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EQUITY MARKET INTEGRATION IN SELECTED OPEC COUNTRIES

Ashwag Al-Muwallad[1], Shabbir Ahmad[2]

[1,2]College Of Business, Effat University, Qasr Khuzam St., Kilo. 2, Old Mecca Road. P.O.Box 34689, Jeddah 21478, Saudi Arabia.

[1]Aalmowaled@Effatuniversity.Edu.Sa, [2]Shhakim@Effatuniversity.Edu.Sa

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ABSTRACT:
Financial liberalization has led to an increase in capital flows across the countries that are paving the way for an increasing stock markets integration. This integration among various financial markets is believed to have a positive impact on the equity markets around the world. The information about the integration of these markets is used to improve the efficiency of the portfolios diversification and securing them against different types of risks. This study aimed to examine the integration among selected equity markets of the Organization of Petroleum Exporting Countries (OPEC). The integration among the selected equity markets and the international equity markets was also examined whereas the US and the UK markets were chosen as a proxy to represent international markets. The S&P 500 and FTSE 100 were selected to represent the US and UK financial markets. The autoregressive distributed lag (ARDL) modeling approach is employed to find the integration among the selected markets because of its superior properties. The results showed that there was a strong integration within OPEC markets and with the international equity markets and affected each other that provided a limited opportunity for OPEC investors to have a good diversification for their portfolios.

INTRODUCTION:

Financial liberalization has led to an increased integration among different stock markets of the world. The stock market integration has a significant effect on the investor's portfolio diversification. Financial liberalization is also correlated with increment in domestic competition and technology transfers with potential positive impact on economic growth [1]. For a successful hedging or better portfolio diversification, it is important to know the

integration of various stock markets. Many studies have attempted to measure the integration of different stock markets across the globe. Advocates of financial liberalization argue that it leads to an increased financial integration thus developing the markets and institutions. The stock market development is main predictor for future long term economic growth [2].The macroeconomic factors such as income level, banking sector development, gross domestic investment, stock market liquidity and private sector flows are main determinants of stock market development in emerging market countries [3].Since 1981, the GCC countries have been suggesting the integration of their goods and financial markets. Many macroeconomic indicators of the GCC economies exhibit similar to pattern and these countries are about to establish a monetary union. There is a great deal of similarity between economic and institutional organization in these countries and markets that are considered comparable because of fixed exchange rate to the US dollar that consequently form a heavy reliance on the oil sector and a tremendous dependence on imported labor. The presence of stock market integration in GCC countries will indicate that capital mobility exists among member countries and the financial markets are well-integrated. This gives a positive message to the policy makers for the formation of a monetary union. Many studies have been done determining the relationship between oil prices and GCC stock markets. A non-linear direct relationship is found between oil prices and GCC stock indices [4]. Most of five Gulf area Arab stock markets was found influenced by most international events than local and regional factors [5].Stock markets integrations is defined based on two perspectives included asset pricing perspective and statically perspective [6]. First perspective has suggested that completed stock markets integration need identical securities to be priced identically in these markets. Meanwhile, second perspective suggests that highly integrated markets tend to move together and stable long run relationship. Liow et al. (2014) had analyzed the integration between the real estate market and the stock market globally and on the regional level. This study has proved that the success of the integration between real estate and stock markets has increased since the last century especially in the Asia region that improves the relationship between the countries in this region [7]. In addition, this integration is very important to diversify the investment between two or more markets as it considered as an important capital asset that involves wealth creating especially in the global economy. According to Rajhans et al. (2014) had measured the integration level between different stock markets. Stock in the two dimensions of integration, horizontal and vertical increase the liquidity of markets, to take the benefit of arbitrage as well as to improve market efficiency [8]. Oskooe (2012) had stated that the stock market is mature for the financial situation in any country. Therefore, financial behavior affects stock market performance. In this study, Iran's market was used as an example of oil price. Volatility in the global market had an implication in the stock markets' investment and this volatility was supporting the investors in decision-making and to create portfolios and risk management [9].Many factors affect the market integration around the world either positively or negatively such as trading activities, economic development, and the legal environment [10]. Another factor

