. It contributes to 95% of export earnings, 65% of GDP, and 80% of government revenue. It has the largest reserve of oil in Africa. Since sanctions on Libya were lifted in 2003, it has attracted foreign investment in exploration and production. As a result, the production has continuously but slowly increased over the past decade, and so have the oil exports. Currently, Libya exports over 72% of its oil to Europe namely Italy, Germany, France, Spain, Greece, and UK, and to China and the United States. Natural gas production and exports have substantially increased since the "Greenstream" underwater pipeline was opened in 2004. It has increased from 200 billion cubic feet in 2003 to over 550 billion cubic feet in 2010, and the capacity is planned to increase further in the future for use in domestic power sector and LNG development.

Algeria, as all the discussed countries, has an economy that relies heavily on oil and gas. In fact, hydrocarbons contribute up to 60% of budget revenues, 30% of GDP, and 95% of export earnings. An inert bureaucracy has constituted an impediment to attract foreign and domestic investments in sectors outside the oil and gas sector, which has made the economic diversification a hard task to accomplish and unemployment to sustain. Besides crude oil production that is limited by OPEC quota, Algeria produces condensates and natural gas liquids

as well. During the last few years, United States was the largest importer of Algerian crude oil, and then comes Europe in a second rank. In 2010, Algeria was the seventh largest exporter of LNG in the world, providing 7% of total LNG exports. Authorities' efforts since the last year has focused on corruption investigation among the operators in the oil and gas sector, investment incentives, and planning for additional LNG capacities.

For Egypt, hydrocarbons play a major role in the Egyptian economy. Tourism, manufacturing, and construction are also important elements to the economy. The Suez Canal and Suez-Mediterranean (SUMED) Pipeline has made Egypt a strategic point for the world energy markets through which Persian Gulf oil and LNG is exported. Oil production has decreased since 1996 although new discoveries have been made and enhanced oil recovery techniques have been deployed. At the same time, the demand for oil has been increasing. Currently, the consumption is slightly higher than the production, which compels Egypt to import in order to cover the deficit. Egypt is an important provider of natural gas to Europe and Mediterranean region. It is constantly expanding its gas sector and promoting exploration and production. Half the energy demand in Egypt is assured by natural gas. In 2008, 5% of consumption came from hydroelectricity, and 0.3% from renewables. The rest was assured by oil. Projects are launched to increase the share of wind and solar energy such as a 140 MW solar installation that should be operational during this year, and a 5.66 GW wind energy to be installed over the five next years. Egypt is also developing nuclear power; a 1200 MW reactor is expected to operate by 2019 and three other nuclear plants are planned by 2025. The tables below summarize the production of oil and Natural gas by Arab countries, and their exports, imports, and consumption in Natural gas.

Table 4 indicates that Algeria, Iraq, Kuwait, Qatar, Saudi Arabia and United Emirates recorded the highest number of barrels produced per day in 2011 with 1884.15, 2634.58, 2681.89, 1637.54, 11153.02 and 3096.34 respectively.

On the other hand, Bahrain, Iraq, Saudi Arabia exhibit a sufficiency regarding the natural gas production as it covers the needs for consumption. Jordan, Kuwait and Syria import natural gas because their production does not suffice their respective countries' consumption. Qatar, Yemen and Algeria export the exceeding amounts from their productions. Other countries like Oman and United Arab Emirates import and export natural gas. United Arab Emirates consume more than they could produce and import part of their need but maintain an export activity. On the other hand, even if Oman produces sufficiently for its internal consumption it imports small amounts of natural gas and maintains as well an export activity.

