AMERICAN UNIVERSITY OF BEIRUT

THE EFFECTS OF OIL PRICE SHOCKS ON OUTPUT GROWTH IN THE ARAB REGION

by
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A project
submitted in partial fulfillment of the requirements
for the degree of Master of Arts Financial Economics
to the Department of Economics
of the Faculty of Arts and Sciences
at the American University of Beirut

Beirut, Lebanon
September 2014

AMERICAN UNIVERSITY OF BEIRUT

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AMERICAN UNIVERSITY OF BEIRUT

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ACKNOWLEDGMENTS

A special thank you to Dr. Simon Neaime and Dr. Isabella Ruble for their guidance and assistance which helped me write my project in a more professional and efficient way.

AN ABSTRACT OF THE PROJECT OF

Chantal Chafic Khadra for Master of Arts in Financial Economics
Major: Financial Economics

Title: The Effects of Oil Price Shocks on Output Growth in the Arab Region.

Ever since the early 1900s, the world has seen the demand for oil rise drastically. As the emerging economies continue to develop, it is safe to say that this trend will continue hence increasing the importance of that resource worldwide. This project aims at analyzing empirically how oil shocks affect the output growth in the Arab countries that are either net exporters or net importers of this commodity but who do little to affect the global oil prices. The restriction of no command on world oil prices falls into the dynamic Vector Autoregressive setting. According to the impulse response, the effects of the world oil price on the GDP of Kuwait, Qatar and Tunisia are positive and significant while it is not the case in Morocco.

CONTENTS

ILLUSTRATIONS

TABLES

To My

Beloved Family

CHAPTER 1

INTRODUCTION

The strategic nature of oil affects the world economies. Therefore, any fluctuation in the oil price is likely to affect oil producing, net oil exporting and net oil importing countries. For any category of countries, oil price fluctuations affect the balances of the current account, the fiscal side, the domestic price movements, the economic growth and issues related to labor markets. In fact, there is a vast amount of literature which analyses the effects of oil price hikes on the economic activity and explains the channels of such a transmission.

In the past three decades, it is no secret that the Arab world has witnessed radical social, economic, and political transformations and the oil sectors as well as the political economy of oil have played a fundamental role in such transformations. At a first stage, the oil producing countries gradually integrated the oil sector into their economies. This sector was later introduced into the Arab economies in general. According to Al-Moneef, the role of the oil sector went through different stages taking on various forms depending, on the one hand, on the developments in the oil market and the flow of oil revenues, and on the other, on the utilization of the comparative advantages of that oil sector on the Arab economies. Throughout the 20th century, the strategic significance of Arab countries and the integration of their economies into the global economy received a boost with the discovery of oil and the realization of its importance and potential for meeting world energy needs.

Ever since the 1970s, there has been an increasing interest in understanding the causes and consequences of oil price fluctuations. They have been responsible for

recession, inflation and stagflation. They also have been held responsible for changes in monetary policy, for far-reaching labor market adjustments, and for changes in energy technologies. Our understanding of the determinants of oil price fluctuations and of the interaction between oil markets and the global economy has improved with the development of empirical and theoretical models used by economists. Such a relationship depends on many factors like the scale of the fluctuation, its persistence, the dependence of the economy on oil and energy as well as the policy response of the monetary and fiscal authorities in every country. Hence, according to Hamilton (2003), all major global fluctuations in the price of oil can be attributed to disruptions of the flow of oil production triggered by political events in the Middle East economy. Such political events include the Arab oil embargo in 1973/74 which followed the 1973 Yom Kippur War, the Iranian Revolution of 1978/79, the Iran-Iraq War of 1980-1988 and the Persian Gulf War of 1990/91.

Over the last five decades, Arab countries mainly in GCC states have taken a number of important steps towards decreasing dependence on oil and gas. Infrastructure has been built, education and health systems have been created, and a broad range of manufacturing industries primarily servicing an international market have been established. Important economic reforms have also been undertaken in an attempt to make investment attractive. Oil money has been invested to diversify the economies and projects like the aluminum smelting in Bahrain, the creation of industrial cities of Yanbu and Jubail in Saudi Arabia, and the ports in Dubai were undertaken. However, those Arab countries remain in a position where the oil sector continues to dominate the economy, and few industries and services would survive in a post-oil era. So the Arab countries continue to be in a weak situation where they sell their hydrocarbons to import almost all of their commodities and large parts of their labor force.

After a general introduction in Chapter 1, Chapter 2 will be an extensive review of the literature highlighting the impact of oil on macroeconomic growth and the importance of the oil/GDP relationship. Chapter 3 will offer a review of the historical oil price fluctuations and their impact on Arab Economies and will clarify the contribution of the oil sector in the Arab Economies. It will also elaborate the important steps towards decreasing the dependence on oil. Chapter 4 will outline the data and methodology used in this study, presenting the test statistics and interpreting the empirical results. Chapter 5 will conclude the argument and provide some answers.

CHAPTER 2

LITERATURE REVIEW HIGHLIGHTING OIL IMPACT ON MACROECONOMIC GROWTH

The negative correlation between oil prices and real output is not the fact deemed true by everyone. In 1983, Hamilton pinpointed a very solid link between the "oil crisis" of the 70s and the U.S recession: an option that was three years later (1989) confirmed by Mork who adopted this analysis. The results were none but a strong negative correlation between oil price increases and the growth based on said increase that persisted in a sample way after the 1985-86 oil price declination.

Earlier in 1980, and before the publication of Hamilton's theory, many alternatives were given focusing on major events occurring roughly unintentionally, most notably, the final breakdown of pegged exchange rates in 1973 and the widespread adoption of price controls in the U.S in 1971. The course of these events may have caused understatement of the GNP deflator compared to true values. However, when in 1973-1975 controls were abated real income fell back to its real values a misleading perception of a deeper recession.

In 1891, Michael R. Darby came up with the hypothesis of a noteworthy effect of energy supply disruptions on economic activity. Thus, an outstanding relation has been noticed between energy prices and cumulative measures of output and employment. Even the U.S recession of 2001 was well predicted thanks to multivariate analysis mainly highlighting the energy prices. In 2000, Backus and Crucini demonstrated in "Oil prices and the terms of trade" that oil shocks are a major force leading to changes in international trade and attributed it to the transfer of wealth between oil importers and exporters. In 1996, Mark Hooker denied the consistency of

Hamilton and Mork linear relation between oil prices and output with observed economic performance between 1986 and 1996. Hooker's theory being solid, it has gotten Hamilton's approval saying that it is an overwhelming evidence and an unassailable conclusion. He stated that oil price changes are truly an unreliable instrument for macroeconomic analysis of data subsequent to 1986. In addition, it is Hooker's findings of the unstable relationship over time between oil prices and GDP growth proved that energy price shocks increases contributes to economic slowdowns remains controversial. However, many others have linked such instability to misspecification of the functional small disorders in the supply of primary commodities such as energy. In 1988, Hamilton acknowledged that "the benefits of a price decline on crude oil price would be smaller than the damages caused by an increase in price of similar size."

2.1. Oil Demand and Supply History

Early in the 20th century, new internal combustion engines (engine of cars) were introduced to the market boosting the demand for petroleum products largely sustaining the industry nowadays. Since then, several products and industry inputs from oil that are highly important to almost all industries and manufacturers were discovered, starting from power generators and cars to simple medicine tablets and pens. Today, few industries and services are left without the use of oil and oil products. Therefore and unsurprisingly the crude oil market is the largest commodity market in the world for demand for oil, around the globe and at any time, did not and will never stop to increase. This increase in oil consumption or demand coming mostly from developed and fast-growing countries is the main indicator of the economic growth. As the USA, EU countries, Japan, China, India and other countries develop industry, rapid

urbanization and higher living standards the energy use goes up and most notably the use of oil.

In 2006, Wright noticed throughout his studies that between 1950 and 1973 worldwide oil industry grew of 10% per year and that over 20 years leading to a production of more than 2.5 billion new motor vehicles, half of which in the United States. In 1950s the world´s demand for oil was 11 million barrels per day; a number that has been multiplied to 57 million barrels per day (mb/d) in 1970s and that has increased to 80 mb/d nowadays. According to Wright's studies, the U.S.A consumes 20.7 mb/d, as shown in Figure 1, which is a rate exceeding any other nation and equivalent to the consumption of the next five largest national consumers being China, Japan, Germany, Russia and India.

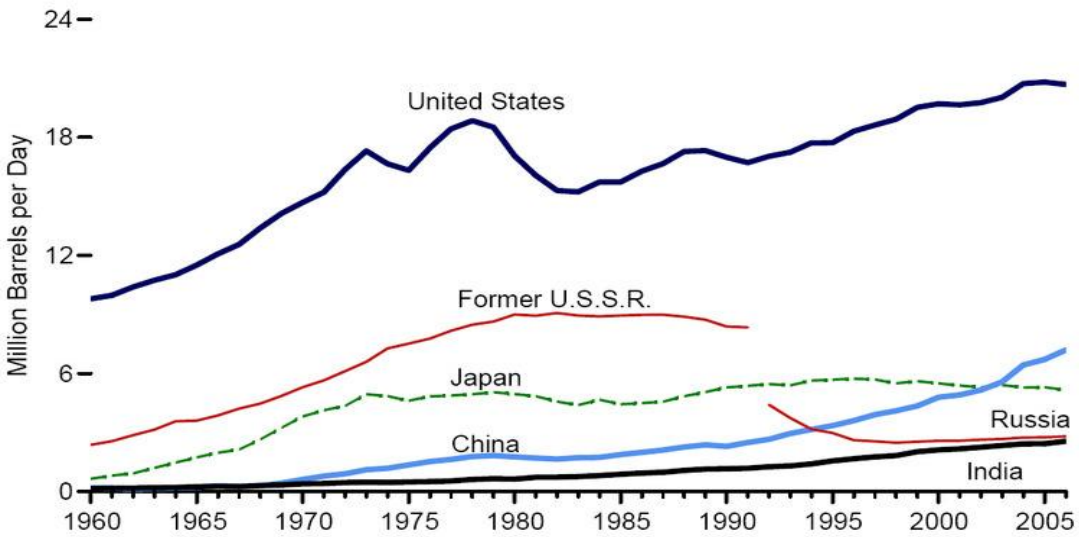

Fig. 1. The biggest consumers demand growth
Source: US DOE. 2005. Energy Information Administration. *Annual Energy Review*.

In fact the global demand is still growing faster than ever as the economies of China (6.5 mb/d) and India (2.3 mb/d) have developed and increased of 10% annually.

However, it is to mention that the United States remains the largest consumer even with the oil consumption growth, seen by China, of 8% yearly since 2002, doubling from 1996- 2006. In 2006, the IEA stated that in India the oil imports are expected to be in 2020 triple than the rate reached in for such rate is rising to 5 million barrels per day. Hence, it is very important to always take into account the country's oil consumption along with the demand growth speed and volume, for, sensitivity to the oil price instability mainly depends on how fast and cheap the economy can move to an alternative energy source. In his studies, Wright added that the U.S.A's consumption consists of four major sectors: transportation, industrial, electricity generation and residential/commercial; whereby transportation accounts for almost 70% of the overall US oil consumption, two thirds of which is motor gasoline. He reiterated that country's population adapted to cheap and plentiful gasoline and has structured their cities and lifestyles around this fact.

In 2006, the IEA noticed that the overall world crude oil demand grew an average of 1.76% per year from 1994 to 2006, with a high of 3.4% in 2003-2004. This percentage is estimated to increase to 37% by 2030 that said 118 million barrels per day from 86 million barrels. It is to be mentioned that the biggest part of increase in demand will come from the transportation sector.

The supply of oil has a crucial role in world's everyday life. The fact is that petroleum usage in industrial scale started in Europe and USA where the first oil wells were drilled there. Nevertheless, European countries never were big oil producers until the discovery of hydrocarbon reserves in North Sea 1970s.

Actually, the petroleum industry started with kerosene before the uprising Fords method of automobile production boosted the increasing need of using cars as an transportation mean available to all ordinary people, not only elite. According to the

EIA, the United States became a net importer of oil in 1948 and became very depend on foreign oil supply once it has witnessed the big economic growth. But even if the US is one of the main producers at 8.5 barrels/day, its consumption still reaches 20.5 barrels/day most of which are imported. In his historical overview, Wright pinpointed three supply shocks: First the Arab oil embargo in 1973 where the Yom Kippur War, or the Arab-Israeli Conflict, generated many political and economic crises. The response to Western support of Israel came fast in the same year on 16 October when the Arab countries of OPEC placed an embargo on oil supplies to the United States. Second, the Iranian revolution in 1979 after the Khomeini took over the power instead of the overthrown Shah. Back then, the Iranian production amounted to 6 million barrels/day, which decreased to almost half. Third, the Gulf war and Soviet Union collapse in 1991 where the former president Saddam Hussein invaded Kuwait leading both big oil producers to a short crisis of supply, knowing that the Soviet Union was one of the biggest producers. In fact every crash caused significant supply increments and generated major disturbances to the market (Figure 2). Since then first supply shock industrialized nations totally realized that cheap oil is not the goal anymore and that energy efficiency and oil supply are by now national security issues. Therefore, the industry and supply previously taken in hands of the so-called “Seven Sisters”, passed to OPEC. Five of the largest American companies succeeded in creating an oligopoly in union with the three European firms. As for smaller companies entering the market wasn’t as hard as rivaling the scope of the pioneer companies pertaining to an oligopoly that made up complex businesses and legal systems for extracting oil and controlling supply. But as stated by Wright, this situation vanished rapidly, big profits, deflation of reserves interests’ lit up a lot of turbulence among population and nationalization progress. Since then and in order to handle this growing industry and to control the

increasing profits, producing countries stood before the oil industry and formed the Organization of Petroleum Exporting Countries (OPEC). The latter's goal was to change decision making centers from west to resource owner's territory. However, there is no current real country or organization that effectively influences or controls supply as used to have "Seven Sisters".

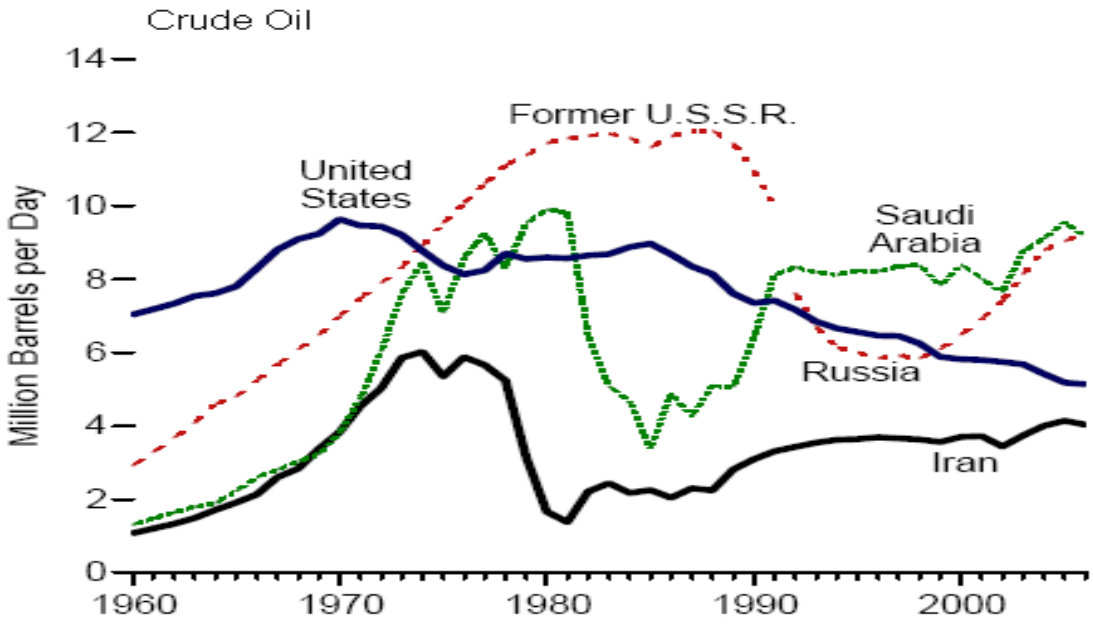

Fig. 2. Top oil producing countries 1960-2006
Source: US DOE. 2006. Energy Information Administration. *Annual Energy Review*.

Before 1970, the supply rate was stable until big disruptions started in 1973 and never stabilized to perfect since then. Nowadays the production is more stable than before but many new different risks appeared affecting the price volatility.

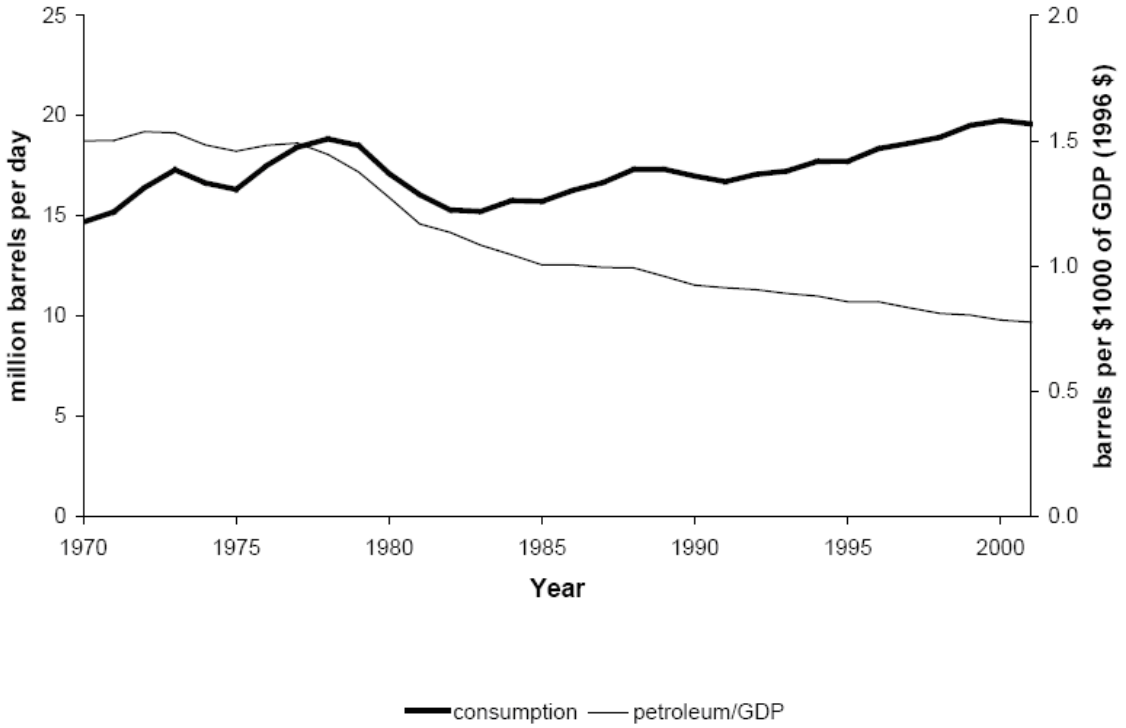

Fig. 3. US trends in petroleum consumption
Source: EIA. 2002. U.S. Energy Information Administration; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

2.2. What Explains Oil Price Volatility?

Baumeister, Peersman and Robays and many other experts concluded that increasing crude oil markets as well as price volatility are both caused by unanticipated economic developments. They have illustrated their conclusion with two major examples being the Chinese and Indian unforeseen heave energy demand and the declining weighted value of the U.S dollar. As previously shown the first oil shock sparks the price volatility era making the world economic growth slower. Such instability was caused by many factors throughout and increased by time to become frequent and unusual. Experts knew that said volatility is definitely caused by both economic and noneconomic reasons: the economic growth, for example is one of the main economic grounds, engendering a high growth of demand for oil in developing

countries was not balanced by sufficient supply. Another economic grounds are the under investment to new prospective projects caused by resource nationalism, the recent skyrocketed price of exploration technology, the maturing old oil wells, and depreciation of dollar value against world currencies.

The fact is that price fluctuation can last to a long or short term, for long-term volatility is affected by long-term global economic performance while the second is changing depending on the US economic performance and petroleum and gasoline inventory data. As for noneconomic grounds, such factors are highly politically motivated. Countries with big oil reserves have their own strategies of unveiling their real oil data for investors. The thing is that they prefer to ensure a high profitability of their investment projects. They surely manipulate oil data because of their big political influence classifying this issue as a national security matter. So the fact that said countries show to be uncertain keeps most of the investors hesitant from investing in big perspective projects, which could secure steady supply.

