The GCC Financial Markets: Stylized Facts and Potential Roles in Regional Development

Ahmad Telfah

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Abstract

The paper discusses some stylized facts in financial literature in application to seven GCC capital markets. The analysis comes in the context of evaluating the potential roles of these markets in enhancing economic development. Analyzing the technical and statistical aspects of these markets using parametric and non-parametric techniques leads to some interesting results to wit: (a) All the GCC financial markets are weak form inefficient; (b) Volatility in the markets has long memory and shocks to volatility persists for long periods in most of the GCC capital markets; (c) Risk is internally priced and investors get compensated for holding more risk; (d) The GCC markets are highly integrated and consequently, investing across the region has very little impact on risk diversification; and (e) The dynamics in the Saudi and Kuwait stock markets spill over to other markets. On assessing the potential roles of the GCC financial markets in enhancing regional economic development, the author utilizes Levine's (1996 and 1997a) two measures for identifying capital markets that act as spur to growth. Findings reveal that the Saudi Stock Market, and to a lesser extent, the Kuwait Stock Exchange, are the only markets that can contribute to long-run economic development in the area.

أسواق الأوراق المالية في دول مجلس التعاون الخليجي :
حقائق نمطية والدور المرتقب في التنمية الإقليمية

أحمد طلفاح

ملخص

تناقش الورقة بعض الحقائق النمطية المتعارف عليها في أدبيات الاقتصاد المالي بتطبيقها على أسواق الأوراق المالية في دول مجلس التعاون الخليجي في سياق تقييم الدور المرتقب لهذه الأسواق في تعزيز التنمية الاقتصادية في المنطقة. إن التحليل الفني والقياسي لهذه الأسواق يقود إلى عدد من النتائج أهمها: 1- أن جميع أسواق الأوراق المالية في دول مجلس التعاون الخليجي لا تتمتع بالكفاءة بمفهومها الضعيف. 2- أن التقلبات (الذبذبة) في العوائد في هذه الأسواق تتميز بطول الذاكرة، بمعنى أن أي هزة تؤثر في ذبذبة العوائد سوف تستمر في التأثير في هذه الأسواق لفترات طويلة. 3- أن الأسواق المالية الخليجية تعوض المستثمرين عن المخاطر التي يتحملونها، وأسعار هذه المخاطر متضمنة في العوائد. 4- أن الأسواق الخليجية تتمتع بدرجة عالية من الترابط في ما بينها، فتنويع المحفظة في هذه الأسواق لا يترتب عليه التقليل من درجة المخاطرة التي يتحملها المستثمر. 5- أن التقلبات في السوقين السعودي والكويتي تنتقل إلى باقي أسواق المنطقة. أما على صعيد تقييم الدور المرتقب لأسواق الأوراق المالية الخليجية في تعزيز التنمية الاقتصادية فإن تطبيــق معاييـر ليفيـن (1997،1996) في تمييز الأسواق المالية القادرة على تحفيز النمو الاقتصادي تشير إلى أن سوق الأوراق المالية السعودي وعلى نطاق أضيق السوق الكويتي هما السوقان الوحيدان القادران على المساهمة الإيجابية في التنمية الاقتصادية.

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Introduction

The Millennium Development Goals (MDGs) of halving poverty by 2015 seems to be difficult to achieve depending upon "growth alone"-enhancing policies. According to Besley and Burgess (2003), this task requires Developing Countries to more than double its current GDP per capita growth rates. However, the results of Besley and Burgess (op. cit.) and many others including Ravallion (2001) and Wolfenson and Bourguignon (2004) imply that the MDGs may also be achieved by reducing inequality within the so-called the poverty-growth-inequality triangle.

Empirical research on growth of GDP per capita indicates that growth-enhancing policies can also affect income inequality as well. Some policies enhance everybody's income; others raise the income of wealthy groups; and a third spectrum of growth-enhancing policies increases the income of the poor. In this regard, the MDGs may be best achieved by the pro-growth, pro-poor policies. Including many others, Clarke, Xu and Zou (2003), Beck, Demigüç-Kunt, and Levine (2004), and Honohan (2004) argue that a well-functioning financial sector can play this role.

A well-functioning financial market enhances growth by mitigating economic risk, mobilizing savings, reducing frictional costs and increasing specialization. This, in turn, would result in an increase in operational efficiency, and allocative efficiency. Theoretical and empirical research discussing the impact of financial development on growth is overwhelming for anyone to comprehend. It goes back to Gurley and Shaw (1955), Goldsmith (1969), McKinnon (1973) and Shaw (1973) who emphasize that developed financial markets boost economic growth by mobilizing savings and reducing transaction and information costs. A new wave of literature led by the World Bank researchers including Levine (1997b) and Demigüç-Kunt, Laeven and Levine (2004) stress the same finding of the positive impact of financial markets on economic growth.[1]

Unlike the relationship between financial development and economic growth, the theoretical link between financial development and income inequality and alleviation of poverty is less clear-cut. The research on this front started recently and led by the World Bank researchers in relation with the MDGs. Clarke, Xu and Zou (2003) evaluate the relationship between financial intermediary development and the levels of income inequality. Honohan (2004) on the other hand, assesses the impact of financial development on the absolute poverty levels.

