INSTITUTIONS, NATURAL RESOURCES, AND ECONOMIC DEVELOPMENT IN THE MENA COUNTRIES

By

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ABSTRACT

This study examines the effect of institutions and natural resource on per capita income in the Middle East and North Africa (MENA) region. The study answers the following questions: Do institutions and natural resources have a direct effect on growth in MENA countries? Are these effects significantly different from countries outside the MENA region? The analysis employs data from 1970 to 2010 for 158 countries and it uses six measures of institutions and six measures of natural resources. The data is analyzed by Ordinary Least Square, Fixed Effect, and System Generated method of moments. The results show a positive and direct effect of institutions and natural resources on per capita income in the MENA region. However, the effect of institutions is smaller for countries in the MENA region comparing with non-MENA countries. In contrast, the effect of natural resources is larger in MENA countries than non-MENA countries. Finally, the results show that institutions are not a proxy for natural resources for countries in the MENA region.

DEDICATION

To my parents and my brothers and sisters thank you for all of the love, support, encouragement, and prayers.

To my wife, Manal, and our two daughters, Juwan and Arean for their love, support, patient, and understand.

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CHAPTER 1

INTRODUCTION

Overview:

The Middle East and North Africa (MENA) region includes the following countries: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Mauritania, Morocco, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen. The MENA region divides Asia and Africa. MENA's large land mass contains resources including: rivers, oil fields, mines, and agricultural lands. According to OPEC (2012), more than 60% of the world's proven oil reserves and about 45% of the world's proven natural gas reserves are located in MENA countries.[1] With this amount of wealth, one would predict that this region would enjoy high standards of living with a long-term sustained growth.

Many studies argue that the quality of institutions plays a major role in economic performance. Some argue that differences in institutions are the fundamental source of differences in income per capita across countries (Acemoglu, Johnson, & Robinson, 2001). Institutions are widely recognized to be a prime determinant of a nation's success or failure (Rodrik et al. 2002). The importance of institutions has been particularly emphasized by the empirical work of Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001) and Dani Rodrik, Subramanian, and Trebbi (2004) among others. These studies examine a large number of countries from around the globe. However, many countries from the (MENA) region

[1] Annual Statistical Bulletin (2012), Organization of the Petroleum Exporting Countries (OPEC).

are usually excluded from these studies due to lack of data, especially on institutions. To the best of my knowledge, no study has tried to investigate the impact of institutions on per capita income in the MENA region.

When trying to deal with the economic situation in the MENA region, it is hard to ignore the impact of natural resources. Several studies investigate the impact of natural resources on economic growth. Some studies show that economies abundant in natural resources have tended to grow slower than economies without substantial natural resources (Sachs & Warner, 2001). More precisely, many researchers have been considering the "resource curse hypothesis" (Auty and Gelb (2001), Sala-i-Martin and Subramanian (2003)). On the other hand, some economists find no proof of the negative effects of resource abundance on economic growth including Christa Brunnschweiler (2006), Lederman, Maloney, Dunning, and Shelton (2008) , Alexeev and Conrad (2009) , and Haber and Menaldo (2011) among others. Another direction in the literature deals with what is called "conditional resources curse," which states that the impact of the abundant natural resources on economic performance depends on the condition of the institutions. Mehlum, Moene, and Torvik (2006a) examine how natural resources interact with institutions to determine the conditions under which the resource curse could happen. They state that the resource curse appears in countries with bad institutions.

Research Questions and Hypothesis:

Previous studies on different regions in the world show a positive impact of institutions on income. Other studies find strong proof of the resource curse hypothesis. This positive impact may be hindered by natural resource abundance which indicates a conditional resources curse.

MENA is a region with both weak institutions and abundant natural resource. Taking these facts into account, I will mainly test the following questions:

- Do institutions have a positive direct effect on growth in the MENA region?
- Is the effect of institutions on per capita GDP in the MENA region significantly different from the rest of the world?
- Do natural resources have a positive direct effect on growth in the MENA region?
- Is the effect of natural resources on per capita GDP in the MENA region significantly different from the rest of the world?

Importance of the Study and Its Contributions:

The main contributions of this dissertation are as follows: First, it provides the literature with the investigation on the impact of the quality of institutions on economic performance in the MENA region. To the best of my knowledge, this will be the first study deals with the impact of the quality of institutions on economic development in the MENA region. The second contribution is to clarify the ambiguity over the effect of natural resource on economic performance by providing evidence from a special and important region in the world that contains vast amount of natural resources which gives the finding an important aspect. The third is to fill a gap in the literature since most of the influential studies did not include most of the MENA countries in these studies.[2]

This dissertation has five chapters. After the introduction, we give a brief background about the MENA region from different angles including location, economic indicators, oil and

[2] For example, the work by Sachs and Warner (1995, 1997, and 2001) exclude 8 oil rich MENA countries. Acemoglu et al. (2001) due to the lack of data of settler's mortality rates, they just include 5 MENA countries.

natural gas and minerals, fiscal policy, international integration, and human capital. Chapter three gives a comprehensive literature review about the topic, while chapter four deals with empirical analysis including data, methodology, results, and robustness checks. Finally, chapter five provides conclusion and policy implications.

CHAPTER 2

MENA BACKGROUND

Location and Countries:

The Middle East and North Africa (MENA) region is divided between Asia and Africa. Its area extends from the Atlantic coast of Africa to central Asia and from the Mediterranean Sea to the Sahara Desert. The MENA region covers a surface of over 15 million square kilometers and contains over 336 million people which represent about 6 percent of the world's population. Strategically located, MENA not only has a strategic location, but also has a large land contains different resources include: rivers, oil fields, mines, and agricultural lands.

For the purpose of this study, the MENA region are: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Mauritania, Morocco, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen. MENA region countries can be divided into groups based on different categories. Based on oil, the MENA oil exporting countries are Algeria, Bahrain, Iran, Iraq, Kuwait, Libya, Oman, Qatar, Saudi Arabia, the United Arab Emirates, and Yemen. The oil importers countries are Djibouti, Egypt, Jordan, Lebanon, Mauritania, Morocco, Sudan, Syria, and Tunisia. Based on income level, the high income countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The middle income countries are Algeria, Djibouti, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Sudan, Syria, Tunisia, and Yemen. Mauritania is a low income country. Another category is labor flow. According to the World Bank, seven countries; Algeria, Egypt, Jordan, Morocco, Sudan, Tunisia, and Yemen export labor in a significant manner and receive large inflows of remittances as a source of foreign exchange earnings. The labor importers in the

region are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. When considering economic diversification according to the World Bank, Morocco, Syria, and Tunisia have a fairly diversified economic and export base while the economies of Djibouti, Mauritania, and Sudan are largely based on agriculture or minerals. The large service sector is the common factor for Algeria, Bahrain, Egypt, Iran Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, the United Arab Emirates, and Yemen.

Economic Indicators:

The real GDP growth for the MENA region was about 1.8% in 2010, increased to 3.8% in 2011, and reached 4.1% in 2012 mainly driven by the region's oil exporters. Between 2000 and 2010 real per capita GDP in the MENA region was almost 4.02% which is less than that of other regions including the Asian Pacific, Latin American, Caribbean, and European and Central Asian regions over the same period (IMF, 2012).

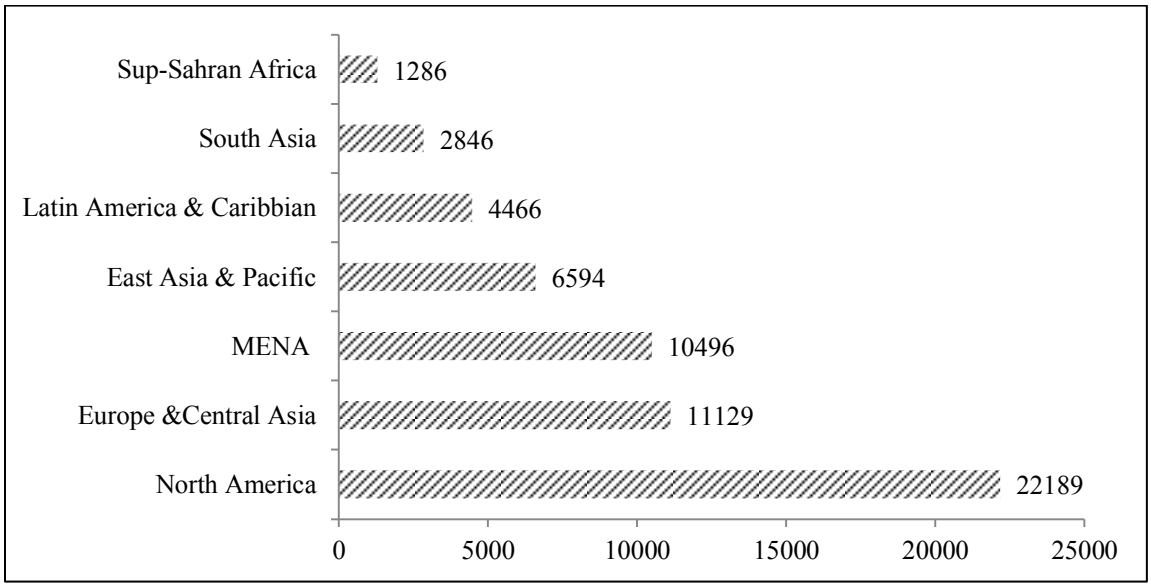

Figure 1: ***Per Capita GDP 1970-2010 (current US $)***

Source: WDI (2013)

In nominal terms, the GDP per capita in the MENA region is also less than that of those regions. Figure 1 shows a comparison between regions by per capita GDP (in current US$) for the year 2009.

By comparing the per capita GDP of these regions, we will find that the Latin America and Caribbean region has the highest value at $7018 followed by Europe and Central Asia at $6411, and $3600 in the East Asia and Pacific region, while MENA was in fourth place at$3210. For further analysis, the MENA countries can be divided into two subgroups; oil exporting countries and oil importing countries. Table 1 provides selected economic indicators for the MENA region. By looking at table 1 we find that the growth of the real GDP for MENA oil importers decreased to 2% in 2011 compared with 4.5% in 2010, then grew to 2.2% in 2012. The decline in real GDP for oil importers countries did not affect the overall growth of the real GDP for the MENA region because the growth of the real GDP in oil exporter's countries increased from 3.5% in 2010 to 4% in 2011.Moreover, the IMF (Regional Economic Outlook, April 2012) expects that the growth in real GDP for this group will reach 4.8% for the year of 2012.

The ratio of the current account balance has been increasing in the MENA region in the last five years with the exception of 2009 due to the world financial slowdown. This ratio is driven mainly by the oil-exporting countries as it increased for these countries from 4.2% in 2009 to 9.2% in 2010 then increased further to 16.9% and 18.2% in 2011 and 2012 respectively. The overall fiscal balance followed the same path as the current account balance despite its decline in oil importing countries. Moreover, the annual growth of inflation as a percentage of the GDP grows rapidly in the MENA region as general and in both groups of oil-exporting and oil-importing countries.

Table 1: Selected Economic Indicators for MENA Region (%GDP) 2000-2012

	Average 2000-2007	2008	2009	2010	2011	2012
***MENA*[1]**						
Real GDP (annual growth)	5.4	5.1	1.8	3.8	3.5	4.2
Current Account Balance	10.4	14.9	2.4	6.5	13.2	14.5
Overall Fiscal Balance[2]	4.1	8.6	-3.4	0.6	2.8	3.4
Inflation, (annual growth)	6.2	14.5	6.1	7	9.8	10
MENA Oil Importers						
Real GDP (annual growth)	4.7	6.4	4.8	4.5	2.0	2.2
Current Account Balance	-1	-3.1	-4.2	-3.8	-5.3	-5.3
Overall Fiscal Balance	-6.6	-4.5	-5.4	-6.2	-8.1	-8.3
Inflation, (annual growth)	4.2	13.5	7	7.6	7.1	7.7
MENA Oil Exporters						
Real GDP (annual growth)	5.6	4.7	0.7	3.5	4.0	4.8
Current Account Balance	13.4	18.8	4.2	9.2	16.9	18.2
Overall Fiscal Balance	7.3	12.9	-2.7	3	6.1	6.9
Inflation, (annual growth)	6.9	14.8	5.8	6.8	10.6	10.6

The IMF: regional economic outlook (April 2013)
1) Data excluded Syria for the year 2011-12.
2) Data excluded Libya for the year 2011-12.

Figure 2 shows the path of the change in real GDP growth of oil importers and oil exporters of the MENA countries. For a broad view, the economy size for the MENA region should be considered and compared with a set of selected countries. This reveals that in 2009 the nominal GDP was $1,062 billion with a population of 330.9 million while in the United States, with a population of 307 million, the GDP was $14,119 billion for the same year. Compared to the Russian GDP of $1,232 billion for 2009, and the United Kingdom's at $2,644 billion for the same year, the MENA region's economy is still smaller. In recent years, high oil prices have stimulated continuous growth in Middle Eastern oil exporting countries. However, these countries still face many challenges including developing their legal and political systems in order to create a clean environment that will attract more investments and enhance entrepreneurial initiatives. In addition, there is a need to develop the financial markets and

diversify the economies to create more jobs in order to reduce the increasing unemployment rates in these countries.

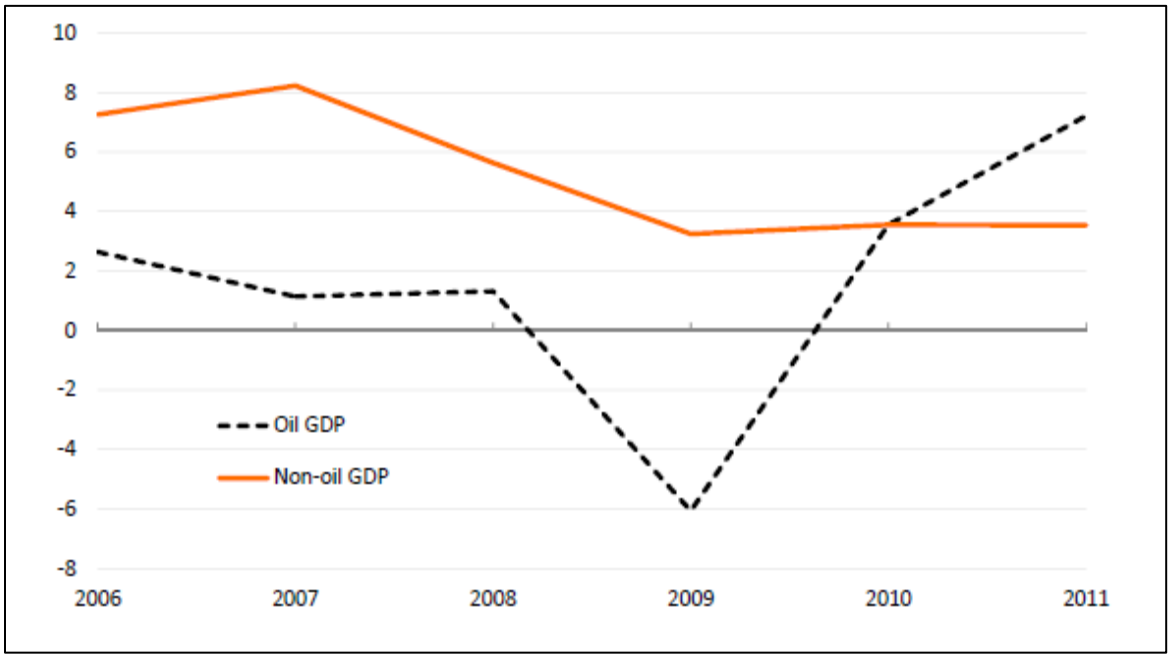

Figure 2: ***Real GDP Growth (annual percentage change)***

Source: IMF (2011) (excluding Libya)

Oil, Natural Gas, and Minerals:

Natural resources play a central role in shaping the political economy of the MENA region. The region's economies are highly dependent on natural resource rents, especially oil and natural gas. This is not surprising fact considering that MENA countries are richly endowment with large oil and natural resources. According to OPEC, the MENA region has about 58% of the world's proven oil reserves (see figure 3) and 45% of proven natural gas resources. Tables 2 and 3 show the proven reserves by country of oil and natural gas respectively. Six countries in the MENA region are among the ten largest proven oil producing countries in the world. Saudi Arabia has the largest proven oil reserves in the region with more than 18% of the world proven

oil reserves, Iran has 10% and Iraq has 9.5 %. United Arab Emirates, Kuwait, and Libya have 7%, 6%, and 3% respectively. Eight countries from the MENA region are members of The Organization of the Petroleum Exporting Countries (OPEC). These countries are: Iran, Iraq, Kuwait, Saudi Arabia, Qatar, Libya, the United Arab Emirates, and Algeria. The MENA region is also rich with natural gas, sitting on about 45% of the world reserves. Iran and Qatar are among the largest natural gas proven reserve countries in the world and Iran alone has 15% of the world's total (OPEC, 2013).

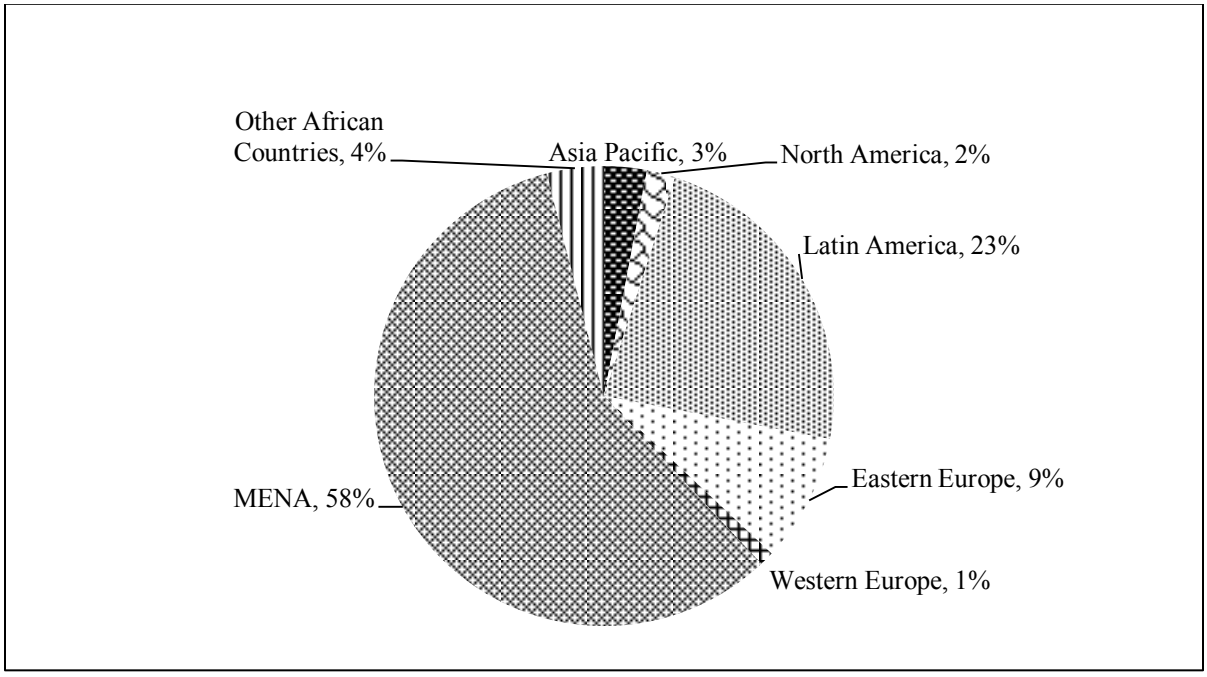

Figure 3: ***World Proven Oil Reserve***

Source: OPEC (2013)

Given this large endowment of natural resources, most MENA economies are heavily dependent on the rents earned from the exploitation of natural resource commodities. For example, the average share of oil rents as a percentage of GDP for a country in the MENA region was 22% in 2009 while the world average was 2% (Farzanegan, 2013). Fuel exports as a percentage of merchandise exports is 52% for the MENA region compared to the world average

of 16%. On the country level, the total natural resource rent as a percentage of the GDP during the period from 1970 to 2101 is about 56% in Iraq, 49% in Kuwait, 46% in Qatar, 45% in Saudi Arabia, and 44% in Oman. This dependence on natural resources means that the economies in MENA countries are less diversified.

Table 2: MENA Proven Oil Reserve by Country (m.b.)

Country	2007	2008	2009	2010	2011
Algeria	12,200	12,200	12,200	12,200	12,200
Egypt	4,070	4,340	4,300	4,400	4,500
Iran	136,150	137,620	137,010	151,170	154,580
Iraq	115,000	115,000	115,000	143,100	141,350
Kuwait	101,500	101,500	101,500	101,500	101,500
Libya	43,663	44,271	46,422	47,097	48,014
Oman	5,572	5,572	5,500	5,500	5,500
Qatar	25,090	25,405	25,382	25,382	25,382
Saudi Arabia	264,209	264,063	264,590	264,516	265,405
Sudan	6,700	6,700	6,700	6,700	6,700
Syria	2,500	2,500	2,500	2,500	2,500
UAE	97,800	97,800	97,800	97,800	97,800
Others	2,798	2,798	2,798	2,798	2,828 1.1
MENA	**817252**	**819769**	**821702**	**864663**	**865431**
Total world	**1,213,008**	**1,292,280**	**1,332,776**	**1,467,363**	**1,481,526**
%	**67%**	**63%**	**62%**	**59%**	**58%**

Source: OPEC 2012

By looking to the data on economic indicators in the MENA countries, one cannot ignore the positive impact of the natural resources-in general- on the living standard of the people of these countries. However, it is legitimate to argue that this impact has fallen short of its potential compared with both the rest of the world and the huge amount of natural resources in these countries. There has been progress but it has been slow and weak in most cases. Of course, the impact differs from one country to another. When prices are high, the resource-rich countries enjoy the high revenues of oil and natural gas in a direct way while the poor-resource countries

benefit indirectly through grants from the rich-resource countries, or remittances from their citizens working in the rich-resource countries.

Table 3: MENA Proven Natural Gas by Country (billion standard cu. m)

Country	2007	2008	2009	2010	2011
Algeria	4,504	4,504	4,504	4,504	4,504
Egypt	2,060	2,170	2,170	2,185	2,210
Iran	28,080	29,610	29,610	33,090	33,620
Iraq	3,170	3,170	3,170	3,158	3,158
Kuwait	1,784	1,784	1,784	1,784	1,784
Libya	1,540	1,540	1,549	1,495	1,547
Oman	690	690	690	610	610
Qatar	25,636	25,466	25,366	25,201	25,110
Saudi Arabia	7,305	7,570	7,920	8,016	8,151
UAE	6,072	6,091	6,091	6,091	6,091
Others	906	908	908	939	1,050
MENA	**81747**	**83503**	**83762**	**87073**	**87835**
Total World	**179,554**	**182,901**	**189,712**	**192,549**	**196,163**
%	**46%**	**46%**	**44%**	**45%**	**45%**

Source: OPEC 2012

The minerals resources sector plays a key role in economic development as an underlying or associated sector and intersect with other economic sectors. The mining activity in the MENA countries is inadequate compared to the minerals capacity in the region. This is due to several reasons including the modesty of the financial allocation due to the lack of interest compared with the oil sector, shortage of skills, lack of geological information, and cloudy investment legislation (Egyptian Mineral Resources Authority, 2010). The most important minerals discovered in MENA countries which account for a considerable portion of global reserves are phosphate (76%), sulfur (18%), bars (15%), strontium (13%), and iron ore (4.3%) in addition to copper, gold and silver. Some countries have made significant achievements in the extractive industry and mining sector: phosphate in Morocco, Tunisia, Jordan, Syria, Algeria and Egypt; iron in Mauritania, Algeria, Egypt, Morocco, and Tunisia; zinc in Iran and Algeria; lead in

Morocco, Algeria, Tunisia; copper in Morocco, Saudi Arabia, and Iran; gold in Saudi Arabia, Sudan, Oman, and Morocco; and Chromium in Iran.