The countries problem falls on what is called the "Peak oil" theory saying that once the global extraction maximum rate is reached, the rate of production will most obviously decline. Hence, the resource control are behind the instability in regions of oil producing countries as noneconomic grounds as well as political uncertainties are behind the weak protection of investor's rights in resource abundant countries. Peersman noticed that the intensity of recent political games around investments in new projects providing steady supply, were totally ignored. Therefore, the so-named "spare capacity" of oil producers disappeared. Since then, an agency known by the International Energy Agency, Europe's energy agency, was created. Its goal was the protection of western importers interests after accusing the OPEC of not pumping enough oil and causing by this price volatility. OPEC stood against this accusation

mainly brings lay the blame on the lack of the worldwide refinery capacity. It stated that it can increase production at any time but said action will definitely not offset the instability in markets. As previously said, beside all the reasons affecting the price volatility, the world economic performance remains the major ground of estimation on said matter. During the last quarter of 2008, the oil market witnessed a significant drop in oil price from 147$/barrel to 45$/barrel, due to global economic crisis. Apart from the low demand in 2009, several dangerous circumstances arose such as low prices. Therefore, investments in new oil projects became unprofitable ones as prices dropped below the marginal cost of production. Upon recovery from such economic crisis, the operational process of supply and demand will enter the vicious circle that might contribute to price volatility once again.

2.3. Oil and GDP Relationship

In 1983, Hamilton worked on the relationship between oil prices and macroeconomic activity. His theory indicated that oil prices reduced US output growth between 1948 and 1980. This negative relationship investigated through oil prices was accepted way more when Hamilton's results were confirmed and extended by Awerbush in 2003 and many others experts.

Most of energy economists concluded that U.S. post WWII recessions, as well as 2001 recession, were caused by sharp increase in oil prices.

In fact, oil price increases lower GDP growth by raising production costs. In 2005, Gou and Kliesen, noticed that the ebb and flow of oil price may affect the total output adversely for said changes might delay business investment by raising uncertainty or expensive sectoral resource reallocation. According to the FT in 2008, crude prices increase will obviously negatively affect output and employment, for said

increase is deemed as a tax on consumption. The fact is that even firms facing higher cost, increase prices for their products, which means rise in inflation. So if output growth slowed because of uncertainty delays investment in capital goods, employment growth tends to be highly dependent on output growth. Thus, price volatility decreases employment growth, increases unemployment rates and influences financial markets in a direct and indirect way. The FT stated that all of the current and projected modifications in economic activity, corporate earnings, inflation, and monetary policy following the oil price increases will influence equity and bond valuations as well as currency exchange rates.

In 1994, Morks and Olson supported Hamilton's findings in saying that a distinction can be made between the effects when the price fluctuates. Such effects are usually different on GDP for an oil price increase and a price decrease. The increase is mostly negative unless the energy producing sector forms a big part of the country economy such as most of oil exporter's countries. In a multi sector model with more friction for resources possible losses of output are to be expected and that due to reallocation of resources that could offset the gains from an oil-price decrease, even if the country imports all its oil.

CHAPTER 3

OIL DEPENDENCY IN THE MIDDLE EAST

In 2010, Ceylan concluded that since the dawn of independence and the creation of new nation states in the Arab World, oil discovery and exploitation became a major issue for Arab countries. Its importance for meeting the worldwide energy need help said countries to integrate their economies into global one. Throughout the 20th century all the socio-economic and political changes witnessed by the Arabs were influenced by political economy of oil as well as by the impact of the oil sector development on their economy in particular.

The "Arab world" is often used to refer to the countries of the Middle East and North Africa (MENA) region, and the member states of the Arab League. As defined by the World Bank and with a population of 310 million (5% of the world population), a combined GDP of $870 billion (3% of global GDP), and a per capita income of around $2,900, Arab countries are classified as low middle-income countries. Despite the historical and cultural ties that exist among Arab countries, there are wide ranging differences among Arab sub-regions (the Gulf and the Arabian Peninsula, the *Mashreq* and the *Maghreb).* In terms of population size, resource endowment, levels of socio-economic development, output structure and per capita income, among others. These differences not only influence the growth patterns of Arab economies, but also have an impact on the process of economic integration and the political unity and cohesion in the Arab world.

In the past three decades, Arab countries have passed through transformations socially, economically and politically. At different historical times, the oil sector and its

political economy have played an axial role in such transformations. At the time when production was still maintained by the international oil companies (IOCs) at the beginning of oil discovery era, these transformations were caused by contentions of the major world powers. The oil sector was progressively incorporated into the economies of the oil producing countries, and, consequently, into the Arab economies at large, after the wave of nationalizations and ending the takeovers of the former concessionaires.

The influence of oil sector had passed through various phases and forms relying on the expansion in the oil market and the flow of oil profits on the one hand, and the utilization of the comparative advantages of Arab economies on the other, following its incorporation into the Arab countries. Also, it also depended on the political, institutional and fiscal relations between the oil sector giving by the national oil companies (NOCs), diversified among countries and their respective governments. The global economic setting and the petroleum market combined with the existing economic structures of the Arab oil exporting states may lead these countries into taking advantage of the current expansion for their economic development. They make use of their experience with previous booms and properly address the challenges and opportunities provided by the new setting. Even though there was no single growth and development pattern or policy fix applying to all Arab countries, certain far-reaching changes are important and should be taken into consideration by all Arab economies. Achieving sustainable growth in the Arab oil exporting economies is the right way to developing and managing the oil sector.

3.1. Historical Oil Shocks and Their Impact on Arab Economies

Ever since the 70s, the oil price shocks issue seemed to be controversial. Causes and consequences were related for recessions, higher inflation, and stagflation (a

term coined to refer to the unprecedented coincidence of inflation and economic stagnation during the 1970s). Many Experts linked such shocks to the changes in monetary policy, far-reaching labor market adjustments, and changes in energy technologies. However, the study conducted during this last decade succeeded to put an end to long-held beliefs regarding this matter. The fact is that our understanding of the determinants of oil price shocks and of the interaction between oil markets and the global economy has also changed in favor of the new approaches presented in the aforementioned research.

Cabral described oil prices shocks saying that they have a stagflationary effect on the macroeconomy of an oil importing country. In fact they are able to slow down the rate of growth (and may even reduce the level of output – i.e. cause a recession) and increase the price level as well as the inflation rate. Therefore the impact on growth and prices of an oil shock relies on many factors: the size of the shock, the shock's persistence, the dependency of the economy on oil and energy, the policy response of monetary and fiscal authorities.

The world oil market has witnessed significant variations in price and output during the past decades. As Hamilton said this identification problem may be ignored as long as all major fluctuations in the price of oil can be attributed to interruptions of the oil production flow triggered by political events in the Middle East economy. He also talked about potential political events including the 1973 Yom Kippur War followed by the Arab oil embargo in 1973/74, the Iranian Revolution of 1978/79, the Iran-Iraq War of 1980-1988, and the Persian Gulf War of 1990/91.

3.1.1. Historical Oil Shocks

3.1.1.1. First Oil Shock (1973-1974)

As Ilie said there was no event in the last decades of the 20th century as visible as the fourfold increase of the oil price in 1973-1974. As oil market was ever straitened, Arabs started to use oil as a weapon to reach its economic and political goals. Grabill highlighted the main element that allowed the achievement of such goal; he talked about the oil embargo during the war between Egypt and Israel, in October 1973. Back then the Saudi Arabia refused to increase production in order to stop the price fluctuation, unless the US supported the Arab case. At that time Arab oil Ministries set this embargo to achieve their political targets. So the production was to be reduced by 5% monthly, until the West gave up. The policy was clear: any country adopting a "friendly" attitude towards Arab states was not to be affected. By time President Nixon suggested to give a $2.2 billion military aid to Israel, but Arab countries extended their embargo to the US, the Netherlands, Portugal, and South Africa.

At that time the official oil price was set by OPEC members: an outstanding increase from $3/barrel to 11.65/barrel. The embargo caused a deep economic world recession that hit the biggest countries: the US GDP decreased by 6% in the next two years as for the Japanese economy it contracted for the first time after the Second World War. So the Arab embargo was imposed when American oil production was falling, and while demand and import were growing. The OPEC production decreased as well along with minimal world excess production capacities, creating oil shortage on the market and increasing the price. Six months later, once the embargo was lifted, the price was four fold and OPEC controlled world oil market again.

The market suffering from a bad situation during the embargo ended up reacting as follows:

- Refineries changed oil suppliers, starting to import from other available sources.

- Imports from Arab members of OPEC were launched again immediately after the embargo and continued growing till 1977. Even if exploitations in the North Sea and Alaska had become important, OPEC quota in American imports rose from 26% in 1973 to 36% in 1977

- The refining industry began to develop oil processing technologies and methods to reduce oil consumption and to enhance operational efficiency.

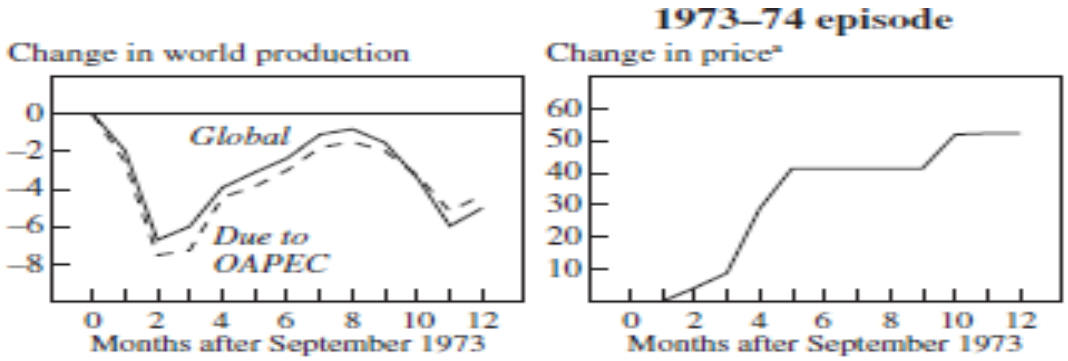

Fig. 4. Cumulative changes in world oil production, prices after first oil shock
Source: EIA. Monthly Energy Review; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

Knowing that the embargo increased the price of refined products, consumers used to consumers paid on average 57% more on gas between 1972 and 1975 when OPEC returned its initial production level before the shock. Many efforts were made, after the embargo, to preserve energy and to pass from oil to alternative energy sources but the unbearable high energy price was behind the 1974-1975 economic recession. In the same year and due to the same embargo the International Energy Agency was created by the US and 20 other states. Its purpose was to secure oil supply knowing that

the member states are setting developed plans for strategic reserves necessary in times of oil supply interruptions. And in order to stabilize the market the Law witnessed a legal improvement right after the embargo.

3.1.1.2. Iran, Iraq, and the Second Oil Shock (1978-1980)

From 1978 to 1980 political developments caused a second drop in oil supply and a price increase to above $30. Scott Cooper went back to 1978 at a time where Iranian students protested more and more against the government of Shah Reza Pahlavi. The frustrating political climate led to the departure of foreign oil production workers. Iranian oil production couldn't but drop from 1.5 million to 500 thousand barrels/day. In January 1979, the government forced to resign was replaced by Ayatollah Khomeini as a leader of the country. But obviously this wasn't the solution for in November 1979, a group of Iranians took over the American embassy in Tehran, holding its inhabitants as hostages. Since then all connections between Iran and U.S. oil companies were cut off. Along with all these events, and to fire things up the KSA announced a significant cut in oil production (to 9.5 million barrels/day) leading to additional shortages in oil production.

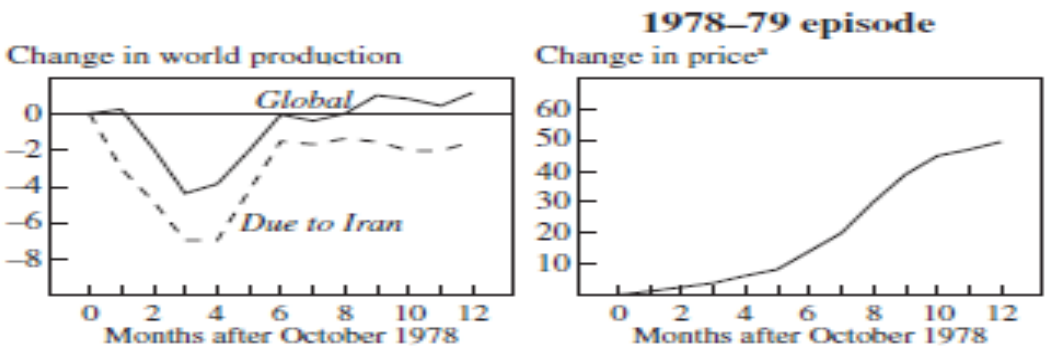

Fig. 5. Cumulative changes in world oil production, prices after second oil shock
Source: EIA. Monthly Energy Review; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

By the end of 1979, the oil price had reached $24/barrel, but, oil-related chaos continued in 1980. In September of the year, a war between Iraq and Iran erupted over the Shatt al Arab waterway. The conflict was severe and pushed both countries to bomb and destruct many oil production facilities. Due to this huge conflict the world price of crude reached $32/barrel at the end of 1980 before falling again to $11/barrel in the mid 80s. Since inflation had increased prices by a factor of two since 1973, this effectively returned oil prices to their pre-1973 levels.

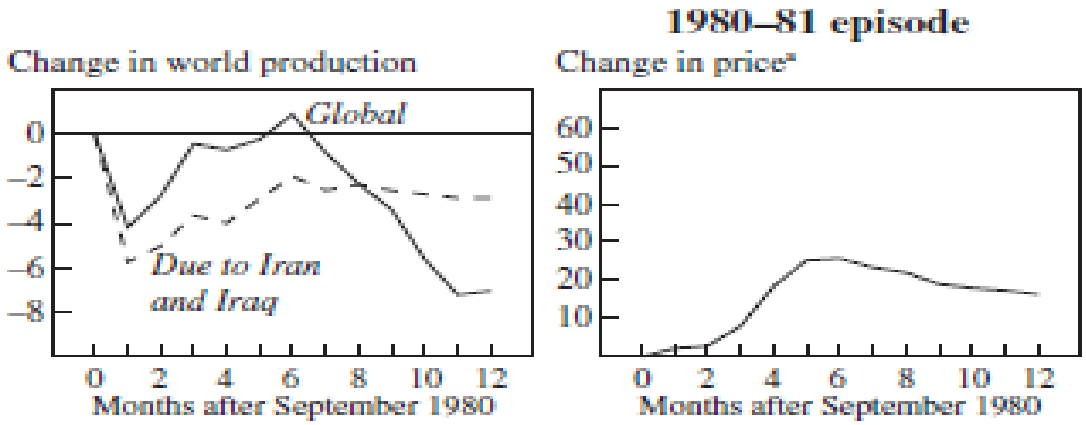

Fig. 6. Cumulative changes in world oil production, prices after third oil shock
Source: EIA. Monthly Energy Review; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

3.1.1.3. First Gulf Crisis (1990-1991)

Again in August 1990, Iraqi troops occupied Kuwait declining the oil production by 4 million barrels/day due to the destruction of oil facilities in Kuwait. As for the Crude oil prices they surged to $32/barrel. Kilian noticed that with the start of the allied military action against Iraq in January of 1991, the U.S. immediately withdrew 33.75 million barrels from the country's Strategic Petroleum Reserve, which partly compensated for the decline in production. In March of the same year, the surplus

of unsold oil held by oil producers exceeded 80 million barrels pushing the OPEC countries to announce a reduction in output to 22.3 million barrels/day. Therefore, Kuwait resumed oil production in January 1992, supplying 400 thousand barrels/day, and an oil embargo was imposed on Iraq's oil exports.

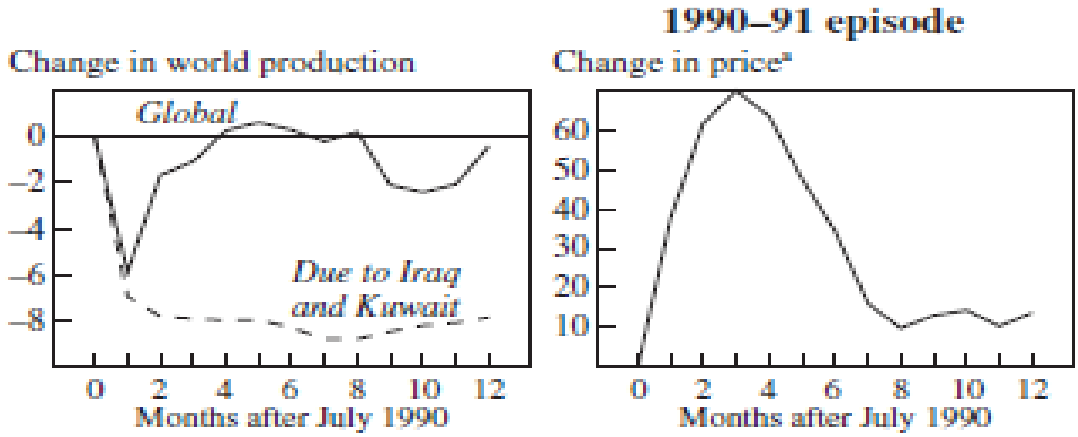

Fig. 7. Cumulative changes in world oil production, prices after the invasion of Kuwait *Source*: EIA. Monthly Energy Review; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

Four episodes are above shown: the four left-hand panels recorded the drop in oil production during each episode for OAPEC as a group in the 1973–74 episodes and for the most affected producing country or countries in the others. The production shortfall is expressed each time as a percentage of total global production just after the shock. As shown, for each event 6 to 9 percent were removed of world supply. In each episode, increased production in other countries partially mitigated the consequences. The net consequences of the disruptions for global production are indicated by the percentage decline in world oil production following each event. Production increases from other countries were minor in 1973–74 but substantial in 1990–91.

Table 1. Quantity and Price Changes in Past Oil Shocks

Episode	*Supply reduction (percent)*[a]	*Increase in price (percent)*[b]	*Implied price elasticity of demand*[c]
October 1973–March 1974	4.0	41.3	0.10
November 1978–July 1979	1.3	38.7	0.03
October 1980–March 1981	1.2	25.8	0.05
August 1990–October 1990	2.9	71.6	0.04

Source: EIA. Monthly Energy Review; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

The contemporaneous path of oil prices is represented in the middle column. Each episode was associated with a significant increase in the price of oil, for example by 25 percent (logarithmically) in 1980 and 70 percent in 1990. However, price controls in effect during the first three episodes spread the consequences over time. Lutz Kilian underestimated the contribution of these supply interruptions to the price movements above shown. He instead attributed much of the historical fluctuation in the price of oil saying that it is a precautionary demand associated with market concerns about the availability of future oil supplies. He meant by precautionary demand any movement in the real price of oil statistically unjustified by his measures of shocks to supply and total demand. By observing price movements on the basis of plausible elasticity, the supply disruptions will be deemed sufficient or not to explain such movements. In the table there is a comparison of the average decline in global oil production during each of the four episodes with the observed price change. In addition, the implied price elasticity of demand is calculated assuming zero shifts in demand from growing income and no further influences on prices during the episode. These elasticities a smaller than expected, but none render it implausible to attribute most of the price change to the supply shortfall itself. In 2009, Kilian pointed out the fact that the declines in

individual-country (or OAPEC) production overemphasize the magnitude of the supply interruptions in these four episodes. He took the example of Iraq which production witnessed a significant increased production prior its war with Iran in 1980 and its invasion of Kuwait in 1990. Therefore, the decline in Iraqi production just before the conflict overstates the shock. He added that in spite of the high Iraqi production in the months before the 1980 war, global production in September 1980 was 2.9 percent below its level three months earlier and 5.4 percent below that of six months earlier. The same happened to the global production in July 1990 for it fell to 2.1 percent and 0.7 percent from its values three and six months earlier, respectively. Both Kilian and Robert Barsky argued that demand pressures also contributed to higher oil prices in many of the present episodes. It would be then irresponsible to claim that the nominal oil price increase in 1973–74 had nothing to do with the general inflation and the boom in the prices of other commodities back then. However, Alan Blinder and Jeremy Rudd had doubts about the inflationary pressures being a primary explanation for the reason behind OAPEC choice to reduce its oil output by 5 percent within weeks of the beginning of the Yom Kippur War. The fact is that oil price shocks of past decades were initially caused by significant disruptions in crude oil production caused exogenous geopolitical events. The grounds behind the larger impact of oil shock in the 1970s are to be cited as follows: First, the real price of oil increased way more in the 1973 and 1979 shocks than in the 1990 shocks. Real oil prices peaked above $43/barrel in 1974 and to $82 in 1980, relative to $30 in 1990. Even at close to $43 oil remains below it 1980 earlier peak when adjusted for inflation. Second, the fast change of prices where the increases in 1973-74 and 1979-80 were larger (about 210% and 135%) than smaller in 1990 (40%). The latter shock occurred from very low initial real prices and early shocks were more persistent. The real price of oil needed four to five years to fall back

significantly. Lasting for almost 3 quarters, the 1990 shocks were temporary. In addition, in the 70s, the major oil consumers lacked strategic petroleum stockpiles. However, most consumers maintain significant buffers nowadays. The 1973 and 1979 shocks hit the economy while inflationary pressures were on the rise knowing in 1971-73 commodity prices and inflation already increased before the oil shock; likewise in 1979 inflation was up prior the oil shock. However, in 1990 the shock hit the economy when inflation was low (4%).

