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The Qatar-Gulf Crisis and Risk Management in Oil and Gas Markets

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Abstract: Oil prices have tumbled after Saudi Arabia and its allies cut ties with Qatar, sparking anxiety that OPEC's fragile deal to curtail oil production could come undone. Also and although its daily oil output of around 600,000 barrels represents less than one percent of world crude production, Qatar is a major player in liquefied natural gas. This means that the current deterioration in relations among the Middle East neighbours would have significant implications for oil and gas markets. This paper is novel in its methodological approach, which is used to decompose the variance of oil stock price indices into contributions from country-specific uncertainty and uncertainty common to all countries. The analysis reveals that the contributing factors have varied over time. Prior to the blockade on Qatar, the region-specific uncertainty plays an important role in driving the volatility of oil and gas shares for all cases. In considering the post- boycott, an increasing importance of the country-specific uncertainty factor is shown. This suggests GCC states that have long resisted making a collective effort to accomplish energy security, are now moving into a new era during which securing their own supply routes will be an indispensable part of their mode of operation. To strengthen energy cooperation, it is first necessary to rebuild trust.

Keywords : Qatar diplomatic crisis, oil and gas markets, region-specific uncertainty, country-specific uncertainty.

JEL classification : C15, C32, E32, G11, G15.

1. Introduction

For several decades, the Gulf Cooperation Council (GCC)¹ have been a pillar of the global energy market for their wealth of resources and political stability. Nevertheless, their contemporary infighting might prompt a strategic shift in how the world looks at the geopolitics of the GCC. The collective decision by Saudi Arabia, the United Arab Emirates (UAE), Bahrain and Egypt to cut diplomatic and economic ties with Qatar on 5 June 2017 has rattled nerves, sending shockwaves around the world. These unprecedented tensions have exacerbated the uncertainty over the ultimate economic consequences of this crisis. The Qatari stock market lost about 10 percent in market value over the first four weeks of the boycott. Other GCC stock markets also fell in response to the blockade, though with varying extent. The Qatar's blockade disrupted supply chains, harmed the flow of goods and services, and caused widespread devastation among companies in the region. Many businesses feared that escalating tensions in the region could have serious consequences on some business deals and companies in the region. The most immediate impacts of increased uncertainty over Qatar crisis on businesses were debated intensively since the announcement of Qatar's isolation. Nevertheless, its implications for oil and gas markets are still unaddressed. As far as the impact of geopolitical risk on oil and gas markets is concerned, to the best of our knowledge, no studies have emphasized the contribution of country-specific and region-specific uncertainty in determining oil and gas price indices.

The 2017 edition of the “BP Statistical Review of World Energy” indicates that the GCC countries are peerless sources of energy resources. Altogether, the six controlled a 29 percent of proven oil reserves in 2017, and about 41 percent of total reserves held by the Organization of the Petroleum Exporting Countries (OPEC). It must be mentioned at this stage that of the six GCC states, only Oman and Bahrain are not members of OPEC. These

¹The Gulf Cooperation Council (GCC) is a political and economic alliance of six Middle Eastern countries, namely Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman.

two countries, however, follow OPEC's production and its price strategies. With a global oil share of 15.6 percent, Saudi Arabia is still the second major source of proven reserves after Venezuela. Saudi Arabia appears as the greatest regional power, because of its massive oil wealth. Nevertheless, the economy of Saudi Arabia is entirely based on oil. The drop in oil prices since June 2014 created a certain obsession among Saudis with economic and political decline. The global share of oil reserves of the rest of Gulf countries is nearly 13.4 percent (in particular, Kuwait with 5.9 per cent, the UAE with 5.7 per cent, Qatar with 1.5 percent and Oman with 0.3 percent). With respect production, GCC states contributed by about 24.4 percent of global oil output in 2016. The UAE and Kuwait are important oil producing countries, accounting respectively for nearly 4.4 percent and 3.4 percent of the global oil output. Similarly, GCC countries are considered as potential players in natural gas, accounting for almost 22.6 percent of reserves in 2016. Qatar boasts 24.3 trillion cubic meters of proven gas reserves, the third biggest in the world. Qatar is the major exporter of liquefied natural gas, mostly to Asian and European countries and the United States through long-term contracts. Besides, natural gas reserves of other Gulf states cannot be ignored. Saudi Arabia with 4.4 percent, the UAE with 3.3 percent, Kuwait with 1 percent, Oman with 0.4 percent and Bahrain with 0.1 percent. Gulf countries still depend substantially on the energy sector for the well-being of their economies. This was well noticed when oil prices witnessed a sharp decline in mid-2014, resulting in budgetary shortages and forcing a streamlining of public sector expenditures and rolling back subsidies. It is important to remember that GCC states have often been aware of the importance of reducing their economies' reliance on the hydrocarbon sector.

Given the rising political uncertainty over Qatar crisis, it is important to provide a basic understanding of how uncertainty might influence the economy by offering numerous mechanisms through which uncertainties are transmitted to the economy. Uncertainty can

exert a significant influence on the macroeconomy depending on whether it reflects exogenous factors like natural disasters or geopolitical risks perceived as a source of macroeconomic fluctuations, or whether it emerges as an endogenous reaction to other potential macroeconomic drivers, including aggregate demand shocks or aggregate supply shocks. In fact, high uncertainty can transmit through the macroeconomy by influencing spending decisions of households and firms, leading for instance to suspend consumption and investment, and harming financial markets if the anticipated asset price volatility raises risk premia which are thereafter transmitted to great cost of credit to households and industries. Moreover, the economic policy uncertainty may have a substantial impact on the appropriateness and the efficacy of economic policies. For example, economic downturns characterised by a increased uncertainty might necessitate a deeper monetary policy stimulation package to effectively support the economy. Consequently, individual and institutional investors, governments and central bank officials have long considered heightened uncertainty indispensable determinant of macroeconomic fluctuations (inter alia: Arnold and Vrugt 2008; Bloom 2009, 2014; Bernal et al. 2014; Christiano et al. 2014; Liu and Zhang 2015; Carney 2016). Arnold and Vrugt (2008), Bernal et al. (2014), and Liu and Zhang (2015) show that there exists a positive relationship between policy uncertainty and stock market volatility. Heightened uncertainty also prompts a decline in investment, as claimed by Kang et al. (2014) and Gulen and Ion (2016). In addition, Tax adjustments, regional conflict, and fiscal reforms in response to political and economic instability inhibit investments (Pástor and Veronesi, 2013; Chau et al. 2014).

