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FINANCIAL INTEGRATION OF THE GCC STOCK MARKETS

by
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AN ABSTRACT OF THE PROJECT OF

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The Gulf Cooperation Council countries have recorded the highest GDP growth rates among the Arab region through sound policies and a profound focus on heavy investment in different sectors. All of that could be easily seen today through their sound economic, social, and demographic indices. More importantly, being the leaders in the Arab region, the GCC financial markets have undoubtedly established very high standards and have promoted their competitiveness even on a worldwide scale despite their relatively smaller sizes. They have declared the goal of establishing a more integrated financial system through openness, economic diversification, expansion, modification of laws and regulations to attract more foreign investment, the proposal of a common currency and a market-merger that could possibly unite their strengths. Hence, the question of the integration of the six GCC stock markets is a key finding that should be relied on in analyzing the future of these countries' economies. This project focuses on examining whether and to what extent the markets are interrelated and interdependent by investigating the short-run and long-run relationships among the seven markets.

My project tackles the integration of GCC stock markets via a time-series analysis. It will be divided into five main chapters as follows: Chapter (1) will be an introduction that covers a brief overview about the topic and the current situation of GCC financial markets and where they stand, and what questions this project aims to answer. Chapter (II) presents a literature review that shows what past researches have discussed, what methodology they've used, and what conclusions they've made about the integration of GCC or other stock markets. Chapter (III) overviews the seven GCC stock markets: the detailed characteristics and the focal developments during that phase along with an overview on stock market mergers. Chapter (IV) presents the detailed empirical approach to study the financial integration of the GCC through

time-series analysis using several tests and approaches. Last but not least, Chapter (V) includes numerous conclusions about the integration among the GCC stock markets and important policy recommendations.

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CHAPTER I

INTRODUCTION

Ever since its establishment in May 1981, the Gulf Cooperation Council (GCC) has constantly proved itself to be one of the world's strongest and most developed regional blocs. Being the world's largest producer and exporter of oil and comprising 40% of the world's reserves (Hanna, 2006) has definitely helped the GCC attain on-going success. Not only that, but as a group of economies that are heavily reliant on hydrocarbons (World Bank, 2010), the GCC as a whole was able to acquire great investment from all around the world, witness tremendous growth of GDP per capita to proclaim the status of highest-income countries, secure better standards of living for their citizens, and most importantly strive in their financial standings and accomplishments allowing them to compete with the world's most developed markets. In addition to that, the GCC countries have upheld their position as the world's fastest-growing economies throughout the years, outperforming any country by witnessing a three-fold growth in size between 2002 and 2008 in precise ("GCC Economy", n.d.). With no doubt, all GCC countries have endorsed record-breaking economic booms to also feature a remarkable growth in their financial markets despite their relatively smaller size. The six member states of the GCC –Bahrain, Oman, Qatar, Saudi Arabia, Kuwait and the United Arab Emirates- have soared as an eminent group given their countless similarities. Some of those common characteristics that eased the way for the synchronization and the formation of the GCC were the geographical proximity coupled with the resembling socio-political backgrounds such as traditions, language and monarchy system, the analogous economic conditions and policies, along with the

structural dependency on labor, capital and natural resources (IMF, 2014). The region has recognized the importance of economic diversification along the years and the later has become a necessary goal especially that all countries were attached to the volatility in the world's oil market making their economies very sensitive to any kind of fluctuations. This kind of diversification can definitely create job opportunities on a smaller scale and help increase productivity and sustainable growth on a bigger one as well as prepare a strong platform for the non-oil economy at an earlier stage keeping in mind that oil is a non-renewable source and has to be offset (IMF, 2014). In fact, effort has been directed towards this challenge and so far the governments have implemented most of the common policies that support a strong, persistent and diversified growth such as a macroeconomic policy framework, a solid business climate, strong underlying infrastructure investments, and a dense focus on trade and FDIs through the objectives of free trade. Despite all this, more efforts should be directed towards a more appropriate environment of work incentives to attract workers towards the tradable fields and non-oil sectors including social safety nets and more effective training and education (IMF, 2014). This diversification is a critical act that can further unite the six countries and facilitate a more stable economic bloc that will ensure homogeneity and a possible union's credibility at the same time.

In parallel with all these victories and challenges, the ambitious scheme of achieving full integration, interconnection, and coordination, all the way to unity is one of the most important aspects and foundations of the GCC Organization. This is stated in the fourth article of its charter and was agreed on in the early stages of the organization focusing mainly on the economic integration. From this latter aspect, advocating this goal definitely drew great attention to the organization's methods and

progress, especially that they've relied on the diversification discussed above, openness and free-trade, economic expansion, development of financial markets, their inter-cooperation and possibly uniting their strengths, along with synchronizing the laws and regulations with fiscal integration and economic development as a prerequisite.

In 2001, the GCC paced up its efforts after a slow start were it updated the details of their goal's framework and timeframe making it a more developed one and taking the organization one step further in the process of achieving full economic integration. The organization has agreed on staying in accordance to the national and international economic trends, smoothening the formation of the common custom union, working on forming a joint GCC market, liberalization and a possible common currency, which was later postponed to a further notice (2001 agreement). One of the greatest steps taken by the organization is the 2002 declaration of the goal of a common currency. The Gulf Cooperation Council strongly stressed on the aim of forming a monetary union through this adoption of a single currency, yet by that point, the only effort actually fulfilled was pegging all gulf currencies to the US Dollar.

In 2003, the GCC state members met once again to agree on the Common Market Initiative, which also declared the financial integration of the six member states as their goal. Two years later in 2005, a GCC fiscal council was formed in hopes of becoming a GCC central bank later on (Abdulqader, 2015), and this council would make sure that fiscal integration is maintained and constantly in progress so that the correct fiscal environment would be available for the GCC organization to better achieve full integration. Unfortunately, the envisioned project of a common currency is still not instigated especially after the two states of Kuwait and UAE rejected the project at the peak of the 2007-2008 world economic crisis (Abdulqader, 2015), in which the

fiscal council had to postpone the project until the economic conditions are suitable enough. Last but not least, the year of 2008 was a promising year for the GCC despite the noticeable effects its group of economies had to face amid the financial crisis. By that year, the GCC customs union was finally completed and the Common Market Agreement fruitfully took place. With all that being said, some policymakers still believe that the progress in moving closer towards GCC's declared goal has been slow. Yet, adding to the long list of important economic attainments that have rendered economic integration is the tremendous growth in the levels of trade among the GCC member states via the custom union that was formed (Abdulqader, 2015). Furthermore, according to a World Bank report, developing an integrated system of intra-regional infrastructure will benefit the trade volumes and help allocate the investment advantages across the GCC countries (World Bank, 2010). Clearly, the GCC's efforts never ceased and have been on-going in line with the promising declared goals. All these economic agreements and ambitions have encouraged the integration of financial markets within the GCC by facilitating the necessary environment for the countries to standardize the policies, laws, rules and regulations governing them (Abdulqader, 2015). More importantly, it's true that the sought-for monetary union and a system of integrated financial markets in the GCC go hand-in-hand. "The impact of a monetary union on financial markets in the GCC region, once achieved, will be overwhelming" (Kern, 2012). In theory, the effects will begin just with the fact that such a union would most likely introduce a single currency. But there exists a bi-directional causality between the two, where such a union would also be derived from the efforts of creating a single financial market itself. In other words, the final and most important target of economic integration is a single financial market characterized by liberalization, openness,

cohesion, common motives, rules and regulations and other central aspects to be further highlighted. Many economic integration analysts stress on the importance of such an interchange and shed light on its endless promising benefits. “If it became a single market today, then the GCC would rank as the ninth largest economy in the world and the sixth within 15 years” (Dickinson, 2016), and further creating such a unity in the GCC will open doors to endless opportunities for growth among all six members. It’s important to stress that the GCC countries ought to be careful in assessing such a move for they need to be fully ready on all levels. Policymakers need to emphasize more on some crucial points that could hinder full economic integration if not completed before taking the last milestone step of integration. Laws and regulations need to be persistent in all six member states, the same efforts and involvement willingness must be provided by authorities and concerned councils in terms of full harmonization, and increased transparency must be established to facilitate integration (World Bank, 2010). In addition, regional policies and common economic reforms ought to be developed and constantly updated, enhancement of financial markets must be a focal point as well, and fiscal and monetary integration are critical prerequisites that would accelerate financial integration.

To reemphasize GCC’s main declared goal in the past, full economic integration is a groundbreaking milestone that can further push the economies of the member states to higher world-wide rankings and quicker growth. The last step of full economic integration, as mentioned, could be characterized by a single financial market among the six GCC countries, and this last step depends on how interconnected those markets are and to what extent and whether the countries are really ready. Stock markets, being the main entities depicting financial markets, are the vital blocks that need to be examined

to assess the possible creation of a single market, from the aspect of how much work has been done and where the level of integration stands today. Hence, the question of the integration of the GCC stock markets in precise is a key finding that should be relied on in analyzing the future of these countries' economies. "Financial integration is the process through which a country's financial markets become more closely integrated with those in other countries or with those in the rest of the world" ("Financial Integration", n.d.). The financial integration of stock markets has acquired pronounced attention within the past decade where economists and policymakers have relied on extensive studying and results to provide guidance in the fields of decision making, portfolio diversification, shock spillovers, and most importantly the interconnectedness between the financial markets of countries in the same and/or different regions. Few literature has targeted the financial integration of GCC stock markets, and the latter solely track back all the way to the early 2000s before the GCC organization has updated its goals to include the aim of financial integration as a final step to reach full economic integration. There's a lack of coherent scholastic research that focuses on the inter-regional integration of all seven GCC stock markets specifically after the 2008 world financial crisis and up till today. Also, there's a lack of academic studies that assess this financial integration for the purpose of investigating a possible stock market merger.

In this project, the aim is to empirically investigate the financial integration of GCC stock markets via time-series analysis. Precisely, the purpose is to test whether and to what extent these markets are actually integrated. Focusing on the period between 2008 and 2015, this evaluation is used to examine the long-run and the detailed short-run relationships between the GCC markets whereby extensive tests will be

conducted to analyze the interconnection between them. Deducing which stock market acts as the leading force amongst the seven markets or the financial hub in case of a merger is another point to be tackled in this project. The aim is also to evaluate whether or not the GCC organization has really succeeded in achieving its declared goal, whether the numerous extensive efforts –such as liberalization, diversification, economic development and so on– have really paid off, and what else needs to be done to ensure a smooth transition into full integration. In parallel with that, the aim extends to testify whether a stock market merger is a suitable idea to be implemented in the near future. Last but not least, another objective of this paper is to investigate whether the 2008 global financial crisis and the US' government's official announcement of the end of the recession had any impact on the degree of integration among the GCC stock markets.

The rest of this project is divided as follows: Chapter (II) presents a literature review that shows what past researches have discussed, what methodology they've used, and what conclusions they've made about the integration of GCC or other stock markets. Chapter (III) overviews the seven GCC stock markets: the detailed characteristics and the focal developments during that phase along with an overview on stock market mergers. Chapter (IV) presents the detailed empirical approach to study the financial integration of the GCC through time-series analysis using several tests and approaches. Last but not least, Chapter (V) includes numerous conclusions about the integration among the GCC stock markets and important policy recommendations.

CHAPTER II

LITERATURE REVIEW

Over the last few years, efforts were targeted towards the question of stock market integration and to what extent these stock markets are interrelated, for this topic has recently acquired legitimate attention as a very popular field in financial economics. The aim of pinpointing this topic varies between providing profound implication on potential gains for portfolio diversification (Sharma & Seth, 2012), enhancing the process of decision making, detecting spillovers from one stock market to another, or examining the change in that level of interrelationship around the time of a main global or regional event. In addition, the topic has been highlighted to detect the more influential stock markets in the world, or even to review the required economic policies and necessary levels of markets development. With that being said, there hasn't been any consent on one specific methodology, and thus results have varied tremendously depending on the combination of countries being tackled, the used sample period and the frequency of the data.

There are few scholastic researches that tackle the financial integration of the GCC stock markets using diverse methodologies. A handful of those literatures have concluded that the dealt-with markets are significantly integrated, and few others prove the contrary. The three authors Osamah Al-Khazali, Ali Darrat and Mohsen Saad (2006) focused on the intra-regional integration of the GCC stock markets for the period between 1994 and 2003. This paper is truly an exclusive scholarly study that was able to determine essential results of significant integration of GCC stock market along with the role of the influential act of liberalization on the degree of integration. They stress on

the goal of their research by pointing out that "if the GCC markets have indeed become more linked together in the wake of recent attempts to open up capital markets in the region, then market liberalization can be considered as a key propagation mechanism for building stronger financial and capital ties among the GCC countries" (Al-Khazali et al., 2006). Due to a lack of consistent data for Qatar and UAE's stock markets, the authors focus only on the remaining four of the seven stock markets in the GCC region: Saudi Arabia, Kuwait, Bahrain and Oman. They rely on the prevalent data of stock price indices with a weekly frequency over the period from October 1994 to December 2003. In order to scrutinize the level of integration between the stock markets at the rise of great attempts to reach higher levels of openness, the authors apply a time-series analysis based on a Vector Auto Regression Model. Before embarking on any test, the authors test for the existence of a unit-root in the price indices representing those markets using the Augmented Dicky-Fuller and Philips Perron unit root tests (Al-Khazali et al., 2006). As for the co-integration methodology used, the authors apply the Johansen-Juselius co-integration test, which is a very robust test especially in multivariate time series models such as this one. First, the results of the unit root testing prove that all four variables are non-stationary (include a unit root) in log-levels and stationary at their first differences (Al-Khazali et al., 2006); in other words, they are integrated of the order one. As for the Johansen Juselius test, it indicates that the four GCC stock markets are linked by one significant co-integrating vector over the long-run (Al-Khazali et al., 2006). The authors then modify the above test by first including a dummy variable representing market liberalization as an exogenous variable to the system, which results in two significant co-integrating vectors binding the four markets instead of one meaning that the market liberalization strengthened that long-run

relationship that linked the four stock markets. The authors also divided their whole sample into two sub-samples representing a pre-liberalization period and a post-liberalization period as a supporting test to their results. As predicted, no co-integrating relation is found among the four markets during the period preceding market liberalization, and one relation is inferred in during the second period (Al-Khazali et al., 2006). The authors conclude that these results render that although short-run gains remain possible, the long-run gains from portfolio diversification across these markets are most likely to disappear (Al-Khazali et al., 2006).

A similar study was conducted by Aqil Mohd and Hadi Hassan (2003), which addresses the integration of a different group of GCC stock markets by empirically investigating the possible existence of a long-run relationship binding these markets, as well as the short-run dynamic interrelations. However, a debatable drawback of this paper is neglecting most of the bigger and more developed markets and centralizing the study on a small number of the less developed markets. The authors solely tackle the stock markets of Oman, Bahrain and Kuwait during the period between October 1994 and August 2001 using weekly share price indices. The results of the same tests as Al-Khazali et al.'s reveal that there exists one co-integrating vector joining the three Gulf stock markets in the long-run (Hassan & Mohd, 2003). Still assessing the long-run tie between the three markets, the authors extend the analysis by turning to the likelihood ratios to determine the validity of exogeneity among the variables. The results reckon that the Omani stock index is exogenous in the system (Hassan & Mohd, 2003) and this is a salient approach that differentiates this review from other scholarly research. In other words, "the results of co-integration suggest that Kuwait and Bahrain have a meaningful stable long-term relationship" (Hassan & Mohd, 2003). In addition, the

authors expand the regular used methodology to include Granger-Causality test within the Vector Error Correction Model to assess the short-run relationships among the stock markets. The results for Granger-causality illustrate that the variables do not granger cause each other except for the case where values of the Oman stock index help predict those future values of Kuwait. So, share prices are not really adjusting to changes in each others' values, but instead moving along their trend values (Hassan & Mohd, 2003). In conclusion, the authors believe that investors in Kuwait can definitely benefit in the long-run from information found in the Bahraini Stock market and vise-versa. Not only that, but opposite to what Al-Khazali et al. conclude, the authors in this paper argue that this "will provide a greater opportunity for investors to diversify their portfolios" (Hassan & Mohd, 2003). Last but not least, the scholars stress on the importance of liberalization within the GCC stock markets. This move can definitely promote the possibility of a single market especially that a base for such a move prevails in the GCC (Hassan & Mohd, 2003).

Jorg Bley and Kim Heng Chen (2006) also undertake the same conventional methodologies to examine the issue of integration in GCC stock markets whereby they reach conclusions similar to most papers that have tackled the GCC region. Covering the span between January 2000 and September 2004, the authors exploit daily stock market indices with a weekly frequency for all six countries where the full sample is divided into two subsamples separated at June 2002. The additional perspective of this study is that the US and UK markets are also included in order to point out how they affect the emerging markets of the GCC region (Bley & Chen, 2006) to try to control for the possibility of the GCC markets being related because of indirect linkages with those two international markets. Not only that, but this study also engulfs a variety of

tests in order to amply inspect the issue of integration of six stock markets over the examined period. Their results of the ADF and PP tests affirm that all the series are non-stationary at level except for Bahrain in the first subsample (Bley & Chen, 2006). Consequently, the prominent method of Johansen and Juselius is carried out based on a multivariate Vector Auto Regression model whereby the outcomes vary between no co-integration vectors among the GCC countries in the first subsample, and three in the second one. The authors extend previous studies by using the generalized forecast error variance and the impulse response functions. In parallel with those of the variance decompositions, the results reveal that "the index return variations in the GCC countries depend to a greater extent on shocks from within the region rather than from the outside" (Bley & Chen, 2006). In conclusion, the ranking of GCC stock markets in terms of impacts of innovations in the country's market on the other markets is as follows: Saudi Arabia, Bahrain, Kuwait, Oman, UAE and Qatar, noting that "only about 1.6% of individual GCC stock market variation can be explained by US and UK innovations" (Bley & Chen, 2006). Also relying on Granger Causality test, Bley and Chen conclude that only in the first period did the US stock market granger cause those of Saudi Arabia, Kuwait and Bahrain. In the same period, Bahrain and Saudi Arabia markets granger cause that of Oman, and Saudi Arabia granger causes Qatar's. As for the second period, the US market doesn't help predict the values of any of the GCC market indices, the Bahraini and UAE market indices granger cause Oman's index and Saudi Arabia granger causes Qatar (Bley & Chen, 2006). The authors draw inference at the level of GCC stock market integration as relatively low suggesting their heterogeneity. Also, they assure that Saudi Arabia has the number one explanatory power since it leads most of the other markets. Last but not least, the conclusion

conveys that there exist some benefits from portfolio diversification for international investors as well as that within the GCC region (Bley & Chen, 2006). Similar to what Hassan et al. have recommended, Bley and Chen convey that the stock markets are most likely to become more homogenous in the future, speeding the goal of an economic union and a single currency (Bley & Chen, 2006).

John Simpson's (2007) paper on the integration of the GCC stock markets adds to the pool of literature with its primary exploration to test which of the markets acts as the financial hub of the GCC countries. The author works with daily data for the GCC stock market indices of UAE, KSA, Oman, Bahrain, Qatar and Kuwait between January 2000 and November 2003. What differentiates this paper as well is handling the data with the benchmark indices of GIC GCC Composite index (Simpson, 2007). As preliminary analysis, the stationarity results imply that all variables are non-stationary (Simpson, 2007). Then, the Johansen co-integration test pinpoints the existence of at least one co-integrating equation (Simpson, 2007). As for the short-run, the main results of the Granger Causality test show that there are neither uni-directional nor bi-directional causality between the UAE and each of the Bahrain and Oman markets, and that "the UAE significantly granger causes Saudi Arabia, Kuwait and Qatar markets" (Simpson, 2007). This paper counters most scholarly papers such as Bley and Chen's (2006) by intuiting that the UAE ought to become the hub of any combination to take place between the GCC stock markets and not Saudi Arabia.

Another empirical study relating the GCC is that of Mohamed El Hedi Arouri and Duc Khoung Nguyen (2009), which takes on a different approach to evaluate the topic of integration and interaction of the stock markets. Their study was one of the first to tackle such a topic via a multivariate dynamic conditional correlation GARCH model

(DCC-GARCH) whose biggest advantage is the "ability to capture persistence in the volatility and leptokurtic distribution of stock return series" (Arouri & Nguyen, 2009) since it quantifies the co-movements between the markets. Not only that, but this paper also dates any "structural breaks in the time-paths of the conditional correlation indices, to highlight whether the cross-market co-movement encompasses significant changes in nature or not" (Arouri & Nguyen, 2009). The study uses daily natural log returns on stock markets of only five individual GCC stock markets between the period of June 2005 and April 2008 (all countries excluding Bahrain), hence the study neither accentuates the 2008 crisis nor the full set of GCC stock markets. The authors admit that "as expected, the markets [they] studied are significantly more volatile than the world market" (Arouri & Nguyen, 2009) with Saudi Arabia being the most volatile. "The correlations between the Gulf markets are relatively low, 22.86% on average" (Arouri & Nguyen, 2009) meaning that there are generous risk diversification opportunities within the GCC stock markets. The results also convey that the conditional correlations are constant neither over time nor from a couple of countries to another. Also, the conditional correlations between the GCC markets and the world market are significantly low at 1.52% only (Arouri & Nguyen, 2009). In the final analysis of their paper, the authors focus on detecting and dating any significant breakpoints in the conditional correlation indices, such as the act of liberalization, reforms or even the financial crisis of 2008, using the Bai and Perron (2003) test. The authors also detect and date significant breakpoints in the correlation indices using the Bai and Perron (2003) test, whereby the results were as follows: Five breakpoints were identified for Oman, four for UAE and Qatar, three for Kuwait and two for Saudi Arabia. These revealed events have a low-in-magnitude impact on conditional correlations and there's

no apparent increasing trend in the co-movements of markets, hence none of these events increase the degree of integration among the discussed GCC stock markets (Arouri & Nguyen, 2009). Contrary to most of the mentioned literature, the results of this study propose a weak regional and international interdependency of the GCC stock markets implying that diversification for regional and international investors is surely beneficial. Arouri & Nguyen (2009) also conclude that the authorities and specialists in the Gulf regional can boost the level of financial integration by reinforcing their relative markets and further developing them.

Chaker Aloui and Besma Hkiri (2014) conduct a more intricate study, which contributes to the extensive literature of GCC stock markets integration with its use of an infrequent and unconventional methodology. The Morlet Wavelet Coherence Approach permits the analysis of the frequency components of the stock market time series variables without losing any of the time information. In addition to that, it has been proved that this sophisticated technique is practical for evaluating short and long-run stock market dependences. “This is the first empirical work implementing the continuous wavelet squared coherence to explore the dynamic linkage among the GCC stock markets in the frequency domain” (Aloui & Hkiri, 2014). Aloui and Hikri (2014) make use of the daily stock prices of the six GCC stock markets of Kuwait, Bahrain, Qatar, Oman, Saudi Arabia and UAE for the span between June 2005 and February 2010. The dynamics of the interactive relationship between the markets is changing briskly in time as well as in frequency (Aloui & Hkiri, 2014), and the co-movements between the stock markets tend to emerge at a higher frequency after the year of 2007. Supporting the “contagion hypothesis”, the results report that the 2008 financial crisis has drastically increased the degree of co-movement between the considered stock

markets (Aloui & Hkiri, 2014). After the calculation of the VaR of a GCC multi-country weighted portfolio, the authors were interested in showing how the co-movements between the markets actually affect the VaR of this portfolio. The results of this thorough procedure suggest that "the co-movements among GCC markets result in higher VaR" (Aloui & Hkiri, 2014) which may have striking implications for both regional and international investors as most previous authors have established.

Drifting the focus away from the GCC region, several pieces of literature have also handled the topic of intra-regional financial integration, but regarding the MENA stock markets. Ali Darrat, Khaled ElKhal and Sam Hakim (2000) assess market linkages and explore whether certain MENA stock markets are related among themselves and with the U.S stock market, using the conventional time-series analysis methodologies. Their choice lies particularly on the three emerging markets of Jordan, Morocco and Egypt, which could possibly represent some drawbacks due to the narrow number of markets. Using monthly time series of the relative stock market indices between October 1996 and August 1999, the authors "examine the price linkages within the three Middle Eastern stock markets and investigate their sensitivity to price movements in U.S stocks" (Darrat et al., 2000). After confirming that the series are non-stationary, the authors run the Johansen-Juselius test not only in a multivariate model, but also in bivariate and trivariate models. The final results of this test inform that significant co-integration exists between: Egypt and Morocco, Egypt and Jordan, and Egypt and Jordan and Morocco as a group as well. Results show that there is a long-run relationship binding the three MENA markets that induces any market that drifts away from the group in the short-run to divert back to this group (Darrat et al., 2000). Plus, no co-integratrion was found between the US stock market and any of the three MENA

markets within any of the models used (Darrat et al., 2000). To contribute to literature that offers portfolio diversification recommendations, Darrat et al. (2000) also convey that since the studied MENA markets aren't significantly related to the US market, then investors in the MENA region can unquestionably benefit from international portfolio diversification (Darrat et al., 2000). Although several scholarly studies have attempted to point out which stock market is the leading force among the studied group, what distinguishes this paper from other papers is the remarkable method used to show which one of the markets is the dominating force among the three MENA markets. No integration was found between Morocco and Jordan, but "only when Egypt is included to form a trivariate model would the three Middle Eastern markets show evidence of integration" (Darrat et al., 2000). Within a VECM model, the Granger Causality test is used to depict the short-run dynamics between the co-integrated MENA stock markets. The latter shows a uni-directional causality in which the stock market indices of Egypt and Jordan can help predict the future values of the Moroccan market stock prices, but not the other way around (Darrat et al., 2000). Hence, other than being co-integrated in the long-run with Egypt as a driving force, there are significant short-run dynamics among the MENA stock markets which appear to be segmented from the US market.

On the contrary, some other papers conclude a weak regional integration in the MENA region. In his 2002 paper, Simon Neaime (2002) fixes his attention on what portfolio diversification implications are derived from the analysis of financial integration of MENA financial markets on both regional and international levels. Indeed, this paper was the first to report this topic from a broader scope by covering seven emerging MENA stock markets. The data is composed of weekly closing price series from the early 1990s up to December 2000 for the seven MENA stock markets of

Kuwait, Saudi Arabia, Bahrain, Egypt, Jordan, Turkey and Morocco, as well as those of the US, UK and France (Neaime, 2002) to demonstrate the level of international financial integration. This paper turns to the methodologies of Augmented Dicky-Fuller and Philips Perron for unit root testing, Johansen co-integration within the VAR model test to test the possible long-run relationship among the series of stock market indices and Granger Causality test within the Vector Error Correction Model to detect which series help in predicting the future values of other series. Another short-run analysis is the Impulse Response functions, which explain the dynamics of each one of the variables in the VECM as a result of shocks to any of the other variables (Neaime, 2002). The preliminary step of verifying the existence of a unit root among the series is affirmed for all variables i.e.; all the series are integrated of order one, and as Neaime (2002) states: "It is common for time-series data to demonstrate signs of non-stationarity" (Neaime, 2002). After dividing the list of used variables into several groups, Neaime (2002) suggests that there is one co-integrating vector among the GCC stock markets and no co-integration among the MENA non-GCC markets, which is what the author had expected. Moreover, the results propose no co-integration between the GCC and world markets but one co-integration relation between the MENA and world markets entailing that the MENA non-GCC markets have matured and were able to integrate with the world's most developed financial markets (Neaime, 2002). More importantly, the last part of the Johansen co-integration test indicates no co-integration between all MENA stock markets (GCC and non-GCC) "providing more robust evidence against regional financial integration" (Neaime, 2002). As for the short-run dynamics, the results of the Granger Causality test and Impulse Response functions support each other affirming that there is a strong significant uni-directional causality

from the US and UK markets towards the MENA region. Similarly via the impulse response functions, it's safe to say that shocks in those international markets alter the MENA stock markets (Neaime, 2002). At the end, Neaime (2002) stresses on the importance of inter-MENA liberalization in upgrading regional intermediation, boosting the efficiency of financial market and attracting investment to the region as a whole (Neaime, 2002).

In like manner, Aktham Maghyereh (2006) also inspects the regional integration of stock markets in MENA countries and reaches the conclusion that integration among certain MENA stock markets is still weak. The author also deals with few of the largest MENA stock markets of Jordan, Egypt, Morocco and Turkey and explains that his choices were based on their relatively common features, common goals, and similar sizes (Maghyereh, 2006). The author turns to the daily national stock indices of the four MENA stock markets over the period between November 1997 and December 2002 that he consequently converts into returns. For non-normality reasons, it's required to correct the residuals before performing any of the intended tests. The system is "jointly estimated by the pseudo-maximum likelihood method using the Berndt-Hall-Hall-Hausman (BHHH) algorithm" (Maghyereh, 2006), where the residuals are then used to form a set of moving average representations (MAR) (Maghyereh, 2006) and this is a unique approach that Maghyereh (2006) embarks before proceeding with the Error Variance Decomposition and the Impulse response functions. The eminent error variance decompositions suggest that "the linkages among these markets are relatively small" (Maghyereh, 2006). With only 0.755% of its forecasted error variance being explained by other MENA stock markets, it seems that the Turkish market is the most exogenous market among the four. On the other hand, around 2.6% of those of Jordan

are explained by the other MENA stock markets (Maghyereh, 2006). The author reports that these reflect the intuition that the sensitivity of stock markets to shocks goes hand-in-hand with the level of openness of that market (Maghyereh, 2006). In parallel, the impulse response functions portray that responses, in all stock markets, to shocks in each one of the different markets are very small and die out within a short period of time (Maghyereh, 2006). In other words, the interconnectedness between the stock markets of Jordan, Morocco, Egypt and Turkey isn't strong at all due to the low levels of trade and coordination among the four countries (Maghyereh, 2006). At last, the author praises that by investing in MENA markets, regional and international investors have ample portfolio diversification opportunities (Maghyereh, 2006). Ultimately, numerous steps can be taken by the relative authorities to attract more investors to the region, enhance growth and liquidity features, as well as "foster the efficiency of the MENA markets" (Maghyereh, 2006).