3.1.1.4. Oil Shock of 2007–08

In 2009, Hamilton analyzed the global crisis that has begun in early 2008 with a financial meltdown in the United States and Europe. It took no longer than few months to trouble the rest of the world. In early stages, any large international bank that had overinvested in risky real estate mortgages suffered very big losses once real estate prices declined in 2007. Hamilton said that the liquidation of important financial institutions and the erosion of household wealth in real estate and equity markets broke up the investor and consumer confidence. Despite the quick interventions of Western governments preventing their economies from depression, the sharp decline in consumer and corporate spending led the U.S. and European economies one of the worst recession since World War II as well as to a sharp decline in the demand for oil, food, and other commodities.

Unlike the previous oil shocks, this price run-up of 2007-08 was mainly caused by strong demand confronting stagnating world production. However, the consequences for the economy seemed to be similar to those observed in earlier episodes. Same significant effects affected consumption spending most notably the purchases of domestic automobiles. It is to be mentioned that this episode was qualified as one of the

biggest shocks to oil prices of all times. Being the world's most important oil exporter has for many years Saudi Arabia was also influenced by the crisis. The Saudi oil output has historically been quite volatile, only because Saudis followed a deliberate strategy of adjusting production to stabilize prices. Al Habibi talked about the kingdom's decision to increase production sharply in late 1990 as a reason to a short-term oil price shock. Saudis usually use their excess capacity to balance short-run supply shortfalls elsewhere. Thus, many analysts such as Behrendt, Haq and Kamel assumed that they would adopt this strategy to solve longer-run pressure of growing world demand, and so most forecasts called for continuing increases in Saudi production over time. The International Energy Agency's World Energy Outlook 2007, for example, was foretelling that the Saudis would be pumping 12 million barrels a day (mbd) by 2010. In 2007, the Saudi production amounted to 850,000 barrels a day lower than in 2005. It's nothing but a matter of inference whether the decline in Saudi production should be attributed to reduction of the country's oilfield, to a deliberate policy decision responding to a perceived decline in the price elasticity of demand, or to the long-run considerations. Whatsoever were the causes, the decline was most certainly one major factor contributing to the stagnation in world oil production over 2005–07. It definitely marked the beginning of a new era for oil pricing dynamics because without the Saudis' willingness or ability to adjust production to stabilize the price, any further interruption in supply or demand will have had a bigger impact on prices than in earlier periods. Even when the global supply stagnated, the global demand was growing fast and strong in particular the oil consumption in China, which has been growing, according to the EIA, since 1990 at a 7% compound annual rate. Therefore, in 2007 the Chinese consumption was of 870,000 barrels/day which is relatively a big increase. According to the International Monetary Fund, real gross world product grew by 9.4% in 2004 and

2005. While World petroleum production is of 85 mbd, it has witnessed a 6 % increase being 5 mbd higher in 2005 than in 2003. This percentage must be attributed to a shift in the demand curve caused by growth in world income.

As said the global recession conducted the world to a decline in the demand for crude oil and its price. According to the U.S. Energy Information Administration, the price of oil fell more than 70%, to an average of $39 per barrel in February 2009 after reaching a peak of $133 per barrel in July 2008. Back then, OPEC members also implemented a production cut on January 1, 2009 to stabilize the price. This combination of lower price and reduced output in Arab oil-exporting countries caused big losses of oil revenues for those countries.

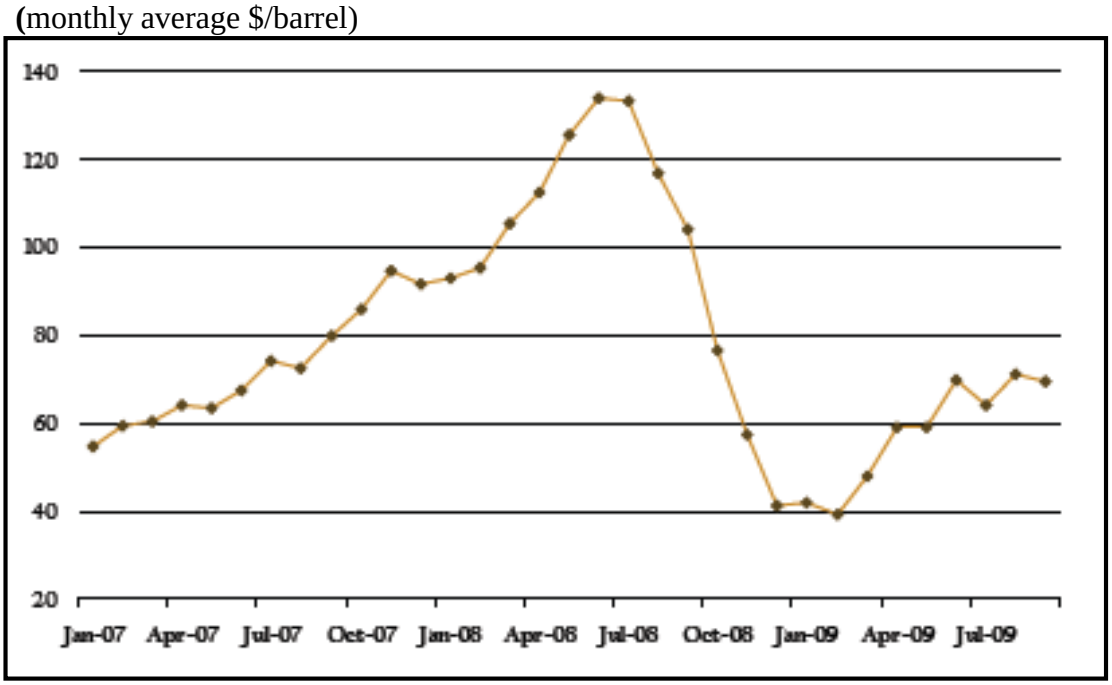

Fig. 8. Price of crude oil in Arab oil-exporting countries
Source: EIA. U.S. Energy Information Administration; available from http://www.eia.doe.gov; Internet; accessed on June 2014.

(in billions of $)

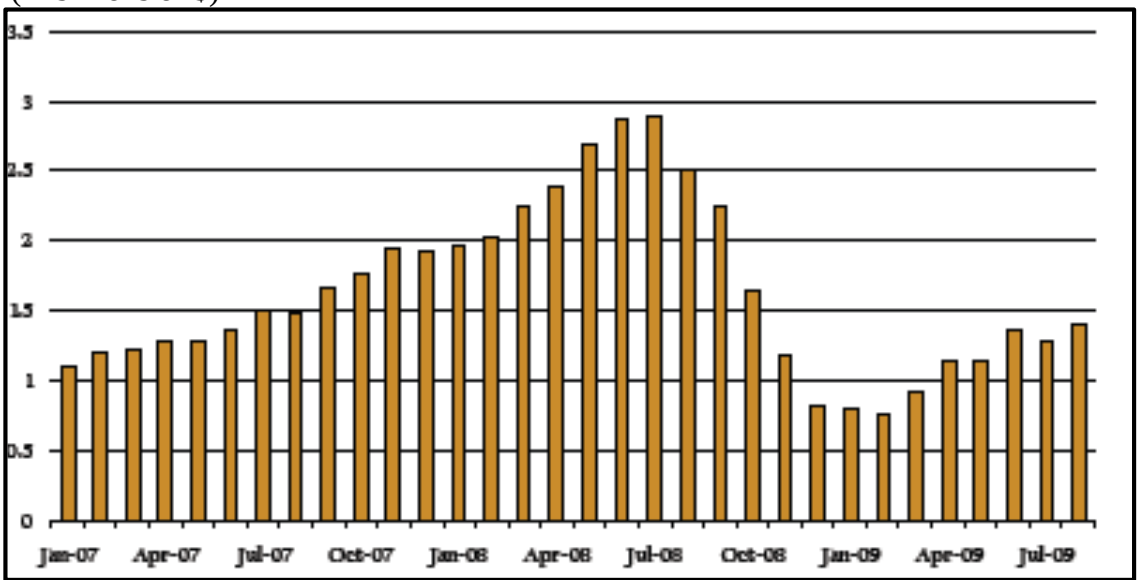

Fig. 9. Arab Oil-exporting Countries: Daily value of oil output
Source: EIA. U.S. Energy Information Administration; available from http://www.eia.doe.gov; Internet; accessed on June 2014. Author's calculations based on monthly average price of crude oil (WTI) and aggregate daily oil output of Arab oil exporting countries (excluding Iraq).

Only fiscal revenues of oil-exporting Arab countries, not their fiscal spending decreased due to the sharp decline in oil revenues. According to the International Monetary Fund (IMF), the relative size of central government revenues as a percentage of GDP in MENA oil exporters reached 43.2% in 2008 before declining to 35.5% in 2009. As for central government expenditures, they were expected to grow from 29% of GDP in 2008 to 33.6% of GDP in 2009. Said study reported a declination of fiscal revenues of Arab oil exporters (excluding Iraq) by an average of 38% in 2009, and a decrease of fiscal expenditures of 2.4% less than in 2008. In five oil-exporting countries being Algeria, Oman, Qatar, Saudi Arabia, and UAE, the fiscal spending was expected to be bigger in 2009 compared with 2008, despite lower oil revenues. In most cases this increase results from deliberate expansionary fiscal policies started as a reaction to the economic crisis. As previously said the Saudi Arabia has tried to balance the decrease in

private spending by increasing fiscal expenditures from 29.6% of GDP in 2008 to a projected 40% in 2009. As for Arab oil exporters, they have accumulated large oil revenue surpluses during 2005–7 and were able to use these surpluses to cover oil revenue losses in 2008 and 2009. The oil-importing MENA countries shall have found the falling price of oil during 2008–9 a blessing for the lower the price is the less their energy import bill is. This will definitely help helped them improve their trade imbalance. However, lower oil revenues of oil-exporting countries reduced their investments and tourism expenditures in other Arab countries. Oil-importing Arab countries being Morocco, Egypt, and Jordan benefiting from the increasing flows of GCC investment during the three years preceding 2008, have felt a serious decline in these investments during the second half of 2008 as well as early 2009. The global crisis decreased the value of GCC countries and Libya's foreign assets. The sharp increase in these countries' oil revenues during 2003–8 surprised their governments; so the volatile nature of oil revenues was a big deal for them in the previous three decades. Therefore, they did not increase their fiscal spending fast and transferred large portion of their bonus oil revenues into their Sovereign Wealth Funds (SWF) that invested them in global markets. As these funds grew over time, SWF managers concluded that investing these large sums in bank deposits and U.S. government bonds was no longer a long-term strategy knowing that low-risk assets offered very low rates of return. Al Habibi went back in time to the 2007, a period during which Arab SWFs along with their Asian counterparts invested in equities and real estate. Some of these investments were made in U.S. and others in European financial institutions, such as Citigroup and Merrill Lynch which suffered heavy losses later on. The exact size of these losses remained unknown, but it is likely that Arab SWFs lost almost 15% of their asset values by March 2009. The recent reports of Al Habibi showed that the financial losses of the Kuwait

Investment Authority and the Abu Dhabi Investment Authority amounted to $31 billion and $125 billion, respectively. Whereas the value of these funds' assets immediately before the crisis was estimated at $200 billion and $850 billion, respectively, their losses amounted to approximately 15%. According to Al Habibi, these funds still hold large assets however, in excess of $1,500 billion, and the decline in their value did not cause financial difficulties for their respective governments. Some governments, such as Qatar, used these funds earlier this year to support their stock markets and financial institutions. Nevertheless, the declining value of their SWFs has forced these governments to be more cautious about their ambitious and expensive development projects.

3.1.2. Impact of Oil Shocks on Arab Region

As previously said oil prices shocks have a stagflationary effect on the macroeconomy of an oil importing country. Roubini and Setser said that the size of the output growth/level effect and inflation rate/price level effect of an oil shock relies on many factors: the size of the shock (terms of the percentage increase in oil prices and the real price), the shock's persistence, the dependency of the economy on oil and energy, the policy response of monetary and fiscal authorities. Nowadays, the current high oil prices that might exert a significant drag on the world, as well as the political shock in the Middle East (violence in Iraq/ attacks on Iraq's petroleum infrastructure, concerns about terrorism in Saudi Arabia, the Israeli-Palestinian conflict) are the main concerns that may probably lead to a reduction in oil supply, higher prices and a new oil price recession.

Galí listed many offsetting factors among which the milder effects of oil shock on growth and inflation. In 1973-74 and 1980-81, the growth effects were more severe

and more persistent with a larger output drop than in 1990 -91. Moreover, the inflationary effects of the shock were also sharper with inflation in double digits in the two 1970s episodes. However, they were shallower and less protracted in 1990-91 recessions and the effects on inflation were very mild. It's to mention that the first two oil shocks caused an increase in inflation due to monetary policy response. In other terms, in 1974 and 1979, the policy response was to consider the shock a temporary one and to respond with monetary easing. This thinking fed inflation expectations when inflation was already up. The latter only fell back to a lower permanent rate after Volcker engineered the famous and painful disinflation in 1981-82. Last of all, even a permanent oil shock, should result in a one and only one off increase in overall price level for it leads to a persistent higher inflation rate whenever the policy response is wrong. If inflation expectations are low and the oil shock transitory as in 1990, the "Fed" must care more about growth and unemployment as it must ease monetary policy to stimulate growth without over thinking the sock's inflationary effects and its policy easing.

3.2. The Contribution of the Oil Sector in the Arab Economies

By the end of 2005, the oil reserves of Arab countries held 667 billion barrels and gas reserves up to 53 trillion cubic meters (1,870 tcf), or 56% and 30% of the world's total oil and gas reserves, respectively. 25 million barrels a day (mbd) of oil and 30 billion cubic feet per day (bcfd) of gas, or 303 billion cubic meters (bcm) were exported by the Arab in 2005, accounting for 32% and 12% of the total global oil and gas production. The Arab countries were responsible for 43% and 15% of total oil and gas exports, with oil exports of 20.5 mbd and gas exports of 100 bcm, respectively. The Arab world countries have increased their share of worldwide oil reserves for the past

three decades, which leads to conclude the reason after dominance of the oil sector in the economies of the Arab oil producing countries and after so the whole region.

Fourteen out of nineteen Arab League member states produce oil and gas. The six countries of the Gulf Cooperation Council (Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the UAE) with Iraq, Algeria and Libya stock up to 98% of total Arab oil reserves, 95% of gas reserves and 90% of all Arab oil and gas production. 30 to 60 % of the respective gross domestic product (GDP) of those economies was conducted by the oil sector (oil and gas production, processing and refining) in 2004, as shown in Table 2.

Table 2. The Share of the Oil Sector in Arab Economies (Nominal) as of 2004

	GDP in $ million	Oil Sector	Share of Oil by %	Share of Total GDP
GCC countries	**474.5**	**197.8**	**42**	**55.0**
Bahrain	11.07	3.13	28	1.3
Kuwait	55.72	26.60	48	6.4
Oman	24.82	10.53	42	2.8
Qatar	28.45	17.68	62	3.3
Saudi Arabia	250.56	105.75	42	28.8
UAE	103.83	34.10	33	11.9
Other Major Oil Producers	**146.1**	**80.73**	**55**	**16.0**
Iraq	33.7	31.32	93	3.9
Algeria	84.8	32.18	38	9.7
Libya	27.6	17.23	62	3.2
Other Oil Producers	**136.9**	**20.0**	**15**	**16.0**
Egypt	78.5	9.30	12	9.0
Sudan	22.0	1.81	9	2.5
Syria	23.5	4.85	21	2.7
Yemen	12.9	4.07	32	1.5
Other Countries	**112.5**	**2.25**	**2**	**13.0**
Djibouti	0.66	--	--	--
Jordan	11.50	0.27	2	1.3
Lebanon	19.75	--	--	2.3
Morocco	50.00	0.81	2	5.7
Mauritania	1.35	0.14	10	--
Tunisia	29.25	1.03	3	3.4
Total Arab Countries	**870**	**301**	**35**	**100**

Source: Arab Monetary Fund (AMF), September 2005. Joint Arab Economic Report.

The average share of the oil sector in Arab economies was up to 35% in 2004. Major oil production and prices increases recorded that year were marked by this exceptional high oil production in the combined GDPs of the Arab economies that year, when also a higher share of the group of major oil producers in total Arab GDP was accounted up to 72%. Previously, between 1990 and 2004, the share of the oil sector in total Arab GDP was influenced by the global oil market, dropping to 16% in 1998 and peaking at 35% in 2004.

The size of the GDP and its contribution to overall Arab GDP varied among the different sub-regions. Four countries, namely, Saudi-Arabia, the United Arab Emirates (UAE), Algeria and Egypt counted 60 % of the combined GDP of Arab countries during the period 1995-2004.

3.2.1. Arab Oil Exporting Countries

Besides their stated development objective of varying their economies and reducing their exposure to external shocks for over the past three decades, many Arab oil producing countries have experienced their GDP growth driven by the growth pattern of oil sector. The gloomy economic performance of Arab countries compared with other developing countries has animated the relationship between resource abundance and economic growth. Theoretically, providing the economy with the investment capital and advanced technologies needed for the “big push” was maintained by resource abundance. In 2002, Hausmann and Rogibon noticed that the real per capita income grew by 1.8% in the non-oil exporting developing countries, compared with a growth rate of only 1.1% in the oil exporting countries, based on an experimental study of 115 countries from 1960 to 2000, a period that witnessed several oil price increases and declines.

In ‘Dutch disease’ literature this incident is caused by a reallocation of resources across sectors and radical transformations rather than a dynamic growth process. Two sorts of resource expansion affecting the economy are expected: the *spending effect* and the *resource movement effect.* Even though, the “resource curse” model was not confirmed of being the accurate tool for describing the increasing patterns of OPEC or Arab economies, for it is based on assumptions of full employment of resources, external balance, wage/price flexibility and immobility of production factors across borders, where state ownership of oil resources gives the state an important role in sectoral supply and prices.

Many clues of divergence of growth performance between oil producing and other economies are noticed when looking at the performance of the Arab economies. Table 3 reflects the pattern of economic growth in selected Arab economies during 1990-2004. The group of oil producing economies expanded slightly faster than the other economies during the “oil boom” years of 2000-2004, while performance varied among countries of the two groups. The minor oil producers Egypt, Tunisia and Yemen, for example, registered higher real growth than the major oil producers Saudi Arabia, Algeria and Oman. However, the oil economies of Algeria, Bahrain and the UAE proceeded better than those of Egypt, Jordan and Morocco throughout the period of 1995-1999, which experienced a softer oil market and the oil price collapse of 1998. Growth in individual countries seems to be more affected by country-specific economic conditions, policies and programs than to changes affecting oil resources.

Table 3. Growth of Real GDP in Selected Arab Countries (1990-2004)

	1990-1994	1995-1999	2000-2004
Oil Producing Countries	**3.9**	**2.4**	**4.1**
Bahrain	5.7	4.0	5.4
Kuwait	4.7	1.6	5.1
Oman	6.6	3.5	2.9
Saudi Arabia	4.4	1.0	3.9
UAE	6.4	5.6	5.2
Algeria	-.4	3.4	4.2
Other Economies	**4.0**	**3.8**	**3.4**
Egypt	2.2	5.3	4.0
Jordan	7.7	2.4	4.6
Lebanon	8.9	3.8	3.0
Morocco	3.3	1.9	2.9
Syria	7.6	3.6	3.4
Tunisia	4.9	5.2	4.4
Yemen	0.3	5.6	4.3
Arab Economies	**3.8**	**2.9**	**3.8**

Source: World Development Indicators 2003-2005, World Bank.

Based on oil profits accuring to the state enable the public sector to make disbursement and investment outlays without resorting to taxation. The growth patterns of oil producing countries and their macroeconomic policies have been shaped by The Fiscal connections. Even monetary policies and their parameters such as interest and exchange rates were an extension of the fiscal policies of the state. The absorptive capacity of the economy and the magnitude of oil profits were the reason behind the allocation of oil profits through government expenditure to competing needs throughout the multiple “oil booms and busts”. During the first and second oil booms (1973-1974 and 1979-1980), when absorptive capacity decreased and revenues increased,

governments tended to isolate foreign exchange receipts from the local money supply by accumulating foreign assets abroad. During 1981-1986, when absorptive capacity increased and oil revenues declined, governments drew down their foreign reserves, reduced capital expenditures and reduced subsidies. After so, during 1987-1999, when absorptive capacity increased remarkably, lower oil revenues persisted and foreign reserves drained, the governments of the affected countries went about deficit financing and sometimes to external borrowing.

The actual physical production from the petroleum sector (oil and gas) which inlays into the rest of the economy as intermediate inputs, including crude oil input into the refining industry. The input of gas and its liquid feed stocks (and refined products) into the petrochemical industry, and the use of oil and gas fuels into electricity productions and energy intensive industries have been of exceptional significance to the evolution of the manufacturing sector in oil producing Arab countries and its growing share in their respective GDPs. As well as in the excess of their non-oil exports and the provision of utilities at favorable prices, a factor has been engaged in the growth and development of the services sector and its share in GDP. The first direct contribution of the oil sector was marked in the progression of the refining industry in Arab oil exporting countries. This advancement came out naturally of the uprising of the oil industry in those countries, which had noticed their refining capacity expand from 2.2 mbd in 1975 to 5.7 mbd in 2003. The second contribution was introduced by the evolution of the petrochemical industry, initially relying on natural gas and its liquids. After the first oil price peak, this evolution accelerated, resulting from more of liberal government policies adoption on using oil as a motivation for diversification in industry and the various alliances that had been established between the newly emerging national oil (or petrochemical) companies and the international majors of the petrochemical

fields. This evolution led to an explosion of basic, intermediate and final petrochemical production in the Arab oil exporting countries, more though in the GCC. Petrochemical production had expanded to 50 million tons by the end of 2005, up from less than 10 million tons in the early 1980s, including basic petrochemicals (51%; 56% olefins), intermediate petrochemicals (16%) and final chemicals (33%).

