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The Impact of Oil Prices on Stocks Markets: New Evidence During and After the Arab Spring in Gulf Cooperation Council Economies

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ABSTRACT

This study investigates the impact of stock price fluctuations on stock markets in six countries in Gulf Cooperation Council (GCC) (Saudi Arabia, Kuwait, Oman, Bahrain, United Arab Emirates (UAE) and Qatar) during and after the recent geopolitics conflicts, known as Arab Spring, from January 2011 to December 2017. Two statistical models were implemented to measure the relationship between oil price fluctuations and stock markets returns. The logistic smooth transition model was implemented to measure the relationship between oil price direction (positive/negative) and stock markets returns. The exponential smooth transition model (ESTR) was applied to capture the relationship between the magnitude of oil price fluctuations (small/large) and stock markets returns. The results reveal several asymmetrical results of oil price directions (positive/negative) on stock markets returns in some GCC countries. In Saudi Arabia, Kuwait and Bahrain, the negative oil price fluctuations have larger impact on the returns of stocks markets than positive oil price fluctuations. The results reveal also that the existence of political instability increases the sensitivity of stock markets returns on negative oil price shocks. In addition, the results of ESTR model do not reveal any asymmetrical relationship between the magnitude of oil price changes and stock markets returns in GCC region except Oman. A high level of oil price shocks has larger impact on Omani stock market returns than small oil price shocks.

Keywords: Oil Prices, Stock Markets, Arab Spring, Geopolitical Conflicts, Gulf Cooperation Council
JEL Classifications: E02, E44, E6, G18, Q41

1. INTRODUCTION

In Gulf Cooperation Council (GCC) countries[1], stock markets have an essential role and crucial functions. They promote economic development and help to fix prices of financial products on the basis of investors supply and demand. They contribute to raise funds, to attract foreign investors and lead to business growth. They are considered as barometer of politic, economic and security conditions prevailing in countries.

Nowadays, the stock markets in GCC countries are characterized by low rate of return, shortage of liquidity and excess of volatility

(Albaity and Mustafa, 2018; Saif-Alyousfi et al., 2018). For some researchers, the Arab Spring and regional conflicts in Middle East and North Africa countries pose significant challenges on stock markets of GCC countries (Zaiane, 2018). For many others researchers like Khamis et al. (2018), the falling down and the fluctuation of oil prices since 2008 are the major reasons behind the actual pressure on stock markets. This reasoning can be validated because oil sector in GCC countries has a dominant position in the economy and oil prices have a strong effect on gross domestic product (GDP) fluctuations (Khamis et al., 2018; Albaity and Mustafa, 2018).

GCC countries are between the major political players in the region and one of the the most important players in the oil market around the world (Arouri et al. 2011). They own more than 30% of the

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[1]   GCC is an alliance of 6 countries comprising Saudi Arabia, Kuwait, Bahrain, UAE and Qatar.

international total oil reserves and considered the largest exporter of oil with fifteen million oil barrels per day (OPEC, 2016). They have a clear influence on the economic and political decisions of Middle East region and at the same time they are affected by the actual regional conflicts, economic conditions and oil prices volatility. Therefore, the impact of geopolitical conflicts and oil price volatility on stock markets in GCC economies is not in doubt.

Previous empirical studies confirm that the fluctuations of oil prices in GCC, Middle East, developed and developing countries have significant impact on stock markets but the evidence of the nature and the direction of influence are still inconclusive. The impact of oil prices volatility on stock markets has found to be negative in some cases, positive in some studies and neutral in some others (Kilian and Park, 2009, Acaravcı et al., 2012, Serkan et al., 2013, Gencer and Demiralay, 2014, Santillán-salgado et al., 2017, Ojikutu et al., 2018 and Mikhaylov, 2018).

On the other hand, some studies show that the geopolitical conflicts in Syria, Lebanon, Yemen, Iraq, Libya, Tunisia and Egypt have slowed down the return of some stock markets (Abdelbaki, 2013; Acemoglu et al., 2018) and the financial sector in Middle East countries (El-Chaarani and Rajab, 2018; El-Chaarani and El-Abiad, 2019; El-Chaarani, 2019). Acemoglu et al. (2018), have documented that the number of public protests was associated with low valuation in Egyptian stock markets.

From the existing researches, it can be concluded that many studies have explored the influence of oil prices shocks on stock markets in developed countries without considering the geopolitical environment and without comparing the country differences. Moreover, it can be settled that some other studies have revealed the impact of regional conflict in Middle East and North Africa countries on some few and specific stock markets without considering the impact of economic factors and variables like oil prices.