affecting the integration between the markets is the market volatility. It considered the mediator between the market integration and market activity, which means the more the trading activity market volatility and the more the integration between the markets.There is interesting to examine the integration of GCC stock markets that are member of OPEC. There are many studies that have focused on testing the integration in more advanced international stock markets around the world. Investors are interested in studying stock markets integration, as help in improve portfolios diversification. There is no studying discussing or measuring the integration of the OPEC equity markets by using advanced regression model such as Autoregressive-Distributed Lag (ARDL) model. This study aimed to examine the integration among selected equity markets of the Organization of Petroleum Exporting Countries (OPEC).

METHODOLOGY

In this study, the integration of the selected stock markets was estimated by using the ARDL model to analyze the monthly-adjusted price of selected markets. Those markets were Saudi Arabia Stock Exchange market (TASI), Qatar Stock Exchange (QSE), Kuwait Stock Exchange (KSE), Emirate Stock markets presented by Dubai Financial Markets (DFM) and Venezuela The Caracas Stock Exchange (IBVC). The S&P500 and FTSE100 are used as a proxy to represent the international stock market indices.. There were two stages in integration estimation included between those markets and measured the integration between those markets and international markets like US index and UK index. The study uses historical data that contains 118 monthly adjusted closing price of the following stock market indices; the Saudi equity market (TASI), Qatar stock market (QSE), Kuwait stock exchange market (KSE), UAE equity market presented by Dubai financial market (DFM) and Venezuela market (IBVC) for the period from 1st January 2004 until 31st December 2013.Autoregressive Distribution lag (ARDL) model was used to measure the integration between the stock markets of selected countries. Various stationary data tests was done to check the data stability. The autoregressive distributed lag model was estimated to find out the integration between selected markets. Stationary tests was done to test if the data can be stable or can be forecasting by used Augmented Dickey-Fuller Test (ADF) to check whether the data has a unit root to be stable or not stable. ADF test was estimated with applied the null hypothesis that there was a unit root in the data which meant non-stationary.This study aims to estimate the relationship between selected stock markets of the Petroleum Exporting Countries (OPEC) countries using Autoregressive Distributed Lag (ARDL) approach

RESULT AND DISCUSSION

Result

The study had examined the stationary of the data before estimating the ARDL model. The results of Augmented Dickey Fuller test are reported as in Table 1. This test showed that null hypothesis of the unit root was rejected for the

following variables in the first difference; Saudi, Qatar, Kuwait, Dubai, FTSE and S&P500 markets, while Venezuela variables had a unit root in a level.

Table 1. Result of the unit root of all variables

	ADF in 1st different			**ADF in level**		
Variables	**Test statistic**	**Critical value**	**p-value**	**Test statistic**	**Critical value**	**p-value**
D (KSA)	-8.79	-2.89*	0.00	-1.66	-2.58	0.45
D (Qatar)	-9.58	-2.89*	0.00	-1.81	-2.58	0.37
D(Kuwait)	-6.49	-2.89*	0.00	-1.66	-2.58	0.45
D(Dubai)	-4.36	-2.89*	0.00	-2.16	-2.89	0.22
VENEZ	-	-	-	-5.50	-2.89*	0.00
D(S&P 500)	-8.95	-2.89*	0.00	-2.40	-2.58	0.14
D(FTSE)	-10.85	-2.89*	0.00	-1.69	-2.58	0.43

In Table 1, only market that has stationary data in level based on the ADF hypothecs that mentioned earlier, if the probability value (PV) became equal to or less than 5% was Venezuelan market while the PV for the other markets was greater than 5%. Therefore, markets data considered not stationary. In this case, the data tested again in first difference and all the calculated PV became less than 5% as considered as stationary data.

