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Economic Instability in the Gulf Region: Insights from a Dual Shock

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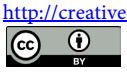


Abstract

The emergence of the COVID-19 pandemic has caused financial markets to suffer historic losses during the first quarter of 2020, at levels unseen since the crisis of the futures markets in 1987. The pandemic affected global markets parallel to a simultaneous shock from the oil price war between Saudi Arabia and Russia. As the global health crisis worsened, governments worldwide were forced to take measures that led to economic lockdowns and significant economic disruptions. This research paper examines the extent to which the dual shock impacted the GCC economies due to the critical implications for the Gulf region because of its heavy reliance on oil. The core findings show that the dual shock caused significant disruption in the GCC stock exchanges, except for the case of Bahrain's stock market, which emerged as relatively stable.

Keywords

COVID-19, Oil Price War, GCC, Stock Markets, Dual Shock

1. Introduction

The year 2020 brought significant uncertainty levels to the GCCs economies as a dual shock impacted the region. As the global health crisis unfolded and its effects escalated globally, governments worldwide were forced to take measures that led to economic lockdowns. The economic hibernation led to significant social and economic hardships and severe disruptions of global supply chains that reduced aggregated demand and aggravated during 2021. Global inflationary pressures led by the hand of the energy crisis emerged as the world economies started their reopening process (Jackson, 2021; Ha Kose, & Ohnsorge, 2021). In addition, discrepancies between Saudi Arabia and Russia led to significant oil supply disruptions that added additional pressures to the GCC region, which relies heavily on oil exports. On March 9, the Kingdom of Saudi Arabia began an

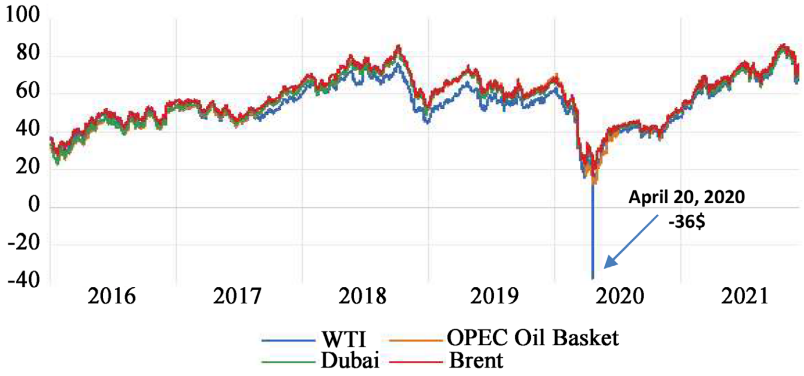
oil price war against Russia by increasing production levels by 25%, reaching 12.3 million barrels a day. The decision caused a significant disruption in the oil market, with oil prices plunging as oil barrels were sold at historically low prices, with an immediate 30% price decline (Jawadi & Sellami, 2021). The situation did not improve even after the historical deal of the OPEC countries agreeing to cut oil production by 10 million barrels/day on April 12, 2020, as prices were 22$ (WTI) and 18$ (Brent) on April 13 (DataStream 2021). Hence, oil prices continued their sharp decline through April 2020, and by April 19, the WTI reached 17$. April 20 and 21 were historical days as WTI recorded a historic low, entering negative territory with a −36$ price that was followed the next day by −6$ for the first time in oil history (Estrada, 2020).

Undoubtedly, oil plays a critical role in the GCCs economies as the countries have a significant time-varying financial dependency on fossil fuels. Consequently, this paper examines the impact of COVID-19 and the oil shock on the return and volatility of GCC countries, as existing research studies have not provided evidence of market performance amidst the 2020 dual market shock within the context of volatility persistence and long-memory processes.