Table 4: Total Oil Supply in 2011 (Thousand Barrels per day)

Country	Production
Algeria	1884.148
Bahrain	47.435
Egypt	706.094
Iraq	2634.582
Jordan	0.088
Kuwait	2681.894
Lebanon	0.000
Libya	495.621
Morocco	3.938
Oman	888.909
Qatar	1637.539
Saudi Arabia	11153.020
Sudan and South Sudan	436.269
Syria	330.815
Tunisia	82.584
United Arab Emirates	3096.343
Yemen	163.424

Sources: Dogruel & Tekce (2011)

Table 5: Natural Gas Overview in 2010 (in Billion Cubic Feet)

Country	Production	Imports	Exports	Consumption
Bahrain	432.609	0	0	432.609
Iraq	46.015	0	0	45.910
Jordan	7.769	88.994	0	96.763
Kuwait	414.351	31.430	0	445.781
Lebanon	0	0	0	0.000
Oman	957.037	67.099	405.769	618.719
Palestine	0.000	0	0.000	0.000
Qatar	4121.261	0	3351.394	769.867
Saudi Arabia	3095.713	0	0	3095.713
Syria	315.716	24.367	0	340.083
United Arab Emirates	1810.953	597.177	270.160	2137.970
Yemen	220.366	0	193.526	26.839
Africa	7376.527	173.397	3995.892	3553.643
Algeria	2988.002	0	1970.224	1017.778

Sources: Dogruel & Tekce (2011)

According to the Herfindahl-Hirschman index indicates that the Arab region countries do not depend on their oil resources revenues through export. The trade linearization pushes the countries to diversify their exports but the agreements with the EU and GCC countries leads them to export only specific products (Dogruel & Tekce, 2011).

III. The Dynamic Processes for Revenues and Prices

This part uses the 1971-2010 data obtained from World Bank datasets. Regression analysis is then performed to estimate respectively the revenue process and its links to oil would prices. The outcomes of these analyzes are shown in the following parts.

1. Analysis of Oil and Gas Revenues per Arab country

Based on oil and gas rents or net revenues for the period 1971-2010, regression analysis is performed to determine the pattern governing revenues as measured by rents. The best models obtained show that in most of the countries, the statistically significant coefficients are those

related to the lagged rent variable at the exception of Iraq. Moreover, the coefficients are most of the time lower than one except for Egypt and Libya where they are around one. This means that the rent series for oil in every country appear to be stationary in general. There is though the case of Yemen where the coefficient of the second lagged rent is also statistically significant. This means that more instability in oil rents has been observed. However, this is not the case of all other Arab countries.

Table 6: The Dynamic Process of Oil Rents

Country	**Cst**	**Coef. Rt-1**	**Coef. Rt-2**	**R^2**
Algeria	3.404	0.746	0.033	0.602
(tstat)	1.910	4.406	0.195	
Bahrain	9.793	0.380	0.136	0.674
(tstat)	4.672	2.139	1.003	
Egypt	1.958	1.064	-0.218	0.788
(tstat)	1.703	6.475	-1.340	
Iraq	-1.081	0.444	0.455	0.751
(tstat)	-0.028	1.270	0.865	
Jordan	0.003	0.906	-0.584	0.559
(tvg stat)	2.498	5.255	-3.399	
Kuwait	17.160	0.653	-0.007	0.418
(tstat)	2.323	3.740	-0.039	
Libya	5.977	1.052	-0.197	0.798
(tstat)	1.266	3.784	-0.676	
Morocco	0.002	0.580	0.259	0.629
(tstat)	1.101	3.552	1.578	
Oman	8.257	0.577	0.217	0.559
(tstat)	1.512	3.413	1.298	
Qatar	5.031	0.802	0.039	0.680
(tstat)	1.124	4.605	0.226	
Saudi Ar.	12.187	0.731	-0.001	0.532
(tstat)	2.099	4.309	-0.007	
Sudan	4.595	0.697	0.072	0.749
(tstat)	2.098	2.291	0.256	
Syria	4.614	0.721	0.023	0.620
(tstat)	2.546	4.313	0.147	
Tunisia	0.984	0.894	-0.050	0.737
(tstat)	1.510	5.308	-0.296	

UAE	5.109	0.726	0.023	0.598
(tstat)	1.748	4.061	0.132	
Yemen	20.922	0.807	-0.509	0.472
(tstat)	3.236	3.759	-2.319	

Source: Estimates of the authors

While Bahrain, Iraq and Libya have not shown statistically significant coefficients for one lagged rent, the other countries have expressed coefficients that are less than one. This confirms the stationary series for gas rents.

