

THE REACTION OF STOCK MARKETS IN THE GULF COOPERATION COUNCIL COUNTRIES TO ECONOMIC POLICY UNCERTAINTY IN THE UNITED STATES

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Abstract: This study investigates if the changes in economic policy uncertainty in the U.S. can explain the returns on stock markets of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. The study also examines how the stock market returns of the six GCC countries respond to the changes in economic policy uncertainty in the U.S. The results demonstrate that changes in economic policy uncertainty in the U.S. are not significantly linked with the returns on all the stock markets except Oman stock market, which shows a statistical significant negative relationship with the changes in economic policy uncertainty in the U.S. Controlling for the effects of the U.S. stock market and oil price, returns on all the six GCC markets including Oman show insignificant coefficients. The returns on all the stock markets do not respond to the changes in economic policy uncertainty. The results of Granger causality tests show that the changes in economic policy uncertainty in the U.S. do not cause the returns of all the six GCC stock markets.

Keywords: *GCC, Oil Markets, Policy Uncertainty Index, Stock Market Performance, Spillover Effects, USA.*

JEL Classification: E60, F40, G12, G15

INTRODUCTION

By the beginning of the 1980s, six countries in Arabian Peninsula decided to form strong alliance in order to overcome economic and social difficulties they were facing. At that time, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates formed regional intergovernmental political and economic union consisting of all Arab States of the Persian Gulf. This institution is called the Gulf Cooperation Council (GCC). In 1998, total intra-trade by the GCC countries was about \$8 billion; while in 2017 it was \$175 billion (World Bank, 2010; European Commission, 2018). Right from the beginning the USA has recognized the GCC as an important economic partner. By 1998, total trade between the GCC and the USA was \$30 billion, while in 2017 it reached \$72 billion (Anthony, 1999; European Commission, 2018). Since trade between the US and the GCC increased significantly, they were all open not just for new business opportunities, but also for spillovers. The financial crisis of 2007–2008 and the 2010s oil gluts produced

numerous effects on the economies of the USA and GCC, which in the end slowed down the increase in trade.

When it comes to spillover effects, they usually start with existence of uncertainty among analysed subjects. Bernanke (1983) sees uncertainty as a huge problem for companies that are forced to delay investments when the costs of planned projects face unpredicted volatility. This volatility eventually goes from micro to macro level, which can cause spillover effects around the world. Some authors point out that other reasons for the existence of economic uncertainty are precautionary spending cutbacks by households, upward pressure on the cost of finance, managerial risk – aversions and interactions between nominal rigidities and search frictions (Panousi & Papanikolaou, 2012; Pastor & Veronesi, 2013; Gilchrist, Sim & Zakrajšek, 2014; Basu & Bundick, 2014; Leduc & Liu, 2015). On the other hand, there are studies that emphasise detrimental economic effects of monetary, fiscal and regulatory policy uncertainty (Friedman, 1968; Rodrik, 1991; Higgs, 1997; Hassett & Metcalf, 1999). Pastor and Veronesi (2012) developed a model that helped in understanding the connection between market fluctuations, policy uncertainty and stock market volatility in order for policymakers to better prepare for potential shocks. Born and Pfeifer (2014), also Fernandez-Villaverde *et al.* (2015) studied multi-factored policy uncertainty by using the DSGE models. They found the existence of moderately negative effects.

Due to economic shocks that hit numerous countries at the same time, many authors have started to pay more attention to international spillovers. With the reduced form of GARCH models, a group of authors detected some spillovers from the U.S. to Japan and the UK equity markets, both for returns and in particular for conditional volatility (Hamao, Masulis & Ng, 1990; King, Sentana & Wadhvani, 1994; Lin, Engle & Ito, 1994). Becker, Finnerty and Friedman (1995) found that US news and information were responsible for the existence of spillovers between the U.S. and UK stock markets. Ehrmann and Fratzscher (2004) confirmed that news and information could have strong impact on changing conditions in some markets, but these spillovers were much stronger from the U.S. to Euro market than in the opposite direction. Since the U.S. has strong and well-established financial markets, it is not unusual that many well-known global spillovers have originated in the U.S. (Goldberg & Leonard, 2003; Bayoumi & Swiston, 2007; Ehrmann & Fratzscher, 2009; Kim, Salem & Wu, 2015; Fratzscher, Lo Duca & Straub, 2018).