Result from Autoregressive- Distributive Lag Model (ARDL)

All variables was used as a dependent variables as the result represented in Table 2 which indicated that the relationship between variables in the significant cases based on Schwarz Bayesian criterion.The results showed that Schwarz's criteria used minimum lags possible while the other criterion use a very long lag, so this study was used the Schwarz Bayesian Criterion on the bases of Parcimouius model.In Table 2, the calculated F value (511.65) was greater than the upper bound critical value even at 1% level of significance given by Pesaron (3.86) which rejects the null hypotheses that there was no long run relationship between the two variables. This indicates that the two markets are integrated, but this relationship will be strong when Kuwait is the dependent variable and Saudi market is the independent.Based on the error correction model (ECM) as shown in Table 3 the estimated coefficient in case 1 is 0.04534, when Saudi market was the dependent variable is significant at 1%, level with expected negative sign. The result points to a short run integration relationship between the variables. In addition, the result suggested that 4% of the adjustment back to the long-run equilibrium corrected after month. Hence, the sign of the ECM probability shows the significant relationship at only 11% ECM probability.If Kuwait is the dependent variable, the estimated ECM coefficient was equal to -0.038462, which was greater than

the upper bound critical value even at 1% level with expected negative sign. The result also points to a short run integration relationship between the variables. In addition, the study suggested that 3% of the adjustment back to the long-run equilibrium take place in per month. The sign of the ECM showed the significant relationship at only 5% ECM probability. In this case, the Saudi market evidently affects the Kuwaiti stock market.In case number 3 and 4, the study had estimated the integration between Qatar and Saudi Arabia's markets. The significance of this integration was decided from the error connection model probability value that equal to 0.06. The relationship was strong which Qatar market was the dependent variable and Saudi market was the independent one.In cases number 5 and 6, the study had estimated the integration between the Saudi and Venezuelan markets, the study found that the integration between the markets was highly significant when Venezuela was the dependent variable in the long-run, and on the bases of (ECM) probability that less than 0.05. The study concluded that the two markets affected each other in the long and short run but the Saudi market had more effect on the Venezuelan market.In cases number 7 and 8, the study had estimated the integration between the Saudi and Dubai markets. The study found that there was an integration between the two markets. Based on the (ECM) and long run probability, the study had concluded that there was a significant relationship between the variables in both cases, whether the Saudi market which was considered the dependent variable or Dubai market the independent one. In cases number 9 and 10, the study had estimated the integration between Dubai and Kuwait markets based on the (ECM) and long run probability and long run coefficient. The study had concluded that there was a significant short run relationship but when Kuwaiti market was the dependent variable, the study found that the relationship was highly significant. In cases number 11 and 12, the study had estimated the integration between Dubai and Qatar's markets. When Qatar market is the dependent variable its' significant only at 27%. Based on this result, the study confirmed that Dubai market was affected the Qatari market. Consequently, the study had concluded that Dubai affects the Qatari market, but not the opposite.In cases no. 13 and 14, the study had estimated the integration between Dubai and Venezuela's markets. The study found that there was an integration between the two markets. Based on the (ECM), the long run probability and the F-Value, there was a significant extended relationship between the two markets when Venezuela is the dependent variable. Based on this result, the study confirmed that the Dubai market affects the Venezuelan market, and not the other way around.In cases number 15 and 16, the study had estimated the integration between the Kuwaiti and Qatari markets. The study found that there was an integration between the two markets on the bases of the (ECM) probability and coefficient value. There wa a significant extended relationship between the two variables. The study had estimated the integration in cases number 17 and 18 between the Kuwaiti and Venezuelan markets. There was an integration between the variables and a significant relationship in both cases. However, there was more significant that Venezuela is the dependent variable. Thus, this result meant that the Kuwaiti market affects the Venezuelan market more than the Venezuelan market affects the Kuwaiti

market.In cases number 19 and 20, the study had estimated the integration between the Qatari and the Venezuelan markets. The study found that in both cases a short-run relationship, but at the same time. This result was more integrated when Venezuela is the dependent variable. Therefore, the study concluded that there was a strong relationship between the two markets. Based on the (ECM) probability and coefficient, the result showed that there was a significant extended relationship between the variables.