Beck, Demigüç-Kunt, and Levine (2004) investigate the relationship between financial intermediaries and changes in income inequality, attempting to test directly for the impact of intermediaries on the growth of the income of the poor and poverty alleviation.

Beck et al. (2004) use a broad sample of 52 developed and developing countries with data averaged over a period of 40 years. Their results were very robust in indicating that financial sector development is pro-poor, in that financial development significantly improves income distribution by disproportionately enhancing the income of the poor. According to their results, Gini coefficient and the standard deviation of income inequality falls more rapidly in countries with higher levels of financial development.

On the social impact of financial intermediation, Beck et al. (op. cit.) find that countries with a better-developed financial sector, have larger decreases in infant mortality. Additionally, they report a strong positive relationship between school enrollment in the primary schools and financial intermediary development. Their results seem to be consistent with Jacoby's (2004) results that financial repression reduces primary schools attendance.

The conclusion of the above studies is consistent with Kuzents'(1955) hypothesis that there is a non-linear relation between financial development and economic development. The relation is close to be humped shape. When financial development is in its initial stages, rich people benefit the most, and income inequality increases. However, after certain levels of financial deepening, financial development becomes pro-poor, and more financial development would reduce income inequality and alleviate poverty.

Finance research on the Gulf Cooperation Council (GCC) markets as a region, is very limited in general and much less on the impact of development of financial sector on economic development. Some of these markets - Saudi, Bahrain, Kuwait, and Oman - are usually included individually in the studies conducted in the Middle East and North Africa (MENA) countries on the financial sector, which is also very limited in number.

Generally speaking, research on the relationship between financial development and economic development in the Arab countries focusing primarily on the impact of financial sector on economic growth, inadequate attention is

given to other institutional or social aspects of development. General results of this type of research indicate that there seems to be no significant impact of the financial sector on economic growth. As a matter of fact, Ben Naceur and Ghazouani (2003 and 2006) report negative impact of the banking system on growth. Ersel and Kandil (2000), Boulila and Trabelsi (2004), Al-Awad and Harb (2005), and Abu Bader and Abu-Qarn (2006) report that economic development affects financial sector development but not the opposite.

Researchers attribute this weak link between the financial sector and growth to a number of factors including: (a) long period of financial repression and the delay of reforms in the Arab countries; (b) high information and transactional costs; (c) ownership structure of large companies and listed companies (large portions of government ownership); (d) sizes of companies listed compared to those unlisted; and (e) weak integration with global markets.

In a related paper, Darrat and Haj (2002) find that financial markets development reduces long-term macroeconomic volatility in some MENA countries including Saudi Arabia. They also observe that financial deepening has different impacts on different sectors. Their results are robust only if financial development persists over a prolonged period of time.

This paper contributes to current literature by analyzing and evaluating the potential roles for the GCC capital markets in enhancing regional economic developments through the services that it provides for investors. It also tests for a number of stylized facts in finance literature in application on the GCC capital markets including market efficiency, volatility dynamics, risk and returns relationship, inter-regional integration and diversification potentials, and the spillover among those markets. The study pertains exclusively to the GCC markets that include:

- Abu Dhabi Securities Market (ADSM)
- Bahrain Stock Exchange (BSE)
- Doha Securities Market (DSM)
- Dubai Financial Market (DFM)
- Kuwait Stock Exchange (KSE)
- Muscat Securities Market (MSM), and
- Saudi Stock Market (SSM).

The Structure of the GCC Securities Markets

All GCC capital markets are considered relatively new by international standards. ADSM was established in 2000; BSE in 1987; DSM in 1995; and DFM in 1990. KSE is the oldest in the GCC region established in 1977, MSM in 1989, and the SSM in 1984. In fact, the GCC Securities Markets are relatively new compared to some Arab Stock Markets, e.g. Egypt (1888, 1903), Lebanon (1920) and Amman Stock Exchange (1976).

GCC markets are basically equity markets, but some of these markets provide other investment instruments like bonds and Islamic Sukuk (Islamic Bonds), mutual funds, options and forwards. Among the seven GCC markets, three markets (BSE, DFM and MSM) have bonds and Islamic Sukuk listed beside stocks. ADMS is under the process of listing bonds and Sukuk. Except for ADSM and DSM, all the GCC markets have mutual funds listed. For derivative securities, the KSE is the only GCC capital market offering call option and forwards trading in the regular market. Previously, KSE had futures contact listed in the regular market, but it has been temporarily stopped. KSE also offers an odd lots market to increase the liquidity of the market and to make a market for investors with small holdings. SSM is in the process of starting an odd lots market.