At the regional level, customs, monetary and economic unions are very exposed to spillovers between member countries. Fadejeva, Feldkircher and Reininger (2017) indicated that the emerging European economies are the most vulnerable economies to all shocks either from the U.S. or euro zone. Spillover effects are sometimes larger than domestic response which is why developing economies are struggling to overcome external economic shocks. Sum (2012) empirically proved that changes in the European economic policy uncertainty have negative effects on stock markets in the European Union, Norway, Russia, Switzerland, Turkey and Ukraine. Beirne *et al.* (2010) examined global and regional spillovers for 41 emerging economies in Asia, Europe, Latin America and the Middle East. They found that global spillovers had a stronger impact on the economies in Asia and Europe, while regional spillovers produced a more significant effect than global

spillovers in Latin America and the Middle East. Sugimoto, Matsuki and Yoshida (2014) analysed spillovers in Africa during the U.S. financial crisis and the European sovereign debt crisis. The study found the existence of strong and negative relationship between global spillovers and African stock markets. As for regional spillovers, their impact in Africa does not produce significant effects. Another study showed that the South African regional market was the most influential in propagating shocks to other African markets (Boako & Alagidede, 2018). Several studies found the existence of strong and statistically significant impact of spillover effects among the regions in China and Spain (Johansson & Ljungwall, 2009; Zhou, Zhang & Zhang, 2012; Ouyang & Fu, 2012; Marquez, Ramajo & Hewings, 2015; Marquez-Ramos, 2016).

This study investigates the effect of changes in economic policy uncertainty in the U.S. on the returns of stock markets in Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. The study also examines how stock market returns of the six GCC countries respond to changes in economic policy uncertainty in the U.S. The Granger causality test is carried out to know if changes in economic policy uncertainty in the U.S. cause returns of the GCC stock markets. This study will help in providing a better understanding of the GCC country financial markets and their relationship with the U.S.

1. METHODOLOGY AND DATA

In order to conduct research, appropriate data should be collected. The study used monthly data on economic policy uncertainty (EPU) in the U.S. and GCC stock market indices from 2004:7 to 2018:8. The monthly data on economic policy uncertainty in the U.S. were collected from the Economic Policy Uncertainty Index website at <http://www.policyuncertainty.com>. The monthly data on stock markets of the GCC countries, stock market of the United States (S&P500) and oil price (Brent) were obtained from Bloomberg.

Hypothesis that will be tested in this paper is: H1: Changes in economic policy in the U.S. have negative impacts on the stock markets of the GCC countries. First, descriptive statistics and correlation analysis are carried out. After that, time-series regression analysis is implemented. Time-series regression will help us understand the impacts of economic policy uncertainty in the U.S. on each of the GCC countries. In this case, economic policy uncertainty in the U.S. is an independent variable, while stock market prices of each individual GCC country is a dependent variable as shown in (equation 1). To control for the effects of U.S. stock market and oil price, returns on S&P500 and Brent are included in time-series regression analysis. Vector autoregressive (VAR) model is employed to know how returns on each GCC country respond to a shock in economic policy uncertainty in the U.S. Implementing all these steps will help us understand the ways in which GCC countries are exposed to economic shocks in the U.S. and how they behave under these circumstances.

