Economics Bulletin

Volume 34, Issue 3

Economic policy uncertainty, oil price shocks and GCC stock markets

Mohamed Arouri
CRCGM Université d''Auvergne, France

Christophe Rault
LEO, Université d''Orléans (UMR CNRS 7322), and Toulouse Business School, France

Frédéric Teulon
IPAG Business School, IPAG – Lab, France

Abstract

We contribute to the literature by studying the impact of economic policy uncertainty (EPU) from major net oil importers (USA, Europe and China) on Gulf Cooperation Council (GCC) stock markets. We use panel data methods to estimate different specifications. We find that (i) an increase in EPU affects negatively stock returns (ii) this effect is persistent and interacts with oil price changes and (iii) an increase EPU has a delayed positive effect on volatility.

Citation: Mohamed Arouri and Christophe Rault and Frédéric Teulon, (2014) "Economic policy uncertainty, oil price shocks and GCC stock markets", *Economics Bulletin*, Vol. 34 No. 3 pp. 1822-1834.
Contact: Mohamed Arouri - Mohamed.arouri@gmail.com, Christophe Rault - chrault@hotmail.com, Frédéric Teulon - f.teulon@ipag.fr.
Submitted: May 29, 2014. **Published:** August 20, 2014.

1. Introduction

This paper examines the effects of economic policy uncertainty (EPU) in major net oil importers (USA, Europe and China) on Gulf Cooperation Council (GCC) stock markets. By policy uncertainty we refer to risk of changes in the existing policies that define parameters of the decision making process of economic agents such as consumers, investors, firms and banks. High policy uncertainty may affect the economy and delay decisions made by economic agents such as spending, investment and employment decisions. For instance, policy uncertainty can raise expected production and financing costs, affect house prices both through supply and demand channels, decrease the value of protections provided by the government for markets, increase the risk of default and delay long-term investment until the uncertainty has been eliminated.

Recently, the literature has paid great attention to the impact of economic policy uncertainty on economic variables such as corporate investment, economic growth, inflation, financial development, foreign direct investment, employment, and so on. The pioneering works on this area include Rodrik (1991) who shows that in developing countries reforms generally delay investment decisions until uncertainty on the results the reforms is eliminated. Ali (2001) studies 119 countries and reports that volatility of economic policies is negatively correlated with economic growth. Bloom (2009) advances that economic and political uncertainty negatively affects the business cycle. Fernandez et al. (2013) establish that uncertainty in fiscal policies affects adversely economic activity. Byrne and Davis (2005) find that inflation uncertainty affects negatively investment decisions in the case of the US. A negative impact of uncertainty on investment is also empirically established by Julio and Yook (2012) and Gulen and Ion (2013). More recently, Kang et al. (2014) show that economic policy uncertainty in interaction with firm-level uncertainty depresses firms' investment decisions. Pastor and Veronesi (2013) provide evidence that policy uncertainty drives up the cost of capital and reduces investments. Baker et al. (2014) show that economic policy uncertainty intensified recession during the last global 2007–2009 crisis.

As far as the impact of EPU on stock markets is concerned, there are only a few very recent studies that considered developed and major emerging markets in Latin America and Asia. Brogaard and Detzel (2012) study 21 countries and show that high economic policy uncertainty affects negatively stock market returns. Chang et al. (2014) investigate for a

sample of seven OECD countries whether economic policy uncertainty is linked to stock markets. The authors report that volatility in the US and UK economic policies lead stock prices to decrease and that the US EPU also affects oil prices. Antonakakis et al. (2013) use a DDC GARCH model to show that comovements between US stock market returns, volatility and economic policy uncertainty vary over time and that an increase in policy uncertainty decreases stock market returns. Based on a VAR model, Kang and Ratti (2013) reach a similar conclusion. More recently, Kang and Ratti (2014) use a structural VAR model to study the links among China's policy uncertainty, the global oil market, and stock market returns in China. They find that a shock to economic policy uncertainty in China has a delayed negative effect on global oil production and stock markets and that the effect is stronger since 2003 as China's influence in the oil market increases. Donadelli and Persha (2014) use DCC-GARCH models to show that policy uncertainty significantly affects average equity risk premium in a sample of Asian, East European and Latin American emerging markets.