The present research seeks to assess the role of uncertainty fluctuations on determining oil and natural gas GCC stock markets. The aspects of regional and country-specific uncertainty have been relatively unexplored for the case of Gulf countries. We decompose the volatility of stock prices from the six GCC countries into country specific role and a

contribution common to all GCC countries for the periods before and after the blockade on Qatar. From a policy perspective, measuring, monitoring and analyzing impact of different uncertainty components is of paramount importance (Mumtaz and Musso, 2018). By documenting the evolving role of various components of uncertainty in explaining the volatility of oil and gas markets, we can better understand developments in oil and gas stock markets as well as the financial cycles, and in turn appropriately inform the economic policy process in times of geopolitical turmoil.

Our findings reveal that the contribution of the different uncertainty indicators in explaining the volatility of oil and natural gas stocks vary by moving from the period before the Qatar diplomatic crisis to the period after the blockade. Prior to the boycott, the regional uncertainty plays more explaining oil and natural gas markets than the country-specific uncertainty. After the blockade, the regional uncertainty and the country-specific uncertainty are likely to exert a pronounced effect on the oil and natural gas markets in all cases, though with different sensitivities. We advance throughout this research some elements of explanation of these outcomes.

The article is organised as follows : Section 2 provides some insights about the energy cooperation among the GCC countries before and after the 2017 Gulf-Qatar diplomatic crisis. Section 3 describes the methodology and the data. The findings from the estimation method are presented and discussed in Section 4. Section 5 concludes.

2. The 2017 Gulf crisis and energy cooperation among the GCC states

The energy cooperation across GCC countries could pave the way for strengthened integration to improve economic efficiency, enhance governance and ensure security of supply. The region is facing a prompt surge of the domestic energy demand owing to the increased economic growth, wider infrastructure and industrial projects without ignoring the

population growth and immigration², raising fuel consumption. The GCC states grew remarkably over the last decades, with a combined GDP of around 2.3 trillion dollars in 2017 and total exports of approximately 879 billion dollars. Evidently, the 2014-oil price crash has adversely affected these economies. The GCC members makes up the world's biggest energy exporting bloc, holding nearly 29.3 percent of the world's global oil reserves and approximately 23 percent of its natural gas reserves. In short, GCC countries depend substantially on the hydrocarbons. Before the oil price decline of mid-2014, the hydrocarbon sector accounted for 80 percent of its exports and fiscal revenues. Collectively, the GCC states have so far fulfilled noticeable milestones including the achievement of a regional free trade zone and a customs union. This cooperation, nevertheless, has not yet attained its full potential. The GCC grid interdependence represents the bloc's most successful energy cooperation project to date. But since 2016, no additional efforts have been undertaken to spur the economic benefits while attempting to achieve a complete regional electricity market. Moreover, opportunities exist for cooperation in the gas sector, easing use and trade of wide resources across the region. All GCC states (except Qatar) suffer from a shortage of natural gas. Oman and the UAE are highly influenced, and started importing natural gas from Qatar. This implies it would be fruitful to develop cross-border pipeline projects.

Normally, the current conditions may be ripe to motivate regulators to make further efforts toward regional energy cooperation. First of all, the GCC economic downturn owing to the global decline in oil prices has led to a deeper burden on governments, yielding them to rethink energy prices. In addition, the heightened domestic pressures to stimulate economic diversification, coupled with international pressure post-COP21 to minimize carbon dioxide emissions and limit climate change may be regarded as incentives to cooperate.³ Nonetheless,

²The total population of GCC increased from 23 million in 1990 to 53 million in 2016.

³It must be stressed that collapsing energy prices prompt the region exhibiting greatest per-capita emissions in the globe, with Qatar ranking first.

regardless of the projected benefits that could be fulfilled through energy cooperation across GCC, a variety of barriers are still harm the efforts to speed up cooperation. Political will and geopolitical uncertainty may be considered as the major challenges.

Energy policies across the GCC region remain unstable. Each state has roles for independent regulatory bodies, and a different market structure to meet security of supply. Energy is a requisite to stimulate economic development at the national level. Countries must ensure their own interests and responsibilities are protected in an attempt to conduct joint projects. There is no doubt that the recent Gulf crisis has prompted a markedly turmoil in the intra-Gulf relations. The consequences of such economic and diplomatic upheaval will be difficult to conquer even if the Gulf states manage to find a way out. But it must be reminded that from the beginning, the Gulf Cooperation Council lacked a definite foundation, which gives an explanation of its failure to develop a comprehensive regional organization to circumvent crises among its members. While social cooperation between the GCC nations has often been great, the state-level interactions have been relatively modest, at least with respect the institutionalization of agreements that were concluded among the member states. But other regional organizations including the European Union, for instance, have much less social cooperation but are highly institutionalized regarding the economic cooperation. This has been far more successful at stimulating political consensus. In other words, the GCC lacks the required legislative and bureaucratic arms to successfully implement collaborative policies and appropriate decision-making processes. Beyond the several challenges facing the GCC states over the last years (over-reliance on oil and gas,⁴ asset price bubbles resulting

⁴The global oil prices have often played a significant role in driving growth rates, and in turn income levels of these economies. The sharp oil price collapse in mid-2014 turned the account surpluses into noticeable deficits in most cases, putting huge pressures on foreign exchange reserves.

from higher oil price⁵, economic diversification, stubbornly low productivity, see Macaron (2017) for more details), the GCC, faces more than anything else, a political challenge. In fact, geopolitical developments, unstable relations within the Gulf region, and more importantly a protracted diplomatic rift between Qatar and its Arab Gulf neighbors could slow progress toward greater GCC integration and cause a broader erosion of confidence in Qatar and the rest of the GCC countries, harming business in general, and energy sector in particular. The Qatar diplomatic crisis puts the accomplishment of GCC reform plans in doubt, and could in turn undermine the GCC structural reforms aiming at diversifying their economies.⁶

To spur energy collaboration, it is of utmost importance to build more trust. It is time for these countries to resolve their differences and work seriously on strengthening the GCC economic outcomes in an uncertain global economy. If the political will is established, the implementation of energy cooperation will follow without any difficulty.

