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### IMPACT OF OIL PRICE ON GCC STOCK MARKETS

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#### **ABSTRACT**

Oil is the significant wellspring of income for GCC nations and is required to influence the securities exchanges in these nations. At the point when oil costs change, they have coordinated effect on the development of an economy, which permeates to the securities exchanges. Oil is the real wellspring of income for the Gulf Cooperation Council (GCC) nations. However, there are relatively few examinations that have inspected the effect of the adjustment in oil cost and profit for GCC securities exchanges. This examination analyzes the effect of progress on oil costs on the profits on GCC securities exchanges utilizing eight-year month to month information frame February 2008 to December 2015. For information examination and model testing, this investigation utilized common Minimum Square or relapse strategy. The test aftereffects of the model demonstrate that the adjustment in oil costs has critical impact on the profits in securities exchanges in all GCC nations.

#### **INTRODUCTION**

Oil costs assume a vital job in the macroeconomic dimension exercises of the countries around the world. At the point when oil costs change, they have coordinated effect on the development of an economy, which permeates to the securities exchanges [1]. Oil is the significant wellspring of income for the Gulf Cooperation Council (GCC) nations. Any critical change in oil costs influences the accessibility of assets to the legislatures in these nations [2]. Accessibility of assets impacts the execution of organizations working in these nations, which are relied upon to be reflected in the execution of the securities exchanges [3].

Numerous examinations have explored the connection between oil cost and macroeconomic variable, including securities exchanges. Be that as it may, larger parts of studies have concentrated on created showcase. As indicated by Awartani and Maghyereh [4], lion's share of the past investigations significantly centered around the impacts of oil costs on the macroeconomic variables. In such manner, the impacts of the vitality costs on the share trading system are regularly explored with respect to the share trading system exhibitions of the individual oil organizations. Also, most of the investigations have dove on the economies that were at that point created, while little examinations are focusing on the developing markets. In a similar note, a past report completed by Dagher and El Hariri [5] demonstrated that the GCC securities exchanges are known to assume huge jobs in the GCC economies and furthermore the oil costs straightforwardly impacts them in particular ways. Rithuan et al. [6] and Akoum, Graham, Kivihaho, Nikkinen and Omran [7] clarify that the oil costs are straightforwardly identified with the nation's macroeconomics, which has boundless consequences for the GCC securities exchanges. For this situation, every one of these examinations which are straightforwardly interface among macroeconomics and the securities exchanges exhibitions in the officially created and rising nations through the use of various instruments and in various powers should be indisputably assessed and dissected.

Request side stuns additionally legitimize high oil value instability. Also, Hamilton [8] contended that request side stun getting from industrialization of nations, for example, China could have a noteworthy effect. He additionally voiced the sentiment that absence of quick reaction of oil-supply to a huge scale increment in oil-request could result to an interest side stun. Kilian and Park [9] supported that request side oil value stuns impact stock costs more than the supply-side oil value stuns. Request side oil value stuns practice a negative impact on stock costs because of the prudent interest for raw petroleum, which echoes the vulnerability of future oil supply accessibility.

Ciner [10] presents proof that oil stuns influence in a nonlinear way the stock returns in US, which is predictable with the verified effect of oil on financial aspects action. Also, Arouri and Nguyen [11] gave a two-factor GARCH model to analyze the impact of oil costs on European segments' profits instead of just on total securities exchange list returns. Papapetrou [12] utilizing a VAR mode shows up a connection between oil value changes and securities exchanges in Greece. Likewise, Zarour [13] found a similar end for other rising securities exchanges utilizing a worldwide multifaceted model. Less consideration has been given to littler developing markets, particularly in GCC nations, where share managing is a moderately late occurring. In addition, Arouri and Rault's [14] procured a bootstrap board co-ordination procedure and an apparently inconsequential relapse (SUR) method<sup>4</sup> and given proof that positive oil value stuns have positive effect on the share trading system execution of GCC nations. Hammoudeh and Li [15] gave an essential finding in this subject and intrigue. They proposed the real occasions that reason changes in oil costs prompt increment money markets unpredictability of the GCC nations. Arouri, Lahiani and Bellalah [16] inspected the connection between stuns that had happened in oil costs and stock returns by utilizing

straight and non-direct models inside the time of 2005-2008 among nations sending out oil.