$$R_{it} = \alpha + \beta \Delta EPU_{it} + \varepsilon_{it}, \quad (1)$$

$$R_{it} = \alpha + \beta \Delta EPU_{it} + \gamma SP_{it} + \delta BRE_{it} + \varepsilon_{it} \quad (2)$$

$$\left(\begin{array}{l} R_t = \alpha + \sum_{i=1}^p \lambda_i R_{t-i} + \sum_{i=1}^p \phi_i SP_{t-i} + \sum_{i=1}^p \rho_i BRE_{t-i} + \sum_{i=1}^p \lambda_i \Delta EPU_{t-i} + \varepsilon_t \\ SP_t = \tau + \sum_{i=1}^p \delta_i R_{t-i} + \sum_{i=1}^p \phi_i SP_{t-i} + \sum_{i=1}^p \rho_i BRE_{t-i} + \sum_{i=1}^p \psi_i \Delta EPU_{t-i} + \eta_t \\ BRE_t = \nu + \sum_{i=1}^p \rho_i R_{t-i} + \sum_{i=1}^p \zeta_i SP_{t-i} + \sum_{i=1}^p \rho_i BRE_{t-i} + \sum_{i=1}^p \psi_i \Delta EPU_{t-i} + \chi_t \\ \Delta EPU_t = \rho + \sum_{i=1}^p \pi_i R_{t-i} + \sum_{i=1}^p \theta_i SP_{t-i} + \sum_{i=1}^p \zeta_i BRE_{t-i} + \sum_{i=1}^p \psi_i \Delta EPU_{t-1} + \mu_t \end{array} \right), \quad (3)$$

where R_t is return on a country's stock market index in month t ; R_{t-i} is return on a country's stock market index in month $t-i$; SP_t is return on the S&P 500 index in month t ; SP_{t-i} is return on the S&P 500 index in month $t-i$; BRE_t is return on Brent oil price index in month t ; BRE_{t-i} is return on Brent oil price index in month $t-i$; ΔEPU_t is change in the U.S. economic policy uncertainty index in month t ; ΔEPU_{t-i} is change in the U.S. economic policy uncertainty index in month $t-i$.

2. RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of all the variables under study; the correlation between the variables are presented in Table 2.

Table 1. Descriptive Statistics

Variables	Mean	Std. Dev.	Obs.
Bahrain	-1.1512	65.3240	169
Kuwait	7.9739	481.1092	169
Oman	5.7913	356.9300	169
Qatar	26.0592	699.9756	169
Saudi Arabia	10.4560	749.4658	169
UAE	16.0114	276.7859	169
S&P 500	10.6497	54.3082	169
Brent	0.2212	6.5761	169
ΔEPU	0.0533	23.2548	169

Source: Authors' calculations

Table 2. Correlation Analysis

	ΔEPU	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	S&P 500	Brent
ΔEPU	1.0000								
Bahrain	-0.0664	1.0000							
Kuwait	-0.1058	0.7104	1.0000						
Oman	-0.1764	0.5461	0.5956	1.0000					
Qatar	-0.1448	0.4407	0.4106	0.4916	1.0000				
Saudi Arabia	-0.1091	0.3942	0.4080	0.4181	0.3332	1.0000			
UAE	-0.0436	0.5118	0.4694	0.4890	0.5367	0.4520	1.0000		
S&P 500	-0.2214	0.2940	0.3329	0.3225	0.3117	0.2126	0.1699	1.0000	
Brent	-0.1419	0.3612	-0.1058	0.4950	0.4055	0.2794	0.2189	0.3638	1.0000

Source: Authors' calculations

Based on Table 1, all analysed data showed a positive average return except Bahrain stock market, which demonstrated a negative average return of -1.1512 . The results of correlation analysis in Table 2 indicate a negative relationship between economic policy uncertainty in the U.S. and all the six GCC countries.

Table 3. Regression results of the impact of the economic policy uncertainty in the U.S. on the monthly returns of each GCC country

Country	Coefficient	Std. Err.	<i>t</i>	Sig.	<i>R</i> ²
Panel: 2004:M7-2018:M8 (<i>n</i> = 170)					
Bahrain	-0.1865	0.2163	-0.86	0.3896	0.40
Kuwait	-2.1873	1.5874	-1.38	0.1701	1.09
Oman	-2.7077	1.1657	-2.32	0.0214	3.08
Qatar	-4.3573	2.2994	-1.89	0.0598	1.96
Saudi Arabia	-3.5142	2.4719	-1.42	0.1570	1.17
UAE	-0.5174	0.9189	-0.56	0.5742	0.15

Source: Authors' calculations

As reported in Table 3, monthly returns on each GCC stock market are regressed on economic policy uncertainty in the U.S. using time-series OLS regression; the results in Table 3 present a statistical insignificant negative correlation for all returns on the GCC markets except Oman, which is statistically significant with a negative coefficient. Thus, economic policy uncertainty in the U.S. affects return on the Oman stock market negatively.