Fiscal Policy:

The economies in the MENA countries have been characterized by large government expenditures which lead to governments playing a central role in these economies. However, the impact of these government expenditures on growth in the MENA region is ambiguous. In the resource-poor countries this impact is found to be negative while it is positive in the resource-rich countries (Eken, Helbling, & Mazarei, 1997). Table **B.**1 (appendix B) shows that the average share of government expenditures from 2002 to 2012 in the MENA region was 31% of the GDP. Iraq has the highest share with 56% and Sudan the lowest share at 19%. With this share, this MENA region is in a position between two groups of countries; the first one is the major advanced countries and the Euro area, and the second one is the emerging market countries and the developing countries. The average share of government expenditures to GDP over the period 2002-2012 was 48% and 22% for each group respectively. For the oil-exporting countries in the region this share was 35%, while it was 31% for the oil-importing countries. In contrast, in the oil-rich countries in the MENA region government revenues depend on the price of oil which makes them volatile due to volatility in oil prices. The average share of government revenues to GDP during the period of 2002-2012 was about 37% in the MENA region compared to 45% in Europe and 27% in the emerging market countries (Table B.2). The highest share over the same period was in Kuwait with 65% and the lowest was in Sudan with 18%. The average share of government revenues to GDP over the period of 2002-2012 for both the oil-exporting countries and the oil-importing countries in the region was 45% and 31% respectively.

By looking for the movement of government revenues in the MENA region, it can be concluded that this movement is a reaction to the movement of the oil prices even in oil-importing countries. That is, when oil prices are high, government revenues increase in the same direction. Figure 4 shows both government expenditures and government revenues as a percentage of the GDP in the MENA region between 2002 and 2012.

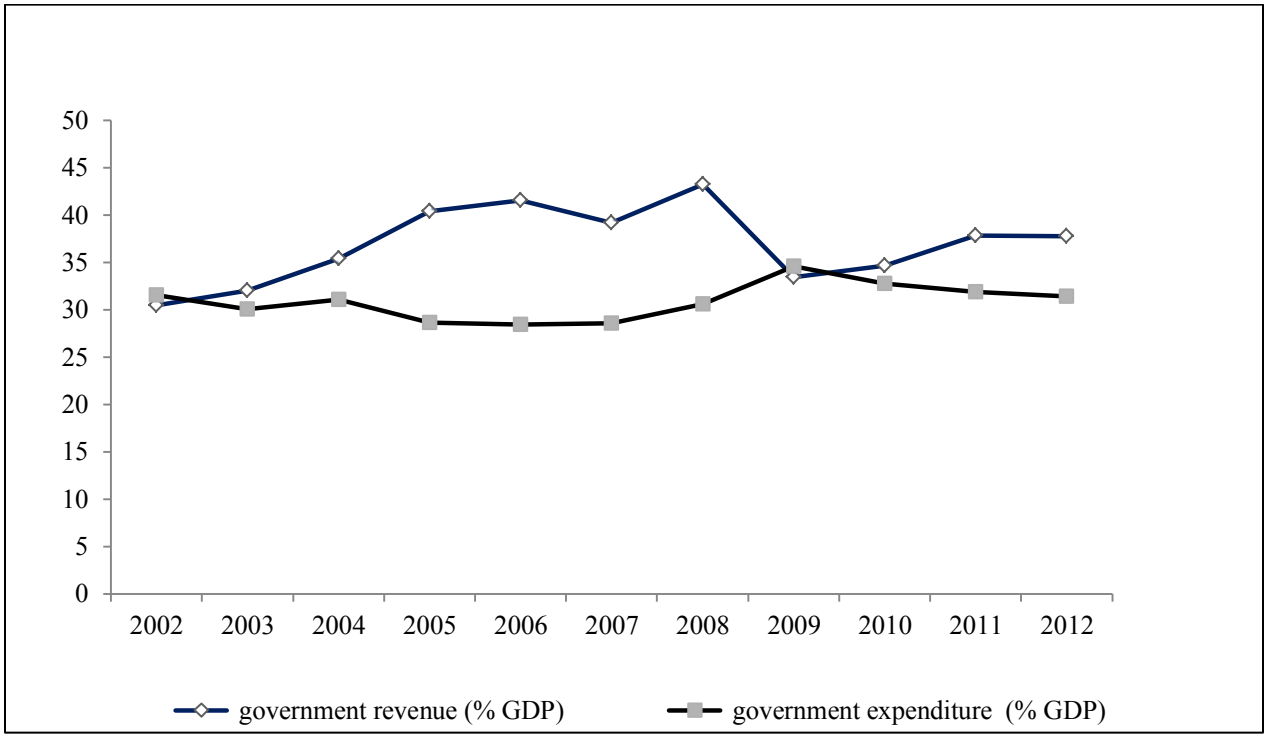

Figure 4: ***Government Expenditures and Revenues (%GDP) in the MENA Region 2002-2012***

Source: IMF (2013)

Given that, the question now is which kind of fiscal policy that MENA countries have? Abdih, Lopez-Murphy, Roitman, and Sahay (2010) find that fiscal policy in the MENA region and Central Asia has been procyclical especially in good times with bias in the oil exporting countries. At the same time, the scope of countercyclical fiscal policy is increasing in the oil exporting countries. Moreover, Macroeconomic management is complicated by the failure of

most MENA countries to mount countercyclical policy in response to the oil cycle. Instead, fiscal policy tends to be highly procyclical with respect to commodity prices, where governments typically fail to raise savings (net of expenditure) in good times to provide for bad times when prices slow down for oil-producing countries (Elbadawi, Schmidt-Hebbel, Soto, & Vergara, 2011).

International Integration:

International integration is thought to be an important factor that has a strong link to economic growth as shown in several studies.[3] For example, international integration helps in fostering diversification, stimulating employment, and creating jobs. This section addresses two common types of international integration essential to the MENA region; Trade and Foreign Direct Investment (FDI).

Trade:

Trade in the MENA region is characterized by several features; dependence on one commodity, being under-trade, and low integrated. MENA's trade performance is weak relative to other countries and its export/GDP ratio is above the world average mainly because of the petroleum exports (Behar, 2011). However, the non-oil exports/GDP ratio for MENA is below the world average[4] and has performed poorly for a long time compared to other regions in the world. This is expected since oil and natural gas account for more than 76% of total exports in the MENA region while manufactured goods account for just 11% of the exports (IMF, 2012). The compositions of MENA trade are highly concentrated and less diversified overall with Egypt, Jordan, Lebanon, Morocco, and Tunisia performing better than the rest of the countries in the region. In general, exports are dominated by petroleum goods which account for high ratio of

[3] For Example, Frenkel and Romer (1999).
[4] For Example, Bhattacharya and Wolde (2010) and Behar (2011).

the total exports in the region especially in the GCC countries where the petroleum goods are about two thirds of the total exports.

When looking to the data on trade, it can be concluded that MENA is among the least-integrated regions in the world both globally and regionally. Trading with the outside world is very low with 1.8% being the region's share of non-oil world trade. Most of the region's trading goods with other regions are oil and natural gas which makes the GCC countries more integrated with the world than the other countries in the region. Trade within MENA is very small and the share of intra-trade as a percentage of total trade has remained constant since the mid 1990's. According to UNCTAD, MENA's intra-trade is less than 10% of the total exports. In fact, most of the countries in the region are not major trading partners with their neighboring countries. There are many possible explanations for this situation, but among the most important ones are the similarity of the goods produced and the ineffectiveness of the trade agreements.

During the period from 1992 to 2012, the overall exports of the MENA region have increased partly as a result of trade openness and the trade agreements, but mostly because of higher oil production and exports. The region's volume of total exports as a share of GDP grew from around 32.6% in 1990 to 37.9% in 2000 and to around 49.6% by 2010. This performance is driven by the resource-rich countries where they have increased their production and exports of the oil and natural gas as a result of the increase in the prices of these goods. Manufactured exports are a smaller share of merchandise exports in the MENA region than in any other region. The average of this share for MENA was 18.5% between 1990-2012 compared to 83% for East Asia & Pacific, 75% for Europe & Central Asia, 73% for South Asia, 71% for North America, and 48% for Sub-Saharan Africa (Figure 5).

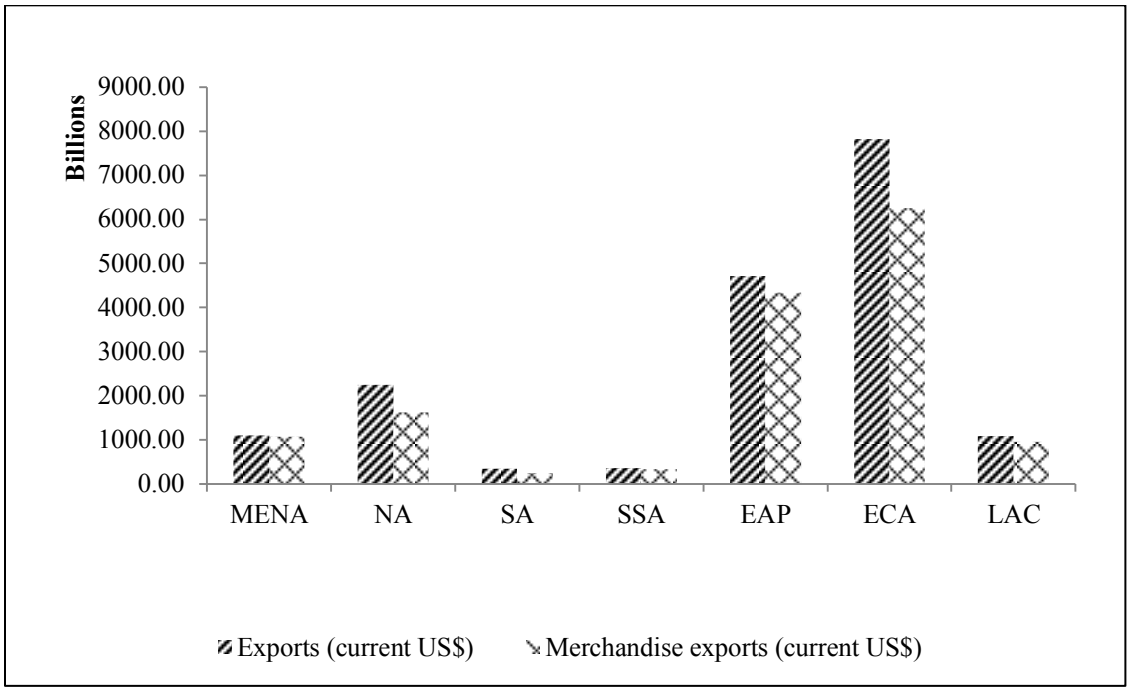

Figure 5: ***Total Exports and Merchandise Exports (2005-2012)***

Trade openness is measured by the share of trade (exports plus imports) to the GDP. Table 4 shows the trade openness measurements for the world regions during the period between 1992 and 2012. MENA is more open than the world average and in comparison to all other regions of the world. On the country level, Bahrain, Jordan, UAE, Djibouti, Kuwait, Oman, Qatar, and Tunisia are above the region average while the other countries in the region are below the average. More importantly, excluding petroleum goods, the MENA region still leads the world in openness as reported in table 4.

The terms of trade effect equals capacity to import less export of goods and services. MENA's terms of trade are volatile. In the period from 2002 to 2012, terms of trade for the MENA region has been changing dramatically due to fluctuation in oil prices. MENA's term of

trade was about 22% in 2005 then declined to 2% in 2007 then rose again to 12% in 2008 before declining in 2009 to about 19% as the worse terms of trade among all regions in the world.

Table 4: Openness 1992-2012

Region	Merchandise trade (% of GDP)	Trade (% of GDP)
East Asia & Pacific	46.2	53.6
Europe & Central Asia	54.9	69.0
Latin America & Caribbean	34.3	46.5
Middle East & North Africa	62.4	74.4
North America	23.0	28.7
Sub-Saharan Africa	52.9	65.1
World	41.7	50.8

Source: WDI 2013

Table 5: Trading Rank for some MENA Countries in 2011

Country	Rank	Country	Rank	Counntry	Rank
GCC	48	Saudi Arabia	18	Iraq	180
Bahrain	49	UAE	5	Syria	122
Kuwait	112	Algeria	127	Yemen	118
Oman	47	Egypt	64		
Qatar	57	Iran	138		

Source: World Bank, Internatianl Finance Cooperation, 2011

It is clear from figure 6 that the trend of the terms of trade in the MENA region is following the trend of the oil prices. According to the International Finance Cooperation, the United Arab Emirates and Saudi Arabia are among the first twenty countries in trading rank in 2011 with the fifth and eighteenth positions respectively. The lease trading ranking countries in

the region are Iraq (180), Iran (183), Algeria (127), Syria (122), Yemen (118), and Kuwait (112) while the other countries in the region range between 32 and 93 (the Full list is in Table 5).

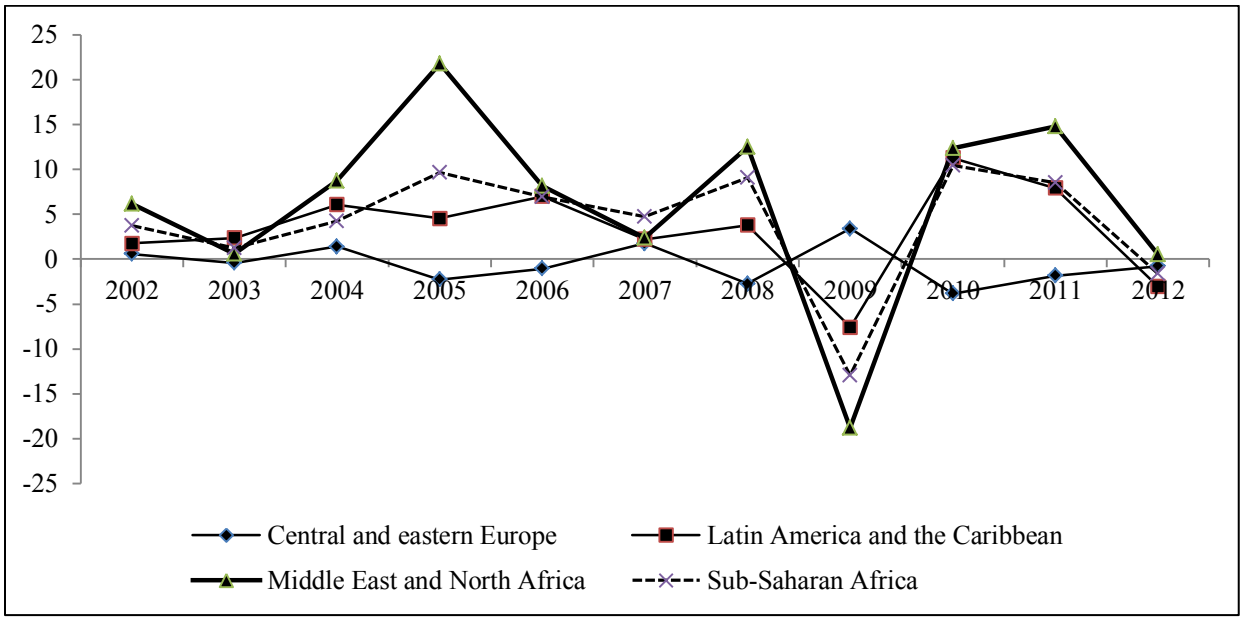

Figure 6: ***Term of Trade***

Source: WDI (2013)

Foreign Direct Investment (FDI)

As a result of globalization, FDI inflows have grown rapidly in the world economy over the period from $207 billion in 1990 to about $1.52 trillion in 2011. MENA region is no exception from this FDI surge; the FDI inflows increased from $5.8 billion in 1990 to $40.7 billion in 2011. Despite the increase in the FDI flows to MENA region, the share of FDI inflows to the MENA region as share of the total FDI in the world is small compared to other regions in the world. Over the period between 2000 and 2011, the share of FDI inflows in MENA represented on average of 4% of the total FDI inflows in the world compared with 20% in the early 1980s, 11% of the total FDI inflows to developing economies, and 6% of the total FDI inflows to developed economies. Moreover, the FDI inflows as a share of GDP in the MENA

region is larger in the oil-importing countries than in the oil-exporting countries with 4.6%, 8.4%, and 5.4% compared to 0.9%, 4.7%, and 3.1% in the years of 2000, and 2005, and 2009 respectively. Over the period 2000-2011, much of the FDI flows were concentrated in a few countries with Saudi Arabia as the largest recipients with 32%, followed by United Arab Emirates with 15%, and Egypt with 10%. The countries that received the least were Djibouti, Kuwait, and Mauritania accounting for less than 1% of the average FDI inflows to the MENA region over the same period. The weakness of FDI in the MENA region is due to the lack of understanding of the importance of FDI for economic growth, the lack of efforts to attract FDI and highlight the opportunities in the region, and finally the unclear legal procedures of FDI.

Table 6: FDI (Billion US dollar)

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
inflows	World	1401	828	628	587	744	981	1463	1976	1791	1198	1309	1524
	MENA	1668	1266	1199	1530	2040	3041	4083	3745	2523	2728	3118	2479
	Developing economies	256	217	173	190	292	327	427	574	650	519	617	684
	Transition economies	7	10	11	20	30	31	54	91	121	72	74	92
	Developed economies	1138	601	443	377	422	623	982	1310	1020	606	619	748
outflows	World	1227	748	528	571	926	889	1415	2198	1969	1175	1451	1694
	MENA	2	1	3	-2	8	12	23	38	44	19	20	25
	Developing economies	135	83	47	47	123	133	239	317	328	268	400	384
	Transition economies	3	3	5	11	14	14	24	52	60	49	62	73
	Developed economies	1088	662	476	513	789	742	1152	1830	1581	858	990	1238

Source: UNTCAD (2012).

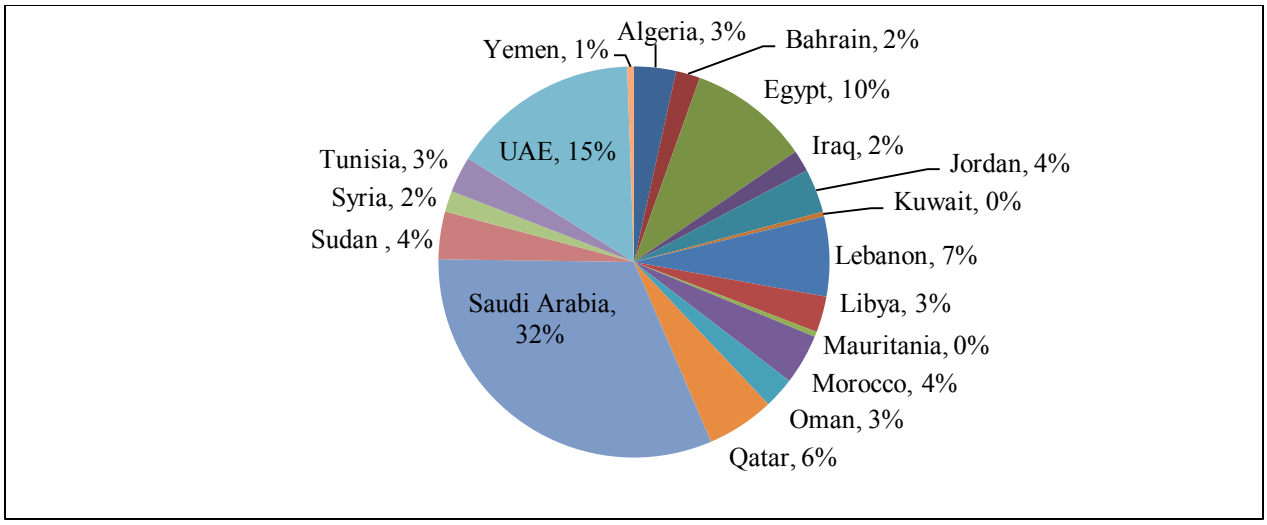

Figure 7: ***FDI Inflows to the MENA Countries (2000-2011)***

Source: UNTCAD (2012)

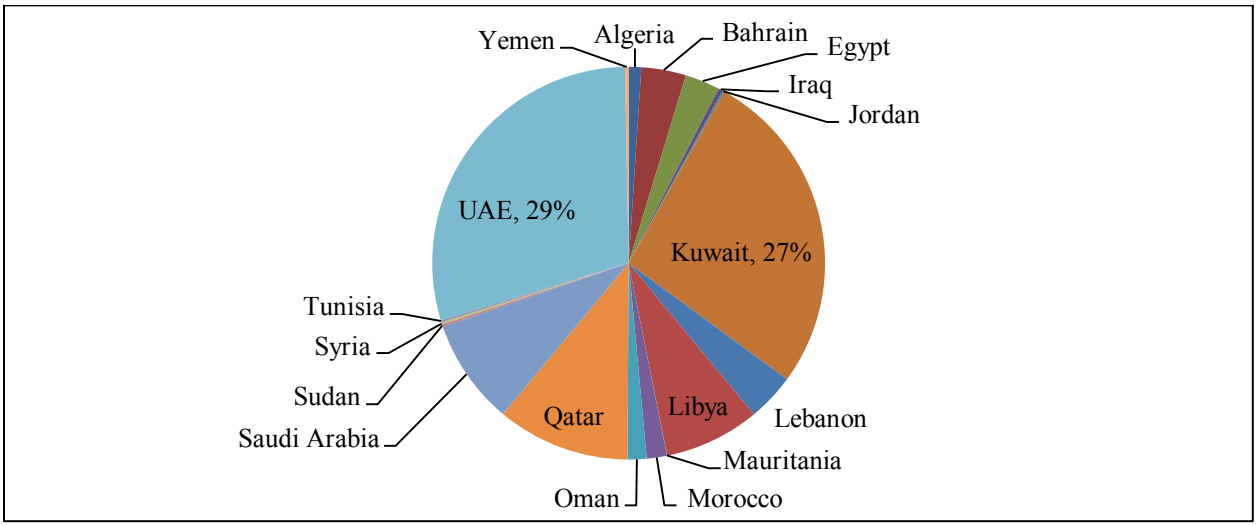

Figure 8: ***FDI Outflows to the MENA Countries (2000-2011)***

Source: UNTCAD (2012)

The FDI outflows from MENA countries, on the other hand, are modest compared with other regions of the world. In the 2000's the average FDI outflows from the MENA countries were 1.3% of the total FDI outflows in the world and 7% and 1.6% of the total FDI outflows from

both the developed and developing economies respectively. The United Arab Emirates has the largest percent of FDI outflows in the MENA region on average with 29% then Qatar with 26% and Kuwait with 10 %. The countries in the MENA region with the smallest FDI outflows are Mauritania, Jordan, and Tunisia with less than 1% of the total MENA FDI outflows over the period 2000-2011. Fortunately, oil-importing countries get their share of FDI from the oil-exporting countries.