However, no attention has been given to frontier markets, in particular GCC markets. Our study is the first that investigates the role of global world policy uncertainty in frontier economies, in particular in GCC countries. We hypothesize that economic policy shocks hitting major net-oil importer economies, namely the USA, Europe and China, may spillover onto other countries, in particular net oil exporter GCC countries and thus affect their stock markets. GCC countries are interesting for several reasons. First, most GCC countries are major exporters of oil in world energy markets, their stock markets are likely to be susceptible to changes in economic policies in major net-oil importers. Second, GCC markets differ from those of developed and from other emerging countries in that they are only weakly integrated within international markets and are overly sensitive to regional political events [Arouri and Nguyen (2010)]. Finally, GCC markets are very promising areas for international portfolio diversification and several reforms have been made in order to attract global investors. Recently, frontier market mutual funds and ETFs also have emerged. However, despite the significant attention to GCC stock markets among the investment community, very little research includes them. Investigating the impact on economic policy uncertainty on stock returns in GCC countries can help GCC economic agents as well as foreign investors make necessary investment decisions and may be of use to policy-makers who regulate stock markets.

The remainder of the article proceeds as follows. Section 2 introduces the data we use. Section 3 reports and discusses our empirical results. Section 4 concludes the paper and provides some policy implications.

2. Data and preliminary analysis

Our empirical investigation covers GCC stock markets. The GCC was established in 1981 and it includes six countries, namely Bahrain, Oman, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates (UAE). GCC countries have several patterns in common. Together, they account for about 20% of global oil production, they control 36% of global oil exports and they have 47% of proven global reserves.[1] Although they have several economic and political characteristics in common, the six GCC countries depend on oil to differing degrees; likewise, efforts to diversify and liberalize the economy differ from country to country.

To conduct the study, we use monthly series over the period May 2005- January 2014. Our data are constituted of stock prices, economic policy uncertainty indices and economic variables to control our estimations. Financial and economic data were sourced from Datastream International and Morgan Stanley Capital International (MSCI) databases while policy uncertainty indices were extracted from Baker et al. (2014). The indices of economic policy uncertainty constructed by Baker et al. (2014) are weighted averages for each country or region of three uncertainty components: (1) newspaper coverage of policy-related economic uncertainty; (2) the number of federal tax code provisions set to expire in future years, and (3) a measure of disagreement among economic forecasters as a proxy for uncertainty.

Figure 1 plots the US economic policy uncertainty (EPUUSA) together with the GCC stock market index. This figure suggests a negative correlation between the two series. Moreover, one remarks that the timing of major regional and worldwide historical events is marked in the figure. For instance, one can see the effects of the 2007-2009 financial crisis, the 2010-2011 Euro and debt crises and the Arab Spring. These events are often followed by rises in the economic policy uncertainty and falls in the GCC market index.

[1] For a detailed presentation of GCC economies and markets, please refer to Kern (2002).