3. Methodology and data

To determine country-specific and regional uncertainty proxies, we apply a dynamic factor model with stochastic volatility and time-varying factor loadings. The factor model is expressed as follows :

$$X_{it} = B_i^C F_t^C + B_i^G F_t^G + e_{it} \quad (1)$$

where X_{it} is a panel of oil and natural gas stock price indices for GCC countries. This panel of data is summarised by three main components: a set of factors common to all countries

⁵The higher oil prices that prevailed before the oil price crash of mid-2014 prompted asset price bubbles that posed significant risk to the GCC macroeconomic stability.

⁶The huge reliance of the GCC economies to the hydrocarbon sector urges a vigorous and speedy implementation of structural reforms.

(F_t^G) and a set of country-specific factors (F_t^C) for each country and idiosyncratic components (e_{it}) . The global and the country specific factors pursue VAR processes :

$$F_t^G = C^G + \sum_{j=1}^p \beta_j^G F_{t-j}^G + (\Omega^G)^{1/2} e_t^G \quad (2)$$

$$F_t^C = C^C + \sum_{j=1}^p \beta_j^C F_{t-j}^C + (\Omega^C)^{1/2} e_t^C \quad (3)$$

It must be stressed that equations (2) and (3) enable the global and cross-country factors to have a dynamic relationship. The idiosyncratic component has an AR transition equation denoted as:

$$e_{it} = \sum_{j=1}^J \rho_j e_{it-j} h_{it}^{1/2} \varepsilon_{it} \quad (4)$$

where $e_t^G, e_t^C, \varepsilon_{it} \sim N(0,1)$. Based on Mumtaz and Theodoridis (2015)'s study, we enable for time-varying factor loadings. Collecting the factor loadings at time t in a matrix $B_{it} = [B_{it}^G, B_{it}^C]$, the law of motion depicting their time-variation can be expressed as follows :

$$B_{it} = B_{it-1} + (Q_i^B)^{1/2} U_t \quad (5)$$

where the error terms in equations (2), (3), (4) and (5) are heteroscedastic. Following Mumtaz and Musso (2018), the error covariance matrices in the VAR models (2), (3) and (4) are denoted as :

$$\Omega_t^J = (AJ)^{-1} H_t^J (AJ)^{-1'} \quad (6)$$

where $J = G, C$. AJ are lower triangular and H_t^J are diagonal matrices given by :

$$H_t^J = \text{diag}(S_k^J \lambda_t^J) \quad (7)$$

The time-varying volatility is detected by λ_t^J with S_k representing scaling factors for $k = 1, \dots,$

K. The total volatilities evolve as AR(1) process expressed as follows:

$$\ln \lambda_t^J = \alpha^J + \beta^J \ln \lambda_{t-1}^J + (\mathbf{Q}^J)^{1/2} + \xi_t^J \quad (8)$$

Equation (6) indicates that the volatility component detects the entire volatility in the orthogonalized residuals of the VAR models. As claimed by Carriero et al. (2015), the common volatility can be defined as the average of the variance of the shocks with equal weight given to individual volatilities. We should point out at this stage that the errors to these equations represent the shocks to global and country-specific factors. Therefore λ_t^G, λ_t^C detect the average volatility of the unpredictable part of the common and the cross-country components. These volatilities can be considered as relevant indicators uncertainty associated with regional and country-specific conditions.

We suppose that the variance of the shocks to the idiosyncratic component to be heteroscedastic with h_{it} evolving as a stochastic volatility process. We have :

$$\ln h_{it} = a_i + b_i \ln h_{it-1} + q_i^{1/2} \zeta_{it} \quad (9)$$

The structure of the model suggests that the unconditional variance of each variable can be expressed as a function of Ω_t^J ($J = G, C$) and h_t . Specifically,

$$\text{var}(X_{it}) = (\mathbf{B}_{it}^G)^2 \text{var}(F_t^G) + (\mathbf{B}_{it}^C)^2 \text{var}(F_t^C) + \text{var}(e_{it}) \quad (10)$$

where the variance terms in the equation (10) are measured by means of a standard VAR formula for unconditional variance. These variance terms are time-varying as they are functions of λ_t^G, λ_t^C and h_{it} .

Note that the volatility of each variable in our panel is determined by uncertainty that is common to all countries, an uncertainty that is country-specific as well as a residual term that detects data uncertainty. More accurately, we try to identify how volatilities of oil and natural gas equities for each country are driven by region-specific or country-specific uncertainty. The time-varying factor loadings permit to evaluate the dynamic contributions of each of the regional, cross-country and idiosyncratic components.