By recognizing the significant aspect of geopolitical conflicts, oil sector and stock markets in GCC countries, the importance of this research is to provide new evidences by addressing the following question: What is the impact of oil price volatility on stock markets in GCC countries? What is the impact of last street protests and geopolitical conflicts, known as Arab spring, on the relationship between oil prices and stock markets returns in GCC countries?

The objective of this study is to fill gaps of already existing literature and empirical findings by exploring the impact of oil prices on stock markets returns in GCC countries. Second, this study investigates the joint impact of geopolitical conflicts and oil prices on stock markets returns in GCC countries. Finally, this study examines the nature of oil prices impact on stock markets returns during the last geopolitical crises, known as Arab spring. In other words, this study examines the impact of asymmetrical directions (positive or negative) and magnitude (low or high) of oil price fluctuations on stock markets in GCC region. Considering the GCC region is due to the position of this region as large oil supplier for the global economy.

To accomplish the objectives of the study, the remainder of this paper is organized as follows: Section two presents the literature review. Section three describes the data, explains the methodology and defines the variables of the study. Section four, discusses the sample characteristics and the empirical findings. Finally, section five concludes the research paper.

2. LITERATURE REVIEW

2.1. Economic and Politic Overview of GCC Countries
GCC is an economic and political alliance comprising six oil exporting countries (Kuwait, Bahrain, Oman, United Arab Emirates (UAE), Qatar and Saudi Arabia). Since their alliance, GCC countries share similar political and economic strategies. GCC economies are manly dependent on oil production and exportation. They own one-third of the crude oil reserves and they export 34% of world oil needs[2]. Few countries, like UAE and Qatar have developed alternative revenue sources like banking and infrastructure sectors. Recently, Oman and Saudi Arabia are trying to diversify their investment plan by developing new sources of revenue like tourism and health sector.

The GDP of GCC economies is $1464 billion in 2017. The GDP of Saudi Arabia represents 47% of GCC's GDP, followed by UAE with 26%, Qatar with 12%, Kuwait with 8%, Oman with 5% and Bahrain with 2% (Figure 1). In 2017, Saudi Arabia, UAE and Kuwait were considered between world's top 10 oil exporters with $133.6 billion in value, $49.3 billion in value and $38.2 billion in value, respectively (OPEC, 2018).

During the last decade, the economic situation and indicators of GCC countries has experienced many swings of declining and growing (Figure 2). It is believed that the GDPs and the other economic indicators of GCC countries are largely affected by the international crises and the oil price fluctuations (Khamis et al., 2018).

After the oil price booming in 2003, GCC countries expended their public and private investments. In the period between 2003 and 2006, GDPs of GCC countries increased to attain their highest levels in 2006. Qatar, Saudi Arabia, Kuwait and Oman decided to use the excess of oil revenues by developing large-scale investment projects, initiating mega infrastructure projects, increasing public employment and expending their foreign exchange reserves[3].

The international financial crisis of 2008 and the sharp drop of oil price in 2008 (Figure 3) decreased the GDPs of all GCC countries to the lowest level in 2009. The economic and financial situations of GCC countries were unstable. The low level of oil price led to large deficit in the governments revenues, governments expenditures and global current accounts. During this period, the reform of economic structures by developing the private sector and shifting from energy sector to service sector was the main driver of economical changes. However, this economic recession did not stay for long time. The economic situation has been recovered in 2010 with the global monetary reforms, the rapid recovery of oil prices and the new fiscal policies and packages initiated by GCC governments.

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2   From the World Factbook, 2016.
3   From Credendo database, 2018.

Figure 1: Contribution of Gulf Cooperation Council countries to total gross domestic product
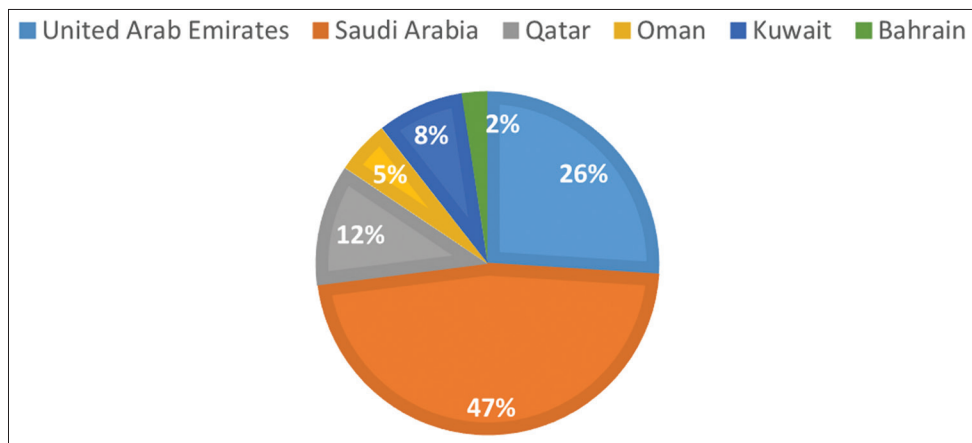
Source: World bank database.