Human Capital:

More than 395 million people live in the MENA region with annual population growth of 2% on average (2000-2012) and about 66% of the total population is aged 15-65. Female comprise 48% of the total population in the region. The average life expectancy at birth is about 71 years which is more than the world average- and the infant mortality rate is below the world average at 29 per 1000 live births. These numbers give an indication about the demographic dimension of the MENA region as a young, healthy society.

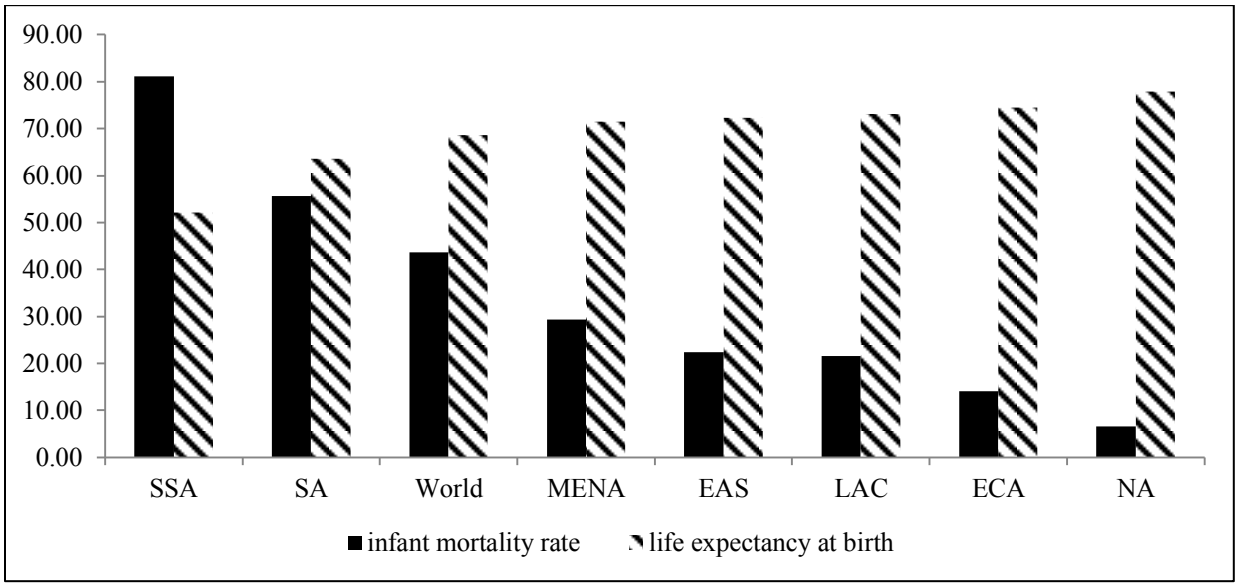

Figure 9: ***Some Human Capital Indicators***

Source: WDI (2013)

However, one can draw conclusions about the challenges that the countries have been facing provide jobs and high quality health services as governments are the main job and social welfare providers in the economies of the region. Figure 9 shows life expectancy rates and mortality rates for the world and its regions.

Many MENA countries are experiencing rapid population growth and have a high proportion of young people. In the meantime, some countries have higher than average population growth rates including Qatar, Yemen, Bahrain, and Kuwait. On the country level, Egypt has the largest population in the region with more that 80 million people as in 2012 with annual population growth of 1.7% followed by Iran with more than 76 million, and Algeria with 39 million. The least-populated countries in the region are Djibouti, Bahrain, and Qatar with 0.85 million, 1.3 million, and 2 million people respectively. Figure 10 provides the percentage of population by groups of ages for MENA countries.

As more than 50% of some MENA countries' population is young, this fact will have a consequence on the future of the region, especially on the labor market, and will create challenges for policymakers for years to come. During the period of 1990-2011, the labor force in the MENA region experienced rapid growth with more than 131 million people in 2011 compared to 69 million in 1990. The average participation rate for those who are aged between 15 and 24 is 34% in that same period. Moreover, female participation rate registers on average 17% which is considered a low rate compared with 52% of males. According to the World Bank (2012) " on average, …more than two out of three women did not participate in the labor market [in MENA Region]". Figure 11 shows the labor participation rate as a percentage of total population over the age of 15.

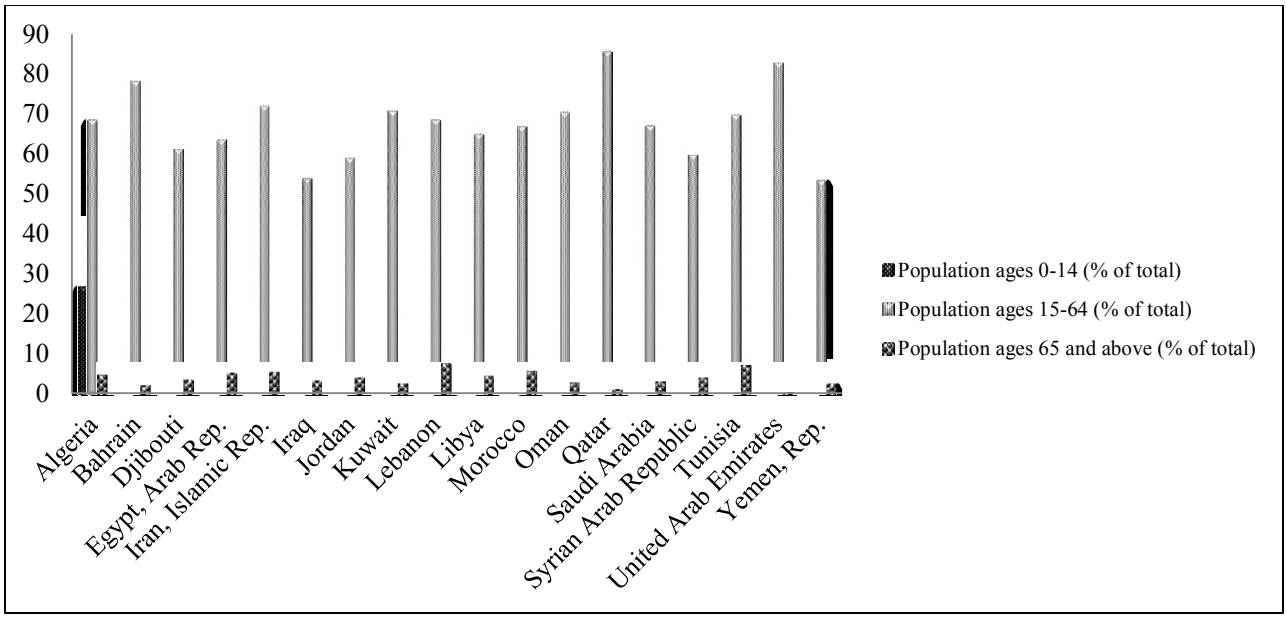

Figure 10: ***Population by Group of Age for MENA Countries***

Source: WDI (2013)

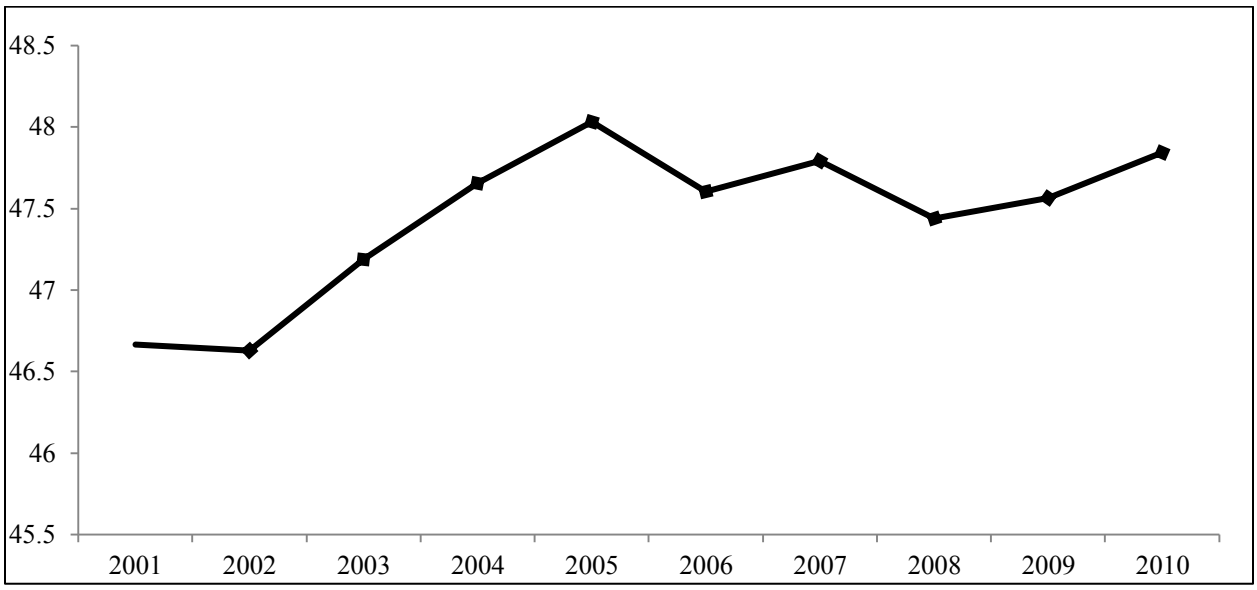

Figure 11: ***Labor Participation Rate, total (percentage of the total population age 15+)***

Source ILO (2011)

These challenges are growing as unemployment rates increase in the region. The total unemployment as a percentage of the labor force is about 10% in the region which is among the

highest unemployment rates in the world. According to the International Labor Organization (ILO) (2012), Djibouti has 59.5% unemployment. Algeria, Yemen, Iraq, Iran, and Jordan all have a large portion of their working-age population with no jobs; 27.3%, 16.2%, 15.3%, 13.5%, and 12.5% respectively. MENA's female unemployment rates are the highest in the world on average during the period from 2005 to 2012 with 17.6% of the total female labor force without a job. Jordan has female unemployment rate above the region average with 24% followed by Syria and Algeria with 22% and 18% respectively, while average of 8% of the male labor force in the region has no job. Unemployment rates are especially high among young people. Compared with other regions in the world, the MENA region has the highest youth unemployment rate with 23.4% of the total labor force unemployed. This ratio is higher in the non-oil producing countries in the region. In some countries in the region, unemployment rates among young women aged 15-25 approach 50% compared with 15% for males of the same age.

Education plays a crucial role in shaping the future of nations. It eases the integration of people into the world economy. This fact applies worldwide and on the regional level as well. In early stages of development, policymakers in the MENA countries understood this fact and made education one of their priorities. Over the years, all educational indicators have increased including enrollment rates and girls' access to education. Since the early 1960s, the MENA region has registered tremendous gains in terms of more equitable access to formal education. In the 1950s, very few children, particularly girls, were attending formal schools (the World Bank, 2008).

Table 7: Spending on Education in some MENA Countries

Country	Adjusted savings: education expenditure (% of GNI)	Adjusted savings: education expenditure (billions current US$)
Algeria	4.5	6.2
Bahrain	3.0	0.5
Egypt	4.4	8.3
Iran	4.0	13.3
Jordan	5.6	1.4
Kuwait	3.2	3.6
Lebanon	1.6	0.5
Morocco	5.2	4.6
Oman	4.2	1.8
Qatar	1.9	1.8
Saudi Arabia	7.2	27.7
Syria	2.6	1.4
Tunisia	6.0	2.5
Yemen	4.1	1.0

Source: the World Bank, WDI 2013.

Despite the successful steps that achieved in the MENA region, there are some issues that need to be solved. For example, the relationship between education and economic growth has remained weak since the education system's outcomes do not attract the market as they have been due to the decline in quality. Another issue is that compared with other regions in the world, the region is behind in its education systems and has an education gap, in absolute terms.

Health care quality in the MENA region, in general, is below its potential compared to other regions in the world. MENA countries are among the lowest countries in spending on health care. According to the World Bank (2012), the MENA region spent 4.6 percent of its GDP on health care or $231.7 per person during the period between 2000 and 2011. In comparison, health-care expenditure per capita in the North America region was about $6,480 or 15.5% of the GDP over the same period. Qatar is the largest country in the region in health spending over the period 2000-2011 followed by United Arab Emirates, Kuwait, Bahrain, Saudi Arabia, and Oman.

The health care spending in the GCC countries represented two-thirds of the total health expenditures over the period 2000-2011.

MENA countries have invested in education over the past few decades about 5% of GDP and 20% of government expenditures. The education expenditure in MENA region is the highest among all the regions in the world with 5.4% of the gross national income (GNI). Saudi Arabia and Tunisia have the largest spending on education ratios with 7.2% and 6% of their GNI respectively. The country with the lowest spending on education is Lebanon with 1.6% of the GNI or 7% of the total government expenditure. Table 7 reports the average expenditures on education in some of the MENA countries during the years between 2005 and 2010.

Table 8 shows the health expenditures in all the world regions, while table 11 provides the health expenditures in MENA countries on average over the period 2000-2011. The health spending varies among countries in the region where the oil-rich countries spend more on the health care and have some of the most advanced medical facilities in the world. At the same time, there is a need to improve the health sector in some countries like Yemen, Syria, and Djibouti.

Table 8: Health Expenditure by Region (2000-2011)

Region	Health expenditure per capita (current US$)	Health expenditure, total (% of GDP)	Health expenditure, public (% of total health expenditure)	Health expenditure, public (% of government expenditure)
EAP	324.84	6.66	68.94	11.34
ECA	1713.02	9.12	75.67	15.26
LAC	415.60	6.98	48.45	9.06
MENA	231.72	4.64	57.01	8.57
NA	6479.43	15.46	46.45	19.15
SA	31.37	3.98	26.21	6.42
SSA	59.95	6.40	41.64	NA

Source: World Bank (2012)

Table 9: Health Expenditure in the MENA Countries (2000-2011)

Country	Health expenditure per capita (current US$)	Health expenditure, total (% of GDP)	Health expenditure, public (% of total health expenditure)	Health expenditure, public (% of government expenditure)
Algeria	125.4	3.7	76.7	8.4
Bahrain	670.1	4.0	69.2	9.9
Djibouti	67.6	6.8	67.0	12.7
Egypt	87.2	5.3	40.5	6.7
Iran	232.4	5.5	40.4	9.8
Iraq	110.4	5.0	53.2	4.8
Jordan	255.8	9.0	56.9	13.4
Kuwait	957.6	2.8	80.2	6.8
Lebanon	489.8	8.0	38.1	9.2
Libya	266.5	3.2	64.9	5.6
Morocco	115.1	5.3	31.4	5.7
Oman	386.6	2.8	81.3	6.0
Qatar	1379.0	2.6	80.2	7.1
Saudi Arabia	507.0	3.9	70.6	8.2
Syria	73.9	4.2	46.9	6.3
Tunisia	190.9	5.6	53.4	9.5
UAE	1175.9	2.8	67.4	8.5
Yemen	51.1	5.2	36.1	5.8

Source: WDI (2013).

CHAPTER 3

LITERATURE REVIEW

Institutions

Introduction:

For decades, economists have been trying to answer an important question; why is there a difference in per capita income among countries? In other words, what makes some countries poorer than others? Over time, economists have provided different answers to this question. For example, Solow (1965) attributed the reason for these differences to the variation in the savings rates among nations. Later, economists argued in favor of other factors including preference, innovation, capital accumulation, human capital, and economic policies.

In more recent years, the focus has shifted to the role of institutions. Many studies have been conducted to investigate whether the quality of institutions is the factor that must be taken into account when considering the determinants of growth among countries. The importance of institutions has been particularly emphasized by the empirical work of Knack and Keefer (1995), Hall and Jones (1999), Acemoglu, Johnson, and Robinson (2001, 2002), Gleaser, La Porta, Lopez-de-Silanes, and Shleife (2004), and Rodrik, Subramanian, and Trebbi among others. It is important when talking about institutions to go back to Douglas North who jointly won the Nobel Prize in economics science (1993) with Robert W. Fogel for *"*having renewed research in economic history by applying economic theory and quantitative methods in order to explain economic and institutional change"(Nobel Foundation, 1993). In his 1993 Nobel Prize speech Douglass North said that "Institutions form the incentive structure of a society and the political

and economic institutions, in consequence, are the underlying determinant of economic performance" (North, 1993). In fact, as more research has been done, institutions are widely recognized to be a prime determinant of a nation's success or failure (Rodrik et al. 2004) , and many economists believe that differences in institutions are the fundamental source of differences in income per capita across countries (Acemoglu et al., 2001).

Definition of institutions:

What do we mean by institutions? Many definitions have been given to explain the concept of institutions either by economists or political scientists.[5] North (1990) gives the following definition: ‘‘Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction"(p.3). As Acemoglu and Robinson (2007) point out, there are three important features of institutions apparent in this definition: (a) they are ‘‘humanly devised," which contrasts with other potential fundamental causes, like geographic factors, which are outside human control; (b) they are ‘‘the rules of the game" setting ‘‘constraints" on human behavior; and, (c) their major effect is a result of incentives.

Scholars have proposed other definitions that disagree with North's definition. Hodgson (2006) offers another definition: "Institutions are systems of established and embedded social rules that structure social interactions" (p.2). Hodgson states that organizations are special institutions. However, for North, the internal structure of the organization is less important than

[5] One reason to provide a definition here is that the word "institutions" has different meanings in social science literature even though it is known in economic growth literature. Another reason is to emphasize that I do not mean "physical" institutions.

the macro aspect of the organization.[6] Similar to Hodgson, as Dixit (2004) cites Greif (2000) who defines institutions as "a system of social factors—such as rules, beliefs, norms, and organizations—that guide, enable, and constrain the actions of individuals". Again this definition merges the concepts of organizations and institutions, looking at the organization as examples of institutions. Schotter (1981) sees institutions as "regularity in social behavior that is agreed to by all members of society, specifies behavior in specific recurrent situations, and is either self-policed or policed by some external authority" (p.11). This definition is from the point of view a game theorist who considers institutions to be a strategy that individuals should choose (Dixit, 2004). As we see, there are endless disputes over the definition of institutions. Throughout this paper, we will adopt North's definition of institutions, following the mainstream definition used in the literature.

Importance of institutions:

Why are institutions important? Institutions provide a suitable environment for creativity and innovation and protect the intellectual rights of innovators. Not only that, but they also increase the competition for opportunities as long as the rule of law applies to everyone without discrimination or favoritism. In fact, the influence of the quality of institutions is not limited to individuals but can affect nations as well. A large body of research finds that countries that are enforce the rule of law and have well defined property rights protect property rights tend to express higher economic growth even under non-democratic regimes (Olson, 1993).

[6] North stated this view in a letter to Hodgson dated in 19, September 2002. See Hodgson (2006).

As previously mentioned, the impact of institutions on economic growth has been shown by many studies around the world.[7] Some may argue that economic growth is attributed to other factors, whether geography or human capital, but even in those cases it is unarguable that the absence of strong institutions will hurt growth. The importance of institutions is not limited to economic growth but goes beyond that to have an impact on other economic activities. As Asiedu (2006) found; "an efficient legal system, less corruption and political stability also promote foreign direct investment" (p.65). She observed progress in African countries and found that the decrease in corruption level had a positive impact in the same magnitude on FDI as increasing the share of fuels and minerals in total exports.

Traditionally, many economists have argued that democracy is more conducive to economic prosperity because it secures civil liberties and property rights. Democracy also makes it possible for individuals to examine opportunity costs freely and engage in entrepreneurial behavior (North, 1990). However, democracy may not always contribute to growth. Olson (1982, 1993) argues that some forms of dictatorship may be more encompassing if democratic institutions allow a majority to use its position to gain protection. In addition, a democratic regime may apply bad policies for political gains, while autocracies may be under no such pressure. He argues that stable autocratic regimes can deliver growth successfully, but stability cannot be guaranteed for a long period of time. Rodrik (2000) argues that the conflict management possibilities in countries with participatory institutions yield less growth volatility than in non-democratic societies. Before ending this section, it should be pointed out that Rodrik (2008) summarizes the importance of institutions as "Desirable institutions provide security of property rights, enforce contracts, stimulate entrepreneurship, foster integration in the world

[7] For example, Acemoglu et al. (2001) and Rodrik et al (2004) among others.

economy, maintain macroeconomic stability, manage risk-taking by financial intermediaries, supply social insurance and safety nets, and enhance voice and accountability"(p.1).

Institutions and Economic Growth:

Mounting evidence suggests that institutions are indeed important for economic growth. Knack and Keefer (1995) show that not only are institutions a cause of growth, but also that the explanatory power of the regressions is higher when political violence indicators are included. They find that political violence, the Gastil political index, and civil liberties indicators are all insufficient proxies for the quality of the institutions and marginally significant when using BERI samples. They find that securing property rights has a strong impact on the magnitude and allocation of investment. They argue that the empirical research of cross-country growth has been restricted to a narrow examination of the role of institutions due to data limitations. Hall and Jones (1999) suggest that the differences in capital accumulation and productivity, and therefore, output per worker is due to the differences in social infrastructure, that is, differences in institutions and government policies across countries. They find a strong correlation between output per worker and measures of institutions and government policies across 127 countries; countries with long-standing policies favorable to productive activities—rather than diversion—produce much more output per worker. In their study of European colonization practices, Acemoglu, Johnson, and Robinson (2000) find a strong relationship between colonial institutions and economic performance. Their findings indicate that over 50 percent of the variation in income per capita is associated with variation in the index of institutions. They find a strong relationship between settler mortality rates and current institutions, and between early institutions and current institutions. Finally, they argue that the mortality rates of European settlers more than 100 years ago have no effect on GDP per capita today except through institutions, and that

improving institutions will lead to improving the income per capita. However, they do not explain how institutions would be improved. Acemoglu and Robinson (2006) try to investigate the relationship between contracting institutions and property rights institutions. They find correlations between both contracting and property rights institutions and long-run economic growth, investment rates, and financial development. The results also show that the legal formalism is affected by the legal origin of the country; the legal origin has a strong effect on all the measures of contracting institutions and a small impact on the measures of property rights institutions. They show that settlers' mortality rates and population density in 1500 had a large impact on property rights institutions and no effect on contracting[8] institutions. Thus, institutions appear to have a strong effect on economic performance, turning the question into "how" powerful is the effect of institutions on growth in relation to other factors.