The focal point of this investigation is on the connection between oil cost and securities exchanges in the Gulf Cooperation Council (GCC), which are Saudi Arabia, Bahrain, Kuwait, Oman, Qatar, and United Arab Emirates. The essential target of this examination is to explore the effect of progress in oil costs on profits for securities exchanges in the GCC nations This investigation looks at the effect of progress in oil costs on the profits on the GCC securities exchanges utilizing eight-year month to month information shape February 2008 to December 2015. This examination utilizes standard slightest square technique to research the connection between factors. The test aftereffects of the model of this investigation demonstrate that the adjustment in oil cost has critical effect on the GCC securities exchanges, anyway with various degrees. The real effect was in Saudi Arabia and the base one in Oman.

**METHODOLOGY**

To be able to fulfill the objectives of this research, certain aspects were looked at such as data from previous years on stock markets and oil prices. The aim of this research was to investigate the impact of changes in oil prices on returns on stock markets in the GCC. This chapter presents a model of this study, data, a model testing, and hypothesis testing in details.

***Models of This Study***

The choice for the model was guided by the availability of data that is needed for this specific study. This study applies ordinary least square or regression method for data analysis. The models of this study are  $R = a + bOP + e$ , where  $R$  = Return on Stock Market,  $a$  = Intercept,  $OP$  = Oil Price,  $e$  = Error term, these equations relate the dependent variables (return on the stock markets) with the independent variables (change in oil price).

***Data***

Secondary data is used for this study spanning from February 2008 to December 2015. The frequency of the data is monthly. The data on the variables was obtained from the following sources as shown in Table 1 and Table 2.

**Table 1:** Table of Sources

Source	Data
Bloomberg Professional Database	1. Return on Saudi Arabia stock market
	2. Return on Oman stock market
	3. Return on United Arab Emirates stock market
	4. Return on Kuwait stock market
Markets today.net	1. Return on Qatar stock market
	2. Return on Bahrain stock market
Federal Reserve Economic Data (FRED)	Oil price (crude oil price: Brent-Europe)

**Table 2:** Table of Indexes

Country	Index
Saudi Arabia	SASEIDX Index (Tadawul All Share TASI Index)
United Arab Emirates	DWAE Index (Dow Jones UAE Total Stock Market Index AED)
Kuwait	DWKW Index (Dow Jones Kuwait Total Stock Market Index KWD)
Qatar	Qatar Exchange Index
Oman	DWOM Index (Dow Jones Oman Total Stock Market Index OMR)

**Model Testing**

The model of this examination was tried with the relapse investigation. Relapse examination is a factual apparatus for the examination of connections between factors. Relapse systems have for quite some time been integral to the field of financial measurements ("econometrics"). The relapse is the examination or proportion of the relationship between one variable (the reliant variable) and at least one different factor (the free factors). There are numerous procedures for doing relapse investigation has been produced, for example, direct relapse and conventional slightest squares relapse. The examiner likewise commonly surveys the "factual criticalness" of the assessed connections, that is, the level of certainty that the genuine relationship is near the evaluated relationship.

**Hypothesis Testing**

To test the hypothesis, this study applied t-test. To test the significance of the test statistic (t-statistic), the p value generated by the software was compared with the significance level of 5% ( $\alpha = 0.05$ ). t-Statistic is used in decision making if the model supports or rejects the null hypothesis.

**RESULT AND DISCUSSION**

The model test was done by using eight-year monthly data form February 2008 to December 2015. This study used ordinary least square or regression method.

**Descriptive Statistics of GCC's Returns**

Table 3 shows the descriptive Statistics of GCC Returns. Over the period of study, the mean monthly return on Oman stock market was negative 0.152% with standard deviation of 5.308%. The Kurtosis and Skewness of the distribution of the returns are 8.219 and -1.804. 8.219 Kurtosis value shows that the distribution is lepokurtic. It is mean the peak of the data distribution is higher than that of the normally distributed data. The Skewness of -1.804 shows slight skew towards left.