As we can see, most of the results of past literature are somewhat homogenous in proving that there is strong regional integration among the dealt-with regions, yet there are several others that prove the contrary. Finally, we expand the geographic locus for the regions that were targets for the question of financial integration of stock markets, to papers that tackle the integration of regional stock markets in more international areas. One example is Jian Yang, James Kolari and Insik Min's (2003) paper, which is truly considered as one of the densest, for it comprises very detailed analysis and spans one of the largest numbers of countries within the same study. The authors aim at extending past research that also considered the integration of Asian stock markets by being the first to exemplify the role of the 1997-1998 Asian crisis as a catalyst for the integration of the markets, to include two more developed markets in the

combination of stock markets, and to vary the testing with different currency numeracies (Yang et al., 2003). Along these lines, this paper also uses the universal time-series methods of VAR analysis in a multivariate system of twelve stock markets to reveal both short and long-run relationships. The data that the authors have used consists of daily stock index closing prices of the stock markets of the following countries: Japan, USA, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore, Thailand, Taiwan, over the period between January 1995 and May 2001 which is further divided into four periods representing pre-crisis, crisis, transition and post-crisis time spans (Yang et al., 2003). As a prevalent prerequisite in this realm, the authors first confirm that all of twelve series are non-stationary via the newly applied procedure of Likelihood Ratio test whose null hypothesis is stationarity (Yang et al., 2003). As for the co-integration breakdown using local and US currencies, the Johansen test informs that "no co-integrating vector exists in the pre-crisis and transition periods, but two co-integrating vectors exist in both the crisis and post-crisis period" (Yang et al., 2003), which clearly implies that the crisis was a stimulant to the level of co-integration among the stock markets. Based on intensive reporting, the authors' results of the impulse response functions are summed as follows: The markets of Indonesia and Taiwan are somewhat isolated, the market in Malaysia is proved to be moderately informative towards the other markets, and as for the Philippines market, it tends to be confined before the crisis while some other markets strongly responded to shock from it (Yang et al., 2003). The Korean market is quite endogenous and as for India and Pakistan, they tend to render very similar results as endogenous markets as well, since most of the movements in their markets are driven by shocks to other markets "while the reverse may not hold" (Yang et al., 2003). On the other hand, a vast

number of Asian markets responded to shocks from both Thailand and Hong Kong in different periods, making the latter influential markets among this group. As for the most interactive market of them all, the Singapore market ranks at the top (Yang et al., 2003). Last but not least, the authors pinpointed that all markets heavily responded to shocks in the US and Japanese markets and this relation was uni-directional. At the end, the authors convey to their readers that both the level of integration in the long-run and the short-run dynamic relations among the stock markets tends to change over time especially around the time of the Asian crisis (Yang et al., 2003).

Another interesting group of countries that possess similar economic, cultural, and business environments is Latin America. For that reason, some literature also emerged on the integration of stock markets in some Latin American countries. Gong-meng Chen, Michael Firth and Oliver Meng Rui (2002) collaborated to formulate a study that also examines the short and long-run interdependencies between the stock markets of six developing Latin American countries. The authors of this paper rely on daily closing stock price indices in local currencies of Brazil, Mexico, Argentina, Venezuela, Chile and Colombia stock markets between February 1995 and June 2000, which seems to be a very akin timeframe as that of Yang et al. (2003). Also, this paper's concern stretches to include how world financial crises can affect the level of interrelations between the Latin American stock markets (Chen et al., 2002). For that reason, Chen et al. (2002) divide the whole sample into three smaller ones to account for the two crises of Asia and Russia that took place around that time. Before testing for co-integration, the order of integration of the stock market price indices is determined; strictly speaking, the six series must be declared as non-stationary and this is what the Philips Perron and Augmented Dicky-Fuller tests assert (Chen et al., 2002). As

mentioned by the authors, Johansen's multivariate co-integration test suggests that there exists one co-integrating vector among the six Latin American stock markets which indicates that once again another group of stock markets located in countries that are in the same region share a long-term equilibrium relationship (Chen et al., 2002). The same test run on the three sub-samples illustrate similar results except for the last sub-period where no co-integration is proposed (Chen et al., 2002). The authors here restrict their interpretation to the temporal causality results based on the VEC model as part of the short-run dependency analysis. In fact, when using local currencies, whenever there's a deviation from the long-run co-integrating relationship, it's merely the changes in the Brazilian stock market that "adjust to clear the disequilibrium" (Chen et al., 2002). When the dollar currency is used instead, the results slightly differ; now all four of Brazil, Mexico, Colombia and Venezuela are the ones that "bear the burden of short-run adjustments to the long-run equilibrium" (Chen et al., 2002). Briefly, the decomposition of forecast error variance is also employed on all six countries and it's revealed that Brazil is "influential in determining prices in Argentina and Chile", whereas Mexico is effective in determining prices in Argentina (Chen et al., 2002). As expected, the impulse response functions affirm that shocks in Mexico and Brazil have strong positive effects on the other Latin American stock markets. In the end, the authors reach the following portfolio diversification conclusion: Since the six stock markets seem to be bound by a long-run relationship up until 1999, then investing in several Latin American markets will barely render any risk diversification up until 1999 (Chen et al., 2002).

Last but not least, the authors of "Price and volatility spillovers in Scandinavian stock markets" G. Geoffrey Booth, Teppo Martikainen and Yiuman Tse (1997) provide

a very significant addition to the literature review that detect weak financial integration among a group of stock markets. This paper isn't only one of the few papers that points out price and volatility spillovers within stock markets of closely related countries, but also one of the few that handle the EGARCH model. At the rise of the harmonization process and the discussions of a possible joint stock market within Scandinavia, the motivation behind this paper is to cater new evidence on different spillovers between the infrequently tackled Scandinavian countries. This mission is accomplished by practicing the Exponential Generalized Autoregressive Conditionally Heteroskedastic model. "An EGARCH model makes it possible to investigate the asymmetric impact of good news (market advances) and bad news (market retreats) on the volatility transmission among the four markets" (Booth et al., 1997). Data selection falls on the daily closing values of the prices indices for the stock markets of Denmark, Norway, Sweden and Finland over the time period of May 1988 till June 1994. First focusing on the interrelations among the four stock markets, Booth et al. (1997) construe that Sweden and Norway are the only two markets that spill over to other markets. Accurately, "Norway price spills over to Denmark and Sweden, and Sweden price spills over to Finland" (Booth et al., 1997). As for volatility, the coefficients suggest that there's a bi-directional effect between the two markets of Finland and Sweden and Swedish volatility spills over to Norway. Hence, as mentioned by the authors, out of twelve possible pairwise impacts, only three were demonstrated for each type of spillover. Moreover, Finland experiences the strongest persistence of this volatility (Booth et al., 1997). More importantly, running the EGARCH allows the authors to conclude that "with the exception of Denmark, [the volatilities of the stock markets] respond more strongly to bad news (market retreats) than good news (market

advances)" (Booth et al., 1997). With that being said, it's fair to state that the "four markets are weakly related to each other" (Booth et al., 1997) and that there's more to be done by the authorities of the four countries to achieve a more integrated degree or to even merge their markets.

In conclusion, it's clear that the topic of regional financial integration of stock markets has captivated a lot of attention starting the late 1990s in the field of Financial Economics. Aims, methodologies, data spans and data frequencies, and hence results, conclusions and policy recommendations have differed over a large spectrum of scholarly papers. Although some academic work rejected it, most of the papers have proved that regional integration of stock markets exists among a number of countries due to several reasons, leading to thorough policy recommendations. The past literature that covered the regional integration of GCC stock markets has had quite a few gaps. Most of the papers investigating the GCC region don't employ all stock markets in the GCC region and no papers confide in numerous empirical tests to verify and complement their results. Not only that, but there's an eminent lack of scholarly work targeting the post-2008 crisis period specifically and hence the need for an updated investigation to identify the very recent level of integration at the peak of both regional efforts and overwhelming world-wide economic conditions. Also, the policy recommendations resulting from most papers are limited to portfolio diversification, decision-making, spillover effects and development recommendations meaning that there's a lack of focus on a possible merger and its consequences. Therefore, this paper aims to fill some of those gaps as much as possible.

This paper contributes to the literature related to this topic by shedding light on the post-crisis period and up until 2016, by including all seven stock markets in the

GCC including a separation between Abu Dhabi and Dubai stock markets, by including new approaches to verify the leader and driving force among the seven markets, by running a solid number of tests that complement each other and provide more robust analysis and results, by detecting the potential impact of the 2008 crisis, and by relying on the results to help develop a conclusion for the possibility of a stock market merger and an assessment of the GCC's on-going efforts to reach their declared goals.

CHAPTER III

OVERVIEW OF THE GCC STOCK MARKETS & STOCK MARKET MERGERS

A. Qatar

1. Overview

In 1995, the Doha Securities Market DSM was established but operations didn't start until 1997, before switching to full electronic trading in 2002. According to Qatari governmental sources from Qatar Exchange, since then, the exchange has grown to become one of the GCC's most leading markets. In June 2009, Qatar Holding along with Qatar Investment Authority QIA and NYSE Euronext signed an agreement to rename the market as Qatar Exchange and to turn it into a world-class market. As part of their statement today: "*The primary aim of the Qatar Exchange is to support Qatar's economy by providing a venue for capital raising for Qatari companies as part of their corporate strategy and giving investors a platform through which they can trade a variety of products in a transparent and efficient manner"* ("Qatar Exchange", n.d.). Also, for the past five years, Qatar Stock Exchange has been ranked among the top 40 stock exchanges of the world and the second among the Arab countries after Saudi Arabia. In a very recent interview conducted by 'The National Business' with the Chief Executive of Qatar Stock Exchange Rashid Al Mansoori, the latter stressed that they continue to seek growth through the areas of capital formation and capital allocation and by educating the different members of the market on the importance of good management-owners relationships. Along these two goals, Al Mansoori sheds lights on

the importance of product diversification and the liquidity provision measures that the Exchange has already announced (Al Mansoori, 2015). Moreover, according to a report by Ibrahim and Harrigan under the name "Qatar Economy: Past, Present and Future", the difficult economic conditions starting 2008 never stopped Qatar's financial sector from rising and expanding in order to support the country's growth. In fact, the Qatar Exchange has also been promoting growth and development by "launching a new trading platform" named a "Junior Bourse" (Ibrahim & Harrigan, 2012). Being located in a country with a diversified and fast-growing economy has allowed Qatar Exchange to develop faster that its neighboring markets to become a first-class world-wide market that attains international standards and performs as good as any of the world's leading markets. Last but not least, it's important to mention that the market index representing the Qatari stock market is the "Qatar Exchange Index" (QE).

2. Regulation of the Exchange

According to the official website of the Organization, the Qatar Stock Exchange is regulated by the Qatar Financial Markets Authority QFMA which is Qatar's "independent and empowered regulatory and supervisory authority for the capital markets" ("Qatar Exchange", n.d.). As of 2005, the QFMA was empowered to exercise regulatory oversight and enforcement over the capital markets in Qatar under Law no. 33 ("QFMA", n.d.). Starting 2012, the responsibilities of QFMA expanded to include a wider scope of supervision and monitoring actions ("QFMA", n.d.). In its declared mission, the Qatar Financial Markets Authority stresses on the following four strategic pillars that they've adopted in order to lift Qatar's financial position to one of the world's highest rankings as a first-class market: *"Protect investors, ensure fair and*

efficient financial markets, enhance transparency, proficiency as well as awareness and markets integrity and constrict misleading information and deceptive conduct affecting financial products and services" ("QFMA", n.d.).

3. Number of Listed Companies

According to World Bank data, the number of listed domestic companies on the Qatari Stock Exchange has fluctuated between 44 and 43 since the year of 2008. As of the year-end of 2015, 44 companies were listed on QE. As seen in the chart below, the banking and financial services sector is dominating Qatar Exchange with 12 out of the 44 listed companies. The highest concentration is also among the industrial and consumer goods and services sectors. As for the lowest, it's associated with the sectors of telecommunications, transportation and right issues.

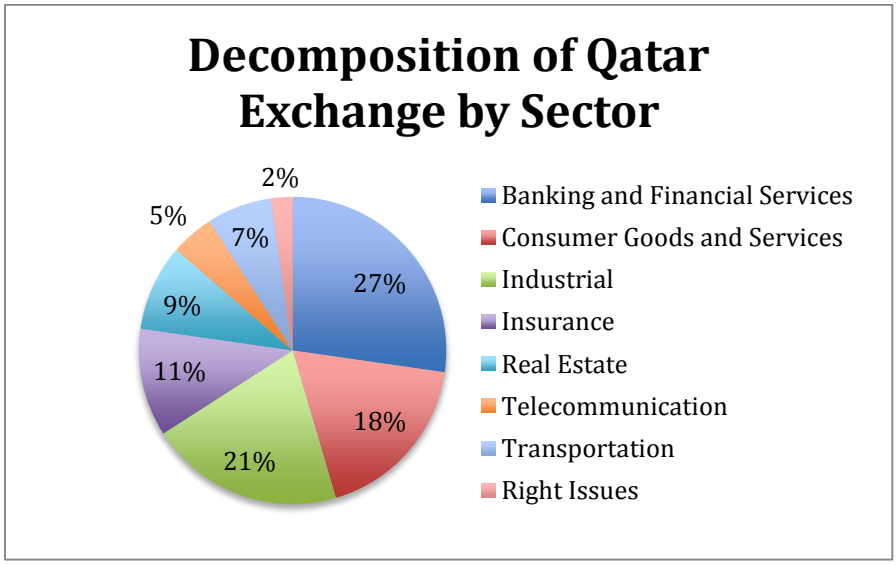

Figure 1: Decomposition of Qatar Exchange
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio

Market Capitalization is defined as the total value of stocks traded on the exchange multiplied by the total number of shares outstanding. As seen below in the graph, the market capitalization of Qatar Exchange faced a huge downfall in the year 2008 with the global financial crisis, where the values declined to a low value of only 76 billions dollars in that year (from around 120% of Qatar's GDP in 2007 to a low 66% in 2008). Fortunately, the values went through a solid upward trend till the years of 2010, but for the following two years and till 2012, the value fluctuated around 124 billion dollars. This fluctuation came hand-in-hand with the not-so encouraging corporate earnings of 2012 ("Qatar Inc. Inches Up", 2013), the tense global conditions and unstable political environment in the Arab world. Analysts weren't surprised with this performance since most GCC markets were trying to get on the path of recovering from the unappealing conditions in the years preceding 2012 and were still facing negative growth values, but Qatar, on the other hand, was one of the few members that didn't witness a drop around those years and was able to at least maintain a stable market performance. As expected, the market properly recovered quickly from this setback starting 2012 and the market capitalization soared to reach again a high total of 185 billion dollars (90% of the country's GDP) in 2014. Analysts have also highlighted that they expect this increase to be maintained over the following years. Within that scope, the year of 2014 was an interesting turning point for the country, where it mitigated the adverse impact of the drop in oil prices at the end of that year better than other neighboring countries.

Figure 2: Market Capitalization of listed companies - Qatar
Source: World Bank Data

Over the discussed period, it's clear to see that Qatar Exchange has suffered because of the financial crisis where the total value of stocks traded, which is the total number of stocks traded multiplied by their respective matching prices, also sharply dropped in the following year and continued dropping till 2010 to reach a low 18.3 billion dollars. Fortunately, from that year onwards, the market has focused on the recovery process. Although the numbers have been increasing, the year 2014 was the more eventful year for Qatar Exchange for two reasons that allowed the total value of traded stocks to increase to almost 55 billion dollars. First, Morgan Stanley Capital International gave QE the 'Emerging Market' status, and second of all, a huge positive change to the foreign ownership limit in stock markets took place. Hence, those two events played very important roles in the upward trends that Qatar Stock Exchange has managed to experience in the last few years allowing the market to truly prove itself as a world-class market and to even fight the extreme negative effects of the very recent oil prices crash as much as possible of course.

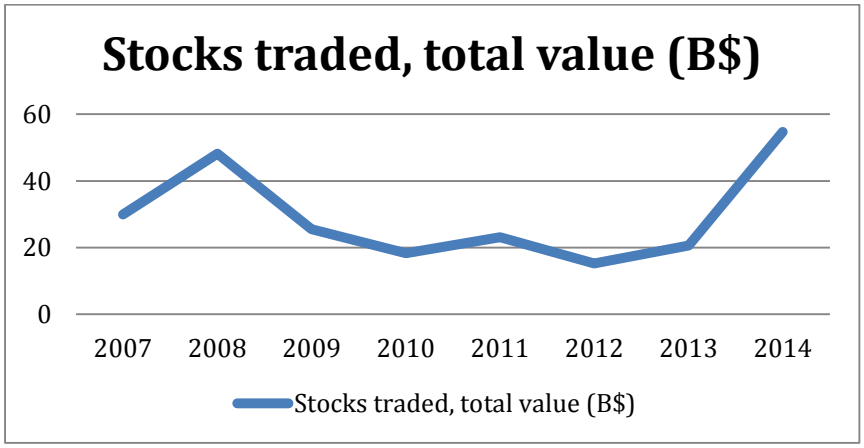

Figure 3: Total Value of Stocks Traded – Qatar
Source: World Bank Data

As for the turnover ratio, it's the total yearly value of stocks traded divided by the average market capitalization of the stock exchange during that year and it represents the stock market liquidity. It's clear from the below graph, that just like the other discussed features of the stock market, the turnover ratio suffered immensely because of the world financial crisis. Thankfully, with several efforts and economic reforms that took place in Qatar, along with the efforts of the Exchange to excel their performance, the liquidity status has picked up a momentum and has been in an upward trend ever since 2012. The two main events of the year 2014 also played a huge role in picking up the turnover ratio of Qatar Stock Exchange with acceleration.

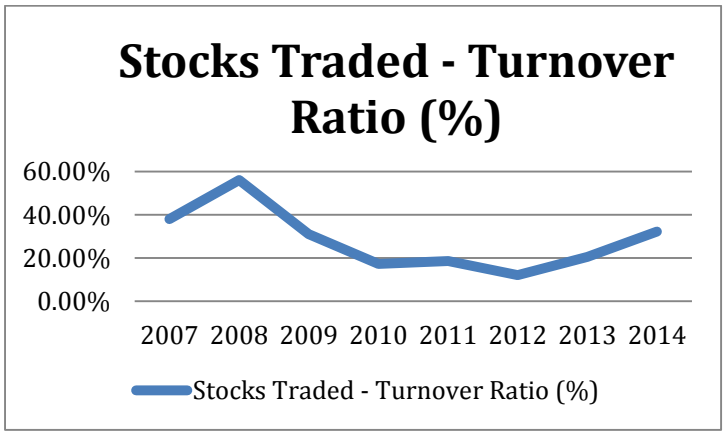

Figure 4: Turnover ratio – Qatar
Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization:

According to the '2015 Investment Climate Statement' by the Bureau of Economic and Business Affairs of the US Department of State, 2014 was truly a very important year for the stock market in Qatar. As we've mentioned above, 2014 was signified by Morgan Stanley Capital International's announcement of elevating the Qatari market to the emerging market status and this was reflected in all the upward trends in the different characteristics of the Qatar Stock Exchange. This upgrade surely helped in increasing the depth, liquidity and development of the market, and as the CEO of QE pointed out that "such achievement represents an additional element of success to QE's continued successes throughout the previous years in terms of developing its basic infrastructure, providing further services and trading mechanisms for investors and applying new tools of investments" (Al Mansoori, 2015).

Not only that, but in 2005, non-Qataris were allowed to invest up to 25% of offered shares. Yet, on August 5th 2014, a newly issued law stated that the limit of allowed foreign ownership in listed companies on the stock exchange which was previously limited to 25%, will now be raised to 49%. In other words, "the newly approved law stipulates that non-Qatari investors are allowed to own up to 49% of the shares of a Qatari shareholding company listed on the QE" ("Qatar", 2015). Also, since then the other GCC citizens were treated as Qatari citizens in terms of ownership of shares. Hence, we can see that Qatar has successfully taken the path of liberalization and openness regarding its stock exchange, and such a move will definitely play a huge role in the market's future performance, liquidity and in increasing the foreign investment. The same report also states that there haven't been any official on-going privatization programs of state-owned enterprises in the last few years in Qatar. Despite

that, Qatar highly praises, promotes and encourages a solid private sector ("Qatar", 2015). With all these changes and consequent victories, the government has been directing efforts to modernize as much of its financial legislation as possible in order to ease the flow in investment and facilitate business in Qatar.

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

As mentioned in their mission on their official website, Qatar Exchange *"also provides the public with access to market information and ensures correct disclosure of information"* ("Qatar Exchange", n.d.). In fact, there exists a QFMA Corporate Governance code that is applicable to all listed companies aiming to strengthen the internal control. According to the QFMA Corporate Governance Report, "the QFMA Code explained that shareholders, as the owners of a company, have the legal rights stipulated by laws, administrative regulations and the company's articles of association [including] the right to access and review information contained in the company's shareholder registry" ("QFMA", n.d.) along with the disclosed information by the exchange. Also, all companies are required to prepare a detailed annual corporate governance report for QFMA and should also comply by all stated rules and necessary actions needed to maintain a good overall level of credibility, integrity and transparency. Moving on to the Corruption Perception Index, it is a composite index constructed by a global organization called "Transparency International" that conveys the level of corruption in public institutions around the world, and ranks countries according to the views of experts regarding the level of public corruption. The scores range from 0 (highly corrupt) to 100 (very clean). As of 2015, Qatar places a high 71

value ranking as the 22nd most "clean" country in the world and number one in the Arab world ("Transparency International", 2015). Last but not least, another measure of market efficiency is the Ease of Doing Business. According to the World Bank, Qatar's global ranking in the Ease of Doing Business measurement is 50 as of 2015, but it ranks in number one when it comes to paying taxes ("Doing Business", n.d.).

B. Saudi Arabia

1. Overview

The Saudi Stock Exchange also known as 'Tadawul' is the only stock market in Saudi Arabia. Its main characteristic is being the largest stock market in the Middle East in terms of market capitalization. The beginnings of this market track all the way back to the mid 1930s, when the "Arab Automobile" company was formed as the first joint stock company. In 1984, a ministerial committee was established in order to enhance and regulate the stock market of Saudi Arabia. In the year 2003, the exchange's only regulator was formed: Saudi Capital Markets Authority. Finally, in 2007, the Council of Ministers in Saudi Arabia approved the formation of the 'Tadawul' company in accordance with Article-20 of the Capital Market Law ("Tadawul", n.d.). In the same year, the organization switched its electronic system to one that is provided by OMX. In fact, Tadawul's mission is to *'offer sound, efficient and attractive capital market products and services that deliver superior value to our market participants and stakeholders'* ("Tadawul", n.d.). The Saudi Stock Exchange has proved itself to be the catalyst and the leading force in the region in terms of size, liquidity and even diversification. Over the years, the successful activity of Tadawul has placed it in the highest ranks within the GCC and MENA region, especially after its somewhat quick

recovery after the disastrous 2008 global financial crisis. It's worthy to stress that this rise in the Saudi Stock Market is also due to a flourishing economy underpinned by strong fundamentals based mainly on oil revenues and profound fiscal measures and not just the mere efforts of the markets to maintain their positive acceleration. In addition, analysts have noted that "[this] market gives investors exposure to emerging market-type growth coupled with low-risk sovereign credit quality" (Khatoun & Shamma, 2015). Other than diversification, stable economic conditions, heavy reliance on oil revenues, sound fiscal reforms and good recovery schemes, the recent extreme shift in the access regulations by opening Tadawul to foreign investors was a huge stimulus to the excellent performance of Tadawul amidst the tense regional and global conditions. Last but not least, the market's vision is also *'to be an integrated financial exchange that fosters the development of diverse Saudi capital market and competes internationally'* ("Tadawul", n.d.). Hence, as the leader in the Arab world, Tadawul is sincerely one of the largest emerging and growing stock exchanges in the world. It's important to note that the stock market index in Saudi Arabia is the "Tadawul All Share Index" (TASI).

2. Regulations of the Exchange

The regulatory authority for Tadawul is the Capital Market Authority (CMA) of Saudi Arabia, which was established by the Capital Market Law in July 2003. According to the official website of CMA SA, its function is to *'regulate and develop the Saudi Arabian Capital Market by issuing the required rules and regulations for implementing the provisions of Capital Market Law'* ("Capital Market Authority", n.d.). Moreover, CMA makes sure that fairness, efficiency and transparency are maintained in

all types of transactions of securities. Another important duty is monitoring the work of Tadawul. This regulatory authority is necessary for Saudi Arabia to maintain its high-quality performance and the international competitiveness it has gained over the years since a deep and insightful environment controlled by the correct provision, regulation and implementation is definitely a prerequisite.

3. Number of Listed Companies:

According to World Bank Data, the number of listed companies in Tadawul has been notably increasing over the reaches to reach 167 companies as of the end of 2015. In fact, among other GCC members, Tadawul comprises one of the highest numbers of listed companies across 16 different sectors. As seen below, the dominating sector in Tadawul is the Insurance sector including 35 out of 167 companies. As for the other sectors that demonstrate a high concentration, the building & construction and industrial investment sectors are in the lead. Also, the least concentration is present among the Hotel & Tourism and Media & publishing sectors. Clearly depicted below, the Saudi Stock Market is very well diversified and covers an abundant number of sectors.

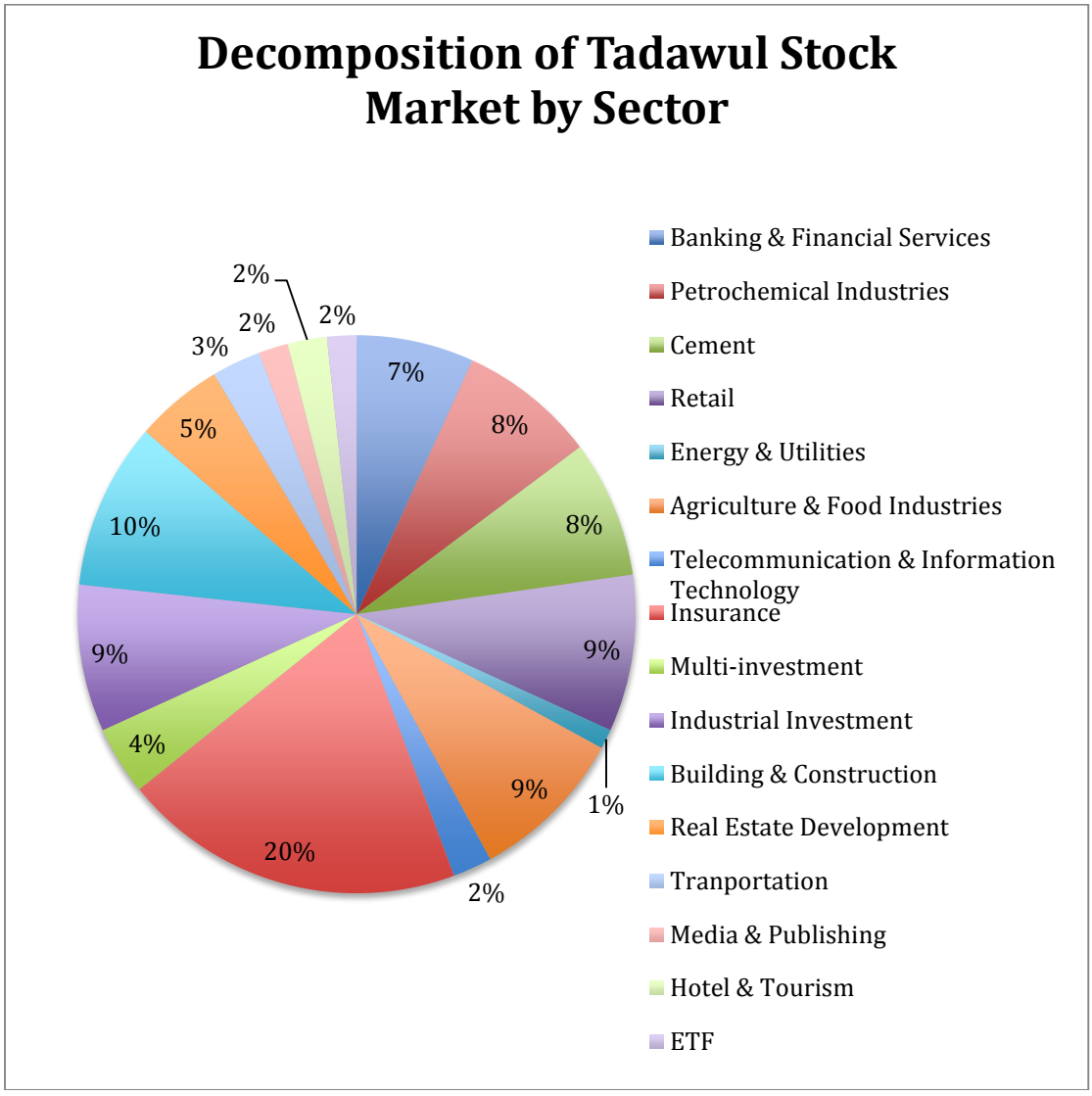

Figure 5: Decomposition of Tadawul
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio:

By far, the Saudi Stock Market is GCC's largest, most liquid, most diversified and most successful market. Even after the 2008 crisis, Tadawul was able to recover from the calamitous setback. Being located in one the world's largest oil-exporting countries has helped the Saudi Stock Market in shining over the years to an extent. But also, there are "many factors [that] account for the rally, including high liquidity, confidence, good corporate profits, retail momentum as well as selective foreign

institutional positioning" (Hanware, 2014). As we can see below, Tadawul has faced a momentous drop in the level of market capitalization in the year of 2008 to reach a low 246 billion dollars after an immense value of 515 billion dollars in 2007. The recovery went really well as market capitalization has reached a high 483 billion dollars in 2014. That year holds the highest annual increase for Tadawul since the crisis, and hopes are strong towards an even faster recovery in 2015 and 2016 amidst the recent end-of-2014 oil price crisis especially after the recent acts of liberalization and openness to foreign investors by Saudi Arabia.