Figure 2: Gross domestic product growth % of Gulf Cooperation Council economies (2001-2017)
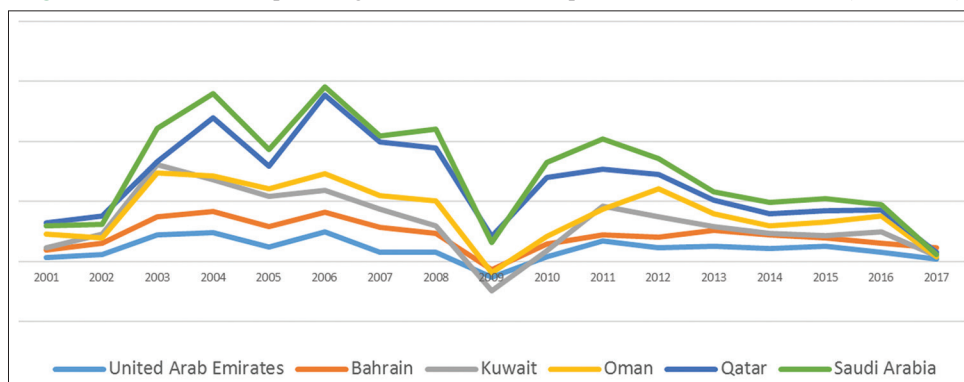
Source: World bank database.

Figure 3: Average crude oil price (2008-2018)
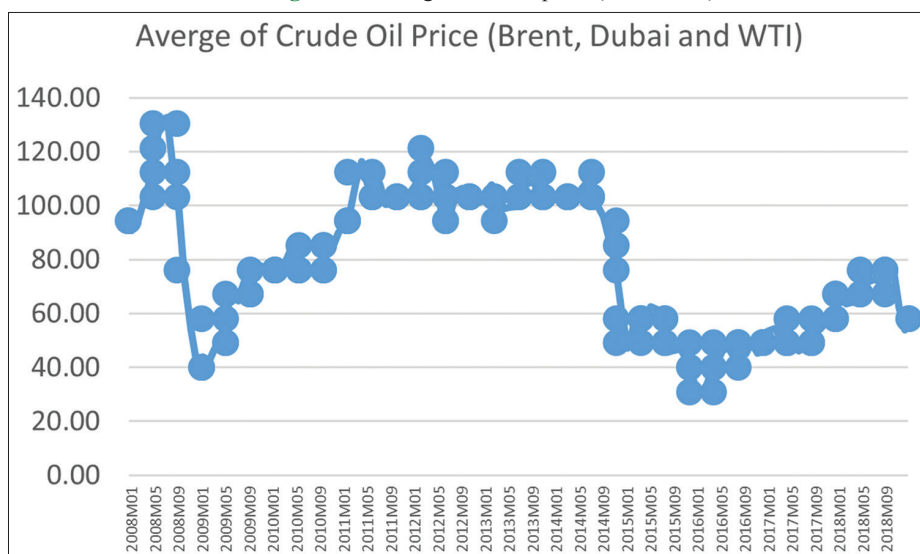
Source: World bank database.

The economic and political situation was almost stable until February 2011, the date in which the Middle East and North Africa region witnessed some political conflicts and street protests known as Arab Spring. The anti-government and street protests had developed in Syria, Egypt, Libya, Tunisia and appeared few months later in GCC countries, mainly in Bahrain. In February 14, 2011, a series of anti government and violent protests were led by the Shia Bahraini Opposition against the Sunni royal family calling for social, economical and political reforms. During the period between 2011 and 2014, Bahraini government

succeeded to control the street protests with the support of Saudi Arabia government who considers the Shia in Bahrain as a threat. GCC countries tried to defend their regimes by avoiding all kind of social and political modifications.

There was a real fear from Kings and Emirs in the other GCC countries that the street protests would spread to their countries which pushed them to increase the government expenditures without fixing new fiscal framework which made difficult to increase government revenues and make mega infrastructure investment. For the International Monetary fund (2013)[4], the Arab Spring have developed a kind of unstable economic environment, increased the unemployment rate and dropped down the growth rate in GCC countries.