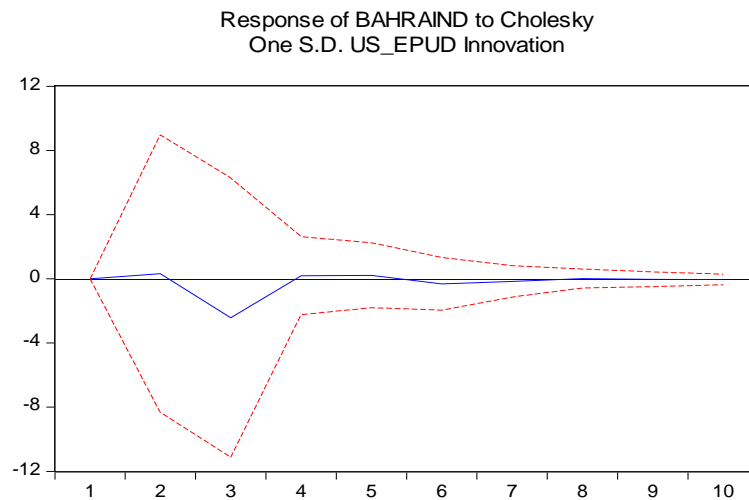


Fig. 1. The impulse response functions of the returns on Bahrain stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

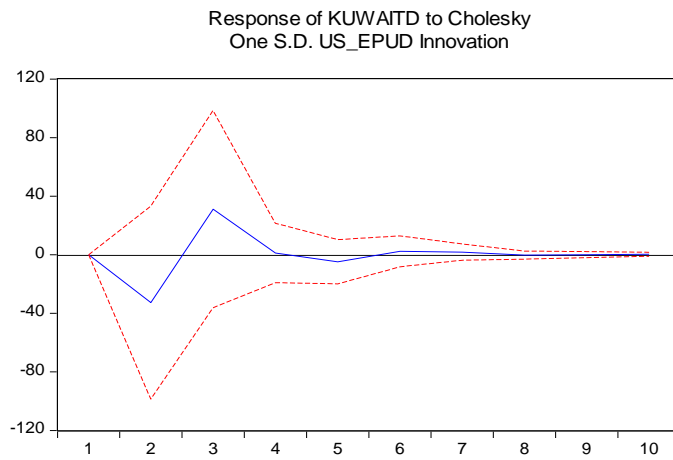


Fig. 2. The impulse response functions of the returns on Kuwait stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

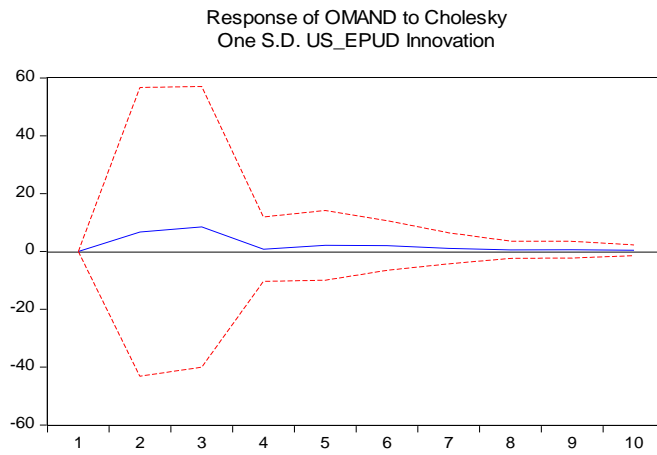


Fig. 3. The impulse response functions of the returns on Oman stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