In short, this study assesses whether the uncertainty factors determining the volatility of GCC oil and natural gas stock prices have been changed over the period witnessing heightened uncertainty over the 2017 Gulf crisis. To test this hypothesis, we determine the uncertainty contributing factors for two equal periods prior to and post-the blockade on Qatar. The boycott decision was on 05 June 2017, which we subsequently view as the announcement day. So, this study compares the determining forces of the volatility of oil and natural gas stock markets over equal periods before the boycott (Period 1: from 03 April 2016 to 04 June 2017; 428 observations), and after the boycott (Period 2: from 06 June 2017 to 07 August 2018; 428 observations). The data of oil and natural gas stock indices were collected from DataStream (Thomson Reuters). We transformed all the variables by taking natural logarithms to correct for heteroskedasticity and dimensional differences. Descriptive statistics for series are reported in Table 1. We note that the volatility increased for all the stock markets under study by moving from period 1 (i.e., before the blockade, Panel A, Table 1) to period 2 (i.e., after the blockade, Panel B, Table 1), with large extent for Saudi Arabia and Qatar. The least volatile stock market is that of Oman. After the 2017 Gulf crisis, we notice that all the equities are likely to be negatively skewed, with the exception of Oman and Bahrain. Such heterogeneity in this times of market stress highlight that market participants may enjoy portfolio diversification opportunities. But, despite the importance of these results, the latter do not inform us about the contributors of this change in the volatile behaviors of oil

and gas markets. We try in the following to identify the uncertainty driving forces of the volatility of oil and gas markets before and after the blockade.

Table 1. Statistical properties of oil and natural gas stock returns by country

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
<i>Panel A : Period 1 : Before the blockade on Qatar</i>						
Mean	0.001916	0.000806	0.001621	1.10E-05	-0.001023	0.002128
Median	0.031738	0.030342	0.041192	-0.002028	0.077655	0.031826
Maximum	0.166263	0.116793	0.145847	0.438927	1.677135	0.387325
Minimum	-0.698647	-1.158281	-0.509544	-0.338575	-4.582749	-0.823530
Std. Dev.	0.123620	0.108400	0.125771	0.181631	0.374123	0.162142
Skewness	-1.933086	-4.106304	-1.801694	0.244617	-5.185766	-1.539648
Kurtosis	8.157172	7.85176	6.169026	4.225992	58.77320	6.920278
Jarque-Bera	740.8627	192.9533	41.06505	31.07290	57391.57	443.1699
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
<i>Panel B : Period 2 : After the blockade on Qatar</i>						
Mean	0.000652	0.000338	-0.001613	0.000316	0.003419	-0.000778
Median	0.039204	0.040166	0.041048	-0.003971	0.072908	0.042192
Maximum	0.164509	0.127914	0.133137	0.537433	1.684439	0.535590
Minimum	-0.456515	-1.625613	-0.589045	-0.534400	-4.278205	-1.631654
Std. Dev.	0.125851	0.131264	0.123171	0.297125	0.337480	0.214524
Skewness	1.122593	-5.588247	1.676758	-0.603860	-5.357073	-2.740098
Kurtosis	3.759154	5.964327	5.930341	4.970826	65.29266	16.14385
Jarque-Bera	100.1730	59.44518	35.36880	70.03692	71247.18	3616.481
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