Table 7: The Dynamic Processes of Gas Rents for Arab countries 1971-2010

Country	**Cst**	**Coef. Rt-1**	**Coef. Rt-2**	**R^2**
Algeria	1.207	0.637	0.239	0.768
(tstat)	1.565	3.878	1.480	
Bahrain	1.972	0.436	0.306	0.450
(tstat)	1.465	1.921	1.204	
Egypt	0.439	0.825	0.039	0.746
(tstat)	1.220	4.875	0.233	
Iraq	-0.117	0.564	0.325	0.463
(tstat)	-0.187	1.284	0.523	
Jordan	0.117	0.516	-0.006	0.245
(tstat)	1.856	2.097	-0.027	
Kuwait	0.960	0.423	0.144	0.271
(tstat)	2.585	2.417	0.819	
Libya	0.479	0.616	0.288	0.762
(tstat)	1.173	1.978	0.838	
Morocco	0.003	0.974	-0.092	0.788
(tstat)	1.116	5.783	-0.544	
Oman	0.606	0.740	0.194	0.843
(tstat)	1.195	3.181	0.789	
Qatar	1.124	0.540	0.398	0.799
(tstat)	1.282	2.840	1.941	
Saudi Ar.	0.241	0.716	0.211	0.854
(tstat)	1.532	4.331	1.275	
Syria	0.201	0.682	0.232	0.839
(tstat)	1.293	3.842	1.325	
Tunisia	0.094	0.709	0.184	0.780
(tstat)	1.541	4.270	1.114	
UAE	0.780	0.572	0.190	0.615

(tstat)	2.228	3.276	1.145	

Source: Estimates of the authors

The above results are introduced and where rents from a given year are represented in relation those of the past year (as percent of GDP). This shows that most of the graphs are closer to the 45 degrees line with most slopes lower than one to confirm that the rents series are stationary for most oil and gas producers and exporters. It is noted that some non oil producers such as Morocco are also included because of the implicit rates related to government intervention in the domain of oil and gas.

2. The relationships between oil and gas net revenues and prices

The estimated regressions show respectively the relationships between rents and prices of oil with respectively introducing instantaneous prices with their first and second lag in the first model, first lag and instantaneous price in the second model and only the instantaneous price in the third model. The fourth model is based on the first price lag while the fifth is based on the second lag only. The details of the results per country are shown in the appendix.

For Algeria, the first model appears to be statistically relevant with the coefficient of instantaneous price and that of the second lag of the price with R^2 of 0.41. All the other models are statistically non valid except for the third model with the instantaneous price.

For Bahrain, the first model appears to be statistically significant with the second lag of oil prices. Egypt and Jordan did not show any statistically significant price effects. Kuwait is showing that the first and second models are statistically valid with price effects expressed by instantaneous and second lag of oil prices. Libya exhibits mainly the effects of instantaneous prices under first, second and third models with a high level of R^2.

No price effects are expressed in the case of Morocco and Tunisia. On the other hand, oil rents in Oman appear to be sensitive to both current and past prices as shown under the first and second

models. In Qatar, the effects of past prices are statistically significant as seen in the first and second models. For Saudi Arabia, current and past prices appear to be relevant as shown in the first, second and third models. Sudan has only the effects of current prices as in the first, second and third models. The same thing applies to Syria.

Only model one applies for the UAE with the effect of instantaneous prices. However, Yemen has also the effect of the second lagged price as shown under model 1.

An important volatility is observed in oil prices as these are very sensitive to series of rumors and other shocks. For example, strikes in England, France and other countries drove the governments to reduce taxes. The speculations indicate that the prices will continue to go higher because of the oil shortage. In addition, the oil prices increase because of the damages caused by the pipelines in Nigeria or conflicts in the Persian as well as the hurricanes and the bad weather (The Economist, 2008). Another example is offered in relation to the price of energy that jumped to high prices because of Katrina hurricane and the damages it inflicted in the infrastructures refineries and pipelines. Analysts believe that the activities of businesses depending on the natural resources were interrupted at that time (Esterbrook, 2005). The short run fluctuations induced imply short-term increases in oil prices and are not likely to be persistent in the long run. Once most of the households, economies, and technologies adjust to the new prices, either by substitution towards new energy sources or by reducing their current oil consumption, the oil prices would stabilize to a level lower than the expected $200 per barrel (Becker, 2008).