For comparison purposes, Appendix 1 lists comprehensive statistical and technical information on 23 non-Arab emerging markets. Information includes the number of listed companies, market capitalization, average monthly trading value, turnover ratios, as well as the risk and return measures and other financial ratios for each listed emerging market. In addition, the mean, median, standard deviation, maximum and minimum for each indicator are also provided.

Apart from the SSM, the GCC securities markets are considered small in terms of number of listed companies, market capitalization and trading volume. All of them have less than 200 listed companies. Five markets list less than 100 and three have 50 or less companies listed. The total number of listed companies in the seven markets reached 560 companies by the end of September 2006. Nevertheless, this number is still less than the number of companies listed in the Egyptian Stock Market alone which contains almost 632 listed companies as of September 2006. Also, it is less than the average number of listed companies in emerging markets that is around 600 companies. The number of listed companies in the DFM and DSM is less than 47 companies which is the minimum number

of listed companies in the sample of emerging markets in Appendix 1.

Concerning market capitalization, the total value of market capitalization for the seven GCC markets reached $1150 billion in December 2005 but then fell to $854 billion by September 2006. As a matter of fact, the SSM, ADSM, KSE, DFM and DSM, respectively, were listed as the largest five stock markets (in terms of market capitalization) among the 15 Arab stock markets at the end of 2005. Except for the Saudi market, all GCC markets have market capitalization less than the average of the emerging market sample presented in Appendix 1. However, this is still higher than the minimum market capitalization akin to the stock market in Sri Lanka.

For value traded, the GCC markets ranked among the most active financial markets in the Arab countries. SSM, KSE and DFM ranked as the three most active markets, in this order respectively, in the Arab Countries as of September 2006. The monthly value traded for the seven GCC markets reached around $190 billion in December 2005, then dropped to around $158 billion in September 2006. Excluding the Saudi Market, the monthly value traded in any of the GCC markets is much less than the average value traded in the set of emerging markets presented in Appendix 1.

Table 1 summarizes the general aspects of the GCC stock exchanges in terms of number of listed companies, market capitalization and trading volume for the month of September 2006 and year 2005. Among the GCC stock markets, KSE contains the highest total number of listed companies reaching 175 at the end of September 2006, followed by MSM with 119 companies.

For market capitalization, Table 1 shows that the Saudi market is the largest in terms of market capitalization and the MSM is the smallest despite of it emerging second in terms of listed companies. The market capitalization for the SSM accounts for more than 53.5% of the total market capitalization of the seven markets, whereas the MSM accounts for 1.5% of the total market capitalization of these markets. The size of SSM in 2005 measured by market capitalization is bigger than any emerging market listed in Appendix 1.

Compared to the size of the economy measured by total market capitalization as a percentage of the GDP, the DSM is the largest among the GCC

markets. The total market capitalization for the DSM is over 250% of the GDP at the end of 2005. DSM comes second among the 15 Arab capital markets. The Amman Stock Exchange comes first with a total market capitalization to GDP reaching 296% at end of 2005.[2]

If the number of listed companies is used in conjunction with market capitalization to calculate the market capitalization per listed company, it may be seen that the SSM has the highest market value per listed company among all the GCC stock markets with about $5.65 billion as of September 2006. It may be noted that this number is higher than the per market capitalization of any of the 23 emerging markets listed in Appendix 1. On the other hand, the MSM is the lowest with around $110 million.

In terms of market activity measured by value traded that serves also as a measure of market liquidity, SSM is the most active market with a monthly trading value reaching to more than $136 billion in September 2006, falling from almost $221 billion in February 2006. The trading value in the Saudi market accounts for more than 86% of the total trading value in the seven GCC markets in September 2006. On the other hand, the BSE is the least active among the seven GCC markets, accounting for less than 1% in the total value traded of the markets. Actually, SSM is one of the most active emerging markets ─ the value traded in the Saudi Market is larger than any trading value registered in any emerging market listed in Appendix 1. The Chinese Market is the closest with $62 billion.

For turnover ratio, the ratio of trading value to market capitalization at the end of the trading period, the SSM remains to be the most active market measured by both monthly and yearly turnover ratio. The monthly turnover ratio for the month of September 2006 was 29.83. BSE is the least active market among the seven GCC markets with a monthly turnover ratio equals 0.57. The market capitalization weighted average turnover ratio for the GCC markets in September 2006 was around 18.5. Looking at yearly turnover ratios, SSM is the most active, followed by DFM.