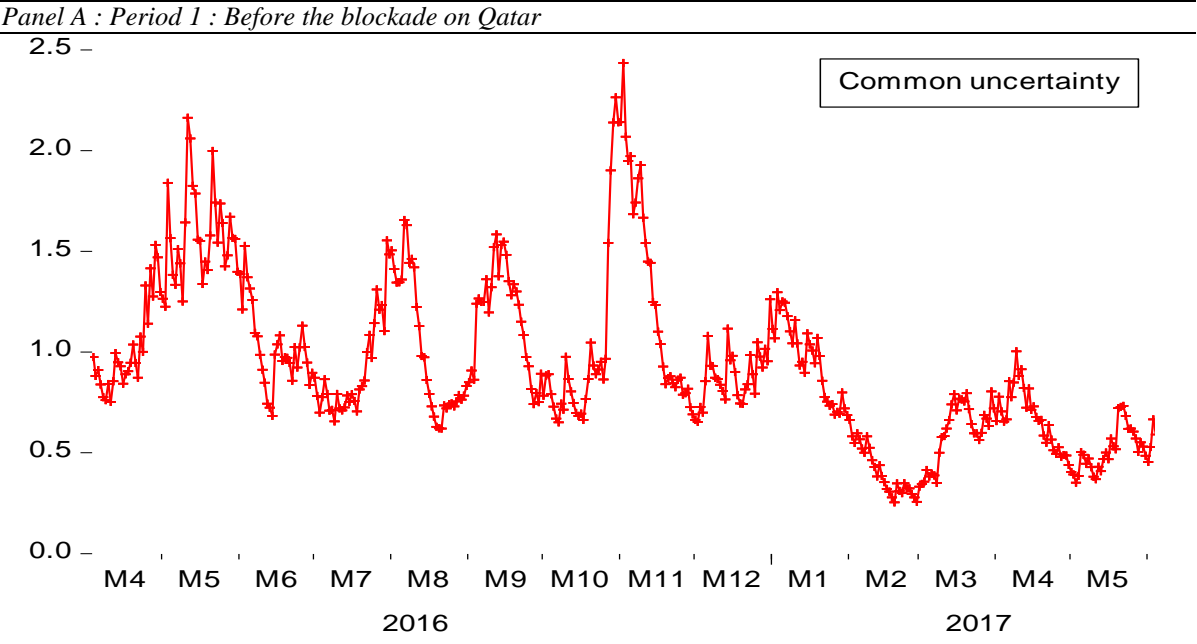
4. Empirical results

4.1. Estimates of uncertainty components

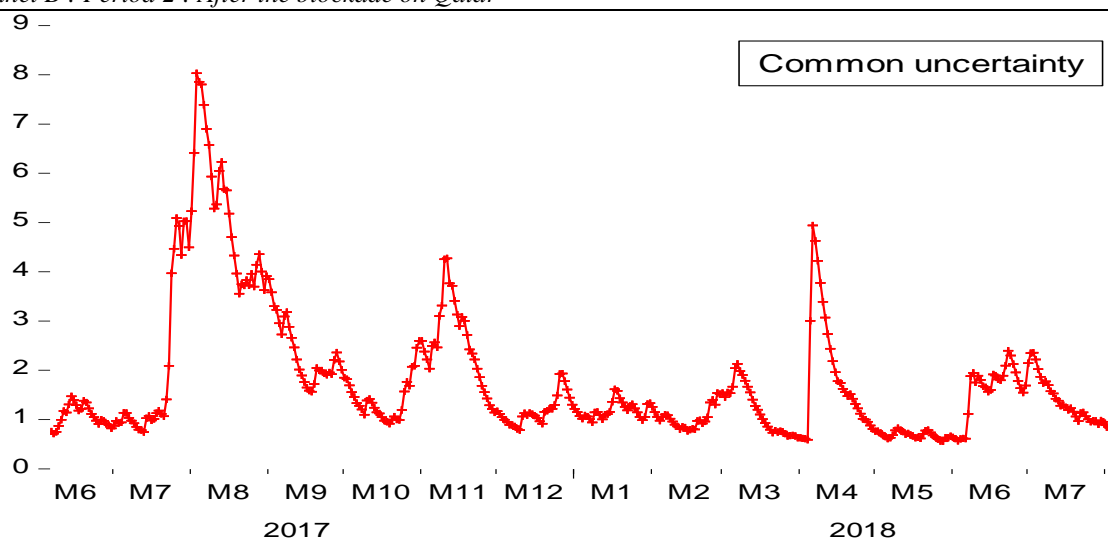
The uncertainty measure derived from the dynamic factor model is displayed in Figure 1 by the posterior estimates of the common standard deviation of the shocks to the global factors $(\lambda_t^G)^{1/2}$, along with various selected events, either relating to major economic events or associated to major geopolitical events with significant economic implications such as the US presidential elections and 2017 Gulf crisis with implications for global oil prices. We interpret this as an uncertainty indicator that is common across the countries under consideration. Notably, the measure of the regional uncertainty attained its highest levels with the Trump's win in US presidential elections in November 2016, with the Riyadh Summit in

late May 2017 when many world leaders, including Donald Trump visited the region, giving great support for Saudi Arabia’s efforts in fighting against states and groups allied with Iran and the Muslim Brotherhood, on June 5 with the announcement of the decision by Saudi Arabia, UAE, Bahrain, and Egypt to suspend diplomatic ties with Qatar, and after 30 January 2018 when the United States-Qatar Strategic Dialogue meeting was held (see Panels A and B, Fig.1). Accounting for about 40 percent of global oil reserves and 24 percent of proven gas reserves, GCC countries benefited from an increased demand in emerging markets. Given this, it is not surprising that a diplomatic row consisting of cutting transport links and trade ties with Qatar exacerbates the uncertainty leading to reverberations in the oil and gas market. But the Qatar-GCC diplomatic crisis has intensified concerns about oil and gas supply routes. Fig.1 clearly indicates that the uncertainty across GCC countries increases more markedly after the Qatar diplomatic crisis.