A new challenge appears for GCC economies when the oil price collapsed again in 2014. In 2015, the GDPs of GCC countries dropped down and the total GCC public revenue decreased by 35%[5]. The economic system in GCC countries was no longer possible to resist with high budget deficits and declining of oil price. To recover their large deficits, the GCC countries used their foreign exchange reserves, issued local bonds and entered in the international bond markets. Consequently, GCC countries borrowed US$318 billion through issuance of international and local bonds to finance their fiscal deficits (Gulf Base, 2016). Moreover, they cancelled large number of infrastructure projects and introduced new measures to increase government revenues and reduce government expenditures. Part of these measures was the introducing of new taxes like the value added tax (VAT). For the international monetary fund (IMF, 2016), introducing the VAT has improved the GDPs of GCC countries like Qatar, Kuwait and UAE. Also, it will develop the government capacity to reduce the deficit of government budget.

2.2. The Impact of Oil Prices on Stock Markets

Many researchers have studied the relationship between oil prices and macroeconomic factors like GDP, growth, inflation and budget deficit. The majority of studies have revealed that oil price fluctuations have a clear impact on the economic activity and indicators in developed and developing countries (Trang et al., 2017, Foudeh, 2017, Ewing and Malik, 2016, Tehranchian and Seyyedkolaee, 2017, and Eltejaei and Afzali, 2012). However, few studies have tested the impact of oil price shocks on stock markets. Additionally, most of those few studies have focused on the relationship between oil price fluctuations and stock markets in developed countries while developing countries like GCC countries still non well explored.

Sadorsky (1999), is among the firsts who study the impact of oil price shocks on stock markets in United States for the period between 1947 and 1996. Using (VAR) model, he found that the unexpected increases in oil prices have a negative impact on stock prices. In 2003, the author introduced a new method to examine the correlation between oil price fluctuations and technology stock

prices. He recognized that oil price shocks have not a direct impact on technology stock prices. He also found that oil prices have an impact on prices and inflation ratio which indirectly affect the technology stock prices.

Park and Ratti (2008), conducted the (VAR) model to analyze the influence of oil price movements on stock markets in United states and thirteen European countries between 1986 and 2005. They revealed that the fluctuations of oil price have a negative impact on stock markets. In United states stock markets, they found that the stock markets returns are more affected by oil prices than that of interest rate.

Using (GARCH) model, Lee and Chiou (2011), studied the correlation between oil price shocks and Standard and Poor 500 returns. They considered the expected and unexpected oil price. They revealed that in case of low oil price volatility, the unexpected changes in oil prices have no impact on Standard and Poor 500 returns.

Based on (EGARCH) model, Bharn and Nikolova (2010), studied the relationship between oil price shocks and stock markets returns in Russia. They revealed a negative correlation between oil prices and Russian stock markets in case of international news like the news of Iraq war in 2006 and the news of 9/11 terrorist attack in United states.

Gencer and Demiralary (2014), implemented the (GARCH) model to test the volatility spillover between oil price shocks and five different sectors in Turkey for the period between 2005 and 2013. They revealed significant transmission from oil markets to stock markets. By using (VAR-GARCH), (DCC-GARCH) and (VAR-AGARCH) models, Lin et al. (2014) confirmed the transmission of volatility from oil prices to stock markets in Ghanaian stock markets.

Al-Hajj et al. (2017), studied the relationship between oil price fluctuations and Malaysian stock market returns over the period of 1991-2016. The results of autoregressive distributed lag model showed that oil price, interest rate and exchange rate have negative impact on stock market returns in Malaysia. Oppositely, Diaz and De Gracia (2017), revealed positive impact of oil price fluctuations on stock returns in NYSE over the period of 1974-2015.

Using weekly data spanning for the period between 2010 and 2017, Sharma et al. (2018), analyzed the linear relationship between Indian stock markets and international crude oil. The results of (VAR) model revealed that the Energy index in India is highly affected by the international crude oil fluctuations.

Recently, Anyalechi et al. (2019), examined the volatility transmission between stock market returns and oil price fluctuations in Nigeria from 1994 to 2016. The results of autoregressive distributed lag model showed that oil price shocks had no significant impact on stock market returns.

In GCC countries, Arouri et al. (2011) analyzed the relationship between oil price shocks and stock markets over the period of 2005-2010. The results of their study found some significant

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4   George T. Abed, "IIF Regional Overview on the Middle East and North Africa: "Arab Spring" Countries Struggle, GCC prospects Favorable," Institute of International Finance, Washington, DC, October 27, 2013.

5   From Credendo database, 2018.

volatility spillovers between stock markets and oil price fluctuations. The study of Almohaimeed and Harrathi (2013), confirmed this result by using univariate and multivariate models in GCC countries over the period of 2007-2012. In their paper, they found evidence of volatility spillover between oil price shocks and GCC stock markets. The results showed that stock markets prices are affected by oil price fluctuations.