Table 1.   The GCC Stock Markets: Some Indicators

Market	No. of Listed Companies		Market Capitalization[***] (US$ bil)			Trading Value[***] (US$ bil)		Turnover Ratio[**] (%)	
	Sep 2006	2005	Sep 2006	2005	% of GDP 2005	Sep 2006	2005	Sep 2006	2005
Abu Dhabi	59	59	93.98	132.41	108	2.14	28.51	2.28	21.53
Bahrain	50	47	21.23	17.36	139	0.12	0.71	0.57	4.08
Doha	36	32	65.78	87.14	251	1.10	28.26	1.67	32.45
Dubai	40	30	95.93	111.99	91	13.02	110.30	13.57	98.49
Kuwait	175	158	106.83	142.10	190	4.62	97.58	4.32	68.67
Muscat[*]	119	139	13.09	12.06	42	0.25	3.20	1.91	25.20
Saudi Arabia	81	77	457.38	646.12	210	136.42	1103.65	29.83	170.84
Total	560	542	854.22	1149.18	150	157.93	1372.21	18.49	119.41

Sources: Arab Monetary Fund available at www.amf.org.ae and Global Investment House, GCC Market Review January 2006, available at www.globalinv.net.
[*] For Muscat Securities Market, the source is www.msm.gov.om, Reports Section. N.B. Bonds and the investment funds are excluded.
[**] Market capitalization weighted average turnover ratio.
[***] Numbers of market capitalization and value traded are corrected to 4 digits exchange rate.

Regarding future investment opportunities in the GCC, Table 2 shows that high financial ratios were dominant in December 2005 but in the first quarter of 2006, went down gradually to its global averages in September 2006. In the first quarter of the 2006, the Saudi market had the highest Price-Earning Ratio (P/E) and Price to Book Value Ratio (P/BV) among the set of emerging markets when these ratios skyrocketed in March 2006 to 75 times and 13.93 times respectively. ADSM, DSM and DFM had same higher ratios as well, but all returned to the emerging market averages after the large expansion in the Initial Public Offerings (IPOs) and the dramatic correction in the GCC markets that took place in the first half of the year 2006.[3]

Table 2. The GCC Stock Markets: Main Financial Ratios

Market	December 2005			September 2006		
	P/E Ratio	P/BV Ratio	Dividend Yield %	P/E Ratio	P/BV Ratio	Dividend Yield %
Abu Dhabi	20.87	4.33	1.16	11.80	2.79	1.59
Bahrain	16.26	2.09	3.19	13.74	1.96	3.56
Doha	30.61	4.57	1.31	18.96	3.53	2.13
Dubai	19.19	4.42	1.19	12.64	2.94	1.70
Kuwait	13.13	3.29	2.00	12.13	2.70	3.82
Muscat	12.79	2.51	4.03	12.81	2.32	4.17
Saudi Arabia	63.77	10.11	1.33	23.47	5.69	1.93

Depth and Breadth of the GCC Markets with Respect to Economic Structure

A closer look at the companies listed in the GCC markets shows that almost two thirds of the firms listed in the GCC markets are in the services sectors. Services sectors include financial services (banks, investment companies, real estate and insurance), general services, telecommunications and hotels and tourism. The services sectors also account for more than 70% of the market capitalization of the firms listed. The services sectors are the most active sectors in the GCC markets. Around 45% of the value traded in September 2006 in the seven markets is attributed to the services sectors. Within the services sectors, financial service is the dominant sub-sector with a total number of companies listed reaching close to 200 firms. These companies account for more than 42% of the seven GCC market capitalization. However, their contribution to market activity is modest and does not exceed 10% of the total trading value of the seven GCC markets. The detailed classification in each sub-sector is not quite obvious, because of the differences in classification among the GCC markets in reporting.

Although the industrial sector (mining and manufacturing) is dominant in the GCC economies because of the oil industry, it accounts for a smaller portion especially in terms of number of listed companies. The main reason for this disproportion is that most of the oil companies in the GCC countries are not listed in the financial markets. The largest oil companies are totally owned by governments. The total number of industrial companies listed in the GCC capital markets (including the Saudi cement companies and non-Kuwaiti companies listed in the KSE, while excluding the Kuwaiti food companies) are around 30% of the total number as of September 2006. However, industrial companies seem to be very large and active companies, since in total, they account for around 30% of the total market capitalization and 42% of value traded of the seven GCC Markets.

The agriculture and food sectors do not seem to be shown as separate sectors in the GCC markets except in the Saudi market (for agriculture) and KSE (for the food companies). The total number of companies working in agriculture and food industries is around 2.5% of the total number of companies listed in the seven GCC markets with a total market capitalization of less than 1% of the total market capitalization. The small number and size of agriculture companies listed

in the GCC markets is consistent with the small contribution of this sector in the GCC economies. Agriculture sector contributes for less than 1% of the GDP in Bahrain, Kuwait and Qatar and less than 5% for Oman, Saudi Arabia and UAE. Food companies, on the other hand, are listed in most of the GCC markets under the "industrial sector" but not as a separate sector. Food companies are identified in an isolated sector only in the KSE. Generally speaking, the agribusinesses in the GCC countries is usually small and family-owned, Saudi Arabia is the only GCC country that has large agribusiness firms.