**Table 3:** Descriptive Statistics of GCC Returns

	OMAN	UAE	QATAR	KW	SA	BAH	OP
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Mean	-0.1517	0.4239	0.3876	-0.8535	0.1679	-0.8199	-0.5189
Median	0.8884	0.2836	0.5800	-0.1657	1.0573	-0.4300	0.5113
Standard Deviation	5.3081	9.3211	7.4948	6.1507	6.7949	3.2918	8.8640
Sample Variance	28.1761	86.8830	56.1718	37.8314	46.1704	10.8360	78.5697
Kurtosis	8.2189	1.2314	2.7773	2.7268	2.3133	1.9893	1.0782
Skewness	-1.8037	-0.5245	-0.4909	-0.5580	-0.5862	-0.7768	-0.7660
Range	40.8739	51.4502	50.2000	39.0670	46.2006	20.5600	46.5578
Minimum	-28.5386	-31.9537	-25.6200	-21.3243	-25.7091	-12.2000	-26.9083
Maximum	12.3353	19.4965	24.5800	17.7427	20.4915	8.3600	19.6495
Count	95	95	95	95	95	95	95

Based on Table 3, over the period of study, the mean monthly return on UAE stock market was positive 0.424% with standard deviation of 9.321%. The Kurtosis and Skewness of the distribution of the returns are 1.231 and -0.524. 1.231 Kurtosis value shows there is kurtosis in the distribution on the data and the peak is normal. It is mean the data normally distribution. The Skewness is -0.524 shows slight skew towards left.

Over the period of study, the mean monthly on return Qatar stock market was positive 0.388% with standard deviation of 7.495%. The Kurtosis and Skewness of the distribution of the returns are 2.777 and -0.491. 2.777 Kurtosis value shows there is kurtosis in the distribution on the data and the peak is normal. It is mean the data normally distribution. The Skewness is -0.491 shows slight skew towards left.

Over the period of study, the mean monthly return on Kuwait stock market was negative 0.854% with standard deviation of 6.151%. The Kurtosis and Skewness of the distribution of the returns are 2.727 and -0.558. 2.727 Kurtosis value shows there is kurtosis in the distribution on the data and the peak is normal. It is mean the data normally distribution. The Skewness is -0.558 shows slight skew towards left.

Over the period of study, the mean monthly return on Saudi stock market was positive 0.168% with standard deviation of 6.795%. The Kurtosis and Skewness of the distribution of the returns are 2.313 and -0.586. 2.313 Kurtosis value shows there is kurtosis in the distribution on the data and the peak is normal. It is mean the data normally distribution. The Skewness is -0.586 shows slight skew towards left.

Over the period of study, the mean monthly return on Bahrain stock market was negative 0.8199% with standard deviation of 3.2918%. The Kurtosis and Skewness of the distribution of the returns are 1.989 and -0.776. 1.989 Kurtosis value shows there is kurtosis in the distribution on the data and the peak is normal. It is mean the data normally distribution. The Skewness is -0.776 shows slight skew towards left.

#### ***Model Test results of relationship between oil price and GCC countries***

From the results in Table 4, the following regression equation for relationship between change in oil price and Oman stock market return is obtained: RO= -

0.044+ 0.207OP + e. The equation says if the return in oil price increases by 1 % the return on Oman stock market will increase by 0.21 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level, because p-value is 0.001, which is less than critical value of 0.05. T- Statistic of the relationship between RO and OP is 3.561 and P-Value is 0.001. It means that the change in oil prices has a significant impact on the returns on Oman stock market. The explanatory power of the model gives by its R2 value of 0.120, means that the 12.0% variance in return on Oman stock market explained by the change in oil price. In addition, 0.001 significance level of F-statistic, which is less than 0.05 indicates and the model is a good fit model.