Figure 1. GCC stock market index and US economic policy uncertainty

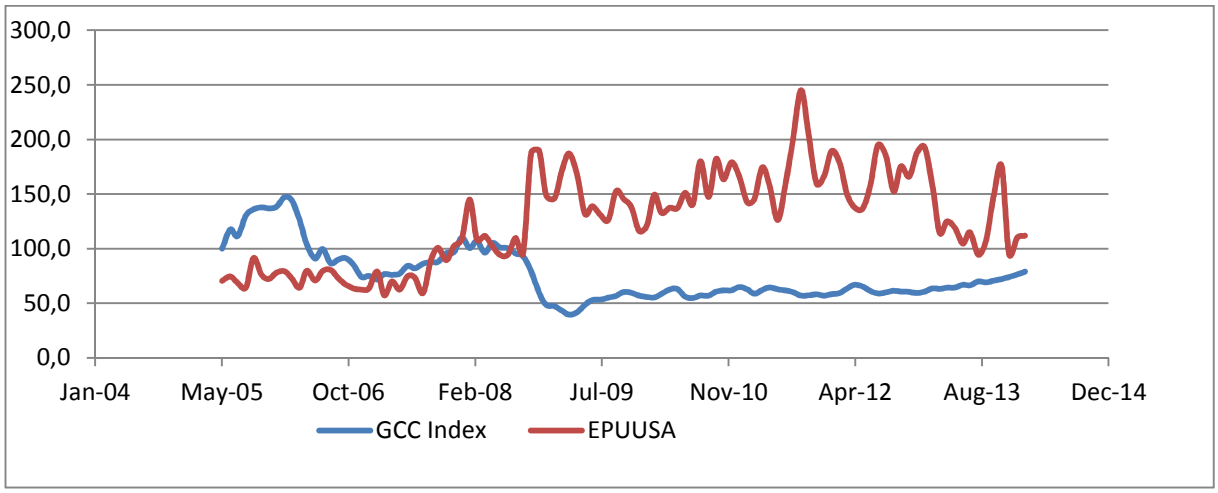
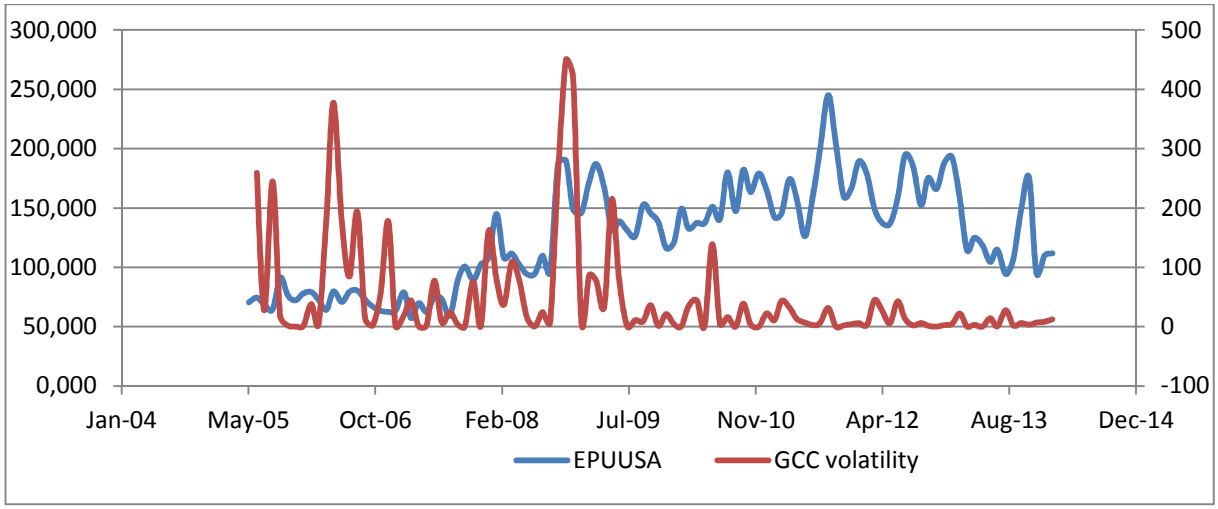


Figure 2 suggests a positive association between the US economic policy uncertainty and the GCC stock markets volatility. Generally, major global or regional economic and political events increase both policy uncertainty and GCC market volatility.

Figure 2. GCC stock market volatility and US economic policy uncertainty



Proprieties of the data we use are presented in Table I. Panel A reports basic statics on policy economic uncertainty (EPU) for the USA, Europe and China. Besides the level of EPU which provides information on the degree of economic policy uncertainty, we are interested in the change in EPU (DEPU) which assesses the innovation in economic policy uncertainty. On average, policy uncertainty is higher and more volatile in China, followed by the USA.