2. Dual Economic Shock—The 2020 Global Health Crisis and the Oil Price War

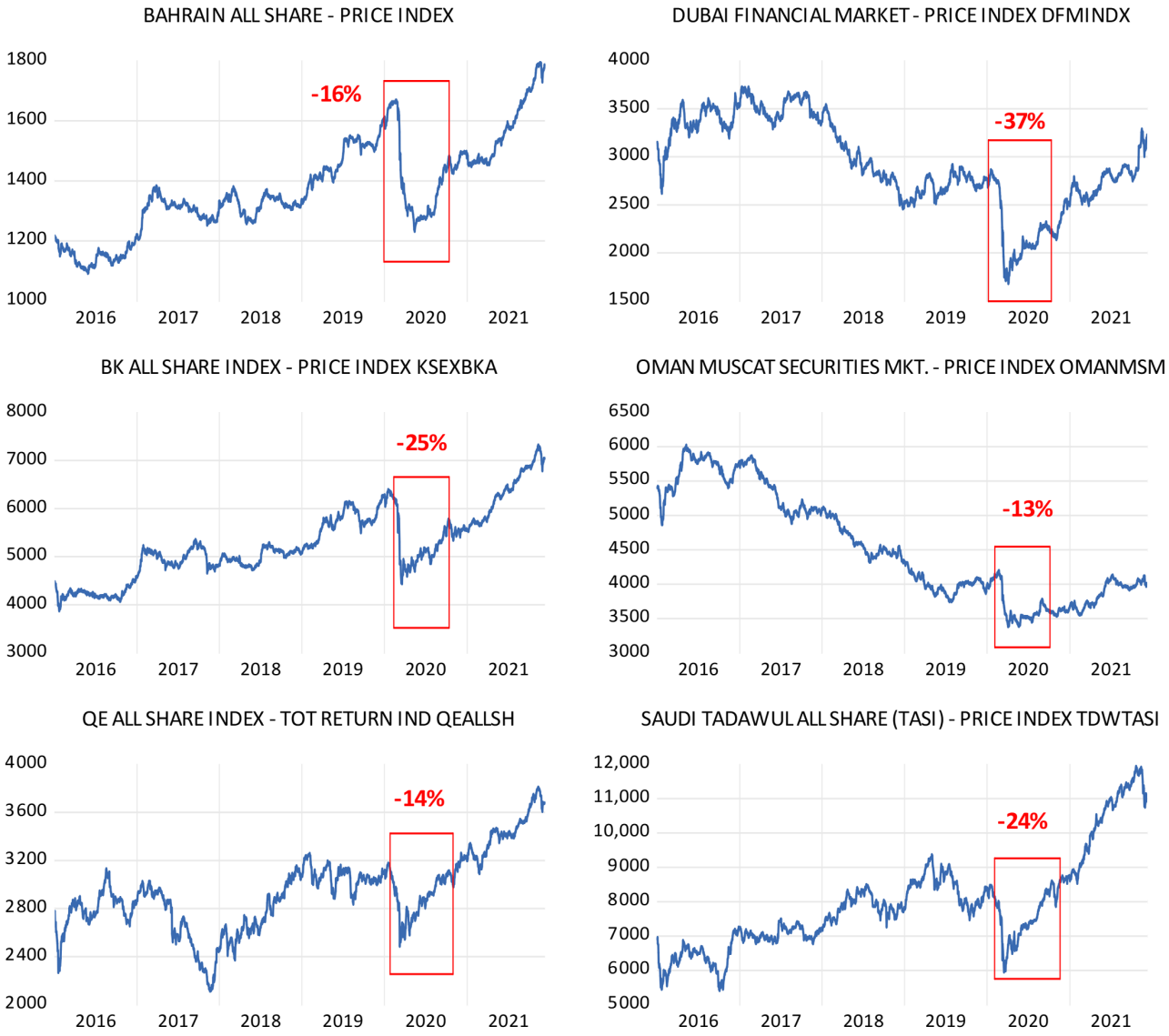
The emergence of COVID-19 has caused global stock markets to experience historic losses during the first quarter of 2020 at a level unseen since the crisis of the futures market in 1987 (BBC, 2020a; Bash, 2020; Lestari, 2021). For instance, the Dow Jones Industrials, the S&P 500, and the NASDAQ (the technological index) declined 3.5%, 3.3%, and 3.7%, respectively, during the initial stages of the COVID-19 pandemic (Bash, 2020; Bartoszkiewicz, 2021; BBC, 2020b). As the global health crisis escalated, an oil price crisis was also in the making. On March 9, the Kingdom of Saudi Arabia began an oil price war against Russia by increasing production levels by 25%, reaching 12.3 million barrels a day. The decision caused a significant disruption in the oil market, with oil prices plunging (Jawadi & Sellami, 2021; Albulescu, 2020). The situation did not improve even after the historical deal of the OPEC countries to cut oil production by 10 million barrels/day on April 12, 2020, as WTI prices were at 22$ and Brent prices at 18$ on April 13. **Figure 1** below illustrates how oil prices continued their sharp decline through April 2020, and by April 19, the West Texas Intermediate Index (WTI) registered two consecutive days in the negative zone.