Using (BEKK-GARCH) process, Jouini and Harrathi (2014), reported that the volatility spillover was running from oil price fluctuations to stock markets prices, and from stock markets volatility to oil prices in GCC countries during the period of 6 years, between 2005 and 2011. Dutta et al. (2017), confirmed the existence of a positive and significant relationship between stock market performance and oil prices in some GCC countries like Qatar, Kuwait, Saudi Arabia and UAE.

Albaity and Mustafa (2018), tested the long and short run relationship between GCC stock markets returns and oil prices in the period between 2005 and 2015. The authors found significant long relationship between oil prices and stock markets before the crisis of 2007-2008. This result means that stock markets are predictor of oil price fluctuations. After the financial crisis, the authors recognized that oil price fluctuations do not co-move with stock markets, except Kuwait and Qatar.

Cheikh et al. (2018), used the nonlinear smooth regression test (STR) to explore the influence of oil price shocks on GCC stock markets in the period between 2004 and 2015. The results revealed that the negative changes of oil price have greater impact on stock markets than that of positive changes. The authors stressed the need of government reforms and economic stability to reduce the volatility spillover between stock returns and oil price fluctuations.

As evidenced by the previous studies on the subject, the impact of oil price shocks on stock markets remains contradictory and open to new methods and technics.

2.3. The Impact of Political Instability on Stock Markets

The impact of political news and instability on the economic situation and financial markets has been debated in many research papers. According to Bilson et al. (2002), political instability and uncertainty are considered largely influential in emerging markets that are characterized by non liberal political and economic regimes. For Pástor and Veronesi (2013), there are two different influences of political instability on the economic situation. The impact of political instability and uncertainty is positive on the economy if the government anticipates them by providing protections and regulations. If the political uncertainty and instability are not well anticipated and diversified, their impacts will be negative on the economy. Pástor and Vernesi (2013) also argued that the volatility of stocks is very high in case of high level of political uncertainty.

Kim and Mei (2001) had revealed the same results in Hong Kong stock markets. Using jump-volatility filter model, they argued that both bad and good political news had a significant impact on

stock market volatility. Also, they found that bad political news had higher impact on stock markets volatility than that of positive political news. The same results have been observed by Beaulieu et al. (2005) in Canada. They found that stock market volatility increases when political instability and uncertainty are very high. The influence of political situation on the sentiment of investor is largely immense.

Goonatilake and Herath (2007), conducted their study in United States to analyze the effect of political news on stock markets namely NASDAQ, DJIA and S and P 500. They found that the nature of news has an impact on stock market volatility. Bad news increases the stock market volatility; good news decreases the stock markets volatility while neutral news has no impact on stock markets volatility.

Hira (2017), revealed the relationship between political instability and stock prices in Pakistan from 1998 to 2012. The results of (ARDL) approach showed that instable political system has a significant negative impact on stock prices.

Balaji et al. (2018), analyzed the impact of election news on volatility and stock returns for a period from 1998 to 2014 in India. They divided the time period of study to three sub-periods: Pre election, election and post election. Balaji et al. (2018), revealed that the election news has high effect on stock markets in short term, then this effect diminishes in the long term after the election.

The impact of Arab Spring in Middle East, North Africa, and GCC countries on stock markets were studied by many researchers. The majority of research revealed that the last political tensions have a direct impact on stock markets volatility and returns. Also, many studies revealed an indirect impact of Arab spring on the stock markets of stable neighboring countries.

Using a vector error correction model, Abdelbaki (2013), revealed that the political uncertainty following the Arab Spring had a strong impact on the volatility of Egyptian stock market during the period of 9 months, from March 2011 to November 2011. Ahmed (2017), confirmed the impact of political tensions during Arab Spring on the Egyptian stock market. His results revealed a negative impact of political instability on the returns of the major market sectors.

Chau et al. (2014), analyzed the impact of Arab Spring on stock markets volatility in six countries, namely Kuwait, Bahrain, Egypt, Jordan, Lebanon and Oman. Using (GARCH), (EGARCH) and (GJRGARCH) models, they found that Middle East and North Africa markets became more integrated with international markets after the Arab Spring. Furthermore, they showed that the volatility of Islamic indices increased during political tension.

Al Shugaa and Masih (2014), studied the volatility of stock markets in Middle East and North Africa region during the Arab Spring. Using continuous wavelet transform method from 2008 to 2014, they found that stock markets in Egypt, Lebanon, Jordon, UAE, Qatar, Bahrain, Oman and Kuwait are affected by the non stability and the bad political news of Arab Spring.

Alsharairi and Abubaker (2016), studied the impact of the Arab Spring on the stock markets of stable neighboring countries. They considered the street protests during the Arab Spring in Egypt and their impacts on Dubai Financial Markets (DFM) from 2008 until 2012. The results showed that the Arab Spring sparking in Egypt had a significant impact on the volatility of telecommunication and transportation indices in DFM.