Fig. 1. The estimate of the standard deviation of shocks to the common factors



Panel B : Period 2 : After the blockade on Qatar

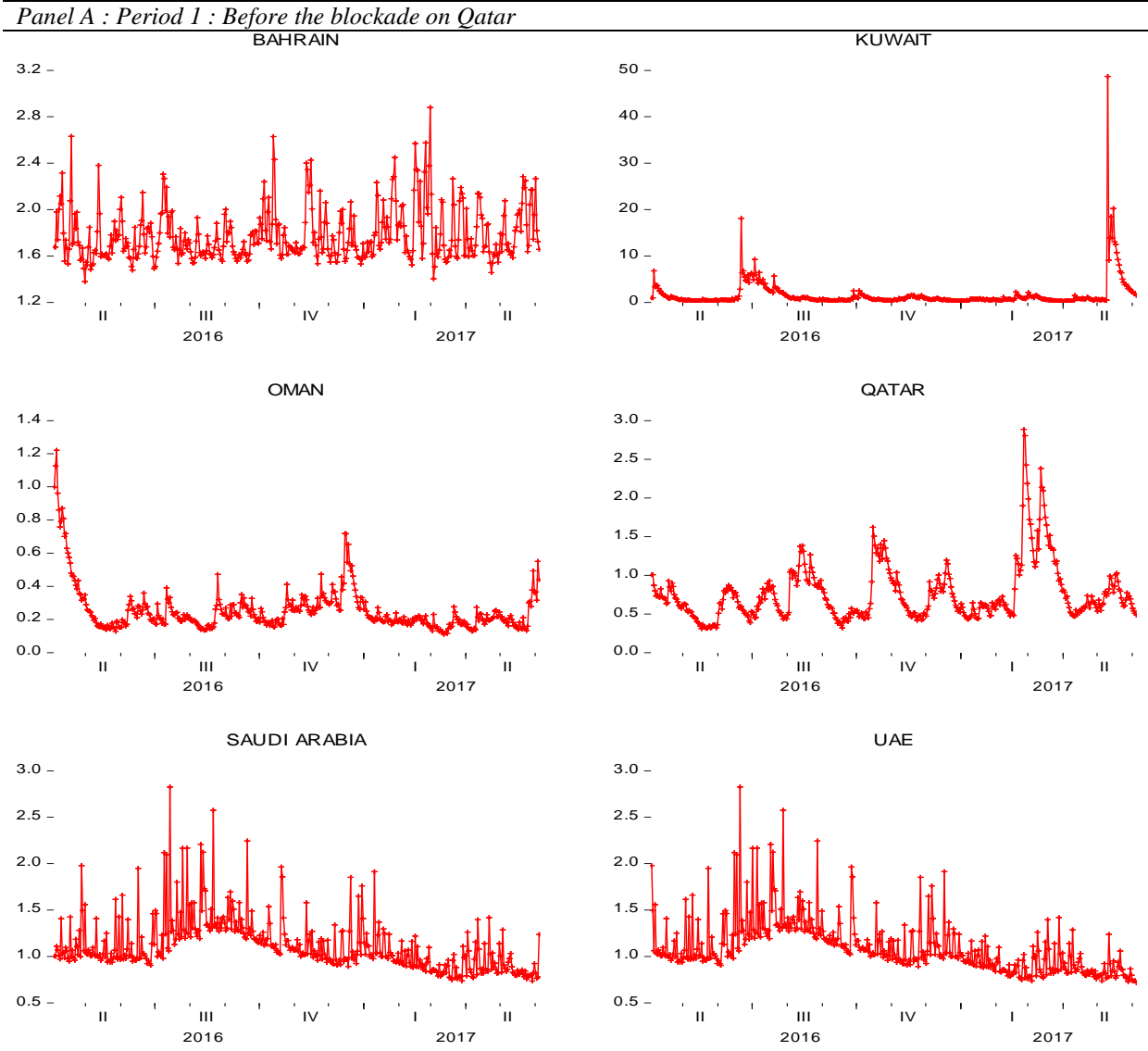


The posterior estimates of the common standard deviation of shocks to country-specific factors $(\lambda_t^G)^{1/2}$, for $c=1, \dots, 6$ are outlined in Fig. 2. The cross-country estimates of financial uncertainty indicates that GCC oil and gas stock market uncertainty is highly persistent for all countries before and after the blockade (Panels A and B, Fig. 2). OPEC serves as a potential determining factor of this high uncertainty surrounding energy industries. The OPEC's principal objectives of sufficient supply and stable prices are to be fulfilled by a quota system which enables each member a production in relation to its proven reserves. The OPEC member states account for 40 percent of global crude oil production, 55 per cent of crude oil exports, and more than two-thirds of the world's crude oil reserves. Despite the OPEC's power in the oil market, the regulation of individual production quotas can have a significant effect on the global oil market price. According to Zietlow (2015), the oil price originates from resource pragmatism and nationalism which prompt heightened supply uncertainty. OPEC can be viewed only as a vehicle to expand the interests of its member states. Nonetheless, the individual market power of countries (in particular the core OPEC, i.e., Saudi Arabia, Kuwait, UAE and Qatar) may yield to a breakdown of the cartel-like structure. In this context, Dibooglu and AlGudhea (2007) argued that OPEC member states

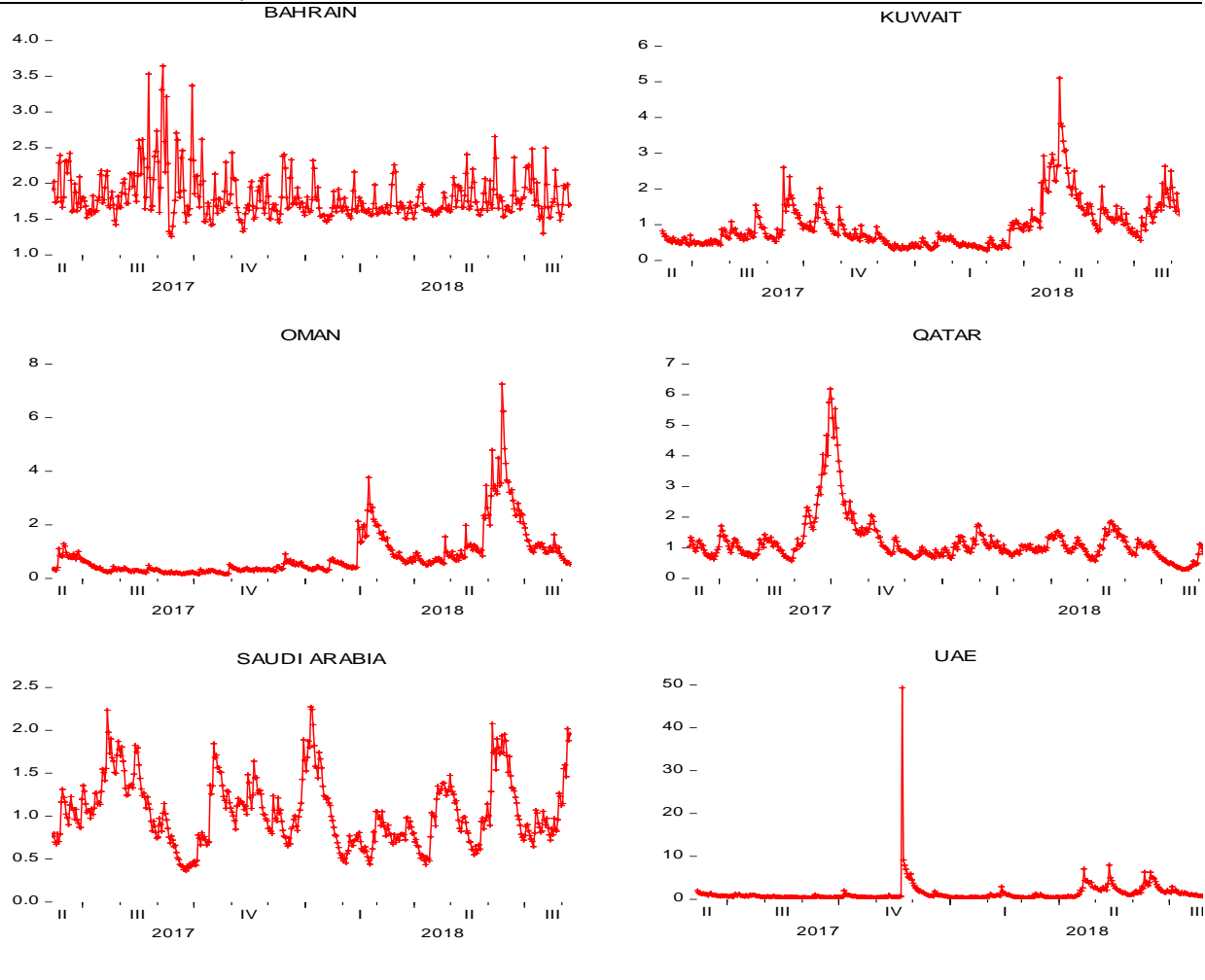
deviate from the agreed production quotas which can be perceived as a signal of the increased instability of the group, and may in turn, lead to an excessive oil price volatility. Another uncertainty factor that underpins oil and gas stock market volatility is geopolitics. Geopolitical risks cause disruptions in major oil-producing countries, raising critical questions about the ability of these countries to supply the global market in the long-term in periods of heightened crisis or tensions which would have a strong effect on oil price dynamics. The significant oversupply of oil markets has cushioned oil prices from a lot of the geopolitical turmoil in the world over the past few years. Nevertheless, with the markets rebalancing, geopolitical instability may exert a more pronounced impact on oil prices in the future. Moreover, some studies have suggested that oil and gas investments are significantly impacted by geopolitical stability, within-border conflicts and external conflicts, altogether documenting a negative causality from geopolitical uncertainty to investment (for example, Brandon and Yook 2012 ; Bøe and Jordal 2016). In this context, Fig. 2 clearly indicates that oil and gas price indices have been affected by the 2016 US presidential elections. Oil prices moved in volatile territory after the Trump's win in the US presidential elections. It is expected that the escalating trade war could prompt a great fallout for the oil market. Besides, the president Trump called for lower oil prices by increasing supply. Donald Trump tweeted in November 2018 'Hopefully, Saudi Arabia and OPEC will not be cutting oil production.' In this context, some commentators speculate that Riyadh may be more willing than usual to pay heed to President Donald Trump's call, after the reputational threat it suffered following the death of Saudi journalist Khashoggi. Yet, Saudi Arabia has actually raised its production even modestly since in response to Trump's call. Accordingly, the Bank of America recently described a pessimistic scenario in which the possibility of an emerging market downturn happened at a time when OPEC raised production, a combination that could undoubtedly push oil down to 60 dollars. Interestingly, the Qatar-GCC diplomatic crisis and the resulting