The empirical studies not only highlight the importance of institutions for long-run growth, but also assert the primacy of institutions among other economic growth determinants. Dani Rodrik et al. (2004) study the "deeper" determinants of economic growth—geography, integration, and institutions— and find that institutions trump everything else. They find that once institutions are controlled for, integration has no direct effect on incomes, while geography has at best weak direct effects and that trade often enters the income regression with the "wrong" (i.e., negative) sign, as do many of the geographical indicators. By contrast, their measure of property rights and the rule of law always enter with the correct sign and statistically significant, often with t-statistics that are very large. They find that institutional quality has a positive and significant effect on integration. Easterly and Levine (2002) investigate if the economic development depends on the geographic endowments (tropics, germs, and crops). They study the role of institutions and policies in this relationship by testing the endowment, institutions, and

[8] Contracting Institutions are the institutions that enable private contracts between citizens.

policy views against each other using cross country evidence. The results show that endowments significantly explain economic development through institutions, but they do not explain economic development beyond their impact on institutions. Robinson, Torvik, and Verdier (2006) argue that institutions determine not only the level of income or its rate of growth but also the comparative statics of the equilibrium. They introduce a comparative statics model of an equilibrium that is often conditional upon the institutional equilibrium of a society and call it "institutional comparative statics". They argue that the strength of institutions determines the response of economies to shocks or innovations in economic opportunities; that is, the response would be positive in presence of strong institutions and vice versa. Institutions explain more than any factor the variations in growth among nations.

The importance of institutions is not limited to the direct effect on growth; there are also indirect effects. The indirect impact of institutions usually takes two forms: either by interacting with other variables, or through working as a channel to determine those variables' effects on growth. Examples of such variables include, but are not limited to, trade, policy, democracy, and human capital. Regarding trade, Dollar and Kraay (2003) study the long-term partial effects of institutions and trade on growth. They investigate the identification problem facing empirical research that works to isolate the partial effects of institutions and trade. They use two measures: the partial R-squared diagnostic measures suggested by Shea (1997), and the minimum eigenvalue test of the null hypothesis of weak instruments suggested by Stock and Yogo (2001), and they find that these models are not very well identified, hence, they conclude that the causal effects of institutions and trade on long-term growth cannot reliably be based on conventional t-statistics. Acemoglu, Johnson, and Robinson (2005) argue that European growth after 1500 was affected by the Atlantic trade in both a direct and indirect way through the institutional channel.

They argue that large profits from the Atlantic trade made institutional change possible in countries that had easy access to the Atlantic and non-absolutist initial institutions, which in turn shifted the political power and allowed for institutional reforms that help in more innovations in economic institutions. Baliamoune-Lutz and Ndikumana (2007) study whether poor quality of institutions is the reason for reducing the effect of trade openness on growth in Africa. They use panel data from 39 African countries covering the period 1975-2001 and apply the Arellano-Bond GMM estimation technique with income per-capita (in log) as the dependent variable. The results show that institutions have a large impact on promoting the growth effect of trade. The joint effect of institutions and trade liberalization on growth is found to be negative, while the joint effect of institutions and trade is found to be a U-shape which indicates that as openness to trade reaches high levels, institutions play a critical role in harnessing the trade-led engine of growth. Navas (2009) studied the impact of trade on the process of institutional change. He finds that countries that open to trade have larger average growth and much earlier change in institutions than that those with no such experiment. Moreover, international trade plays a role in the advancement of the institutional environment by changing the relative price of the final goods, changing the way production factors are compensated, and having general equilibrium price effects. He argues that trade specialization accelerates the process of institutional change by raising capital rents, making then capital accumulation faster. There is no doubt that institutions are the main factor in determining the impact of trade on growth.

Many studies investigate the relationship between institutions and policy. Easterly and Levine (2002) find that macroeconomic policies have no role in explaining economic development after accounting for the impact of institutions. Fatás and Mihov (2005) argue that policy volatility has a strong and direct negative effect on growth. They find that an increase by

one standard deviation in the volatility of fiscal policy is associated with a decrease of 0.75 percentage points in long-term economic growth. They find that political institutions play a role in shaping policy outcomes. This is in contrast with the evidence that economic policies are simply a proxy for poor institutions and do not have a significant role as mediators in this relationship. (Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2004)) argue that it is not about institutions but rather about policy; less-developed countries under dictatorships achieve economic success when they apply good policies. Thus, the influence of policy on growth depends mainly on the quality of institutions in the country.

Other economic, social, and political variables are affected by institutions. Acemoglu and Robinson (2008) find that when controlling for factors that simultaneously affect income and democracy, no association exists. By using an instrumental variables technique, they find no causal effect of income on democracy. However, the cross-country estimates show a positive correlation between changes in income and democracy over the past 500 years. They provide evidence that this is likely to be because the political and economic development paths are interwoven. Commander and Nikoloski (2010) study the relationship between democracy and growth for the period from 1960-2009 (5 years average) for 159 countries using growth in per capita income and real GDP growth as dependent variables. The democracy data were obtained from Freedom House and Polity IV. Their findings indicate no association between democracy and growth. They analyze whether commonly used measures of institutions have any significant impact on performance of countries and firms. They focus precisely on the impact of political system, business and investment environment, and perceived business constraints on economic performance. The study found little evidence of a robust link between commonly used measures of institutions and economic performance. This weak relationship was attributed to mis-

measurement, mis-specification, complexity, and non-linearity. Rigobon and Rodrik (2005) study the relationships between economic institutions, political institutions, and income levels across countries. The results suggest that both democracy and the rule of law are beneficial for economic performance, but that the rule of law is quantified and statistically more important. E Asiedu (2003) employs a model that studies the relationship between debt relief and the quality of institutions in Heavily Indebted Poor Countries (HIPCs) by using data on 12 measures of institutional quality. When analyzing the institution's condition in HIP countries, she finds that the institutional quality is very weak. As a result, she suggests that a country needs to achieve some minimum threshold of institutional quality in order to benefit from debt relief. She asserts that institutional reform has to be a central part of the debt relief program in those countries. Banerjee, Iyer, and Somanathan (2005) employ a case study format to focus on historical institutions, the system of collecting land revenue, in India and show that the differences in historical property right institutions lead to sustained difference in economic outcome. They argue that the advantage of focusing on one specific institution in one particular country is that it makes it easy to locate the source of the difference. Lee and Yeon Kim (2009) find that while secondary education and institutions turn out to be important for lower income countries, an emphasis on technology and higher education appear to be effective in generating growth for upper middle and high income countries. Indeed, institutions affect growth directly and indirectly through their role in determining the directions and the size of the impacts of the other variables on growth. Miletkov and Wintoki (2012) study the role of financial development in improving the property right and legal institutions for 126 countries over the period between 1965 and 2003. They use private credit as their measure of financial development while employing the Legal Structure and Security of Property Rights Index (Economic Freedom) as their measure of the

property rights institutions. The results show a strong and positive link between financial development and the quality of property rights institutions.

The idea that institutions matter is not conventional wisdom among researchers. Some scholars have challenged this idea and tried to come up with justified reasons for this challenge. Mostly, the strong critique was related to "which institutions do we mean?" and "how are institutions measured"?. Bardhan (2005) claims that the new institutionalists have gotten their institutions wrong by mixing the measures of institutions. In contrast to North (1981), Panda and Urdy (2005) argue that institutions need not be "designed". For that reason, they try to focus on *de facto* rather that *de jure* institutions, arguing that this is a better indicator when considering institutions in low-income countries. Przeworski (2004) argues that institutions and development are mutually endogenous and the most we can hope for is to identify their reciprocal impacts. (Glaeser et al. (2004)) discuss the measurement of political institutions used in the literature by studying these measurements according to North's definition of institutions as reflecting constraints on government and being permanent. They find these measurements reflecting neither constraint on government nor the permanence feature. They argue that the initial level of education is a strong predictor of subsequent economic growth. The results indicate a strong correlation between economic growth and the average of institutional quality, while showing no relationship between economic growth and the suggested constitutional measures of institutions. They find no evidence to support the claim that institutions cause growth at least during the period of 1960-2000. They claim that the reason that quality of institutions might enter significantly in the growth regression is because they improve as income increases. Lee and Kim (2009) investigate the causality between institutions and economic growth in the GMM context. They find that causation is bi-directional; institutions are found to cause growth and growth leads

to improvement in institutions. Clearly, these kinds of critiques are strong, but they do not hinder empirical research on institutions.

Natural Resources

Definition:

Scholars use several definitions for natural resources. The World Bank defines natural resources as being "all 'gifts of nature'- air, land, water, forests, wildlife, topsoil, and minerals- used by people for production or for direct consumption, [and] can be either renewable or nonrenewable".[9] According to the German Federal Environment Agency (UBA) natural resources are those which occur in nature. These include renewable and non-renewable primary raw materials, physical space (land area), environmental media (water, soil, and air), flow resources (such as geothermic, wind, tidal and solar energy) and biodiversity.[10] The U.S. Geological Survey defines natural resource as "A concentration of naturally occurring solid, liquid, or gaseous material in or on the Earth's crust in such form and amount that economic extraction of a commodity from the concentration is currently or potentially feasible."[11] Since we are not intending to study natural resources *per se* but rather their relationship with institutions, it is not necessary to expand upon these definitions. In line with the data that are used in this study, we apply the definition of natural resources according to the World Bank.

[9] See the glossary section in the World Bank website.
[10] See the glossary section in the UBA website.
[11] See the glossary section in the U.S. Geological Survey

Is It a Curse or a Blessing?

Logically, if a country has a substantial amount of natural resources, it should have a high standard of living and great wealth. In reality, however, that is not usually the case. In fact, some resource-rich countries are suffering from many economic and social problems. For this reason, the economic literature has been experiencing intellectual battles related to the role of natural resources in economic growth and development. Since most studies show that economies abundant in natural resources tend to grow slower than economies without substantial natural resources, the effect of natural resources on economic growth has been an important factor in a large number of studies that deal with growth models. More precisely, many scholars have been considering the resources curse hypothesis. Sachs and Warner (1995) state that resource abundance leads to weak institutions and, in turn, lower economic growth. Stijns (2005) finds that land abundance tends to have negative effects on all determinants of growth, including different measures of institutional quality. Sachs and Warner (2001) show that controlling for direct geographic variables does not eliminate the evidence of the curse of natural resources. They argue "evidence that resource-abundant countries tended to be high-price economies and that, partly as a consequence, these countries tended to miss-out on export-led growth" (p.1). Arezki and Van der Ploeg (2010) provide new cross-country empirical evidence for the effect of resources on income per capita. The results indicate a direct negative effect of natural resources dependent on income per capita especially in countries with bad institutions. They find a casual negative relationship between resource abundance and economic performance. They argue that the reasons that resource abundance has more negative effect than resource dependence is because the former is more exogenous than the latter. This result holds even after controlling for

geography, rule of law and *de facto* or *de jure* trade openness. In contrast, several recent studies find a positive relationship between natural resources and economic performance. Brunnschweiler (2006) uses the World Bank's per capita natural resources data to test their effect on economic growth over the period 1970-2000 for a sample of 100 countries and to investigate the role of the quality of institutions in this relationship. The main variables used to measure institutional quality are the rule of law and government effectiveness. The results show a positive direct association of the abundance of natural resources with economic growth over the period 1970-2000, which is confirmed when considering the role of institutions. No confirmation is found for the negative effects of resource abundance through institutional quality. She finds an association between more highly developed the institutions and weak positive growth impulses of natural resource abundance, and that the beneficial growth effects seem to diminish as institutional quality improves. Those results hold in both OLS and 2SLS estimations. Lederman et al. (2008) argue that the negative impact of natural resource abundance is not proven. They use new data and a new econometric analysis to conclude that the curse does not occur even in an indirect way through institutions. They find that the direct positive effect of natural resources can be large. They find heterogeneity in the potential blessing effects of natural resource endowments. In the static model, poor countries benefit the most, whereas in the dynamic model, the richest seem to have benefitted the most. In both cases, these blessing effects tend to disappear when we control for macroeconomic volatility and factor accumulation. Alexeev and Conrad (2009) argue that the findings of natural resource curse in the literature are due mostly to misinterpretation of the available data. They use exogenous geographical factors to estimate the countries' per capita GDP in the absence of the typical oil or mineral wealth. Then they use this estimated GDP as a control variable in the regressions of institutional quality on natural

resources endowment measures. Their available data suggest that natural resources enhance long-term growth so they focus on the levels of per capita GDP rather than on the rates of growth over any given period of time. The results show that institutional quality affects economic growth while an increase in GDP does not lead to better institutions or undermine the quality of the existing institutions. They find that the negative effect of large endowments of point source resources on institutions claimed in the literature is mostly due to the use of initial GDP values as control. Large natural resource endowments appear to increase per capita GDP without simultaneous improvement of the country's institutions. They conclude that the natural resources curse does not seem to exist. Clearly, considering natural resources as a curse or a blessing depends on the institutional quality among other factors.

Natural Resources and Economic Activities:

The investigation of the role that natural resources play in the economy is not limited to their interaction with institutions. In fact, economists study the influence of natural resources on other economic factors. Gylfason and Zoega (2006) propose a link between natural resources and economic growth through saving and investment. The results from 85 countries between 1965 and 1998 show a negative relationship between investment in physical capital and the share of natural capital in national wealth, while the relationship is positive between investment in physical capital and the development of the financial system. The share of natural resources is found to be negatively related to education while natural resource abundance is hurting economic growth. They find that foreign investment is inversely correlated with growth. Finally, they argue that economic and structural reforms leading to more efficient capital markets, increased

investment and a better allocation of capital across sectors may help start growth in countries that are well endowed in terms of natural resources.

Some studies focus on the influence of natural resources on human capital. Aldave and García-Peñalosa (2009) develop an endogenous growth model with unskilled individuals who can work in the industrial or natural resources sector, and skilled workers who work only in the industrial sector. Their argument is that corruption and education are correlated and both are impacted by natural resources. This study approached the resources curse hypothesis from a different angle by assigning the role of the engine of growth to human capital, especially skilled agents. The results show that natural resources have a direct effect on output and an indirect impact on the feasible equilibria. In particular, small endowments imply that only the high-growth equilibrium exists while intermediate endowments lead to both a high-growth and low growth/poverty-trap equilibria. An economy is more likely to fill in a poverty trap in the case of a huge endowment. On the other hand, they find that the direct effect of resources to be ambiguous. Their results show that in the low-growth equilibrium, a higher value of the stock of natural resources increases corruption, reducing human capital accumulation and growth.

To look at the resource curse from different setting, economists have tried to link natural resources to economic reforms and policies. Amin and Djankov (2009) investigate the link between the abundance of natural resources and micro-economic reforms using a sample of 133 countries covering the period 2003-2008. Previous studies suggest that natural resource abundance gives rise to governments that are less accountable to the public and states that are oligarchic, and that it leads to the erosion of social capital. These factors are likely to hamper economic reforms. The results show a negative relationship between natural resource abundance and growth-enhancing reforms. Gylfason (2011) investigates the impact of natural resources on

the economic policies and the role and design of institutions in resource-rich countries. Using data for 164 countries between 1960 and 2000 and employing OLS and SUR methods, he finds that rich countries grow less rapidly than poor ones and he argues that the reason behind this argument is that the rich have already exploited more of the growth opportunities available to them. He uses the natural capital share in GDP as a proxy for natural resource dependence and natural resources per person as a proxy for natural resource abundance, and finds that natural resource dependence is negatively related to growth even if natural resource abundance has a positive impact on growth. E. Asiedu and Lien (2011) investigate the impact of natural resources on the relationship between FDI and democracy. Using data from 122 developing countries from 1982 to 2007 and employing a linear dynamic panel-data model, they find a threshold in the share of oil and minerals in total exports above which democracy has a positive impact on FDI and vice versa. Thus, it is clear that natural resources play a vital part in the modern economic growth research.

Political Implications of Natural Resources:

Economists and political scientists have been conducting empirical studies related to the implications of natural resource endowments— particularly oil—on political and economic outcomes. It is arguable that the political incentives that resource endowments generate are the key to understanding whether or not they are a curse (Robinson et al., 2006). Auty and Gelb (2001) argue that the type of political state provides the link between the natural resource endowment and the economic outcome where an autonomous state has sufficient independence to pursue a comprehensive economic policy. They argue that a *benevolent* autonomous state is associated with the developmental states of resource-poor East Asia for the following reasons: First, population density makes it difficult to have inequitable land distribution and predatory

rent extraction. Second, in resource-poor countries it becomes hard to support either protected manufacturing or an over-expanded bureaucracy. Third, resource-poor countries are less likely to have Dutch disease effects. Finally, with poor resources, countries give more attention to investment in human and social capital. In addition, they provide a characteristic of the resource-abundant countries in which they use indirect redistribution mechanisms to allocate natural resource rents and they have the tendency to become overextended. They conclude that the presence of a developmental state is a necessary condition for sustained and rapid economic development.

Several scholars investigate the consequences of natural resource abundance on the behavior of politicians. Caselli (2006) argues that empirical evidence suggests that the natural resources curse depends on the political elite's behavior. He presents a model of the natural resources curse that produces strongly non-monotonic relationships between the natural resources endowments and the growth rates, long-run levels of GDP per capita, and consumption. This model generates power struggles and, as a result, increases the effective discount rate of the governing group. He notes that many scholars believe that the resource-curse problem is due to the incentives of the political elite. He suggests that multinational organizations should put pressure on countries to improve the use of resource revenues. A growing literature on the implications of natural resources and regime type built a debate among scholars on whether natural resource wealth promotes autocracy or not. Ross (2001) uses pooled time-series cross-national data for 113 countries between1971 and 1997 to study the "oil-impedes democracy" claim. He studies three possible reasons for the absence of democracy in the Middle East's oil rich countries: 1) these countries have been authoritarian since the independence, 2) the influence of Islam, and 3) the colonial history. He begins by summarizing

the relationship between oil and authoritarian rule in the Middle East countries through three main effects or as he called them *Casual Mechanisms*: the rentier effect[12], the repression effect[13], and the modernization effect.[14] He finds that oil and nonfuel minerals hinder democracy not only in the Middle East countries, but also in other oil-rich countries in Africa and central Asia.

On the other hand, Herb (2005) investigates the relationship between *rentierism* and democracy using a cross-regional dataset. He argues that the claims that natural resources harm democracy cannot be tested without using a *counterfactual* GDP. As a result, he derives *counterfactual* GDP figures from comparing *rentiers* to otherwise similar countries in the region and uses this measurement instead of the standard per capita GDP. Then he employs Ordinary Least Squares (OLS) with Panel-Corrected Standard Errors and Lagged Dependent Variable. The result indicates that there is no harmful net effect of *rentierism* on democracy scores. Democracy scores in the surrounding region are found to be strongly correlated with a country's own democracy score. To determine whether there is a long-term relationship between resource dependence and regime type within countries over time, Haber and Menaldo (2011) use both a country-by-country time series approach and a dynamic panel framework with country fixed effects. Their study covers 168 countries from 1800 to 2006 and they employ four alternative measures of natural resource dependency and two measures of regime type. They test the resources curse hypothesis by designing the data in which they decide whether the country is

[12] When government's revenues increase from oil, they usually cut taxes or increase government spending on social programs, which makes the enthusiasm for democracy diminish and fade out.

[13]Governments usually use a large portion of the high oil revenue to buy security equipment to improve the security sector's ability to defeat any rising voices for democratization.

[14]This effect comes from the people, unlike former effects where the government is the source: as more people have higher levels of education and as more cultural and social changes occur, this leads democracy.

resource-dependent based on its level of fiscal reliance on resource-revenues, and then they set the threshold for the resource- dependence at 5% during the period of 1972-1999. As a result of this procedure, they end up with 53 resource dependent countries. The results indicate that resource dependence does not promote dictatorship over the long run. The result supports the resource blessing hypothesis in many specifications. Thus, it is clear that there is no conventional wisdom among scholars on the relationship between natural resources and regime type.

Oil as a natural resource plays a major role in the world's economy and impacts world stability. For this reason, scholars examine deeply the impact of oil on economic and political outcomes. Cotet and Tsui (2010) study the effect of oil abundance on political violence by using a panel dataset describing worldwide oil discoveries and extractions for a sample of more than 100 countries over the period 1930-2003. They find that by controlling for country fixed effects removes the statistical association between oil reserves and civil war. They find that there is no impact of oil reserves on violence. However, they do find that oil-rich nondemocratic countries have larger defense expenditures, but they argue that oil resources are not necessarily a social curse and argue that "natural resources themselves are not to blame for various disappointing political outcomes"(p.25). Using data from the Association for the Study of Peak Oil and Gas, Tsui (2011) studies the impact of oil discoveries on democracy. His finding indicates that discovering oil decreases a country's 30-year change in democracy, as measured by the Polity Index. He finds that on average; when non-democratic countries discover 100 billion barrels of oil, it pushes their democracy score about 15 percentage points below trend three decades later. He finds that oil discovery has no political impact. He argues that oil wealth can be a political curse when oil-rich dictators oppose democratic development because they will have more to give up from losing power.

The impact of natural resources on the economy has been tested by using cross-sectional data. Bjorvatn, Farzanegan, and Schneider (2012) focus on intra-country effects. Using panel data for 30 oil-rich countries from 1992 to 2005, they argue that political power balance is an important determinant of the efficient use of resources rents. They argue that resource rents have a positive impact on growth as long as the government is strong even though some of its institutions appear weak of weak institutions. On the other hand, they claim that oil revenues to a fractionalized government, for example consisting of a single party, lead to slower economic growth even with the presence of strong institutions. The lesson from this finding is that the political power balance plays an important role in determining the income effect of resource rents. In particular, resource rents are less likely to have a positive effect on income when governments are weak.

Natural Resources and Institutions:

The debate over the effect of natural resources on economic growth enters a new stage when economists consider the quality of institutions as the most important factor in distinguishing the positive and negative impact of natural resource abundance. Mehlum, Moene, and Torvik (2006b) test the link between economic growth, natural resources, and institutions. They claim that countries rich in natural resources constitute both growth losers and growth winners. They investigate the extent to which growth winners and growth losers differ systematically in their institutional arrangements by distinguishing between *producer friendly institutions*[15] (good) and *grabber friendly institutions*[16] (bad). They extend the model developed by Sachs and Warner (1997) where they allow for the growth effect of natural resources to

[15] Producer friendly institutions: where rent-seeking and production are complementary activities.

[16] Grabber friendly institutions: where rent-seeking and production are competing activities.

depend on the quality of institutions. They find that the resources curse applies in countries with grabber friendly institutions but not in countries with producer friendly institutions. Pessoa (2008) deals with the role of institutions in explaining growth decline. The results show a negative relationship between growth and relative resource abundance supporting the idea that good institutions enhance growth. The investigation does not prove that the resource curse only appears in countries with bad institutions. He concludes that there is no justification for the idea that certain countries will remain caught up in a low growth trap constrained by institutions that impede their growth.