As noted earlier, specifying the exact activity of each company in each market is difficult because of the differences in classification among the markets. However, looking at each market individually, does give a better idea. Generally, services sectors (banks, investment companies, real estate, insurance, general services, telecommunications, and hotels and tourism) are the dominant sectors in each individual market led by financial services (mainly banks).

The services sectors account for more than 90% of the total market capitalization of ADSM, and about 83% of value traded. The non-financial services companies seem to include the largest and the most active companies (in terms of trading value). However, measuring market activity via the turnover ratio indicates that the industrial companies are the most active in the ADSM, although its market capitalization is relatively low (less than 10% of the total market capitalization).

For BSE, banking and investment sectors contain the largest and most active companies (measured by trading value) in the market. Banking and investment companies account for more than 75% and 93% of the market capitalization and trading value, respectively. BSE, as a whole, seems not to be very active by the turnover ratio measure. Its companies have the lowest turnover ratios among the companies listed in the GCC capital markets.

Regarding DSM, the banking sector registers the largest companies in terms of market capitalization, and it includes the most active companies in the DSM. The non-financial services sector contains the second largest and second most active companies in the market in terms of trading value and it is ranked first when measuring market activity via turnover ratios.

For DFM, the non-financial services sector is the most dominant considering market capitalization, value traded, and turnover ratio.

For KSE, the financial services companies have the largest listed companies, the largest market capitalization, and the most active companies in terms of value traded and turnover ratios.

The case is the same for MSM where the banking and investment companies are the largest but not the most active in terms of trading value and turnover ratios.

For SSM, the story is totally different. The industrial sector contains the largest number of listed companies with the largest market capitalization and value traded (even without including the cement and electricity companies). The banking sector has the second largest market capitalization but relatively low value traded. However, the agriculture companies seem to be the most active companies in the Saudi Market, if activity is defined in terms of turnover ratios.

Statistical and Economic Aspects of the GCC Stock Returns and Markets

The analysis below depends on the daily price indices for the seven GCC markets as reported by the Arab Monetary Fund (AMF). The indices have different starting dates. ADSM and DFM stock price indices start from May 2, 2004. The DSM stock price index starts from August 22, 2004. For other markets, the indices start from May 29, 2002. The series ends on June 28, 2006.

Appendix 2 shows the pace of the stock prices in the seven GCC markets. The boom in the GCC markets started in 2003 and intensified in early 2005. As also indicated by the figures, this boom continued until the end of the year when market sentiment started to be modified and selling pressures started to appear in November 2005. Since then, there have been dramatic corrections in several markets in early 2006. The corrections started first in the UAE and Qatari markets, where stock price increases were tremendous. In early 2006 and when most markets started to recover, pessimism spread among investors. By then, margin calls increased dramatically leading to panic selling on "Black Tuesday," on March 14, 2006. Governments, in that time, adopted a number of measures in efforts to help calm investors. However, markets remain very sensitive, and this

sensitivity is translated into a further sharp fall in the Saudi Market in mid-April, 2006. The impact of the collapse was asymmetric among the markets. The major effect appears in the Saudi, UAE and Qatari markets.

The boom in the GCC markets in its early stages (2003-2004) may be largely explained by improved earnings related to the increase in oil prices and strong macroeconomic performance. However, the massive increase started at the beginning of 2005 was mostly attributed to: (a) unreasonable expectations of corporate profit growth (after the exceptionally high profits reported at the beginning of 2005); (b) large oversubscriptions on the under-priced initial public offerings (IPOs) especially for newly privatized state-owned companies; and (c) rapid growth in household credit, (see IMF 2006a, b, c and d).

IMF studies (IMF 2006b and c) report that the correction in the GCC markets begun in late 2005, was prompted by several factors: (a) Earning reports for the fourth quarter of 2005 released in early 2006, were lower than the exceptionally high expectations - this is correct especially for the Saudi and Kuwaiti markets; (b) There was a growing belief among investors that high profits reported by some listed companies were a result of equity trading rather than operations; and (c) The huge amounts of money raised through large numbers of IPOs across the GCC countries and delays in refunding oversubscribed amounts contributed in drying up liquidity - as in the cases in Qatar and UAE.

Additionally, as a fourth reason, some regulatory measures and actions taken by authorities to limit speculation at a time when market confidence was already shaky, boosted the downturn in sentiment. For example, Saudi Arabia introduced a regulatory action of further limiting daily fluctuations in individual stocks from 10% to 5%. Such action was interpreted by investors as a lack of confidence in market valuations. As prices began to fall, margin calls intensified selling pressures. Selling contagion spread from Saudi Arabia to other GCC and Arab equity markets since the Saudi market is highly integrated with most of the stock exchanges in the area (see IMF, 2006e).