Panel B reveals a number of interesting facts. Compared to the world market, GCC markets have higher risk, but not necessary higher returns. Qatar has the highest monthly return followed by Saudi Arabia and the UAE. The UAE has the highest standard-deviation followed by Qatar and Saudi Arabia.

Table I: Descriptive statistics

Panel A: Policy uncertainty

	Mean	Std. dev.	JB	MIN	Max
EPU USA	126.290	42.978	5.116*	57.203	245.130
DEPU USA	2.070	19.020	23.012***	-45.734	95.826
EPU EUR	124.662	39.670	6.555*	52.027	217.310
DEPU EUR	1.357	14.740	8.098**	-31.600	52.685
EPU China	130.770	75.640	33.256*	26.144	363.529
DEPU China	12.932	59.859	48.209***	-82.914	234.90

Panel B: World and GCC stock market returns

	Mean	Std. dev.	JB	MIN	Max
MSCI World	0.663	4.860	12.360***	-18.934	11.319
Bahrain	-1.269	7.080	18.529***	-27.728	17.453
Kuwait	0.391	6.968	4.349	-19.041	21.020
Oman	0.212	6.061	24.400***	-29.863	14.279
Qatar	0.936	8.600	13.118***	-26.479	23.368
Saudi	0.401	8.510	5.168*	-25.399	20.793
UAE	0.400	10.956	8.648**	-33.368	36.250

Panel C: Global control variables

	Mean	Std. dev.	JB	MIN	Max
Oil	1.023	8.197	15.593***	-26.725	19.738
Dollar	-0.078	1.746	9.678***	-4.102	6.683
TB	0.122	0.161	111.580***	0.001	0.419

Panel B: Matrix of correlations

	DEPU USA	EDPU EUR	DEPU Chnia	Bahrain	Kuwait	Oman	Qatar	Saudi	UAE	Oil	Dollar	TB	MSCI World
DEPU USA	1.00	0.504	0.078	-0.057	-0.067	-0.171	-0.159	-0.218	-0.079	-0.151	0.233	0.027	-0.216
EDPU EUR		1.00	0.185	-0.111	-0.156	-0.338	-0.150	-0.105	-0.188	-0.192	0.184	0.012	-0.247
DEPU Chnia			1.00	0.038	0.024	-0.024	0.012	0.026	0.002	-0.088	-0.026	0.008	-0.078
Bahrain				1.00	0.549	0.504	0.370	0.388	0.459	0.214	-0.217	0.153	0.376
Kuwait					1.00	0.522	0.416	0.288	0.451	0.202	-0.378	0.158	0.514
Oman						1.00	0.603	0.498	0.625	0.373	-0.338	0.046	0.513
Qatar							1.00	0.541	0.690	0.390	-0.271	-0.034	0.506
Saudi								1.00	0.570	0.370	-0.153	-0.082	0.429
UAE									1.00	0.343	-0.172	-0.047	0.523
Oil										1.00	-0.566	0.065	0.502
Dollar											1.00	-0.122	-0.451
TB												1.00	0.052
MSCI World													1.00

***Notes**. EPU and DEPU denote the level and the change in economic policy uncertainty, respectively. JB is the Jarque-Bera test for normality based on excess skewness and Kurtosis. *, ** and *** Denote statistical significance at the 10%, 5% and 1%.*

Panel C presents basic statistics of our global control variables. They are: Brent oil price, Dollar exchange rate and the US 3-month Treasury bill rate. During our sample period, changes in oil prices were on average higher that returns in all GCC stock markets.

Panel D reports correlations among markets. As we can see, cross-market correlations within the GCC region as well as correlation between GCC markets and the world market are not high. This is indicative of the facts that the Gulf markets are generally segmented from the World market trends, and that global investors can still benefit from adding financial assets of the Gulf region in their diversified portfolios. More interestingly, changes in economic policy uncertainty are negatively correlated with stock returns but at different degrees. The lowest correlations are found in the cases of Bahrain (-0.06) and Kuwait (-0.07) and the highest in the cases of Saudi Arabia (-0.22) and Oman (-0.17).