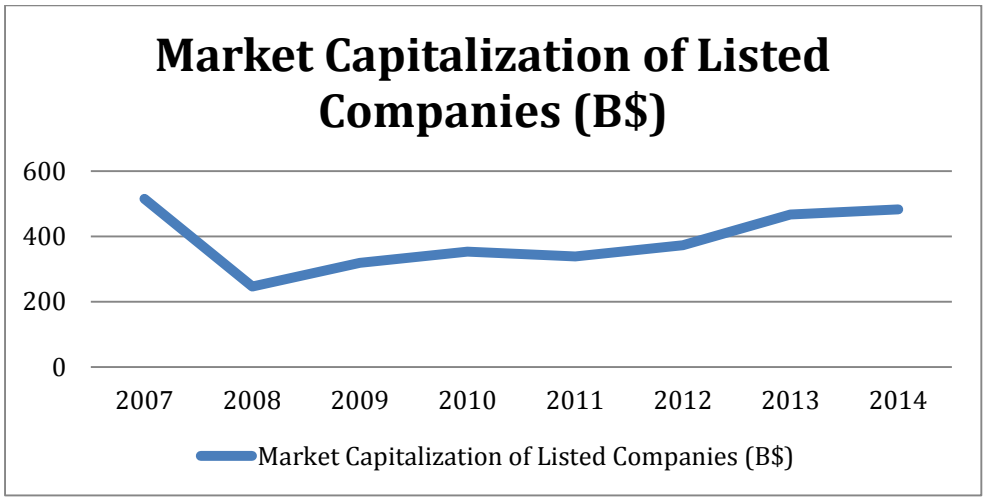

Figure 6: Market Capitalization of Listed Companies – Saudi Arabia
Source: World Bank Data

In parallel with that, the total value of stocks traded in Tadawul over the past few years has witnessed a similar trend. A huge drop is witnessed in 2008 and 2009 and after facing serious difficulties in 2012, the other obvious aspect is the small drop in 2013 which was due to the instability in the regional political environment as well as the lower government spending. These changes resulted in lower GDP growth rates and a decline in the fiscal surplus of the government, which largely affected the stock market.

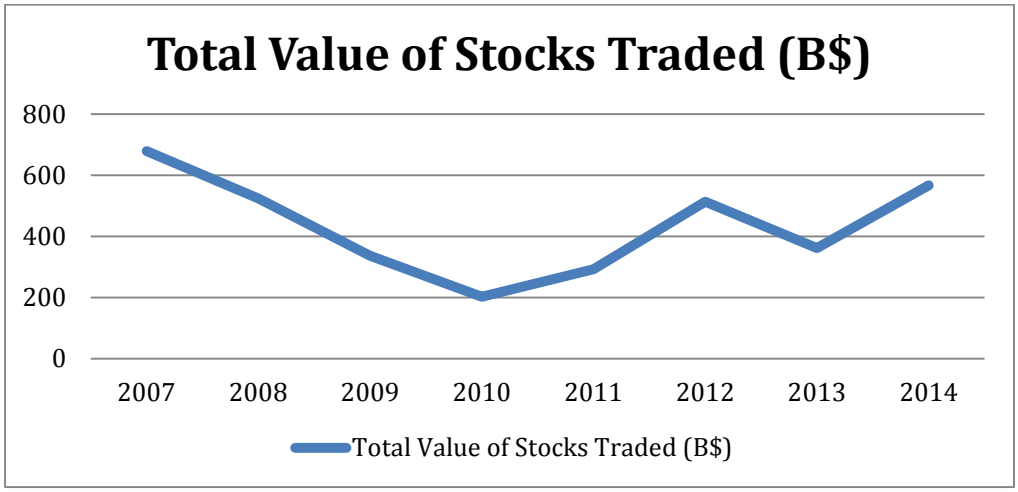

Figure 7: Total Value of Stocks Traded – Saudi Arabia
Source: World Bank Data

It's safe to say that for the same reasons discussed above, the turnover ratio of the listed companies in Tadawul faced a drop after the 2008 financial crisis and during the critical year of 2013. Yet, hopes are expressed by analysts, that the Saudi Market will keep on demonstrating positive acceleration in its liquidity as it has started doing so in 2014 with the opening of its market and with the efforts of dodging the effects of the oil crisis even up till today.

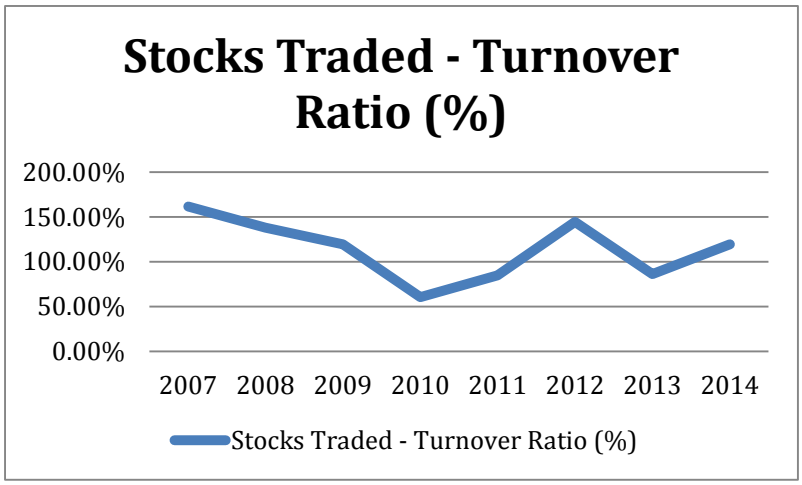

Figure 8: Turnover Ratio – Saudi Arabia
Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization:

As mentioned earlier, the Saudi Stock market has established for itself astonishing positions making it an eye-catching investment opportunity. Furthermore, Tadawul is also attractive given the stable economy that Saudi Arabia enjoys, ranging between the high GDP from the oil sector, fiscal surplus, economic diversification, growth and government spending. Indeed, the government has been extending the stock market reforms for reasons like the possible excessive volatility and political sensitivity that could be driven by foreign investors' strategic ownership in Saudi Arabia's biggest companies (Kerr, 2015). Initially, non-GCC foreign investors were only allowed to invest in the Saudi stock exchange through swap agreements and exchange-traded funds, which was costly and very complicated. But in June 2015, the Saudi market finally opened up to foreign investors as part of the kingdom's reforms to attain an economic boost, to further develop its financial markets and truly gain better ranking and competitiveness on a global level. The Capital Markets Authority, the regulator of Tadawul has bluntly stated that "the decision to open the market to direct foreign investment is aimed at supporting increased participation of institutional investors and reducing the role of smaller investors" ("Capital Market Authority", n.d.). In fact, the MSCI Index research managing director stated that "after its stock market opening, Saudi Arabia might be added to MSCI emerging markets index earliest in 2017" (Kukemelk, 2016). The CEO of Tadawul also recently announced that this framework was set to attract "sophisticated and [long-term] investors, which would lead to higher standards of corporate governance" (Batrawy, 2015) and it's in favor of enhancing the infrastructure and practices of the exchange. Furthermore, "the Supreme Economic Council announced the approval of privatization procedures, open to domestic and

foreign investors [in 2002]" ("Saudi Arabia", 2015), which has been playing a huge role in the performance of many companies listed on the Saudi Stock Exchange. In conclusion, Saudi Arabia has really been directing tremendous efforts towards the development of its stock market and the establishment of a solid financial environment that can overcome external factors such as global crises and oil-price crashes as much as possible. Last but not least, "Notwithstanding the downturn in oil prices beginning in mid-2014, the Saudi government is committed to maintaining high levels of government spending and investment, particularly in healthcare, education, transportation, infrastructure and housing" ("Saudi Arabia", 2015).

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

On a first note, the RSOC report for Saudi Arabia discusses the notion of disclosure of information and declares that "listed companies in KSA are required to produce quarterly and semi-annual financial statements, which contain a balance sheet, a profit and loss account, a cash flow statement, and notes, as well as audited annual reports" (World Bank, 2009), which is also underlined by the exchange itself. The same report headlines that "for emerging market countries, improving corporate governance can serve a number of importance public policy objects" (World Bank, 2009). In depth, markets can become less vulnerable to financial crises and attain overpowering development if their corporate governance state is enhanced. On a more concise level, achieving a thorough corporate governance mechanism can secure the rights of all parties especially the shareholders, advance transparency and disclosure mechanisms and promote better performance and more investments ("Tadawul", n.d.). The Capital

Markets Authority has issued the 'Saudi Corporate Governance Regulations' (SCGR) which all listed companies have to follow with the supervision of Tadawul. This SCGR is composed of a systematic set of procedures, regulations and organizational arrangements that govern the very important relationship between the shareholders, board of directors and executive management ("Tadawul", n.d.). The actual report of Corporate Governance in Saudi Arabia issued by the Board of Capital Markets Authority based on the Capital Market Law articulates that *"these regulations include the rules and standards that regulate the management of joint stock companies listed in the exchange to ensure their compliance with the best governance practices that would ensure the protection of shareholders' rights as well as the rights of stakeholders"* ("Capital Markets Authority", n.d.) and since all listed companies have thrived in adhering to the regulations, compliance prevails in Saudi Arabia.

According to the Transparency International – 2015 report, Saudi Arabia was classified as the 48th most "clean" country in the world, falling behind the higher ranked GCC member states Qatar and UAE, with a decent Corruption Perception Index value of 52. Last but not least, as of 2015, Saudi Arabia's global position in the standard of the 'Ease of Doing Business' is subtle 84 falling behind all three of Qatar, Oman, and UAE ("Doing Business", n.d.).

C. United Arab Emirates

1. Overview

The United Arab Emirates is the only country in the GCC that has two stock markets that are completely independent from one another and that operate separately from one another with entirely different companies listed on each one of the exchanges.

Hence, they are two separate entities that need to be dealt with distinctly. Those two exchanges are Abu Dhabi Securities Exchange and Dubai Financial Market. In fact, the two stock markets are rivals and are always competing against one another. Starting with the Abu Dhabi Securities Exchange, the mission of this exchange is *"to become the market of choice in the region"* ("Abu Dhabi Securities Exchange", n.d.). The Abu Dhabi Securities Exchange, located in Abu Dhabi – UAE, was established on November 15th of the year 2000 by Local Law No. (3) of 2000, the provisions of which vest this market with a legal entity of autonomous status, independent finance and management, and give the ADX the necessary supervisory and executive powers to exercise its functions ("Abu Dhabi Securities Exchange", n.d.). The management of the exchange has clearly stated that their mission is to *"develop the capital market through legal environment that ensures disclosure, transparency, and integrity"* (ADX official website). As a matter of fact, the CEO of Abu Dhabi Securities Exchange has recently expressed his optimism on the market's outlook despite the challenges in the global economy and the downfall in oil prices that can heavily hit the GCC as a whole: "Today, the expectations of the economic performance are still positive figures, and companies are still doing well" (Diaa, 2015).

As for the Dubai Financial Market, which is located in Dubai – UAE, it was also founded on March 26th of the year 2000. In details, it was established as a public institution having its own independent corporate body by a resolution from the Ministry of Economy No. (14) of 2000. Just like its rival ADX, DFM's vision is to become a *"world class regional marketplace"* ("Dubai Financial Market", n.d.). As for their mission, it's to offer the shareholders innovative services in conducting trading, clearing, settlement, and depository of securities, in a very efficient, transparent and

liquid environment ("Dubai Financial Market", n.d.). One of the biggest peculiarities of the DFM is that it's the first publicly listed exchange in the whole GCC region, which took place in 2007. Not only that, but it's also the only Shari 'a compliant exchange in the world. As the Chairman of DFM mentioned in an interview, "[despite the difficult economic global environment and back-to-back crises], as of 2013, the DFM was recognized as one of the best performing exchanges globally" and regionally, which truly reflects the on-going efforts of the exchange to become a leading financial market and to reinforce its first-class position even during hardships (Kazim, n.d.). As part of this project, it's important to specify that the Stock Market index of the Dubai Stock Market is the "Dubai Financial Market General Index" (DFMGI), and that of Abu Dhabi's stock market is the "Abu Dhabi Securities Exchange General Index" (ADI).

2. Regulations of the two Exchanges

The regulatory authority for both of Dubai Financial Market and Abu Dhabi Securities Exchange is the "Securities and Commodities Authority (UAE)" which was established on January 29th of the year 2000 by a federal decree by HH UAE President. The SCA aims at developing the capital markets in the UAE in order to contribute to the growth of the national economy. As mentioned in its mission, the SCA's goal is *"to protect investors and enhance the principles of sound and fair practices, and to improve the efficiency of UAE capital markets through the development of the necessary legislations, the enhancement of supervisory regulations and the development of investment and legal awareness"* ("Securities and Commodities Authority", n.d.). The SCA also ensures that all services and operations of the two stock exchanges in UAE

are undergoing the correct provision according to the best possible criteria of quality and integrity.

3. Number of Listed Companies

As of the year-end of 2015, 59 companies were listed on DFM, compared to 67 companies on the ADX. It's important to restate that they are two completely separate stock markets, where none of the companies listed on DFM are listed on ADX and visa versa. For Abu Dhabi, the companies have varied between 10 different sectors. As seen below, the insurance sector is the dominating sector in ADX engulfing 17 companies out of the total 67 companies. Other sectors demonstrating high concentrations are the banking and industrial sectors. As for the lowest, it's associated with the sectors of Investment and Financial Services, along with Energy and ETFs.

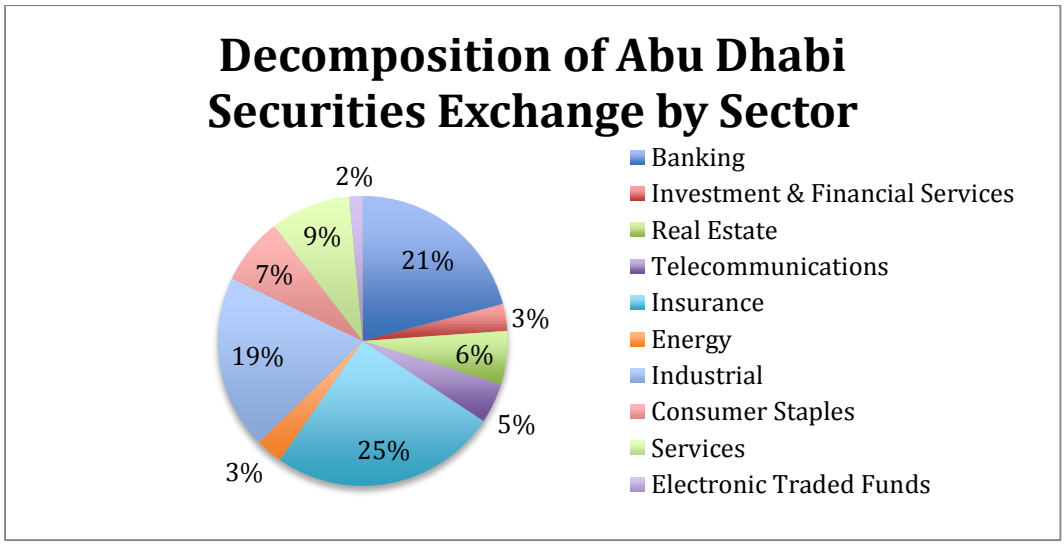

Figure 9: Decomposition of ADX
Source: marketstoday.net

As for Dubai Financial Market, its decomposition varied between 9 different sectors. The insurance sector is also the dominating sector in this stock market engulfing 13 companies out of the 59. Also representing some of the highest concentration are the

sectors of banking and real estate & construction. On the other hand, the lowest concentrations are associated with the industrial and telecommunications sectors.

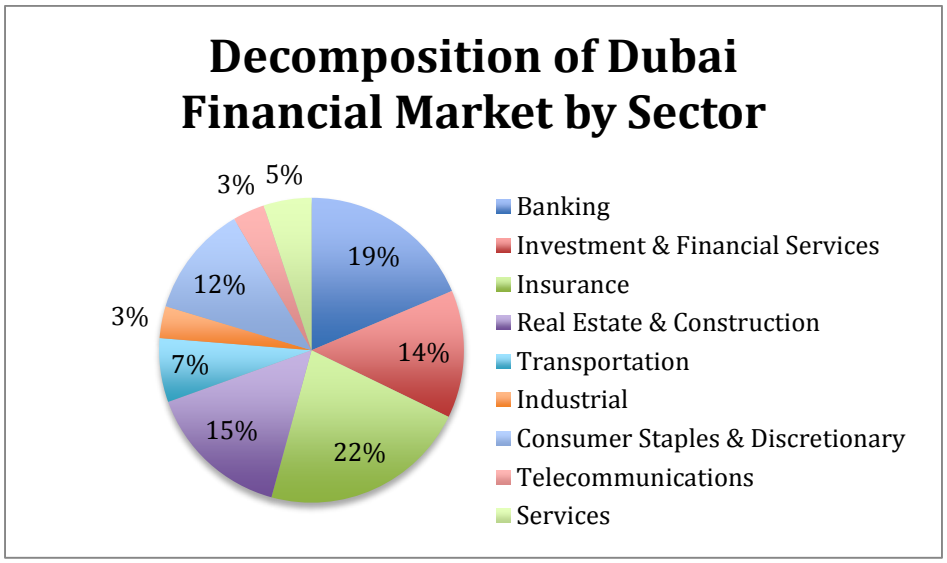

Figure 10: Decomposition of DFM
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio

MSCI recently upgraded UAE to the status of an "emerging market", along with Qatar after their latest review of the overall financial markets' condition in the UAE. The market capitalization in UAE as a whole has faced a significant drop of around 20 billion dollars in 2008 to almost 100 billion dollars (from 49% to only 34% of the country's GDP) due to the global crisis of 2008, which altered every market in the region. Another noticeable drop is the one of 2011, which was characterized by a low 93 billion dollar market capitalization after a high 131 value in the preceding year. "US debt, political unrest in the region, in addition to moderate 2Q financial results for the top UAE companies [coupled with low confidence in these markets] negatively impacted UAE markets" ("GCC Market Capitalization Drops", 2011). Keeping in mind the continuous effects of the 2008 crisis, the year of 2012 will always be remembered in UAE's history for the beginning of economic recovery (although slower than other

GCC countries) from the biggest financial crisis in its history. In fact, an IMF report even states that "the recovery of the economy is continuing despite the uncertain global environment" (IMF, 2014). Hence, starting the end of 2012, the UAE's efforts paid-off, which could be depicted even through its stock markets. As seen below, the market capitalization took an upward turn by 2012 and has been increasing ever since then with future hopes of a further increase, despite the negative effects of the recent oil prices crash.

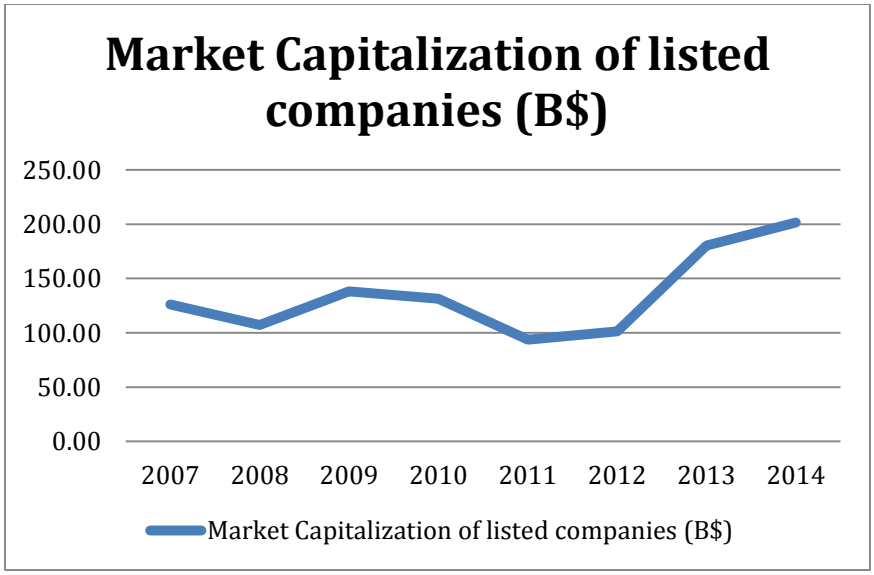

Figure 11: Market Capitalization of listed companies – UAE
Source: World Bank Data

For the total value of traded stocks, the same pattern as that of the market capitalization is depicted: two significant drops are clear between the years of 2008 and 2012 given the global financial crisis, Dubai's 2009 debt crisis and the unsteady regional political and economic environment afterwards. Thankfully, the total value of stocks traded in the two stock markets of the UAE has witnessed a momentous increase starting the end of 2012. Analysts have expressed their hope in this certain indication as well despite the oil prices crash in 2014, where several actions of fiscal and monetary

policies by the country along with acts of diversification and development have eased the recovery process.

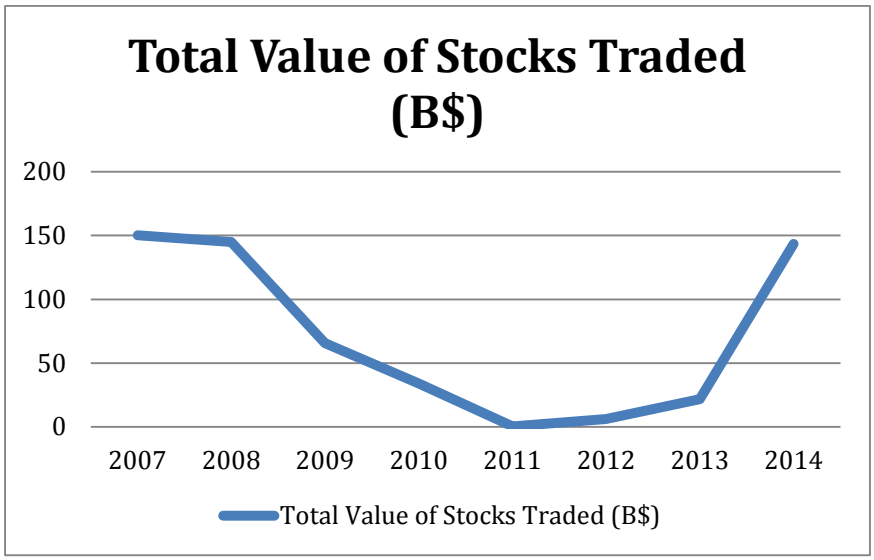

Figure 12: Value of Stocks Traded – UAE
Source: World Bank Data

Last but not least, the turnover ratio of the stocks traded in the UAE is also demonstrated to further analysis the performance of the stock markets over the last few years. The ratio in UAE also illustrated the same patterns to further prove the heavy impacts the UAE had to face starting 2008, along with the confirmed efforts and recovery starting the end of 2012 and up till today amidst the oil price crisis.

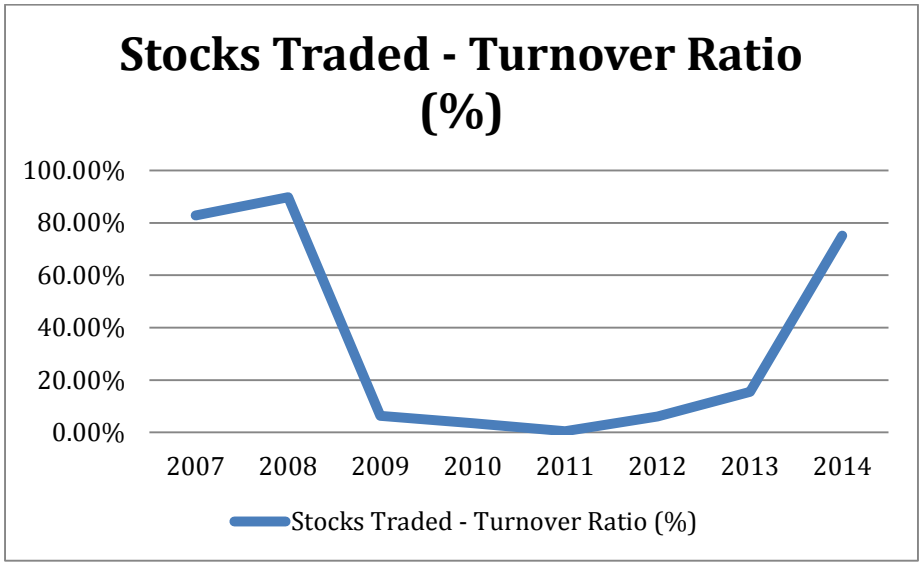

Figure 13: Turnover ratio – UAE
Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization

UAE has been excelling its pursued economic agenda by focusing on diversification and the promotion of a more developed private sector. Excessive efforts over the years have been exercised in order to attract more foreign investment. These endeavors have resulted in a combination of a somewhat stable economy that slowly (yet eventually) recovered from global crises, rapid GDP growth and fast-growing capital markets. Despite this entire favoring environment, "the regulatory and legal framework in the UAE continues to favor local over foreign investors" ("United Arab Emirates", 2015). As the report also states, there really isn't any national treatment for investors in the United Arab Emirates and the foreign ownership of stock remains restricted. In more depth, since the companies listed on those two exchanges are subject to the Federal Commercial Companies Law, "foreign investors are allowed to own up to 49% of a company [only]" ("United Arab Emirates", 2015) in only 105 companies. As for the other GCC citizens, they are not restricted to ownership in the UAE but the percentage fluctuates across companies between 25% only, 50% and mostly a 100%

(DFM official website). Moreover, there haven't been any privatization programs, but there have been some listings of SOEs on UAE stock exchanges. Hence, despite all the efforts, the UAE is still not fully open to foreign investment and the focus on GCC investors should be unanimous among all listed companies to permit 100%. Last but not least, investment incentives in UAE are mainly given to foreign investors in the free zones where they are given full freedom to own up to 100% of an investment ("United Arab Emirates", 2015). The government of the United Arab Emirates has also been focusing on "building infrastructure to create an environment conducive to economic growth and outside investment [as well as] collaborating with its partners in the GCC to support ventures in the region" ("United Arab Emirates", 2015).

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

The official websites of the two stock markets in the UAE state that the two organizations are constantly making sure that the exchanges comply to the regulatory requirements forcing listed companies in the UAE to disclose all types of information to the market at the right time. The Securities and Commodities Authority of the UAE makes sure that disclosure of information is done perfectly by imposing the "Disclosure Resolution" on all listed companies. In fact, the SCA also took crucial measures by suspending some listed companies in the past for failing to disclose enough information about their financial standings (Al Mansoori, 2015). Moving on in the scope of corporate governance, in 2009 the SCA "introduced a new corporate governance regulation: the Corporate Governance Code" (Norton Rose Fulbright, 2011) which sets very high standards of corporate governance similar to the international ones that must

be followed by all listed companies. The main provisions of this code are that "the board must establish a strict internal control system to evaluate the means and procedures for risk management, the implementation of the Corporate Governance Code" and that "any listed company must submit a yearly [Governance Report] to the SCA" (Norton Rose Fulbright, 2011). Admiringly, on-going compliance is definitely extant in the UAE which is catching up with international values and whose standards have been successfully achieved by both financial markets up until today.

As of 2015, UAE places a solid value of 70 for the Corruption Perception Index ranking as the 23rd most "clean" country in the world, right after Qatar ("Transparency International", 2015). Wrapping up this overview of the UAE, the latter's global ranking in the Ease of Doing Business measurement as of 2015 is a pleasant 31. It's beneficial to point out that it also ranks second globally in dealing with construction permits and fourth in getting electricity ("Doing Business", n.d.).