Economists distinguish between the effects of natural resources based on their source. Isham, Woolcock, Pritchett, and Busby (2005) tests the proposition that being dependent on point source natural resources negatively affects economic growth and the quality of institutions.. The analysis of data shows that point source exporting countries show an inverse relation with governance indicators while countries with natural resources exports that are diffused do not show the same strong effects. They use the continuous indices of export composition to estimate a two-equation system where the institutional variable is the dependent variable in the first equation while in the second one growth is determined by institutions. The results indicate that neither the manufacturing index nor the diffuse index is statistically significant predictors of any of the institutional variables while the point source index is statistically significant in all the specifications. The share of primary exports in the GDP is a positive and significant predictor of institutions. The results of estimating the growth equation show a strong impact of institutions on post-1974 growth and suggest that institutions are a positive and significant determinant of economic growth among these developing economies from 1975 to 1997. Norman (2009) investigates the relationship between the rule of law with

both the natural resource export intensity in 1970 and the natural resource abundance for the 110 countries distinguishing between resource abundance (stocks) and extractive intensity (flows). The main finding is that mineral abundance is associated with lower levels of rule of law, but there is not robust evidence for this having a direct effect on growth. The results show that there is no significant relationship between resource extraction rates and rule of law when controlling for resources abundance. De Rosa and Iootty (2012) examine whether natural resource dependence has a negative impact on various indicators of institutional quality using a system of a dynamic panel data model based on the work of Arellano and Bover (1995) and Blundell and Bond (1998). The results show that countries with a high degree of resource dependence experience low government effectiveness and low domestic competition. In particular, a 1% increase in the average worldwide share of fuel exports among total exports leads to a 0.13% decrease in government effectiveness in the short run, and to a 0.20% decline in the long run. In sum, examining the role of institutions is crucial when studying the impact of natural resources.

Many studies focus on the rent-seeking phenomena related to natural resources abundance. Sala-i-Martin and Subramanian (2003) argue that for a given level of institutional quality, natural resource abundance has no direct impact on growth. Rather, this abundance effects growth indirectly through institutional quality, but only when resources are geographically concentrated. Ades and Di Tella (1999) use cross-country regressions to show how natural resource rents may stimulate corruption among bureaucrats and politicians. Da Cunha Leite and Weidmann (2001) show an important indirect effect through the impact of those resources on corruption. Acemoglu et al. (2005) argue that higher resource rent makes it easier for dictators to buy off political challengers. Atkinson and Hamilton (2003) show that natural resource abundance may have negative effects on development when weak institutions allow

profits from resources to be spent on government consumption rather than invested. Bulte, Damania, and Deacon (2005) find mineral abundance has a slightly negative indirect effect on development via measures of institutional quality. Lederman et al. (2008) conclude that countries with good institutions can avoid the resources curse, but they stress the possibility that natural resources affect institutional quality. Bhattacharyya and Hodler (2010) investigate whether and how the quality of the democratic institutions affects the relationship between natural resources and corruption. They study this relationship theoretically and empirically. In the theoretical part, they use a game-theoretic model which shows that resource rents increase corruption if and only if the quality of the democratic institutions is below a certain threshold level. In particular, their model predicts that resource abundance increases corruption in countries with poor democratic institutions, but not in countries with comparatively better democratic institutions. In the empirical part, they test this prediction using a reduced form model and panel data from 124 countries covering the period from 1980 to 2004. The estimates confirm that the relationship between resource rents and corruption depends on the quality of the democratic institutions. They find that resource rents are positively associated with corruption in countries for which the net democracy score POLITY2 is 8.5 or less. This result holds when they control for the effects of income, time varying common shocks, regional fixed effects, legal origin, and various additional covariates. It is also robust across different samples to various alternative measures of corruption, natural resources, and the quality of democratic institutions.

CHAPTER 4

EMPIRICAL ANALYSIS

Data:

In this section we will give a brief description about the data including the sources, the time spans, and statistic descriptions. The data is divided into three categories based on the three variables used. The three sections are institutions variables, natural resources variables, and other variables that are used in this study.

Measures of Institutions:

In the literature, many measurements for the quality of the institutions are used by economists. The most widely used measurements are obtained from three datasets: (a) International Country Risk Guide (ICRG) used by Knack and Keefer (1995), Hall and Jones (1999), and Acemoglu, Johnson and Robinson (2001) among others; (b) an aggregated index of governance indicators of the World Bank collected by Kaufman, Kraay and Mastruzzi (2003) used by Rodrik, Subramanian and Trebbi (2002) among others; and (c) the Polity IV data set (Jaggers & Marshall, 2000). Despite the fact that these measurements are widely employed in studies about institutions, there is no universal agreement on the appropriateness of their use. Glaeser et al. (2004) argue that measures of institutions obtained from the ICRG dataset are highly volatile and not permanent and that the measures of institutions of governance indicators are outcomes and highly correlated with the level of economic development. However, their critique contains only general observations without any concrete proposals (Voigt, 2009).

In this study, I use six measures of institutions: constraints on the executive, polity2, autocracy, law and order, and government stability and property right protection. The first three measures are obtained from Polity IV database, while law and order and government stability are obtained from the ICRG database. The last one is obtained from the Economic Freedom of the World. Table 10 provides a Summary of Descriptive Statistics.

Table 10: Summary of Descriptive Statistics: Institutions Variables

Variables	World Sample		MENA Sample	
	Mean	*Standard Devotion*	*Mean*	*Standard Devotion*
Constraints on the Executives	0.51	0.32	0.17	0.11
Polity2	0.54	0.30	0.18	0.14
Autocracy	0.68	0.27	0.32	0.23
Law and Order	0.65	0.21	0.61	0.14
Government Stability	0.70	0.16	0.64	0.12
Property Right Protection	0.64	0.23	0.53	0.14

***Constraints on the executive**:* This measure was obtained from the Polity IV dataset. The Polity IV manual indicates that it measures the independence of the legislature and judiciary from executive control. This measure is a seven-category scale, from 1 to 7, with a higher score indicating more constraint: 1 indicates unlimited authority; 3 indicates slight to moderate limitations; 5 indicates substantial limitations; 7 indicates executive parity or subordination; 2, 4, and 6are intermediate values. The data cover the period between 1970 and 2010. Polity IV uses special values: -66, -77, and -88 to indicate the absence of the central governments in some periods for some countries. I treat those special values as missing[17] except for Lebanon when I

[17] I follow Acemoglu et al (2008) when they treat these special values as missing.

give the value 1 for the period between 1975 and 1992 because of the civil war that took place during that period.

This measure was chosen for three reasons: first, it corresponds to the procedural rules constraining state action; second, it highlights the close relationship between property rights institutions and political institutions (Acemoglu & Johnson, 2005); and third, it is available for a longer period than any other institutional variable. These variables were used previously in the literature to measure the effect of institutions by Acemoglu et al. (2001) and Glaeser et al. (2004) among others.

The world average score on this variable over the period 1970-2010 is 0.51 and the MENA average over the same period is 0.17 and this is the lowest average score compared with other regions in the world as figure 12 shows. The highest average score is that for the United Arab Emirates with 0.33 and Egypt with 0.33, while the lowest average is for Iraq with 0.01.

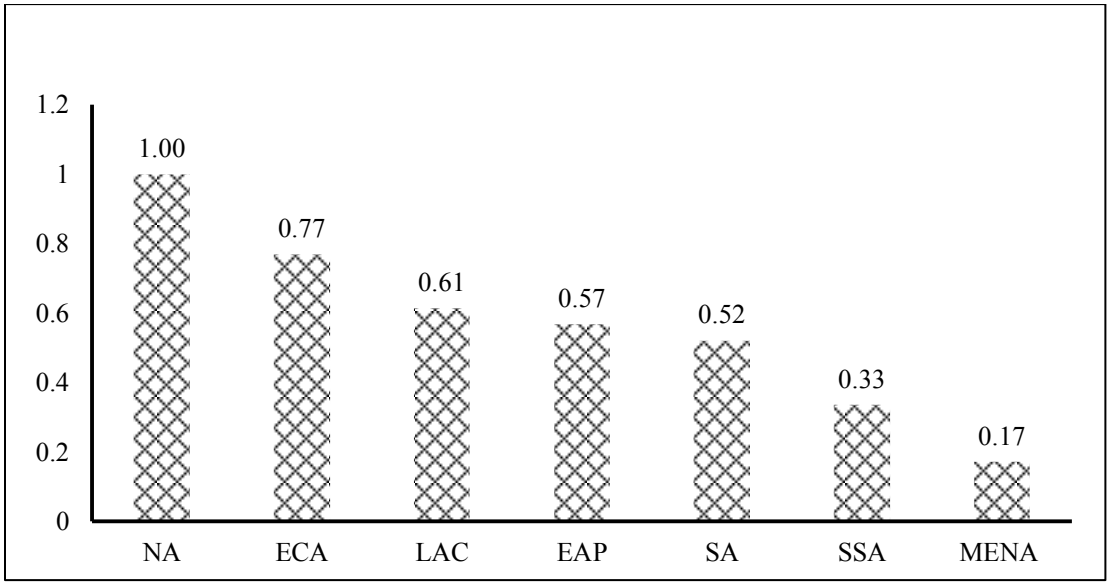

Figure 12: ***Average Constraints on the Executive 1970-2010***

Source: Polity IV (2011)

Autocracy: this variable means that leaders are chosen in a regularized process of selection within political elite and they exercise power with few institutional constraints (Polity IV project, 2010, p.15). This variable is scaled between 0 and 1 in which the highest being the best. The highest scores in the MENA region are for Lebanon with 0.98, above the world average, and for Yemen with 0.62. Other countries that are above the region average include Djibouti (0.47), Sudan (0.43), Egypt (0.42), Algeria (0.40), Mauritania (0.39) and Tunisia (0.32). Figure 13 shows the average score of autocracy between 1970 and 2010 by regions of the world. As it can be seen from the figure, MENA has the lowest score with 0.32, while North America has the highest score of 1.

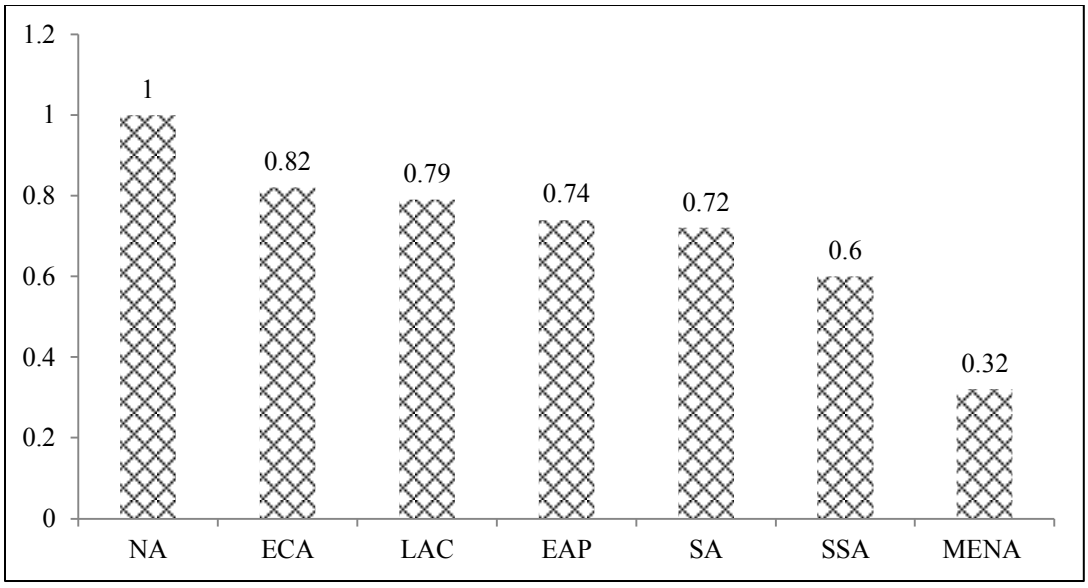

Figure 13: ***Average Autocracy Score by Region (1970-2010)***

Source: Polity IV (2011)

Polity2: this variable measures the different between the score of democracy and the score of autocracy of a country. This variable becomes the most popular measure of a country's political regime (Plümper & Neumayer, 2010). The most benefit of this variable is that it provides a large

coverage of all democracy indicators for a large range of countries. The world average score on this variable over the period of 1970-2010 is 0.54, while the average for MENA region is 0.18 which is again is the lowest average among all regions in the world (figure 14). Lebanon has the highest average score among MENA countries with 0.58 which is slightly above the world average. Moreover, Yemen is in the second place with an average score of 0.32.

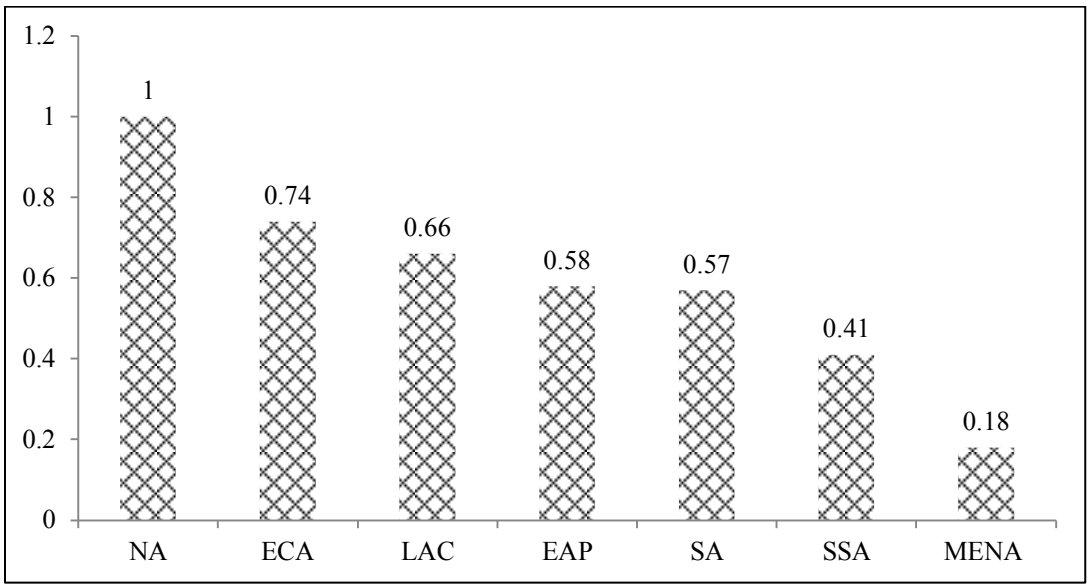

Figure 14: ***Average Polity2 Score by Region (1970-2010)***

Source: Polity IV (2011)

Law and Order: The data on this variable is only available since 1984 and it covers the period to 2011. I obtained the data on this variable from International Country Risk Guide (ICRG). According to ICRG this variable measures "Law and Order form a single component, but its two elements are assessed separately, with each element being scored from zero to three points. To assess the "Law" element, the strength and impartiality of the legal system are considered, while the "Order" element is an assessment of popular observance of the law." (ICRG, 2012, p.5) The

world average for this measure between 1984 and 2011 is 0.65 while the average among MENA countries is 0.61.

Government Stability: According to the ICRG website:

> This is an assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk (para. 15).

The subcomponents of this variable are government unity, legislative strength, and popular support. For the MENA region, the average over the period of 1984-2011 is 0.64 which is less than the world average (0.70) during the same period of time.

Property Rights Protection: this variable measures the protection of the property right in a country where the lowest score indicates that the property right is poorly protected by law, while the highest score means that property right is well protected by law (Gwartney, Lawson, & Hall, 2012). This variable is obtained from the Economic Freedom of the World annual report published by Fraser Institute. The average score in the world for this variable is 0.64 over the period 1970-2010. MENA region has an average of 0.63 which is above the world average below the same period.

Measures of Natural Resources:

Data about natural resources are obtained mainly from the World Development Indicators (WDI) of the World Bank. Two other sources are used to obtain natural resources data are: the

dataset of Kevin Tsui (2010) and the dataset of Michael Ross (2012). I will give details on six variables of natural resources including: Total natural resources rents as a percentage of GDP, oil rents as a percentage of GDP, natural gas rents as a percentage of GDP, oil reserve per capita, value of oil reserve, and value of oil plus natural gas rents. Table 11 provides a summary of descriptive statistics.

Table 11: Summary of Descriptive Statistics: Natural Resources Variables

Variables	World Sample		MENA Sample	
	Mean	*Standard Devotion*	*Mean*	*Standard Devotion*
Total Natural Recourses Rents (%GDP)	9.67	14.82	24.25	18.47
Natural Gas Rent (%GDP)	1.91	8.16	2.52	2.78
Oil Rent (%GDP)	7.05	13.30	23.20	17.78
Log of Oil Reserve per capita	-0.09	0.12	-0.02	0.01
Value of Oil Reserve per capita	149.6	996.9	894.1	2394.9
Log of Oil and Gas value	2.03	2.55	5.23	3.38

Total Natural Resources Rents (%GDP): The total natural resource rent (% of GDP) is the main measure of the natural resources abundant in a country. This variable is the sum of the rents of all natural resources as a percentage of the GDP.[18] Economists have been using different variables to measure natural resources, for example; the ratio of primary-product exports to GDP (Sachs & Warner, 1995, 2001) , the share of natural resources in merchandise exports (Van der Ploeg, 2011), and share of oil revenues in the government budget (Bjorvatn et al., 2012). In fact, extensive studies use Sachs and Warner's measure but I do not use it here because

[18]According to the World Bank this is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.

of the lack of complete data for some countries from the MENA regions.[19] An advantage of using this measure is that it is available for all countries in the MENA region for a long period of time.

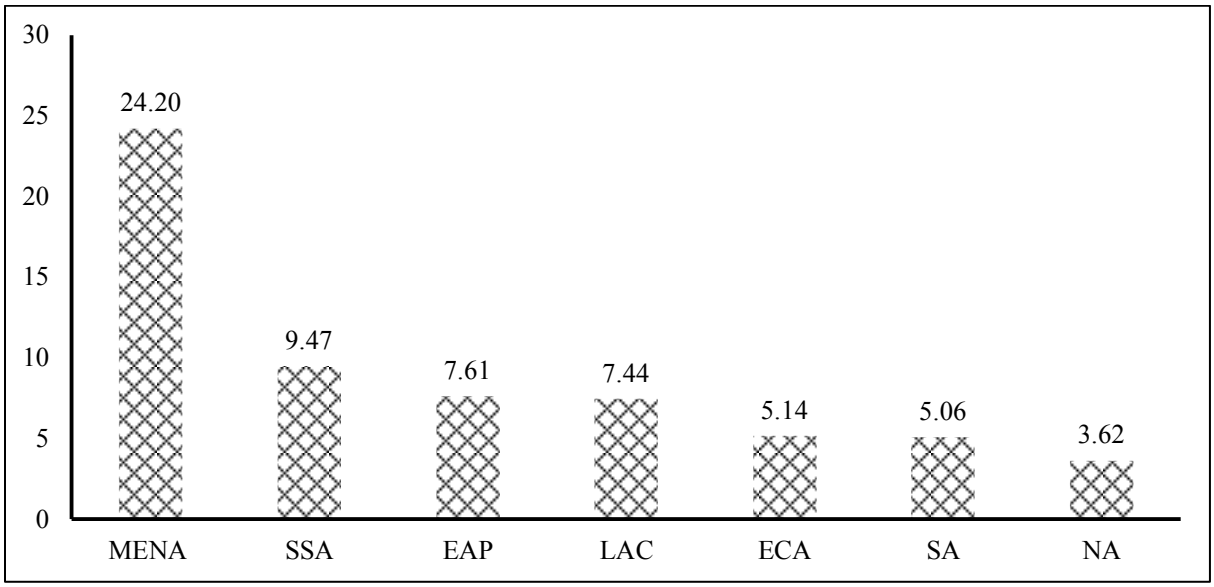

Figure 15: ***Total Natural Resources Rents (%GDP) 1970-2010***

Source: WDI (2013)

The data cover the period between 1970 and 2010. Table 11 provides summary statistics for the natural resources variable. Natural resources are vital for the countries in the MENA region. The average rent is 24.24 % of the GDP, almost three times greater than the world's average. More importantly, fourteen out of twenty countries in the MENA region have an average share of total natural resources greater than that of the world. Iraq has the largest share with about 56%. Kuwait, Qatar, Saudi Arabia, and Oman have large shares of total natural resource to the GDP at 49%, 47%, 45%, and 44% respectively. Figure 15 shows the average total rents of natural resource as percentage of the GDP in the world region. As it can be seen from the figure, MENA region has the highest average total rents over the period of 1970-2010.

[19]Data is not available for eight countries: Bahrain, Iraq, Libya, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

Oil Rents (%GDP): According to the World Bank, oil rents are the difference between the value of crude oil production at world prices and the total cost of production. Again, this variable is crucial for the MENA countries when talking about natural resources over the last four decades in which oil rents have been the main revenue source for most of the MENA countries[20], especially the Gulf Countries. The world's average oil rent is about 7% while it is a 23% in the MENA region which contains about 60% of the proven crude oil reserves. The non-MENA countries that have oil rents greater than the average oil rents of MENA are: Equatorial Guinea (49%), Angola (43%), Chad (43%), Congo, Rep. (43%), Gabon (38%), Azerbaijan (35%), Nigeria (31%), and Venezuela (26%). There is no relationship between the abundance of oil and its rents in most of these countries. For example, oil rent in Venezuela is about 26% of GDP and its proven oil reserves are 297.5 bill/b (20% of the world reserves) while Gabon has oil rent of 38% with proven oil reserves of 2 bill/b. Figure 16 shows the average oil rent as a percentage of the GDP in all the world region. MENA region has the highest average rent over the period of 1970-2010.

Natural Gas: Natural gas rents are the difference between the value of natural gas production at world prices and total costs of production. This variable is obtained from the World Development Indicators (WDI) of the World Bank. The data on this variable covers the period from 1970 to2010. Qatar has the largest rate of natural gas rents among the MENA countries at 8.8%, while Lebanon and Sudan have the lowest rate at 0%. Table 11 provides descriptive statistics for the variable. Turkmenistan with rents of 83.5 % has the highest rate in the world followed by Uzbekistan with 37.7 %, and Trinidad and Tobago with 12.3%. Figure 17 shows the

[20]Lebanon is the only MENA country with oil rent of 0% of GDP. In 2012, Lebanon announced the discovery of some oil fields.

average rent of natural gas over the period between 1970 and 2010 for all the regions in the world. Europe and Central Asia region has the highest average rent followed by the MENA region.