challenges seem to be a factor associated to substantial increases in the common financial uncertainty (Panel B, Fig.1). More interestingly, we note that the 2017 Gulf crisis has exacerbated financial uncertainty with large extent for Qatar and the boycotting countries (Panel B, Fig. 2). This is dominantly due to the paramount importance of the region for global supplies. The increased volatility of the region has prominent implications on the supply of oil and gas. The stability of oil producing countries is crucial to maintain a global supply line and then to mitigate uncertain exposure.

Fig. 2. The estimate of the standard deviation of shocks to country-specific factors



Panel B : Period 2 : After the blockade on Qatar



4.2. Variance decomposition

To assess the degree to which shocks to various uncertainty components drive the volatility of oil and gas stock price indices for each GCC country, we utilize forecast error variance decompositions. In other words, based on equation (10), the unconditional variance is decomposed into region-specific and country-specific contributions with the residual capturing the idiosyncratic component (or the variable-specific volatility). Table 2 displays the average variance decomposition for the GCC oil and gas stock price indices. More particularly, the table displays the average contributions over the whole sample period of each uncertainty component to oil and gas stock market for each Gulf country, and for the whole sample of GCC countries. We show that idiosyncratic uncertainty explains the total volatility

of oil and gas stock prices, more than the region-specific uncertainty and the country-specific uncertainty ; this is valid for the two periods under study. Before the blockade, on average for all the countries, the idiosyncratic components explains most the volatility of oil and natural gas stock prices, with common uncertainty component corresponding to the second most important driving force. The importance of common uncertainty in driving the volatility of oil and gas stock markets before the blockade can be explained by the increased financial sector integration among Gulf countries. Highly motivated by the necessity to enhance efficiency, GCC countries have taken prominent steps these last decades toward achieving appropriate financial regulation and corporate governance measures, which have in turn enabled to improve convergence across GCC financial systems. Lane and Milesi-Ferretti (2017) explored the extent of financial integration in the Gulf using capital flow data and equity prices. The study revealed that there is an improvement in regional financial integration. In contrast, and after the blockade on Qatar, oil and gas volatility seems dominantly driven by the specific-country uncertainty and the idiosyncratic component, while the impact of the region-specific uncertainty appears less pronounced (with the exception of Kuwait and Oman). This highlights that the Qatar diplomatic crisis can be viewed as a signal for failure in regional integration among GCC countries. The Gulf States appear to move from the stage of cooperation to confront foreign threats to another stage where all states will seek their own security and protection against one another. In response to the blockade, Qatar rebuild its trade ties and food supply chain to pass round imports previously received through Saudi Arabia and the UAE. Qatar accelerated efforts to further diversify sources of imports and external financing. Qatar withstand the harmful effects of the blockade as it growingly emphasizes economic relationships outside the Gulf region. This has allowed Doha to replace import trade that came by land from Saudi Arabia and by sea from the UAE. In brief, the 2017 Gulf crisis forced Qatar to think and act more swiftly to determine new supply routes

and trade partners. Doha cultivated new supply chains via Oman while receiving great assistance from Turkey and Iran. The Turkish president has been a major supporter of Doha since the quartet cutties and imposed boycott against Qatar. Also and according to Qatar's Chamber, Turkey is one of Qatar's major customers for non-oil exports. Similarly, Qatar's pledge of aid to Turkey has strengthened the two countries' alliance. In August 2018, the emir of Qatar pledged to invest 15 billion dollars in Turkey, which grapples with a currency crisis that made the lira collapse by about 45 percent against the US dollar. In the same order of ideas, Doha sees its links with Tehran as vital to its economic and security interests. Qatar's ties to Iran are of paramount importance to safeguard its natural resources, as the countries share the biggest gas field in the world. Since the blockade, Iran and Qatar ties have improved. As a response to the 2017 Gulf crisis, Iran voiced its support for the Qatari government, consolidating its alliance with the small Gulf state. Iran's trade with Doha totaled 250 million dollars in 2018, registering a sharp rise of 2.5 percent compared with 2017 (Bouoiyour and Selmi 2018). Overall, the recent Gulf crisis and its resulted diplomatic and economic challenges with other GCC countries has significantly sped up Qatari plans and has also strengthened the motivation to take a close attention to self-sufficiency. The fact that the major uncertainty factor contributing to the variance of oil and gas stock prices of Kuwait and Oman is still the common component can be attributed to their neutral reaction amid Qatar crisis. Rather than following Saudi Arabia and its allies, Kuwait and Oman have chosen to stay resolutely above the fray. The neutrality of these two Gulf countries provided leverage for Qatar, albeit without direct support. But it must be mentioned at this stage that Kuwait appears as the main mediator among the warring parties, and Oman endorsed diplomacy while improving its links with Qatar. Kuwait has attempted to mediate the spat between Qatar and its Gulf neighbors. Its good links with all parties of the GCC and equal distance from each of them have enabled Kuwait to act in a neutral manner. But it must be