Zaiane (2018), studied the impact of Arab Spring on stock market volatility in Tunisia. Using the (EGARCH) model from 2010 to 2016, the author found that both of bad and good news have increased the volatility of TUNINDEX. Moreover, the author revealed that the impact of bad news on stock markets volatility is higher than that of the impact of good news. The same results of negative influences of Arab Spring had been observed by Mnif (2017) and Jeribi et al. (2015) in Tunisian stock markets.

3. DATA AND METHODS

This research considers the mutual impact of oil price fluctuations and political instability on the stock markets returns of six GCC countries: Kuwait, Bahrain, Qatar, Oman, Saudi Arabia, and UAE. This study is based on monthly data of Brent oil prices and stock markets spanning the period of 7 years, from January 2011 to December 2017. The data of monthly data of oil prices were collected from world bank database. The oil returns (OR_t) were measured by the logarithmic difference of oil prices. The data of stock markets indices were gathered from World Bank database, Arab Monetary Funds database and the official website of each stock market in GCC region. The stock markets indices were expressed in US dollar based on MSCI[6] database. In addition, two control variables were considered for this study: the interest rate of US three-month treasury bills and the monthly MSCI world index returns.

To consider the impact of political instability, the period of the study was divided to two different sub periods: from January 2011 to December 2013 and from January 2014 to December 2017. The first 3 years of this study were characterized by high level of political instability while the next 4 years were characterized by political stability after controlling the streets protests in the majority of Arab countries except Syria, Iraq and Yemen.

As reported in Table 1, the sample of the study were extracted from six formal stock markets with USD 723 billion as market

6   Morgan Stanley Capital International.

capitalization value and 770 listed companies in 2017. Based on capitalization level, Saudi Arabia stock market is the largest in the region while Bahrain stock market is smallest. In 2017, the highest number of listed companies was in Kuwait stock market followed by Saudi Arabia and UAE. The stock markets of UAE and Saudi Arabia had been well developed from 2011 to 2017 while it is noticed in the same period a decreasing of stock markets capitalization for Oman and Kuwait.

In this study, two different impacts of oil prices are considered based on two different statistical approaches that are derived from smooth transition autoregressive (STR) model and inspired from the study of Cheikh et al. (2018). Firstly, the logistic smooth transition (LSTR) model is implemented to test the asymmetrical effect of negative and positive oil prices fluctuations on stock returns. Secondly, the exponential smooth transition model (ESTR) model is applied to capture the effect of large and small oil price shocks on stock returns. The simple representations of STR (equation a), LSTR (equation b) and ESTR (combination of equations [a] and [c]) models are presented as follow:

$$(a): Yt = O_1X_t + O_2X_tG(S_t;\partial,C) + U_t;$$

$$(b): G(S_t;\partial,C) = (1 + \exp(-\partial(S_t-C)))^{-1};$$

$$(c): G(S_t;\partial,C) = 1 - \exp(-\partial(S_t-C)^2).$$

Where, O_1 is the linear coefficient and O_2 is the nonlinear coefficient; $G(S_t;\partial,C)$ is a continuous function bounded from zero to one depending on (C), the threshold level; (∂), the speed of transition across regimes and (S_t), the value of transition variable. U_t is the iid $(0, \sigma^2)$.

The logistic transition model (LSRT) is suitable in measuring the asymmetrical effect with respect to the positive or negative directions of oil price fluctuations mainly when the value of threshold (C) is close to zero. The exponential transition model (ESRT) is useful to detect the asymmetrical effect of the magnitude of oil price shocks.

The nonlinearity test was implemented to select the appropriate smooth transition model and the lagged OR_t as a threshold variable. Based on the study of Van Dijk et al. (2002), the linearity test was applied by considering six lagged OR_t, then successively drop the lagged variables when the t-statistic of the corresponding parameter is less than the absolute value of 1.

Table 1: GCC stock markets in 2011/2017

Country Name	Listed Companies (2011)	Market Capitalization (2011) USD Million	Listed Companies (2017)	Market Capitalization (2017) USD Million
United Arab Emirates	108	93,727.43	127	239,387.10
Bahrain	44	16,593.33	42	18,226.97
Kuwait	215	107,436.32	217	96,269.43
Oman	114	26,863.42	112	21,299.27
Qatar	42	112,432.35	45	130,613.34
Saudi Arabia	111	338,873.21	188	450,305.45

Source: World bank database and Arab Monetary Funds

4. EMPIRICAL RESULTS

The LSTR model in Table 2 reveals the impact of negative and positive oil price shocks on stock markets during 7 years, from 2011 to 2017. The results of Table 2 indicate that the stock markets in GCC region are highly affected by negative oil fluctuations, except UAE. Between GCC countries, the stock market in Oman is the most affected by negative oil fluctuations. When the oil price fluctuates above the threshold of (0.093), the reaction of stock returns in Oman stock market to 1% of oil price shocks is equal to 0.663%.