3. Empirical results

We investigate whether economic policy uncertainty from the USA, Europe and China affects GCC stock returns and volatility. First, we estimate a variety of panel regressions in which the stock market return is regressed on a constant term, the lagged return, a vector of uncertainty variables and a vector of control variables:

$$R_{it} = \alpha + \beta\, R_{i,t-1} + \phi' \, UNCERT + \varphi' \, CONTROL + \theta' \, FE + \varepsilon_{it} \qquad (1)$$

Where *UNCERT*, *CONTROL* and *FE* are a vector of EPU variables, control variables and fixed effects, respectively. Returns were computed using this formula: $R_{it} = 100 * (P_{it} / P_{i,t-1} - 1)$, where P_{it} is the value of the stock market index in country *i* at the end of month *t*.

Our empirical findings are summarized in Table II. Standard errors reported in the table are double clustered by country (to allow for heteroskedasticity across GCC countries) and by month (to allow for potential regional shocks). Fixed effects are included to prevent unobserved heterogeneity across GCC countries from biasing the estimated coefficients. Column 1 shows that coefficient relating the current return series to the one-lag returns is significant suggesting some predictability in GCC stock markets based on previous returns. More interestingly, the coefficient of EPU is significantly negative. Thus, an increase in the US economic policy uncertainty is associated with a decrease in GCC stock market returns.

Column 2 suggests that both the contemporaneous EPU and the one-lagged EPU are significantly negative, suggesting that the effect of the US economic policy uncertainty on GCC stock market is rather persistent. Some predictability of GCC stock returns can be obtained using previous levels of the US economic policy uncertainty. In Column 3, we do the same analysis but introduce a dummy variable to isolate the effect of the last global financial crisis on GCC stock markets. Indeed, the period of analysis we choose entails both calm and volatile periods, the most extreme of them was the last global crisis. To analyse the impact of this crisis we introduce a dummy variable that takes 1 during the crisis and zero elsewhere. We fix the beginning of the crisis at the date of bankruptcy of Lehman Brothers in September 2008 and the end date in October 2009 based on the analysis of Bartram and Bodner (2009). The coefficient of this dummy variable is negative suggesting that the crisis has had a significant negative impact on GCC stock markets.

In column 4, we include global factors that have been shown to be associated with GCC economies and stock markets such as oil price changes, dollar exchange rate changes and the US 3-monthTreasury bill rate changes because a correlation between GCC stock markets and uncertainty may become from a "proxy effect". Indeed, variations in GCC stock markets have been associated with changes in global stock markets, in oil prices and in exchanges rates and global business cycle fluctuations [Arouri and Nguyen (2010) and Arouri and Rault (2012)]. Thus, a correlation between GCC stock markets and policy uncertainty may simply reflect an association between these global factors and policy uncertainty. Hence, we need to control for these global factors when studying the association between global economic policy uncertainty and GCC stock markets.

As expected, our results suggest that a rise in oil prices increases GCC stock markets and a depreciation of the dollar decrease the GCC returns as oil prices are libelled in dollar. An increase in the US 3-month treasury bill rate decreases GCC stock markets as GCC and global investors may arbitrage in favour of investments in the USA rather than in GCC markets. More importantly, our results on the effect of the US economic policy uncertainty on GCC stock markets remain unchanged: the effect of EPU is negative and persistent.

The next issue we examine is the impact of GCC countries heterogeneity in matter of sensitivities to world oil price shocks [Arouri and Rault (2012)] on the effect of economic policy uncertainty of their stock markets. We expect that countries with higher sensitivities to oil price shocks to be more sensitive to world economic policy uncertainty. In column 5, we

introduce an interaction term between EPU changes and oil price changes. Results show that the coefficient on this term is significant. Oil shocks and economic policy uncertainty are interrelated and influence stock returns: the direct positive effect of oil shocks on stock returns in GCC markets seems to be reduced by an increase in the US economic policy uncertainty.