Furthermore, **Figure 2** below highlights the effects of the global health crisis on the performance of the GCC markets. The Dubai index (DFMGI) was the most impacted as it dropped by 37%, followed by the Kuwaiti index (KSE), which fell by 25%. On the other hand, the Saudi index (TASI), the Bahrain index (Bahrain), Qatar index (Qatar) and Oman (Muscut) recorded the lowest impact with drops of 24%, 16%, 14% and 13%, respectively.



Source: Authors (2022). Data retrieved from DataStream (2022).

Figure 1. Oil prices.



Source: Authors (2021). Data retrieved from DataStream (2021).

Figure 2. GCC Stock Markets Decline amidst the COVID-19 Pandemic.

Bahrini and Filfilan (2020) studied the impact of COVID-19, and the oil prices shock on the GCC stock market returns from April 1 to June 26, 2020. Their findings illustrate that the GCC stock markets responded negatively to the increase in COVID-19 confirmed deaths and the crash of oil prices during the studied period. In the same line, Alber and Saleh (2020) also focused their attention on the effects of the pandemic on the GCC stock markets between March 1 and May 31, 2020. The core findings suggest that the GCC stock markets only responded to the announcement of new COVID-19 death cases. At the same time, other COVID-19-related news (such as new cases, confirmed cumulative cases, and cumulative death cases) did not impact the performance of the stock markets. Moreover, Salman and Ali (2021) studied the impact of COVID-19 on GCC stock markets between September 2019 and July 2020, finding that COVID-19 had a short-term negative impact on the GCC region compared to its effect on the world stock markets. The short-lived effects of the pandemic on the GCC region are confirmed by updated research studies developed by Alkhatib et al. (2022) and Al-Kandari et al. (2022).

On the other hand, Al-Refai, Zaitun, & Eissa (2022) studied the impact of the dual shock (COVID-19 and the oil prices shock) on the GCC stock markets over two sub-sample periods. The authors differentiated between the pre-pandemic period (i.e., January 5, 2017, to March 10, 2020) and during the pandemic (i.e., March 11 to September 17, 2020). Their findings showed that the pandemic had no impact on GCC markets, while the oil shock created significant disruption. Al-kandari and Abul (2020), and Al-Ajmi (2020) analyzed the Kuwait stock exchange, finding that the Kuwait stock exchange was more volatile during the pre-liberalisation period and that good news has a more significant impact on index return volatility than bad news. Overall, the extant literature shows a dearth of research studies examining volatility dynamics in the context of GARCH modelling like the well-known GARCH and FIGARCH models to examine the effects of the COVID-19 pandemic and the oil price war in the GCC countries, a research gap addressed by this study.

3. Data and Econometrics Modelling

The data set comprises the leading indexes from the GCC countries' markets (see **Table 1** below for details). The research sample spans from December 31, 2015, to December 9, 2021, accounting for 1551 observations to ensure that the volatility exercise is feasible, as according to Ng & Lam (2006), a minimum of 1000 observations should be considered to ensure that the GARCH modelling process does not encounter stationarity problems.

The GARCH model under consideration is presented below.

$$\begin{aligned} &\varepsilon_t \mid \Omega_{t-1} \sim N\left(0, h_t^2\right), \\ &h_t^2 = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{i-1}^2 + \sum_{j=1}^{q} \beta_j h_{t-j}^2 \\ &\omega > 0,\ \alpha_i, \beta_j \geq 0 \rightarrow h_t^2 \geq 0, i = 1, \cdots, p \text{ and } j = 1, \cdots, q \end{aligned} \tag{1}$$

Table 1. Data set.

GCC countries			Source
Dubai	DUBAI	Dubai Financial Market	DataStream
Qatar	Qatar	Qatar Index	DataStream
Saudi Arabia	TASI	Saudi Stock Exchange	DataStream
Bahrain	Bahrain	Bahrain All-share index	DataStream
Kuwait	BKA	Boursa Kuwait	DataStream
Oman	Oman	Muscat security market	DataStream

Source: Authors (2022).

where Ω_{t-1} is the set of all information available at time $t-1$. The restriction of non-negative values for the parameters (ω, α_i and β_j) is important to ensure positive values for the conditional variance, which is $h_t^2 \geq 0$; otherwise, the model is not stable. Similar to the GARCH (1, 1), Baillie, Bollerslev and Mikkelsen (1996) argued on the importance of ensuring a positive conditional variance of the FIGARCH (1, d, 1) model, and as such, all the parameters ω, α, β must be positive. Moreover, α, β must be less than one and the sum of the coefficients α and β must be ≤ 1; otherwise, the model collapses, and it is not considered to be stable. In addition, the d parameter that captures the long memory process must be in the range of 0 to 0.5; if $0 < d < 0.5$, the series is stationary; if the $0.5 < d < 1$ the process is mean-reverting as there is no long-run impact of innovation to future values.