The results indicate that the asymmetrical impact of oil price fluctuations exists only in Saudi Arabia, Kuwait and Bahrain. In those three countries, the negative changes of oil prices have higher impact on stock markets return than that of the positive fluctuations. In the other GCC countries (Qatar, Oman and UAE), the results indicate insignificant response of stock markets return to positive oil fluctuations.

To measure the joint impact of oil prices and geopolitical conflicts in Arab world on the the stock markets returns in GCC region, the sample of observations has been divided to two different sub samples, the first one includes the observations from 2011 to 2013

and the second one includes the observations from 2014 to 2017. The results of Tables 3 and 4 reveal that the speed transition of oil prices during political instability is highest than that of political stability period. During the political instability in Arab world, the results of Table 3 indicates that the negative fluctuations of oil prices are highly incorporated in the returns of stock markets in GCC region, except UAE. The results do not reveal any impact of positive oil prices fluctuation during this period. It seems that the investors are more affected by negative oil news than that of positive oil news during political instability period.

After the political instability period in Arab world, the positive fluctuations of oil prices come to be more incorporated in the returns of stock markets in Saudi Arabia, Bahrain and Kuwait. The results of Table 4 indicate the existence of asymmetrical impact of oil prices on the returns of stock markets in those three countries. In Saudi Arabia, Bahrain and Kuwait, the negative oil price fluctuations have larger impact on stock returns than positive oil price fluctuations. Qatar and Oman are only affected by negative oil price fluctuations while the return of Emirates stock markets is not affected by oil fluctuations.

The results of ESTR model in Table 5 present the impact of magnitude of oil price fluctuations on stock markets in GCC

Table 2: LSTR model for 2011-2017

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/6	Ort/3	Ort/5	Ort/4	Ort/4	Ort/5
Threshold C	0.06	0.08*	0.099***	0.093***	0.093***	0.100***
Speed transition ∂	3.521	6.832	7.741	8.471	9.363	13.931
Negative oil changes G $(S_t;\partial, C)=0$						
Long effect	0.145	0.342**	0.424***	0.663***	0.461***	0.577***
Positive oil changes G $(S_t;\partial, C)=1$						
Long effect	0.211	0.210*	0.338***	0.134	0.258***	0.417
R^2	0.435	0.411	0.421	0.432	0.442	0.405

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

Table 3: LSTR model for 2011-2013 (During the Arab Spring)

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/4	Ort/5	Ort/3	Ort/5	Ort/4	Ort/5
Threshold C	0.03	0.06	0.091***	0.093***	0.100***	0.900***
Speed transition ∂	4.457	8.453	10.133	7.764	11.457	14.931
Negative oil changes G $(S_t;\partial, C)=0$						
Long effect	0.214	0.421**	0.457***	0.769***	0.521***	0.635***
Positive oil changes G $(S_t;\partial, C)=1$						
Long effect	0.125	0.122	0.141	0.132	0.156	0.221
R^2	0.432	0.435	0.447	0.411	0.453	0.424

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

Table 4: LSTR model for 2014-2017 (After the Arab Spring)

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/4	Ort/3	Ort/3	Ort/5	Ort/6	Ort/5
Threshold C	0.085*	0.09***	0.093***	0.090***	0.089***	0.901***
Speed transition ∂	2.541	5.345	6.223	7.291	7.234	14.421
Negative oil changes G $(S_t;\partial, C)=0$						
Long effect	0.145	0.245**	0.392***	0.562***	0.403***	0.499***
Positive oil changes G $(S_t;\partial, C)=1$						
Long effect	0.124	0.235*	0.256***	0.321	0.202***	0.357
R^2	0.422	0.443	0.414	0.452	0.402	0.431

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

Table 5: ESTR model for 2011-2017

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/4	Ort/4	Ort/6	Ort/5	Ort/6	Ort/5
Threshold C	0.023	0.036	0.043**	0.020**	0.021***	0.045*
Speed transition ∂	0.425	0.362	0.153	1.442	0.314	1.009
Small oil changes G $(S_t;\partial, C)=0$						
Long effect	0.251	0.268	0.368	0.221***	0.055	0.307
Large oil changes G $(S_t;\partial, C)=1$						
Long effect	0.419*	0.677**	0.461***	0.583***	0.433***	0.536*
R^2	0.433	0.421	0.393	0.313	0.364	0.406