Table II. Economic policy uncertainty and GCC stock returns

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.886***	-0.771***	-0.499***	-0.471***	-0.452****	-0.481***	-0.476***	-0.489***	-0.466***
	(0.037)	(0.033)	(0.067)	(0.097)	(0.101)	(0.094)	(0.094)	(0.049)	(0.046)
$R_{i,t-1}$	0.203***	0.188***	0.174***	0.133***	0.130***	0.135***	0.135***	0.140***	0.136***
	(0.044)	(0.046)	(0.041)	(0.046)	(0.045)	(0.046)	(0.046)	(0.046)	(0.046)
$REPU_t$ (USA)	-0.053***	-0.064***	-0.061***	-0.031***	-0.041***				
	(0.013)	(0.015)	(0.015)	(0.014)	(0.015)				
$REPU_{t-1}$ (USA)		-0.053***	-0.051***	-0.032***	-0.032***				
		(0.008)	(0.008)	(0.005)	(0.005)				
$REPU_t$ (Europe)						-0.056***	-0.054***		
						(0.012)	(0.011)		
$REPU_{t-1}$ (Europe)						-0.027	-0.025		
						(0.023)	(0.023)		
$REPU_t$ (China)								0.004***	0.004*
								(0.002)	(0.002)
$REPU_{t-1}$ (China)								-0.007***	-0.009***
								(0.001)	(0.001)
$R_{oil,t}$				0.173**	0.174**	0.166**	0.166**	0.192**	0.194**
				(0.073)	(0.073)	(0.0761)	(0.076)	(0.077)	(0.077)
TB_t				-2.77*	-2.829*	-2.778*	-2.761*	-3.205***	-3.390**
				(1.531)	(1.545)	(1.639)	(1.641)	(1.604)	(1.609)
$R_{\$,t}$				-0.623**	-0.735***	-0.624***	-0.587**	-0.678***	-0.707***
				(0.257)	(0.250)	(0.229)	(0.236)	(0.233)	(0.234)
$R_{oil,t} * REPU_t$					-0.002**		0.001		-0.001***
					(0.001)		(0.001)		(0.000)
Dummy (crisis)			-2.221***	-2.730***	-3.148***	-2.697***	-2.579***	-2.958***	-3.115***
			(0.456)	(0.427)	(0.447)	(0.370)	(0.417)	(0.364)	(0.376)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	618	618	618	618	618	618	618	618	618
Number of countries	6	6	6	6	6	6	6	6	6
Adj-R^2	0.065	0.081	0.090	0.159	0.164	0.161	0.161	0.156	0.159

*Notes: standard errors double-clustered by country (to allow for heteroskedasticity across countries) and by month (to allow for potential regional shocks) are reported into parentheses. . *, ** and *** Denote statistical significance at the 10%, 5% and 1%.*

Columns (6)-(7) report the results of similar estimations based on economic policy uncertainty from Europe. Column (6) shows that, as in the case of the USA, economic policy uncertainty from Europe affects negatively GCC stock markets. However, this effect is not persistent as the coefficient on the one-lagged EPU is not significant. Moreover, the effect of EPU on GCC stock returns does not interact with oil price changes (column (7)).

Columns (8) and (9) report results when we use the Chinese index of economic policy uncertainty. The effects are weak but statistically significant and persistent. Moreover, there is some evidence on interaction between the effect of oil price changes on GCC stock markets and that of Chinese policy uncertainty, reflecting the increasing role of China in world oil markets.

Finally, we notice that the highest adjusted R-squared is obtained when changes in policy uncertainty from the USA (0.164) are considered, followed by Europe (0.161) and China (0.159).