**Table 4:** Regression Results of relationship between Oil price and Oman

ANOVA					
	df	SS	MS	F	Sig F
Regression	1.000	317.774	317.774	12.679	0.001
Residual	93.000	2330.782	25.062		
Total	94.000	2648.556			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)
Intercept	-0.044	0.515	-0.086	0.932	Accepted
OP	0.207	0.058	3.561	0.001	Rejected

From the results in Table 5, the following regression equation for relationship between change in oil price and UAE stock market return is obtained.  $RE = 0.6398+ 0.4161OP + e$  the equation says if the return in oil price increases by 1 % the return on UAE stock market will increase by 0.42 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level, because p-value is 0.0001, which is less than critical value of 0.05. T- Statistic of the relationship between RE and OP is 4.1553 and P-Value is 0.0001. It means that the change in oil prices has a significant impact on the returns on UAE stock market. The explanatory power of the model gives by its R2 value of 0.157, means that the 15.7% variance in return on UAE stock market explained by the change oil price. In addition, 0.000 significance level of F-statistic, which is less than 0.05 indicates and the model is a good fit model.

**Table 5:** Regression Results of relationship between Oil price and UAE

ANOVA					
	df	SS	MS	F	Sig F
Regression	1.000	1278.877	1278.877	17.267	0.000
Residual	93.000	6888.123	74.066		
Total	94.000	8167.000			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)
Intercept	0.6398	0.8845	0.7234	0.4713	Accepted
OP	0.4161	0.1001	4.1553	0.0001	Rejected

From the results in Table 6, the following regression equation for relationship between change in oil price and Qatar stock market return is obtained:  $RQ = 0.5422 + 0.2979OP + e$  the equation says if the return in oil price increases by 1 % the return on Qatar stock market will increase by 0.30 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level, because p-value is 0.0005, which is less than critical value of 0.05. T-Statistic of the relationship between RQ and OP is 3.6309 and P-Value is 0.0005. It means that the change in oil prices has a significant impact on the returns on Qatar stock market. The explanatory power of the model gives by its R2 value of 0.124, means that the 12.4% variance in return on Qatar stock market explained by the change oil price. In addition, 0.0005 significance level of F-statistic, which is less than 0.05 indicates and the model is a good fit model.

**Table 6:** Regression Results of relationship between Oil price and Qatar

ANOVA					
	df	SS	MS	F	Sig F
Regression	1	655.5767	655.5767	13.1836	0.0005
Residual	93.000	4624.5716	49.7266		
Total	94.000	5280.1483			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)
Intercept	0.5422	0.7247	0.7481	0.4563	Accepted
OP	0.2979	0.0821	3.6309	0.0005	Rejected

From the results in Table 7, the following regression equation for relationship between change in oil price and Kuwait stock market return is obtained:  $RK = -0.704 + 0.288OP + e$ . The equation says if the return in oil price increases by 1 % the return on Kuwait stock market will increase by 0.29 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level, because p-value is 0.000, which is less than critical value of 0.05. T-Statistic of the relationship between RK and OP is 4.400 and P-Value is 0.000. It means that the change in oil prices has a significant impact on the returns on Kuwait stock market. The explanatory power of the model gives by its R2 value of 0.172, means that the 17.2% variance in return on Kuwait stock market explained by the change oil price. In addition, 0.000 significance level of F-statistic, which is less than 0.05 indicates and the model is a good fit model.

**Table 7:** Regression Results of relationship between Oil price and Kuwait

ANOVA					
	df	SS	MS	F	Sig F
Regression	1	612.710	612.710	19.359	0.0005
Residual	93.000	2943.441	31.650		
Total	94.000	3556.151			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)
Intercept	0.5422	0.578	-1.218	0.226	Accepted
OP	0.288	0.065	4.400	0.000	Rejected

From the results in Table 8 the following regression equation for relationship between change in oil price and Saudi stock market return is obtained:  $RS = 0.343 + 0.338OP + e$  the equation says if the return in oil price increases by 1 % the return on Saudi stock market will increase by 0.34 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level, because p-value is 0.000, which is less than critical value of 0.05. T-Statistic of the relationship between RS and OP is 4.733 and P-Value is 0.000. It means that the change in oil prices has a significant impact on the returns on Saudi stock market. The explanatory power of the model gives by its R<sup>2</sup> value of 0.194, means that the 19.4% variance in return on Saudi stock market explained by the change oil price. In addition, 0.000 significance level of F-statistic, which is less than 0.05 indicates and the model is a good fit model.