mentioned that Oman is uninvolved in the 2017 Gulf crisis and cannot undertake such a mission because of intense relations with Saudi Arabia and the UAE as a consequence of strong Oman's ties with Iran. In fact, Saudi Arabia has proclaimed its displeasure with the sultanate's increased links with Iran across several sectors such as energy, trade, defense, and investment. In addition, Saudi Arabia and UAE' fears about strengthened Omani-Iranian relations may prevent the Saudis and Emiratis from viewing Muscat as neutral in the current Gulf crisis.

Table 2. Contribution of the region-specific, country-specific and idiosyncratic uncertainty components to the variance of GCC oil and gas stock prices

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
<i>Panel A : Period 1 : Before the blockade on Qatar</i>						
Common uncertainty	24%	33%	29%	38%	41%	48%
Country-specific uncertainty	17%	21%	18%	14%	22%	19%
Idiosyncratic component	59%	46%	53%	48%	37%	33%
<i>Panel B : Period 2 : After the blockade on Qatar</i>						
Common uncertainty	19%	30%	31%	22%	24%	26%
Country-specific uncertainty	22%	24%	27%	35%	31%	32%
Idiosyncratic component	59%	46%	42%	43%	45%	42%

Our obtained findings have relevant policy implications for Gulf countries. In fact, the consideration of distinct sources of uncertainty can appropriately inform the changing energy landscape and the optimal policy reaction. For instance, if the volatility of oil and gas markets is mainly determined by the country-specific uncertainty component, a range of domestic policy measures might in turn represent the most effective response to mitigate possible harmful consequences. In contrast, when the oil and natural gas markets are predominantly explained by the common uncertainty, this might be beyond the control of national policy authorities if acting in isolation and might need under certain scenarios, coordinated policy responses at regional level. But with the recent political developments amid the blockade on

Qatar which exacerbate political and economic uncertainty, coordinated policies among the GCC countries become hard, if not impossible, to be achieved. This is because the problem here goes beyond the economic and financial context. It enters into logic of Sunni world domination. Indeed, the Qatar's challenge to Saudi Arabia is exacerbated by the fact that it adheres to Wahhabi creed. More accurately, Qatar's alternative adaptation of Wahhabism coupled with a long-standing links with the Muslim Brotherhood, make its relationship with Saudi Arabia more complicated and upraise it to a serious threat (Bouoiyour and Selmi, 2018).

In sum, the changing role of the various uncertainty components derived from the factor model to explain the volatility of oil and gas stock markets in Gulf states underscore the paramount importance of monitoring both the common and country-specific uncertainty, in order to better understand developments in oil and gas price fluctuations and financial cycles, and then well inform the economic policy process. With the multiplicity of oil supply disruptions resulted from geopolitical events, such accurate information may help oil and gas producers to effectively counterbalance the supply losses.

5. Conclusions

This paper addresses whether uncertainty dynamics that are common among GCC countries matters more or less for oil and gas stock market volatility than country-specific uncertainty shocks. More interestingly, we test if the 2017 Qatar-Gulf crisis slow the progress toward greater energy cooperation in the GCC.

Using a dynamic model with time-varying factor loadings and stochastic volatility, we show that the contributors of the volatility oil and gas shares vary over over time. Before the blockade on Qatar, the volatility of oil and gas stock prices is determined first and foremost by the common uncertainty component. However, the contribution of cross-country

uncertainty appears more pronounced after the economic and diplomatic boycott of Doha. Such outcome is not surprising as confusion gains ascendancy in the energy and shipping markets since Saudi Arabia and its allies abruptly cut diplomatic and economic ties with Qatar. The largest class of oil tankers⁷ frequently travel back-to-back around several GCC ports to load about two million barrels of crude oil per month. The UAE's al-Fujairah port is the major hub for bunkering and energy trading activities where ships transit on their way to Asia, Europe, and North America. Since the Qatar-GCC crisis started, these supertankers were left with unforeseeable guidance on the restrictions they might face in their regular routes. Accordingly, the International Energy Agency (IEA, 2017) claimed that the Gulf spat led to logistical headaches with growing shipping costs. This highlights that the 2017 Gulf crisis has significantly strengthened the motivation of each Gulf country to take a close attention to self-sufficiency. The Gulf States seem to move from the stage of cooperation under the banner of the Gulf Cooperation Council to defy foreign threats to another stage where all countries will seek their own energy security and protection against one another. Either business was or was not disrupted, the disorder regarding trade routes would have important implications. Europe and Asia will most likely rethink how much their economies should rely on energy resources from the Gulf market. Qatar is a global leader in liquefied natural gas (LNG), offering 30 percent of the world's LNG supplies, mostly to Asian and European countries. This implies that a disruption in the production or shipment of Qatari LNG could have a significant effects on European economies, forcing them to rely instead on Russian natural gas, a move they would like to bypass considering the political upheaval with Moscow. Indeed, there has been a consciousness among all sides that a disruption in the global energy market would precipitate alarm bells, especially in Asia and European countries.

⁷The very large ship for transporting oil carrying more than 100,000 tonnes of oil.

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