Table 4. The Share of the Manufacturing and Petrochemical Sector in the Economies of Arab Oil Producers in Percent (2004)

	Contribution of the Manufacturing Sector to GDP	Share of Refining and Petrochemicals in Manufacturing
Bahrain	12.6	15
Kuwait	8.0	76
Oman	8.1	28
Saudi Arabia	10.1	38
UAE	12.6	51
Algeria	4.9	11
Libya	3.4	n.a

Source: Arab Monetary Fund (AMF). 2005. Unified Arab Economic Report.

The contributions of the oil sector to the manufacturing sector as described above resulted in an accretion in the value poured of that sector in the economies of oil producing countries of the region from $25 billion in 1990 to $54 billion in 2004. It also led by a rise in that group's share in combined Arab manufacturing GDP from 56% to 61% in those two years. Table 4 shows the contribution of the manufacturing sector for the group of Arab oil producing countries, and the share of petrochemical and related industries in the value added of that sector.

The more income is spent on imported goods and services, the greater the negative influence on the payments' balance. The first and second oil booms were distinguished by uplifting oil exports and increasing imports in Arab oil producing

countries, which led to a surplus in trade balance. On the other hand, excessive outlays exposed these economies to symptoms of the "Dutch disease" outlined above. During the protracted oil market decline of 1982-1999, when the value of oil exports decreased, non-oil exports increased while the rate of import growth declined. The slowdown in import growth was caused by the reduction of infrastructure disbursement, the development of other sectors and the evolution of import competing industries, which often benefited from government support. The slowdown kept the balance of payments manageable in most of the oil producing countries which they took advantage of. The ultimate influence on the economies of Arab oil producing countries have diverted, depending on the size of the economy or/and the magnitude of oil profits, the degree of economic openness, the framework of fiscal and monetary policies adopted, and the political and social steadiness.

Table 5. GDP Growth in Selected Arab Oil Producing Countries 1980-2004

	1970-1980	1980-1989	1990-1994	1995-1999	2000-2004
Bahrain	n.a	-0.7	5.7	4.0	5.4
Kuwait	2.5	1.3	4.7	1.5	5.1
Oman	6.2	8.4	6.6	3.5	2.9
Saudi Arabia	10.1	-1.3	4.4	1.0	3.9
UAE	n.a	-2.1	6.4	5.6	5.2
Algeria	4.6	2.7	-0.4	3.4	4.2
Libya	2.2	-7.0	-0.6	1.6	n.a

Source: Arab Monetary Fund (AMF). 2005. World Bank, 2005a and 2005b.

Table 5 summarizes such variations in multiple periods. Except for Oman, all of the oil and gas producing countries of the region have gone through slow or contracted growth during 1980-1989, a period marked by a slack world oil market.

During 1995-2004, Algeria and the UAE were ahead of the other countries because of economic reforms in the previous and the Dubai-led diversification drive in the latter.

3.2.2. Non-Oil Exporting Arab Countries

The contribution of oil to evolution has not been restricted to the economies of Arab oil exporters, but expanded to other Arab economies as well, whereby the transmission mechanisms have changed due to different oil booms and among the individual economies of this sub-group of Arab countries. The non-oil exporting Arab countries took benefit of four channels: workers' remittances, tourism flows, bilateral and multilateral aid, and investment flows, during the first two oil price and oil revenue increases of 1973-74 and 1979-80. The oil price accretion also helped Arab oil and gas producers indirectly, such as Egypt, Syria and Tunisia, by boosting the value of their oil exports and reducing their oil import bills, and by encouraging foreign direct investment in their petroleum sectors, thus outgrowing their balance of payments. The proliferation of different inter-Arab economic associations and government-sponsored projects during 1973-1983 was another contributing factor.

The oil booms of 1973 and 1980 had faced the largest wave of migration within the Arab world in recent history. Rising government outlays, increased private sector activity and improved standards of living in the oil exporting countries linked with limited labor supply (except in Algeria) – due to demographic and socio-political factors – helped provide more stimulants for migrating from non-oil exporting to oil exporting Arab countries. The number of Arab migrant workers swelled from one million in 1975 to 3.7 million in 1985. The excess in migration influenced the economies of the migrants' home countries in two forms: First, it attenuated unemployment where it existed. Second, it exceeded the flow of remittances from oil

exporting, labor importing countries to the labor exporting countries. Totaling $1.5 billion for Egypt, Jordan, Morocco, Sudan, Tunisia and Yemen in 1975, remittances became a major source of foreign exchange profits for those countries. By 1985, total remittances had increased to $7.8 billion and by 1992 to $10 billion, covering 40% of the exports and 10% of the combined GDPs of Egypt, Jordan and Yemen. $189 billion is estimated by a study to be the cumulative remittances of Arab workers in the GCC countries during 1973-2004. Total remittances from all expatriate workers in the GCC were accounted at $413 billion. Expatriate workers' remittances in general and Arab workers' remittances in particular have faced four periods in the GCC countries. The first period, covering 1975-78, was overpowered by the presence of an Arab workforce and saw workers' remittances from both Arab and non-Arab sources increase from $1.6 billion to $9 billion, nearly growing into of 33% annually. The second period, prolonged from 1982 to 1987, witnessed relative steadiness with remittances averaging $9.6 billion per year and increasing at a rate of 1%. During the third period (1988-94), remittances, predominantly by workers from Southeast Asia, expanded remarkably, from $11 billion to $25 billion, growing at an annual rate of 15%. The fourth period, stretching from 1995-2000, saw relative settlement in remittances with an annual average of $23 billion and a zero growth rate. The opposite decrease in the influence of remittances to the economies of the recipient countries cannot be related merely to declining oil revenues. High population increase rates as well as human resource development programs in the oil exporting countries have resulted in more important expansion of the rate for the indigenous labor force. The efforts of GCC governments to provide their citizens with job opportunities through the substitution of expatriate workers influenced the Arab workforce first. As pointed out by the World Bank, the Arab workforce in the GCC countries has progressively been replaced since the early

1990s by more imported labor from Southeast Asia.

The transfer of oil profits to other Arab economies is more pertinent to countries with relatively well developed tourism infrastructure and sectors such as Egypt, Lebanon and Morocco. The flux of tourists from Arab oil exporting countries to these countries has helped increase their foreign exchange receipts and further develop their service sectors. Inter-regional tourism seems to have grown faster during the first oil boom of 1974 and again during the most recent boom than during the period 1980-2000. Tourist arrivals from within the Arab world increased from 22% of total tourists in 1999 to 45% in 2004.

Moreover, the transmission of oil sector profits to non-oil exporting Arab economies is seen in two ways: official bilateral aid and multilateral aid. Aid is transmitted either directly, through financial institutions settled by the governments of oil producing countries, or through collective efforts – whether regional, Islamic, or otherwise – to provide succor to either Arab countries of developing countries at large. The first bilateral institution, the Kuwait Fund for Arab Economic Development, was established by Kuwait in 1962. It was followed by the Abu Dhabi Development Fund in 1971 and the Saudi Fund for Development in 1974. The multilateral financing institutions were all established later on after the first oil price boom of the 1970s. This group includes the Arab Fund for Social and Economic Development, established in 1975, the Arab Bank for Economic Development in Africa (BADEA) in 1974, the Islamic Development Bank in 1975, and the OPEC Fund for International Development in 1976. Respectively, more than 70% and two thirds of the resources of the last two institutions, both include non-Arab countries as shareholders, structured in Arab countries.

Also, nearly 72% of the $40 billion in cumulative lending provided by the

previously mentioned institutions as of the end of 2004 were poured to infrastructure projects, while the remainder helped finance multiple productive sectors, such as agriculture, industry, mining, etc. This lending was subjoined by other sources of bilateral assistance to Arab non-oil exporting countries. $124 billion is the total cumulative assistance from all sources. Of that amount, during the period 1990-2004, $117 billion originated in GCC countries, globing approximately 1% of their combined GDP. In addition to development loans, Arab aid institutions have provided several forms of technical assistance, including feasibility studies, sectoral studies and technical training. Arab aid has encouraged the economies of grantee countries in a number of other, indirect ways as well, e.g., by attracting foreign investment. According to AMF, some Arab aid institutions also came up with programs for financing inter-Arab trade and set up facilities for private sector financing. In addition, over $4.4 billion in balance of payments and structural adjustment support was accounted as a cumulative total of the Arab Monetary Fund since its inception in 1976.

Last but not least, official exploitation are made by 16 inter-Arab companies, covering various sectors and operating on a commercial principle, established by Arab governments or multilateral institutions after the first oil boom in the seventies. $5 billion was the total shareholder equity in these companies by the end of 2004, with activities ranging from petroleum (APICORP, the Arab Petroleum Services Company, the Arab Marine Petroleum Company) to investment (the Arab Investment Company and the Inter-Arab Investment Guarantee Corporation), and agriculture and related activities (the Arab Company for Livestock Development, the Arab Fisheries Company and the Arab Authority for Agricultural Investment and Development). The circumstances surrounding their establishment compelled the accession and success of these companies, their ownership and management, and their spheres of activities.

Further expansion of such government-sponsored investments has been banned by these and related factors since the late 1970s. Private capital flows are known for being a second channel for investment in other Arab countries. However, the increment role and broadening sphere of private sector activities in the GCC and the more open economic and investment policies that have been introduced by non-oil exporting Arab countries have led to the growth of private investment in importance since 1990, either as part of an overall economic reform effort, or within the framework of an IMF structural adjustment package. Inter-Arab investment flows have also faced oil market turns and their consequences on the economies of the oil exporters and, in conclusion, their private sectors. For example, during 1995-1999, total inter-Arab investment flows were up to $9.6 billion, with the GCC countries globing a share of 12%. As stated by the Inter-Arab Investment Guarantee Corporation, when oil prices recovered during 2000-2004, inter- Arab investment reached $17.4 billion, with the GCC accounting for a share of 35%.

3.3. Oil and Economic Diversification Mainly in GCC Countries

It took the GCC at least five decades to diversify their economies away from oil and gas. Their plan was to build new infrastructure, create education and health systems and establish a broad range of manufacturing industries mainly targeting the international market. The major economic reforms were seriously undertaken in the early 2000s in most of the countries except for Qatar and Kuwait. Such improvements aimed mostly at making investment by nationals and foreigners more attractive. Since then many projects dedicated to diversify economies by investing oil money in productive assets were launched such as aluminum smelting in Bahrain, the industrial cities of Yanbu and Jubail in Saudi Arabia, and the ports in Dubai established in 1970s.

Nevertheless, and according to many experts, the oil sector remained the most powerful sector manipulating the economy. Despite all the efforts made by the GCC, few of the industries and services they've introduced will survive the post-oil era, for, trading with hydrocarbons on a worldwide scale will allow such countries to import all of their living requirements and large parts of their labor force.

3.3.1. A Historical Review for Economic Diversification

Ever since the first oil boom, the economic diversification has been the GCC's target. According to the ESCWA, the idea and the push to diversification was more of awareness to the finite nature of oil resources and a prospect of the oil boom end. In 2010, Koren and Tenreyro attributed the creation of a viable economy to the drive to diversification; a step that will practically sustain the living of society in the upshot of the oil era.

The whole diversification plan faded away in the early 80s with the decline of oil prices and their exceeding volatility in the 80s and 90s. So being independent from oil and later gas revenues became almost impossible. The export of the only noteworthy resources (oil and gas) in the GCC was a must to finance the governmental spending programs. In 2010, El Kharouf noticed that the price of oil and the nominal GDP of the GCC countries moved in circle. However, The ESCWA as well as Peterson insisted on the fact that the one-to-one relationship between international oil prices and the performance of the economies being export earnings, current accounts, government revenues, and ultimately total income and employment, made diversification one of the priorities in economic policy.

The GCC countries adopted a range of actual measures and applied them on different levels in order to achieve economic diversification and development: *First of*

all, the development of the physical and social infrastructure; some investments in infrastructure, schooling and health services, were deemed compulsory for non-oil economy growth. *Second of all, the development of capital-intensive industries that utilize the region's comparative advantage in hydrocarbon resources*; such as the production of steel, aluminum, fertilizer and petrochemicals (being the chemical components derived from oil which serve as building blocks for products such as detergents, adhesives, plastics, fibers, lubricants and gels). Another example can illustrate this kind of development: the Saudi Basic Industries Corporation (SABIC) established in 1976. *Third, the development of other manufacturing industries*: cement, construction materials (plaster, cladding, rebar, window frames etc.), electrical products, textiles, clothing, furniture and household items. Apart from this kind of development, Hvidt highlighted the fact that the GCC countries invested overseas in productive assets in 1970s where investments were generally placed in banks abroad and in productive investments (stocks and bonds). Then he noticed that the boom years (1999 to 2008) higher percentages of the oil surpluses were invested inside the GCC countries. *Fourth, the development of other productive sectors and services*: agriculture (animal production, poultry, dairy products), trade, banking, financial services. In the 2000s new fields of investment arose such as aviation, real estate, tourism and a buy-up of overseas firms managed from the GCC (e.g. hotel chains, real estate). *Fifth, the reduction of the direct role of the public sector as an agent of economic growth* and that by the privatization of publicly owned companies and utilities and the reduction of domestic subsidies.

As said by Cook and Nielson, when it comes to diversification, a 'one size fit all' theory does not apply. In fact the diversification unique history of each country shapes the measures it will be adopting. While Oman is building a service and tourism

industry, other Gulf countries are promoting the banking, media, aviation, shipping or manufacturing sectors for said fields suit best their geographical locations, natural endowments and resource base.

Back in 1994, Looney noticed that from 1973 to 1993 the manufacturing sector performance for the GCC countries was very weak comparing to other non-oil Arab countries and regarding the service and distribution sector. He also came up with a conclusion saying that the GCC attempts at industrialization 'must be considered minor failures'. In 2008, Shochat confirmed that the GCC diversification actively undertaken in the 80s and 90s was in the energy sector and that by searching for and recovering hydrocarbons as well as refining, selling and distributing them.

In 2001, the ESCWA came up with a new approach saying that since the 70s the GCC countries have developed industries, services and other sectors for purposes of reducing the oil sector size. In that time, non-oil export has relatively increased as a proportion of total exports, and the contribution of oil revenue to total government revenues has declined. All these developments are nothing but varying degrees of success in diversification away from dependence on oil. However, three decades after the oil boom in the 70s, the contribution of the oil sector to the GCC economies in all its aspects remains quite high.

Table 6. Oil as percentage of economic indicators in the Gulf countries

Country	% of export earnings	% of state budget	% of GDP
Bahrain	69	86	24
Kuwait	90	93	45
Oman	65	77	41
Qatar	91	80[b]	46
Saudi Arabia	85	85	50
United Arab Emirates	69	77	32

Source: Calculated from data in the statistical appendix following each country section in Europa Publications (2011).

In 2011, Beblawi highlighted the major role of oil in the Arab countries economies. It was pretty obvious that neither oil-based nor import substitution industries will be able to survive or expand in a post-oil era. Therefore all the efforts made for diversification were fruitless since no development pattern was sustainable. Seznec stated a different standpoint as for the diversification issue saying that in spite of all shortcomings in the diversification drive, the Gulf has become one of the main centers for the production of petrochemicals, fertilizers, aluminum, cement, prefab metal building, fiber-optic cables, air conditioners, and any other products related to construction. He added that the GCC countries started from an industrial base of near zero 30 years ago, to achieve by now huge current developments in banking, shipping, logistics and distribution, airports, real estate and else.

Twenty years ago, Looney traced many of the problems affecting the industrial sectors in the Gulf States. He talked about the lack of an overall industrialization strategy, problems related to the Dutch disease, bureaucracy and administrative routine, as well as an instability of the industrial manpower (almost exclusively expatriate), an unbalanced consumer consciousness, inadequacies of incentives in production and export and insufficient protection towards competition from abroad. Looney talked about the lack of an overall industrialization strategy referring to the fruitless the GCC's efforts to manage industrial policies. Amongst all GCC countries, the KSA was the only country that had a large individual market. This step pushed the rest of the Gulf countries to work harder on the coordination of industrial activities as well as the allocation thereof among the member states. Looney talked about the lack of an overall industrialization strategy referring to the fruitless the GCC's efforts to manage industrial policies. He added that amongst all GCC countries, the KSA was the only country that had a large individual market. This step pushed the rest of the Gulf countries to work

harder on the coordination of industrial activities as well as the allocation thereof among the member states. The GCC plan started in 1981 with the aim of achieving an industrial development and a diversification of their products on an integrated basis. Then in 2001, new economic agreements integrated the economies of the GCC member states in 2010 upon the signature of the GCC heads. The integration meant back then the inclusion of a customs union, a common market and an economic and monetary union with a unified currency. According to Beblawi, the integration was not fully achieved; the customs union came into force in 2005 by creating a single external tariff, the common market was established in 2008. Such market removed important barriers to free movement of goods and services and to increase the mobility of national labor and capital. He added that such integration was not accomplished when the GCC members failed to establish the monetary union giving place to deficiencies in cross-border transportation, data sharing and communication technology that affected interregional trade significantly.

Nevertheless, insufficient protection regarding the competition abroad was explained by Seznec in 2011 when he confirmed that in trading economies import substitution industrialization (ISI) strategy does not apply, economically or politically. That was the case of the Gulf States in the 1970s. As defined by Todaro and Smith, an ISI strategy aims at securing a home market for 'infant', not yet competitive industries by applying sharp tariffs or quotas on imports. This was not an option to the Gulf States for said strategy might have damaging effects that will most probably harm their political allies – the merchants – who would have lost their basic source of income. This was not an option to the Gulf States for said strategy might have damaging effects that will most probably harm their political allies – the merchants – who would have lost their basic source of income. Therefore the issue of domestic infant industries'

protection was barely possible and led to a lack. Being unable to provide protection, newly established industries were forced to reach international competitiveness from the outset. Thus, choosing turnkey solutions and hiring skilled expatriate manpower in new industries and in services was the best option. Seznec noticed that this is the way making economic interests of the merchants and the application of foreign labor a part of the framework condition for development in the Gulf region.

Until the 90s the diversification remained largely ineffective according to Shochat. The reason was simply the presence of a structural change at the same time. He meant by changes the ones decreasing the power of the public sector as the agent of economic growth, the lack of private and foreign investment, the deficiency of qualified manpower and the small market size. But, during the boom period of 2002–8, economic reforms targeted these fields and allowed diversification to be taken up with much more vigor and success.

As pointed out by Hvidt, all economic and institutional reforms undertaken in the GCC countries prior 2008, except for Qatar and Kuwait, were only substantive reforms. He added that these reforms are surly a first initial step to reach the stated aims of diversifying the GCC countries' economies and refreshing the private sector, for rentierism is not a process that is easily achieved.

El-Kharouf *et al*. analyzed the role of sovereign wealth funds (SWFs) in the diversification strategy saying that the formation and evolution of the SWFs was an vital part of an overall prescription for the cyclical economic and fiscal imbalances of the oil-based GCC economies. El-Kharouf *et al*. added that the policy principle is really simple so once the GCC countries invest their oil revenues in either local or international industries, they would be able to convert volatile and exhaustible oil incomes into a more stable financial stream of wealth to be used in the development of

their societies in the long run. According to Beblawi, Kuwait has spearheaded this development by establishing the Kuwait Investment Office in London before 1953. In 2008, the Europa Publications reported that Kuwait's Reserve Fund for Future Generations, where 10% of the annual oil and gas revenues are placed, was estimated to have US$100 billion by the in the Gulf War of 1990–1. As for the returns on these investments, they were similar to the annual oil and gas income. Nowadays, Abu Dhabi Investment Authority has the largest SWF in the world, which alone held assets worth US$ 627 billion in 2011. It's to be mentioned that more than one SWF is present in each country.

Table 7. GCC countries deposits in sovereign wealth funds (US$ billion), end of 2011

Bahrain	Kuwait	Oman	Qatar	Saudi	UAE	Total
9	296	8	85	478	783	1,659

Source: SWF Institute. 2012.

As above shown, the Gulf countries hold US$1,659 billion of assets. Once investments are undertaken overseas, no jobs are created in the local economies and no further education and training of the local workforce.

3.3.2. Assessment for Recent Development Strategies

All plans of diversification applied in the past ended up with meager results. Nowadays, development plans define diversification as a means to ensure stability and the sustainability of future income levels. The states continued to control the economies, but, diversification led to a reinvigoration of the private sector and required the

implementation of long-terms broader reforms through detailed plans and spending budgets.