IV. Current Status of Renewable Energy in Arab Countries

UNEP's reports about global trends in renewable energy investments make comparisons between the different world regions about this particular type of investment. Excluding the large-scale hydropower projects, the global investment in renewable energies (RE) went from 10 billion in 1998 to 38 billion in 2005, it reached over 50 billion in 2006, then 160 billion in 2009 to get to

211 billion in 2010 and finally at 257 billion in 2011. Countries of the Middle East and Africa combined contribute to the smallest share of the global investments through an investment number of 5.5 billion in 2011, which accounts for 2.1% of global investments.

The growth in Asia, although increased by 31% in 2010 on 2009 levels to reach a $4 billion, it was contributed to mainly by Pakistan, Thailand, and Taiwan and other countries outside the Arab countries. In Africa, growth achieved in 2010 was five times higher than in 2009 to reach $3.6 billion, and was the performances' results of Egypt and Kenya. In Egypt, the investment rose from $800 million to $1.3 billion. Smaller contributions were made by Zambia, Morocco that made an investment of $0.18 billion, Cape Verde, Libya by $0.15 billion, and Sudan with $0.10 billion.

In 2011, investment growth decreased by 18% on 2010 in the Middle East and Africa to reach $5.5 billion while it continued to increase in the rest of the world except in the Americas. Arab countries contribution to Asia's total investments was insignificant. Achievements were higher in Indonesia, Singapore, and Pakistan among others. In the Middle East, UAE led the way with $837 million followed by Turkey. Morocco led both the Arab and the African countries with a $1.1 billion up from 0.18 billion in 2010. Other Arab African countries made only small investments that do not exceed$ 0.1 billion.

Small-scale projects account for 30% of the total renewable investment. It is however led by Germany, Italy, Japan, US, Australia, UK, France, Spain, Greece, and China. The investment from these countries sums to $69.5 billion over a $76 billion global investment in small-scale RE (UNEP, 2012). Once again, the Arab countries have a very limited presence.

The investment in corporate and government R&D renewable energy again scores the lowest numbers in the Middle East and Africa with an investment of $0.013 billion in 2011. For

comparison sake, the world leaders in R&D investment register numbers like $2.3 in both US and Europe, $1.6 in China, $0.14 in Brazil, and $0.08 in India (UNEP, 2012).

The Arab region has a huge potential for renewable energy sources. It has an excellent solar irradiation because of its geographic positioning in the called “sun belt”, which has the most of the energy-intensive sunlight on Earth (AFED, 2011). It also has in many of its areas wind speeds that are suitable for power generation. The average speeds were recorded to vary from 8 to 100 m/s in Egypt and Gulf of Suez, and from 5 to 7 m/s in Jordan (AFED, 2011). Other important sources include hydro energy, biomass, and geothermal. In general, the renewable energy sector and the green economy remain very limited. This is mainly due to the abundance of oil and gas sources and their low supply cost relative to the renewable sources of energy. Unless there is a national policy for the development of a green economy accompanied by government incentives and initiatives, the growth of this sector will remain limited in most of the Arab countries. In general, Arab countries can be classified into two categories: those that have come to the formulation of national policies and plans for the development of RE, and those which still haven’t taken any significant steps towards RE development and for which RE does not constitute a priority for their leaders. In the latter category of Arab countries, RE development are only limited to small initiatives for universities or research departments.

Algeria plans to provide 7% of electricity needs from RE by 2020. It has successfully carried a project of the electrification of 18 southern villages using solar energy, and hybrid power station using both solar and natural gas sources. Other completed projects include mini PV stations of small capacities of generation connected to the grid and solar bath heaters. Projects underway shoot for bigger capacities and include a 150 MW hybrid solar/gas hybrid stations and a 10 MW

hybrid wind/ diesel facility, in addition to the provision of solar water heaters for households and the industrial tertiary sector.