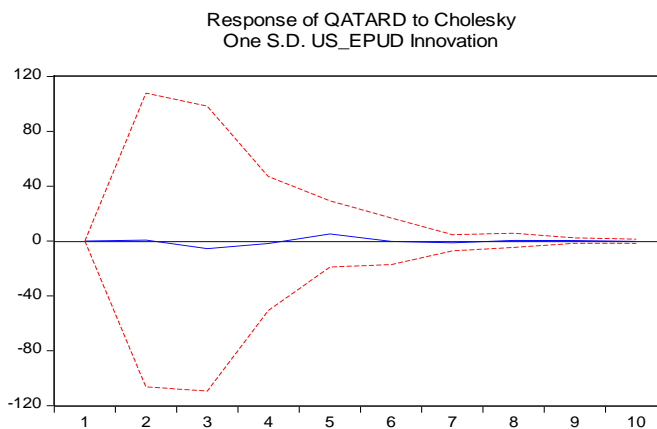


Fig. 4. The impulse response functions of the returns on Qatar stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

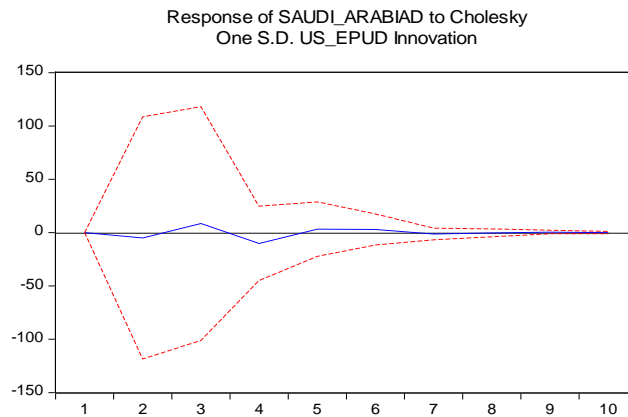


Fig. 5. The impulse response functions of the returns on Saudi Arabia stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

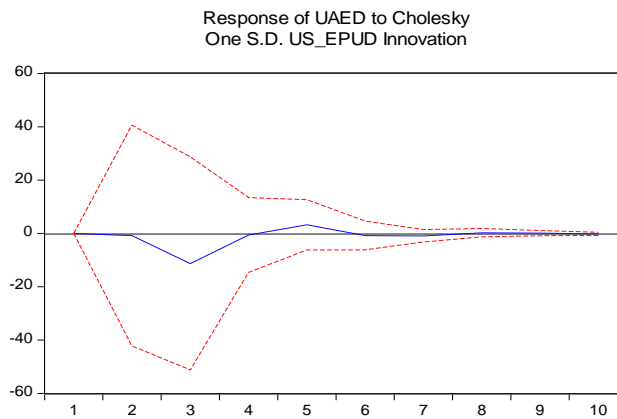


Fig. 6. The impulse response functions of the returns on Saudi Arabia stock market to changes in the U.S. economic policy uncertainty (2004:M7 – 2018:M8)

Table 4. Regression results with control variables for the impact of the economic policy uncertainty in the U.S. on the monthly returns of each GGC country

Country	Coefficient	Std. Err.	<i>t</i>	Sig.	<i>R</i> ²
Panel: 2004:M7-2018:M8 (<i>n</i> = 170)					
Bahrain	0.0415	0.2055	0.20	0.8401	15.71
S&P 500	0.2130	0.0917	2.32	0.0215	
Brent	2.9477	0.7611	3.87	0.0002	
Kuwait	-0.3500	1.4921	-0.23	0.8148	18.10
S&P 500	1.9283	0.6660	2.89	0.0043	
Brent	21.0055	5.5255	3.80	0.0002	
Oman	-1.2886	1.0421	-1.24	0.2180	27.41
S&P 500	0.9347	0.4652	2.01	0.0461	
Brent	23.3631	3.8592	6.05	0.0000	
Qatar	-1.7660	2.1474	-0.82	0.4120	19.87
S&P 500	2.2679	0.9586	2.36	0.0191	
Brent	35.4394	7.9521	4.46	0.0000	