The GCC authorities reacted to the sharp reduction in stock markets by adopting policy measures aimed at enhancing market liquidity, broadening the investor base, and improving transparency. The Saudi authorities, for example, reversed their earlier procedure limiting daily price fluctuations of individual stocks and allowed stock splits to lower the face value of shares and encourage

broader retail ownership, and also lowering the minimum face value of traded stocks in an effort to make smaller shares attractive. The authorities also allowed foreign residents to trade directly with local exchanges (previously they were restricted to trade only in mutual funds). To improve the quality of information available to investors, the Saudi authorities started to license research institutions to analyze new companies and have introduced harsh new penalties against using insider information, (see IMF, 2006b and d).

In the UAE, in order to enhance the liquidity of the market, authorities reduced the time limit for companies to refund IPO oversubscription. Authorities now require companies to refund IPO oversubscriptions within two weeks. They also raised the ceiling on bank lending against equity holdings and ceased margin requirements from 30% to 20% to lower the risk of forced stock sales that were adding to market pressures. The Central Bank in the UAE has also strengthened monitoring of the banking sector with expanded reporting requirements by local banks to include indirect stock market exposures. This is beside the announcements of potential share purchases by state investment funds operating in the major regional markets lifted market sentiment, (see IMF, 2006b and d).

Appendices 2 and 3 show that the GCC markets faced very volatile periods (especially for ADSM and DFM) during the above mentioned trend that is usually associated with large drops in returns. This is what Black (1976) refers to as leverage effect. By visualizing Appendix 2, it may be concluded easily that all indices are non-stationary, due to the pronounced trend and the changing variance in some markets, e.g. ADSM and DFM.

Appendix 3 plots the daily returns on the seven GCC stock markets. Returns are defined as continuously compounded returns (the natural logarithm first difference). DSM is shown to be the most volatile among the seven markets. ADSM also faces a period of high volatility. BSE and MSM seem to be the most stable markets in the GCC. From the figures in Appendix 3, it may be concluded that the daily returns on the GCC markets are all stationary. A more formal unit root tests including Augmented Dickey-Fuller (ADF) and the Phillips-Parron (PP) are presented below.

As for the unconditional distribution statistics for daily returns of the GCC capital markets, Table 3 shows the mean of daily returns is significantly different than zero for only the BSE, KSE and the Saudi, with the highest for the Saudi

market. However, an ANOVA-F (6, 4145) test for the differences in the means of returns shows that these differences are statistically insignificant.[4]

With respect to volatility measured by the standard deviation, Table 3 shows that UAE stock markets have the highest standard deviation and thus the ADSM and DFM are the most volatile among the GCC capital markets. On the other hand, MSM has the lowest volatility. Using Barlett (6), Levene (6, 4145) and Brown-Forsythe (6, 4145) techniques to test for the differences in variances resulted in a strong rejection of the null hypotheses that the variances of returns in the seven GCC markets are equal.[5]

The coefficient of variation (CV) measured as a standard deviation per unit of returns shows that the UAE has the highest CVs. For ADSM, each unit of return is associated with 141.2 units of risk. For DFM, results show that each unit of return is associated with 53.4 unit of risk. DSM also shows high CV in spite of its relatively low standard deviation, which means that realizing one unit of return in the DSM tolerates investors to very high risk. The lowest CV is found in the MSM market.

Table 3 shows also that BSE, DSM, DFM, and MSM are all positively skewed. This is expected since the means of returns in these markets are higher than the median. This result implies that there are many long periods in these markets with small negative returns, while there are very few periods with high positive returns. Thus, investors in these markets are willing to bear small losses for big positive rewards. On the other hand, the distribution of daily returns in the Saudi market seems to be negatively skewed. This implies that there are many periods of positive returns in the market, but there are few periods of high negative returns.

Since the size of kurtosis of the normal distribution equals 3, all the GCC markets seem to have significant excess kurtosis, which means that there is a higher probability to see outliers in market returns than normal. With these results for skewness and kurtosis, the unconditional distribution of the daily returns in the GCC markets is expected to be far from normality. This result is documented by Jarque-Bera test for normality of Jarque and Bera, (1987). The test statistics of   strongly rejects the null hypothesis of normality of the daily returns in the seven GCC markets.

To test for the efficiency of the GCC stock markets, two tests are used - the AR(1) model and the Q-Stats up to 36 lags of Box and Pierce (1970) and Ljung and Box (1979), respectively. The results of the tests indicate that current returns depend on previous returns. For DFM and MSM, current returns are affected by far lagged returns, but not with the directly previous returns. This result indicates that all of the GCC financial markets are weak form inefficient, and of course not semi-strong or strong form efficient. This result of inefficient GCC markets is reported also in Simpson (2004).