Tunisia: Electricity generation by RE is currently at 1% of total generation; however, the Tunisian government has the target of increasing this share to 11% by 2016, and 25% by 2030. Government efforts has been since oriented towards rural electrification and towards energy conservation and efficiency. Tunisia offers capital subsidies, grants, and rebates for energy efficiency projects and tax incentives for renewable energy. In solar energy, Tunisia has a total peak capacity of 255 KW for photovoltaic pumping applications and a total capacity of 2.15 GW from CSP technology is planned to start construction during the next year. In wind energy, Tunisia plans to increase its capacity from 114 MW to 692 MW by 2016

Libya targets a contribution of 10% from RE to the electricity supply by 2020. So far, Libya is currently planning for pilot projects in PV for a 1 MW capacity and in desalination. It also intends to use PV for water pumping used for irrigation.

Egypt is currently producing 5% of its electricity needs from hydroelectricity. According to the energy ministry, this share is almost equal to the full hydroelectric potential of the Nil River. Egypt targets a 20% contribution to the electricity sector from RE by 2020. The share from the grid-connected wind power is 12%. Of the 12% capacity, the government plans to finance projects for the implementation of 3% of it and implement incentives for the private sector to contribute by the remaining 8%. For this purpose, Egypt plans to adopt the competitive bids approach at a first place, then the implementation of the feed-in-tariff system. The launched projects include a 140 MW integrated solar combined cycle (ISCC) power plant where the solar input accounts for 20 MW, the rest of power is provided by natural gas (EIA, 2011), another 100 MW solar thermal project in Kom Ombo (UNEP, 2011), and a 220 MW wind installations in the

Gulf of El Zeit region (UNEP, 2011). Egypt is also developing nuclear power; a 1200 MW reactor is expected to operate by 2019 and three other nuclear plants are planned by 2025 (EIA, 2011).

Jordan has currently two wind farms dating from 1988 and 1996 respectively and of capacities 320KW and 1.2MW. Other uses of wind resources include stand-alone wind units for small applications. About 30% of households in Jordan use solar energy for water heating in addition to 184 KWp of PV origin used to provide power in remote areas. Jordan owns biogas facility that generates 5 MW from Municipal Solid Waste. The country is orienting its efforts towards RE development. In fact, Jordan's national energy strategy targets 7% of energy demand from RE by 2015 and 10% by 2020. A Renewable Energy and Energy Efficiency Fund were established to support initiatives. The Renewable Energy Law passed recently aims at encouraging investment in the RE sector by eliminating the bidding approach; the companies with project ideas can instead negotiate with the Ministry. The law forces the national company of electricity (NEPC) to purchase power from RE projects and the local electricity providers to absorb the excess of electricity from small-scale and private RE projects by purchasing it at retail value (EBoom Policy, 2010).

Currently, UAE is looking into diversifying the sources of electricity generation by considering nuclear power and renewable sources of energy. The government has contracted in 2009 with the South Korean Electric Power Corporation to build four nuclear reactors with a total capacity of 5.6 GW. The first one of them is expected to come online in 2017 (AFED, 2011). Solar and geothermal projects are currently either on the phase of construction or planning to provide power for UAE and are part of Abu Dhabi's plan to make 7% of electricity generation from renewables by 2020 (EIA, 2011). Negotiations involving Masdar and Abu Dhabi companies are

expected to lead to the construction of a 100 MW thermal solar project in Abu Dhabi. Masdar is also planning for a 100 MW PV plant in Abu Dhabi (AFED, 2011). UAE is gaining reputation in the field of renewables, especially after the establishment of Masdar City, the first zero emission city in the world.

In Saudi Arabia, solar energy is still underdeveloped. PV installations provide a total of 3 MW power (AFED, 2011). Recently however, the king Abdullah Petroleum Studies and Research Center awarded the construction of a 3 MWp PV system, and Aramco awarded a 10 MWp shade mounted PV plant, the biggest one in the world (AFED, 2011).

Kuwait seems to be more interested in the nuclear energy as it has established a 20 year cooperative deal with the French Atomic Energy Commission to develop this sector in the country. It is planning four nuclear power plants to become operational by 2022 (EIA, 2011). As for solar energy, Kuwait has made the feasibility study for the development of an integrated solar combined cycle (ISCC) power plant (AFED, 2011)

Morocco's RE plan looks more ambitious than in the rest of the Arab world. It aims to provide 42% of electricity demand from RE applications. It is mainly focusing on wind, solar, and hydropower resources. The government announced their 2 GW solar initiative and 2 GW wind initiative and plans to realize them in partnership with the private sector. Morocco has the largest PV installation in the Arab region with a total capacity of 16 MW that benefitted 160000 solar power home systems in 8% of rural households (AFED, 2011).