Next, we test the hypothesis that higher world policy uncertainty is associated with higher volatility in GCC stock markets. To do this, we estimate different panel specifications of the form:

$$\sigma_{it}^2 = \alpha + \beta\,\sigma_{i,t-1}^2 + \phi' UNCERT + \varphi' CONTROL + \theta' FE + \varepsilon_{it} \quad (2)$$

σ_{it}^2 is simply measured by the variance of within-month daily returns of country *i* in month *t*.

Our empirical findings are summarized in Table III. Column (1) shows that contemporaneous economic policy uncertainty coming from the USA does not increase contemporaneous volatility in GCC stock markets. In contrast, column (2) shows a significant positive effect of the one-lagged US economic policy uncertainty on GCC volatility. Increase in the US EPU is associated with an increase in GCC macroeconomic and financial risk which leads the stock market volatility of the following month to be higher. Column (3) shows that the last global financial crisis has increased the volatility of GCC stock markets. The effect of the lagged EPU remains positively significant after introduction of control variables as shown in Column (4). It is worth nothing that GCC stock market volatility augments with increases in oil price volatility, dollar exchange rate volatility and Treasury bill rate volatility.

Table III. Economic policy uncertainty and GCC stock markets volatility

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	35.861***	32.583***	24.092***	18.891***	16.812***	17.618***
	(1.735)	(1.623)	(1.830)	(5.576)	(5.396)	(6.352)
$\sigma^2_{i,t-1}$	0.304***	0.305***	0.212***	0.138***	0.137***	0.136**
	(0.030)	(0.0302)	(0.043)	(0.033)	(0.034)	(0.035)
$REPU_t$ (USA)	0.050	0.311	0.126	0.060		
	(0.178)	(0.198)	(0.202)	(0.191)		
$REPU_{t-1}$ (USA)		1.285***	1.140***	1.207***		
		(0.224)	(0.234)	(0.235)		
$REPU_t$ (Europe)					-0.009	
					(0.171)	
$REPU_{t-1}$ (Europe)					1.163***	
					(0.280)	
$REPU_t$ (China)						0.006
						(0.045)
$REPU_{t-1}$ (China)						0.042*
						(0.025)
$\sigma^2_{oil,t-1}$				0.166***	0.162***	0.164***
				(0.0461)	(0.046)	(0.045)
$\sigma^2_{TB,t-1}$				185.235**	181.597**	189.233**
				(75.791)	(76.390)	(76.750)
$\sigma^2_{\$,t-1}$				5.968***	5.674***	6.363***
				(1.679)	(1.581)	(1.686)
Dummy (crisis)			102.868***	61.537***	59.813***	61.665***
			(14.113)	(14.009)	(13.172)	(12.553)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	618	618	618	618	618	618
Number of countries	6	6	6	6	6	6
Adj-R^2	0.137	0.173	0.240	0.344	0.360	0.303

*Notes: standard errors double-clustered by country (to allow for heteroskedasticity across countries) and by month (to allow for potential regional shocks) are reported into parentheses. . *, ** and *** Denote statistical significance at the 10%, 5% and 1%.*

Columns (5) and (6) show similar results: previous changes in economic policy uncertainty from Europe and China increase stock market volatility in GCC countries. However, it seems that the effect is largely higher in the cases of uncertainty coming from Europe and the USA than from China. The highest adjusted R-squared is obtained when uncertainty considered is from Europe (0.360) followed by the USA (0.344) while the model that includes uncertainty from China presents the lowest adjusted R-squared (0.303).

4. Conclusion

We studied the impact of economic policy uncertainty on stock markets in GCC countries. As GCC economies rely heavily on oil and oil related products exports, we considered uncertainty coming from major net-oil importing countries: the USA, Europe and China. We tested different hypotheses using panel data regression methods.