D. Oman

1. Overview

The fourth stock market in the GCC to be discussed is that of Oman. A Royal Decree first established the Muscat Securities Market in June 1988 as means to regulate and control the financial market in Oman and as an initial step to create a strong Omani financial sector. Ten years after that, the Sultanate had to modify the whole structure of this market to ensure faster growth and a better functioning of the market. In that scope, another Royal Decree in 1998 highlighted the new Capital Market Law which establishes and separates the two entities of Muscat Securities Market as the exchange and Capital Market Authority as its official regulator where the first is independent from

but subject to the second. According to the official website of the exchange, the main mission of Muscat Securities Market is *"[to provide an] efficient environment attractive to investment"* as part of their vision *"[to move] ahead with times toward efficiency"* ("Muscat Securities Market", n.d.). Throughout the years, the Omani market has directed its work towards "ensuring sound transactions", "higher standard of performance" as well as "deepening the market through encouraging new listing and diversifying investment instruments" ("Muscat Securities Market", n.d.). Although many criticize the Omani stock market as one of the MENA's smallest with a market capitalization dwarfed by the GCC's giants Saudi Arabia and Qatar, the Muscat Exchange Market has really proved itself to be a very strong, organized and steady market among its peers especially after rebounding in 2009 from the 2008 financial crisis with growth rates much higher than the regional average as well as exhibiting ample growth indications ever since 2010. Another aspect to be highlighted is the level of electronic development the exchange has relied on. The latest was in 2012 where the market united efforts with NYSE Euronext to introduce the high-tech NSC V900 trading platform hoping for a better trading environment that can possibly attract more foreign investment into the Sultanate. It's safe to say that with all the efforts executed by the Omani market and the success it has delivered, the Muscat Securities Market continues to impose greater growth and development schemes in order to keep up with the more developed neighboring markets. Over the past five years, the organization has worked on maintaining higher standards of compliance and corporate governance, acquiring more regional and international investors, initiating more IPOs, expanding market capitalization and size along with focusing on the development of the market's infrastructure. Muscat Securities Market remains as one of the GCC's smaller stock

markets, but one of the most open with a lot of room to further grow and prosper and support Oman's economy. At the end, we should note that the Stock Market Index in Oman representing Muscat Securities Market is the "Muscat Securities MSM30 Index".

2. Regulations of the Market

Since an adequate regulatory system is compulsory for any successful stock market, all the GCC exchanges have definitely established very dynamic and effective regulatory climates, including the Sultanate of Oman. As mentioned, the Muscat Securities Market is officially regulated by the Capital Market Authority of Oman, which was established in 1988 with the distinction from the Omani Exchange that it regulates. CMA's role is mostly concentrated on *"supervising and monitoring institutions regulated [by it, mainly the Muscat Securities Market,] to upgrade the efficiency and the level of capital market and insurance sectors in general, and to protect investors and policyholders in particular"* ("Capital Markets Authority – Oman", n.d.). The Capital Market Authority monitors, overlooks and synchronizes the work of the stock exchange by "enforcing its rules and regulations [summed up in the Capital Market Law]" in hopes of "[achieving] fairness, efficiency, and transparency in securities transactions" and "[protecting] the public and investors from unfair and unsound practices" ("Capital Markets Authority – Oman", n.d.). All this effort is targeted towards the Authority's vision of turning the Omani financial market into a dynamo for maintainable economic growth.

3. Number of Listed Companies

According to World Bank data, the number of listed companies on MSM has been increasing since 2010, but as of the end of 2015, there are 120 companies listed on the exchange, which represents a high number in comparison to other GCC stock market exchanges. As seen below, the main three sectors comprising the Muscat Securities Market are the financial, industrial and services sectors, whereby the industrial services is dominating with 50 companies given the high level of concentration in industrial projects and investments always taking place in Oman.

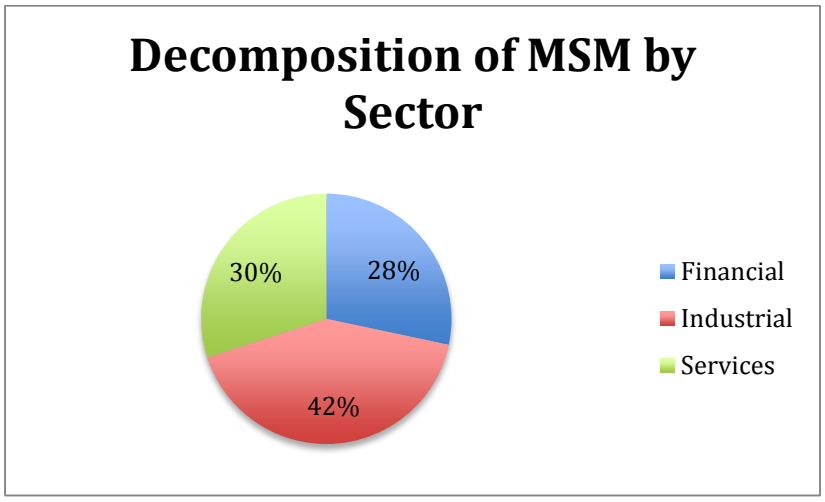

Figure 14: Decomposition of MSM
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio

After 2008, and just like all other GCC markets, the MSM faced a lump in all aspects including the market capitalization. Thankfully, ever since then, Oman was able to recover despite its much smaller size. In fact, it was the second-stronger performer in GCC after Saudi Arabia in the year of 2009 with market capitalization growing at around 17%. According to Emirates24/7, Oman's recovery peaked in 2010 with its "prudent macroeconomic management of oil wealth, appropriate regulatory and

supervisory policies, and implementation of structural reforms to enhance non-oil growth" ("Oman", 2010). An immense focus on improving the infrastructure in Oman has been ongoing since 2011, not only including the region's greatest industrial projects and investments, but also the great development of the financial market. Precisely, the Director General of MSM has stated that "there has been a substantial IPO increase here. With the help of the government, we are on the right track and moving in the right direction." (Al-Marhoon, 2013). It's safe to say that the MSM has been shedding light on developing and attaining international standards of performance and growth despite its small size, and more success is predicted for the coming years. As seen below, the market capitalization has been facing an upward trend since 2008, almost doubling its values, yet still very low compared to the values of neighboring GCC member states. Last but not least, in 2013, trading was improved in Oman, and with a rise in economic confidence, this sophisticated market surprisingly responded to the unstable regional conditions with rampant growth amidst the period it has broadened its vision with a new Shari 'a window. Oman officials are hoping that the effects of the oil-prices crash won't be too large and that by the end of 2016 they'll try to fully execute strong recovery plans that they would have already set and implemented ahead of time in face of this recent world-wide crisis.

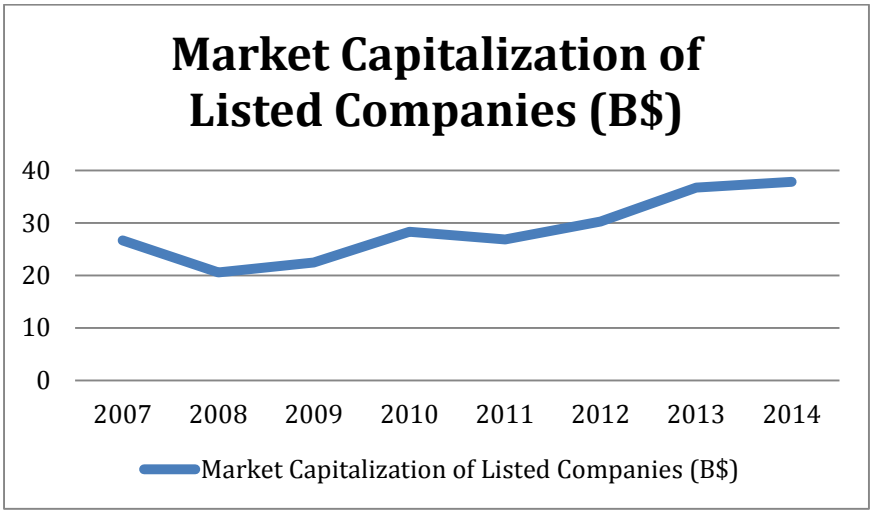

Figure 15: Market Capitalization of Listed Companies – Oman
Source: World Bank Data

The total trade value of stocks though has faced some lower values starting 2008 and that could be due to the loss of many of their foreign investors and the overall stagnant financial atmosphere after the global crisis that left many in doubt and fear. But thankfully, Oman has also managed to attract more investors in the recent years, allowing it to push up the total value of the exchange's trade. Therefore, if the government further relaxes its strict listing requirement, the trading volume will definitely bolster even more.

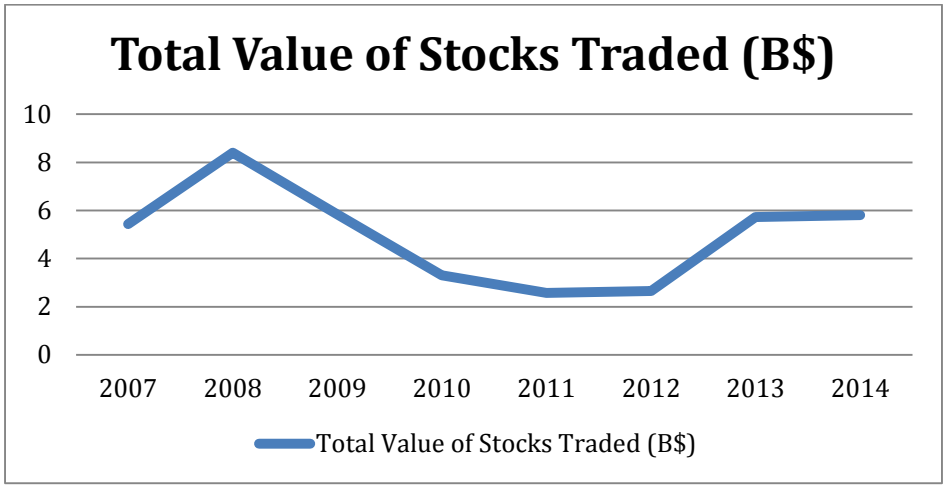

Figure 16: Value of Traded Stocks – Oman
Source: World Bank Data

In parallel, the turnover ratio indicator of the Muscat Securities Market has also significantly declined starting the 2008 financial crisis. In fact, this trend was coupled with the overall loss in confidence among investors, which greatly impacted the Omani market as one of the most open markets. As expected, and with extensive efforts to reestablish an attractive reputation and performance, positive signs were depicted starting the end of 2012 with a formidable increase in the turnover ratio for the Omani market, which is still low compared to other countries'.

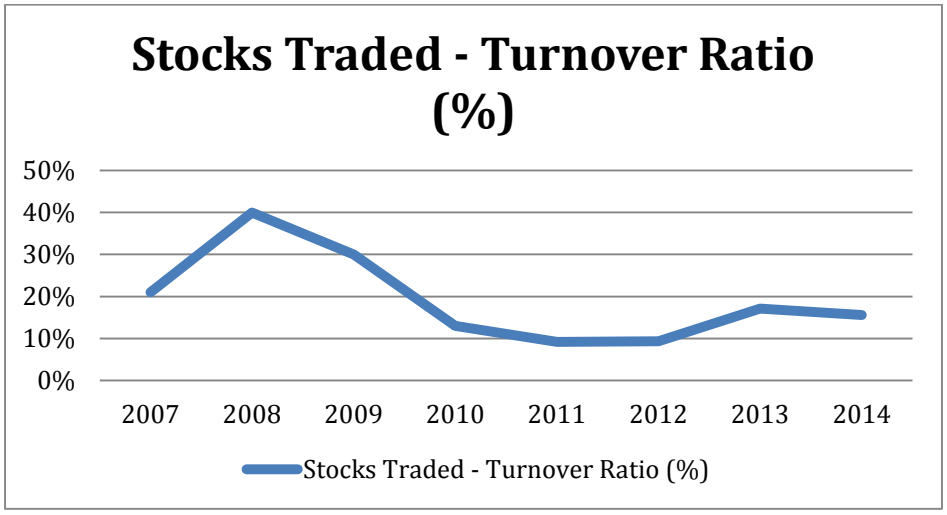

Figure 17: Turnover Ratio – Oman
Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization

Keeping in mind the ambitions of the Omani government to diversify the economy, along with the extensive efforts to maintain their growth indicators, the Muscat Securities Market is one of the most open markets in the GCC, with a great focus on foreign investors and further development of their relatively smaller market. In fact, "foreigners may invest in the Muscat Securities Market as long as they do so through an authorized broker" ("Oman", 2015). In other words, Oman is very welcoming to foreign investors and allows them to acquire 100% ownership. Furthermore, privatization programs are somewhat common in Oman, where a plan for privatization has been negotiated years back, but hasn't been announced to the public. Foreign investors are also "allowed to participate fully in some privatization programs, even in drafting public-private partnership frameworks" ("Oman", 2015). On a good note, there has been a huge level of international recognition on the serious opportunities present in Oman especially with the government's infrastructure investment program and diversification efforts. Within that scope, this has been

depicted in the country's stock market exchange, which was able to prove itself as one of the stable and growth-determined markets despite its relatively smaller size in comparison to other GCC stock markets. In other words, Oman's stock market comprises a lot of future potential for growth and a huge flow of investments.

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

As part of their mission, the organization of the Muscat Securities Market explicated its focus on the disclosure of information and the development of this process through their highly advanced electronic trading system. Ensuring the correct mechanism of disclosure within the exchange will definitely "ensure transparency of activities" ("Muscat Securities Market", n.d.) which is considered to be one of the main principles of a well organized market, and "support the market by encouraging investors to make the right investment decision at the right time" ("Muscat Securities Market", n.d.). Under the outlook of corporate governance, the official regulation authority of the Omani stock market exchange executed forceful leadership to improve the level of corporate governance within the exchange. Essentially, "CMA continued the efforts to execute certain schemes pertaining to the relevant laws and regulations as some have been completed and dispatched to the official entities such as the draft amendments to the Capital Market Law and the draft amendments to the Rules for Election of Directors of Public Joint Stock Companies and the Provisions Pertaining to their Responsibilities" ("Capital Markets Authority – Oman", n.d.). Not only that, but Oman is the leader among its peer GCC neighbors with am ample advantage in terms of Corporate Governance. It was "the first to adopt a code of corporate governance and to establish

an independent capital market regulator" (Hawkamah, 2007), which was possible because of the strong support by the government aiming to diversify the economy. This solid corporate governance environment will definitely play a role in attained a stable financial performance for Oman, along with attracting more GCC and foreign investors. With all that being said, Oman should not cease its efforts, as it's understanding its weaknesses and acting accordingly on trying to radiate as an economically growing country characterized by a developing financial market that's attractive to foreign investors.

As of 2015, Oman places a solid value of only 45 for the Corruption Perception Index ranking as the 60th most "clean" country in the world, falling behind all the other GCC countries ("Transparency International", 2015). Yet on another positive note, Oman comes in the fourth rank among GCC countries when discussing the easiness of doing business and in the 70th rank globally ("Doing Business", n.d.).

E. Bahrain

1. Overview

Going back in time to 1957, the first Public Shareholding Company in Bahrain was inaugurated. Twenty years later, in 1987, the Kingdom of Bahrain decided to establish the 'Bahrain Stock Exchange' as an entity within the Central Bank of Bahrain due to the increase in number of local public shareholding companies that needed an official stock market. The exchange launched its activities in 1989 where only shares where being traded on it through the manual "Auctional Trading" system, but ten years later the system was switched to a more developed electronic one ("Bahrain bourse", n.d.). In 2002, the Central Bank of Bahrain became the legislative and regulatory

authority of the exchange. More recently, in 2010, the Bahrain Bourse was established to replace the Bahrain Stock Exchange since the latter couldn't keep up with the modern technology necessary for trading. According to their official website, Bahrain Bourse's vision is to *"become the leading bourse regionally with a fair, transparent, diversified, and efficient market, [to provide] unique services to all stakeholders and customers and [to attract] investments, thus contributing to the national economy of the Kingdom of Bahrain"* ("Bahrain bourse", n.d.). With Bahrain Bourse being self-regulated yet supervised by the Central Bank, this change in structure can be seen as an opportunity for the exchange to be more flexible in attaining better regulation and more leading in terms of organizational excellency. Since its creation, the Bahrain Bourse has been fighting the odds amidst the peak of the global financial crisis to deliver better standings and emerge as one of the best stock exchanges in its region. Being one of the most illiquid markets among other GCC markets, this negative aspect of Bahrain Bourse has pushed the organization to undertake programs in a drive to increase liquidity. One of the most noticeable acts are upgrading its NASDAQ OMX trading platform and encouraging more trading and listing. Also known to be one of GCC's smaller markets, if the Bahraini Bourse resumes these efforts, then even more upward trends and positive outcomes would be observed, and as its Chairman stated, "by encouraging local businesses to grow and diversify, the BHB is not only fostering a better market for itself, but is supporting the growth and development of the whole of Bahrain" ("Bahrain Bourse", 2014). Last but not least, the stock market index representing the Bahrain Bourse is the "Bahrain All Share Index" (BASI).

2. Regulations of the Market:

According to the legal framework states by the official website of the organization, the "Bahrain Bourse is governed by the rules and legislations which include the Bourse's law and all its internal regulations that are issued by the Central Bank of Bahrain concerning the capital markets sector in the Kingdom of Bahrain" ("Bahrain Bourse", n.d.), yet the Bahrain Bourse is different from all other regional markets by being a self-regulated organization, where the Bourse regulates its own activities but still being supervised by the Central Bank, giving the Exchange more flexibility. Specifically, the Central Bank's Capital Market Supervision Directorate is the party that oversees the capital markets including the Bahrain Stock Market by relying on the newly modified "Capital Markets Rulebook" that the Bank has published in 2006. The latter provides the Directorate with a coherent set of rules and regulations to make sure that transparency and fairness are the main features of the capital market transactions ("Central Bank of Bahrain", n.d.).

3. Number of Listed Companies

Since the creation of the Bahrain Bourse, the number of listed companies has increased drastically. Yet, as of the end of 2015, the number is still low at only 44 companies, which stresses the anemic growth in the number of listed companies and the need for the organization to encourage more IPOs. The main two sectors dominating the Bahrain Bourse are Investment and Services and this actually reflects Bahrain's focal interests as a country. On the other hand, non-Bahraini and closed companies demonstrate the lowest concentrations in the market.

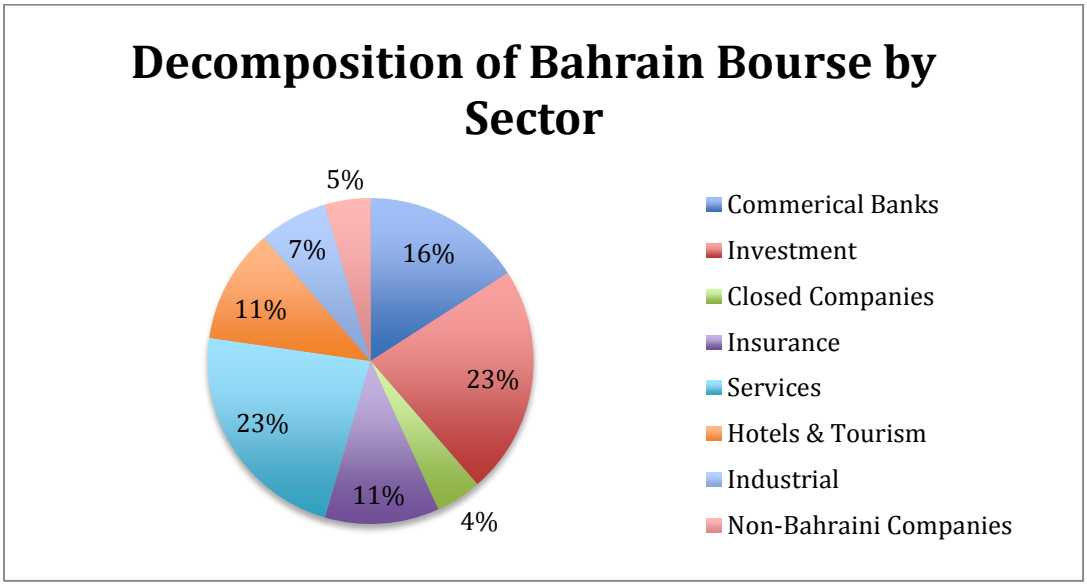

Figure 18: Decomposition of Bahrain Bourse
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio

Similar to the reaction of other GCC stock markets, the Bahrain Bourse took a large hit from the global financial crisis, with all its market indicators demonstrating a dip in the years of 2008 and 2009. Moreover, the socio-political unrest that took over Bahrain at the beginning of 2011 had its forceful impact as well. In the years of 2011 and 2012, Bahrain Bourse actually had the worst performance among its peer GCC neighbors shedding almost 60% below its value previous to the crisis. Luckily, the consequent years for Bahrain were more hopeful and starting 2013, the Bahraini stock market exemplified the true meaning of financial recovery by implementing diversification and openness attempts, along with keeping up with the necessary need for a high-tech trading platform hoping to revive the confidence among other GCC and foreign investors. Hence, as seen below, the market capitalization has experienced an upward trend starting 2013 and the efforts are ongoing. In fact, 2014 marked the

market's 25th anniversary where it posted a 20% year-on-year increase in the market capitalization ("Market Capitalization grows as Bahrain Bourse turns 25", 2015).

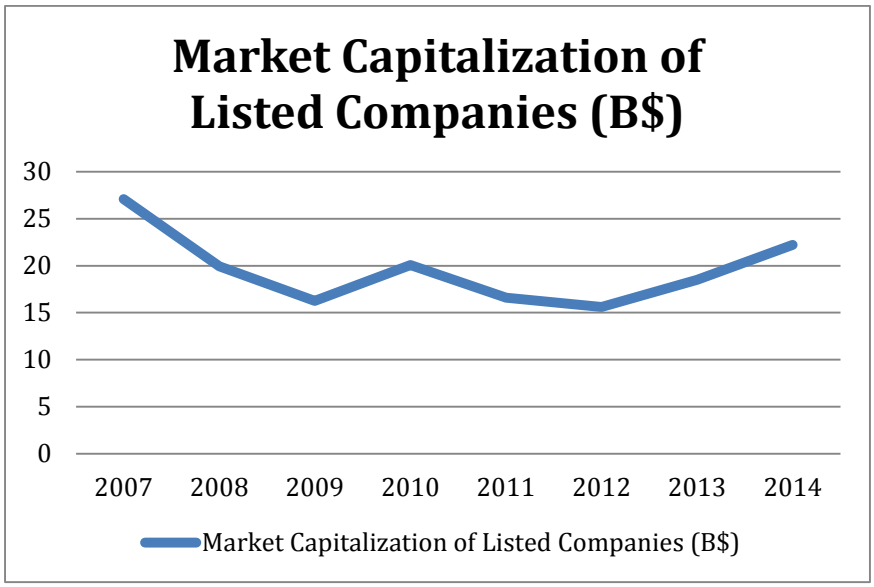

Figure 19: Market Capitalization of Listed Companies – Bahrain
Source: World Bank Data

Similarly, the total value of stocks traded demonstrates this trend in the Bahrain Bourse, where a huge drop occurs after the 2008 global financial crisis, but also in 2011 a significant drop in this indicator can be accounted to the low free floats that were available and the slow growth in the number of listed companies. Positively, the Chairman of Bahrain Bourse expressed the positive upturn in 2013 by pointing out that "investors have begun to treat our equities somewhat like fixed income instruments, and this has a better impact on our trading value" ("Bahrain Bourse", 2014), which increased by 104% after the extensive efforts in 2013.

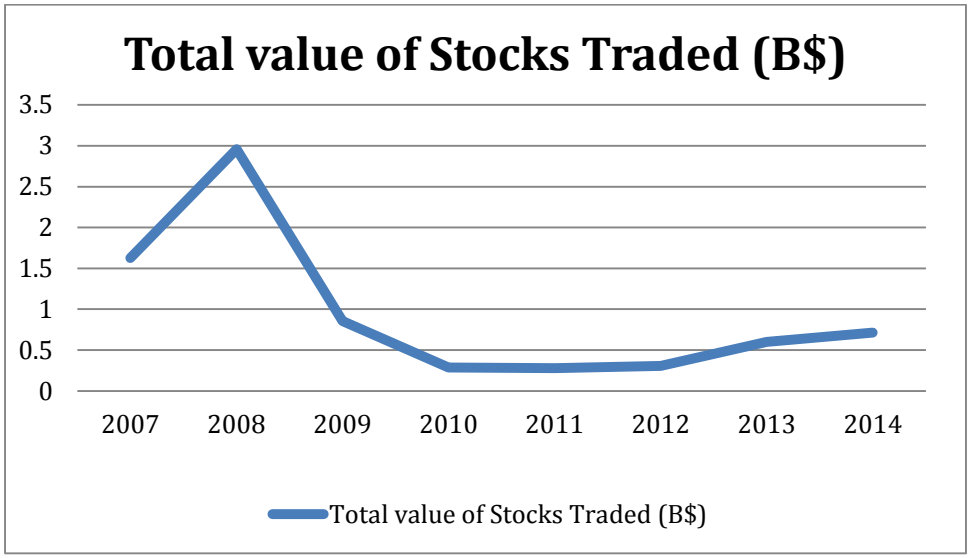

Figure 20: Value of Stocks Traded – Bahrain

Source: World Bank Data

With the same explanation, the turnover ratio also illustrates this movement with percentages that are far beneath the GCC average meaning that the Bahraini market is indeed one of the most illiquid markets. But positively speaking, the Bourse has initiated efforts to change this characteristic and this can be seen from the slight increase in this ratio starting 2013 with this determination. Constant efforts and focus must be directed towards this issue of liquidity in the near future in order to catch up with the regional GCC average of liquidity that stands at much higher values than those in Bahrain, especially with the continuous effects of the late-2014 oil crash crisis that significantly hit the GCC as a whole.

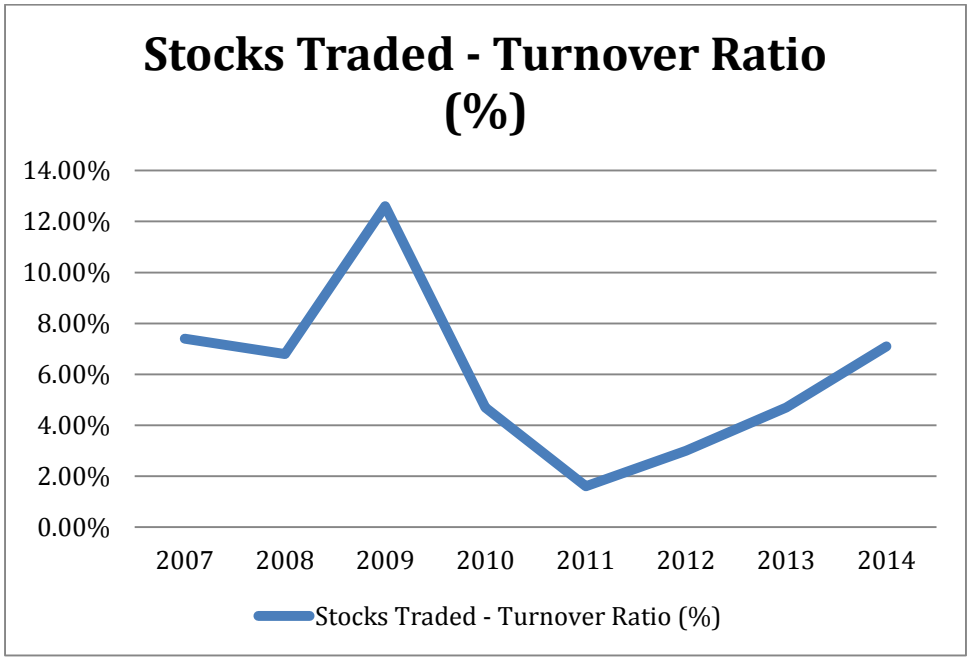

Figure 21: Turnover Ratio – Bahrain

Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization

Starting 1999, other GCC investors were allowed to own 100% of any of the listed companies' shares. As for non-GCC foreign investors, the focus on liberalization and the need for openness and more foreign investment in the Bahrain Bourse have pushed the organization to allow them to own up to 100% of shares as well. On the other hand, the privatization programs in Bahrain have recently become a definite aim especially with Bahrain's Economic Development Board's focus on a strong private sector even within the country's financial market.

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

As the supervising authority of the Bahraini stock market, the Central Bank of Bahrain has the job of enforcing strict disclosure standards on the Bahrain Bourse to help the latter achieve its goal of being a transparent and efficient market for its participants. According to the official website of the Bourse, it follows the CBB Disclosures Standards Book issued by the Central Bank of Bahrain. "[This] regulatory framework for capital markets will conform to international standards, to ensure that the financial market in Bahrain is fair, orderly and efficient" ("Central Bank of Bahrain", n.d.). The harsh economic and financial consequences of the 2008 crisis left Bahrain in no other choice but to enhance its level of corporate governance. Consequently, Bahrain Bourse took serious steps in updating the status of corporate governance in 2010 by issuing a new Corporate Governance Code. "The code, which establishes a minimum standard of best-practice corporate governance principles, supplements the principles of corporate governance which already exist within Bahrain's legislative framework" (Norton Rose Fulbright, 2010). Accordingly, Bahrain Bourse won the Corporate Governance award of the year 2014 for demonstrating high-standard practices and encouraging the companies listed on the Bourse to comply with the rules and regulations, allowing the market to achieve world class levels of transparency, efficiency and leadership.

As of 2015, Bahrain demonstrates a Corruption Perception Index of 51 ranking as the world's 50th "cleanest" country and the 4th among the GCC countries ("Transparency International", 2015). Last but not least, Bahrain's global ranking in the

Ease of Doing Business measurement as of 2015 is 65, putting it in the second rank among its GCC peers (“Doing Business”, n.d.).