In other countries where RE is underdeveloped, a part of the electricity demand is provided by hydropower. The total hydroelectric capacity installed in the Arab world 10 683 MW (AFED, 2011). This type of power is present mainly in Iraq, Egypt, Syria, Morocco, and Sudan. However due to the increasing demand in electricity, the hydropower share is continuously decreasing.

Table 8 summarizes the wind and hydro capacities installed in Arab countries as reported in 2010.

Table 8: Wind and Hydro Installed Capacities in Arab Countries in 2010

Country	Existing Wind Capacity (MW)	Existing Hydro Capacity (MW)
Algeria	0	228
Egypt	550	2800
Iraq	0	2513
Jordan	1.4	12
Kuwait	0	0
Lebanon	0	13
Libya	0	0
Morocco	255	1730
Sudan	0	1342
Syria	0	1151
Tunisia	160	66
UAE	0	0
Total	966.4	9855

Source: El-Khayat (2010)

The PV technology is present in almost all the countries as opposed to electricity generation from wind or biomass. Solar water heating is another common practice across the Arab Region. Besides the previously discussed solar projects and applications, there is also a study conducted by the Omani government to develop a 150 MW solar plant and another project to install a 20 MW grid-connected PV system in Bahrain (AFED, 2011). However, solar applications remain of a limited capacity and are mainly installed in remote areas or for rural electrification purposes.

As part of the effort made in the Arab world to promote alternative sources of energy for power generation, many countries have engaged in international and regional initiatives namely DESERTEC, founded by the European Union. DESERTEC that aims at the generation of 550 GW of electric power in solar plants installed at different locations in North Africa and the region that extends from Turkey to Saudi Arabia. It expects to export the electricity in the form

of direct current from the Arab world to Europe through undersea cables. A second initiative has been launched under the name of Mediterranean Solar Plan (MSP) and aims to establish a 20 GW power capacity to be generated from alternative sources on the Southern Mediterranean by 2020 along with the adequate electricity infrastructure to enable the interconnection with Europe. A different form of initiatives that emphasizes cooperation among Arab countries has taken place. It includes the Arab Regional Strategy for Sustainable Consumption and Production, which has undertaken the task of identifying the strategic objectives including policy making necessary to the transition towards a green and sustainable energy sector in the Arab world.

The current Arab energy policy can be seen in most countries leaning towards a more promotion to oil and gas than to RE ore other green energy measures. First, heavy and untargeted government subsidization to oil and gas industry underlines the Arab policy. This latter, that at the same time, neglects to set specific targets, strategies, legal and institutional frameworks for the promotion of green energy. Algeria is the only country that has implemented a feed-in-tariff, and only nine countries have set and announced national targets for renewable energy development. The Arab policy is also characterized by the absence of national standards, testing, and certification schemes for the RE technologies installed. Moreover, the energy policy do not account for the external cost of fossil fuels caused by environmental degradation as hospitalization costs or loss in fisheries and agriculture. In fact, a study undertaken by the World Bank estimated this kind of losses to account for 4.8% of GDP in Egypt (1999), 3.7% in Morocco (2000), and 3.6% in Algeria (1998) (AFED, 2011).

Conclusion

This paper has attempted to characterize the oil and gas economies in the Arab world besides the trends taking place in the area of renewable energies. For this purpose the authors conduct a descriptive analysis besides regressions.

For oil and gas as traditional sources of energy, international market prices as well as rents have been analyzed both statically and through time. Most of the time stationary processes have been revealed for oil and gas prices but also for rents as measured as a share of GDP.

But, the current Arab energy policies can be seen in most countries leaning towards more promotion of oil and gas than to renewable energies or other green energy measures.

The limited or non-exporting oil exporting economies in North Africa, Jordan and Syria exhibit different patterns in comparison with those of the Gulf. However these latters enjoy an oil price stability for their exports in the past years that help them maintain a stable revenue generated. On the other hand, the non-exporting or limited resources countries entertain an active search for renewable energy sources.