Our findings suggest that an increase in policy uncertainty reduces significantly returns in GCC stock markets. However, the effect seems to be stronger when uncertainty is coming from the USA and Europe than from China. More interestingly, our empirical results show that the effect of uncertainty on GCC stock market returns is persistent and interacts with oil price changes. Oil price shocks and economic policy uncertainty in major oil importing countries are interrelated and influence stock returns in GCC countries through affecting expected cash flows and/or cost of capital. Moreover, our findings show that policy uncertainty increase global risk in GCC economies and future stock market volatility. Our paper highlights the importance for GCC authorities to better understand policies in major net-oil importing countries to better prevent their impacts on GCC markets.

References

- Ali, A., (2001).”Political instability, policy uncertainty, and Economic growth: an empirical Investigation”. *Atlantic Economic Journal*, 29, 87-106.
- Antonakakis, N., Chatziantoniou, I., Filis, G. (2013). "Dynamic Co-movements between Stock Market Returns and Policy Uncertainty”, *Economics Letters*, 120 (1), 87-92.
- Arouri M. and Rault C. (2012), “Oil Prices and Stock Markets in GCC Countries: Empirical Evidence from Panel Analysis”, *International Journal of Finance and Economics*, 2012, 17(3), pp. 242-253.
- Arouri M. and Nguyen D. (2010). “Time-varying Characteristics of Cross-market Linkages with Empirical Application to Gulf Stock Markets”, *Managerial Finance*, 36(1), 57-70.
- Baker, S.R., Bloom, N., Davis, S.J., (2013). “Measuring economic policy uncertainty. Unpublished working paper”. Stanford University and University of Chicago.
- Bartram, S. M. and Bodnar, G. M. 2009. No Place to Hide: The Global Crisis in Equity Markets in 2008/09. *Journal of international Money and Finance*, 8(8), 1246-1292.
- Bloom, N. (2009). “The Impact of Uncertainty Shocks”, *Econometrica* 77(3), 623-685.

- Brogaard J. and Detzel A. (2012),"The asset pricing implications of government economic policy uncertainty". *University of Washington mimeo.*
- Byrne, J.P. and E.P. Davis. (2005). "Investment and Uncertainty in the G7", *Review of World Economics*, 141, 1-32.
- Chang, T., Chen, W.-Y., Gupta, R. and Nguyen, D. K. (2014). "Are stock prices related to political uncertainty index in OECD countries? Evidence from bootstrap panel causality test", Economic Systems, Forthcoming.
- Donadelli M. and Persha L. (2014), "Understanding emerging market equity risk premia: Industries, governance and macroeconomic policy uncertainty, *Research in International Business and Finance*, 30, 284– 309.
- Fernandez-Villaverde, J., Guerron-Quintana, P., Kuester, K., Rubio-Ramirez, J., (2013). "Fiscal volatility shocks and economic activity". *NBER Working Paper*
- Gulen, H.and M. Ion, (2013), "Policy Uncertainty and Corporate Investment", Working paper, Purdue University.
- Julio, B.,Yook, Y.,(2012). "Corporate financial policy under political uncertainty: international evidence from national elections", *Journal of Finance* 67,45–83.
- Kang W. and Ratti R.A. (2013), "Oil shocks, policy uncertainty and stock market return", *Intentional Financial Markets, Institutions and Money* 26, 305– 318.
- Kang W. and Ratti R.A. (2013), "Structural oil price shocks and policy uncertainty", *Economic Modelling* 35, 314–319.
- Kang W. and Ratti R.A. (2014), "Policy Uncertainty in China, Oil Shocks and Stock Returns", *CAMA Working Paper No. 32/2014.*
- Kang W., Lee K and Ratti R.A. (2014), "Economic policy uncertainty and firm-level investment", *Journal of Macroeconomics* 39, 42–53.
- Kern S. (2012), "GCC financial markets Long-term prospects for finance in the Gulf region", Deutsche Bank, *DB Research*.
- Pastor, L., Veronesi, P. (2012). "Uncertainty about government policy and stock prices". *Journal of Finance* 67, 1219–1264.
- Rodrik, D. (1991)."Policy Uncertainty and Private Investment in Developing Countries", *Journal of Development Economics,* 36, 229-242.