F. Kuwait

1. Overview

Kuwait engulfs the GCC’s oldest and most major stock market as well as one of MENA’s oldest financial sectors. In 1952, the National Bank of Kuwait was the country’s first ever shareholding company. After the nation’s two famous market crashes of 1977 and 1982, the government directed extensive effort to help create a stable and well-regulated stock market and thus the Kuwait Stock Exchange was created in 1983 as a self-regulatory organization owned by the government. On another note, the Gulf War destroyed the country’s capital markets as a whole but the State bailed out the entire financial system in Kuwait after that. Over the years, Kuwait’s stock market grew tremendously to become the second most liquid market in the GCC region after Saudi Arabia. In fact, in 1995, KSE was the first GCC market to introduce an electronic trading system to its platform and in 2003 the online version was launched. Not only that, but the Kuwaiti stock market was the first to introduce derivatives (“Kuwait Stock Exchange”, n.d.). As we know, the 2008 global financial crisis altered all of the GCC markets, which needed some time to recover with extensive efforts and planning. KSE, for instance, comprised the most potential out of all the markets, but for numerous reasons fell behind all other GCC markets while they were all demonstrating deliberate recovery. Amongst all this, the Capital Markets Authority was opened in 2010 to both regulate and supervise the market. Starting then, efforts were targeted towards the privatization of the stock exchange, but it wasn’t until 2014 that a plan was set for 2016

to try to regain the market's regional and global competitiveness. With all that being said, the market was the best performing market in the GCC between 2000 and 2004 and is still among the world's deepest markets with a market capitalization to GDP ratio of almost 100% and ranking as the fourth largest stock market in the GCC in terms of market capitalization and that's why it is hopeful to eventually recover. According to the official website of the exchange, the organization "is full of confidence as it faces the future challenges to achieve a fair, transparent, orderly and efficient marketplace" ("Kuwait Stock Exchange", n.d.). At last, it's important to note that the stock market index representing the KSE as a proxy is the "Kuwait Stock Exchange Index" (KSE).

2. Regulation of the Market

Initially, when the Kuwait Stock Exchange was establish, it was a self-regulated organization, but in 2010, the Capital Market Authority was created and took over the regulation of the market under the Capital Markets Law. As mentioned in the official website, "the exchange was mandated to organize trading activities and to regulate them, which it continued to do until its regulatory responsibilities were transferred to the Capital Markets Authority which was established by a new law which after being signed by the Amir came into force on 28th February 2010" ("Kuwait Stock Exchange", n.d.). CMA's vision is *"to be a leading regulatory authority which works on developing and supervising the activities of capital markets in the State of Kuwait, and creating an attractive investment environment that obtains investors' trust"* (Capital Markets Authority – State of Kuwait", n.d.). This authority has been trying since its establishment to offer help to the capital markets of Kuwait amidst the financial crisis and the socio-political instability in the Arab world by trying to improve the investment

environment that has suffered in the last few years. Not only that, but also this authority needs more attention in Kuwait since the country has struggled in its recovery process with stagnant regulations as one of the reasons. Moreover, the Capital Markets Authority in Kuwait signed an agreement with HSBC ME in 2012 to overlook the intended privatization process of the Kuwait Stock Exchange.

3. Number of Listed Companies

Known to be one of the GCC's biggest and oldest markets, the Kuwait Stock Exchange has 208 companies listed on it as of the end of 2015. This number hasn't changed since 2011 and "this slowdown in new listings can be attributed in large part to a decline in confidence among investors in the wake of the 2007-08 downturn" ("Kuwait's Capital Markets Regulator", 2015), along with the unappealing economic conditions in Kuwait in the consequent years after the crisis. The sectors of financial services, industrials and insurance are the dominating sectors in KSE. On the other hand, the sectors of health care, technology and telecommunications demonstrate the lowest concentrations.

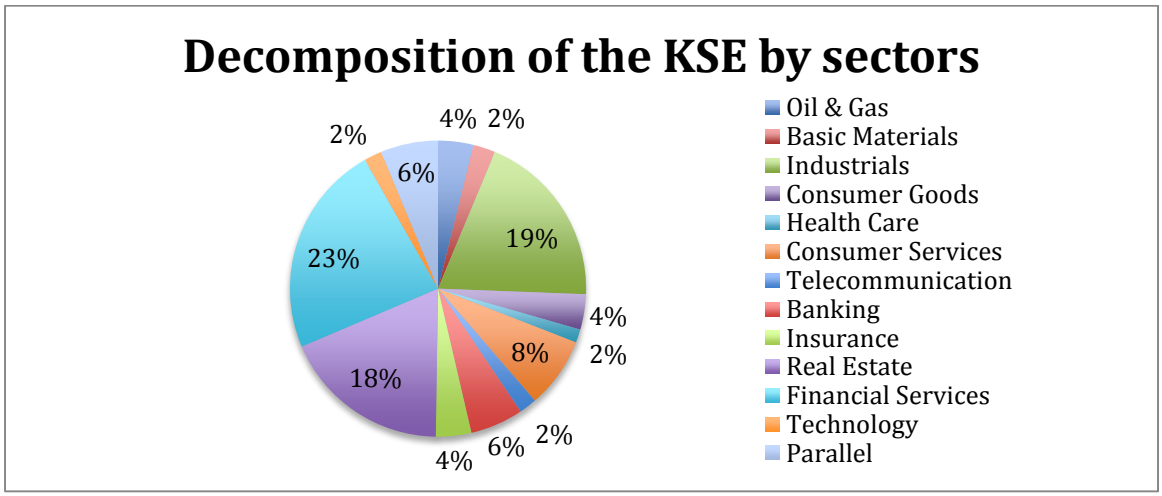

Figure 22 : Market Capitalization of KSE
Source: marketstoday.net

4. Market Capitalization, Volume Traded & Turnover Ratio

Although it is known as one the deepest and most liquid stock markets in the Middle East, the KSE took a big share out of the impact of the 2008 global financial crisis. Unfortunately, the Kuwaiti Market was the last market to pick up its recovery process, and while other GCC members were soaring with high numbers in their indicators, KSE struggled to keep up and fell behind due to the drop in liquidity and poor economic environment coupled with weak regulatory frameworks and reforms to help save the Kuwaiti financial market. Especially with the attractive success of its neighboring markets of Qatar, Saudi Arabia and UAE, the Kuwaiti stock market was losing investors to the latter and was reporting a very poor performance because of its inability to meet with certain international standards and its outdated infrastructure ("Work in Progress", 2016). As these neighboring markets were slowly recovering from the crisis and even demonstrating positive growth rates, the KSE was still battling with its losses, still being placed almost 60% below its early-2008 peak. Some Kuwaiti analysts highlight that what has been happening to the KSE is really "unfair", blaming investment companies precisely since cash liquidity was withdrawn from the KSE at the peak of the crisis to repay their bank dues causing liquidity to drop significantly. It's important to note that although it's still one of the most liquid markets in the GCC region, a major part of recent market activity is actually "chalked up to speculative trading among a relatively small cadre of wealthy, local individual investors" ("Kuwait's Capital Markets Regulator", 2015), which has pushed the CMA to attract more regional and international investors. As seen below, market capitalization suffered greatly in 2008 and wasn't able to pick up its numbers for the next six years. As for the total value of stocks traded, the KSE hit a high 120 billion dollars in 2007 and registered

a 10-year record low of almost 20 billion dollars only in 2014, where the increase in 2013 represented “harmful trading” caused by the low interest rates and cheap Kuwaiti shares. For this same explanation, the turnover ratio displays the same variations showing that KSE has really struggled deeply with liquidity.

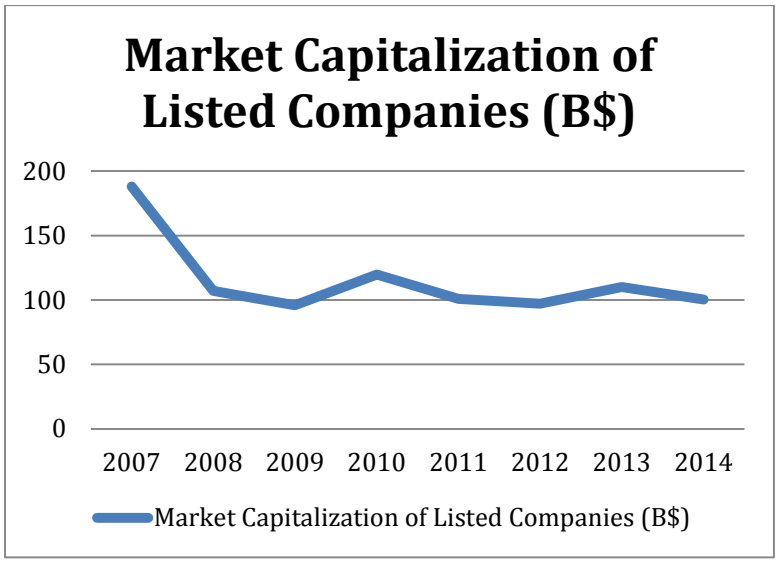

Figure 23 : Source: Market Capitalization of Listed Companies – Kuwait
Source: World Bank Data

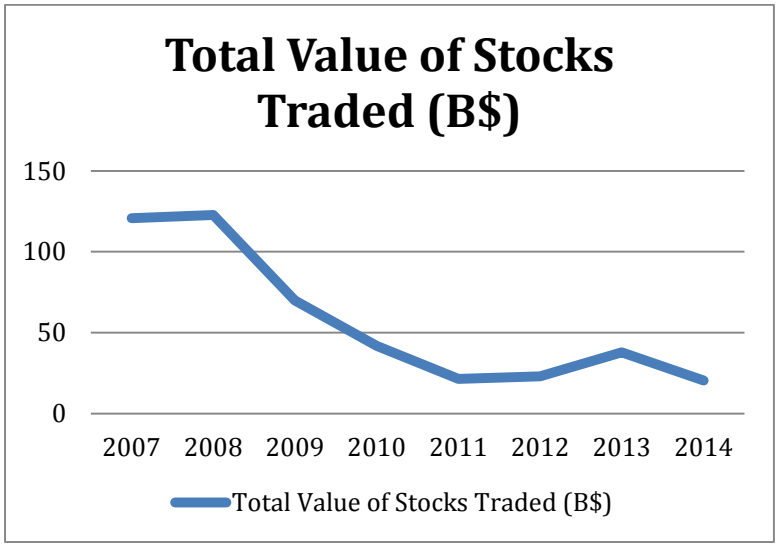

Figure 24 : Value of Stocks Traded – Kuwait
Source: World Bank Data

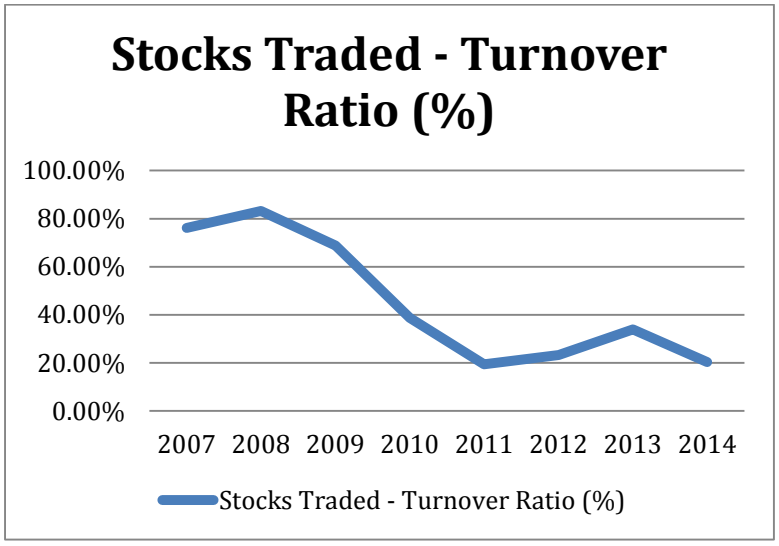

Figure 25: Turnover Ratio – Kuwait
Source: World Bank Data

5. Openness and Accessibility to Foreign Investors & Privatization

In the year of 2000, a Ministerial Resolution of the number 205 was published to set the criteria regulating the foreign ownership of shares. "It stipulated that foreign nationals may wholly own shares in Kuwaiti shareholding companies on the Kuwaiti Stock Exchange" ("Kuwait Stock Exchange", n.d.). As a solid plan to help save the financial sector in Kuwait amidst the struggle it has been facing for the past few years coupled with the unattractive investment climate, the CMA encouraged the privatization of the Kuwait Stock Exchange hoping that it would be run better to deliver better. According to Oxford Business Group, this change can make KSE more competitive if and only if a subtle national development plan for enhancing the economy, investment environment and regulatory reforms is set and implemented. In 2014, CMA created the Boursa Kuwait Securities Company, which is set to take over KSE in 2016. "The privatization of the KSE will benefit both investors and listed companies by enhancing the transparency of the capital market and is a much-needed prerequisite towards upgrading the Kuwaiti market to emerging market status, furthering Kuwait's ambition

to become a leading financial hub in the Gulf region by 2020" ("Work in Progress", 2016).

6. Disclosure of Information, Level of Governance, Corruption Perception Index and Easiness of Doing Business

According to the official website of Capital Markets Authority in Kuwait, the Capital Markets Authority Law aims to regulate the securities market in Kuwait and to systemize stocks and securities transparently, competitively and fairly. In 2012, the CMA published a new set of coherent instructions applicable to all the listed companies on KSE, calling for full disclosure of information, which would achieve the declared transparency and efficiency of the stock market. Not only that, but CMA's main role is to support, enhance and raise awareness about the Corporate Governance Regulations (Capital Markets Authority – State of Kuwait", n.d.). Unfortunately, over the last few years, Kuwait's practices of Corporate Governance weren't able to keep up with the growth of its stock market. As we've discussed earlier, the instable regulatory environment and weak implementation of much-needed rules to ensure coherent corporate governance were also a catalyst to the slow recovery of Kuwait. With the assistance and guidance of CMA, KSE needs to shed more light on corporate governance in order to improve its practices and help Kuwait's financial sector and the country as a whole achieve better indicators of healthy corporate governance mechanisms, investment environment and confidence, as well as credibility and competitiveness. As a matter of fact, Kuwait demonstrated a Corruption Perception Index of 49, ranking as the world's 55th most "clean" country, and the 5th among GCC peers ("Transparency International", 2015). Another indicator that asserts the need to

enhance the investment environment in Kuwait is the country's global ranking in terms of easiness of doing business being the 100th and the last among the five other GCC member states ("Doing Business", n.d.).

After an exhaustive exploration and analysis of the GCC stock markets separately, it's clear that the GCC region engulfs very prominent stock markets that have many similarities as well as differences to a certain extent. The GCC countries account for more than 90% of the Arab world's stock market capitalization with Saudi Arabia owing a greater bulk. Despite that, the GCC markets can further develop their financial markets in terms of full liberalization, full harmonization of regulations, more IPOs and quicker recovery given their high GDP levels and advanced economies since the latter come hand-in-hand with bigger and more developed markets and these markets still somewhat fall behind the world-wide illustrious markets. On a more positive note, all markets have focused on attaining significant diversification and liberalization levels, setting and implementing rules and regulations, securing coherent corporate governance schemes and developing their markets by encouraging more listing on their exchanges. The latter have definitely dominated all GCC markets but at the end of day their degrees have definitely varied from one market to another based on their countries' potential, economic environment and GDP levels and so on. In other words, the generally similar economic conditions and political environment in the Gulf has also pushed the countries' stock markets to be operating under the same promising settings for development and integration. For some markets, this development process was executed more smoothly than others and for some, this process is still on-going with some difficulties based on macro-level conditions as well as very specific aspects of their markets that could be enhanced. Precisely, some GCC stock markets recently

acquired the status of ‘emerging markets’ due to their eminent achievements, creating for the other “slower” markets an encouraging environment to deepen their development plans in order to promote the overall coherence and financial unity that the GCC organization once declared as a goal. Backed up by their mostly diversified decomposition, macro-level recovery attempts, constant focus on the growth and development of financial markets and openness to other GCC and international investors, most of the GCC stock markets were able to recover from the 2008 global financial crisis or even show signs of recovery by 2013. Unfortunately, some markets took longer to start recovering, and Kuwait is still struggling. Even the recent oil crash has pushed all the markets into a downhill, yet the common concept of diversification slightly cushioned the impacts up until the end of 2015 and the different member states have tried to recover as much as possible. GCC member states have constantly directed their focus on unity and uniformity along with development among their markets, in order to achieve their long-declared goal of economic integration. Very recently in 2010, the GCC countries have also signed a multilateral MoU agreement to achieve full uniformity in laws and regulations hoping that this would render the path to their goal. Hence, it’s clear that the level of openness to one another, the degree of harmonization and attempts to further strengthen the coherence as well as the determination to develop and strive as leading markets, all support the initial declared goal of integration within the GCC stock markets. Despite the common favoring conditions and efforts among all stock markets, the one loop in this situation is that some markets are a bit slower than the faster-growing markets in the region. Hence, the path of recovery and development needs to be maintained by all markets and accelerated by some, also through making sure that the economy is favoring such a process.

Logistically, the GCC markets seem to be integrating their efforts to try and become more integrated in terms of common regulation, performance, and level of diversification, governance and many more. Realistically, the level of financial integration among the GCC markets will be empirically tested in the next section of this project for the following reasons: To examine to what extent these markets are really integrated in both the short-run and the long-run, to determine the detailed interrelation dynamics between all seven markets, to investigate whether the efforts of the GCC member states of achieving integration have really paid-off, to detect the leading power among the seven markets, to scrutinize the impact of the 2008 global crisis on the integration level and to inspect whether a stock market merger could be the next step for the GCC organization.

G. Stock Market Mergers

Theoretically, the idea of a stock exchange merger is very new to the financial world. Over the last few years, several mergers and alliances have taken place and have been great changes to the financial sectors and economies of the relevant countries. In a paper discussing the growth strategies and value creation for stock exchanges, Hasan et al. conclude that "when the stock exchange's partner is located in a country with a more developed stock market, its liquidity will increase more after the integration activities" (Hasan et al., 2012). Keeping in mind that a merger must overcome any differences or barriers or even risks across the different markets, the authors also stress that when the partner is located in a country with higher investor protection, the synergy gain from the transfer of governance will be much larger (Hasan et al., 2012). Through a detailed empirical study, the authors also conclude that it's specifically the cross-border

horizontal mergers of stock exchanges that channel greater benefits for the participants (Hasan et al., 2012). Not only that, but minor differences in the levels of some indicators and characteristics of the stock markets can undoubtedly help all the entities of the merger by complementing one another, allowing the strengths of the markets to be heightened, the weaknesses to be overcome and both the total possible gains or losses to be shared by the members. In their paper "Stock Exchange Mergers and Market Efficiency", Charles et al. emphasize that stock exchanges may merge for the following reasons, which Kokkoris et al. also highlight: increase liquidity, increase market share, become more competitive, create more value for shareholders, increase capital mobility, reduce all costs, acquire knowledge, skills and governance mechanisms from partnership, economies of scale and scope, cross-selling, diversification, horizontal integration and even cut across international boundaries (Charles et al., 2014). To further clarify the advantages of stock exchange mergers, the authors also show how each of the exchanges, listed firms, and their investors benefit. For the exchanges, the effects of a merger vary between becoming a broader and deeper market, reducing costs, increasing trading volumes and used technology, all the way to increasing the opportunity for a greater number of instruments to be offered through one entity (Charles et al., 2014). As for the listed firms, liquidity is improved and uncertainty is demolished (Charles et al., 2014). On the other hand, investors also reap vast benefits from the consolidation of stock exchanges, which include lower transaction costs, greater risk reduction through effective diversification, and a broader selection of instruments to be traded (Charles et al., 2014). On another promising note, it's agreed upon that when merging stock markets, "the goal would be to become a fully integrated geographical entity, hoping for an extremely high level of synergies" (Charles et al.,

2014), but in order to achieve that, the different stock exchanges must have common growth and development strategies, common motives, common governance and regulatory perspectives as well as common economic backgrounds and diversification levels that can help support the synchronization of the countries' financial markets.

In reality and in order to put the above into clearer perspective, the two most famous stories in Europe that have undertaken this path of stock market mergers to achieve the above goals for the exchange, investors, firms and economies are the EURONEXT and OMX. These two examples will be used as recent successful stories of stock market mergers that show the positive outcomes and the great potential that holds within such a consolidation among markets. To begin with, the OMX merger tracks all the way back to 1998 when the Norex Alliance was formed between the stock markets of Denmark and Sweden into which the stock markets of Iceland and Norway have also entered in 2000. With OM Stockholm Stock Exchange (now known as OMX AB) expanding to control Finland, Copenhagen, Lithuania and Iceland's markets, the OMX GROUP was finally formed as a merged entity controlled by the Swedish OMX AB. The vision of OMX group was to *"create an integrated market place for financial instruments in the Nordic and Baltic regions"* (Clausen & Sorensen, 2009). In fact, this merger was done after extensive studying and harmonization of regulations and diversification levels of the separate stock markets, given the fact that the Scandinavian countries (just like the GCC countries) share similar economies that are heavily reliant on natural resources, geographic proximity, similar political environments, common incentives and goals to synchronize the financial sectors of their countries. The merger was successful in a sense that "more than 80% of trade in listed securities on the Nordic/Baltic markets is now carried out through OMX" (Clausen & Sorensen, 2009).

In addition, what this merger resulted in was a unified market that ranks as the fifth largest market in Europe. What OMX focuses on next is a strategy to minimize the differences between the national markets. In fact, the official website of OMX states that "harmonization is achieved by sharing the same trading system, providing common listing and index structures, enabling efficient cross-border trading and settlement, offering cross-membership and providing one market source of information" ("Nasdaq OMX Nordic", n.d.). To that end, it can be concluded so far that a stock exchange merger could be the correct move to be taken by markets that share common goals, characteristics and environments, aiming to attain greater power, better performance, larger market capitalization and a higher level of competitiveness and investment attraction despite the inevitable minor differences that the separate stock markets might exhibit.

As for the other successful story of stock market mergers, the EURONEXT was formed in 2000 as the alliance between the stock markets of Brussels, Paris and Amsterdam. What's different about this merger is that the three exchanges agreed to establish a holding company "EURONEXT NV" that will responsibly own all the shares of the three independent exchanges, which were consequently renamed as "Euronext Brussels", "Euronext Paris" and "Euronext Amsterdam". The advantages of this merger were colossal: Most importantly, the Euronext is now the biggest market in Europe with a market share of 29%. In addition to that, the merger has enhanced the competitive stand of Euronext and market depth has accelerated. Not only that, but the merger "increased the potential investor base" (Nielsson, 2009) coupled with a significant increase in turnover for big Euronext firms. The chair and chief executive of Euronext stressed on their goal of "leading in terms of quality and service, efficiency

and innovation, [creating] a fair and orderly market for investors, brokers and issuers, [decreasing] fragmentation in European markets, [facilitating] capital market growth" (Nielsson, 2009), cutting costs to all market participants, attracting more listings, offering a wider selection of investment products, deepening liquidity pools and higher trading turnover of stocks (Clausen & Sorensen, 2009).

According to Nielsson (2009), although the sizes of the national markets involved in the two mergers differ, the challenge of consolidating several stock exchanges that are regulated by different national authorities is the same. Euronext and OMX made sure of providing common trading and information systems for the merged exchanges. In both cases, the participants of the mergers had strong common motives to upgrade their financial markets, similar economies that can support the development of the markets (especially in the case of OMX) and more importantly stock markets that really were interrelated. Not only that, but the individual stock exchanges of the merged entities had very similar Corporate Governance Codes making it easier to harmonize them together to reach a common Code that can be successfully and fully complied by all members of the merger.

Merging stock markets sounds like a very promising plan for regional markets that share geographic proximity, relatively similar characteristics, common efforts and declared goals, diversification goals, common corporate governance levels and coherent levels of openness and regulations. Yet this plan requires numerous prerequisites other than the synchronized logistics of the markets themselves to ensure a smooth transition. There should be fiscal and monetary integration among the countries as well, to ensure that the performance of a single market is supported by an overall set of stable and similar economies. What's necessary also are good relations between the countries and

their financial sectors in a sense that they should all unite to identify their capabilities, their strengths and their weaknesses, to see where they could complement each other and where they need to further develop. Hence, such a move requires heavy assessments of its members on both macro and micro levels as well as the level of coordination and cooperation between them to ensure that it can definitely create synergies for the region as a whole and the countries independently.

CHAPTER IV

EMPIRICAL ANALYSIS

A. Data & Methodology

1. Data

In order to conduct the empirical study of the financial integration of the GCC stock markets, we use daily closing stock price indices of the following seven GCC stock markets: Tadawul, Qatar Exchange, Abu Dhabi Securities Exchange, Dubai Financial Market, Bahrain Bourse, Kuwait Stock Exchange and Muscat Securities Market. The daily data was obtained from both "Reuters" and "MarketsToday" and it ranges from January 6th 2008 to December 31st 2015 meaning that we have 2085 observations for each index series. All the GCC markets are closed on Fridays and Saturdays, hence our data has a 5-day week frequency starting on Sunday and ending on Thursday. Moreover, in order to perform all the empirical approaches, we use the noteworthy E-VIEWS software. Below is the graph that includes the stock market indices of all seven GCC countries over the studied period:

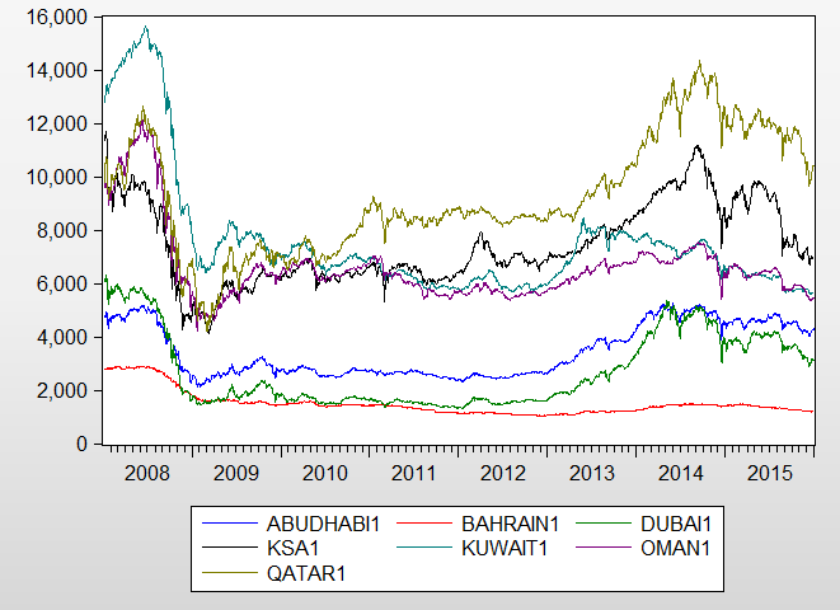

Figure 26: GCC Stock Market Indices
Source: Author's Analysis using E-Views

The impact of the global financial crisis of 2008 can be easily observed in the graph, whereby all of the indices faced a huge significant drop in their values. Moreover, we can also see how most of the markets were beginning to recover a while after the crisis, yet at different rates. Not only that, but the recent oil prices crash that took place towards the end of 2014 can also be perceived through the other ample drop in the GCC indices as seen above. It's also clear how all the GCC market indices are somewhat moving together.

The following table shows some descriptive statistics of the daily markets returns of the seven GCC stock markets:

	RABUDHABI	RBAHRAIN	RDUBAI	RKSA	RKUWAIT	ROMAN	RQATAR
Mean	-4.63E-05	-0.000397	-0.000324	-0.000244	-0.000395	-0.000288	3.12E-05
Median	0.000298	-0.000209	0.000446	0.000587	0.000235	0.000248	0.000511
Maximum	0.076295	0.026217	0.122045	0.090874	0.038026	0.080388	0.094220
Minimum	-0.071549	-0.0492	-0.088102	-0.101684	-0.038745	-0.08699	-0.093592
Std. Dev.	0.011108	0.005564	0.018041	0.013926	0.007141	0.011106	0.013848
Skewness	-0.249808	-1.109882	-0.048055	-0.749062	-0.764749	-1.072867	-0.413235
Kurtosis	11.93275	10.63136	9.204499	14.07219	7.972314	19.61246	13.10102
Jarque-Bera	6950.451	5484.833	3343.521	10840.09	2349.994	24363.51	8918.967
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-0.096581	-0.827715	-0.675288	-0.508366	-0.822528	-0.600329	0.065106
Sum Sq. Dev.	0.257016	0.064497	0.677985	0.403977	0.106231	0.256930	0.399437
Observations	2084	2084	2084	2084	2084	2084	2084

Table 1: Descriptive Statistics of the Returns on the GCC Stock Markets

Source: Author's Analysis using E-Views

As seen in the table above, over the studied timeframe, Qatar's stock market was the only market in the GCC to exhibit positive average daily returns whereby all the other GCC markets display negative average daily returns over the period. Not only that, but looking at the standard deviations, Dubai's market is the riskiest along with the markets of Saudi Arabia and Qatar, and Oman's stock market seems to be the least risky in that period. In addition, the skewness is negative in all the seven stock market return series.