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Appendix: *Rents and Prices in Arab countries*

Country	Cst	Coe. Pt	Coe. Pt-1	Coe. Pt-2	R^2
Algeria	11.5090506	0.130426	-0.01765	-0.0959	0.413906
	(6.7650)	(4.2681)	(-0.4766)	(-2.9083)	
	11.09226	0.104336	-0.07546		0.268099
	(0.0000)	(0.0026)	(0.0350)		
	10.34399	0.04154			0.167501
	(5.3585)	(2.6913)			
	12.3109		0.023825		0.048186
	(5.9864)		(1.3500)		
	13.67941			0.0099	0.007879
	(6.6564)			(0.5346)	
Bahrain	17.39808	0.024324	-0.13688	0.176577	0.175166
	(5.3718)	(0.6075)	(-1.9515)	(2.0303)	
	21.33437	0.034693	-0.0222		0.033497
	(7.7535)	(0.8237)	(-0.5033)		
	21.00993	0.016241			0.0237
	(7.9693)	(0.7944)			
	21.77497		0.009416		0.007266
	(8.1179)		(0.4362)		
	19.79642			0.030794	0.042776
	(6.3831)			(1.0779)	
Egypt	11.87381	0.033577	2.72E-05	-0.03457	0.024694
	(4.8168)	(0.7583)	(0.0005)	(-0.7234)	
	11.72359	0.024174	-0.02081		0.009681
	(4.8057)	(0.5750)	(-0.4629)		
	11.51723	0.006856			0.003617
	(4.8552)	(0.3614)			
	12.00594		0.002194		0.000324
	(5.0716)		(0.1079)		
	12.49434			-0.00317	0.00064
	(5.3931)			(-0.1517)	

Country	Cst	Coe. Pt	Coe. Pt-1	Coe. Pt-2	R^2
Jordan	0.006054	-1.2E-05	-3.6E-05	3.67E-05	0.055133
	(2.0616)	(-0.2593)	(-0.6811)	(0.7362)	
	0.006342	1.36E-06	-1.8E-05		0.029526
	(2.2032)	(0.0317)	(-0.3941)		
	0.006138	-1.4E-05			0.022347
	(2.2105)	(-0.7091)			
	0.006361		-1.7E-05		0.029479

	(2.3121)		(-0.8174)		
	0.005342			-7.9E-06	0.005822
	(1.9212)			(-0.3589)	
Kuwait	51.0106	0.260313	0.023471	-0.36126	0.338563
	(10.7001)	(3.3572)	(0.1846)	(-2.5838)	
	46.09711	0.246294	-0.23298		0.204742
	(9.7612)	(2.9476)	(-2.7168)		
	44.22094	0.046348			0.032097
	(8.7053)	(1.0773)			
	49.64049		-0.01034		0.001517
	(9.8422)		(-0.2305)		
	52.81992			-0.05028	0.022511
	(9.6975)			(-0.8977)	
Libya	24.84566	0.22944	0.095154	-0.26309	0.717253
	(5.2286)	(4.1632)	(0.8362)	(-1.6564)	
	20.45493	0.205192	-0.07015		0.661841
	(4.9091)	(3.6553)	(-1.2149)		
	19.72043	0.145816			0.628565
	(4.7138)	(5.2034)			
	24.68393		0.113612		0.360612
	(4.6316)		(3.0039)		
	23.14318			0.145602	0.317563
	(3.7149)			(2.7286)	

Country	**Cst**	**Coe. Pt**	**Coe. Pt-1**	**Coe. Pt-2**	**R^2**
Morocco	0.012236	9.24E-06	-9.9E-06	-2E-05	0.025454
	(4.8169)	(0.2025)	(-0.1788)	(-0.3998)	
	0.012151	3.88E-06	-2.2E-05		0.020872
	(4.8590)	(0.0901)	(-0.4720)		
	0.011935	-1.4E-05			0.014637
	(4.9077)	(-0.7312)			
	0.012196		-1.8E-05		0.020644
	(5.0491)		(-0.8711)		
	0.012273			-2E-05	0.0241
	(5.2003)			(-0.9428)	
Oman	47.78995	0.150071	0.029575	-0.2796	0.272302
	(12.0463)	(2.3257)	(0.2796)	(-2.4031)	
	43.98709	0.139222	-0.16891		0.144949
	(11.3223)	(2.0253)	(-2.3942)		
	42.62688	-0.00574			0.000782
	(10.4099)	(-0.1654)			
	45.99004		-0.04306		0.041785