Table 2. Autoregressive-Distributive Lag Model (ARDL)

Case#	Dependent variables	Independent variables	F value	ECM coefficient	ECM Prob.
1	**Saudi**	**Kuwait**	511.65*	-0.045346	0.118
2	**Kuwait**	**Saudi**	5000*	-0.038462	0.058
3	**Saudi**	**Qatar**	332*	-0.0584	0.061
4	**Qatar**	**Saudi**	171*	-0.14256	0.006
5	**Saudi**	**Venezuela**	439*	-0.05006	0.049
6	**Venezuela**	**Saudi**	222*	-0.13117	0.00
7	**Saudi**	**Dubai**	926*	-0.075159	0.009
8	**Dubai**	**Saudi**	638*	-0.081129	0.023
9	**Dubai**	**Kuwait**	620*	-0.05168	0.119
10	**Kuwait**	**Dubai**	926*	-0.07515	0.009
11	**Dubai**	**Qatar**	596*	-0. 03036	0.144
12	**Qatar**	**Dubai**	226*	-0.13563	0.003
13	**Dubai**	**Venezuela**	139*	-0.02702	0.195
14	**Venezuela**	**Dubai**	113*	0.13102	0.00
15	**Kuwait**	**Qatar**	744*	-0.02049	0.258
16	**Qatar**	**Kuwait**	197*	-0.11459	0.007
17	**Kuwait**	**Venezuela**	12.5*	-0.03522	0.04
18	**Venezuela**	**Kuwait**	28.4*	0.13112	0.007
19	**Qatar**	**Venezuela**	39.4*	-0.10504	0.007
20	**Venezuela**	**Qatar**	28.4*	0.12993	0.00

Referring to Table 3, there was integration between the Saudi and UK markets and that there is a significant relationship in the short-run when the Saudi market is considered the dependent variable. a significant relationship in the long-run when the Saudi market is considered the dependent variable which meant the UK market affects the Saudi market.The study had estimated the integration between the UK and Dubai markets. The study had found there was no significant relationship integration between the two variables.the study had estimated the integration between the UK and Kuwaiti markets. The study found that there was integration between the two variables, but this relationship was strong when Kuwait was the dependent variable and the UK market was the independent variable. Based on the (ECM) probability, the study concluded that there was a significant relationship between the two markets when the Kuwaiti market is considered the only dependent variable. According to this result, we can confirm that the UK stock market affects the

Kuwait stock market, but not the opposite.In cases number 7 and 8, the study had estimated the integration between the Qatari and UK markets. Based on the F-value, which is higher than the upper pound value in the Fifth level, along with the 10%, that there was integration between the two markets. Nevertheless, the significance of this integration remarked as well as decided from the long run coefficient value and probability plus the error connection model's probability value. Therefore, the study concluded from these values that the relationship was strong when the Qatari market was the dependent variable and the UK market was the independent one.Based on the previous result, the study had concluded that there was a significant relationship between the two markets. According to this result, the study had confirmed that the Qatari market affected the UK stock market.In cases number 9 and 10, the study had estimated the integration between the Venezuelan and UK markets. There was an integration between the two markets. Nevertheless, the significance of this integration was decided from the error connection model probability and coefficient value. The study was concluded according to these values that the relationship was considerably better when the Venezuelan market was the dependent variable and the UK market was the independent one.In Table 4, the study had estimated the integration between the US and Kuwaiti markets. We come to find that based on the f-value, which is higher than the upper pound value in the fifth level along with 10%, that there is an integration between the two markets. Nevertheless, the significance of this integration is decided from the value of the extended coefficient value, probability and the error connection model's probability value. We can conclude that the relationship is stronger when the Kuwaiti market is the dependent variable and the US market is the independent one.In cases number 13 and 14, the study had estimated the integration between Dubai and US markets. The significance of this integration was decided from the value of the extended coefficient value, probability and the error connection model's probability value. The study was concluded from these values that there was no significant relationship between the two markets when Dubai was the dependent variable while this relationship was stronger and significant when the US market was the dependent variable and the Dubai market was the independent on accordingly, we can confirm that the US market affects the Dubai stock market.In cases number 15 and 16, v integration between the Saudi and US markets based on the bias F-value, which was higher than the upper pound value in the fifth level along with 10%. There was an integration between the two markets. The significance of this integration was decided from the value of the long run coefficient value, probability and the Error connection model's probability value. The study had concluded from these values that there was no significant relationship between both markets when the Saudi market was the dependent variable while this relationship was stronger and more significant when the US market was the dependent variable and the Saudi market was the independent one. In cases number 17 and 18, the study had estimated integration between the Qatari and the US markets based on the bias F-value which is higher than the upper pound value in the fifth level along with 10%, there was an integration between the two markets. The significance of this integration was decided from the value of the long run