2. Methodology:

a. Augmented Dicky-Fuller & Phillips Perron Stationarity Test

When a series is non-stationary, it means that it has a time-varying mean, a time-varying variance or even both. As for the stationary, such a time series will most likely revert to its mean. To commence our analysis, the first important step is to test for the

stationarity of each of the seven series before testing for co-integration. In fact, to test for co-integration, we need to confirm the existence of a unit root in all our series. In other words, we need to make sure that all market indices are non-stationary or integrated of the order 1. To do so, we employ both the Augmented Dicky-Fuller Test and the Phillips Perron Test. Both tests have the following null and alternative hypotheses:

H_0: Series has a unit root (non-stationary)
H_1: Series doesn't have a unit root (stationary)

The regression of the ADF test is as follows:

$$\Delta Y_t = \beta_0 + \beta_1 t + \delta Y_{t-1} + \sum_{i=1}^{m} \beta_i \Delta Y_{t-i} + u_t$$

Whereas the regression of the PP test is as follows:

$$\Delta y_t = \rho y_{t-1} + u_t$$

It's important to note that the Phillips Perron test is more accurate and robust than the Augmented Dicky-Fuller test regarding heteroskedasticity and auto-correlation, and this is why we use the PP test to further verify the results of the ADF test. The aim from both tests is not to reject the null hypotheses to be able to conclude that the stock indices in levels are non-stationary. Last but not least, if we conclude the existence of unit roots in our seven variables, then we perform the two tests on the first differences to verify the order of integration. If we depict stationarity in the series at first differences then we can say that the variables are integrated of order one, meaning that we need to difference the non-stationary indices once to make them stationary.

b. Johansen Co-integration Test:

After Granger (1981) first introduced the notion of co-integration, he cooperated with Engle in 1987 to create a co-integration test that was based on a more generalized

Augmented Dicky-Fuller test. The authors stated that a linear combination of two or more non-stationary variables could be stationary, and in that case the time series are 'co-integrated'. In other words, this co-integrating relationship is interpreted as a long-run equilibrium relationship among the variables, to which they will all move to in the long-run. To a more accurate test of co-integration, the Johansen and Juselius method was developed in 1990, which allows us to test for the long-run relationship among variables within a vector autoregression model (VAR) given that we pick the correct number of lags to include based on certain lag length criteria. There has been worldwide consensus on this specific test especially for studying market linkages. The approach is to consider the following multivariate VAR:

$$y_t = A_1 y_{t-1} + \cdots + A_p y_{t-p} + Bx_t + \epsilon_t$$

Where Y_t is an n x 1 vector of I(1) or non-stationary variables; in this case, the stock market indices. According to Granger representation theorem, one could incorporate the idea that the variables will trend together towards a long-run equilibrium state and can rewrite the above model as the vector error correction model (VECM) but with (p-1) lags as follows:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \epsilon_t$$

such that:

$$\Pi = \sum_{i=1}^{p} A_i - I, \qquad \Gamma_i = -\sum_{j=i+1}^{p} A_j$$

Where the rank of π (which is also: $\pi = \alpha\beta'$) is what determines the r number of co-integrating vectors and α represent the short-run adjustments to the long-run relationship(s) and β are the parameters in these co-integrating relationships.

Johansen (1988) proposes that determining the number of co-integrating vectors is based

on two different likelihood ratio tests: Trace test and Maximum Eigenvalues test. Based on the probabilities we obtain, we can either reject or accept the null hypothesis of having co-integrating vectors that are binding the variables. In our case, we will be using a multivariate Johansen co-integration test in order to determine if the seven stock indices in GCC are co-integrated (move together in the long-run) and to investigate the degree of linkage, interconnectedness and interdependency among the seven GCC stock markets, i.e. if there is a significant long-run relationship that is linking the markets together. A multivariate system including all seven variables can capture the true relationship between all of them and there won't be any spurious patterns of stock market linkages (Janakitamanan & Lamba, 1998), keeping in mind that a VAR model treats all the variables as endogenous. It's important to note that the presence of more than one significant vector indicates that this long-run relationship is stronger, more robust and more stable (Dicky et al., 1991).

c. VAR model

After performing the Johansen co-integration test within the VAR model that we've demonstrated above, the results will guide us on how to proceed with our empirical analysis. If we conclude that the variables are not co-integrated, then we take the first differences of our non-stationary variables and proceed within the framework of an unrestricted VAR in order to employ the proceeding short-run examinations.

d. VECM model

On the other hand, and as we've demonstrated when we explained the Johansen co-integration test, if the variables are indeed co-integrated, then we have to proceed

within the VECM model (which is the restricted VAR model) "to tie the short-run behavior of each series to its long-run values" (Neaime, 2002). We also need to note that the VECM automatically takes the first differences of the variables. "As Granger (1988) suggests: In a set of co-integrated variables, the short-term causal relations among these variables should be examined within the framework of the error correction model VECM" (Ratanapakorn & Sharma, 2002).

e. Granger Causality Test

Granger Causality test was first proposed in 1969 as a useful tool to determine whether the past values of a single time series is beneficial in predicting the future values of another series i.e. if one variable granger causes another variable. In other words, Granger Causality test helps us identify the direction of causality between two stationary variables. For that reason, we perform this test within a VECM if the Johansen test confirms the existence of co-integration, and within an unrestricted VAR comprising the first differences of the time series otherwise. The null and alternative hypotheses of this test are as follows:

H_0: X does not granger cause Y
H_1: X granger cause Y

As for the regressions of this test, they are the following:

$$Y_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_i Y_{t-i} + \sum_{i=1}^{k2} \beta_i X_{t-i} + \varepsilon_t$$

$$X_t = \chi_0 + \sum_{i=1}^{k3} \chi_i X_{t-i} + \sum_{i=1}^{k4} \delta_i Y_{t-i} + \nu_t$$

Based on the probability that we get as a result, we can conclude one of the following results: X granger causes Y; Y granger causes X (uni-directional); a bi-directional causality between the two; or no causality at all.

f. Impulse Response Functions:

Within the same framework of trying to analyze the short-run dependencies and relationships between the variables, the impulse response functions are used in order to depict how each GCC stock market would react to shocks in other GCC markets, whose shocks have persistent reactions and for how long, whose shocks affect others and which markets are highly affected. Also, our aim is to check whether the response to a shock in other markets is permanent, temporary or fades away eventually. In other words, "the impulse response functions shed light on the [short-run] dynamics of the variables included [in our model] as a result of shocks to either one of these variables" (Neaime, 2002). Concerning our topic, if one stock market doesn't respond to shocks or impulses in other markets then it's safe to say that this market is stable. On the other hand, if the index of a stock market quickly, significantly and permanently reacts to many shocks, this implies that the market isn't really stable to external shocks in other GCC stock markets.

g. Error Variance Decomposition:

Another way to further expand our short-run analysis is to conduct variance decompositions, which allow us to determine how important the variable is in explaining its own variability and those of other series. In other words, it shows us how much of error variance/variability in each variable is explained by the shocks to variable itself or shocks to other market activities. "The decomposition of variance gives a quantitative measure to these causal relations indicating how much the movement in one market can be explained by other markets in terms of the percentage of the forecast error variance of that market" (Ratanapakorn & Sharma, 2002).

B. Results

1. Augmented Dicky Fuller & Phillips Perron tests:

To begin our empirical analysis, the most important thing to do is to determine the status of stationarity of the seven stock market indices. Precisely, we need to check for the order of integration of all the series before proceeding with the co-integration analysis and the consequent tests. In order to make the testing for stationarity more robust, we conduct both the Augmented Dicky-Fuller test, along with the Phillips-Perron test. As seen below when we conduct the ADF test on all the level variables, we won't be able to reject the null hypothesis that the series contain a unit root. In more details, the resulting probabilities of this test are too high, meaning that we can't reject the null hypothesis of the test which permits us to conclude that all the variables are non-stationary at level. Whereas when we perform the ADF test on the first difference of the stock prices, the results convey probabilities equal to zero, meaning that we reject the null hypothesis of having unit roots at a 1% significance level. This latter result means that at first differences, the variables become stationary. More importantly, when we carry out the Phillips-Perron test in this manner as well, we obtain the same results for all seven series. Hence, we conclude that the seven stock market indices in the GCC are indeed non-stationary (contain a unit root). In other words, each of the seven variables is integrated of the first order I(1), since they exhibit a unit root at levels and become stationary once differenced.

Stock Market Index	Augmented Dicky-Fuller Test		Phillips-Perron Test	
	Level	*First difference*	*Level*	*First Difference*
Saudi Arabia	-1.388684 (1)	-39.65182 (0)**	-1.420205 (6)	-39.53682 (11)**
Qatar	-2.302647 (1)	-38.60833 (0)**	-2.175256 (4)	-38.55376 (11)**
Abu Dhabi	-2.247916 (1)	-39.53506 (0)**	-2.208014 (8)	-39.2869 (11)**
Dubai	-2.963058 (1)	-43.30338 (0)**	-3.000932 (4)	-43.32754 (5)**
Bahrain	-2.277274 (1)	-38.97375 (0)**	-2.282223 (1)	-38.79932 (6)**
Kuwait	-1.582502 (1)	-34.21662 (0)**	-1.688612 (21)	-37.07769 (17)**
Oman	-2.031621 (1)	-37.39127 (0)**	-2.073486 (14)	-37.33020 (23)**

Table 2: ADF & PP results
Source: Author's calculations using the results from E-views
*Note: This table presents a combination of the results of the ADF and PP tests run on all seven stock market indices in both levels and first differences. The numbers shown above are the test statistics for each specific test. The numbers in the parenthesis are respectively the appropriate lag lengths and bandwidths based on SIC for the ADF test and Newey-West for the PP test. Also, the ** indicates the rejection of the null hypothesis (H_0: series contains a unit root i.e. non-stationary) at the 1% level of significance.*

Hence, now we can carry on with the co-integration analysis after confirming that the seven stock market indices series are non-stationary.

2. Johansen Co-integration Test

As discussed earlier, the aim of this paper is to examine whether and to what extent the stock markets in the GCC are integrated. In other words, the aim focuses on the level of interdependence and on the dynamic linkages between the stock markets in both the short-run and the long-run. Within the scope of a possible long run relationship, the Johansen co-integration test allows us to determine the degree of interconnection among the seven GCC stock markets i.e. whether the set of stock market indices possess a long-run equilibrium relationship. This long-run binding relationship means that although the variables tend to roam over time, there's a certain linear combination or relationship that unites and binds them in the long-run.

With that being said, the best way to examine this is by conducting the Johansen Co-integration test within the framework of a multivariate VAR system including the seven non-stationary series of GCC stock market indices. It's important to highlight that

based on specific lag length criteria; we employ 5 lags in our VAR model. The results of the Johansen Co-integration test engulfing the two methods are as follows:

Sample (adjusted): 1/14/2008 12/31/2015
Included observations: 2079 after adjustments
Trend assumption: Linear deterministic trend
Series: ABUDHABI1 BAHRAIN1 DUBAI1 KSA1 KUWAIT1 OMAN1 QATAR1
Lags interval (in first differences): 1 to 5

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.039771	197.5038	125.6154	0.0000
At most 1 *	0.022411	113.1315	95.75366	0.0019
At most 2	0.013486	66.00875	69.81889	0.0969
At most 3	0.007443	37.78046	47.85613	0.3117
At most 4	0.006206	22.24955	29.79707	0.2849
At most 5	0.003612	9.306825	15.49471	0.3378
At most 6	0.000857	1.783108	3.841466	0.1818

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.039771	84.37232	46.23142	0.0000
At most 1 *	0.022411	47.12276	40.07757	0.0069
At most 2	0.013486	28.22829	33.87687	0.2032
At most 3	0.007443	15.53091	27.58434	0.7052
At most 4	0.006206	12.94273	21.13162	0.4575
At most 5	0.003612	7.523717	14.26460	0.4292
At most 6	0.000857	1.783108	3.841466	0.1818

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 3: Johansen Test 1
Source: Author's Analysis using E-Views

As we can see from the results above, both of the trace and the maximum-eigenvalue tests suggest that there are 2 significant co-integrating relations/vectors that are connecting the seven GCC stock markets in the long-run. In other words, our results convey the presence of 2 stable relationships linking all seven markets in the long-run. Therefore, this means that there are two common forces that are bringing the markets together. This is vigorous evidence affirming the GCC regional financial integration. On a positive note too, this reflects the idea that the efforts of the GCC countries of becoming more integrated financially have paid off as well. As a matter of fact, such a significant long-run relationship among the different stock market indices in the GCC is safely due to the strong economic ties, diversification approaches, openness and liberalization, geographic proximity, harmonization of the rules and regulations and policy coordination, monetary interdependence, inter-trade, cross-listing in stock markets, cohesion of governmental involvement and motifs as well as uniting the GCC powers, all in favor of achieving the declared goal of the GCC of becoming a unified regional well-rounded economic bloc. On a constructive note, the results embodying 2 significant co-integrating vectors implies that the long-run relationship is stronger, more robust and more stable as Dicky et al. (1991). Within the same scope, deducing the existence of co-integration among the seven GCC stock market proxies implies that if any disturbance takes place in the short-run that drifts the markets away from their long-run equilibrium, then adequate internal forces underlying these GCC markets will actually correct this misalignment and redirect the markets back to their long-run equilibrium path. Precisely, these internal forces could be common conditions in the GCC economies, or even more importantly the mere existence of the GCC organization and its declared goal and efforts of becoming more financially integrated.

As a minor note, these results definitely impose consequences on portfolio diversification within the GCC region. The integration of markets is a factor investors should consider before making their investment decisions. Since the GCC stock market are highly integrated in the long-run, then they could possibly offer a substitute for investors in the different stock markets within the GCC. "Diversification benefits decrease with higher financial integration" (Stulz, 1999), hence there's negligible or even no gains to investors from portfolio diversification within the range of GCC stock markets.

Another important aim in this paper is to investigate whether and to what extent the 2008 global financial crisis had an impact on the degree of GCC stock market integration. To do so, we've carefully constructed another VAR model similar to the one discussed above but with the addition of a dummy variable as an exogenous variable. The dummy variable represents the formal announcement of the end of the serious recession in USA after the crisis, i.e. the end of the hefty effects of the 2008 global financial crisis on USA. Since the US government announced that the effects of the financial crisis, which started in December 2007, have ceased in June 2009, then this dummy variable takes the value of 1 up until the end of June 2009 and 0 otherwise. Within this modified VAR, we obtain results that are consistent with the ones when the dummy variable isn't included, which means that neither the global financial crisis nor the official announcement of the recession ending in USA had an impact on the level of integration between the GCC stock markets.

Furthermore, this paper attempts to do a preliminary analysis that can determine whether Saudi Arabia really is the leading force among the seven stock markets or not. Inspired by the proposed method of Darrat et al. (2000), we perform the Johansen co-

integration test again but on the set of the 6 GCC indices excluding the Saudi Arabian stock market index.

Sample (adjusted): 1/14/2008 12/31/2015
Included observations: 2079 after adjustments
Trend assumption: Linear deterministic trend
Series: ABUDHABI1 BAHRAIN1 DUBAI1 KUWAIT1 OMAN1 QATAR1
Lags interval (in first differences): 1 to 5

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.039200	152.4885	95.75366	0.0000
At most 1	0.015969	69.35160	69.81889	0.0544
At most 2	0.007283	35.88335	47.85613	0.4022
At most 3	0.006087	20.68706	29.79707	0.3775
At most 4	0.003019	7.994345	15.49471	0.4660
At most 5	0.000821	1.708297	3.841466	0.1912

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.039200	83.13686	40.07757	0.0000
At most 1	0.015969	33.46825	33.87687	0.0559
At most 2	0.007283	15.19629	27.58434	0.7325
At most 3	0.006087	12.69272	21.13162	0.4809
At most 4	0.003019	6.286048	14.26460	0.5768
At most 5	0.000821	1.708297	3.841466	0.1912

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4: Johansen Test 2

Source: Author's Analysis using E-Views

Once the Saudi Arabian stock index is excluded, we clearly see that the number of co-integrating vectors tying the other six GCC stock markets has declined by 1 vector, to exhibit 1 co-integrating relation only. This set of six GCC markets will undoubtedly still be co-integrated even without Saudi Arabia included in the vector and that's because of the same facts mentioned earlier that explain the strong co-integrating long-run relationship among all GCC stock markets. On the other hand, not only is it the biggest and most liquid stock market of one the world's top oil exporting countries, but the Saudi Arabian market is the leading driving force and the catalyst that is making the long-run binding relationship stronger and more robust. By way of explanation, Saudi Arabia is responsible for the second co-integrating vector when all seven stock market indices were initially included in our examination. Therefore, before proceeding to other important tests to detect the degree and the dynamics of interrelation and interdependence between the GCC stock markets in the short-run, it's safe to say that Saudi Arabia plays the biggest role in making the regional integration of the GCC stock markets more powerful and potent. Saudi Arabia's role as a leader among its peer GCC stock markets has become even stronger in the last few years (Awartani & Maghyereh, 2013). Also note that these results were only reached when this method was applied on the Saudi Arabian stock market index.

3. Granger Causality Test

Granger advocates that in a set of co-integrated variables, the short-run causal linkages and relations among these variables must be examined within the framework of the vector error correction model VECM (Granger, 1988) and that if two or more time-series are co-integrated then there must be granger causality between them either one-

way or in both directions. Hence, after inferring that the seven GCC stock markets are co-integrated with two co-integrating vectors i.e. there are two stable relationships connecting them in the long-run, we construct the seven-variable VECM to be able to link the short-run behavior of the seven series to their long-run dynamics. The first essential test is Granger Causality, which will allow us to determine which of the indices' past values help in predicting the values of other stock market indices. Note that VECM automatically takes the first differences of the variables to ensure that they are stationary when conducting the Granger Causality Test. The results are as follows:

VEC Granger Causality/Block Exogeneity Wald Tests
Sample: 1/06/2008 12/31/2015
Included observations: 2080

Dependent variable: D(ABUDHABI1)

Excluded	Chi-sq	df	Prob.
D(BAHRAIN1)	3.464075	4	0.4834
D(DUBAI1)	12.73854	4	0.0126
D(KSA1)	95.37772	4	0.0000
D(KUWAIT1)	19.54263	4	0.0006
D(OMAN1)	10.42212	4	0.0339
D(QATAR1)	8.337160	4	0.0800
All	161.6667	24	0.0000

Dependent variable: D(BAHRAIN1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	1.092882	4	0.8954
D(DUBAI1)	9.954770	4	0.0412
D(KSA1)	25.99113	4	0.0000
D(KUWAIT1)	8.428559	4	0.0771
D(OMAN1)	23.58319	4	0.0001
D(QATAR1)	15.71651	4	0.0034
All	129.9987	24	0.0000

Dependent variable: D(DUBAI1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	3.334987	4	0.5034
D(BAHRAIN1)	11.89523	4	0.0181
D(KSA1)	90.11212	4	0.0000
D(KUWAIT1)	24.46626	4	0.0001
D(OMAN1)	13.13527	4	0.0106
D(QATAR1)	16.83474	4	0.0021
All	164.9577	24	0.0000

Dependent variable: D(KSA1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	18.57025	4	0.0010
D(BAHRAIN1)	2.374942	4	0.6672
D(DUBAI1)	11.21226	4	0.0243
D(KUWAIT1)	3.574632	4	0.4666
D(OMAN1)	18.40664	4	0.0010
D(QATAR1)	13.96015	4	0.0074
All	75.37720	24	0.0000

Dependent variable: D(KUWAIT1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	7.119031	4	0.1297
D(BAHRAIN1)	2.350635	4	0.6716
D(DUBAI1)	7.381091	4	0.1171
D(KSA1)	69.17955	4	0.0000
D(OMAN1)	26.88615	4	0.0000
D(QATAR1)	14.62165	4	0.0056
All	153.9183	24	0.0000

Dependent variable: D(OMAN1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	7.530671	4	0.1104
D(BAHRAIN1)	34.51403	4	0.0000
D(DUBAI1)	4.992931	4	0.2880
D(KSA1)	148.2361	4	0.0000
D(KUWAIT1)	22.10866	4	0.0002
D(QATAR1)	1.598002	4	0.8092
All	290.9203	24	0.0000

Dependent variable: D(QATAR1)

Excluded	Chi-sq	df	Prob.
D(ABUDHABI1)	8.426329	4	0.0772
D(BAHRAIN1)	11.95809	4	0.0177
D(DUBAI1)	12.43083	4	0.0144
D(KSA1)	162.7306	4	0.0000
D(KUWAIT1)	12.90911	4	0.0117
D(OMAN1)	25.97443	4	0.0000
All	268.8693	24	0.0000

Table 5: Granger Causality Results
Source: E-Views Results

As we've mentioned earlier, the null hypothesis of the Granger Causality test is that the endogenous/excluded variable does not granger cause the dependent variable. We will constrict our analysis to the 5% level of significance. So, if we obtain a p-value that is lower than 5% (0.05) then when we reject the null hypothesis and conclude that the excluded variable granger causes the dependent variable. Whereas if the resulting p-value is greater than 0.05 then we can't reject the null that the excluded variable does not granger cause the dependent variable. Looking at the above results, we find that the p-values associated with the null hypothesis that KSA does not Granger Cause every

one of the 6 other markets are all equal to zero, meaning that we reject all these null hypothesis and conclude that Saudi Arabia Granger Causes all the other countries. This outcome implies that the past values of the Saudi Arabian stock market index help predict the future values of all the other GCC stock market indices. Similarly and after an extensive breakdown of all the pairwise Granger Causality test results above, we reach the following compilation of conclusions:

- Saudi Arabia Granger Causes all other countries as we've explicitly explained.
- Bahrain Granger Causes Dubai, Oman and Qatar.
- Qatar Granger Causes Bahrain, Dubai, Saudi Arabia and Kuwait.
- Abu Dhabi Granger Causes Saudi Arabia only.
- Kuwait Granger Causes Abu Dhabi, Dubai, Oman and Qatar.
- Dubai Granger Causes Abu Dhabi, Bahrain, Saudi Arabia and Qatar.
- Oman Granger Causes all the other countries as well.

In another demonstration, the following table includes only the country pairs that displayed significance at the 5% level i.e. the ones where we were able to reject the null of no granger causality between the pairs at a 5% level of significance:

Null Hypothesis	P-Value
Dubai does not Granger Cause Abu Dhabi	0.0126
Saudi Arabia does not Granger Cause Abu Dhabi	0
Kuwait does not Granger Cause Abu Dhabi	0.0006
Oman does not Granger Cause Abu Dhabi	0.0339
Dubai does not Granger Cause Bahrain	0.0412
Saudi Arabia does not Granger Cause Bahrain	0
Oman does not Granger Cause Bahrain	0.0001
Qatar does not Granger Cause Bahrain	0.0034
Bahrain does not Granger Cause Dubai	0.0181
Saudi Arabia does not Granger Cause Dubai	0
Kuwait does not Granger Cause Dubai	0.001
Oman does not Granger Cause Dubai	0.0106
Qatar does not Granger Cause Dubai	0.0021
Abu Dhabi does not Granger Cause Saudi Arabia	0.001
Dubai does not Granger Cause Saudi Arabia	0.0243
Oman does not Granger Cause Saudi Arabia	0.001
Qatar does not Granger Cause Saudi Arabia	0.0074
Saudi Arabia does not Granger Cause Kuwait	0
Oman does not Granger Cause Kuwait	0
Qatar does not Granger Cause Kuwait	0.0056
Bahrain does not Granger Cause Oman	0
Saudi Arabia does not Granger Cause Oman	0
Kuwait does not Granger Cause Oman	0.0002
Bahrain does not Granger Cause Qatar	0.0177
Dubai does not Granger Cause Qatar	0.0144
Saudi Arabia does not Granger Cause Qatar	0
Kuwait does not Granger Cause Qatar	0.0117
Oman does not Granger Cause Qatar	0

Table 6: Granger Causality – Summary
Source: Author's Analysis

Hence, we can see that each market in the GCC provides useful information to forecast the stock market indices of other GCC markets but in different degrees and for different markets. Given that the results of Saudi Arabia as the excluded variable exhibit a p-value of zero this means that the Saudi market displays the highest significance in granger causing all other GCC markets, which reaffirms its role as a regional leading power. As for the least informative stock market in the GCC, it is Abu Dhabi's since it

only granger causes Saudi Arabia meaning that the past values of Abu Dhabi's stock market index helps predict the future values of the Saudi stock market index only.

In a least important manner, a striking result is that Oman granger causes all the other six markets as well, which means that the past values of Oman's index helps in predicting the future indices of the other GCC indices. There are several reasonable interpretations for this finding: The two stock market indices of Saudi Arabia and Oman have the strongest bi-directional causality among all pairwise dynamics we've reached. This result reveals that Oman follows or shadows Saudi Arabia in a sense, and that's why other GCC markets can look at it too to predict their stock market values. Oman in reality, given its political and economic performance over the years, has declared a hopeful goal of becoming a leader in the GCC as well (Al-Khalili, 2009). Building on that idea, there seems to be two underlying sub-groups in the GCC: A primary group of the countries that rank within the world's top 10 exporters of oil and gas i.e. Saudi Arabia, Qatar, United Arab Emirates, and a secondary group of the "less developed" countries i.e. Oman, Bahrain and Kuwait. The correlation coefficients seen below also reaffirm this idea by depicting high values between the stock market indices of the countries that fall within the same group.

	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
ABUDHABI1	1.000000	0.397225	0.955966	0.894799	0.453615	0.609979	0.889845
BAHRAIN1	0.397225	1.000000	0.610733	0.276176	0.938082	0.843301	0.113325
DUBAI1	0.955966	0.610733	1.000000	0.871364	0.640049	0.748793	0.805129
KSA1	0.894799	0.276176	0.871364	1.000000	0.370259	0.595721	0.917249
KUWAIT1	0.453615	0.938082	0.640049	0.370259	1.000000	0.914273	0.188954
OMAN1	0.609979	0.843301	0.748793	0.595721	0.914273	1.000000	0.445483
QATAR1	0.889845	0.113325	0.805129	0.917249	0.188954	0.445483	1.000000

Table 7: Correlation Coefficients
Source: Author's Analysis using E-Views

"Oman leads a group of smaller oil producers that coordinate their production" (Lefebvre, 2010). Having said that, Oman hopes to be the leader of the secondary group in GCC encompassing the less oil and gas exporting countries of Kuwait, Oman and Bahrain, despite its very small size. More notably, the two GCC countries of Oman and Saudi Arabia fall among each other's top 10 trade partners. In addition to that, the two have achieved some cross listing on each other's stock markets. Moreover, in order to prove the high interconnection and coalition between Oman and Saudi Arabia and to justify Oman's shadowing of KSA in informational beneficence, we formulated a bivariate VAR model including the indices of the two countries and performed the Johansen co-integration test and the results exhibit 1 co-integrating vector binding the two series in the long-run, as seen below:

Sample (adjusted): 1/14/2008 12/31/2015
Included observations: 2079 after adjustments
Trend assumption: Linear deterministic trend (restricted)
Series: KSA1 OMAN1
Lags interval (in first differences): 1 to 5

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.015512	39.34814	25.87211	0.0006
At most 1	0.003288	6.846528	12.51798	0.3608

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.015512	32.50161	19.38704	0.0004
At most 1	0.003288	6.846528	12.51798	0.3608

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 8: Johansen Test 3
Source: Author's Analysis using E-Views

With that being said, it's crucial to point out that the Granger Causality results can't in any way indicate that Oman is a leading force, also because when we perform the Johansen co-integration test within the multivariate VAR including all GCC market indices except that of Oman, we still derive 2 co-integrating vectors that are binding the markets in the long-run as follows:

Sample (adjusted): 1/14/2008 12/31/2015
Included observations: 2079 after adjustments
Trend assumption: Linear deterministic trend
Series: ABUDHABI1 BAHRAIN1 DUBAI1 KSA1 KUWAIT1 QATAR1
Lags interval (in first differences): 1 to 5

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.029060	142.2311	95.75366	0.0000
At most 1 *	0.017842	80.92083	69.81889	0.0050
At most 2	0.010029	43.49180	47.85613	0.1210
At most 3	0.006425	22.53616	29.79707	0.2696
At most 4	0.003297	9.134581	15.49471	0.3531
At most 5	0.001091	2.268770	3.841466	0.1320

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.029060	61.31024	40.07757	0.0001
At most 1 *	0.017842	37.42903	33.87687	0.0180
At most 2	0.010029	20.95564	27.58434	0.2789
At most 3	0.006425	13.40158	21.13162	0.4160
At most 4	0.003297	6.865812	14.26460	0.5051
At most 5	0.001091	2.268770	3.841466	0.1320

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 9: Johansen Test 4
Source: Author's Analysis using E-Views

Hence, it's safe to say that Oman isn't the leading force among the GCC stock markets, it's merely shadowing Saudi Arabia due to their high amalgamation and only serves as a market whose past values can help predict the future market indices for all other GCC countries. This whole result concerning Oman is minor and isn't a problem to dwell on since Oman is only copying Saudi Arabia's role information beneficence in predicting the future prices of other markets.

More importantly, to further explore the short-run interdependence and linkages among the seven GCC markets, the impulse response functions and the variance decompositions are exploited. Also, we're foreshadowing that the results will be in parallel with the results of Granger Causality and that the interpretations will serve assistance in further proving the immense interdependence and integration between the markets, and validating Saudi Arabia's leadership as a driving force that's mostly affecting the other markets.