The FIGARCH model is presented in Equation (2) below.

$$h_t^2 = \omega + \left\{1 - \left|1 - \beta_1 L\right|^{-1} \left(1 - \phi_1 L\right)\left|1 - L\right|^d\right\} \epsilon_t^2 \tag{2}$$

Findings and Discussions

The markets exhibited positive mean prices throughout the sampled period, combined with significant levels of instability as registered by the recorded standard deviations. The market returns show that five markets' mean values are positive, which indicates profit in returns except for the case of Oman with a negative value (−0.000193) over the period (**Tables 2-4**).

The series stationarity properties were examined by implementing three well-known tests, the ADF (Augmented Dickey Fuller), the PP (Phillips-Perron) and the KPSS (Kwiatkowski-Phillips-Schmidt-Shin). The research study is supported by the implementation of three statationarity tests to ensure the robustness of tests results (Asteriou & Hall, 2011; Taheri, 2014; Abdulrazaq & Shitty, 2020). **Table 3** below shows that prices series for GCC benchmarks are non-stationary in levels but are stationary at 1% level in returns enabling the implementation of the selected volatility models (i.e., GARCH and FIGARCH).

The outcomes of the GARCH (1, 1) estimation for the GCC are all significant at 1% level. The alpha coefficient represents recent news related to current market volatility spikes, is in the range of α = (0.104032, 0.156627). Kuwait had the highest vo-

latility spikes, and Dubai recorded the lowest. The beta coefficient represents volatility persistence and registered values in the range of β = (0.647571, 0.853152),

Table 2. Descriptive statistics.

GCC prices						
	Bahrain	**Dubai**	**Kuwait**	**Qatar**	**Saudi**	**Oman**
Mean	1373.505	2926.980	5264.773	2936.463	7958.605	4526.922
Std. Dev.	156.7539	471.4857	734.5464	320.7747	1405.781	778.0595
Skewness	0.429677	−0.260928	0.492258	0.166400	0.946562	0.383964
Kurtosis	2.733524	2.393174	2.813190	3.149955	3.599616	1.752582
Jarque-Bera	52.31390	41.39697	64.89441	8.610821	254.8462	138.6701
Probability	0.000000	0.000000	0.000000	0.013495	0.000000	0.000000
GCC returns						
	Bahrain	**Dubai**	**Kuwait**	**Qatar**	**Saudi**	**Oman**
Mean	0.000248	1.52E−05	0.000293	0.000182	0.000296	−0.000193
Std. Dev.	0.005143	0.010979	0.007999	0.009559	0.010416	0.005147
Skewness	−1.506418	−0.653869	−3.190621	−1.263180	−1.187625	−0.940610
Kurtosis	21.43615	14.44610	40.38432	18.81032	14.48466	16.67683
Jarque-Bera	22537.57	8571.714	92890.71	16555.86	8882.749	12309.25
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Source: Authors (2022).

Table 3. Unit root tests.

GCC	**Returns**				**Prices**			
	ADF	**PP**	**KPSS***	**lags**	**ADF**	**PP**	**KPSS***	**lags**
Bahrain	23.9287 (0.0000)	36.3923 (0.0000)	0.163642	3	−0.40241 (0.9064)	−0.1814 (0.9383)	3.38354	7
Dubai	35.5196 (0.0000)	36.5589 (0.0000)	0.127087	1	−1.2989 (0.6321)	−1.52308 (0.5218)	3.162082	2
Kuwait	33.5391 (0.0000)	33.8347 (0.0000)	0.073448	5	−0.40294 (0.9063)	−0.55905 (0.8769)	3.433574	6
Qatar	37.5455 (0.0000)	37.7328 (0.0000)	0.086213	1	−0.8174 0.8135	−1.10685 (0.7152)	2.586876	2
Saudi Arabia	34.7529 (0.0000)	35.0339 (0.0000)	0.085712	5	−0.43677 (0.9004)	−0.50296 (0.8882)	3.124048	2
Oman	−30.58239 (0.0000)	−30.60818 (0.0000)	0.149798	1	−1.027663 (0.7453)	−1.056701 (0.7453)	4.434236	2

*There is no P-value for KPSS, therefore the 1% significance level was considered for the test at a value of 0.739000. Source: Authors (2022).