coefficient value, probability and the error connection model's probability value. The study had concluded from these values that there was a significant relationship between both markets when the Qatari market was the dependent variable, while this relationship was strong and significant when the US market was the dependent variable and the Qatar market was the independent. In cases number 19 and 20, the study had estimated integration between the Venezuelan and the US markets based on the bias of the F-value, which was higher than the upper pound value in the fifth level along with 10%, there was an integration between the two markets. The significance of this integration was decided from the value of the long run coefficient value, probability and the error connection model's probability value. The study had concluded from these values that, there is a significant relationship between both markets in both cases while this relationship will be stronger and more significant when the Venezuelan market is the dependent variable and the US market is the independent one. Based on this result, we can confirm that the Venezuelan market affects the US stock market.

Table 3. Autoregressive-Distributive Lag Model (ARDL)

Dependent variables	**Independent variables**	**F value**	**ECM coefficient**	**ECM Prob.**
UK	**Saudi**	499*	-0.048857	0.053
Saudi	**UK**	579*	-0.045909	0.104
UK	**Dubai**	1133*	-0.023214	0.266
Dubai	**UK**	585	-0.05022	0.077
UK	**Kuwait**	1144	-0.029559	0.106
Kuwait	**UK**	585	-0.05656	0.055
Qatar	**UK**	297	-0.80796	0.046
UK	**Qatar**	607	-0.063527	0.027
Venezuela	**UK**	2136	0.12233	0.00
UK	**Venezuela**	584	-0.060943	0.053

Table 4. Autoregressive-Distributive Lag Model (ARDL)

Dependent variable	**Independent variables**	**F value**	**Long-run prob.**	**ECM coefficient**	**ECM Prob.**
US	Kuwait	1143	0.655	-0.02676	0.20
Kuwait	**US**	657	0.002	-0l1061	0.00
US	**Dubai**	1178	0.545	-0.013888	0.507
Dubai	**US**	911	0.075	-0.-6714	0.003
US	**Saudi**	742	0.376	-0.040289	0.199
Saudi	**US**	891	0.305	-0.05809	0.01
US	**Qatar**	301	0.325	-0.076035	0.055
Qatar	**US**	916	0.055	-0.09387	0.003
US	**Venezuela**	2121	0.618	0.12925	0.00
Venezuela	**US**	880	0.859	-0.059831	0.01

DISCUSSION

The study found that all the selected equity markets of the Organization of the Petroleum Exporting Countries (OPEC) integrated with each other. At the same time, these equity markets integrated with the international markets that presented by the index of the US equity market (S&P500) and the index of the UK equity market (FTSE100).Another finding in this result was the most advanced market can easily affect the smaller markets, for example, the Saudi market can affect the Kuwaiti, Qatari and Venezuelan markets. On the other hand, when the study had estimated the integration between the US and UK equity markets with the (OPEC) equity markets. The study had concluded that most cases the relationship between the US and (OPEC) markets, where the US market is the independent variable, will be highly integrated to each other. Accordingly, the US and UK equity markets have affected the (OPEC) equity markets. This result is contestant with the earlier findings that larger equity markets of generally tend to affect smaller stock markets.

CONCLUSION

In conclusion, the study had indicated that the selected OPEC countries were integrated with each other as well as with the international markets. However, the degree of integration varies such as some markets were strongly integrated with each other while the other are only weekly integrated. Market integration was important for international portfolio investors as investing in one-market leads to spillover effects on other markets which ultimately brings a limitation for diversification. Because integration between markets means the two markets are affecting each other. For instance, if any raises happen at any of the markets the other markets will affect by this crisis as well and will have some loss.

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