In 2011, Europa Publications took the example of *Bahrain* a small country with very limited oil reserves, and where 1.2 million inhabitants currently live there, including 670,000 non-nationals. This country having small reserves comparing to its neighbors suffered an oil lack. Bahrain decided in 70s to adopt a diversification strategy targeting industrial developments, refineries, shipyard, steel, its manufacturing flagship the ALBA aluminum smelter, and a range of downstream industries for processing raw aluminum. According to the MEED in the 2009, the financial services became the principal sector controlling the diversification drive in 1975 after the relocation of the international banking community from Lebanon to Bahrain and following the outbreak of the civil war in Lebanon. In 2008 and 2010 O'Sullivan, Koren and Tenreyro respectively noticed that in the 80s, Bahrain became the most industrialized country in the GGC. The services and industry thereof accounted for nearly 50% of the economy. In 2006, only Bahrain was part of the diversification plan, and an uprising phenomenon. The success went further with the launching of a Bahraini Economic Vision 2030 plan, in October 2008. Then, a year later the introduction of its National Economic Strategy: a detailed and short-term spending plan aiming to implement the Vision 2030 aims. The first plan was prepared by the Economic Development Board (EDB) which is a new unit headed by Crown Prince HH Shaikh Salman bin Hamdan Al Khalifa. This plan was similar to a development path for the Bahraini economy: it mainly wills to empower the private sector. This plan works on shift from the Bahraini economy from an oil wealth dependent one to a productive, globally competitive one. The latter is to be shaped by the government and driven by a pioneering private sector. As stated by Bahrain EDB in 2008, this economy should raise a broad middle class of Bahrainis who benefit from

good living standards through increased productivity and highly remunerated jobs. Vision 2030 is a challenge pushing the country to create enough opportunities of quality, to provide new jobs for the fast-growing and better-educated Bahraini generations. Nevertheless, Bahrainis are still not the best choice of employers in the private sector, as stated in the plan. The reason is the nature of current jobs in Bahrain that are created for low-skilled and thus low-paid non-Bahraini workers. Bahrain EDB confirmed that the aim of such a plan is to create or to attract very well-paid jobs of high-level knowledge competencies putting Bahrainis in the preferred choice of labor. According to the same reference, the redistribution of oil revenues or the grant of jobs in the public sector to citizen was a first attempt to solve weak jobs creation. However, this solution left the country with an oversized unsustainable public sector due to the gradual decline of oil reserves. It's to be noted that the country driven by the public sector. This model is practically failing as government finances become tighter and competition bigger in a global economy. By 2030, the private sector should be able to drive economic growth in Bahrain independently. However and in order to reach such target two things are to be done: increase the productivity in the private sector, and motivate the latter to hire Bahraini people. As Bahrain EDB stated, the goal relies on creating a favorable environment to entrepreneurship and innovation as well as knowledge-based and high-value-adding companies and economic activities. Apart from the leading financial sector, tourism, business services, manufacturing and logistics will definitely be developed as income earning sectors. Therefore, the investment of the public sector must target in first place the improvement of its human capital through education and training. Thus, *Vision 2030* expects this sector to take a leading role in society and to give up on the creation of jobs by transferring this task to the private sector. This plan encourages Bahraini people to believe in a meritocracy and to compete among

themselves and against foreigners for jobs that require intellectual criteria. Therefore, the State will have a unique role of providing social and health services, taking care of environmental issues, housing, education, foreign policy, defense and else. The privatization was never to be mentioned then.

According to Europa Publications, *Kuwait* is a small wealthy country with one of highest income per capita. There, live 3.6 million people, 2.4 million of whom are non-nationals. In this country the petroleum accounts for half of GDP, 90% of export revenues and 93% of government income. However, Kuwait hasn't done much to diversify its economy throughout the years. In the 1960s, 1970s and early 1980s, as reported by Crystal, many attempts were done to establish mechanisms for planning. However, their impact was barely noticed for the political consensus remained absent. In 2007, new emphasis on development and economic planning was made creating thereafter a new entity: the General Secretariat of the Supreme Council for Planning and Development. As pointed out by the Global Investment House in 2010, Kuwait was definitely the most developed of the GCC countries. It also had the most promising developmental trajectory. But, along with remaining lack of political consensus, fundamental shocks to the economy hit the country: First was the Iran–Iraq War (1980–8) blocking all paths (by sea and land routes) and weakening the trade. Second was the impact of the Iraqi invasion and the following Gulf War (1990–1) leaving the country with bad infrastructure, an enormous debt and an unstable security situation that pushed the private sector to refrain from investing in the country. As stated by the Global Investment House, in February 2010, the National Assembly of Kuwait ratified a five-year development plan for the years 2010 to 2014 along with a detailed expenditure budget for the same period. The latter was approved to supervise the government's way of spending resources amounting to US$125 billion on the development of the country

so Kuwait can be pulled out of the recession it suffered since September 2008. However and prior any ratification of the five-year plan, the General Secretariat of the Supreme Council for Planning and Development (formerly the Ministry of Planning) had published its long-term plan, the *State Vision Kuwait 2035.* The aims of both plans are to give back Kuwait its major role in regional trade knowing that this country has always been a financial hub for the northern Gulf through economic development, diversification and GDP growth. According to the Global Investment House and the State of Kuwait, these aims can't be fulfilled without significant investments like the new business hub so-called Silk City at Subiyah, with estimated costs of US$77 billion. Apart from investments, a major deep-sea container port at the Shatt Al Arab is to be constructed to attract the traffic otherwise aimed for Basra and Umm Qasr in Iraq. New railway and metro systems are also a must, as well as the establishment of new cities to host the increasing population. In addition, basic infrastructure and services, particularly within the health and education sectors should be provided. Both references added that besides these expenditures, a big fraction of public spending will be invested in the oil and gas sector, in order to raise production capacity and modernize current facilities. Furthermore, half of the US$125 billion expenditure will be given by the private sector, through investments. This plan will also definitely need a reform of the legislative and institutional setup in the country.

Since the 70s, *Oman***,** with its 2.7 million inhabitants 820,000 of whom are non-nationals, has directed revenues from its limited oil and gas production into the economy. According to MEED in 2010, the oil production peaked in 2001 at 960,000 barrels a day while the 2010 rate of production was 800,000 barrels a day. As reported by Europa Publications in 2011, Oman is estimated to hold reserves of 5.5 billion barrels of oil, which is 0.4 per cent of the world's proven oil resources. Led by the State,

it was carried out through a succession of five-year plans. A plan applied in 2010 as a result of these policies, thanks to the adequate climate for agricultural production, however limited, and aided by good maritime conditions for fishing. As MEED stated Oman had the second most diversified economy among the GCC countries for in the absence of substantial oil and gas reserves, it has chosen the most obvious path available in its diversification effort, namely the (re)invigoration of the private sector. Ever since the 2000s, the government has witnessed through substantial economic reforms an improvement of the business climate, openness for foreign investments and investors into gas development. Since seizing power in 1970, Oman has a long tradition of economic planning. Sultan Qaboos and his government tried to achieve direct development through a series of five-year plans, the first of which was launched in 1976. The latest is the *Eighth Five-Year Development Plan (2011–2015)* announced on 2 January 2011. Each of these five-year plans is built on a long-term development strategy. As stated by MONE, the first covering the period was form 1970 to 1995, and the second, normally referred to as *Vision 2020,* covered the period 1996–2020. As for the new Supreme Council for Planning, it was entrusted with the task of preparing the development plans and annual budgets. MONE added that *Vision 2020* aimed at providing suitable conditions for economic take off, which implies diversification by increasing the non-oil production in the country. Its goal is to achieve substantial changes in the structure of the national economy by diversifying the production base, enhancing the role of the private sector in the economy, developing human resources and most notably reducing the oil sector's contribution to GDP to 9% by 2020. According to the table above, oil still accounted for 41% of GDP in 2011. MEED noticed that Tourism and gas-based industries are very important elements of the government's diversification strategy. However and because of the current lack of gas

there, MEED suggested strengthening the non-energy-intensive sectors of the economy, such as tourism, agriculture and food processing. In fact, the *Eighth Five-Year Plan (2011–2015)* was established to complete the previous one on different level such as the development of infrastructure and the improvement of the investment environment. In 2011, the United Securities estimated that more than half of total spending in this Plan was dedicated to the construction of airports and roads while another 26% was given to seaports, water and housing. It also noticed that the investment environment improvement constitutes a major step in the diversification strategy of the liberalization of foreign ownership policies. In 2008 MEED emphasized on the possibility to exercise 100% ownership of assets within industry and for foreigners to buy property in Oman under freehold arrangements. According to the Ministry of Information of the Sultanate of Oman, these reform policies were set to enhance the competitiveness of the national economy in the global arena. Oman Daily Observer looked into the current plan in 2011 and noticed that small and medium-sized enterprises (SMEs) in tourism, industry, agriculture and fisheries are encouraged for increase the role of the private sector in the economy and the provision of new job opportunities, particularly for the national manpower. As pointed out by the Ministry of National Economy, the government of Oman has reserved entire categories of jobs and certain sectors exclusively to Omanis and one third of manpower as expatriates, and that in order to bring its own population into the workforce. Therefore, the liberalization influenced the education mostly notably the tertiary education that will be provided with much more options outside of Muscat. As well the liberalization of investment law that has attracted FDI. According to MEED in 2008, this applies particularly to the three sectors of tourism, construction and industry. The *Eighth Five-Year Plan* expects to generate around 40,000 to 55,000 new job opportunities per year. Even if Oman was one of few countries to announce plans to

privatize all remaining state-owned power and water, the *aforementioned plan* did not mention of any other type of privatization. Thus, this could engender negative impact on investments of the financial crisis of 2008.

Qatar, with its approximately 1.7 million inhabitants 1.2 million of whom are non-nationals, is aiming for a future with oil and gas. This country is planning for a controlled approach to development as well as a slow process of diversification. According to GSPD, only 6% of the manpower in 2009 was Qatari, of whom 75,000 nationals held a formal job. GSPD noticed that the *National Development Strategy* aims at increasing the Qatari manpower participation rate from 63% to 66% for men and from 36% to 42% for women during 2011–16 whereas, only 0.3 per cent of these work in the private sector. By willing to create a diversified economy based on a Qatari manpower and private sector, Qatar took a huge challenge. The thing is to create a capable, strong and motivated workforce and private sector for both are a must. In July 2008, Qatar published a long-term plan so-called *Qatar National Vision 2030* followed by the publication of the *Qatar National Development Strategy 2011–2016* in March 2011. As GSDP said the Urban Planning and Development Authority was drawing up a national master plan at same time to guide land use mostly for infrastructure, mega projects, housing and industrial activities, as well as transport plan. The upcoming FIFA World Cup hosted by Qatar in 2022 is one of the main boosters of this sudden and substantial care for planning. As named the *Vision 2030* wills to transform Qatar into an advanced country by 2030 for it to be capable of sustaining its own development and providing a high standard of living for all people of the coming generations. GSDP identified three overriding policies guiding the development within the economic realm: sound economic management, responsible exploitation of oil and gas, and suitable economic diversification. Unlike Bahrain and Oman, Qatar is planning for a situation of

plentiful hydrocarbon reserves. According to MEED, Qatar holds the largest gas reserves in the world and sufficient reserves of oil to keep production going for another 45 years. The *National Development Strategy* implements the *Vision 2030* and as stated by GSDP it confirmed that diversification requires bolstering entrepreneurship and private sector development, improving the business climate, strengthening regional integration and reforming the labor market. But the fact is that Entrepreneurship and innovation need to be learned, rooted in the education system and in the surrounding culture and maintained by business friendly policies and regulations. While creating a diversified economy, Qatar will definitely feel the absence of entrepreneurship, the limited size of the economy as well as the limited number of consumers. Its unfavorable geographical location will highly influence the land transportations that can only be done through. Moreover, like other GCC countries, Qatar has a weak economic model discouraging nationals from seeking employment in the private sector where salaries are way lower than the public one. Finally, GSDP mentioned the Dutch disease issues. In fact, the plan refers to a study mentioning that Qatar exported 1,630 products in 2008, 98% of which were directly linked to the hydrocarbon sector. Therefore, the need of a reform was highly recommended as for the economy and the institutions towards openness, streamlining rules and strengthening the legal framework for enterprises. Up till now, many achievements were done: the law concerning FDI has been liberalized, allowing full foreign ownership of assets; industrial cities at Dukhan, Mesaieed and Ras Laffan have been established; and economic free zones are under way. So since oil and gas will continuously provide the main income as for the coming future, Qatar must focus on creating a knowledge economy as a mean to create a regional hub for knowledge and high-value industrial and service activities. According to MEED and Willoughby, this country has invested very big sums amounting to 5% of the GDP in

establishing a cluster of well-known international universities, primarily American – the so-called Education City. Thus, this kind of knowledge economy is expected to bring more Qataris into the labor force and to reduce the number of expatriates in the country accounting to more than 80% of the manpower.

Seznec studied the case of *Saudi Arabia* which is massively larger than any other GCC countries in terms of land mass, population and energy reserves. It population is of 27 million 8.4 million of whom being non-nationals. KSA holds 19% of the world's proven oil. This country succeeded to be an industrial power within petrochemicals, processing crude output into downstream products of oil through some forty years of diversification strategies. When compared to Qatar, the KSA benefits of numerous advantages making this country a powerful one in the oil field: its size, the favorable timing of the oil era start straight after WWII as well as the level of institutional development, change of policies and fast implementation of plans. However, even with an oil production close to10 million barrels of oil a day in 2011, KSA still have the lowest GDP per capita among the GCC countries, due to its large population and relatively underdeveloped economy. The CIA confirmed the GDP to be of US$24,200 per capita (PPP), which is less than half of that of the UAE and Kuwait. As a consequence, major problems appeared over the last decades, most notably, the youth unemployment, the low living standards and a considerable rise in poverty among Saudis. Despite ruling one fifth of the oil reserves in the world, Saudi Arabia also faced current account deficits and tight budgets during the two decades starting the1980s. AS stated by MEED, all along this period the GDP declined to half, living standards declined and unemployment rate increased. Nevertheless, the KSA has mainly the longest and most elaborate tradition of planning among the GCC countries, institutionalized in the Ministry of Economy and Planning (MoEP). Ever since 1970

nine development plans have guided the economy: the latest was the *Ninth Development Plan* that covered years 2010-2014. Thereafter in 2004 a *Long-Term Strategy* for 2005–24, was published. As pinpointed by the MoEP, besides these plans, there are eight sector plans so-called *National Plans* and covering areas such as youth, transport, privatization, employment, science and technology, industry etc. The Ministry confirmed that the *Long-Term Strategy* was established in response to a number of challenges such as the provision of productive employment to Saudi national manpower and the life quality improvement. This *Strategy* aims at making out of the local economy one of the most advanced economies by doubling the per capita income between 2004 and 2024, creating jobs for the fast growing and young population, increasing the role of non-oil production in the economy, and reducing the share of oil and gas in total exports from 72% to 37% during the plan period. As for the *Ninth Development Plan* it works on different problems such as living standards, lack of employment opportunities, regionally uneven growth and lack of international competiveness for the Saudi economy. The primary means to deal with those problems, except for uneven growth within the regions of Saudi Arabia, is to increased participation by the private sector in the economy. As expected always expected by the MoEP, such sector must increase its production, open the country for investments (including FDI) and exports, and create jobs for the citizens. In December 2005, the KSA became member of the World Trade Organization (WTO) thanks to the effort made by the Saudi Arabian General Investment Authority (SAGIA),governed King Abdullah, on branding the country as ‘business friendly’. This campaign succeeded to attract FDI, as well as to improve the procedures needed to start, operate and close a business. In 2012, the World Bank *Doing Business* index rated Saudi Arabia as the twelfth easiest place in the world to do business whereas the UAE was ranked 33rd,

Qatar 36th, Bahrain 38th, Oman 49th and Kuwait 67th. In 2010 Hertog assured that there is no doubt that Saudi Arabia has carried through a significant number of reforms to ease the business climate since the early 2000s.

The UAE enclosing seven emirates has Abu Dhabi and Dubai as the richest. It's known that Dubai has used up its small oil resources, while Abu Dhabi alone commands almost 7% of the world's proven oil resources knowing that it definitely is the wealthiest emirate. In 2009, Davidson said that while Abu Dhabi, supported by huge oil reserves, has required diversification all these years through manufacturing industries – metals, plastics, fertilizers, petrochemicals, a 'new economy' of high-technology-heavy industries, renewable energies, a luxury real estate market and cultural tourism has seen the light lately. As for Dubai, it has been considered the most proactive and eager emirate that has been working on diversification plans in the GCC region. According to the Executive Council in 2007, Dubai had truly committed to provide a business-friendly environment, to be open to foreigners in business and society, as well as to believe in a proactive role of the 'state' in the economy. In 2005, this Emirate claimed that the non-oil sector accounted for 95%of GDP. When in 2008 the world economic crisis hit the entire globe, Dubai also suffered because the building boom. However, MEED ensured that the real estate market is recovering and that investors and businesses in Dubai are regaining momentum. The fact is that both *Vision 2021* and the *Government Strategy (2011–2013)* gave the private sector a very limited role. Nevertheless, it has always been clear that the UAE operates in a global market economy, targeting high productivity, competiveness and innovation to be successful. The plan was most notably introducing a new economic model of a market driven and built on public ownership. This model could be called 'diversification without privatization'. Here, the public sector – through its investment vehicles, such as the

Mubadala Development Corporation – must create or buy enterprises and operate them on market terms as if they were private firms. The private sector is then limited to its traditional activities being trade and SMEs. In conclusion, both *Vision 2021* and the *Government Strategy (2011–2013)* stress on the necessity to set an improved regulatory framework within the economic sectors, as well as to form a responsible government, a lean one, an innovative and forward-looking one. Thus, a well-built economic development can't be good enough without planning and coordination between government entities and between the seven emirates.

CHAPTER 4

EMPIRICAL STUDY

4.1. Data and Methodology

4.1.1. Data and the selected Arab Economies

As mentioned in previous section, the Arab region is mainly the best place to study constituent economies. Their economies rely on different strategies of development: some depend on the oil export revenues; some tie their economies with the limited domestic production and others are mainly based on oil imports regarding their energy needs. Experts also noticed that these economies are interconnected by their labor markets and international trade linkages. But ever since this study is dedicated to add somehow new approaches to the oil macroeconomics literature in a way to emphasize the situation within which the Arab economies with oil price taking behavior, some economies were chosen to be studied based on this rationale. This study targeted four countries in the MENA region: Kuwait, Qatar, Tunisia and Morocco. Said countries were evaluated in terms IMF's fuel exporting country classification.

The present project investigates the ways oils price shocks might affect the economic performance of the chosen Arab countries and that by relying on panel data. It's to mention that the real GDP figures adopted in the econometric analysis range for the time period 1987 – 2011 and within this time scope each country's specific period of analysis is determined by the availability of data.

4.1.2. Methodology

As pointed out by Cushman and Zha in 1997 and in order to assess the

developments in the world oil price affect the economies of the Arab countries, similar vector auto regressive (VAR) model was adopted in this study. Instead of a conventional single equation model, VAR will help in capturing the dynamic relationships among variables of interests for it has higher predictive power. Further models will be used to enhance our interpretation; accordingly, Granger Causality testing and Co-integration will be performed. In fact, this study used identified VAR model with a block exogeneity where the GDP series of chosen Arab countries do not affect the world oil price with their lags, and this will be explained in details in using multicollinearity and VIFs testing.

Since the goal of this study was to examine the response of the economic variables to one standard deviation permanent shock, a block recursive model was used. In this block used by the present study, oil price is determined by its own dynamics in which an Autoregressive (AR) process is used for the dynamic path of oil price changes, and where the Arab countries macroeconomic variables follow a near Vector Autoregressive (VAR) model. While none of lagged variables of the Arab countries enter the world oil price specification in the model, the real GDP series of each Arab country is affected by the current and lagged values of the world oil price.

The identified VAR model suggested by Cushman and Zha in 1997 is stated in the following formula:

$$(1) \qquad A(L)y(t) = \varepsilon(t)$$

Where, A (L) is 2x2 matrix polynomial in the lag operator L, y (t) is the 2x1 observations vector, and E(t) is the 2x1 vector of structural disturbances. The specification of the model is as follows:

$$(2) \qquad y(t)=\begin{bmatrix} y_1(t) \\ y_2(t) \end{bmatrix}, \quad A(L)=\begin{bmatrix} A_{11}(L) & 0 \\ A_{21}(L) & A_{22}(L) \end{bmatrix}, \quad \varepsilon(t)=\begin{bmatrix} \varepsilon_1(t) \\ \varepsilon_2(t) \end{bmatrix}.$$

Here, innovations E(t) are assumed to be uncorrelated with y(t-j) for j> 0 and A(0) is non-singular. The block (y2(t)) exogeneity is represented by A12(L), which is zero. It can be observed that, y(t) is exogenous to the second block both contemporaneously and for lagged values. We have used the modified error bands of Bernanke, Hall, Leeper, Sims and zha (1996) while computing the maximum likelihood estimation (MLE) and the inference of the system since the MLE of the VAR model is not applicable to the identified VAR model with block exogeneity (see See Sims (1992) and Gordon and Leeper(1994)).