Table 4. GCC countries GARCH and FIGARCH models.

		GCC COUNTRIES					
		Kuwait	**Dubai**	**Qatar**	**Saudi**	**Bahrain**	**Oman**
GARCH (1, 1)	w	2.47E−06 (0.0000)	4.16E−06 (0.0000)	3.15E−06 (0.0000)	3.60E−06 (0.0000)	4.68E−06 (0.0000)	2.40E−06 (0.0000)
	α	0.156627 (0.0000)	0.104032 (0.0000)	0.131418 (0.0000)	0.147074 (0.0000)	0.148637 (0.0000)	0.155814 (0.0000)
	β	0.813056 (0.0000)	0.853152 (0.0000)	0.841201 (0.0000)	0.821419 (0.0000)	0.647571 (0.0000)	0.749127 (0.0000)
	$\alpha+\beta$	**0.969683**	**0.957184**	**0.972619**	**0.968493**	**0.796208**	**0.904941**
	Half-life (days)	**23**	**16**	**25**	**22**	**4**	**8**
FIGARCH (1, 1)	w	3.14E−06 (0.0000)	3.01E−06 (0.0000)	3.21E−06 (0.0000)	1.61E−06 (0.0000)	4.15E−06 (0.0000)	1.87E−06 (0.0000)
	α	0.005245 (0.8741)	0.297341 (0.0000)	0.156179 (0.0000)	−0.09125 0.154	0.771257 (0.0000)	0.155616 (0.0028)
	β	0.658701 (0.0000)	0.713121 (0.0000)	0.609766 (0.0000)	0.901126 (0.0000)	0.647162 (0.0000)	0.560132 (0.0000)
	d	0.765222 (0.0000)	0.60103 (0.0000)	0.615344 (0.0000)	1.175244 (0.0000)	0.03101 (0.0360)	0.603413 (0.0000)

Source: Authors (2022).

with Bahrain having the lowest persistence and Dubai the highest. Lasting volatility effects for the GCC markets ranged between 4 and 25 days, with the highest persistence levels registered by the Qatar index and the lowest associated with the Bahrain index. Figure 3 below illustrates clustering for GCC.

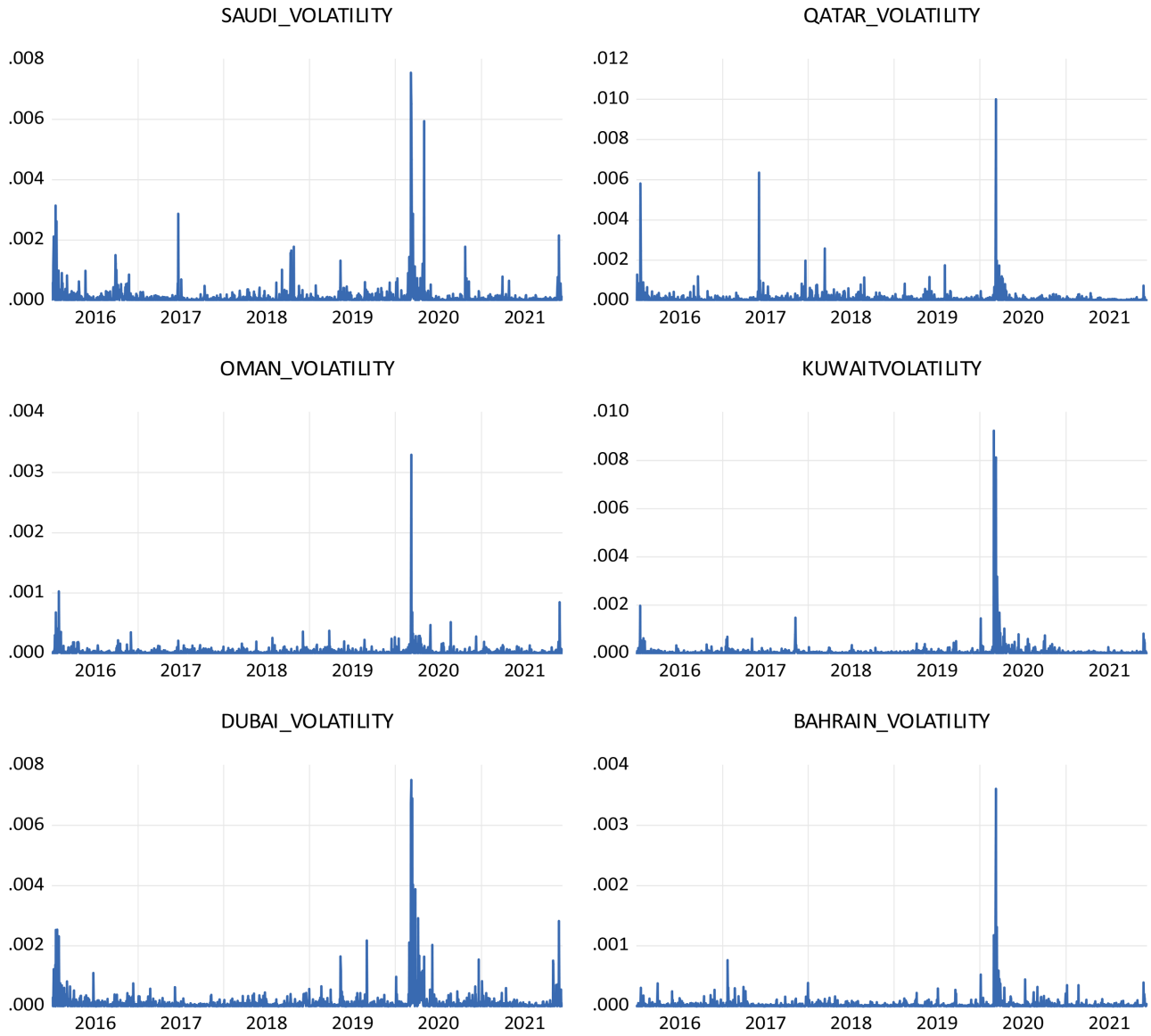
The outcome of the FIGARCH (1, 1) shows the model was not stable for the region except for the case of Bahrain, which indicated evidence of a long memory process.