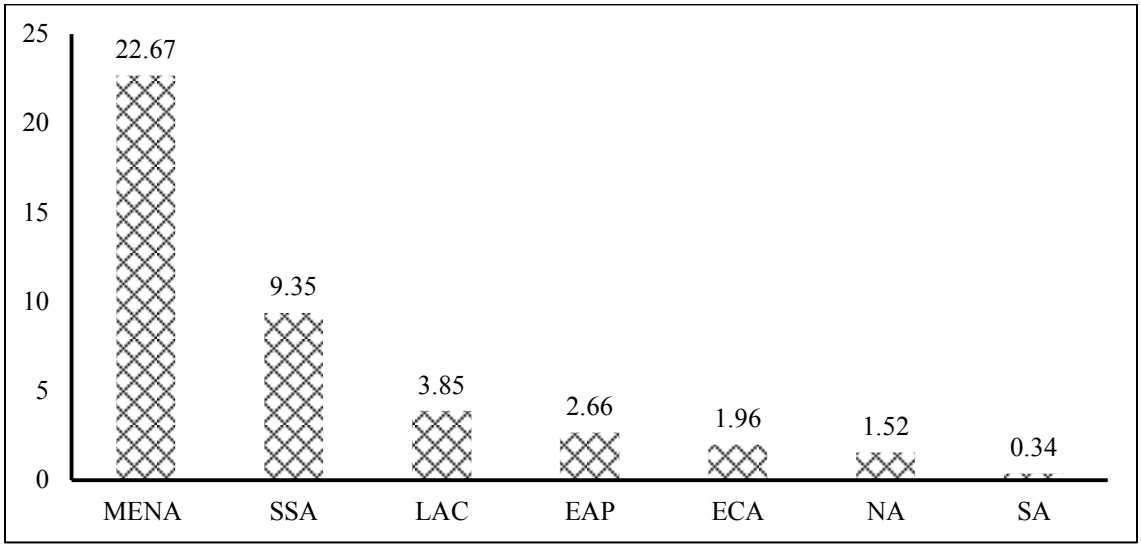

Figure 16: ***The average Oil rent (%GDP) 1970-2010***

Source: WDI (2013)

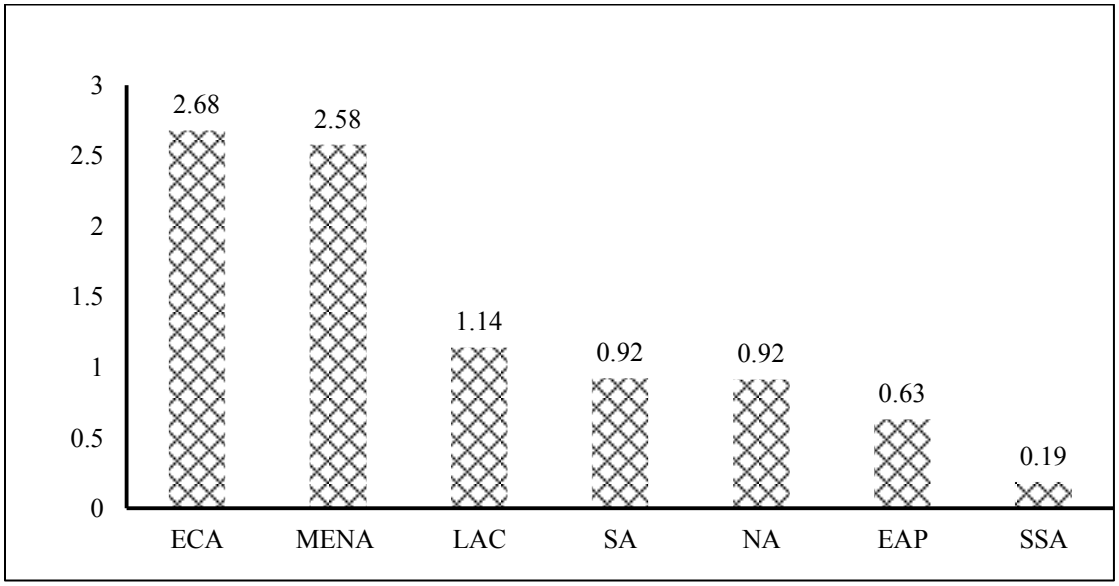

Figure 17: ***The Average Natural Gas Rent (%GDP) 1970-2010***

Source: WDI (2013)

Log of Oil Reserve per capita and ***Log of the Value of Oil Reserve per capita***: these variables measure the oil reserves per capita in million barrels per 1000 persons of a country and its value respectively. This differs from the previous measures that it is not associated with the GDP. The data on this variable is obtained from Kevin Tsui where he obtained the original data from Colin Campbell at the Association for Study of Peak Oil (ASPO) organization.[21] Tsui calculated "oil reserves for each country in any year by subtracting cumulative production from cumulative discovery." (Tsui, 2013, p.5). The value of the oil reserve is calculated by multiplying the oil reserve by crude oil price.

Log of Oil and Gas value : this variable I obtained from *Michael l. Ross, oil and gas, 1932-2011* 2012). This variable measures the value of oil and gas production by multiplying the volume by the world price for oil or gas in nominal US dollar.

Dependent and Control Variables:

Income: As mentioned before, different datasets are used in this study. I use two datasets to obtain the income variables: the World Development Indicators (WDI) and the Penn World Table (PWT 7.1). I use the GDP per capita level to measure the economic performance following Hall and Jones (1999), Acemoglu et al. (2001), Easterly and Levine (2002), Dani Rodrik et al. (2004), and Alexeev and Conrad (2009) Bjorvatn et al. (2012).[22] I use the per capita GDP obtained from the Penn World Table as the dependent variable in all regressions. Many studies use this data as their main sources for income variables. In our case, the data for this

[21]ASPO: a nonprofit organization that is "having an interest in determining the date and impact off the peak and decline of the world's production of oil and gas, due to resource constraints.

[22]Some Studies used the per capita GDP growth rate as the independent variable; for example, Brunnschweiler (2006) and Alexeeve and Conrad (2009).

variable is available for all countries covering the whole study period. Table 12 shows that the average of the per capita GDP in the MENA region is about $10,500 greater than that of the whole world by almost $4000. Resource-rich countries in the MENA region rank in the top three highest per capita GDP on average over the period from 1970 to 2010. The standard deviation is relatively high in the MENA countries sample where the lowest per capita income is about $1000 in Sudan and the highest is about $52,000 in the United Arab Emirates.

Trade: According to the WDI, trade is the sum of exports and imports of goods and services measured as a share of gross domestic product. Table 12 provides summary statistics for this variable. The average rate of trade (as percentage of GDP) for The MENA countries over the period is 81.98% which is higher than that of non-MENA countries with a maximum rate of about 174% for Bahrain.

Secondary School enrollment (% gross): according to the WDI, gross enrollment is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development by offering more subject- or skills-oriented - instruction using more specialized teachers. Table 12 provides descriptive statistics of the variable. The average gross enrollment ratio in the MENA countries is slightly less than that of the non-MENA countries. Bahrain has the highest ratio of 58.76% while Djibouti has the lowest ratio with 13%.

Investment ratio: Investment ratio s the investment share of PPP GDP per capita at current prices. This variable is obtained from the Penn World Table (PWT 7.1). The series covers the period from 1970 to 2010. The average investment ratio in the MENA countries is 28.74% which

about the same as the investment rate in Kuwait. The highest investment rate among the MENA countries on average is that of Bahrain (42.66%) while the lowest one is for Sudan (7.08%).

Population: I use this variable to control for a country size. The world average for population is 32 million, while the average for MENA is 13 million. Egypt and Iran have the largest population in the MENA region with more than 75 million and 65 million respectively. In line with most study, this variable is expected to have positive sign in our models.

Table 12: Summary of Descriptive Statistics: Dependent and Control Variables

Variables	World Sample		MENA Sample	
	Mean	*Standard Devotion*	*Mean*	*Standard Devotion*
Per Capita GDP (PPP) 1970-2010	6656	8272	10496	14826
Trade (% GDP)	76.58	38.92	81.98	33.76
Investment ratio	23.15	8.61	28.47	10.6
Secondary School enrollment	58.15	32.28	53.94	22.26
Population[1]	32.7	11.5	13.7	16.6

1 in million

Methodology:

Estimation Strategy:

i. Ordinary Least Squares (OLS)

I will start with the standard Ordinary Least Squares (OLS) regression following many studies on such topic that use cross-country data such as Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001) , D. Rodrik, Subramanian, and Trebbi (2002), Mehlum et al. (2006a), Norman (2009), and Van der Ploeg (2011). We have two datasets. The first one is the average over the period from 1970 to 2010 and this dataset is the main dataset that I will use

for most of the cross-country regressions. The second one covers a shorter period which starts from 1984 and ends in 2011.

Several issues are associated with the cross-section regressions which may impact the credibility of the results. Limitation of the data for some variables and lack of data for some countries harm the cross-country growth regressions (Norman, 2009). In addition, the cross-country regressions in economic growth suffer from omitted variable bias as they do not allow for correlation between initial level of productivity and past income (Isham et al., 2005). Moreover, Brunnschweiler and Bulte (2009) argue that the problem in the cross-country regression is that most of the resources variables are endogenously determined as well as the existing of the strong concern of the problem of causality. Thus, trying another technique is necessary to avoid the problems that associated with cross-country regressions.

ii. Fixed Effect:

Panel data analysis has many advantages over the cross-section analysis since it allows for studying the dynamic of the variables, has less collinearity, and more degrees of freedom. These advantages open windows to deal with empirical issues such as endogeneity, and omitted variables bias, and controlling for variables unobserved heterogeneity. The use of panel data will help mitigating the serious problems attached with the cross-section estimation.

The fixed effect estimation is widely used in the growth regression as general and in the studies on income variation, institutions, and natural resources in specific since this technique is staple in panel econometric as described by Hayahi (2000) . Several recent empirical studies have employed the fixed effect technique including, but not limited, Acemoglu, Johnson, Robinson, and Yared (2008),Couttenier (2008), Torres, Afonso, and Soares (2009),Tsui (2011), and Fayad, Bates, and Hoeffler (2012). Clearly, growing literatures are using the fixed effect

estimations in the field of growth and development economics. By using fixed effect model, we can remove the effect of omitted variable bias and deal with the unobserved effect. Wooldridge (2001) argues that under certain assumptions, panel data obtains a consistent estimator in the presence of omitted variables. Moreover, Torvik (2009) states that panel-data analysis with country fixed effects is the solution for the problem of omitted variables or missing country-specific effects in the studies that investigate the relationship between resource abundance and economic growth.

iii. System Generalized Method of Moments (GMM)

Recently, several studies use the dynamic panel data models in economic growth to capture the dynamic of the variables over time. This technique is widely growing because its advantages over the cross-section analysis as it is difficult to estimate dynamic models from observation at a single point in time (Bond, 2002). The interest in knowing the effect of lagged dependent and independents variables on the current ones leads economist to apply the dynamic panel data in a wide range of economic growth and development applications including institutions, natural resources, and foreign direct investment. Examples included, but not limited,Lee and Kim (2009), E. Asiedu and Lien (2011), and De Rosa and Iootty (2012).

I employ a linear dynamic panel data model using the system GMM estimator based on the work of Blundell and Bond (1998), and Blundell and Bond (2000). An advantage of using system GMM is that it mitigates the poor instruments problem by using additional moment conditions. However, there is one disadvantage, it utilize too many instruments(E. Asiedu & Lien, 2011). This method is known for its ability to deal with small sample, omitted variables, and endogeneity problem. By using two-step, we guarantee a reasonably robust solution for heteroskedasticity.

Research Questions:

Our estimation strategy will depends on the research questions in which for each question we will use the appropriate model and method.

1. ***Institutions and Growth***

a) *Do institutions have a direct effect on per capita income in the MENA region?*

To answer this question, we will use only the MENA sample since we are focusing here on the effect of institution in that region in particular, and we will employ two techniques; OLS and fixed effect.

i) OLS

For the OLS method, the following model will be estimated

$$lgdp_i = \alpha + \beta\ INS_i + X'_i\rho + \varepsilon_i \qquad (1)$$

Where $l\,gdp_i$ is the natural logarithm of the average per capita GDP for country *i* over the period 1970-2010, INS_i is the quality of institutions measure in country *i* during the period 1970-2010, *X*: a vector of other control variables, and ε_i is a random error term.

ii) Fixed Effect

For the fixed effect the model that will be used is:

$$lgdp_{i,t} = \alpha + \beta\ INS_{i,t} + \delta\ X_{i,t} + \theta_i + \varepsilon_{i,t} \qquad (2)$$

Where *i* indexes country (*i*=1,2,…, N), and *t* indexes time (*t*=1,2,….,T), θ is country specific effect, and all the other variables are the same as in model (1).

In both models, the parameter of interest is β, the coefficient of institutions measure. Previous studies find robust positive effect of different measures of institutional quality on economic performance. For examples, Knack and Keefer (1995) find that when ICRG index increases by one standard deviation, the annual per capita income growth rate increases by 1.24. Hall and Jones (1999) show that an increase by one standard deviation in index of social infrastructure leads to an increase by 128% in per worker output. Moreover, Acemoglu, Johnson, and Robinson (2001) find that one standard deviation increase in protection against expropriation risk increases GDP per worker by 118%. Rodrik, Subramanian, and Trebbi (2004) find that GDP per capita increases by 112% the rule of law index increases by one standard deviation (Pande and Udry, 2005). Therefore, based on the previous studies, we expect β to be positive. That is, there is a direct positive relationship between the measures of institutions and per capita GDP in the MENA region.

b) *Is the effect of institutions in the MENA region significantly different from the rest of the world?*

After we see the direct effect of institutions on per capita income in the MENA region, we want to know if this effect significantly different from the rest of the world. To answer this question, I will add an interaction term between the institutions measures and the MENA region to capture the effect of institutions in the MENA region. Here we will focus only on the level of significance of the interaction term. As a result, our models will be now as following:

i) OLS

$$lgdp_i = \alpha + \beta\ INS_i + \mu\ (INS \times MENA)_i + X'_i\rho_1 + \varepsilon_i \qquad (3)$$

ii) Fixed Effect

The following model will be estimated using fixed effect method:

$$lgdp_{i,t} = \alpha + \beta\ INS_{i,t} + \mu(INS\ \times MENA)_{i,t} + \delta\ X_{i,t} + \theta_i + \varepsilon_{i,t} \qquad (4)$$

iii) System GMM:

The following model will be estimated using System GMM estimation:

$$lgdp_{i,t} = \alpha\ lgdp_{i,t-1} + \beta\ INS_{i,t} + \mu(INS\ \times MENA)_{i,t} + \delta\ X_{i,t} + \theta_i + \varepsilon_{i,t} \qquad (5)$$

Where, (*INS* × *MENA*) is an interaction term between MENA and the quality of institutions.

From equation (3), (4), and (5), the effect of institutions on per capita income is given by:

$$\frac{d\ lgdp_i}{d\ INS_i} = \begin{cases} \beta\,, & for\ Countries\ outside\ MENA \\ \beta\ + \mu\,, & for\ MENA\ \ Countries \end{cases}$$

As we discuss previously, the sign of β is expected to be positive, while the sign of μ (the coefficient of the interaction term) is ambiguous and it depends on the quality of institutions. However, since the quality of institutions in the MENA region is weak relative to other region in the world, we would expect the sign of μ to be negative. If this is the case, then our expectation is that the role of institutions quality in influencing per capita income in the MENA region will be smaller than that in the rest of the world.

2. Natural Resources and Growth

c) Do natural resources have a direct effect on growth in the MENA region?

Now we turn our intention into the role of natural resource and investigate whether it has a direct effect on per capita income in the MENA countries. The effect on natural resources abundant has been under growing studies since the seminal paper by Sachs and Warner (1995) when they find

a negative relationship between natural resources abundant, measured by exports of natural resources as a fraction of GDP, and economic growth. This result was supported by the finding of Isham et al (2005), Norman (2009), Arezki and Van der Ploeg (2010), and Gylfason (2011). On the other hand, several studies find a positive impact of natural resource on economic performance or at least find no evidence of the negative impact of the natural resources. Lederman et al. (2008) argue that the negative impact of natural resources abundance is not proven. Furthermore, Brunschweiler (2006) finds a positive direct association of the natural resources with economic growth over the period 1970-2000. Therefore, it is clear that there is no agreement among scholars about the real effect of natural resource on economic performance. To contribute in this intellectual debate about the effect of natural resource, we will provide an answer related to this effect by fusing on one of the richest regions of natural resources in the world. To answer this question, we will use the data on MENA countries only and employ the following models to investigate the direct effect of natural resources on per capita income in the MENA region:

i) OLS

For the cross-section data we will employ OLS to estimate the following model:

$$lgdp_i = \alpha + \delta\ NAT_i + X'_i\rho + \varepsilon_i \qquad (6)$$

ii) Fixed Effect

We will use fixed effect method to estimate the following model:

$$lgdp_{i,t} = \alpha + \delta\ NAT_{i,t} + \delta\ X_{i,t} + \theta_i + \varepsilon_{i,t} \qquad (7)$$

Where i indexes country (i=1,2,…, N), and t indexes time (t=1,2,….,T), NAT is the measure of natural resources, X is a vector of control variables, θ is country specific effect, and ε_i is a random error term. We will use three different measure for natural resources; total natural resource rents as a percentage of the GDP, oil rent as a percentage of the GDP, and natural gas rent as a percentage of the GDP in which all of these variables are obtained from the World Development Indicators (WDI) of the World Bank. These measures were used previously in the literature in several studies. For example, Brunnschweiler and Bulte (2009) and Bhattacharyya and Hodler (2010) among others used the World Bank data on natural resources. The parameter of interest in our case is δ; the coefficient of the natural resource variable.

b) *Is the effect of natural resources in the MENA region significantly different from the rest of the world?*

As we discussed before, MENA had almost two third of the world's oil proven reserve, and about half of the world's proven reserve from natural gas as well as huge amount of different kinds of natural resources. Thus, it is important to know the impact of the natural resources on MENA economy. This impact will be known after answering the previous question. Then, we need to test if this effect differs significantly from the rest of the world. To capture this effect, we will add interaction terms between the natural resources measures and the MENA region. Again, we will focus only on the level of significance of the interaction term. To estimate this relationship, we will use the whole sample and employ three estimation techniques. Equations 8-10 represent the models for OLS, fixed effect, and system GMM respectively.

i) OLS

The following model will be estimated using OLS method:

$$lgdp_i = \alpha + \delta\ NAT_i + \gamma\,(NAT \times MENA)_i + X'_i\rho + \varepsilon_i \qquad (8)$$

ii) Fixed Effect

With the fixed effect, I will estimate the following model:

$$lgdp_{i,t} = \alpha + \delta\ NAT_{i,t} + \gamma(NAT \times MENA)_{i,t} + X_{i,t}\rho + \theta_i + \varepsilon_{i,t} \qquad (9)$$

iii) System GMM

To obtain the results according to the system GMM estimator, I will estimate:

$$lgdp_{i,t} = \alpha\ lgdp_{i,t-1} + \delta\ NAT_{i,t} + \gamma(NAT \times MENA)_{i,t} + X_{i,t}\rho + \theta_i + \varepsilon_{i,t} \qquad (10)$$

Where, ($NAT \times MENA$) is the interaction term between the natural resources measures and the MENA region.

In this case, the parameter of interest is δ and the natural resource effect will be given by the following relationships:

$$\frac{d\ lgdp_i}{d\ NAT_i} = \begin{cases} \delta, & for\ Countries\ ouside\ MENA \\ \delta + \gamma, & for\ MENA\ \ Countries \end{cases}$$

As we mention before, there is no agreement on the sign of δ, according to the resource curse hypothesis, this sign will be negative. However, for those who find the resource as a blessing, the coefficient of natural resource will be positive. On the other hand, given the role that natural resources play in the MENA economies, we expect γ to be positive.

Results:

In the previous section we explained our estimation strategy that allows us to answer the research's questions. We will show our finding based on answers for all the questions.

1) Do institutions have a direct effect on income per capita in the MENA region?

To answer this question we use only the MENA sample in order to investigate the direct effect of institutions on per capita income in the MENA region. Table 13 presents the results of the linear regressions for models (1) and (2) using Ordinary Least Squares (OLS) and Fixed Effect (FE) methods respectively. The results of the OLS method indicate that there is strong and positive correlation between the measures of institutions and income per capita in the MENA region. The first regression is run with constraints on the executive as an institutional indicator. The finding suggests that the constraint on the executives is positive and statically significant. All other things equal, the result would imply that an increase by one standard deviation in constraint on the executives would have increased per capita income by about 4 percent.[23] Column (3) shows that the impact of polity2 on income per capita in our sample is quite similar to that of constraints on the executives. That is, the impact of the ploity2 is positive and statically significant. This result suggests an increase by one standard deviation would lead to increase the per capita income in the MENA region by 3 percent.[24] Column (5) confirms the finding of columns (1) and (2) in which the measure of institutions (autoc01) has a positive direct effect on income per capita in the MENA countries. To illustrate the positive effect of institutions on per capita income, let's use an example. Consider two MENA countries with different level of constraint on the executives; United Arab Emirates (.033) and Iraq (0.01) then regression (1) indicates that if Iraq has the same level of institutions as that of the United Arab Emirates, then its per capita income would increase by about 8 percentage points.

The results are in line with the finding of Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001) , D. Rodrik et al. (2002), Mehlum et al. (2006a) among others. In

[23] The standard deviation of constraint on the executives in the MENA sample is 0.11.
[24] The standard deviation of polity2 in the MENA sample is 0.14.

addition, the effects of the control variables on per capita income are as expected in theory but insignificant.

Table 13 furthermore shows the results of the fixed effect estimation. Column (2) provides the direct effect of the measure of institutional quality, constraints on the executive, on per capita income which appears to be positive and highly significant. Other measures of institutions also have a positive direct impact on per capita income in the MENA region as shown in columns (4) and (6) where polity2 and autoc01 appear with positive sign and statically significant in the same time. For example, if standard deviation of polity2 increases by one, then the per capita income in the MENA region would increases by about 1.4 percent.[25] As we see, the direct effect of institutions on per capita income in the MENA region is positive which supports the early finding by many researchers in this topic. We use panel data analysis with country fixed effect to capture all relevant country specific effect and the results still hold so we can be more confident about our findings. We notice that the positive direct relationship survives but the magnitude of the coefficient become smaller in all the specifications.

Both OLS and fixed effect methods show a direct positive effect of the quality of institutions on per capita GDP in the MENA region which show the importance of improving the quality of institutions in the MENA countries. Moreover, these results confirm the finding of Meon and Sekkat (2004) on the importance of institutions in MENA economies in particular.

[25] The standard deviation of autocracy in the MENA sample is 0.23.

Table 13: The Direct Effect of Institutions

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Constraints on the Executive		***Polity2***		***Autocracy***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Institutions, β	3.635**	1.382***	3.085**	2.050***	1.833**	1.422***
	(0.026)	(0.000)	(0.013)	(0.000)	(0.036)	(0.000)
Trade	1.155	0.415***	1.076	0.415***	1.054	0.419***
	(0.113)	(0.000)	(0.224)	(0.000)	(0.235)	(0.000)
Investment	0.268	0.286***	0.28	0.263***	0.269	0.222***
	(0.632)	(0.000)	(0.660)	(0.000)	(0.671)	(0.000)
Constant	3.228**	5.227***	3.392**	5.175***	3.565**	5.196***
	(0.030)	(0.000)	(0.043)	(0.000)	(0.025)	(0.000)
R-squared	0.544	0.563	0.496	0.552	0.527	0.583
Number of Countries	19	19	19	19	19	19

***Note**:* The Institutions measures are constraint on the executive, Polity2, autocracy. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

2) Is the effect of institutions in the MENA region significantly different from the rest of the world?