The observation matrices are y= [Arab countries GDP growth], x1= [World oil price], x2= [FDI], x3= [inflation rate], x4= [interest rate].For each of the Arab country, the lag order of the identified VAR model is 1 as suggested by the Bayesian Information Criteria. In the study, the GDP growth of each Arab country at time t (GDPt) is calculated as follows:

$$GDP_t = [(X_t / X_{t-1}) - 1]\ 100$$

4.2. Empirical Results

4.2.1. Order of Integration using both ADF and PP Tests

Our aim is to apply tests that will determine the order of integration of the variables. For that, we'll do the ADF and PP test. We begin with the ADF test procedure by examining the optimal lag length using Akaike's FPE criteria, before proceeding to identify the probable order of stationary. Accordingly, the results for all variables of the four countries (Kuwait, Qatar, Morocco, and Tunisia) are presented in the following

tables.

4.2.1.1. Kuwait

The results of ADF test for Kuwait's variables indicate that each of the series is non-stationary when the variables are defined in levels. First differencing the series removes the non-stationary components in all cases and the null hypothesis of non-stationary is clearly rejected at the 5% significance level, suggesting that all our variables are integrated of order one, as we expected.

Table 8. Kuwait ADF Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.872	0.986	0.969
FDI	0.997	0.790	0.999
Inflation	0.902	0.043	0.978
Interest rate	0.789	0.080	0.999
Growth	0.880	0.861	0.867
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

The results of the PP tests are reported in the below table, and they show clearly no fundamentally different from the respective ADF results. Analytically, the results from the tests on the levels of the variables point clearly to the presence of a unit root in all cases apart from the claims ratio, which appears to be integrated of order

zero. The results after first differencing the series robustly reject the null hypothesis of the presence of a unit root, suggesting therefore that the series are integrated of order one I(1).

Table 9. Kuwait PP Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.888	0.746	1.00
FDI	0.845	0.845	1.00
Inflation	0.937	0.326	0.991
Interest rate	0.743	0.059	0.999
Growth	0.843	0.811	0.845
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

4.2.1.2. Qatar

The results of ADF test for Qatar's variables indicate that each of the series is non-stationary when the variables are defined in levels. First differencing the series removes the non-stationary components in all cases and the null hypothesis of non-stationary is clearly rejected at the 5% significance level, suggesting that all our variables are integrated of order one, as we expected.

Table 10. Qatar ADF Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.872	0.986	0.969
FDI	0.700	0.670	0.856
Inflation	0.459	0.267	0.508
Interest rate	0.909	0.801	0.990
Growth	0.789	0.080	0.999
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

The results of the PP tests are reported in the below table, and they show clearly no fundamentally different from the respective ADF results. Analytically, the results from the tests on the levels of the variables point clearly to the presence of a unit root in all cases apart from the claims ratio, which appears to be integrated of order zero. The results after first differencing the series robustly reject the null hypothesis of the presence of a unit root, suggesting therefore that the series are integrated of order one I(1).

Table 11. Qatar PP Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.888	0.746	1.00
FDI	0.845	0.845	1.00
Inflation	0.937	0.326	0.991
Interest rate	0.743	0.059	0.999
Growth	0.843	0.811	0.845

"Table 11- *Continued*"

Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

4.2.1.3. Morocco

The results of ADF test for Morocco's variables indicate that each of the series is non-stationary when the variables are defined in levels. First differencing the series removes the non-stationary components in all cases and the null hypothesis of non-stationary is clearly rejected at the 5% significance level, suggesting that all our variables are integrated of order one, as we expected.

Table 12. Morocco ADF Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.872	0.986	0.969
FDI	0.544	0.168	0.294
Inflation	0.459	0.267	0.508
Interest rate	0.772	0.367	0.134
Growth	0.182	0.244	0.880
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

The results of the PP tests are reported in the below table, and they show clearly no fundamentally different from the respective ADF results. Analytically, the results from the tests on the levels of the variables point clearly to the presence of a unit root in all cases apart from the claims ratio, which appears to be integrated of order zero. The results after first differencing the series robustly reject the null hypothesis of the presence of a unit root, suggesting therefore that the series are integrated of order one I(1).

Table 13. Morocco PP Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.777	0.726	0.900
FDI	0.530	0.108	0.344
Inflation	0.452	0.270	0.598
Interest rate	0.762	0.377	0.234
Growth	0.194	0.204	0.800
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

4.2.1.4. Tunisia

The results of ADF test for Tunisia's variables indicate that each of the series is non-stationary when the variables are defined in levels. First differencing the series removes the non-stationary components in all cases and the null hypothesis of non-stationary is clearly rejected at the 5% significance level, suggesting that all our variables are integrated of order one, as we expected.

Table 14. Tunisia ADF Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.872	0.986	0.969
FDI	0.504	0.486	0.995
Inflation	0.978	0.493	0.950
Interest rate	0.500	0.260	0.697
Growth	0.287	0. 182	0.382
Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Δ Oil price	0.000	0.000	0.000
Δ FDI	0.000	0.000	0.000
Δ Inflation	0.000	0.000	0.000
Δ Interest rate	0.000	0.000	0.000
Δ Growth	0.000	0.000	0.000

The results of the PP tests are reported in the below table, and they show clearly no fundamentally different from the respective ADF results. Analytically, the results from the tests on the levels of the variables point clearly to the presence of a unit root in all cases apart from the claims ratio, which appears to be integrated of order zero. The results after first differencing the series robustly reject the null hypothesis of the presence of a unit root, suggesting therefore that the series are integrated of order one I (1).

Table 15. Tunisia PP Test Results

Unit-root tests at logarithmic levels			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
Oil price	0.777	0.726	0.900
FDI	0.604	0.596	0.991
Inflation	0.878	0.693	0.966
Interest rate	0.478	0.280	0.597
Growth	0.187	0. 152	0.212

"Table 15- *Continued*"

Unit-root tests at first differences			
Variables	**Constant (p-value)**	**Constant and Trend (p-value)**	**None (p-value)**
△ Oil price	0.000	0.000	0.000
△ FDI	0.000	0.000	0.000
△ Inflation	0.000	0.000	0.000
△ Interest rate	0.000	0.000	0.000
△ Growth	0.000	0.000	0.000

Final Result: The robustness allows us to treat the variables as I (1) and proceed with co-integration and VAR analysis.

4.2.2. Estimate GDP Growth Regression for Each Country and Check for Multicollinearity Problem

4.2.2.1. Estimate GDP Growth Regression

GDP growth t = α + β world oil price t + ϒ FDI t + ∂ inflation rate t + ʎ interest rate t + ut

- *Kuwait:*

The coefficients of Kuwait's variables are all positive and statistically significant as we expected. Testing the significance at 5% significance level, we can note that the computed t-statistics are all greater than 1.96; thus rejecting the null hypothesis. Also, by looking at the p-value that tests the variables' significance we can easily notice that all p-values are smaller than 0.05, which indicates that at 5% significance level, the null hypothesis that the above Kuwait variables are not significantly affecting GDP growth rate in Kuwait is rejected. Hence, we can say that in Kuwait FDI, inflation rate, interest rate, and mainly world oil price are great indicators to expect GDP growth rates due to the positive and statistically significant relation

between these variables and GDP growth rates.

Table 16. Kuwait GDP Growth Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL	1.569388	0.281944	5.566318	0.0000
FDI_KUWAIT	0.028548	0.014388	1.984117	0.0505
INFLATION_KUWAIT	0.495165	0.057412	8.624745	0.0000
INTEREST_KUWAIT	0.157533	0.026056	6.045814	0.0000
C	8.847096	0.097275	90.94968	0.0000

R-squared	0.989131	Mean dependent var	10.93979
Adjusted R-squared	0.988613	S.D. dependent var	0.387202
S.E. of regression	0.041318	Akaike info criterion	-3.480480
Sum squared resid	0.143405	Schwarz criterion	-3.340669
Log likelihood	159.8814	Hannan-Quinn criter.	-3.424126
F-statistic	1911.019	Durbin-Watson stat	0.515597
Prob(F-statistic)	0.000000		

However, in this project our focus is principally on the effects of world oil price on GDP growth rate. For that, we will focus on oil variable coefficient in this regression. Consequently, if world oil price increase by one unit, the Kuwaiti GDP growth rate will increases by 1.57 (>1), which in return enhances our previous assumption that increases in world oil price effectively affects and increases GDP growth rate in Kuwait.

- *Qatar*

The coefficients of Qatar's variables are all positive and statistically significant as we expected. Testing the significance of these variables at 5% significance level, we can note that the computed t-statistics are all greater than 1.96 except for FDI; thus indicating that we can reject the null hypothesis for all variables except FDI. Accordingly, the foreign direct investment in Qatar is not a significant indicator for GDP growth rate since its fiscal and monetary policies are preventing FDI from

enhancing economic growth or GDP growth rate. In normal cases, FDI promotes and improves efficiency and hence stimulates economic growth since FDI is the prime source of capital and technology to developing countries. However, the undertaken policies by the Qatari government made FDI to exert negative effect on economic growth since they don't want FDI to replace domestic savings rather than encouraging it.

Table 17. Kuwait GDP Growth Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-636.9193	8378.876	-0.076015	0.9403
OIL	173.8732	82.27520	2.113312	0.0506
INFLATION_QATAR	0.025777	0.010688	2.411861	0.0282
FDI_QATAR	13.83318	154.8555	0.089330	0.9299
INTEREST_QATAR	203.3219	76.10058	2.671753	0.0167

R-squared	0.952231	Mean dependent var	10236.57
Adjusted R-squared	0.940289	S.D. dependent var	4491.164
S.E. of regression	1097.451	Akaike info criterion	17.04362
Sum squared resid	19270377	Schwarz criterion	17.29232
Log likelihood	-173.9581	Hannan-Quinn criter.	17.09760
F-statistic	79.73702	Durbin-Watson stat	0.876981
Prob(F-statistic)	0.000000		

Also, by looking at the p-value that tests the variables' significance we can easily notice that all p-values are smaller than 0.05; except for FDI which indicates that at 5% significance level the null hypothesis that FDI in Qatar is not significantly affecting GDP growth rate in Qatar is accepted. On the other hand, the Qatari inflation rate, interest rate, and mainly world oil price are valuable indicators to expect GDP growth rates due to the positive and statistically significant relation between these variables and GDP growth rates.

Going back to our principal focus, if world oil price increase by one unit, the

Qatari GDP growth rate will increases by 173.87 (>1). This result is completely logical since it proves their economic reliance on oil exporting as the main source to cover governmental spending and to maintain high GDP rates. Hence, our previous assumption that increases in world oil price successfully affects and increases GDP growth rate in Qatar is valid.

- *Morocco*

The coefficients of FDI, inflation, and interest rate are positive; however, only inflation and interest rate are statistically significant. Testing the significance of these variables at 5% significance level, we can note that the computed t-statistics of inflation and interest rate are greater than 1.96 while FDI and world oil price are insignificant variables in determining GDP growth rate. Thus, indicating that interest and inflation rates are the only variables in this regression that could affect GDP growth rate. In addition, the foreign direct investment in Morocco is not a significant indicator for GDP growth rate since Morocco is not an attractive economy for foreign investment due to its political and socioeconomic situations.

Table 18. Morocco GDP Growth Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.864548	2.789844	1.026777	0.3144
OIL	-0.078190	0.235677	-0.331770	0.7428
FDI_MOROCCO	0.005674	0.189423	0.029952	0.9763
INFLATION_MOROCCO	0.886429	0.185497	4.778669	0.0001
INTEREST_MOROCCO	1.031012	0.190644	5.408039	0.0000

R-squared	0.889621	Mean dependent var	20.22200
Adjusted R-squared	0.871961	S.D. dependent var	7.495569
S.E. of regression	2.682106	Akaike info criterion	4.962094
Sum squared resid	179.8424	Schwarz criterion	5.195627
Log likelihood	-69.43141	Hannan-Quinn criter.	5.036803
F-statistic	50.37329	Durbin-Watson stat	1.059900
Prob(F-statistic)	0.000000		

Also, by looking at the p-value that tests the variables' significance we can easily notice that only interest and inflation rates' p-values are smaller than 0.05. However, FDI and world oil price aren't statistical significance which indicates that at 5% significance level the null hypothesis that the world oil price and FDI in Morocco are not significantly affecting GDP growth rate is accepted. Therefore, only the Moroccan inflation rate and interest rate are valuable indicators to expect GDP growth rates due to the positive and statistically significant relation between these two variables and GDP growth rates.

Going back to our principal focus, we figure out that world oil price is has a negative relation with Morocco's GDP growth rate, and it's not statistically significant. Thus, we cannot give accurate correlation between world oil price and Morocco's GDP growth rate since this relation is not statistically significant. Yet we can conclude that there is a negative relation between these two variables. This result is logical since it matches with Morocco's situation as an oil importer; i.e, Morocco is an oil importer country and as many other Arab importing countries increases in world oil prices will ultimately negatively affect its economic growth and GDP growth. This was obviously clear in the all oil crisis that we've mentioned previously. Thus, our previous assumption that increases in world oil price negatively affects GDP growth rate in Morocco is valid; yet the measurement of this negative affect isn't accurately significant.

- *Tunisia*

The coefficients of Tunisia variables are all positive and statistically significant except for Foreign Domestic Investment variable which is positive but not statistically significant. After testing the significance of these variables at 5% significance level, we can note that the computed t-statistics indicate that all t-values are greater than 1.96 except for FDI; thus indicating that we can reject the null hypothesis for all variables

except FDI. Accordingly, we can infer that foreign direct investment in Tunisia is not a significant indicator for GDP growth rate since Tunisia as well as Morocco is not an attractive economy for foreign investment due to its ruined political and socioeconomic situations.

Table 19. Morocco GDP Growth Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.799198	3.247925	3.017064	0.0058
OIL	18.06483	6.884334	2.624049	0.0146
FDI_TUNISIA	0.042516	0.087975	0.483271	0.6331
INFLATION_TUNISIA	1.035001	0.174229	5.940478	0.0000
INTEREST_TUNISIA	0.869856	0.180113	4.829502	0.0001

R-squared	0.913076	Mean dependent var	20.22200
Adjusted R-squared	0.899169	S.D. dependent var	7.495569
S.E. of regression	2.380140	Akaike info criterion	4.723207
Sum squared resid	141.6266	Schwarz criterion	4.956740
Log likelihood	-65.84811	Hannan-Quinn criter.	4.797917
F-statistic	65.65221	Durbin-Watson stat	1.176883
Prob(F-statistic)	0.000000		

Also, by looking at the p-value that tests the variables' significance we can easily notice that all p-values are smaller than 0.05; except for FDI which indicates that at 5% significance level the null hypothesis that FDI in Tunisia is not significantly affecting its GDP growth rate is accepted. On the other hand, the Tunisian inflation rate, interest rate, and mainly world oil price are valuable indicators to expect GDP growth rates due to the positive and statistically significant relation between these variables and GDP growth rates.

Going back to our principal focus, if world oil price increase by one unit, the Tunisian GDP growth rate will increase by 18.06 (>1). This result is completely logical since the Tunisian economy is not purely an oil importer; it produces crude oil, so when

world oil price increase the value of its crude oil also increases. Although Tunisia is an oil importing country, it exports crude oil that participates in its GDP growth. Hence, our previous assumption that increases in world oil price positively affects GDP growth rate in Tunisia is valid.

4.2.2.2. Multicollinearity and VIFs Test

Multicollinearity occurs when two or more predictors in the model are correlated and provide redundant information about the response. When perfect or imperfect multicollinearity exists among two or more explanatory variables, the consequences will ultimately be: imprecise OLS coefficients due to large standard errors, low t-statistic affecting the statistic significance of a variable, and finally the signs of the estimated coefficients can be opposite to what they should be. For that, it is important to check whether we have this problem or not in order to solve it before starting our advanced analysis.

4.2.2.3. Correlation Matrix

- *Kuwait*

The results are, of course, symmetrical, while the diagonal elements are equal to 1 because they are correlation coefficient of the same series. We can see that world oil price and FDI_Kuwait variables are positively correlated since their correlation coefficient is equal to 0.685. As well, Rate2_Kuwait(interest rate) and FDI_Kuwait are somehow correlated since their correlation coefficient is equal to 0.598. From this we suspect that there is possibility of having negative effects of multicollinearity due to the correlation between world oil price and FDI_Kuwait and the correlation between Rate2_Kuwait(interest rate) and FDI_Kuwait. However, to be sure whether we have a

serious multicolllinearity problem we have to check the VIFs.

Table 20. Kuwait Correlation

Correlation					
	GROWTH_K...	OIL	FDI_KUWAIT	INFLATION_...	RATE2_KU...
GROWTH_K...	1.000000	-0.173350	-0.027566	-0.438982	-0.064693
OIL	-0.173350	1.000000	0.684965	0.491627	-0.598206
FDI_KUWAIT	-0.027566	0.684965	1.000000	0.181002	-0.519734
INFLATION_...	-0.438982	0.491627	0.181002	1.000000	0.048845
RATE2_KU...	-0.064693	-0.598206	-0.519734	0.048845	1.000000

- *Qatar*

The results are, of course, symmetrical, while the diagonal elements are equal to 1 because they are correlation coefficient of the same series. We can see that Growth_Qatar and FDI_Qatar variables are positively correlated since their correlation coefficient is equal to 0.731. As well, Rate2_Qatar(interest rate) and world oil price are correlated since their correlation coefficient is equal to 0.815. From this we suspect that there is possibility of having negative effects of multicollinearity due to the correlation between Growth_Qatar and FDI_Qatar and the correlation between Rate2_Qatar(interest rate) and world oil price. However, to be sure whether we have a serious multicolllinearity problem we have to check the VIFs.

Table 21. Qatar Correlation

Correlation					
	GROWTH_Q...	OIL	FDI_QATAR	INFLATION_...	RATE2_QAT...
GROWTH_Q...	1.000000	0.591747	0.731600	0.330856	-0.468169
OIL	0.591747	1.000000	0.625066	0.332384	-0.815829
FDI_QATAR	0.731600	0.625066	1.000000	0.123002	-0.482824
INFLATION_...	0.330856	0.332384	0.123002	1.000000	-0.217947
RATE2_QAT...	-0.468169	-0.815829	-0.482824	-0.217947	1.000000

- *Morocco*

The results are, of course, symmetrical, while the diagonal elements are equal to 1 because they are correlation coefficient of the same series. We can see that world oil price and FDI_Morocco variables are positively correlated since their correlation coefficient is equal to 0.845. As well, Rate2_ Morocco(interest rate) and FDI_Morocco are correlated since their correlation coefficient is equal to -0.753. From this we suspect that there is possibility of having negative effects of multicollinearity due to the correlation between world oil price and FDI_Kuwait and the correlation between Rate2_Kuwait(interest rate) and FDI_Kuwait. However, to be sure whether we have a serious multicolllinearity problem we have to check the VIFs.

Table 22. Morocco Correlation

Correlation					
	GROWTH_M...	OIL	FDI_MORO...	INFLATION_...	RATE2_MO...
GROWTH_M...	1.000000	0.070922	0.026247	-0.168289	-0.126126
OIL	0.070922	1.000000	0.845885	-0.343473	-0.744672
FDI_MORO...	0.026247	0.845885	1.000000	-0.285540	-0.753829
INFLATION_...	-0.168289	-0.343473	-0.285540	1.000000	0.618270
RATE2_MO...	-0.126126	-0.744672	-0.753829	0.618270	1.000000

- *Tunisia*

The results are, of course, symmetrical, while the diagonal elements are equal to 1 because they are correlation coefficient of the same series. We can see that inflation_Tunisia and FDI_Tunisia variables are negatively correlated since their correlation coefficient is equal to -0.832. As well, Rate2_Tunisia(interest rate) and inflation_Tunisia are correlated since their correlation coefficient is equal to -0.758.

From this we suspect that there is possibility of having negative effects of multicollinearity due to the correlation between inflation_Tunisia and FDI_Tunisia and the correlation between Rate2_Tunisia(interest rate) and inflation_Tunisia. However, to be sure whether we have a serious multicolllinearity problem we have to check the VIFs.

Table 23. Tunisia Correlation

Correlation					
	GROWTH_T...	OIL	FDI_TUNISIA	INFLATION_...	RATE2_TUN...
GROWTH_T...	1.000000	0.062692	0.085475	0.004135	-0.178750
OIL	0.062692	1.000000	0.524227	-0.452865	0.443409
FDI_TUNISIA	0.085475	0.524227	1.000000	-0.832046	0.590306
INFLATION_...	0.004135	-0.452865	-0.832046	1.000000	-0.758207
RATE2_TUN...	-0.178750	0.443409	0.590306	-0.758207	1.000000

4.2.2.4. VIFs Test

To calculate the variance inflation factors for each predictor xj, we have to use the following formula of VIFj:

$$VIF_j = \frac{1}{1 - R_j^2},$$

Where R^2 is the coefficient of determination of the model that includes all predictors except the *j*th predictor.