4. Impulse Response Functions

The impulse response functions are used in order to detect the reactions of each GCC stock market to standard deviation shocks in different markets; whether the response to shock will persist or fade away after a certain number of days, whether the market simply doesn't react to shock in other markets, and how significant the effects are.

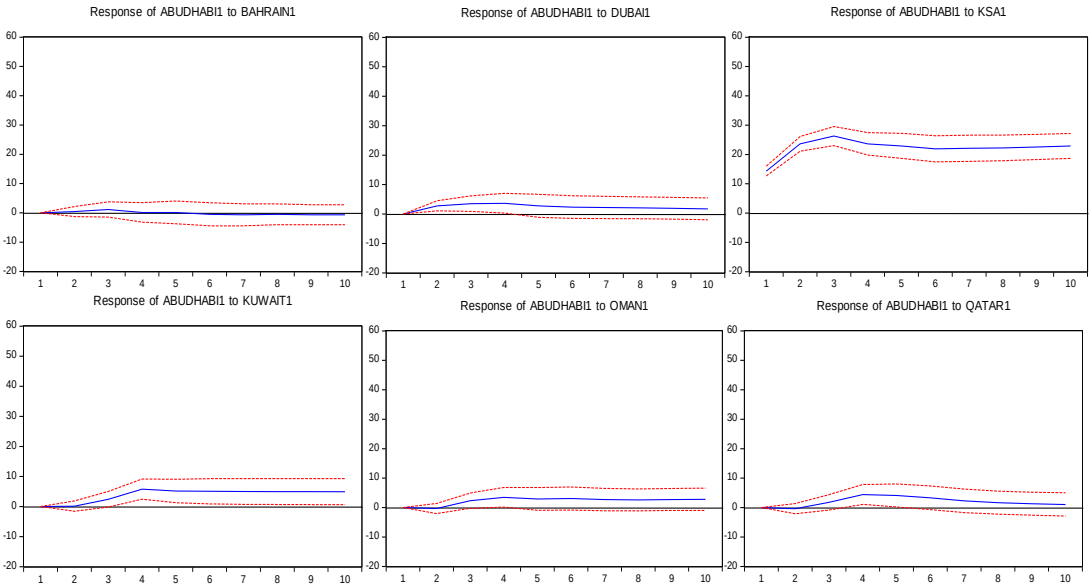

Figure 27: IRF – Abu Dhabi
Source: Author's Analysis using E-Views

Starting with Abu Dhabi, when there's a one standard deviation positive shock in the markets of Bahrain and Qatar, the initial response to the that shock in the Abu Dhabi market is relatively small by the 4th day and fades away in both cases by the 8th day, hence the response to the shocks is temporary. On the other hand, a one standard deviation shock to the stock markets of mainly Saudi Arabia, as well as Kuwait, significantly affect the Abu Dhabi market. Whereas impulses to Dubai and Oman's market indices slightly affect Abu Dhabi's index and the effect or response, in all cases, doesn't die out meaning that it's permanent.

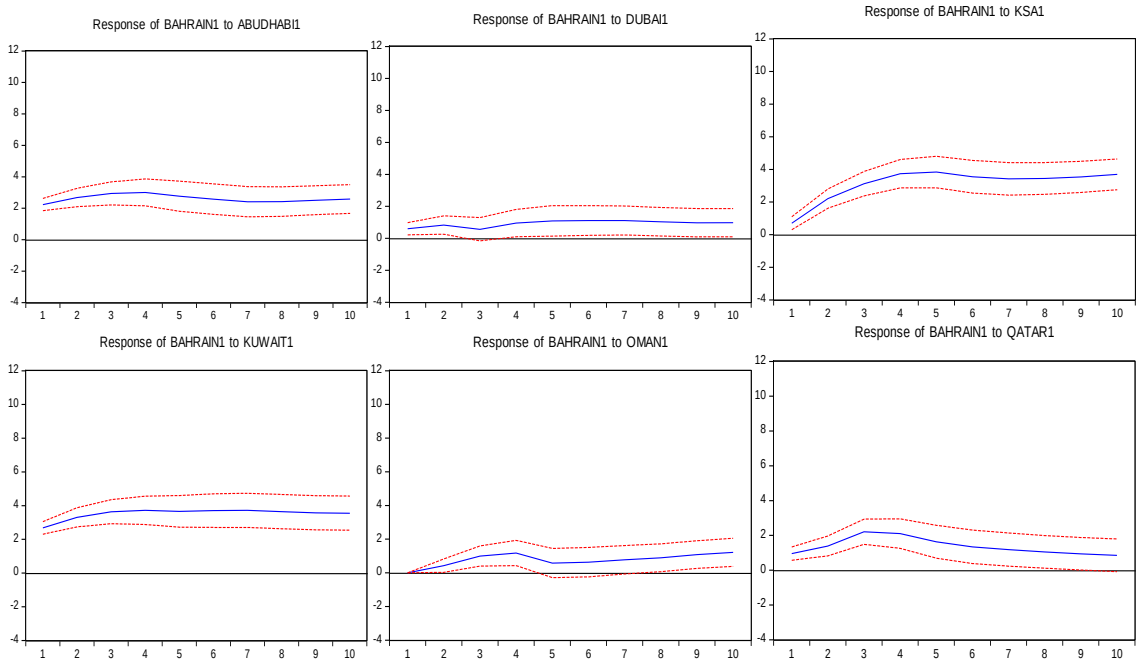

Figure 28: IRF - Bahrain
Source: Author's Analysis using E-Views

Concerning the Bahrain Bourse, the effects of a one standard deviation shock to all the markets in the GCC are weighty and significant and these responses perpetuate and don't fade away. It's important to note that the greatest response of them all is to a standard deviation shocks to the Saudi Arabian stock market activity, and the next two are those to Abu Dhabi, Kuwait and Qatar.

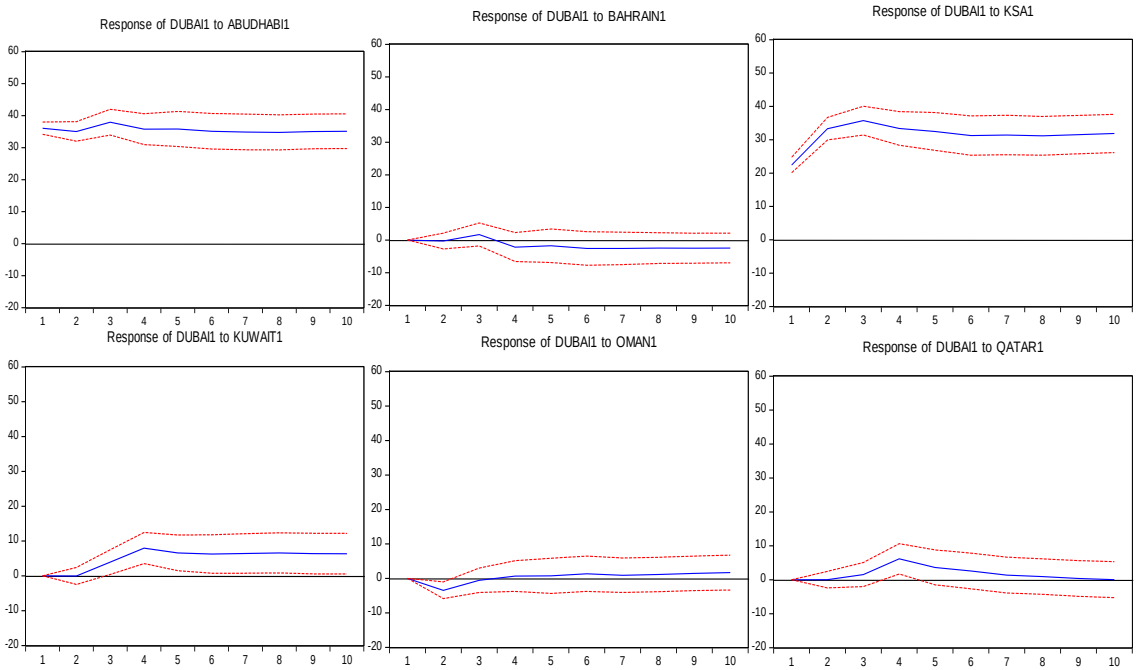

Figure 29: IRF - Dubai
Source: Author's Analysis using E-Views

Moreover, the response of Dubai's market to shocks in other GCC stock markets varies from one country to another. The market doesn't respond to one standard deviation shocks to the markets of Bahrain, Oman and Qatar. On the other hand, a one standard deviation positive shock to the market of Abu Dhabi significantly affects the stock market of Dubai permanently and most considerably, given the high correlation, proximity and similarities between the two UAE markets. In parallel with the results of Granger Causality, Saudi Arabia seems to be the most influential when it comes to the impulse response functions. Precisely, a one standard deviation shock to Saudi Arabia's market adequately affects Dubai's market and it seems that the response is permanent too and will not fade any time soon after the shock. The same is true for a shock to the Kuwaiti market but the effect is not as strong as Saudi Arabia's effect on Dubai's market, or that of Abu Dhabi.

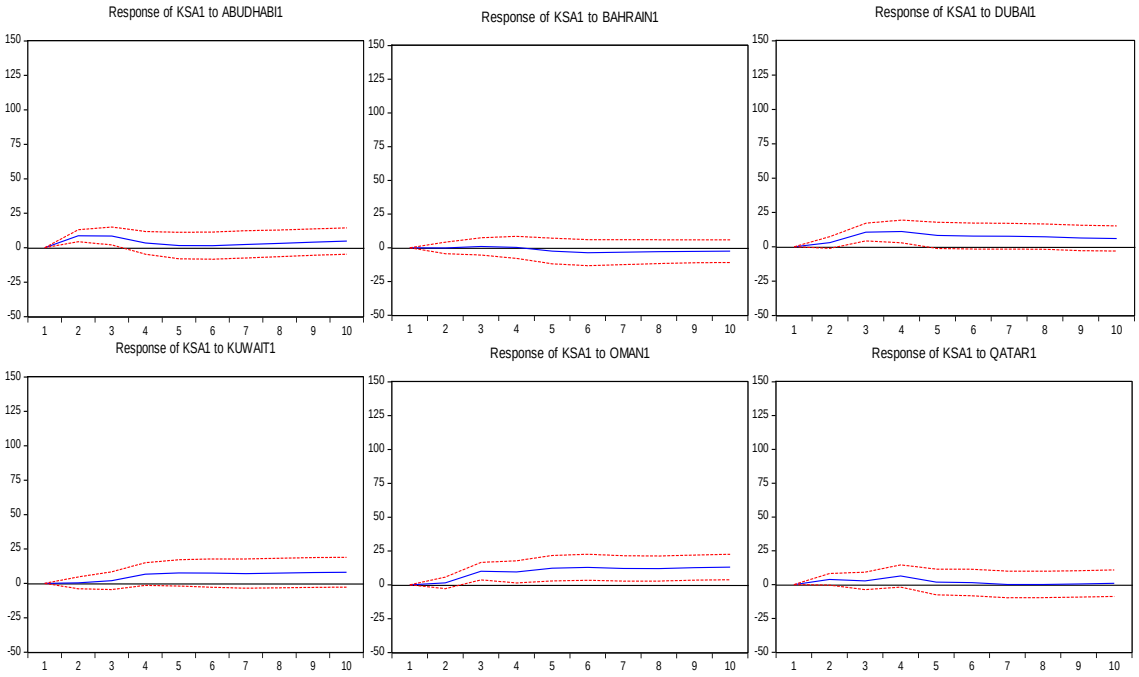

Figure 30: IRF – Saudi Arabia
Source: Author's Analysis using E-Views

As for the stock market of Saudi Arabia, it's clear that it's the region's most stable market since positive shocks to the markets of Bahrain, Qatar, Kuwait, Abu Dhabi and Dubai seem to have an insignificant or even no effect on the Saudi market whereby the Saudi market doesn't respond to these shocks. In other words, Saudi Arabia's market does not react to an impulse in any of these markets. On the other hand, the stock market of Saudi Arabia slightly responds to shocks in the market of Oman and the effect clearly perpetuates even till after 10 days, which supports our earlier findings of strong dependence and co-integration between Oman and Saudi Arabia.

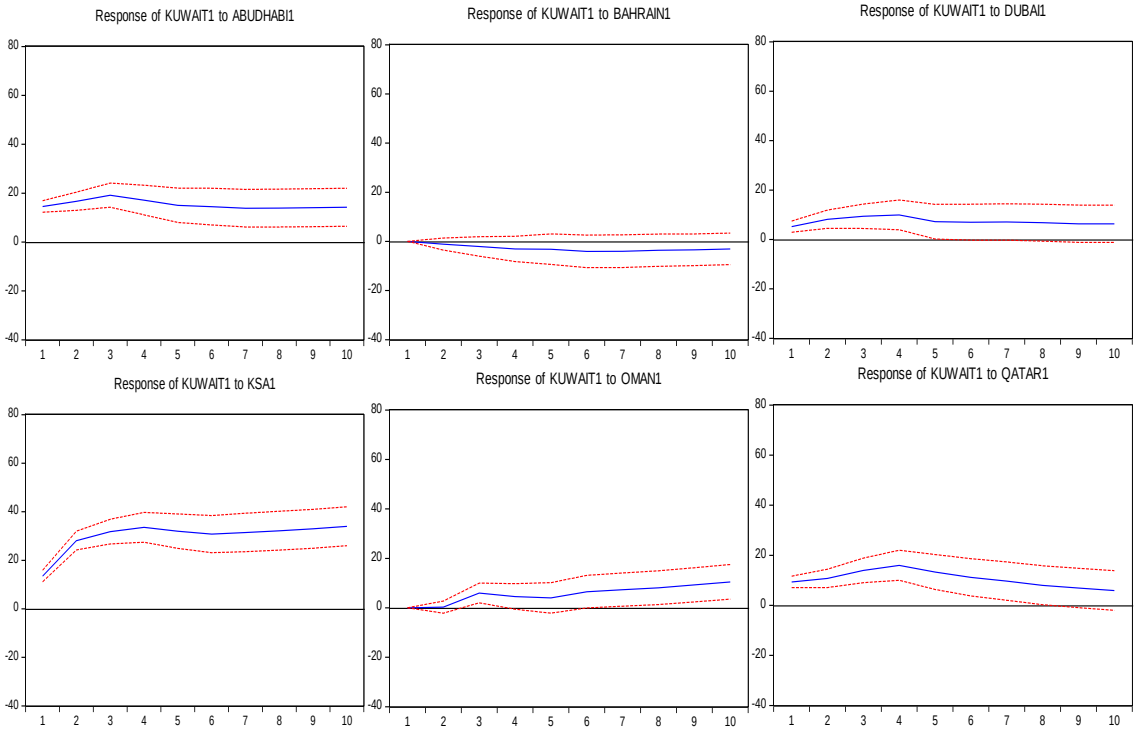

Figure 31: IRF - Kuwait
Source: Author's Analysis using E-Views

The Kuwaiti stock market reacts significantly and positively to a one standard deviation shock to the Saudi Arabian market mostly, as well as moderately to the markets of Abu Dhabi, Oman, Dubai and insignificantly to a shock in the Bahraini market. As for the effect of a shock in the Qatari market on the Kuwaiti market activity, Kuwait responds significantly starting the 4th day, but this effect starts to die out by the 4th day and declines to almost vanish by the 10th day.

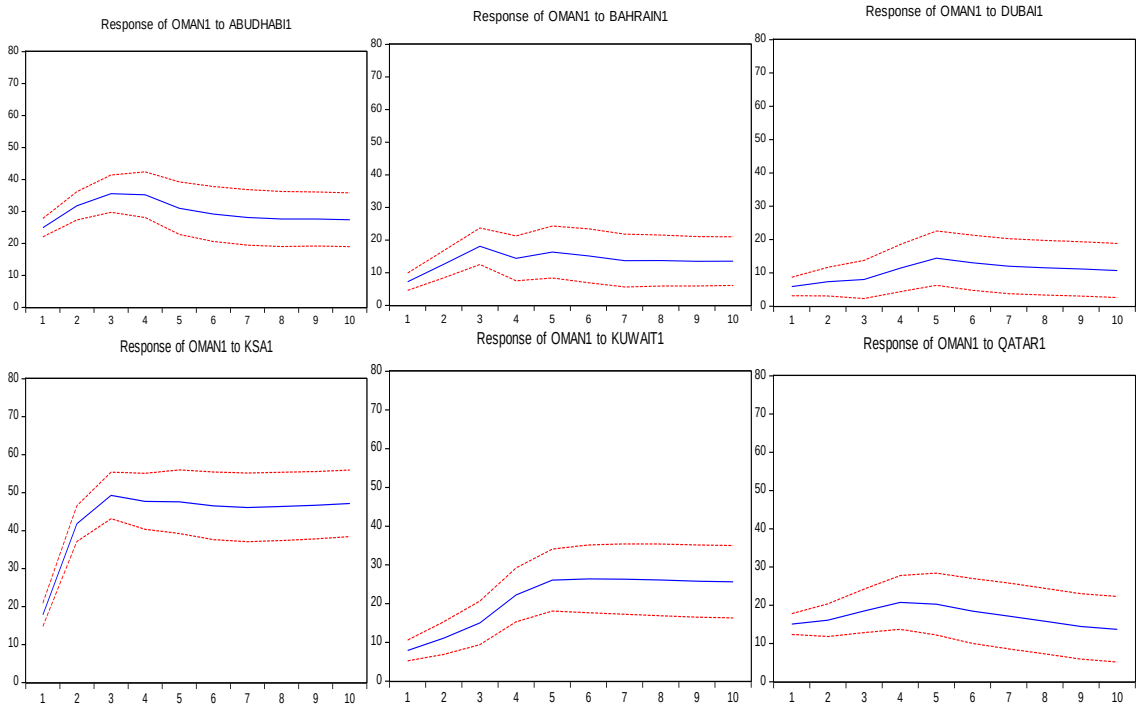

Figure 32: IRF - Oman
Source: Author's Analysis using E-Views

As we've mentioned earlier, if the market activity significantly and quickly reacts to impulses in several other markets, this implies that the market isn't really stable to external shocks in other GCC stock markets. This idea is illustrated in Oman's stock market, which reacts momentously to one standard deviation shocks to all other GCC stock markets, and most significantly to those in Saudi Arabia. It's important to also note that the response perpetuates for a long period of time, as it is permanent.

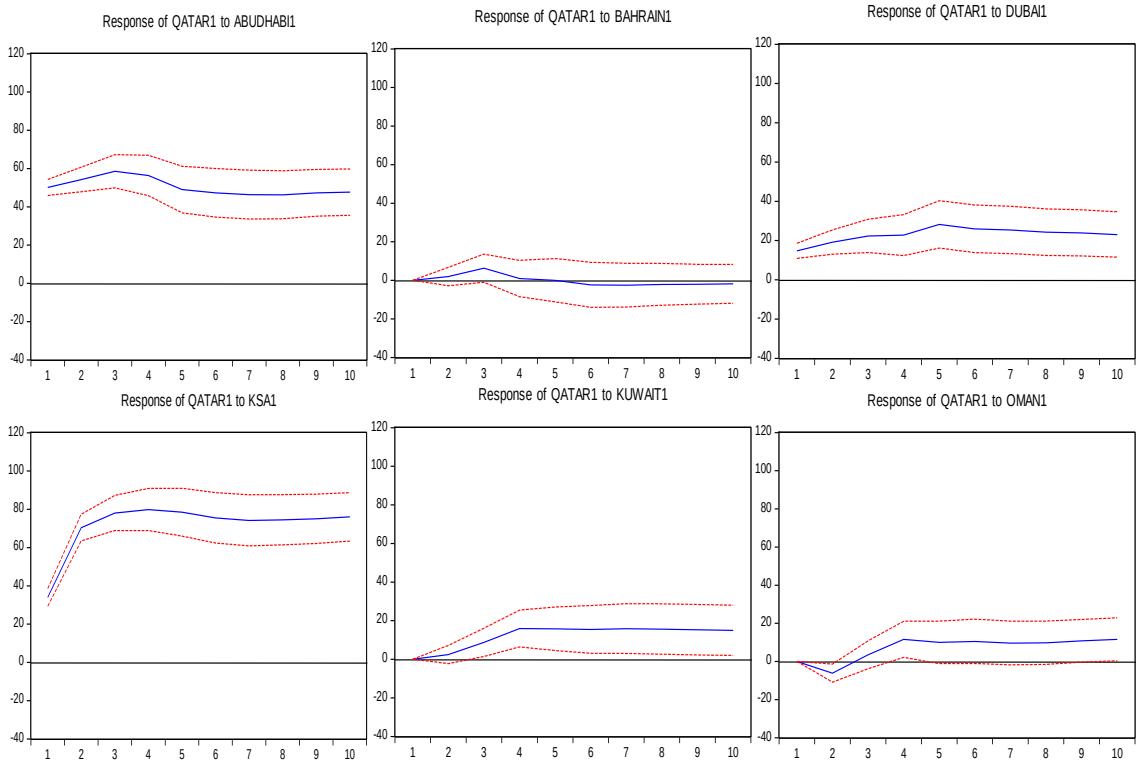

Figure 33: IRF – Qatar
Source: Author's Analysis using E-Views

Last but not least, Qatar's market reacts significantly to impulses in most of the other GCC markets but with different amplitudes. The effect of a shock in the markets of Saudi Arabia, Abu Dhabi and Dubai on the Qatari market is significant, permanent and weighty. As for the effect of a standard deviation shock to the markets of Kuwait and Oman on Qatar's stock market, it is also significant but with smaller magnitudes. Moreover, Qatar's market activity doesn't react to innovations in the market index of Bahrain. These results also go in parallel with the discussed idea of the two underlying groups in the GCC: primary and secondary.

Hence, the impulse response functions allow us to reach several important conclusions. All GCC stock markets respond significantly, positively, quickly and amply to shocks in the Saudi Arabian market, yet the latter doesn't respond to any

impulse in the other markets, which unquestionably reaffirms its role as a leading power in the GCC region along with being the most stable market. But it's important to note that Saudi Arabia reacts slightly to impulses in Oman's market activity, reconfirming the strong relationship between the two markets. The next two markets that also have a significant effect on other GCC markets (except that of Saudi Arabia) are Abu Dhabi and Dubai's markets (but Abu Dhabi's effect is larger), which in their turn slightly react to shocks in few of the GCC markets. Not only that, but in some cases, we were able to depict a somewhat significant effect of a shock in Oman's market on some neighboring markets, which in return reacts significantly to shocks in all other markets, making it an unstable market. As for Qatar, one standard deviation shocks to its market somewhat affect the activity of the smaller GCC stock markets. At last, the markets of Kuwait and Bahrain demonstrate varying results as discussed above, based on the other market included in the pairwise examination.

5. Error Variance Decomposition:

As part of the innovation accounting analysis and within the VECM model of course, the below variance decomposition tables have been assembled for each stock market index in order to analyze how important each of the stock price series are in explaining their own variability and how much of that change in the variances is due to shocks or impulses in other stock market indices. We have chosen the time horizon of up to 10 days, and the Cholesky ordering was based on the market capitalization of the markets.

Variance Decomposition of ABUDHABI1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	39.17900	86.63878	0.000000	0.000000	13.36122	0.000000	0.000000	0.000000
2	59.67441	78.24253	0.005686	0.240774	21.50499	3.51E-05	0.001600	0.004386
3	76.86233	74.54769	0.028252	0.398156	24.77854	0.084047	0.108749	0.054572
4	89.89128	73.36165	0.021137	0.513796	25.12825	0.435240	0.257989	0.281944
5	100.3372	72.64161	0.017324	0.542026	25.50551	0.575745	0.320731	0.397055
6	109.4802	72.46406	0.016025	0.557216	25.47903	0.656623	0.391014	0.436030
7	117.8302	72.31953	0.015879	0.578006	25.51545	0.704339	0.440008	0.426791
8	125.6293	72.22779	0.014560	0.602190	25.52983	0.734812	0.484599	0.406217
9	133.0561	72.12652	0.013733	0.626365	25.55817	0.752945	0.537401	0.384867
10	140.1695	72.00932	0.012834	0.649737	25.60643	0.763400	0.592914	0.365364

Table 10: Variance Decomposition – Abu Dhabi
Source: Author's Analysis using E-Views

As seen above, starting day 2, almost 78.24% of the variability in the Abu Dhabi index is explained by shocks to the market itself. Moreover, shocks to Saudi Arabia have the next most considerable contribution of almost 21.5% of the variability in the Abu Dhabi index. In addition to Saudi Arabia, an impulse to Dubai's index accounts for almost 0.25% of the variability in Abu Dhabi's index. As for the market shocks that are least responsible for the fluctuations in the variance of Abu Dhabi's index, they're the Kuwaiti and Omani stock market shocks with 0.000035% and 0.0016% respectively. Over time and after 10 days, these results barely change: Now, only 72% of the variability in Abu Dhabi's stock market index is due to shocks in the market itself and the Saudi market shocks account for 25.6% of that change in variance, and shocks to Bahrain and Qatar's markets constitute the smallest percentages of the Abu Dhabi stock market index variance at 0.0128% and 0.36%.

Variance Decomposition of BAHRAIN1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	9.046324	6.165185	83.19349	0.457171	0.553405	8.558308	0.000000	1.072445
2	13.59267	6.714046	78.87067	0.608259	2.761789	9.464636	0.103280	1.477318
3	17.14010	7.284697	74.14066	0.519919	4.897525	10.22048	0.417681	2.519041
4	19.99599	7.742175	70.38394	0.664416	6.906610	10.72643	0.679470	2.896955
5	22.21634	7.946665	68.14740	0.853964	8.400492	11.16817	0.633920	2.849388
6	24.10817	8.017831	66.89973	1.034905	9.118871	11.59560	0.636903	2.696163
7	25.80688	7.996012	66.09753	1.203179	9.526395	11.94628	0.695739	2.534866
8	27.40438	8.000766	65.55083	1.330052	9.829619	12.12697	0.789616	2.372150
9	28.92749	8.075208	65.04257	1.433127	10.10750	12.18817	0.937064	2.216365
10	30.40574	8.183731	64.51441	1.538194	10.39472	12.18472	1.114300	2.069923

Table 11: Variance Decomposition - Bahrain
Source: Author's Analysis using E-Views

Moreover, as for the Bahraini stock market, in the short-run and by day 2, a significant 78.8% of the variability in the market's index is due to innovation in the market itself, shocks in the nearby Kuwaiti market constitute almost 9.5% of the forecast error variance and 6.7% and 2.76% of the variability in the Bahraini index is explained by shocks in the markets of Abu Dhabi and Saudi Arabia respectively. In addition, shocks to the markets of Dubai and Oman seem to attribute the least to the variability in the Bahraini stock market activity. 10 days later, the decomposition seems to vary in comparison to the very short-run results: Only 64.5% of the variability in Bahrain's index is explained by shocks in the market itself. Now, almost 12% is due to shocks in Saudi Arabia's index and only 8% is due to shocks in Abu Dhabi's and Oman and Dubai are still smallest contributors.

Variance Decomposition of DUBAI1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	55.56119	42.56446	0.000000	41.02091	16.41462	0.000000	0.000000	0.000000
2	81.34589	38.92620	0.000976	36.25296	24.64983	6.78E-05	0.169904	6.52E-05
3	102.8009	38.53229	0.030094	33.40853	27.75764	0.139094	0.107548	0.024798
4	119.4698	37.99047	0.052772	32.46324	28.58237	0.528756	0.086492	0.295902
5	134.1958	37.76270	0.057822	32.39560	28.74349	0.644497	0.076949	0.318936
6	146.9236	37.71375	0.078214	32.47495	28.63146	0.702773	0.085592	0.313261
7	158.5633	37.70064	0.092419	32.50386	28.57277	0.750315	0.089559	0.290433
8	169.3908	37.71373	0.100616	32.59179	28.42965	0.791826	0.100768	0.271628
9	179.7479	37.76012	0.106895	32.64748	28.29771	0.814657	0.119645	0.253494
10	189.6650	37.80452	0.110361	32.68468	28.18954	0.829515	0.143039	0.238345

Table 12: Variance Decomposition - Dubai
Source: Author's Analysis using E-Views

Moving on to the stock market of Dubai, initially in the short-run, by the second day, shocks in the market itself only contribute to 36% of the variability as opposed to a high 38% due to shock to Abu Dhabi's market and a strong 25% due to shocks to Saudi Arabia's index. Moreover, shocks to the Qatari and Kuwaiti markets have almost negligible contribution to the forecast error variance of Dubai's index. 10 days later, this decomposition barely changes, still owing mainly to Abu Dhabi as the greatest explanatory power, following Dubai's own market index, along with Saudi Arabia. And finally, the least influential markets are Bahrain, Oman, and Qatar.