To answer this question, we employ the full sample data using three estimation procedures; Ordinary Least Square (OLS), Fixed Effect, and System Generalized method of moments (GMM) with interaction terms between our measures of institutions and the MENA region to compare the effect of the institutions on per capita income in the MENA region with the rest of the world. Table 14 provides the results of the estimating models (3) and (4) using the interaction terms for both OLS and Fixed Effect while table 15 gives the results of model (5) using the system GMM. In table 14, column (1) suggests that the effect of constraints on the executives on income per capita in the whole sample is positive and statically significant at 1% level. The interaction term is negative and statically significant at 5% level. The negative sign

indicates that the effect of constraints on the executives on per capita income in the MENA region is less than that in the rest of the world.

To see this, the effect of the constraints on the executives on per capita income in the MENA region is 0.054 compare with 2.035 in the rest of the world. In column (3), the institutions variable, polity2, has positive and statically significant effect on per capita income in the whole sample while the interaction term is statically significant with negative sign which indicates that polity2 in the MENA region is less effective on per capita income compare with the rest of the world. Moreover, autocracy seems to have the same effect of the previous measures.

Table 14: The Effect of the Institutions using OLS and FE Regression with the Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Constraints on the Executive		***Polity2***		***Autocracy***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Institutions, β	2.035***	0.627***	1.953***	1.737***	1.457***	0.960***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
(Institutions x *MENA), μ*	-1.981**	-0.611***	-1.779**	-1.145***	-0.491**	-0.700***
	(0.015)	(0.000)	(0.034)	(0.000)	(0.014)	(0.000)
MENA Impact, (β+μ)	0.054***	0.016***	0.174***	0.592***	0.966**	0.260***
	(0.000)	(0.000)	(0.004)	(0.000)	(0.024)	(0.000)
Trade	0.447***	0.881***	0.507***	0.849***	0.479**	0.867***
	(0.007)	(0.000)	(0.005)	(0.000)	(0.013)	(0.000)
Investment	0.764***	0.039*	0.840***	0.054**	1.006***	0.054**
	(0.000)	(0.083)	(0.000)	(0.015)	(0.000)	(0.016)
Constant	2.615***	3.794***	2.128**	3.778***	1.842**	3.664***
	(0.001)	(0.000)	(0.011)	(0.000)	(0.045)	(0.000)
R-squared	0.637	0.584	0.585	0.593	0.564	0.588
Number of Countries	157	158	151	157	151	157

Note: The Institutions measures are constraint on the executive, Polity2, autocracy. (Institutions × MENA) is interaction term between measures of institutions and the MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Less autocracy is associated with high per capita income in the whole sample and also in the MENA region even though the relationship is much less than that for the world with net effect of 0.963 compared with 1.457. So far, the regressions show that all of the measures of institutions have less effect in the MENA region than that for the rest of the world.

In column (2) we use fixed effect technique and find the coefficient of interest is positive and statically significant while the interaction term is negative and statically significant which implies that the effect of constraints on the executives on per capita income in the MENA region is less than that of the world. This result confirms the finding of the OLS regression in column (1). When using polity2 as a measure of the quality of institutions, we find that the coefficient of institutions remains positive and statically significant at 1% level. Again, the effect of intuitions in the MENA countries is 0.592 which is less than that of the world (1.737). In column (6), we use autocracy as a measure of the quality of institutions and the result indicates that quality of institutions has a positive and statically significant effect on per capita income in the whole sample. The interaction term between institutions and the MENA region when using autocracy is negative and statically significant which suggests that the effect of autocracy on per capita income is less in the MENA region compare with the rest of the world. The interaction terms are positive and statically significant in all regressions under the two estimation techniques. In addition, the control variables are significant with the expected signs.

Table 15 provides the system GMM results for using three different measures of institutions in order to compare the impact of the quality of institutions on per capita income in the MENA region with that in the world. Starting with constraints on the executive, we find that the relationship between institutions and per capita income in the whole sample is positive with coefficient of 0.799 that is statically significant at 1% level. To see how the effect of institutions

in the MENA region, we enter the interaction term between the measure of institutions and the MENA region which is found to be statically significant with a negative sign. This finding suggests that the effect of institutions in MENA region is less than that in the whole sample (it is 0.680). In column (2), we use polity2 as institutional variable which has a positive impact on per capita income. The negative sign of the interaction term suggests that the impact of polity2 on per capita income in the MENA region is less than that in the whole sample. That is, the effect of polity2 in the whole sample is 0.832 while it is 0.338 for the MENA countries. These findings are confirmed with the third regression when using autocracy as a measure of the quality of institutions as shown in column (3) in table 15. Moreover, the linear combinations between the institutions variables and the interaction terms appear to be positive and statically significant in all the regressions. In sum, the effect of institutions on per capita income in the MENA region is less than that of the world. This result is confirmed using three measures of institutions and employing three estimation techniques. Clearly, the quality of institutions in the whole world sample has a positive direct effect on per capita GDP and it is statically significant in all of the specifications. The interaction term between the MENA region and institutions is negative and statically significant which suggests that the impact of institutions in the MENA countries is less than that in other countries in the world.

Table 15: The effect of the Institutions using System GMM with the Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	Constraints on the Executive	***Polity2***	***Autocracy***
	(1)	**(2)**	**(3)**
Institutions, β	0.799***	0.832***	0.681***
	(0.000)	(0.000)	(0.000)
(Institutions x *MENA),* μ	-0.119**	-0.494**	-0.236**
	(0.024)	(0.026)	(0.028)
MENA Impact, $(\beta+\mu)$	0.680**	0.338***	0.445***
	(0.038)	(0.002)	(0.001)
Log Per Capita GDP $(PPP)_{t-1}$	0.667***	0.639***	0.673***
	(0.000)	(0.000)	(0.000)
Trade	0.613***	0.594***	0.612***
	(0.000)	(0.000)	(0.000)
Investment	0.217***	0.334***	0.372***
	(0.000)	(0.000)	(0.000)
Constant	0.891**	1.021***	1.477***
	(0.012)	(0.003)	(0.000)
Number of countries	158	150	150

***Note**:* The Institutions measures are constraint on the executive, Polity2, autocracy . (Institutions × MENA) is interaction term between measures of institutions and the MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

3) Do natural resources have a direct effect on growth in the MENA region?

To answer this question, we use only the MENA sample to be able to indicate the direct effect of the natural resources on per capita income. We, also, use two different estimation methods; the OLS and the Fixed Effect. Table 16 provides the results of estimating models (6) and (7) using both methods with each measure of institutions. In column (1) we use the total natural resource rent as percentage of the GDP as our measure of natural resource. The direct effect of natural resources on the per capita income in the MENA region is obtained by the coefficient of the variable total natural resources rent which is positive and statically significant. This finding implies that an increase by one standard deviation in total natural resources rent will produce an

increase by 19 percent in per capita income in the MENA region. The second measure of natural resources is the rent of the natural gas as a percentage of the GDP. This variable appears to be positive and statically significant at 5% level. The regression in column (5) indicates a positive and highly significant relationship between oil rent as percentage of the GDP and per capita income in the MENA region. Therefore, the OLS regressions suggest positive direct effect of the natural resources variables on the per capita income in the MENA region. To illustrate the positive effect of natural resources on per capita income in the MENA region, consider two MENA countries with different percentages of the total natural resources rents; Iraq, with the highest percentage of the with 56.4 % of GDP and Mauritania with 15.1% of GDP, then if the share of total natural resources of the GDP of Mauritania was the same as that of Iraq, we would expect that per capita GDP of Mauritania would be larger by about 21 percentage points. Moreover, in column (2), (4), and (6) of table 16, the results are obtained from employing the fixed effect technique. The direct effect of the measure of natural resource is positive in all of the specifications and highly significant. In column (4), the results show a strong positive relationship between the total natural resources rents as a percentage of the GDP and per capita income in the MENA countries. This result holds when using different measures of natural resources as in columns (5) and (6). The results suggest that an increase by one standard deviation in total natural resources rents as a percentage of the GDP, natural gas rent as a percentage of the GDP, and oil rent as a percentage of the GDP will lead to increase in per capita GDP in the MENA region by 18%, 3%, and 18% respectively.[26] In sum, these regressions show how different types of natural resources have direct positive effect on per capita income in the MENA region.

[26]The standard deviation of *natur, ngas*, and *oil* in the MENA sample are: 18.47, 2.78, and 17.78 respectively.

Table 16: The Direct Effect of Natural Resource in MENA Region

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Total Natural Resources Rent (%GDP)		***Natural Gas Rent (%GDP)***		***Oil Rent (%GDP)***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources, δ	0.044***	0.015***	0.153**	0.110***	0.039***	0.013**
	(0.002)	(0.000)	(0.019)	(0.000)	(0.008)	(0.024)
Trade	0.915	0.177	1.674**	0.199**	1.402**	0.464***
	(0.106)	(0.139)	(0.027)	(0.041)	(0.030)	(0.000)
Investment	0.156	0.083	-0.308	0.276***	-0.101*	0.113
	(0.717)	(0.226)	(0.569)	(0.000)	(0.084)	(0.154)
Constant	2.979**	6.848***	2.011**	6.260***	2.071**	5.928***
	(0.043)	(0.000)	(0.038)	(0.000)	(0.028)	(0.000)
R-squared	0.629	0.595	0.543	0.587	0.676	0.559
Number of Countries	19	19	17	17	17	17

***Note**:* The natural resources measures are total natural resources rents (%GDP), natural gas rent (%GDP), oil rent (%GDP). Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4) Is the effect of natural resources in the MENA region significantly different from the rest of the world?

The impact of natural resources on per capita income in the MENA region is worth studying since this region has large amount of different types of natural resources either as production or as reserved. As we saw in the previous section, this impact is positive but our analysis limited the sample to those country that in MENA region. Now, we want to study the natural resources effect on per capita GDP in the whole sample and then compare this effect in MENA countries and in the world. We are using the same measures of natural resources as in the previous section with three different estimation methods; OLS, fixed effect, and system GMM. Table 17 provides the results of the OLS and fixed effect estimations (models (8) and (9). In column (1), the effect of natural resources measure ,total natural resources rent, is positive and significant at 5% level

and the interaction term is positive and statically significant which suggests that the impact of natural resources on per capita income in the MENA region is positive and greater than that of the rest of the world. The effect of total natural resource rents on per capita GDP in the MENA region is 0.045 [$\frac{\delta lgdp}{\delta natur} = 0.012 + 0.033 \times (1)$]. The natural gas rent has a coefficient of 0.022 that is statically significant at 5 % level which is less than the coefficient of the interaction term which implies that natural gas rent (% GDP) in the MENA region has greater effect on per capita income than that in the whole sample. The effect of oil rent (%GDP) on per capita income is positive and the interaction term is statically significant with a positive sign which indicates that the effect of oil rent on per capita GDP in MENA region is larger than that in the whole sample. Moreover, the fixed effect results support the findings of the OLS as shown in columns 4-6. The coefficients of total natural resources rents as a percentage of the GDP, natural gas rent as a percentage of the GDP, and oil rent as a percentage of the GDP are positive and highly significant at 1% level. The effects of the three measures on per capita income in the MENA region are: 0.021, 0.085, and 0.047 respectively which is larger than that of the whole sample. Again, we notice that the coefficients in fixed effect smaller than that in the OLS but the positive impact and significance still hold. In addition, the linear combinations are statically significant with positive signs in all the regressions.

Table 17 : The Effect of the Natural Resources using OLS and Fixed Effect with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Total Natural Resources Rent (%GDP)		***Natural Gas Rent (%GDP)***		***Oil Rent (%GDP)***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources, δ	0.012**	0.010***	0.022**	0.012***	0.019**	0.018***
	(0.037)	(0.000)	(0.040)	(0.001)	(0.045)	(0.000)
(Natural Resources x *MENA), γ*	0.033***	0.010**	0.101**	0.072***	0.037***	0.029***
	(0.004)	(0.025)	(0.031)	(0.000)	(0.006)	(0.000)
MENA impact, ($\delta + \gamma$)	0.045**	0.021***	0.123***	0.085***	0.056**	0.047**
	(0.036)	(0.003)	(0.002)	(0.000)	(0.029)	(0.029)
Trade	0.426**	0.850***	0.421**	0.872***	0.434**	0.935***
	(0.027)	(0.000)	(0.036)	(0.000)	(0.027)	(0.000)
Investment	1.008***	0.036	1.038***	0.022	1.077***	0.021
	(0.000)	(0.440)	(0.000)	(0.707)	(0.000)	(0.739)
Constant	3.106***	4.300***	3.219***	4.577***	3.115***	4.328***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
R-squared	0.544	0.557	0.531	0.563	0.569	0.55
Number of Countries	157	158	129	129	129	129

***Note**:* The natural resources measures are total natural resources rents (%GDP), natural gas rent (%GDP), oil rent (%GDP). *(Natural Resources $\times$ MENA)* is interaction term between natural resources measures and the MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 18 shows the results of the dynamic panel data using the system GMM technique by estimating model (10). The results indicate strong and positive relationship between all measures of natural resources and per capita income for the whole sample. The natural resource variables total natural resources rent and oil rent enter the regression with positive sign and 1% statically significant level. The variable natural gas rent is significant at 5% level. The interaction terms are positive and highly significant at 1% level which implies that the effect of natural resource on per capita GDP in mena region is much greater than that in the rest of the world. The results show a strong association between natural resources and per capita income in the MENA

countries. This effect is larger than that in the world. For example, the effect of oil rent on per capita GDP is 0.58 [$\frac{\delta lgdp}{\delta oil} = 0.019 + 0.039 \times (1)$] which is larger than that of the world.

Table 18: The Effect of the Natural resources using the System GMM with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	Total Natural Resources Rent (%GDP)	***Natural Gas Rent (%GDP)***	***Oil Rent (%GDP)***
	(1)	**(2)**	**(3)**
Natural Resources, δ	0.004***	0.005**	0.019***
	(0.003)	(0.021)	(0.000)
(Natural Resources x *MENA),* γ	0.013***	0.083***	0.039***
	(0.003)	(0.000)	(0.000)
MENA impact, $(\beta + \gamma)$	0.017**	0.088***	0.058**
	(0.016)	(0.001)	(0.010)
Log Per Capita GDP(PPP)$_{t-1}$	0.817***	0.717***	0.736***
	(0.000)	(0.000)	(0.000)
Trade	0.684***	0.732***	0.805***
	(0.000)	(0.000)	(0.000)
Investment	0.209***	0.264***	0.203***
	(0.000)	(0.000)	(0.001)
Constant	1.924***	1.434***	1.696***
	(0.000)	(0.000)	(0.000)
Number of countries	158	129	129

***Note**:* The natural resources measures are total natural resources rents (%GDP), natural gas rent (%GDP), oil rent (%GDP). (*Natural Resources* $\times$ *MENA*) is interaction term between natural resources measures and the MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Tables 16, 17, and 18 indicate clearly that natural resources promote income per capita in the MENA region. The results show no evidence of the resource-curse hypothesis in both the whole world and the MENA region. This result is in line with the finding of Brunnschweiler and Bulte (2009) ,Alexeev and Conrad (2009), Haber and Menaldo (2011), and (Bjorvatn et al. (2012)). This result is in contrast with other scholars who find that natural resources have a negative effect on economic growth especially the findings by Sachs and Warner (1995, 1997). The variation in the results comes from different measures of natural resources that used in the

literature. In fact, most studies[27] that find evidence for resource curse use Sachs and Warner's measure of natural resource which is the primary exports (*sxp*) as a percentage of the GNI. "The *sxp* measures the "resource intensity" but if the aim is to quantify natural resource abundance, then primary exports seem an unsatisfactory measure" (Brunnschweiler, 2008, p.5) and it is a measure of resource dependence, not abundance (Brunnschweiler and Bulte, 2008). This fact was recognized early by Sachs and Warner (2001) when they states that [the curse of natural resources] "is not easily explained by other variables, or by alternative ways to measure resource abundance' (p.10). Moreover, Stijns (2005) concludes that "it turns out that the SW result is not robust to changes in the measure of natural-resource abundance from trade-flows to reserves or production" (p.3).

Robustness Checks:

A range of robustness checks is performed. In this section we use alternative measures of institutions and natural resources that are obtained from different datasets from the ones we use in our main tests. Then, we add more control variables to prevent omitted variable biased problem.

Alternative Measures of Institutions:

In Table A.1, I use three different measures of institutions obtained from other dataset. The first one is the property rights protection which is obtained from the Economic Freedom of the World database. The second and the third ones are obtained from ICRG database and they are law and order and government stability. All the three measures are scaled between 0 and 1 in which the highest the best. The estimation results show that property rights protection is statically

[27] For Example, Mehlum, Moene, and Torvik (2006)

significant at 5% level with positive sign. Moreover law and order and government stability have positive coefficients that are statically significant at 1% level. Clearly, this results robust the finding of table 13 in which they indicate that the quality of institutions has a direct positive effect of on per capita GDP in the MENA region. In table A.2 we add interaction terms between the measures of institutions and the MENA region to test if the effect of institutions significantly differs in the MENA region than the rest of the world. The results show that the quality of institutions is positively related to the per capita GDP in the whole sample in all of the specifications. The interaction terms are statically significant at 1% level with negative signs. This finding implies that the effect of institutions on per capita income in the MENA region is less than that for the rest of the world which confirms our finding in table 14. In table A.3, we employ the system GMM using our new measures of institutions with interaction terms between institutions and MENA region. The results clearly confirm our finding in table 15 in which the institutional quality has a positive impact on per capita income in the whole ample. Also, the interaction terms are statically significant with negative sings which suggest that the effect of institutions on per capita income in MENA is less than that for the rest of the world.

Alternative Measures of Natural Resources:

So far, our measures of natural resources represent shares of the GDP. We want to investigate the effect of natural resources on per capita GDP using alternative measures of natural resources that are not associated with GDP. For that reason, we borrow three different measures of natural resources from two different datasets. Our new measures of natural resources are: log of oil reserve per capita and the value of oil reserve both are obtained from Kevin Tsui where he

obtained the data originally from Colin Campbell at the Association for Study of Peak Oil (ASPO). The third on is the value of oil plus natural gas obtaining from Michael Ross (2012). Table A.4 presents the results of using natural resources measures that are not associated with the GDP. As it can be seen from the table, all measures are statically significant with positive sings which indicates that the natural resources have a positive direct effect on the per capita GDP in the MENA region. This result confirms the finding of table 16. When we add interaction terms between the measures of natural resources and the MENA region, as in table A.5, we find that all the interaction terms are statically significant with positive sings which suggests that the effect of natural resources on the per capita income in the MENA region is greater than that for the rest of the world. This finding is in line with the finding of table 17. Furthermore, we conduct a system GMM estimation using the three new measures of natural resources and, as the results of table **A.6** show, we find that the natural resources have a positive effect on per capita income in the whole sample. We find also that the effect of natural resources in the MENA region is positive and greater than that in the whole sample which leads to the same conclusion as that of table 18.

More Control Variables:

The validity of our results depends on the assumptions that no omitted variable bias. That is, our

results may be biased by leaving out some explanatory variables. Therefore, we add some control variables to our existing controls variables. Mainly, we add the gross rate of secondary school enrolment, as a proxy of the level of education, and the log of population, as a proxy of country size.

Table A.7 presents the result of using fixed effect estimation to test the effect of institutions on per capita income when adding more control variables. Here we are using our main measures of institutions; constraints on the executive, polity2, and autocracy. The results show a strong positive relationship between all measures of institutions and per capita GDP in the whole sample. The interaction terms between institutions and MENA region are highly statically significant with negative signs. This finding implies that the effect of institutions on per capita income in the MENA region is less than that for the whole sample. However, the linear combination between the institutions variables and the interaction term is not significant in case of constraints on the executive.

Table A.8 shows the results when employing fixed effect to investigate the effect of natural resources on per capita income when controlling for more variables. In this case we are using our main measures of natural resources; total natural resources rents as a percentage of the GDP, natural gas rents as a percentage of the GDP, and oil rents as a percentage of the GDP. The results indicate that all measures of natural resources have positive and statically significant effect on per capita GDP in the whole sample. The interaction term between the total natural resource rents and MENA region is positive and statically significant. On the other hand, the interaction term between natural gas rent and MENA region is negative but the linear combination is not statically significant in one case. The interaction term between oil rent and MENA is positive and statically significant in one case.

In sum, all the robustness checks support our finding in general in which institutions and natural resources both have positive effects on per capita income in the MENA region. The difference is that the institutions is less effective in the MENA countries compare with the rest of the

countries, while the effect of natural resources on per capita GDP in MENA region is larger than that in other countries in the world.

Is the quality of institutions proxy for natural resources in the MENA region?

Now we want to answer the question whether institutions are proxy for natural resources in the MENA region or not. To answer this question, I enter both the institutions measures and the natural resources measures in the same regression and use OLS and Fixed Effect methods. Therefore, we now have the following models:

$$lgdp_t = \alpha + \beta INS_t + \gamma\, NR_t + \rho\, X_t + \epsilon \qquad (11)$$

And

$$lgdp_{it} = \alpha + \beta INS_{it} + \gamma\, NR_{it} + \rho\, X_{it} + \theta_i + \epsilon \qquad (12)$$

All variables are the same as in the previous models.

Table A.9 shows the results for both OLS and fixed effect estimations when we include the total natural resources rents (%GDP) as measures of natural resources and constraints on the executive, polity2, and autocracy as measures for institutions. The results indicate that all measures of institutions are positive and statically significant. Moreover, the measure of natural resources is also positive and statically significant. To see the impact of these results, let's use an example by employing two MENA countries that have the same economic structure and have in common many other factors such as location, culture, and religion. I pick Saudi Arabia and United Arab Emirates. Then, column 2 suggests that, all else being equal, an improvement in constraints on the executive from the level of Saudi Arabia (0.01) to the level of the United Arab Emirates would increase per capita income in Saudi Arabia by about 19 percentage point.

Table A.10 shows the results for both OLS and fixed effect estimations when we include the natural gas rent (%GDP) as measures of natural resources and constraints on the executive, polity2, and autocracy as measures for institutions. The findings suggest that both institutions and natural resources have a significant and positive direct effect on per capita income in the MENA region. This result are confirm in table A.11 when using oil rent (%GDP) as a measure of natural resource. All variables are statically significant with positive sings which indicates that both institutions and natural resources have positive impact on per capita income.

In summary, the results indicate that there is no evidence support the hypothesis that institutions are proxies for natural resources in the MENA region. The results also suggest that when including both variables in the regressions, the impact still positive in the MENA region. Comparing with the results in table 13 and table 16, we find that the magnitude of the coefficient become smaller but return sings and significance.