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

Table 6: ESTR model for 2011-2013 (During the Arab Spring)

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/3	Ort/4	Ort/5	Ort/5	Ort/4	Ort/5
Threshold C	0.035	0.027	0.021**	0.019**	0.014***	0.014
Speed transition ∂	0.325	0.426	0.341	0.831	0.491	0.509
Small oil changes G $(S_t;\partial, C)=0$						
Long effect	0.121	0.197	0.231	0.201***	0.131	0.214
Large oil changes G $(S_t;\partial, C)=1$						
Long effect	0.216	0.469**	0.425***	0.583***	0.336***	0.540
R^2	0.401	0.444	0.402	0.452	0.347	0.398

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

Table 7: ESTR model for 2014-2017 (After the Arab Spring)

Variables Description	United Arab Emirates	Saudi Arabia	Bahrain	Oman	Kuwait	Qatar
Transition variable S_t	Ort/3	Ort/5	Ort/4	Ort/3	Ort/4	Ort/4
Threshold C	0.042	0.035	0.041	0.024*	0.033***	0.037
Speed transition ∂	0.235	0.216	0.1253	1.442	0.314	1.009
Small oil changes G $(S_t;\partial, C)=0$						
Long effect	0.191	0.201	0.211	0.124	0.121	0.121
Large oil changes G $(S_t;\partial, C)=1$						
Long effect	0.246	0.632	0.547	0.621	0.521	0.632
R^2	0.452	0.345	0.422	0.432	0.404	0.432

(*), (**), and (***) represent the significance levels at 10%, 5%, and 1% levels, respectively. R^2 is the coefficient of determination

countries between 2011 and 2017. The estimated thresholds do not differ significantly across the different countries in GCC region. The results in Table 5 indicate that the asymmetrical magnitude of oil price fluctuations is significant in Oman. A high magnitude of oil price fluctuations is associated with 0.583% of Omani stock returns reaction while a low magnitude level of oil price fluctuations is associated with 0.221% of stock returns reaction. For the other GCC countries (Kuwait, Bahrain, Qatar, Saudi Arabia, and UAE), a high magnitude of oil price fluctuations is associated with significant impact on the return of stock markets.

To measure the impact of oil prices on stock markets in GCC region during the Arab spring period, the observations of the study are divided to two different sub samples. The first sub sample includes the observations during the street protests in Arab region (between 2011 and 2013). The second sub sample includes the observations after the end of street protest (between 2014 and 2017).

The results in Tables 6 and 7 reveal that large fluctuations of oil price during the Arab Spring have significant impact on stock markets returns in GCC region except Qatar and UAE. The results reveal the existence of asymmetrical impact of oil price magnitude in Omani stock markets during the Arab Spring period. This lead to conclude that large oil fluctuations have greater impact on Omani stock returns than small oil fluctuations.

After the Arab spring period, the results do not reveal any significant impact of oil price magnitude on the return of stock markets in GCC region. Moreover, the results do not reveal any asymmetrical impact of oil price magnitude between 2014 and 2017.

5. CONCLUSION

The recent geopolitical conflict in Arab world in 2011 and the dramatic falling of oil price in 2014 lead us to revise the nonlinear and asymmetrical relationship between oil price fluctuations and stock markets returns in six GCC countries (Kuwait, Bahrain, Qatar, Oman, Saudi Arabia, and UAE). The importance of this research is to shed lights on the direction and magnitude of oil price fluctuations during and after the Arab Spring period in Arab world. For this issue, the ESTR and LSTR models were implemented. The LSTR model was applied to capture the asymmetrical impact of oil price directions (negative or positive) while the ESTR model was implemented to distinguish between large and small oil price fluctuations. The study was conducted by using monthly data of oil prices and stock markets indices over the period of 2011-2017.

The results of LSTR model reveal that negative oil price fluctuations have larger impact on the returns of stocks markets than positive oil price fluctuations do in Saudi Arabia, Kuwait and

Bahrain. The results reveal that during Arab Spring period, the negative fluctuations of oil price have a clear impact on the returns of stock markets in GCC countries except UAE. The existence of diversified economy in non-oil sectors can be the reason of the absence of any influence of negative oil price on stock markets returns in UAE.

The results of ESTR model do not reveal any asymmetrical relationship between the magnitude of oil price changes and stock markets returns in GCC region except Oman. The results indicate that the magnitude of oil price fluctuations is asymmetrical in Omani stock market. The large oil price shocks have higher impact on Omani stock market returns than small shocks oil price. The results of ESTR model indicate also that large oil price fluctuations have significant impacts on stock market returns during the Arab Spring period except UAE.

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