	(11.7322)		(-1.2354)		
	48.73234			-0.08128	0.093442
	(11.7100)			(-1.8993)	
Qatar	51.49413	0.123797	0.035029	-0.34859	0.288424
	(9.5126)	(1.4060)	(0.2427)	(-2.1957)	
	46.75295	0.11027	-0.21243		0.184461
	(8.9300)	(1.1903)	(-2.2344)		
	45.04227	-0.07204			0.064702
	(8.2395)	(-1.5560)			
	48.33938		-0.11275		0.150471
	(9.4911)		(-2.4898)		
	52.20479			-0.17237	0.220715
	(9.8053)			(-3.1484)	

Country	**Cst**	**Coe. Pt**	**Coe. Pt-1**	**Coe. Pt-2**	**R^2**
Saudi Ar.	39.65866	0.270872	-0.05045	-0.20133	0.356164
	(10.2314)	(3.8905)	(-0.5979)	(-2.6798)	
	38.78366	0.216099	-0.17182		0.220175
	(9.2571)	(2.9932)	(-2.2256)		
	37.0799	0.073115			0.109811
	(8.5450)	(2.1073)			
	41.30766		0.033819		0.020545
	(9.1088)		(0.8689)		
	43.97963			0.005842	0.000581
	(9.8086)			(0.1446)	
Sudan	2.301488	0.102658	0.005217	-0.04138	0.816895
	(1.0866)	(4.3057)	(0.1997)	(-1.6360)	
	2.349079	0.086594	-0.01546		0.767883
	(1.0332)	(3.7126)	(-0.6300)		
	2.107634	0.074131			0.759508
	(0.9651)	(6.1561)			
	4.964573		0.061801		0.47702
	(1.5981)		(3.3083)		
	6.730205			0.053686	0.356974
	(2.0678)			(2.5810)	
Syria	15.37456	0.090962	-0.02489	-0.05828	0.235235
	(9.0710)	(2.9878)	(-0.6746)	(-1.7740)	
	15.12126	0.075107	-0.06002		0.164441
	(8.6907)	(2.5050)	(-1.8720)		
	14.5261	0.025159			0.080777
	(8.2108)	(1.7786)			
	15.9985		0.011451		0.014633

	(8.7666)		(0.7311)		
	16.7182			0.004061	0.001743
	(9.2988)			(0.2506)	
Tunisia	5.969451	0.018769	-0.00436	-0.01626	0.024116
	(4.6151)	(0.8078)	(-0.1549)	(-0.6486)	
	5.898773	0.014345	-0.01417		0.012039
	(4.6151)	(0.6512)	(-0.6014)		
	5.758305	0.002556			0.001827
	(4.6235)	(0.2566)			
	6.066316		-0.00052		6.5E-05
	4.884618		-0.04838		
	6.257137			-0.0027	0.001683
	(5.1515)			(-0.2463)	
UAE	23.28026	0.120757	-0.04145	-0.10204	0.197663
	(7.3421)	(2.3835)	(-0.6729)	(-1.8490)	
	22.49471	0.093426	-0.10132		0.106222
	(6.8950)	(1.8568)	(-1.8625)		
	21.11328	0.011194			0.006206
	(6.4031)	(0.4470)			
	23.64015		-0.01268		0.00681
	(7.1121)		(-0.4684)		
	24.9521			-0.02687	0.028555
	(7.6917)			(-0.9698)	
Yemen	30.24502	0.12198	-0.01611	-0.12983	0.541367
	(12.2061)	(3.5035)	(-0.4103)	(-3.4399)	
	29.55732	0.075107	-0.08101		0.179553
	(9.2412)	(1.8102)	(-1.8168)		
	28.52411	0.008869			0.010281
	(8.5052)	(0.4202)			
	30.91482		-0.01009		0.01152
	(9.3371)		(-0.4451)		
	32.85943			-0.0279	0.082
	(10.4922)			(-1.2322)	