Variance Decomposition of KSA1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	97.18633	0.000000	0.000000	0.000000	100.0000	0.000000	0.000000	0.000000
2	146.9329	0.357122	0.000834	0.050841	99.50642	0.000275	0.011557	0.072952
3	187.4723	0.435798	0.001016	0.390154	98.78583	0.008018	0.310175	0.069006
4	218.5158	0.351362	0.001311	0.591975	98.38817	0.089311	0.433872	0.144002
5	244.9109	0.286267	0.021649	0.623079	98.17387	0.152628	0.618930	0.123581
6	267.5416	0.245604	0.051415	0.651565	97.96806	0.194171	0.778468	0.110714
7	288.1931	0.222548	0.069203	0.684964	97.83020	0.219485	0.876414	0.097182
8	307.0028	0.211657	0.080005	0.715741	97.70274	0.246243	0.955016	0.088602
9	324.6186	0.211195	0.086967	0.733146	97.57018	0.275112	1.038366	0.085034
10	341.2472	0.218958	0.092324	0.750206	97.42859	0.302834	1.120212	0.086874

Table 13: Variance Decomposition – Saudi Arabia
Source: Author's Analysis using E-Views

As seen above, the variance decomposition for the Saudi Arabian stock market index clearly conveys that the market is exogenous with almost 97% of its variance fluctuation is explained by its own shocks even after 10 days, meaning that it's not sensitive to any of the GCC markets' impulses or innovations. A minor note here to complement our earlier results; it seems that a shock in the Omani market index contributes the most out of all other GCC markets to the decomposition of Saudi Arabia's index with around 1.12%, supporting our previous findings.

Variance Decomposition of KUWAIT1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	55.94949	6.676295	0.000000	0.890873	5.790570	83.87765	0.000000	2.764610
2	90.25294	5.944812	0.021407	1.227187	11.88222	78.46738	0.000980	2.456011
3	117.7845	6.115205	0.058345	1.436257	14.26163	75.04127	0.261496	2.825796
4	142.2845	5.628287	0.111417	1.568070	15.34593	73.87891	0.284878	3.182513
5	163.4189	5.095807	0.151128	1.456126	15.47053	74.48070	0.277967	3.067748
6	182.0824	4.726351	0.209349	1.403857	15.30255	75.15635	0.355279	2.846259
7	198.8506	4.439915	0.254090	1.401157	15.28921	75.55264	0.436830	2.626151
8	214.1891	4.241365	0.282616	1.411647	15.37744	75.75644	0.521031	2.409459
9	228.5714	4.097931	0.306052	1.421973	15.51428	75.82198	0.622116	2.215670
10	242.2196	3.992960	0.321723	1.447614	15.71114	75.74744	0.738275	2.040850

Table 14: Variance Decomposition – Kuwait
Source: Author's Analysis using E-Views

With respect to the Kuwaiti stock market index, initially in the short-run, a shock to the market itself accounts for 78% of the fluctuation in its variance whereas that to the Saudi index constitutes a stable 12%. Two other influential markets on the Kuwaiti market in the short-run are the markets of Abu Dhabi and Qatar accounting for 6% and 2.45% respectively to the fluctuations in the variance of Kuwait's stock market index. After 10 days, this decomposition doesn't really change much, noting that impulses to Oman and Bahrain's market activities are negligibly responsible for any of the variability in the Kuwaiti market activity.

Variance Decomposition of OMAN1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	70.61307	12.61961	1.067338	0.708480	6.460663	1.234055	73.38480	4.525058
2	111.6008	13.38107	1.716575	0.744860	16.79473	1.449029	62.03987	3.873862
3	144.7716	14.23671	2.600557	0.789233	21.73280	1.888965	54.82274	3.929000
4	173.0457	14.34752	2.521145	1.057332	22.97297	2.893353	52.02870	4.178982
5	196.4774	13.83550	2.650043	1.458073	23.85274	3.904775	49.98848	4.310395
6	216.5433	13.40787	2.674979	1.663063	24.36488	4.597547	48.99291	4.298754
7	234.4651	13.07059	2.629092	1.783657	24.71793	5.083772	48.47377	4.241187
8	250.9943	12.80807	2.601510	1.876387	25.01945	5.426767	48.12048	4.147338
9	266.5547	12.62238	2.573122	1.952385	25.26705	5.666072	47.89446	4.024532
10	281.4095	12.46343	2.551825	2.011962	25.48151	5.838566	47.74640	3.906315

Table 15: Variance Decomposition - Oman
Source: Author's Analysis using E-Views

Similarly, the variance decomposition of Oman's stock market index is represented above, and the results are consistent with the previous short-run analyses. By the second day, 62% of the forecast error variance is Oman is explained by shocks to the country's market. In this same day, 17% of the variability in the Omani index is because of shocks to the Saudi market activity, combined with a 13% due to the Abu Dhabi market. Over time, and after around 10 days, the decomposition seems to differ: Now, shocks to the Omani market itself account for a smaller percentage of the fluctuations in the market at 47%. Shocks to the Saudi Arabian stock market index

attribute more significantly after 10 days, as the percentage is now a stable 25%, compared to a very low 2.5% due to shocks in the Bahraini index and almost 4% due to shocks in the Qatari index. This goes in parallel with the findings that the Omani market is very sensitive to shocks in the different GCC stock markets, making the market unfortunately unstable.

Variance Decomposition of QATAR1:								
Period	S.E.	ABUDHABI1	BAHRAIN1	DUBAI1	KSA1	KUWAIT1	OMAN1	QATAR1
1	107.8078	21.66691	0.000000	1.899822	10.00526	0.000000	0.000000	66.42800
2	167.5689	19.60335	0.011553	2.171875	21.97935	0.017875	0.132375	56.08362
3	217.6355	19.03339	0.081583	2.447797	26.09233	0.155043	0.106290	52.08356
4	259.5661	18.26686	0.057576	2.615776	28.01100	0.448781	0.283703	50.31631
5	293.9819	17.17145	0.045523	3.132556	29.16949	0.599706	0.347703	49.53357
6	322.8156	16.50691	0.047736	3.431001	29.82547	0.689447	0.411130	49.08831
7	348.2814	16.05175	0.050526	3.686545	30.28471	0.765010	0.448467	48.71299
8	371.6847	15.72688	0.050751	3.880940	30.70044	0.817302	0.484110	48.33958
9	393.7638	15.53223	0.050670	4.055964	31.05707	0.851312	0.531889	47.92087
10	414.8506	15.38462	0.049836	4.200055	31.40194	0.873228	0.584937	47.50539

Table 16: Variance Decomposition - Qatar
Source: Author's Analysis using E-Views

Last but not least, the Qatari market index in the short-run is also decomposed as shown above. By day 2, shocks to the Qatari market itself constitute 56% of the index variance, as opposed to a 22% attribution by the Saudi Arabian market activity and 19.6% by Abu Dhabi's market. Also, Kuwaiti and Bahraini shocks seem to have a negligible role in explaining the variance in Qatar's market index. Slowly over time, and by the 10^{th} day, Qatar's own shock's contribution to its variability declines to only 47.5%, whereas Saudi Arabia's has increased to 31%, and the markets of Bahrain, Kuwait and Oman still had a negligible input to this variability.

CHAPTER V

CONCLUSION & POLICY RECOMMENDATIONS

Over the years, the Gulf Cooperation Council countries have truly illustrated the definition of a group of high-esteemed and prominent countries that are characterized by fast-growing economies, accelerating GDP per capita, sound fiscal and monetary reforms, high-class standards of living, distinguished government budget surpluses, attractive investment environments as well as renowned financial markets that have portrayed stable development, liquidity, coherent corporate governance and openness to regional and international investors. Undoubtedly, this dignified success owed to the combined efforts of the six members states of the GCC, after the organization's stated goal of becoming an outstanding regional economic bloc, which indeed helped in pushing the region as a whole to colossal rankings in the world. Not only that, but what also helped the GCC to sore with top-ranking economies is the combination of high oil-dependency in terms of oil revenues and the diversification of the economies which facilitated a more stable economic bloc and ensured homogeneity and credibility among the six member states. Within the scope of the region's prosperity, one of GCC's most crucial and primary goals is achieving full integration, as the GCC's Charter states, focusing mainly on the economic integration. For the past 20 years, the GCC as a whole has truly focused on this objective and developed its central goals to include the chief goal of integration from the financial aspect. In other words, the goal of financial integration of the GCC markets was declared in the past and is a very analytical topic that will determine the future of the economies of the Gulf member states. As part of this astounding goal, the organization's focus and hard work were definitely evident and

they never ceased over time. Precisely, the organization has later agreed on the future goals of creating a common custom union, proposing a single currency, establishing a monetary union, and last but not least founding a single stock market which should demonstrate the last milestone in the process of becoming a fully integrated economic bloc conditioned to the efforts of achieving fiscal and monetary integration in hopes of accelerating this integration. In addition to these outstanding schemes, micro-leveled efforts to accomplish financial integration came in different aspects: Most of the effort was demonstrated by the on-going attempts of developing the seven stock markets ranging between diversification, liberalization, synchronization of rules and regulations, openness to other GCC markets and even international markets, rooting coherent corporate governance schemes as well as suitable and easy investment environments. Some of the efforts were also depicted by official agreements among the member states such as the agreement between Bahrain and Oman to link their markets in 1995 to which Kuwait joined later in 1997. These agreements and ambitions have really encouraged and pushed towards the integration of financial markets by facilitating the needed environment for the member states to really be able to unite their forces, rules and motives in order to achieve the goal to its maximum levels. In fact, attaining full economic integration is the bridge that will connect the GCC region to the point of becoming the fastest growing and highest-ranking economies in the world, as several reports state.

On a more precise level, the final step of achieving economic integration is the formation of a single financial market in the GCC; this transition will not only be the end point of full economic integration, but will be the mean to it as well, since it goes hand-in-hand with prerequisites that complete the requirements of achieving the

declared goal. The benefits of such a merger are definitely endless, but the idea isn't as easy as it sounds. Before anything, policy makers in the GCC area need to carefully conduct a full assessment that defines and quantifies the risks of this step such as the required levels of efforts, performance and development of the seven independent financial markets and where they stand today. Moreover, another necessary aspect is the numerous prerequisites that underlie this goal and how much of them is really completed; such as fiscal and monetary integration and the unification of efforts and involvement levels. Not only that, but the real level of integration between the markets needs to be empirically assessed to identify to what extent these markets are interrelated and interdependent in order to determine whether the persistent efforts have paid-off and whether a merger can really be proposed. Last but not least, the level of coherence between the rules and regulations, efforts, corporate governance and transparency should be evaluated before really looking deeply into implementing or proposing a stock market merger in the GCC.

Within the scope of financial integration of the GCC stock markets, there's a lack of scholastic literature that focuses merely on the inter-regional integration of all seven markets after the 2008 global crisis and up till today. In addition, there's a clear lack of studies that assess this integration in the GCC mainly for the purpose of investigating the possibility of a stock market merger. Hence, in this project, the primary aim is to empirically investigate the financial integration of the GCC stock markets via a time-series analysis. In a more detailed manner, the purpose is to test whether and to what extent these markets are actually integrated i.e. to determine the detailed interrelation dynamics between the stock markets. Given the GCC's declared goal of achieving financial integration as part of their ultimate goal of reaching full

economic integration, this paper also tries to conclude if the members' abundant efforts have really paid off, what more needs to be done and whether the market activity illustrations show that they really have what it takes to be fully integrated. Not only that, but this project also tries to shed light on which country acts as the leading driving force and a financial hub among the GCC countries in terms of financial activity and effect on other markets. In addition to all that, and relying on past stock market merger stories, this project extends its purposes to determining what is required for a merger in the GCC, what has been resolved out of these prerequisites, how integrated the markets really are in technical terms, what more needs to be done, whether a stock market merger could be the next step for the GCC organization and how a merger could benefit them if proposed. Last but not least, another objective of this paper is to investigate whether the 2008 global financial crisis in a way had any impact on the degree of integration among the GCC stock markets.

Empirically speaking, the evaluation of this project employs daily closing stock market indices ranging from January 6th 2008 till December 31st 2015 for the following markets: Tadawul, Abu Dhabi Securities Market, Dubai Financial Market, Qatar Exchange, Kuwait Stock Exchange, Bahrain Bourse and Muscat Securities Market. The latter were used in order to assess and examine the long-run and short-run relationships between the markets in terms of unit root testing, co-integration analysis, granger causality testing, impulse response functions and error variance decompositions.

First, the Augmented Dicky-Fuller and Philips-Perron tests were conducted before commencing with our time-series analysis. The robust results of both tests imply that all seven series are non-stationary at level, meaning that they contain unit roots. Differencing the series allows us to reject the null hypothesis of the variables being non-

stationary; hence, all GCC stock market indices are integrated of the order one i.e. I(1). After confirming these results, the time-series analysis begins with building a multivariate Vector Auto Regressive VAR model constituting of these seven variables with the appropriate number of lags based on certain lag length criteria. Next, the most important test in this project is conducted, which is the Johansen Co-Integration Test. This renowned test is used in order to examine the long-run relationship between the variables and to determine whether the stock market indices of the seven GCC stock markets move together in the long-run i.e. if the series possess a long-run equilibrium relationship. Based on the maximum Eigen value and trace methods, the results of the multivariate Johansen test indicate that there are 2 significant co-integrating vectors that are binding the seven variables in the long-run which could be explained by the strong ties among the GCC countries and the different proximities that favor the goal of reaching financial integration. This is definitely vigorous evidence affirming the GCC regional financial integration especially that two co-integrating vectors represents a stronger, more stable and more robust long-run relationship among the variables. Answering one of this project's questions, this result reflects the positive outcomes of all the efforts of the organization in hopes of attaining financial integration, hence the efforts have really paid-off. Similar to past research, as a minor note here, such primary results can help conclude some policy implications regarding portfolio diversification where we can safely say that among the GCC markets, there will be negligible or even no gains from portfolio diversification. The same test is also run again after adding a dummy variable representing the impact of the 2008 global financial crisis demonstrated by the official announcement of the end of the recession in the United States by the government. The results are intact, meaning that in a way, the 2008

financial crisis and its effects had no impact on the level of integration among the GCC stock markets. Within the scope of long-run integration analysis, this paper tries to determine the driving force among the seven stock markets as we've mentioned in the list of purposes. Following the renowned method that Darrat et al. (2000) have proposed, we perform the Multivariate Johansen Co-integration test excluding the Saudi Arabian stock market index series which results in only 1 co-integrating vector meaning that Saudi Arabia's market is what's making the long-run relationship more robust and more stable as it's responsible for the second robust co-integrating vector that's binding the seven stock markets together in the long-run. After reaching these significant results concerning the long-run integration dynamics among the GCC stock markets, this paper's empirical analysis moves on to examining the short-run dependencies among the series with the VECM model to try to detect the level of interrelation and interconnection between the seven GCC stock markets. The short-run test of Granger Causality conveys that there's a substantial level of granger causality among the GCC market indices, whereby the past market activity of one GCC member states can help predict the future values of other market indices. The most noticeable result is that the Saudi Arabian market index granger causes all the other GCC indices very significantly, along with Oman delivering the same results but less significantly. Saudi Arabia's results are definitely not surprising given its influential level of informational usefulness in the GCC as the area's financial hub. As for Oman, the results may seem striking at first, but the truth is that Oman has declared its goal of becoming a regional leader as well a long time ago. Instead, Oman in reality leads a secondary group of the lower ranked oil and gas exporting countries in the GCC (Kuwait, Oman, Bahrain) as opposed to the primary group constituting the region's higher ranked oil and gas exporters (Saudi

Arabia, UAE, Qatar), which could be depicted by the correlation coefficients among the GCC stock market indices. Not only that, but the two countries of Saudi Arabia and Oman are strongly and significantly integrated themselves due to the high level of trade, cross-listing, and even the co-integrating relationship that exists between the two, hence it seems that Oman is shadowing Saudi Arabia and mimicking its role of being a beneficial market in predicting the future values of the other GCC markets. Despite these results, Oman only helps in predicting future values and there's no evidence of it being the region's leading force, especially after conducting Darrat et al.'s (2000) previously mentioned method and still obtaining two co-integrating vectors when Oman's index is excluded.

As part of the short-run analysis, the impulse response functions and the error variance decompositions are generated in hope that their interpretations will confirm the immense level of interconnection, integration and interdependence we were able to reveal so far, along with affirming Saudi Arabia's leading role in the GCC. In fact, the impulse response functions show that all GCC stock markets respond significantly, positively and quickly to shocks in the Saudi Arabian market, yet the latter doesn't respond to any impulse in the other markets, which unquestionably reaffirms its role as a leading power in the GCC region along with being the most stable market. Also, the strong integration between Oman and Saudi Arabia is portrayed by Saudi Arabia's minor reaction to an impulse in Oman's market activity. As for the two stock markets of UAE, shocks to the Abu Dhabi and Dubai markets have ample effects on the other GCC markets (Abu Dhabi with the larger effect) but the two barely react to any shocks in the other markets except to those of Saudi Arabia and the other UAE market tackled. As for the Qatari market, it seems to react to shocks in most of the GCC stock markets, but

innovations to this market render responses by the "secondary" markets mostly. As expected, Oman seems to exhibit significant responses to shocks in all the other GCC market activities, making it the region's "unstable" market, and reaffirming the idea that Oman in no way can represent the leading force in the GCC market. At last, the markets of Kuwait and Bahrain demonstrate varying results as discussed above, based on the other market included in the pairwise examination. For the last part of the empirical analysis, the variance decompositions go hand-in-hand with the results of the impulse response functions, certifying the importance of Saudi Arabia in its attribution to the greater portions of the variability in the indices of all the six other GCC stock markets, and the fact that it's insensitive to shocks in the other markets. Not only that, but just like the impulse response functions, the error variance decompositions clearly validate the strong interrelation and interdependence between all stock market indices. Also, as in the response functions, UAE markets are responsible for significant portions of the variability in the other GCC indices (Abu Dhabi with the larger contribution). Moreover, Qatar is responsible for some of the fluctuations in the variances of the smaller markets of Kuwait, Bahrain and Oman. As for the later, they signify minor contributions to the fluctuation in the variability of some of the other GCC market indices. Last but not least, the error variance decompositions also prove that in all seven cases, the largest portion constituting the decomposition is shocks from within the market itself.

Clearly, from our results, we can state that the GCC stock markets starting 2008 have demonstrated a significant and strong level of integration and interdependence. A high level of integration goes hand-in-hand with the possibility of forming a single stock market, which will be the last step of achieving economic integration (whether

with or without the formation of a monetary union and the updated proposition of a common currency; but the two will definitely accelerate the process) as long as the prerequisites for such a transition are attained by the member states. Some of the prerequisites for such a move are the following proactive and forward-looking actions: fiscal integration, development and expansion of markets and their performance, hopefully achieving the previously declared goal of a common currency, stability, diversification, harmonization of rules and regulations, openness and liberalization, monetary integration, common efforts, awareness and motives, coherent corporate governance schemes, high levels of transparency and informational efficiency, steady economies with consistent growth and minimal strategic differences.

In reality, the GCC countries have really achieved a huge portion of these prerequisites. Most importantly, the countries represent the region's most steady economies characterized with consistent growth and minor strategic differences. Fiscal integration has been targeted by the organization with the formation of the GCC fiscal council in 2005, which in its role aims for full fiscal integration in the GCC region and makes sure that the correct fiscal environment is available to better and easily achieve full integration. In terms of development and expansion of the stock markets themselves, we've seen from the overview of the markets, that the GCC markets are on their way of achieving all their missions and visions of being world-class financial markets as they've all been delivering compelling performances and some of them have gained the status of 'emerging markets', whereby some of the slower-growing markets have to put much more effort. Not only that, but although done at different rates and through different methods, the markets are trying to become more resilient in the face of any new crises as that of 2008 and the recent oil crisis. In fact, many reports have

expressed strong hope regarding the GCC region for the year of 2016: Given the good level of diversification in their economies, many GCC countries (mainly Saudi Arabia and the UAE) are expected to execute continued healthy growth and avoid fiscal deficits, despite the effects of the recent oil price crash. Also, despite their much smaller sizes, the GCC stock markets were able to grow very quickly and attract heavy investment through the firm concentration on fully opening to one another and to international investors too, as well as diversification as we've mentioned in the third part of this project. Concerning the rules and regulations in the GCC markets, all of them are securely and thoroughly regulated by their respective regulatory powers ensuring transparency and efficiency, whereby smooth corporate governance schemes are also achieved. Concerning that, in 2010, the GCC member states proposed and applied the consolidation of the rules and regulations of their markets, which lead to full harmonization. All of this is also coupled with the common efforts by the six different member states of the GCC whereby agreements and meetings have been continuously completed to ensure the compatibility in reaching the organization's declared goal and motives. With equal importance, and according to Darrat & Al-Shamsi (2005), the GCC countries "share a common trend linking together their macro economies" as well as "their monetary policies" (Darrat & Al-Shamsi, 2005).

In order to validate the possible recommendation of a stock market merger, this project sheds light on the benefits to be reaped from a successful stock exchange merger such as: broader and deeper markets, reduction of costs, higher trading volumes and used technology, higher investment opportunities, higher liquidity, demolished uncertainty, lower transaction costs, greater risk reduction and more effective diversification (Charles et al., 2014). To put things in perspective, the overview also

features two successful stories of stock market mergers, namely the EURONEXT and OMX. The two stories illustrate the necessary conditions and the benefits of such mergers whereby the regional groups of countries possessed the needed prerequisites allowing the smooth transition into a single financial market. As we've mentioned before, a stock exchange merger could be the correct move to be taken by markets that share common goals, characteristics and environments, aiming to attain greater power, better performance, larger market capitalization and a higher level of competitiveness and investment attraction despite the inevitable minor differences that the separate stock markets might exhibit.

Since 2008, the idea of a common regional stock exchange started to be proved as necessary at some point in the near future. If done, then this merged market will have more power, a more competitive stand, and more importantly the ability to face harsh crisis and negative shocks whereby both gains and losses can be shared by all GCC countries. Also if done, such a move will allow the GCC to harvest all the mentioned benefits and will push the region to even higher levels, making it a world-wide financial hub.

In the case of the GCC, thus it seems so far that the real-life efforts are somewhat complete by the member states regarding all the needed prerequisites for a tremendous transition like this one. There definitely exists some additional efforts that need to be enforced and that could hinder the possible process if not quickly implemented correctly. In particular, all the on-going efforts must be maintained at a higher pace, more coordination, agreements and meetings between the member states must be executed and possibly completing the declared goal of adopting a common currency which has been constantly elaborated by the Organization. Along with all

these, there needs to be more cross-listed stocks, constant supervision and regulatory assessments must be finalized, and the markets need to make sure that full recovery is established soon, along with consistent growth and expansion. Not only that, but monetary and fiscal policies must by fully synchronized by the different member states. It's important that GCC member states also try to learn and acquire thorough knowledge from the past successful stories of the European countries that managed to merge their stock markets by assessing their readiness and accomplishments before transforming the nature of their markets.

Given the empirical results, the common economic conditions, the similar stock market structure in the different GCC markets, the fiscal and monetary integration, the combined efforts and commonly faced risks, the past successful stories of stock market mergers, the benefits to be reaped, the GCC organization's ultimate goal and the readiness, if the markets truly achieve all the stated prerequisites fully and quickly enough, then the idea of a stock market merger in the GCC would definitely be a great idea to be implemented in the near future. This merger will sincerely be the mean and the endpoint towards achieving the GCC's declared goal of integration. Had the GCC markets been ready a few years back and had the merger been done, the impact of the oil crisis or any other negative shocks could have been minimized or shared by the GCC. Also, the minor differences in the stock markets can allow them to complement each other, forming a spectrum of financial markets that engulf different aspects, which can lead to more synergies. As a policy suggestion as well, the aim of this single merged market could be that 100% of trade of listed stocks on the GCC markets will be carried out through this merged exchange that can possibly be named "GCC exchange" for example. Also, this merged exchange could be one unified entity in one geographical

point or can possess many branches in the different GCC countries, which will ensure synergies, cross membership, a single point of liquidity, a common trading system, same regulations and world-wide competitiveness.

Overall, the results of this project are in line with the bigger bulk of literature that affirms regional financial integration of stock markets. In fact, this topic is very broad and flexible and has been acquiring significant attention over the past few years. This topic will remain to be highlighted in the future; especially at the onset of a global crash of oil prices along with the Chinese recession. All in all, this project aims at assessing the level of integration among the GCC stock markets both in the short-run and long-run with as much detail and intricacy as possible. Yet, some minor limitations here could be relied on by future studies in order to complement and perfect the outcomes of such a time-series analysis. Unfortunately, this paper doesn't incorporate 2016 data into the time span due to the insufficient number of observations, which hinders the capture of the effect of the early 2016 GCC stock market crash on their level of integration. Also, the methodology of this project wasn't able to capture time-varying characteristics and only one exogenous variable was included. Therefore, future studies could include 2016 data, rely on different methodologies for time-series analysis other than the traditional VAR and VECM models, try to include more exogenous variables that can capture the role of oil prices, levels of trade, recent crises or even include an empirical study that can assess the possible effects of a merger on the GCC markets, which is beyond the scope of this project. Last but not least, it's true that the other successful stories of OMX and EURONEXT are used here as a benchmark to what a fruitful merger could look like, but prior to the two mergers, both cases procured

specific intensive research to also determine the overall level of readiness, which the GCC region literature also lacks.

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APPENDIX 1 – LITERATURE REVIEW SUMMARY

Author	Sample	Data	Period	Methodology	Results
Osamah Al-Khazali, Ali Darrat and Mohsen Saad (2006)	Saudi Arabia, Kuwait, Bahrain and Oman	Stock price indices with a weekly frequency	1994-2003	VAR model, ADF, PP, Johansen co-integration test	1 co-integration relation, significant role of market liberalization
Aqil Mohd and Hadi Hassan (2003)	Oman, Bahrain and Kuwait	Weekly share price indices	October 1994 and August 2001	VAR model, ADF, PP, Johansen co-integration test, VECM, Granger Causality	Kuwait and Bahrain have a meaningful stable long-term relationship and Oman Granger Causes Kuwait
Jorg Bley and Kim Heng Chen (2006)	Saudi Arabia, Bahrain, Kuwait, Oman, UAE, Qatar, UK, US	Daily stock market indices with a weekly frequency	January 2000 and September 2004 - two subsamples separated at June 2002	VAR model, ADF, PP, Johansen co-integration test, VECM, Granger Causality, Impulse Response functions, Variance Decomposition	3 co-integrating vectors in the long-run in the second period, strong interrelationship in the short-run, high levels of integration, Saudi Arabia is the number 1 explanatory power
John Simpson (2007)	UAE, KSA, Oman, Bahrain, Qatar and Kuwait	Daily data for the GCC stock market indices	January 2000 and November 2003	VAR model, ADF, PP, Johansen, Granger Causality	Strong integration and causality, and UAE is the leading force
Mohamed El Hedi Arouri and Duc Khoung Nguyen (2009)	Oman, UAE, Qatar, Saudi Arabia, Kuwait	Daily natural log returns on stock markets	June 2005 and April 2008	Multivariate dynamic conditional correlation GARCH model, Bai&Perron test	Weak regional and international interdependency of the GCC stock markets implying diversification for regional and international investors is surely beneficial
Chaker Aloui and Besma Hkiri (2014)	Bahrain, Qatar, Oman, Saudi Arabia and UAE	Daily stock index prices	June 2005 and February 2010	Morlet Wavelet Coherence Approach	The dynamics of the interactive relationship between the markets is changing briskly in time as well as in frequency. All the co-movements between the stock markets tend to emerge at a higher frequency after the year of 2007
Ali Darrat, Khaled ElKhal and Sam Hakim (2000)	Jordan, Morocco, Egypt and US	Monthly stock market indices	October 1996 through Augu	VAR, Bi-variate, tri-variate and multivariate Johansen co-integration test, VECM, Granger Causality	Other than being co-integrated in the long-run with Egypt as a driving force, there are significant short-run dynamics among the MENA stock markets which appear to be segmented from the US market
Simon Neaime (2002)	Kuwait, Saudi Arabia, Bahrain, Egypt, Jordan, Turkey and Morocco, US, UK, France	Weekly closing price series	Early 1990s up to December 2000	VAR model, ADF, PP, Johansen co-integration test, VECM, Granger Causality, Impulse Response functions, Variance Decomposition	No regional financial integration in the MENA region and shocks to the international markets alter the MENA markets
Aktham Maghyereh (2006)	Jordan, Egypt, Morocco and Turkey	Daily national stock indices	November 1997 and December 2002	Berndt-Hall-Hall-Hausman (BHHH) algorithm, moving average representations, Error Variance Decomposition and the Impulse responses	Integration among markets is weak, and the linkages are relatively small
Jian Yang, James Kolari and Insik Min (2003)	Japan, USA, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore, Thailand, Taiwan	Daily stock index closing prices	January 1995 and May 2001 - Divided into four periods representing pre-crisis, crisis, transition and post-crisis time spans	Likelihood Ratio test, Johansen test, Impulse response functions	No co-integrating vector exists in the pre-crisis and transition periods, but two co-integrating vectors exist in both the crisis and post-crisis period. All markets heavily responded to shocks in the US and Japanese markets
Gong-meng Chen, Michael Firth and Oliver Meng Rui (2002)	Brazil, Mexico, Argentina, Venezuela, Chile and Colombia	Daily stock index closing prices	February 1995 and June 2000 - Divided into three period to represent Asian and Russian crises	VAR, ADF, Johansen's multivariate co-integration test,Impulse Response functions and variance decompositions	1 co-integrating vector among the six Latin American stock markets in the long-run and strong short-run interdepency
G. Geoffrey Booth, Teppo Martikainen and Yiuman Tse (1997)	Denmark, Norway, Sweden and Finland	Daily closing values of the prices indices	May 1988 till June 1994	EGARCH model	Four markets are weakly related to each other