To test for volatility dynamics in the GCC markets, Bollerslev's (1986) Generalized Autoregressive Conditional Heteroskedaticity (GARCH) model is used. BSE is found to adhere to a GARCH (0, 1) process, indicating that current conditional volatility in the BSE is affected by the previous level of conditional volatility. Other markets seem to follow GARCH (1, 1) processes. Actually, DSM, KSE, and MSM are found to follow an IGARCH (1, 1) process, since the summation of the parameters of the GARCH process does not statistically differ from 1.

According to Chou (1988), summation of αs and βs represents the change in the response function of shocks to volatility per period. A value greater than unity implies that the response function of volatility increases with time, a value less than one implies that the impact of the shock decays over time.

Estimations for GARCH parameters and applying the necessary associated test statistics on these parameters indicate that the summation of αs and βs are significantly greater than 1 for ADSM, DFM and SSM. This means that any shock to volatility will persist and increase over time. For BSE, the summation of α and β is significantly less than one. This means that any shock to volatility will decay at the end. For other GCC markets, the summations of αs and βs do not significantly differ from one. This means that the process that generates volatility for these markets implies a forecastable conditional volatility with infinite unconditional volatility.[6]

To test for the relationship between risk and returns, Engle, Lilien and Robins (1987) GARCH in mean, (GARCH-M) specification that relates risk to expected returns, is used. The model assumes expected returns to be time varying with conditional volatility. The author uses the square root of GARCH as a measure of conditional volatility.

Results show that all the GCC markets (except DSM) indicate a positive relationship between risk and returns. These results indicate that internal risk is priced in these markets and investors are compensated for holding more risk.

Table 3. Summary Statistics of the Daily Returns of the GCC Markets
(May 29, 2002 - June 28, 2006)

	Abu Dhabi	Bahrain	Doha	Dubai	Kuwait	Muscat	Saudi
Mean (%) z-stats	0.078 0.146	0.102** 2.331	0.082 0.576	0.116 0.385	0.102** 2.357	0.12 3.105	0.172** 2.060
Median (%)	0.073	0.032	0.00	0. 175	0.095	0.026	0. 120
Maximum	0.679	0.159	0.116	0.800	0.065	0.123	0.121
Minimum	-0.669	-0.087	-0.099	-0.741	-0.062	-0.056	-0.156
Std Dev (%)	11.024	1.196	2.661	6.184	1.172	1.072	2.266
CV	141.163	11.661	32.408	53.406	11.531	8.756	13.191
Skewness1 t-stats	0.019 1.597	3.126* 34.963	0.257*** 1.957	0.829* 6.969	-0.116 -1.287	2.004* 22.240	-1.270* -14.094
Kurtosis2 t-stats	33.088* 126.465	55.639* 292.095	6.428* 13.053	116.997* 479.149	7.263* 23.655	32.356* 162.897	15.963* 71.932
AR(1)	-0.389*	0.079**	0.209*	0.001	0.175*	0.025	0.090**
Q-Stats (36 lags)	Significant	Insignificant	Significant	Significant3	Significant	Significant4	Significant
PP unit root test5	-34.598	-25.246	-15.054	-26.630	-22.992	-26.824	-29.408
ADF unit root test5	-7.277	-25.277	-15.174	-14.164	-22.956	-27.075	-24.911
Volatility Process GARCH(p,q)-M Parameter $\alpha s + \beta s6$	GARCH(1,1) 0.118* 1.370*	GARCH(0,1) 0.076*** 0.923**	GARCH(1,1) 0.002 1.005	GARCH(1,1) 0.088* 1.33*	GARCH(1,1) 0.099** 1.001	GARCH(1,1) 0.117*** 0.994	GARCH(1,1) 0.136* 1.039*
Jarque-Bera7	15993.880	86522.940	174.210	229634.50	561.131	27029.510	5372.847
Observations	424	739	348	424	739	739	739

[1] $t=(S'-0)/SE\ (S')$ where SE $(S')=$ square root (6/n)

[2] $t=(K'-3)/SE\ (K')$ where SE $(K')=$ square root (24/n)

[3] lags 2-36 are all significant.

[4] lags 4-36 are all significant.

[5] All test values for the Phillips –Parron (PP) and Augmented Dickey-Fuller (ADF) strongly reject the null hypothesis of non-stationarity (presence of a unit root) at standard significance levels.

[6] The Sum of $\alpha + \beta$ represents the change in the response function of shocks to volatility per period. If $\alpha + \beta = 1$, a current shock persists indefinitely in conditioning future variance. If $\alpha_1 + \beta_1 > 1$ then   the response function of volatility increases with time. If $\alpha + \beta < 1$ this means that shocks decay with time. t-stats for the summation of $\alpha + \beta$ =1 is $\dfrac{\alpha + \beta - 1}{\sqrt{se(\alpha)^2 + se(\beta)^2 + \text{cov}(\alpha + \beta)}}$

[7] H_o of normality assumption is rejected for the seven markets at 99% confidence level.