CHAPTER 5

CONCLUSION

This study investigates the effect of institutions and natural resource on per capita income in the MENA region. There is an extensive literature on the impact of institutions and natural resources on economic performance. However, few studies use data for few countries in the MENA region. Therefore, the main contributions of this dissertation are as follows: First, it provides the literature with the investigation on the impact of the quality of institutions on economic performance in the MENA region. To the best of my knowledge, this will be the first study deals with the impact of the quality of institutions on economic development in the MENA region. The second contribution is to clarify the ambiguity over the effect of natural resource on economic performance by providing evidence from a special and important region in the world that contains vast amount of natural resources which gives the finding an important aspect. The third is to fill a gap in the literature since most of the influential studies did not include most of the MENA countries in these studies. The study answers the following questions: Do institutions and natural resources have a direct effect on growth in MENA countries? Are these effects significantly different from countries outside the MENA region?

Different datasets are used from several sources including the World Development Indicators of the World Bank, International Country Risk Guide, and Polity IV project. The analysis employs data from 1970 to 2010 for 158 countries and it uses six measures of institutions and six measures of natural resources. The data is analyzed by Ordinary Least Square, Fixed Effect, and System Generated method of moments. I investigate the roles of institutions by focusing on three main variables: constraints on the executive, polity2, and

autocracy, while the role of natural resources was studied by using three variables: total natural resources rents as percentage to the GDP, oil rent as percentage to the GDP, and natural gas rent percentage to the GDP. The results show a positive and direct effect of institutions variables on per capita income in the MENA region. Also, I find that the interaction term between institutional variables and the MENA region is negative which suggests that the impact of institutions is less than that in the rest of the world. Moreover, the results find that natural resources have positive effect on per capita income in the MENA region. The interaction term between the variables of natural resources and the MENA region is found to be positive. The positive and statically significant coefficient on the interaction terms suggest that the impact of natural resources on per capita income in the MENA region is larger than that in the rest of the world. Moreover, the results show that the quality of institutions is not a proxy for natural resources in the MENA region. Furthermore, I investigate the robustness of the finding by three ways. First, I use alternative measures of institutions. Second, I use alternative measures of natural resources, and third, I add more control variables to the regressions. The finding of the robustness checks confirms the results of the main results.

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APPENDDICES

Appendix A:

Table A.1

Direct Effect of Institutions using alternative measures of institutions using Fixed Effect

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	Property Right Protection	***Law and Order***	***Government Stability***
	(1)	***(2)***	***(3)***
Institutions, β	0.296**	1.055***	1.359***
	(0.036)	(0.000)	(0.000)
Trade	0.041	0.514***	0.331***
	(0.715)	(0.000)	(0.007)
Investment	0.007	0.113	0.207***
	(0.941)	(0.291)	(0.013)
Constant	7.984***	5.688***	5.881***
	(0.000)	(0.000)	(0.000)
R-squared	0.184	0.453	0.568
Number of Countries	18	19	19

***Note**:* The Institutions measures are property right protection, law and order, and government Stability. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.2

The effect of alternative measures of Institutions using Fixed Effect with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	Property Right Protection	***Law and Order***	***Government Stability***
	(1)	***(2)***	***(3)***
Institutions, β	0.630***	0.730***	0.667***
	(0.000)	(0.000)	(0.000)
(Institutions x MENA), μ	-0.324***	-0.290***	-0.591***
	(0.002)	(0.000)	(0.000)
MENA impact, $(\beta+\mu)$	0.306***	0.440**	0.056**
	(0.003)	(0.046)	(0.031)
Trade	0.02	0.910***	0.731***
	(0.435)	(0.000)	(0.000)
Investment	0.011	-0.043	-0.023
	(0.515)	(0.272)	(0.541)
Constant	8.033***	4.650***	5.138***
	(0.000)	(0.000)	(0.000)
R-squared	0.325	0.347	0.401
Number of Countries	129	131	131

Note*:* The Institutions measures are property right protection, law and order, and government Stability. (*Institutions x MENA*) is the interaction term between the measurements of institutions and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.3

The effect of alternative measures of Institutions using System GMM with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	Property Right Protection	***Law and Order***	***Government Stability***
	(1)	***(2)***	***(3)***
Institutions, β	0.053**	0.646***	0.247***
	(0.034)	(0.000)	(0.000)
(Institutions x *MENA),* μ	-0.119**	-0.406***	-0.214**
	(0.036)	(0.007)	(0.019)
MENA Impact, $(\beta+\mu)$	-0.066**	0,334**	0.033**
	(0.026)	(0.045)	(0.044)
Log Per Capita GDP(PPP)$_{t-1}$	0.966***	0.740***	0.726***
	(0.000)	(0.000)	(0.000)
Trade	0.135***	0.750***	0.672***
	(0.000)	(0.000)	(0.000)
Investment	0.037***	0.161***	0.259***
	(0.002)	(0.000)	(0.000)
Constant	-0.419***	-1.757***	-1.430***
	(0.000)	(0.000)	(0.000)
Number of countries	140	130	130

Note*:* The Institutions measures are property right protection, law and order, and government stability. (*Institutions x MENA*) is the interaction term between the measurements of institutions and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.4

The Direct Effect of Natural Resources using alternative measures

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	log of oil reserve		***value of oil reserve***		***log of oil and gas value***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources, β	8.159**	1.208***	0.001***	0.003***	0.162**	0.064***
	(0.018)	(0.000)	(0.002)	(0.000)	(0.039)	(0.000)
Trade	-0.271	0.270***	0.390	0.188***	2.165***	0.120***
	(0.812)	(0.000)	(0.687)	(0.000)	(0.001)	(0.001)
Investment	1.697**	-0.053*	1.362**	-0.080**	0.390**	0.327***
	(0.015)	(0.097)	(0.032)	(0.029)	(0.034)	(0.000)
Constant	1.892	6.903***	0.777	7.247***	-10.629**	-0.680*
	(0.668)	(0.000)	(0.845)	(0.000)	(0.045)	(0.074)
R-squared	0.512	0.320	0.696	0.280	0.809	0.734
Number of Countries	19	19	19	19	20	20

***Note**:* The natural resources measures are log of oil reserve, value of oil reserve, and log of oil and natural gas value. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.5

The effect of alternative measures of Natural Resources using OLS and Fixed Effect with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	log of oil reserve		***value of oil reserve***		***log of oil and gas value***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources, δ	4.502***	1.760***	0.006**	0.002**	0.112***	0.040***
	(0.000)	(0.000)	(0.038)	(0.037)	(0.006)	(0.000)
(Natural Resource x *MENA),* γ	1.227**	0.849***	0.006**	0.002**	0.028**	0.029**
	(0.030)	(0.002)	(0.038)	(0.048)	(0.049)	(0.014)
MENA Impact, $(\delta+\gamma)$	5.729***	2.609***	0.011***	0.050**	0.139**	0.068***
	(0.000)	(0.000)	(0.001)	(0.045)	(0.017)	(0.000)
Trade	0.561***	0.419***	1.550***	0.408***	1.426***	0.126***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)
Investment	0.694**	-0.008	0.492*	0.004	0.519***	0.312***
	(0.000)	(0.558)	(0.057)	(0.771)	(0.000)	(0.000)
Constant	3.704***	6.204***	0.788	5.979***	9.819***	0.262**
	(0.000)	(0.000)	(0.606)	(0.000)	(0.000)	(0.011)
R-squared	0.22	0.249	0.269	0.181	0.665	0.645
Number of Countries	144	143	118	117	161	161

Note*:* The natural resources measures are log of oil reserve, value of oil reserve, and oil and natural gas. (*Natural Resource x MENA*) is the interaction term between natural resources measures and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.6

The effect of alternative measures of Natural Resources using System GMM with Interaction Terms

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*		
	log of oil reserve	***value of oil reserve***	***log of oil and gas value***
	1	**2**	**3**
Natural Resources, δ	0.271***	0.001***	0.008***
	(0.000)	(0.001)	(0.000)
(Natural Resource × MENA), γ	0.494***	0.002**	0.005**
	(0.000)	(0.015)	(0.038)
MENA Impact, ($\delta + \gamma$)	0.764***	0.003***	0.0131***
	(0.000)	(0.005)	(0.000)
Log Per Capita GDP(PPP)$_{t-1}$	1.010***	1.013***	0.918***
	(0.000)	(0.000)	(0.000)
Trade	-0.001	-0.009**	0.034***
	(0.844)	(0.029)	(0.000)
Investment	0.083***	0.084***	0.080***
	(0.000)	(0.000)	(0.000)
Constant	-0.288***	-0.296***	-1.241***
	(0.000)	(0.000)	(0.000)
Number of countries	142	117	160

***Note**:* The natural resources measures are log of oil reserve, value of oil reserve, and oil and natural gas. (*Natural Resource x MENA*) is the interaction term between natural resources measures and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.7

The Effect of Institutions when adding more Controls Variables

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Constraint on the Executive		***polity2***		***Autocracy***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Institutions, β	0.329***	0.478***	0.753***	0.492***	0.235***	0.389***
	(0.007)	(0.012)	(0.000)	(0.000)	(0.000)	(0.000)
(Institutions x *MENA),* μ	-0.406***	-0.300***	-0.400***	-0.270***	-0.603***	-0.121***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MENA Impact, $(\beta + \mu)$	-0.077	0.178	0.353**	0.222***	-0.3673	0.268**
	(0.521)	(0.29)	(0.015)	(0.001)	(0.000)	(0.011)
Education	0.427***	0.444***	0.434***	0.450***	0.445***	0.457***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	1.160***	1.003***	1.156***	1.002***	1.207***	1.048***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade		0.007***		0.007***		0.007***
		(0.000)		(0.000)		(0.000)
Investment	0.157***		0.158***		0.152***	
	(0.000)		(0.000)		(0.000)	
Constant	4.951***	3.523***	4.951***	3.532***	5.365***	3.924***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-squared	0.574	0.608	0.568	0.603	0.559	0.598
Number of Countries	157	157	156	156	156	156

Note*:* The Institutions measures are constraint on the executive, Polity2, autocracy. (*Institutions x MENA*) is the interaction term between the measurements of institutions and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). Education is the gross rates of secondary school enrolment. Population is the natural log of a country's population. P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.8

The Effect of Natural Resources when adding more Controls Variables

Variables	*Dependent Variable: Log of Per Capita GDP (PPP)*					
	Total Natural Resources Rent (%GDP)		***Natural Gas Rent (%GDP)***		***Oil Rent (%GDP)***	
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources, δ	0.004***	0.002**	0.012***	0.008***	0.010***	0.007***
	(0.001)	(0.039)	(0.000)	(0.006)	(0.000)	(0.000)
(Natural Resources x *MENA), γ*	0.004*	0.007***	-0.024***	-0.013	0.001	0.006**
	(0.059)	(0.001)	(0.006)	(0.106)	(0.968)	(0.028)
MENA Impact, $(\delta+\gamma)$	0.008***	0.009***	-0.011	-0.006	0.011***	0.013***
	(0.000)	(0.000)	(0.166)	(0.471)	(0.000)	(0.000)
Education	0.463***	0.484***	0.543***	0.551***	0.580***	0.596***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	1.249***	1.037***	1.386***	1.176***	1.337***	1.119***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade		0.007***		0.007***		0.007***
		(0.000)		(0.000)		(0.000)
Investment	0.145***		0.227***		0.211***	
	(0.000)		(0.000)		(0.000)	
Constant	5.682***	3.893***	7.675***	5.519***	7.351***	5.214***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-squared	0.564	0.606	0.574	0.607	0.579	0.613
Number of Countries	156	156	127	127	127	127

***Note**:* The natural resources measures are total natural resources rents (%GDP), natural gas rent (%GDP), oil rent (%GDP). (*Natural Resource x MENA*) is the interaction terms between natural resources measures and MENA region. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). Education is the gross rates of secondary school enrolment. Population is the natural log of a country's population. P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.9

The Effect of Natural Resources when using Constraints on The Executive

Dependent Variable: Log per capita GDP (PPP)

Variables	Constraints on the Executive					
	Total Natural Resources Rents (%GDP)	**Total Natural Resources Rents (%GDP)**	**Natural Gas Rent (%GDP)**	**Natural Gas Rent (%GDP)**	**Oil Rent (%GDP)**	**Oil Rent (%GDP)**
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources	**0.033*****	**0.016*****	**0.121*****	**0.095*****	**0.029***	**0.006*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.079)	(0.000)
Institutions	1.379***	0.676***	1.028***	0.327	1.463***	1.081***
	(0.000)	(0.001)	(0.000)	(0.100)	(0.000)	(0.000)
Trade	0.001	0.007***	0.002	0.011***	0.003*	0.011***
	(0.950)	(0.000)	(0.145)	(0.000)	(0.076)	(0.000)
Investment	0.280***	0.388***	0.424***	0.311***	0.353***	0.327***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	6.696***	5.626***	6.317***	6.071***	6.523***	5.699***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-squared	0.244	0.435	0.403	0.491	0.216	0.454
Number of Countries	19	19	17	17	17	17

***Note**:* The natural resources measures are: total natural resources rents (%GDP), natural gas rent (%GDP), and oil rent (%GDP). The Institutions measure is constraint on the executive. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.10

The Effect of Natural Resources when using Polity2

Dependent Variable: Log per capita GDP (PPP)						
Variables	**Polity2**					
	Total Natural Resources Rents (%GDP)	**Total Natural Resources Rents (%GDP)**	**Natural Gas Rent (%GDP)**	**Natural Gas Rent (%GDP)**	**Oil Rent (%GDP)**	**Oil Rent (%GDP)**
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources	**0.034*** **	**0.013*** **	**0.123*** **	**0.089*** **	**0.028***	**0.006*** **
	(0.000)	(0.000)	(0.000)	(0.000)	(0.066)	(0.000)
Institutions	1.956***	0.853***	1.455***	0.202	2.177***	0.913***
	(0.000)	(0.000)	(0.000)	(0.353)	(0.000)	(0.000)
Trade	0.001	0.007***	0.002	0.011***	0.003	0.012***
	(0.768)	(0.000)	(0.172)	(0.000)	(0.144)	(0.000)
Investment	0.261***	0.362***	0.374***	0.297***	0.300***	0.282***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	6.660***	5.620***	6.422***	6.128***	6.607***	5.823***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-squared	0.276	0.439	0.406	0.489	0.252	0.442
Number of Countries	19	19	17	17	17	17

***Note**:* The natural resources measures are: total natural resources rents (%GDP), natural gas rent (%GDP), and oil rent (%GDP). The Institutions measure is polity2. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A.11

The Effect of Natural Resources when using Autocracy

Dependent Variable: Log per capita GDP (PPP)						
Variables	**Autocracy**					
	Total Natural Resources Rents (%GDP)	**Total Natural Resources Rents (%GDP)**	**Natural Gas Rent (%GDP)**	**Natural Gas Rent (%GDP)**	**Oil Rent (%GDP)**	**Oil Rent (%GDP)**
	OLS	**FE**	**OLS**	**FE**	**OLS**	**FE**
	1	**2**	**3**	**4**	**5**	**6**
Natural Resources	**0.033*****	**0.013*****	**0.123*****	**0.088*****	**0.028****	**0.07*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.034)	(0.000)
Institutions	1.366***	0.411***	0.967***	0.090	1.490***	0.487***
	(0.000)	(0.005)	(0.000)	(0.516)	(0.000)	(0.001)
Trade	0.001	0.007***	0.002	0.011***	0.003	0.012***
	(0.616)	(0.000)	(0.101)	(0.000)	(0.118)	(0.000)
Investment	0.219***	0.359***	0.336***	0.296***	0.245***	0.280***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	6.677***	5.658***	6.469***	6.138***	6.666***	5.836***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-squared	0.287	0.432	0.402	0.488	0.257	0.437
Number of Countries	19	19	17	17	17	17

***Note**:* The natural resources measures are: total natural resources rents (%GDP), natural gas rent (%GDP), and oil rent (%GDP). The Institutions measure is autocracy. Trade is sum of trade (%GDP). Investment is the investment share (%GDP). P-value in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Appendix B:

Table B.1
government expenditures (% GDP)

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	34.3	32.2	30.8	27.1	28.8	33.2	37.8	42.2	36.9	40.4	42.2
Bahrain	36.0	33.3	30.5	29.6	28.2	27.5	27.4	30.5	34.2	30.9	32.6
Djibouti	32.9	36.3	37.5	36.8	37.4	37.8	40.6	41.6	36.0	35.2	37.2
Egypt	36.7	35.2	33.9	33.2	37.8	35.3	36.0	34.6	33.4	31.8	33.4
Iran	22.3	22.1	20.3	24.6	25.4	21.6	24.7	22.6	21.2	21.7	17.6
Iraq	n/a	n/a	91.5	63.2	50.3	46.1	57.3	58.9	50.7	44.6	44.2
Jordan	33.6	36.8	37.7	38.8	36.4	37.0	34.4	35.0	30.4	33.2	31.0
Kuwait	41.9	37.0	34.2	28.1	31.9	30.1	40.4	42.2	43.1	38.5	39.6
Lebanon	36.3	35.9	32.9	31.5	35.9	35.0	33.7	32.8	30.6	29.6	32.4
Libya	42.4	43.8	42.7	29.8	31.9	35.5	41.9	54.9	54.7	66.6	51.4
Mauritania	n/a	n/a	n/a	n/a	n/a	29.6	30.7	30.6	27.9	28.4	34.6
Morocco	29.2	27.3	27.7	32.5	29.4	30.1	31.8	31.1	31.9	34.6	35.2
Oman	39.3	39.0	39.2	35.2	34.8	35.4	29.4	38.4	34.0	38.3	38.2
Qatar	30.7	27.1	28.4	28.7	28.1	26.7	24.8	31.8	28.5	30.5	35.5
Saudi Arabia	37.6	34.8	34.9	30.5	29.3	31.6	29.0	40.0	38.6	35.1	33.4
Sudan	12.9	15.2	20.5	26.2	23.8	25.4	23.5	20.5	19.0	17.9	15.1
Syria	28.5	32.6	31.3	28.2	26.6	25.7	23.0	26.7	26.6	n/a	n/a
Tunisia	29.8	29.3	29.2	29.3	29.2	29.4	30.5	30.8	30.9	34.8	35.4
UAE	21.4	20.3	18.1	15.2	14.7	15.6	17.6	27.0	25.3	23.7	22.0
Yemen	30.8	35.3	34.2	36.8	37.4	40.3	41.2	35.2	30.1	28.9	35.1
Advanced economies	39.0	39.7	39.2	39.2	38.9	39.0	40.9	45.0	43.6	42.9	42.3
Euro area	47.4	47.9	47.4	47.2	46.6	46.0	47.2	51.2	51.0	49.5	49.8
G7	39.2	39.8	39.3	39.5	39.3	39.5	41.5	45.7	44.3	43.8	43.1
Other advanced economies	33.6	34.8	34.3	33.3	32.7	32.5	33.5	35.7	34.2	34.3	34.2
Emerging market and developing economies	27.8	27.6	26.7	26.8	27.1	27.4	28.8	30.4	29.7	29.5	30.0
Developing Asia	21.5	21.4	20.9	20.8	21.0	21.0	22.2	24.2	23.4	24.0	24.8
Middle East and North Africa	31.6	30.1	31.1	28.7	28.5	28.6	30.6	34.6	32.8	31.9	31.4
MENA/Oil Exporters	33.7	32.0	37.8	31.4	30.6	30.7	33.6	39.8	37.0	37.7	36.0
MENA/Oil Importers	30.7	31.7	31.5	32.3	32.2	32.1	32.1	31.8	30.1	30.5	32.2

Source: IMF (2013)

Table B.2
Government revenues (%GDP)

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	35.4	37.1	36.0	40.8	42.7	39.4	46.9	36.7	36.5	40.0	39.6
Bahrain	32.2	31.3	30.8	33.0	30.9	29.3	32.4	23.8	27.2	29.2	30.0
Djibouti	29.2	34.0	35.6	37.1	34.9	35.2	41.8	37.0	35.5	34.5	34.5
Egypt	25.4	26.2	25.6	24.8	28.6	27.7	28.0	27.7	25.1	22.0	22.6
Iran	22.9	23.4	24.0	27.5	27.5	29.0	25.4	23.6	24.2	25.8	15.3
Iraq	n/a	n/a	56.1	67.3	61.0	54.0	56.4	46.2	46.4	49.5	48.2
Jordan	29.6	34.7	36.6	33.3	32.4	32.3	30.1	26.5	24.9	26.4	22.8
Kuwait	61.2	54.3	56.4	71.4	67.3	69.2	60.2	69.0	68.4	67.6	70.3
Lebanon	20.3	22.2	23.2	22.9	25.4	24.1	24.0	24.5	22.9	23.5	23.4
Libya	49.4	49.4	54.0	60.4	63.0	62.3	68.4	52.9	64.9	50.3	72.3
Mauritania	34.8	35.4	32.9	26.6	64.3	28.0	24.2	25.5	26.0	27.0	37.2
Morocco	24.3	23.0	24.0	26.3	27.4	29.9	32.5	29.3	27.5	27.8	27.7
Oman	45.4	45.8	45.4	48.1	48.9	47.5	46.2	38.1	39.3	44.6	50.0
Qatar	39.7	33.0	43.3	37.1	36.0	36.5	34.9	44.2	30.9	38.7	43.5
Saudi Arabia	35.9	40.1	47.0	51.8	53.7	46.6	60.5	36.0	41.6	47.5	48.6
Sudan	12.1	16.1	20.7	23.7	22.4	21.9	24.0	15.4	19.3	18.2	10.2
Syria	26.5	29.9	27.1	23.8	25.5	22.7	20.1	23.8	21.8	n/a	n/a
Tunisia	27.6	27.1	27.0	26.5	26.6	27.4	29.9	29.7	30.1	31.3	30.5
UAE	19.9	22.2	23.7	30.9	34.7	33.8	39.1	26.8	30.0	35.1	37.3
Yemen	30.2	31.1	32.0	34.9	38.6	33.2	36.7	25.0	26.0	24.6	29.6
Advanced economies	35.5	35.6	35.8	36.7	37.5	37.9	37.4	36.0	35.8	36.4	36.4
Euro area	44.8	44.8	44.5	44.7	45.3	45.3	45.1	44.9	44.8	45.4	46.2
(G7)	35.0	34.9	35.1	36.1	37.1	37.4	36.9	35.5	35.4	36.0	36.0
Other advanced economies	33.9	35.0	35.1	35.6	35.6	36.1	35.8	34.5	33.8	34.4	34.3
European Union	43.4	43.4	43.2	43.6	44.1	44.0	43.9	43.5	43.5	44.1	44.3
Emerging market and developing economies	24.0	24.8	25.6	27.6	28.5	28.6	29.5	26.3	27.0	28.3	28.3
Middle East and North Africa	30.5	32.0	35.4	40.4	41.6	39.2	43.3	33.4	34.7	37.8	37.8
MENA/ Oil-Exporter	38.7	38.2	42.9	48.4	48.3	46.5	48.7	41.5	42.5	44.3	47.2
MENA/OIL- Importer	26.5	28.3	28.7	28.5	32.4	28.3	29.4	26.2	26.0	26.5	26.9

Source: IMF (2013)