**Table 8:** Regression Results of relationship between Oil price and Saudi Arabia

ANOVA					
	df	SS	MS	F	Sig F
Regression	1	842.372	842.372	22.398	0.0005
Residual	93.000	3497.643	37.609		
Total	94.000	4340.015			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)
Intercept	0.343	0.630	0.544	0.587	Accepted
OP	0.338	0.071	4.733	0.000	Rejected

From the results in Table 9, the following regression equation for relationship between change in oil price and Bahrain stock market return is obtained:  $RB = -0.7420 + 0.1502OP + e$ . The equation says if the return in oil price increases by 1 % the return on Bahrain stock market will increase by 0.15 %. The null Hypothesis:  $H_0: \beta_0 = 0$  is rejected at 0.05 significance level. Because p-value .00005 which is less than critical value of 0.05. T-Statistic of the relationship between RB and OP is 4.2651 and p-Value is 0.00005. It means that the change in oil prices has a significant impact on the returns on Bahrain stock market. The explanatory power of the model gives by its R<sup>2</sup> value of 0.163, means that the 16.3% variance in return on Bahrain stock market explained by the change in oil prices. In addition, 0.000 significance level of F-statistic, which is less than 0.05, indicates and the model is a good fit model.

**Table 9:** Regression Results of relationship between Oil price and Saudi Arabia

ANOVA					
	df	SS	MS	F	Sig F
Regression	1	166.6435	166.6435	18.1912	0.0000
Residual	93.000	851.9408	9.1607		
Total	94.000	1018.5843			
	Coefficients	Standard Error	t Stat	P-value	H0 (5%)



Intercept	-0.7420	0.3111	-2.3852	0.0191	Rejected
OP	0.1502	0.0352	4.2651	0.00005	Rejected

Thus, overall, the descriptive statistics of GCC stock market returns show that Oman, Kuwait and Bahrain have a negative mean return. The mean ranges from -0.8535 to 0.424 with the highest value for UAE. UAE has the highest standard deviation of 9.3% and Bahrain has a lower standard deviation of 3.29%. Kurtosis on Oman has the highest peak. It means that the distribution is leptokurtic. Other GCC countries have a normal peak. It means that the Kurtosis in the distribution on the data is normal. Skewness ranges from -1.80 to -0.490 with the highest value for Qatar. All GCC countries have a negative skewness. It means the slight skew towards left. The correlation between change in oil price and Saudi's return is higher when it is compared with other GCC countries, then comes Bahrain then Kuwait. That correlation is equal to 0.441 for Saudi, after that Kuwait with 0.415 and Bahrain with 0.404. The regression results of the relationship between oil prices and the return of the stock markets in the GCC countries show that there is a significance relationship between oil prices and returns of stock markets in all the GCC countries. The coefficients for Saudi with 0.338, Kuwait with 0.288, Qatar with 0.297, UAE with 0.416, Oman with 0.207 and Bahrain with 0.150. The explanatory power of the model, the range varies from 12% to 19.4%. It is highest percentage for Saudi. It shows that the 19.4% variance in return on Saudi stock market explained by the change oil price. The lower percentage is in Oman with 12%. The findings of this study are similar to those of the previous studies conducted on developed and emerging markets, such as USA [10], Turkey [17] and European sectors [11].

## CONCLUSION

The main purpose of this study is to investigate the impact of changes in oil prices on the returns on stock markets in the GCC area. The test results of the models of this study show significant one-to-one relationship between change in oil prices and all the GCC stock markets that were studied. However, in the regression analysis, the strongest impact was found between change in oil prices and the UAE stock market with a coefficient of 0.4161 and then the Saudi stock market comes next with a coefficient of 0.338.

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