Diagnostic Tests

The GARCH (1, 1) model showed that the residuals were homoscedastic. The heteroscedasticity test (ARCH-LM) where *the null hypothesis of no heteroscedasticity cannot be rejecte*d, indicating that the implemented models are robust.

Research Limitations

This research study offers interesting insights into the performance of the GCCs stock markets during times of significant uncertainty, as experienced during the 2020 dual shock (oil prices war and global health crisis). Although our study provides significant findings, it also has some limitations. The study's methodological framework is limited to implementing the GARCH and FIGARCH models. The study could benefit from adding other conditional variance models such as EGARCH, TGARCH, and FIEGARCH to shed light on volatility performance. Moreover, the analysis of long-term and short-term dynamics differentiating



Source: Authors (2022).

Figure 3. GCC stock markets volatility.

between the two shocks (COVID-19 and oil price shocks) would provide further insights into potential regional differences. The integration of GCC stock markets at a sectoral level would significantly contribute to the extant literature as it will help to better understand sectoral differences during times of high economic and financial uncertainty.

4. Conclusion

This study used the GARCH, FIGARCH modelling widely studied in the academic literature to explore volatility dynamics in the GCC region during the 2020 dual shock (oil price war and global health crisis). The research findings revealed that GCC stock markets exhibited differences towards the health pandemic and oil

shocks, with significant adverse effects in the region. The GARCH model was the dominant model exhibiting robust outcomes. In contrast, the FIGARCH model did not report significant findings, except for the case of Bahrain, which emerged as the most stable market during the dual shock period. This finding is in line with Cheikh, Naceur, Kanaan and Rault (2021), as their study illustrates that Bahrain's stock market reaction to oil price fluctuations differs from the rest of the GCC stock markets. Hence, it is essential to highlight that Bahrain's stock market is the smallest, and its lowest liquidity levels differentiated among the GCC stock markets. While Bahrain's economy is closely linked to global oil price fluctuations, the country's economic model is characterised by its slightest reliance on oil and oil rents and a more diversified economic model compared to other Gulf countries. The empirical contribution of this study is threefold: 1) the existing literature has not provided evidence of market performance amidst the 2020 dual market shock within the context of volatility persistence and long-memory processes; 2) the study provides critical and valuable insights for investment portfolios managers seeking to diversify their portfolio composition, for corporate financial decision-makers and investors seeking to hedge against market uncertainty derived from shocks that destabilise macroeconomic fundamentals, as the GCC region provides evidence of differing market reactions; 3) policymakers need to consider the GCC region exposure to global shocks and the region overreliance on oil that requires policies that promote economic diversification.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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