However, there is no need for all this calculation since EViews does all this calculation for us. After calculating the VIFs on EViews as shown above, we have to look at the VIF centered:

- If VIFj ≥ 10 then there is a problem of multicollinearity.

However, in our data here all the values of VIF centered are below 10;

Table 24. Kuwait VIF Test

Variable	**Centered VIF**
Oil price	1.364890
FDI	1.890442
Inflation	1.901847
Interest rate	1.895438

Table 25. Qatar VIF Test

Variable	**Centered VIF**
Oil price	4.36840
FDI	2.86442
Inflation	1.57387
Interest rate	6.89257

Table 26. Morocco VIF Test

Variable	**Centered VIF**
Oil price	9.009389
FDI	5.892367
Inflation	7.726926
Interest	5.009488

Table 27. Tunisia VIF Test

Variable	**Centered VIF**
Oil price	3.378239
FDI	7.889202
Inflation	6.296783
Interest rate	6.208

Final Result: There is no significant evidence to prove the existence of problematic multicollinearity (no multicollinearity in this model).

4.2.3. Vector Autoregressive Model (VAR) and Causality

We've already explained the importance of using the VAR model approach; however, it's good to re-mention some of the advantages of this approach. First, it is very simple and easy going model. Second, the research while using this model shouldn't worry much about which variable is endogenous or exogenous. Third, its estimation is very straightforward and uncomplicated in the sense that every equation can be estimated independently using OLS techniques. Finally, estimates attained from VAR models are in majority of cases better than those attained from more advanced and complex coincident equation models.

The Johansen method is known to be sensitive to the lag length and therefore we estimate the VAR system through comprising the monetization ratio. For that, we calculate the AIC and SBC to determine the appropriate lag length for the co-integration test.

4.2.3.1. Kuwait

Both AIC and SBC criteria designate that the optimal lag length is two. So primarily, we test for co-integration using only two lags in the VAR system.

Table 28. Kuwait VAR Test

Vector Autoregression Estimates

Vector Autoregression Estimates
Date: 08/04/14 Time: 11:59
Sample (adjusted): 1989 2011
Included observations: 23 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	OIL	FDI_KUWAIT	INFLATION_...	RATE2_KU...
OIL(-1)	0.416125	8288768.	-0.086032	-0.044029
	(0.34010)	(1.1E+07)	(0.07194)	(0.03329)
	[1.22354]	[0.76727]	[-1.19595]	[-1.32247]
OIL(-2)	0.456210	-6602629.	0.178010	0.012071
	(0.35773)	(1.1E+07)	(0.07567)	(0.03502)
	[1.27528]	[-0.58106]	[2.35259]	[0.34469]
FDI_KUWAIT(-1)	1.67E-08	0.992038	1.04E-09	1.68E-10
	(1.3E-08)	(0.40465)	(2.7E-09)	(1.2E-09)
	[1.31184]	[2.45160]	[0.38445]	[0.13481]
FDI_KUWAIT(-2)	9.85E-09	1.253937	2.88E-10	4.56E-10
	(1.6E-08)	(0.50290)	(3.3E-09)	(1.5E-09)
	[0.62194]	[2.49340]	[0.08609]	[0.29417]
INFLATION_KUWAIT(-1)	0.135042	22943478	0.456548	0.123725
	(1.01048)	(3.2E+07)	(0.21373)	(0.09892)
	[0.13364]	[0.71482]	[2.13610]	[1.25079]
INFLATION_KUWAIT(-2)	-1.026191	11993384	-0.722101	-0.016132
	(0.97323)	(3.1E+07)	(0.20585)	(0.09527)
	[-1.05442]	[0.38796]	[-3.50787]	[-0.16933]
RATE2_KUWAIT(-1)	3.225184	-1.20E+08	2.233867	1.134718
	(2.57791)	(8.2E+07)	(0.54527)	(0.25236)
	[1.25108]	[-1.46451]	[4.09685]	[4.49648]
RATE2_KUWAIT(-2)	-7.093499	86924859	-1.830195	-0.566102
	(2.84282)	(9.0E+07)	(0.60130)	(0.27829)
	[-2.49523]	[0.96263]	[-3.04374]	[-2.03422]
INFLATION_KUWAIT(-1)	0.135042	22943478	0.456548	0.123725
	(1.01048)	(3.2E+07)	(0.21373)	(0.09892)
	[0.13364]	[0.71482]	[2.13610]	[1.25079]
INFLATION_KUWAIT(-2)	-1.026191	11993384	-0.722101	-0.016132
	(0.97323)	(3.1E+07)	(0.20585)	(0.09527)
	[-1.05442]	[0.38796]	[-3.50787]	[-0.16933]
RATE2_KUWAIT(-1)	3.225184	-1.20E+08	2.233867	1.134718
	(2.57791)	(8.2E+07)	(0.54527)	(0.25236)
	[1.25108]	[-1.46451]	[4.09685]	[4.49648]
RATE2_KUWAIT(-2)	-7.093499	86924859	-1.830195	-0.566102
	(2.84282)	(9.0E+07)	(0.60130)	(0.27829)
	[-2.49523]	[0.96263]	[-3.04374]	[-2.03422]
C	30.61853	5856418.	-0.582217	2.930597
	(13.0963)	(4.2E+08)	(2.77006)	(1.28203)
	[2.33795]	[0.01408]	[-0.21018]	[2.28591]
R-squared	0.929119	0.890898	0.715894	0.833594
Adj. R-squared	0.888615	0.828554	0.553547	0.738505
Sum sq. resids	1288.905	1.30E+18	57.66338	12.35140
S.E. equation	9.595032	3.05E+08	2.029486	0.939278
F-statistic	22.93912	14.29008	4.409664	8.766455
Log likelihood	-78.93521	-476.2337	-43.20556	-25.48575
Akaike AIC	7.646540	42.19424	4.539614	2.998761
Schwarz SC	8.090864	42.63856	4.983938	3.443084
Mean dependent	38.63435	2.86E+08	3.397349	5.118484
S.D. dependent	28.74967	7.36E+08	3.037374	1.836802
Determinant resid covariance (dof adj.)		1.94E+19		
Determinant resid covariance		2.66E+18		
Log likelihood		-618.4171		
Akaike information criterion		56.90583		
Schwarz criterion		58.68313		

- *Granger Causality Tests for VAR model:*

The below results report the null hypothesis, these F-statistics and probability limit values are for all potential pairs of variables. From the probability limit values presented below, we can infer that at 10% significance level, null hypothesis can be rejected, concluding that world oil price granger causes effects on GDP growth. To add,

this result matches and confirms with the results that we obtained from estimating our regression for Kuwait since also after estimating the regression we obtained that there is a positively and statistically significant relation between GDP growth rate and all other variables.

Table 29. Kuwait Granger Causality Test

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 08/04/14 Time: 12:02
Sample: 1987 2011
Included observations: 23

Dependent variable: OIL

Excluded	Chi-sq	df	Prob.
FDI_KUWAIT	8.118477	2	0.0173
INFLATION_...	1.123831	2	0.5701
RATE2_KU...	6.734702	2	0.0345
All	21.88679	6	0.0013

Dependent variable: FDI_KUWAIT

Excluded	Chi-sq	df	Prob.
OIL	0.634862	2	0.7280
INFLATION_...	0.831178	2	0.6600
RATE2_KU...	2.154171	2	0.3406
All	6.374953	6	0.3825

Dependent variable: INFLATION_KUWAIT

Excluded	Chi-sq	df	Prob.
OIL	9.243714	2	0.0098
FDI_KUWAIT	0.497895	2	0.7796
RATE2_KU...	16.83395	2	0.0002
All	23.28165	6	0.0007

Pairwise Granger Causality Tests
Date: 09/03/14 Time: 13:12
Sample: 1987 2011
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause GROWTH_KUWAIT	23	1.17174	0.3324
GROWTH_KUWAIT does not Granger Cause OIL		4.06826	0.0349
FDI_KUWAIT does not Granger Cause GROWTH_KUWAIT	23	1.22256	0.3178
GROWTH_KUWAIT does not Granger Cause FDI_KUWAIT		0.09765	0.9074
INFLATION_KUWAIT does not Granger Cause GROWTH_KUWAIT	23	0.68534	0.5166
GROWTH_KUWAIT does not Granger Cause INFLATION_KUWAIT		1.40949	0.2700
RATE1_KUWAIT does not Granger Cause GROWTH_KUWAIT	18	0.68406	0.5218
GROWTH_KUWAIT does not Granger Cause RATE1_KUWAIT		0.20851	0.8145
FDI_KUWAIT does not Granger Cause OIL	23	3.54268	0.0504
OIL does not Granger Cause FDI_KUWAIT		1.97822	0.1673
INFLATION_KUWAIT does not Granger Cause OIL	23	1.61906	0.2256
OIL does not Granger Cause INFLATION_KUWAIT		1.84547	0.1866
RATE1_KUWAIT does not Granger Cause OIL	18	0.83109	0.4574
OIL does not Granger Cause RATE1_KUWAIT		0.87182	0.4413
INFLATION_KUWAIT does not Granger Cause FDI_KUWAIT	23	1.36218	0.2813
FDI_KUWAIT does not Granger Cause INFLATION_KUWAIT		0.56634	0.5774
RATE1_KUWAIT does not Granger Cause FDI_KUWAIT	18	0.58793	0.5696
FDI_KUWAIT does not Granger Cause RATE1_KUWAIT		1.40118	0.2811
RATE1_KUWAIT does not Granger Cause INFLATION_KUWAIT	18	0.29104	0.7522
INFLATION_KUWAIT does not Granger Cause RATE1_KUWAIT		0.17677	0.8399

4.2.3.2. Qatar

Also in Qatar's case both the AIC and SBC criteria designate that the optimal lag length is two. So primarily, we test for co-integration using only two lags in the VAR system.

Table 30. Qatar VAR Test

Vector Autoregression Estimates
Date: 08/04/14 Time: 12:12
Sample (adjusted): 1989 2011
Included observations: 23 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GROWTH_Q...	OIL	FDI_QATAR	INFLATION_...	RATE2_QAT...
GROWTH_QATAR(-1)	0.051749	0.678501	12160167	0.249727	-0.101229
	(0.20101)	(0.35646)	(3.9E+07)	(0.11930)	(0.04602)
	[0.25744]	[1.90342]	[0.30826]	[2.09322]	[-2.19950]
GROWTH_QATAR(-2)	0.710054	0.499670	44742851	0.256640	0.020666
	(0.24656)	(0.43724)	(4.8E+07)	(0.14634)	(0.05645)
	[2.87987]	[1.14279]	[0.92470]	[1.75377]	[0.36607]
OIL(-1)	0.545600	0.030290	78634966	-0.183186	0.078128
	(0.19072)	(0.33822)	(3.7E+07)	(0.11320)	(0.04367)
	[2.86075]	[0.08956]	[2.10095]	[-1.61832]	[1.78916]
OIL(-2)	-0.278000	-0.914240	52165004	-0.349435	-0.061691
	(0.23082)	(0.40934)	(4.5E+07)	(0.13700)	(0.05285)
	[-1.20438]	[-2.23347]	[1.15158]	[-2.55065]	[-1.16728]
FDI_QATAR(-1)	3.83E-09	1.65E-08	-0.604645	4.90E-09	-7.98E-11
	(2.5E-09)	(4.5E-09)	(0.49361)	(1.5E-09)	(5.8E-10)
	[1.52127]	[3.69124]	[-1.22494]	[3.27926]	[-0.13865]
FDI_QATAR(-2)	-6.70E-09	3.79E-09	-0.530157	-5.10E-10	-3.66E-10
	(1.8E-09)	(3.3E-09)	(0.36078)	(1.1E-09)	(4.2E-10)
	[-3.64669]	[1.16259]	[-1.46945]	[-0.46776]	[-0.86841]
INFLATION_QATAR(-1)	-0.669454	1.128956	-32546412	0.963465	-0.090207
	(0.43550)	(0.77231)	(8.5E+07)	(0.25848)	(0.09971)
	[-1.53719]	[1.46179]	[-0.38081]	[3.72744]	[-0.90466]
INFLATION_QATAR(-2)	-0.236988	-1.364637	1.80E+08	-0.591116	0.077205
	(0.60677)	(1.07602)	(1.2E+08)	(0.36013)	(0.13893)
INFLATION_QATAR(-1)	-0.669454	1.128956	-32546412	0.963465	-0.090207
	(0.43550)	(0.77231)	(8.5E+07)	(0.25848)	(0.09971)
	[-1.53719]	[1.46179]	[-0.38081]	[3.72744]	[-0.90466]
INFLATION_QATAR(-2)	-0.236988	-1.364637	1.80E+08	-0.591116	0.077205
	(0.60677)	(1.07602)	(1.2E+08)	(0.36013)	(0.13893)
	[-0.39058]	[-1.26822]	[1.50760]	[-1.64141]	[0.55573]
RATE2_QATAR(-1)	-1.174861	-1.751264	-31345464	0.509163	0.901529
	(1.07442)	(1.90535)	(2.1E+08)	(0.63769)	(0.24600)
	[-1.09348]	[-0.91913]	[-0.14866]	[0.79845]	[3.66471]
RATE2_QATAR(-2)	2.614775	2.584514	-99320944	-0.750068	-0.580640
	(1.15141)	(2.04187)	(2.3E+08)	(0.68338)	(0.26363)
	[2.27094]	[1.26576]	[-0.43955]	[-1.09759]	[-2.20249]
C	-9.543880	28.72115	-1.77E+09	12.06934	3.842966
	(7.36918)	(13.0683)	(1.4E+09)	(4.37373)	(1.68727)
	[-1.29511]	[2.19778]	[-1.22728]	[2.75951]	[2.27763]
R-squared	0.901218	0.974219	0.943495	0.895592	0.846601
Adj. R-squared	0.818899	0.952734	0.896408	0.808586	0.718768
Sum sq. resids	149.0717	468.8067	5.74E+18	52.51234	7.814916
S.E. equation	3.524577	6.250378	6.92E+08	2.091896	0.806996
F-statistic	10.94790	45.34531	20.03713	10.29342	6.622729
Log likelihood	-54.12832	-67.30459	-493.3108	-42.12946	-20.22180
Akaike AIC	5.663332	6.809095	43.85311	4.619953	2.714939
Schwarz SC	6.206395	7.352158	44.39617	5.163015	3.258001
Mean dependent	6.457290	38.63435	1.38E+09	3.850755	5.083973
S.D. dependent	8.282212	28.74967	2.15E+09	4.781380	1.521736
Determinant resid covariance (dof adj.)		7.11E+19			
Determinant resid covariance		2.75E+18			
Log likelihood		-651.4488			
Akaike information criterion		61.43033			
Schwarz criterion		64.14565			

- *Granger Causality Tests for VAR model:*

The below results report the null hypothesis, these F-statistics and probability limit values are for all potential pairs of variables. From the probability limit values presented below, we can infer that at 10% significance level, all the null hypothesis can be rejected. Concluding that the following variables are granger causing effects on GDP growth.. To add, this result matches and confirms with the results that we obtained after estimating the Qatari regression since we obtained previously that there is a positively and statistically significant relation between GDP growth rate and the other variables.

Table 31. Qatar Granger Causality Test

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 08/04/14 Time: 12:13
Sample: 1987 2011
Included observations: 23

Dependent variable: GROWTH_QATAR

Excluded	Chi-sq	df	Prob.
OIL	8.185157	2	0.0167
FDI_QATAR	13.63567	2	0.0011
INFLATION_...	6.385212	2	0.0411
RATE2_QAT...	5.205288	2	0.0741
All	34.27035	8	0.0000

Dependent variable: OIL

Excluded	Chi-sq	df	Prob.
GROWTH_Q...	4.188379	2	0.1232
FDI_QATAR	28.24906	2	0.0000
INFLATION_...	2.265324	2	0.3222
RATE2_QAT...	1.665609	2	0.4348
All	72.56973	8	0.0000

Dependent variable: FDI_QATAR

Excluded	Chi-sq	df	Prob.
GROWTH_Q...	0.867723	2	0.6480
OIL	9.279950	2	0.0097
INFLATION_...	3.103588	2	0.2119
RATE2_QAT...	0.421565	2	0.8100
All	90.93919	8	0.0000

Dependent variable: INFLATION_QATAR

Excluded	Chi-sq	df	Prob.
GROWTH_Q...	6.165886	2	0.0458
OIL	15.02926	2	0.0005
FDI_QATAR	13.31454	2	0.0013
RATE2_QAT...	1.253181	2	0.5344
All	67.94827	8	0.0000

Dependent variable: RATE2_QATAR

Excluded	Chi-sq	df	Prob.
GROWTH_Q...	5.573906	2	0.0616
OIL	3.427754	2	0.1802
FDI_QATAR	1.299020	2	0.5223
INFLATION_...	0.827385	2	0.6612
All	21.35670	8	0.0063

"Table 31- *Continued*"

Pairwise Granger Causality Tests
Date: 09/03/14 Time: 12:59
Sample: 1987 2011
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause GROWTH_QATAR	23	1.06963	0.3640
GROWTH_QATAR does not Granger Cause OIL		3.63160	0.0473
FDI_QATAR does not Granger Cause GROWTH_QATAR	23	5.72063	0.0119
GROWTH_QATAR does not Granger Cause FDI_QATAR		4.32353	0.0293
INFLATION_QATAR does not Granger Cause GROWTH_QATAR	23	0.22993	0.7969
GROWTH_QATAR does not Granger Cause INFLATION_QATAR		2.59635	0.1022
RATE1_QATAR does not Granger Cause GROWTH_QATAR	6	14.3461	0.1835
GROWTH_QATAR does not Granger Cause RATE1_QATAR		2.96073	0.3801
FDI_QATAR does not Granger Cause OIL	23	13.4636	0.0003
OIL does not Granger Cause FDI_QATAR		48.8310	5.E-08
INFLATION_QATAR does not Granger Cause OIL	23	4.06826	0.0349
OIL does not Granger Cause INFLATION_QATAR		1.17174	0.3324
RATE1_QATAR does not Granger Cause OIL	6	1.25861	0.5332
OIL does not Granger Cause RATE1_QATAR		1.10453	0.5582
INFLATION_QATAR does not Granger Cause FDI_QATAR	23	18.8537	4.E-05
FDI_QATAR does not Granger Cause INFLATION_QATAR		15.0737	0.0001
RATE1_QATAR does not Granger Cause FDI_QATAR	6	4.32479	0.3219
FDI_QATAR does not Granger Cause RATE1_QATAR		0.64446	0.6610
RATE1_QATAR does not Granger Cause INFLATION_QATAR	6	0.39793	0.7462
INFLATION_QATAR does not Granger Cause RATE1_QATAR		0.37536	0.7558

4.2.3.3. Morocco

As well, the Moroccan case designate that both AIC and SBC criteria shows that the optimal lag length is two. So primarily, we test for co-integration using only two lags in the VAR system.