Country	Coefficient	Std. Err.	t	Sig.	R ²
Saudi Arabia	-1.6486	2.4443	-0.67	0.5009	9.44
S&P 500	1.5788	1.0911	1.45	0.1498	
Brent	26.2104	9.0515	2.89	0.0043	
UAE	0.0805	0.9214	0.09	0.9304	5.64
S&P 500	0.5692	0.4113	1.38	0.1683	
Brent	7.5871	3.4122	2.22	0.0275	

Source: Authors' calculations

In order to control for the effect of U.S. stock market and oil price, monthly returns on each GCC stock market is regressed on economic policy uncertainty in the U.S. (EPU), return on the U.S. stock markets (S&P500) and oil price (Brent). The results of full sample data from 2004:7 to 2018:8 show that all the coefficients of the GCC markets are statistically insignificant, i.e., economic policy uncertainty in the U.S. has no impact on all the six GCC countries.

Table 5. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
Bahrain	S&P 500	2.15	2	0.301
Bahrain	Brent	2.40	2	0.342
Bahrain	ΔEPU	0.10	2	0.952
Bahrain	ALL	7.09	6	0.312
S&P 500	Bahrain	2.49	2	0.287
S&P 500	Brent	2.00	2	0.368
S&P 500	ΔEPU	2.17	2	0.337
S&P 500	ALL	8.35	6	0.214
Brent	Bahrain	4.84	2	0.009
Brent	S&P 500	0.44	2	0.802
Brent	ΔEPU	2.67	2	0.263
Brent	ALL	7.69	6	0.262
ΔEPU	Bahrain	2.33	2	0.312
ΔEPU	S&P 500	10.19	2	0.006
ΔEPU	Brent	0.20	2	0.906
ΔEPU	ALL	13.68	6	0.033

Source: Authors' calculations

Table 6. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
Kuwait	S&P 500	0.39	2	0.824
Kuwait	Brent	7.46	2	0.024
Kuwait	ΔEPU	3.08	2	0.215
Kuwait	ALL	11.75	6	0.113
S&P 500	Kuwait	6.20	2	0.045
S&P 500	Brent	1.68	2	0.432
S&P 500	ΔEPU	2.21	2	0.313
S&P 500	ALL	12.19	6	0.067
Brent	Kuwait	3.56	2	0.169
Brent	S&P 500	0.28	2	0.868

Equation	Excluded	Chi - sq	df	Prob.
Brent	ΔEPU	2.55	2	0.279
Brent	ALL	6.39	6	0.381
ΔEPU	Kuwait	0.30	2	0.861
ΔEPU	S&P 500	863	2	0.914
ΔEPU	Brent	0.18	2	0.013
ΔEPU	ALL	11.50	6	0.074

Source: Authors' calculations

Table 7. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
Oman	S&P 500	0.32	2	0.853
Oman	Brent	0.38	2	0.828
Oman	ΔEPU	0.19	2	0.909
Oman	ALL	0.88	6	0.990
S&P 500	Oman	2.65	2	0.265
S&P 500	Brent	2.34	2	0.310
S&P 500	ΔEPU	1.57	2	0.455
S&P 500	ALL	8.51	6	0.203
Brent	Oman	14.34	2	0.000
Brent	S&P 500	0.46	2	0.795
Brent	ΔEPU	2.16	2	0.340
Brent	ALL	17.36	6	0.008
ΔEPU	Oman	0.36	2	0.836
ΔEPU	S&P 500	8.95	2	0.011
ΔEPU	Brent	0.19	2	0.909
ΔEPU	ALL	11.57	6	0.072