Table 32. Morocco VAR Test

Vector Autoregression Estimates

Vector Autoregression Estimates
Date: 08/04/14 Time: 12:22
Sample (adjusted): 1989 2011
Included observations: 23 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GROWTH_M...	OIL	FDI_MORO...	INFLATION_...	RATE2_MO...
GROWTH_MOROCCO(-1)	-1.092303	-0.444488	-34621537	-0.143365	0.041068
	(0.24988)	(1.22119)	(4.7E+07)	(0.13765)	(0.03118)
	[-4.37138]	[-0.36398]	[-0.73159]	[-1.04149]	[1.31707]
GROWTH_MOROCCO(-2)	-0.436870	-0.511201	-41682354	-0.160902	0.046583
	(0.23235)	(1.13552)	(4.4E+07)	(0.12800)	(0.02899)
	[-1.88025]	[-0.45019]	[-0.94724]	[-1.25707]	[1.60665]
OIL(-1)	-0.029544	0.529522	12004590	-0.041820	0.004194
	(0.08289)	(0.40511)	(1.6E+07)	(0.04566)	(0.01034)
	[-0.35641]	[1.30735]	[0.76467]	[-0.91580]	[0.40542]
OIL(-2)	-0.062854	0.168593	-4182539.	0.010514	-0.008274
	(0.07287)	(0.35611)	(1.4E+07)	(0.04014)	(0.00909)
	[-0.86259]	[0.47343]	[-0.30308]	[0.26442]	[-0.90999]
FDI_MOROCCO(-1)	4.28E-10	1.21E-09	0.079796	1.25E-09	7.40E-11
	(1.5E-09)	(7.2E-09)	(0.27964)	(8.1E-10)	(1.8E-10)
	[0.28999]	[0.16823]	[0.28536]	[1.54075]	[0.40139]
FDI_MOROCCO(-2)	7.85E-10	4.21E-09	-0.156611	-8.54E-10	1.22E-10
	(1.7E-09)	(8.2E-09)	(0.31656)	(9.2E-10)	(2.1E-10)
	[0.46960]	[0.51528]	[-0.49473]	[-0.92726]	[0.58310]
INFLATION_MOROCCO...	-0.995666	-1.612688	1.23E+08	0.437595	0.071978
	(0.44658)	(2.18253)	(8.5E+07)	(0.24602)	(0.05573)
	[-2.22952]	[-0.73891]	[1.45148]	[1.77871]	[1.29160]
INFLATION_MOROCCO...	-0.403748	-0.092869	-1.26E+08	-0.506943	0.101180
	(0.64695)	(3.16175)	(1.2E+08)	(0.35640)	(0.08073)
	[-0.62408]	[-0.02937]	[-1.02515]	[-1.42241]	[1.25329]
RATE2_MOROCCO(-1)	2.635041	-0.657331	4.94E+08	3.288198	1.062761
	(2.20429)	(10.7727)	(4.2E+08)	(1.21432)	(0.27507)
	[1.19541]	[-0.06102]	[1.18238]	[2.70786]	[3.86364]
RATE2_MOROCCO(-2)	-3.173700	-1.844715	-8.49E+08	-2.951495	-0.122175
	(2.33550)	(11.4140)	(4.4E+08)	(1.28660)	(0.29144)
	[-1.35889]	[-0.16162]	[-1.91931]	[-2.29402]	[-0.41921]
C	19.97754	35.71981	3.39E+09	3.668083	-0.718400
	(6.33621)	(30.9661)	(1.2E+09)	(3.49054)	(0.79068)
	[3.15293]	[1.15351]	[2.82313]	[1.05086]	[-0.90859]
R-squared	0.754183	0.951671	0.831780	0.697431	0.984943
Adj. R-squared	0.549336	0.746397	0.691596	0.445290	0.972396
Sum sq. resids	105.3142	2515.365	3.78E+18	31.96056	1.639938
S.E. equation	2.962462	14.47804	5.61E+08	1.631987	0.369578
F-statistic	3.681688	7.474983	5.933509	2.766036	78.49876
Log likelihood	-50.13230	-86.62440	-488.4965	-36.41918	-2.265975
Akaike AIC	5.315853	8.489078	43.43448	4.123407	1.153563
Schwarz SC	5.858915	9.032140	43.97754	4.666470	1.696626
Mean dependent	3.762381	38.63435	9.13E+08	2.981427	6.013333
S.D. dependent	4.412924	28.74967	1.01E+09	2.191208	2.225039

Determinant resid covariance (dof adj.)	5.18E+19
Determinant resid covariance	2.00E+18
Log likelihood	-647.8054
Akaike information criterion	61.11351
Schwarz criterion	63.82882

- *Granger Causality Tests for VAR model:*

The below results report the null hypothesis, these F-statistics and probability limit values are for all potential pairs of variables. From the probability limit values presented below, we can infer that at 10% significance level, null hypothesis can be rejected, except for world oil price and FDI variable. Concluding that the following

variables (inflation rate and interest rate) are granger causing effects on GDP growth; however, FDI doesn't granger causes effects on GDP growth rate. To add, this result matches and confirms with the results that we obtained after estimating the Moroccan regression since we obtained previously that there is a negatively and non-statistically significant relation between GDP growth rate and world oil price this is verified using the granger causality test. Thus, we cannot give accurate correlation between world oil price and Morocco's GDP growth rate since this relation is not statistically significant. Yet we can conclude that there is a negative relation between these two variables. This result is logical since it matches with Morocco's situation as an oil importer; i.e, Morocco is an oil importer country and as many other Arab importing countries increases in world oil prices will ultimately affect its economic growth and GDP growth and this was obviously clear in the all oil crisis that we've mentioned previously.

Table 33. Morocco Granger Causality Test

Pairwise Granger Causality Tests
Date: 08/04/14 Time: 12:23
Sample: 1987 2011
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause GROWTH_MOROCCO	23	0.72299	0.4989
GROWTH_MOROCCO does not Granger Cause OIL		0.01734	0.9828
FDI_MOROCCO does not Granger Cause GROWTH_MOROCCO	23	0.71651	0.5019
GROWTH_MOROCCO does not Granger Cause FDI_MOROCCO		0.43814	0.6519
INFLATION_MOROCCO does not Granger Cause GROWTH_MOROCCO	23	7.28117	0.0048
GROWTH_MOROCCO does not Granger Cause INFLATION_MOROCCO		0.02702	0.9734
RATE2_MOROCCO does not Granger Cause GROWTH_MOROCCO	23	3.21606	0.0639
GROWTH_MOROCCO does not Granger Cause RATE2_MOROCCO		0.25457	0.7780
FDI_MOROCCO does not Granger Cause OIL	23	0.27858	0.7601
OIL does not Granger Cause FDI_MOROCCO		2.54762	0.1061
INFLATION_MOROCCO does not Granger Cause OIL	23	1.43728	0.2636
OIL does not Granger Cause INFLATION_MOROCCO		0.43856	0.6517
RATE2_MOROCCO does not Granger Cause OIL	23	1.83694	0.1879
OIL does not Granger Cause RATE2_MOROCCO		0.25411	0.7783
INFLATION_MOROCCO does not Granger Cause FDI_MOROCCO	23	2.59988	0.1019
FDI_MOROCCO does not Granger Cause INFLATION_MOROCCO		0.60975	0.5543
RATE2_MOROCCO does not Granger Cause FDI_MOROCCO	23	6.16177	0.0092
FDI_MOROCCO does not Granger Cause RATE2_MOROCCO		1.21591	0.3194
RATE2_MOROCCO does not Granger Cause INFLATION_MOROCCO	23	2.62479	0.0999
INFLATION_MOROCCO does not Granger Cause RATE2_MOROCCO		2.73373	0.0919

4.2.3.4. Tunisia

As well, the Tunisian case designate that both AIC and SBC criteria shows that the optimal lag length is two. So primarily, we test for co-integration using only two lags in the VAR system.

Table 34. Tunisia VAR Test

Vector Autoregression Estimates

Vector Autoregression Estimates
Date: 08/04/14 Time: 12:26
Sample (adjusted): 1989 2005
Included observations: 13 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GROWTH_T...	OIL	FDI_TUNISIA	INFLATION_...	RATE2_TUN...
GROWTH_TUNISIA(-1)	-0.664765 (0.44269) [-1.50165]	0.641684 (0.98801) [0.64947]	-18824954 (9555372) [-1.97009]	-0.584936 (0.17244) [-3.39214]	0.233382 (0.78398) [0.29769]
GROWTH_TUNISIA(-2)	1.184153 (1.36167) [0.86963]	-3.915411 (3.03901) [-1.28838]	-33818799 (2.9E+07) [-1.15064]	2.196599 (0.53040) [4.14138]	-2.464483 (2.41145) [-1.02199]
OIL(-1)	-0.640143 (0.70129) [-0.91281]	2.988477 (1.56515) [1.90938]	19921895 (1.5E+07) [1.31609]	-1.131864 (0.27317) [-4.14346]	1.168734 (1.24195) [0.94105]
OIL(-2)	0.813742 (0.63998) [1.27152]	-0.493618 (1.42832) [-0.34559]	-1017056. (1.4E+07) [-0.07363]	1.015740 (0.24929) [4.07459]	-1.367388 (1.13337) [-1.20648]
FDI_TUNISIA(-1)	1.25E-08 (2.0E-08) [0.62948]	-3.03E-08 (4.4E-08) [-0.68693]	-1.375724 (0.42730) [-3.21957]	3.17E-08 (7.7E-09) [4.11555]	-9.87E-09 (3.5E-08) [-0.28155]
FDI_TUNISIA(-2)	1.80E-09 (7.3E-09) [0.24804]	2.12E-09 (1.6E-08) [0.13095]	-0.419758 (0.15655) [-2.68135]	1.12E-08 (2.8E-09) [3.95226]	8.48E-09 (1.3E-08) [0.66042]
INFLATION_TUNISIA(-1)	3.932625 (4.40168) [0.89344]	-8.141861 (9.82377) [-0.82879]	-1.61E+08 (9.5E+07) [-1.69109]	7.488482 (1.71456) [4.36759]	-7.457715 (7.79516) [-0.95671]
INFLATION_TUNISIA(-2)	-0.985989 (0.90556) [-1.08882]	-1.842900 (2.02105) [-0.91185]	-1.78E+08 (2.0E+07) [-9.10493]	0.409815 (0.35274) [1.16181]	2.117499 (1.60370) [1.32038]
RATE2_TUNISIA(-1)	0.513815 (0.84041) [0.61139]	-2.710623 (1.87564) [-1.44517]	-20558793 (1.8E+07) [-1.13334]	1.337273 (0.32736) [4.08504]	-1.491718 (1.48832) [-1.00228]
RATE2_TUNISIA(-2)	-0.448530 (0.35045) [-1.27986]	-1.820859 (0.78215) [-2.32802]	-12622427 (7564425) [-1.66866]	-0.398808 (0.13651) [-2.92147]	0.100252 (0.62063) [0.16153]
C	-17.46740 (34.6665) [-0.50387]	74.92527 (77.3694) [0.96841]	2.71E+09 (7.5E+08) [3.62566]	-56.47294 (13.5034) [-4.18212]	54.51343 (61.3926) [0.88795]
R-squared	0.856770	0.983371	0.997257	0.986672	0.934908
Adj. R-squared	0.140620	0.900223	0.983540	0.920031	0.609451
Sum sq. resids	4.675980	23.29123	2.18E+15	0.709481	14.66513
S.E. equation	1.529049	3.412567	33004143	0.595601	2.707871
F-statistic	1.196355	11.82687	72.70264	14.80587	2.872597
Log likelihood	-11.79988	-22.23653	-231.3374	0.456914	-19.22960
Akaike AIC	3.507674	5.113312	37.28267	1.622013	4.650708
Schwarz SC	3.985708	5.591346	37.76070	2.100047	5.128742
Mean dependent	5.156950	25.55615	4.38E+08	3.977068	8.828404
S.D. dependent	1.649410	10.80356	2.57E+08	2.106179	4.333015
Determinant resid covariance (dof adj.)		0.000000			
Determinant resid covariance		0.000000			

- *Granger Causality Tests for VAR model:*

The below results report the null hypothesis, these F-statistics and probability limit values are for all potential pairs of variables. From the probability limit values presented below, we can infer that at 10% significance level, null hypothesis can be rejected. Concluding that the following variables are granger causing effects on GDP growth. Finally, this result matches and confirms with the results that we obtained after estimating the Tunisian regression since we obtained previously that there is a positively and statistically significant relation between GDP growth rate and the other variables and this is actually verified using the granger causality test.

Table 35. Tunisia Granger Causality Test

Pairwise Granger Causality Tests
Date: 08/04/14 Time: 12:30
Sample: 1987 2011
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL does not Granger Cause GROWTH_TUNISIA	23	4.16783	0.0326
GROWTH_TUNISIA does not Granger Cause OIL		0.06245	0.9397
FDI_TUNISIA does not Granger Cause GROWTH_TUNISIA	23	2.53127	0.1075
GROWTH_TUNISIA does not Granger Cause FDI_TUNISIA		0.93391	0.4112
INFLATION_TUNISIA does not Granger Cause GROWTH_TUNISIA	23	0.12552	0.8828
GROWTH_TUNISIA does not Granger Cause INFLATION_TUNISIA		0.59410	0.5625
RATE2_TUNISIA does not Granger Cause GROWTH_TUNISIA	13	3.83040	0.0681
GROWTH_TUNISIA does not Granger Cause RATE2_TUNISIA		0.10433	0.9021
FDI_TUNISIA does not Granger Cause OIL	23	2.14935	0.1455
OIL does not Granger Cause FDI_TUNISIA		1.05024	0.3703
INFLATION_TUNISIA does not Granger Cause OIL	23	0.35551	0.7056
OIL does not Granger Cause INFLATION_TUNISIA		0.17164	0.8436
RATE2_TUNISIA does not Granger Cause OIL	13	0.76180	0.4979
OIL does not Granger Cause RATE2_TUNISIA		0.20921	0.8155
INFLATION_TUNISIA does not Granger Cause FDI_TUNISIA	23	1.44514	0.2618
FDI_TUNISIA does not Granger Cause INFLATION_TUNISIA		0.56949	0.5757
RATE2_TUNISIA does not Granger Cause FDI_TUNISIA	13	1.78675	0.2283
FDI_TUNISIA does not Granger Cause RATE2_TUNISIA		12.9636	0.0031

4.2.4. Co-integration Test

We also need to determine the appropriate restrictions on the intercept and trend in the short and long run models. For that, we estimate all three alternative models and move from the most restrictive to the least restrictive.

The deterministic trend assumption of test 6 that summarizes all 5 sets of assumptions

Lags interval: 1 to 2

Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	1	2	1	1	1
Max-Eig	1	2	1	1	1

*Critical values based on MacKinnon-Haug-Michelis (1999)

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	-1586.959	-1586.959	-1529.606	-1529.606	-1527.447
1	-1530.974	-1502.159	-1446.555	-1444.217	-1442.335
2	-1526.619	-1446.243	-1444.769	-1440.755	-1439.890
3	-1526.475	-1444.634	-1444.634	-1439.727	-1439.727
	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	6.458586	6.458586	6.239863	6.239863	6.243246
1	6.257442	6.145510	5.929800	5.924414*	5.924891
2	6.264061	5.948663	5.946758	5.938651	5.939193
3	6.287627	5.970357	5.970357	5.962683	5.962683

The first time the null hypothesis is not rejected is for the first model and we can see that both the trace and the maximal eigenvalue test statistic suggest the existence of one co-integrating relationship that we can refer it back to our previous exercise and say that it is a co-integration between world oil price and GDP growth rate. Moreover, from the above results we can say that the second model is the best one in our testing

The corresponding VECM suffers from residual serial correlation and non-normality. This suggests that the lag length chosen may be too small an alternative lag length might be used.

Now we re-estimate the model by previous lag length -1

Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.01 Critical Value	Prob.**
None *	0.284095	169.9444	35.45817	0.0001
At most 1	0.007161	3.842748	19.93711	0.9158
At most 2	0.000545	0.270899	6.634897	0.6027

Trace test indicates 1 cointegrating eqn(s) at the 0.01 level
* denotes rejection of the hypothesis at the 0.01 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

We observe a strong positive relationship between world oil price and GDP growth rate for Kuwait, Qatar and Tunisia, but there is no strong to prove this relationship for Morocco. This provides evidence in favor of the hypothesis that we already suggested.

From the model with linear deterministic trend, we can see that the trace statistic approach and maximum eigenvalue approach both lead to the same conclusion of the existence of one co-integrating equation. This matches the results we found in the previous VAR and granger causality testing where we found that there is integration only between world oil price and GDP growth rate for Kuwait, Qatar and Tunisia.

Relying on the fact that oil is the chief energy input for each economy, it's assumed that the importer and the exporter of oil should be aware of the direct impacts of oil price shocks on their economy. Yet, this is not the situation due to a variety of specification problems that linear systems for instance VAR models would ignore or due to some unique individual economics structural.

Besides it is assumed that in case countries that export oil experienced oil price shocks the impacts will be in a parallel and persistent approach among the shock's characteristics and over consecutive periods. In contrast, the oil price shocks impact on the importers is totally the opposite of that on the exporters.

4.3. Summary

The aim behind this study was to add to the oil macroeconomics literature. Furthermore, the study reveals the impact of oil price. This was based on selected MENA economies being both net importers and net exporters of oil (i.e. Kuwait, Qatar, Tunisia, and Morocco).

The study considered the international classification of oil exporters and the

country ability to produce crude oil to harness or not to harness its domestic economy. Accordingly, Kuwait and Qatar were classified as net oil exporter countries, Morocco was classified as net oil importing country (i.e. non-oil producing), and Tunisia was classified as a country with the capacity of oil production in harnessing its domestic economy.

As recommended by Cushman and Zha (1997) when dealing with the econometric analysis the study used a similar VAR model (vector autoregressive). To illustrate, the used model (i.e. VAR) is able to capture the dynamic relationships among variables of interest in a higher predictive power compared to conventional single equation specification model. It's crucial to mention that the study used an identified VAR model with a block exogeneity in which the chosen MENA countries GDP series do not influence the oil price in the world.

It is vital to know that the positive oil price increases impacts on the output growth of each country can be positive or not statistically significant. In addition, in all the studied countries the effect of oil price shocks on the output growth never was negative and statistically significant. This finding (i.e. the negative and statistically effects of oil price increases) confirm what was found in the literature. Yet, oil price shocks still have adverse effects on growth. To clarify, unless oil price shocks exceeds a certain threshold level or a certain non-linear relationship it would not affect the output growth.

This study focused on analyzing the effects of oil price shocks on specific MENA countries (i.e. Qatar, Kuwait, Tunisia, and Morocco) growth. The interpretation of the results shed light on both the GDP growth rate and world oil price. Further studies are recommended in the field of the existing transmission channels of oil price movements and economic structures these studies can interpret and analysis the

following topics: current account, oil price shocks impacts on fiscal balance, exchange rate and interest rate.

Regarding the Arab non-oil producers countries it's suggested that the production cycle in these countries should catch up with the oil producing countries, this can be done by increasing the trade with the oil producing countries particularly when oil price hikes.

CHAPTER 5

CONCLUSION

Since the early discovery of oil in the 1800s, the commodity has been vital to the world economy. In 1986, Painter declared that the invention of the internal combustion engine was behind the rise in the importance of oil. Later on in 2009, Hathaway noted that all the major distribution systems that allow economic transactions were dependent on oil. Indeed, world crude oil prices have experienced sharp fluctuations since 1970 brought about by supply/demand fluctuations, the geopolitical problems in the Middle East, and by the growth in the world economy, particularly from the emerging economies. Nevertheless, despite all this uncertainty, global oil consumption increased at an annual average rate of 2.86%, 0.80%, 1.42% and 1.29% for the periods 1971-1980, 1981-1990, 1991-2000 and 2001-2010 respectively (BP, 2011). From 1971 to 2010, global oil consumption increased by an average of 1.59% per annum; however, the growth varied between regions. Given oil demand is generally accepted as being one of the most important factors that determines oil prices, it is therefore important to understand current and future oil consumption patterns and how they affect the oil market. Oil price fluctuations and their consequences on global economy remain an important issue. In the last three decades, much literature has covered the relationship between oil prices and the GDP. In 1982 and 1983, Derby and Hamilton respectively concluded that most economic recessions were preceded by a sharp rise in the price of oil. Jimenez-Rodriguez and Sanchez affirmed in 2004 that the consequence of oil price fluctuations should be different in oil exporting than in oil importing countries. According to them, an increase should be considered good news in

the former and bad news in the latter.

Oil price changes affect economic activity through both supply and demand channels. The mechanisms at work during the first two crises in the 1970s are not the same today (since the beginning of the XXI century). Indeed, in 2009, Hamilton wrote that the oil price increase of the 2000s, especially in 2007-08 was one of the biggest shocks to oil prices on record. They were quite different from events in the 1970s. Moreover, in 2009, Hamilton noted that both oil importing and exporting countries experienced less traumatic consequences than during previous oil price shocks. While the historical oil price fluctuations were mainly caused by significant disruption in crude oil production due to exogenous geopolitical events, Hamilton noted in 2009 that the 2007-08 event has not been that of a reduction in supply but rather that of an absence of increase in production between 2005 and 2007. In 2010, Kilian noted that the tighter measures for controlling business shocks that were in place after the 1970s also contributed to the stability of the economy.

As far as the Arab economies are concerned, the role of the oil sector was always shaped by the developments in the oil market and the flow of the oil revenues. It was also dependent on the utilization of the comparative advantages of the Arab economies. The role of the oil sector also differed among countries where the sector is dominant, depending on the political, institutional and fiscal relations between the oil sector, represented by the national oil companies and their respective governments. On the one hand, in the oil exporting countries of the region, the differences included changes in the relative size of the sector and its relation to the economy, the investment needs and challenges in the oil and gas sector and in the overall economy, population growth, and the absorptive capacity of the economy. In the Arab countries, the differences include changes in the trade and investment climate and policies, the level of

integration with regional and global economies, and the fiscal and external positions. Moreover, given the tight relationship between the oil and non-oil Arab economies through the labor market, investment and tourism, the latter group has also been greatly influenced by oil. Hence, the relatively populated non-oil Arab countries have been dependent on oil investments and aid flows mainly from the oil-rich labor-importing Arab countries to finance their development and increase their labor force. Therefore, and with varying degrees, both oil and non-oil countries have been subject to the oil cycle and faced similar challenges.

Over the last five decades, the GCC states have taken a number of important steps towards diversifying their economies and decreasing their dependence on oil and gas. The Arab countries have rebuilt their infrastructure, revamped their education and health systems, and upheld a broad range of manufacturing industries primarily servicing an international market. Since the early 2000s, important economic reforms have been undertaken in some of the countries. Oil has also been used in the aim of diversifying the economies by means of investing oil money in productive assets. However, in 2013 and according to Martin Hvidt, those Arab countries remain in a position where the oil sector continues to dominate the economy and few industries and services would survive in a post-oil era. So the Arab countries continue to be in a weak situation where they sell their hydrocarbons to import almost all of their commodities and large parts of their labor force.

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