Source: Authors' calculations

Table 8. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
Qatar	S&P 500	0.03	2	0.985
Qatar	Brent	4.76	2	0.093
Qatar	ΔEPU	0.00	2	0.999
Qatar	ALL	5.29	6	0.507
S&P 500	Qatar	9.09	2	0.011
S&P 500	Brent	6.92	2	0.031
S&P 500	ΔEPU	1.61	2	0.446
S&P 500	ALL	15.18	6	0.019
Brent	Qatar	0.28	2	0.867
Brent	S&P 500	0.18	2	0.912
Brent	ΔEPU	2.17	2	0.338
Brent	ALL	3.06	6	0.801
ΔEPU	Qatar	1.19	2	0.552
ΔEPU	S&P 500	8.89	2	0.986
ΔEPU	Brent	0.03	2	0.012
ΔEPU	ALL	12.45	6	0.053

Source: Authors' calculations

Table 9. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
Saudi Arabia	S&P 500	0.87	2	0.645
Saudi Arabia	Brent	3.07	2	0.215
Saudi Arabia	ΔEPU	0.03	2	0.983
Saudi Arabia	ALL	4.30	6	0.636
S&P 500	Saudi Arabia	3.46	2	0.178
S&P 500	Brent	3.78	2	0.151
S&P 500	ΔEPU	1.55	2	0.460
S&P 500	ALL	9.35	6	0.155
Brent	Saudi Arabia	1.09	2	0.579
Brent	S&P 500	0.15	2	0.929
Brent	ΔEPU	2.26	2	0.323
Brent	ALL	3.88	6	0.692
ΔEPU	Saudi Arabia	0.75	2	0.687
ΔEPU	S&P 500	9.97	2	0.007
ΔEPU	Brent	0.38	2	0.825
ΔEPU	ALL	11.99	6	0.062

Source: Authors' calculations

Table 10. Granger Causality Wald Tests

Equation	Excluded	Chi - sq	df	Prob.
UAE	S&P 500	0.04	2	0.981
UAE	Brent	5.64	2	0.059
UAE	ΔEPU	0.22	2	0.897
UAE	ALL	7.79	6	0.254
S&P 500	UAE	1.80	2	0.406
S&P 500	Brent	3.67	2	0.160
S&P 500	ΔEPU	2.12	2	0.347
S&P 500	ALL	7.63	6	0.266
Brent	UAE	3.89	2	0.143
Brent	S&P 500	0.24	2	0.889
Brent	ΔEPU	2.17	2	0.337
Brent	ALL	6.73	6	0.347
ΔEPU	UAE	0.79	2	0.674
ΔEPU	S&P 500	9.16	2	0.010
ΔEPU	Brent	0.15	2	0.927
ΔEPU	ALL	12.02	6	0.061

Source: Authors' calculations

The results of VAR analysis indicate that the returns on all the six GCC markets do not respond to a shock in economic policy uncertainty in the U.S. (Figs. 1–5). The results of Granger Causality tests in Tables 5–9 reveal that economic policy uncertainty in the U.S. does not cause returns of all the six GCC markets.

3. CONCLUSION

Global spillovers can cause serious shocks in wide open economies that have intensive trade with some of the biggest economies in the world. Financial crisis of 2007–2008 had terrific consequences to many global economies, especially to those that had intensive trade with the U.S. GCC countries stand for a long time economic partner of the U.S. and they were also affected by economic shocks that started in the U.S. This study has examined if the changes in economic policy uncertainty in the U.S. can explain the returns on stock markets of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

This study has also investigated how the stock market returns of the six countries respond to the changes in economic policy uncertainty in the U.S. The results have shown that changes in economic policy uncertainty in the U.S. are not significantly linked with the returns on all the stock markets except Oman stock market, which demonstrates a statistical significant negative relationship with the changes in economic policy uncertainty in the U.S. Controlling for the effects of the U.S. stock market and oil price, returns on all the six GCC markets including Oman show insignificant coefficients.

The returns on all the stock markets do not respond to the changes in economic policy uncertainty. The results of Granger causality tests show that the changes in economic policy uncertainty in the U.S. do not cause the returns of all the six GCC stock markets.

The results propose that the GCC stock market performance is not related to the changes in economic policy uncertainty in the U.S. This implies that market participants in the GCC markets do not perceive economic policy circumstances in the U.S.

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