[*] Significant at 1%

[**] Significant at 5%

[***] Significant at 10%

Interdependence among the GCC Financial Markets and Inter-Regional Integration

To test for the short term interdependence among the seven GCC markets, the correlation matrix among the daily price indices in the seven markets was calculated. Generally speaking, the GCC markets are found to be highly correlated. The correlation coefficient ranges between 0.52 and 0.95. Results show that the least correlated markets are KSE and ADSM, SSM and ADSM, and then the MSM and DSM. The most correlated markets are MSM and BSE, followed by SSM and KSE and MSM and KSE. Results generally indicate that DSM is the least interdependent. This result differs slightly from that of Simpson and Evans (2004) who reports that the BSE is the least interdependent.

Table 4. Correlation Structure between Daily Indices of the GCC Markets
(May 2, 2003 - June 25, 2006).

	ADSM	BSE	DSM	DFM	KSE	MSM	SSM
ADSM	1.00	0.75	0.62	0.77	0.52	0.63	0.54
BSE		1.00	0.81	0.84	0.91	0.95	0.90
DSM			1.00	0.72	0.65	0.59	0.62
DFM				1.00	0.81	0.82	0.79
KSE					1.00	0.92	0.93
MSM						1.00	0.91
SSM							1.00

Correlation among monthly returns (Table 5) shows the same high correlation among the seven GCC Markets. The correlation coefficients range between 72% and 98%. The highest correlation is between the monthly returns in ADSM and DFM, and the lowest between the monthly returns of DSM and BSE.

Table 5. Correlation Structure among Monthly Returns in the GCC Markets
(December 2001 - May 2006)

	ADSM	BSE	DSM	DFM	KSE	MSM	SSM
ADSM	1.00	0.88	0.88	0.98	0.91	0.85	0.96
BSE		1.00	0.72	0.88	0.85	0.96	0.94
DSM			1.00	0.91	0.94	0.78	0.83
DFM				1.00	0.93	0.88	0.96
KSE					1.00	0.89	0.92
MSM						1.00	0.94
SSM							1.00

To investigate whether the strong short-run correlation holds for long-term periods, cointegration techniques of Johansen's (1991, 1995) maximum likelihood estimator is used to test for the integration among the seven GCC financial markets with five lags (a week of trading). As an initial step, formal unit root tests of Augmented Dickey-Fuller (ADF) and the Phillips-Parron (PP) show that the stock price indices in the seven GCC markets are all integrated with order 1, i.e. they all have the unit root or I(1). Collective and bilateral cointegration tests among the GCC stock price indices show that the seven GCC markets are cointegrated. This means that the interdependence among the markets holds also in the long run. The results indicate that diversification among the GCC markets is not beneficial for international investors, i.e. investing in one market is mimicking investing in other markets.

Moreover, Granger (1969) causality tests for 5 lags (a week of trading) show that the Saudi Market Granger causes DSM, DFM, KSE and MSM. On the other hand, the KSE Granger causes DFM, MSM and BSE. The obvious result drawn from the Granger causality test is that DFM is caused by all of the GCC markets except DSM, whereas ADSM is not Granger-caused by any of the markets but Granger causes DFM.[7] This result indicates that there is a spillover in mean from the Saudi and the Kuwaiti markets to most of other GCC markets.

Economic Growth and Development Services
of the GCC Capital Markets

Capital markets serves as a source of funding for large projects. Initial public offerings (IPOs) and seasoned equity offerings (SEOs) are the main tools for that. In 2005, around $138.5 billion were raised through 1268 IPOs worldwide compared with $112.2 billion raised though 1352 IPOs in 2004.

For the MENA region, almost $8.1 billion were raised in the Arab Countries through 35 IPOs activities in 2005, more than double of the $3.5 billion raised in 2004. The GCC countries participated with $5.74 billion by 23 IPOs. UAE was the leader through 20 IPOs raising around $1.7 billion. Saudi Arabia was the second. UAE and Saudi Arabia both raised around 40% of the total. Oman, on the other hand, raised $800 million.

This increase in the amount of funds raised through IPOs resulted from improvements in the capital market conditions in the region. As a matter of fact, increasing the liquidity of the main GCC capital markets in the last few years attracted investors to approach the financial markets in the region to obtain funds. In the past few years, the GCC markets witnessed increased depth through new firms' listing and an overall increase in market capitalization.

The GCC governments contributed positively to the liquidity of the markets by listing some of previously public companies in the stock exchanges. Examples are numerous including the ASE Baraka Power Company in Saudi Arabia; Al-Qurain Petrochemical Industries in Kuwait, Qatar Gas Transport Co., Omantel in Oman, Dana Gas and Abu Dhabi National Energy companies.

Around 40 non-listed companies in Saudi Arabia have announced plans to go public in 2006. Nearly 130 companies are waiting approval from authorities in the whole GCC countries to go public. For the period 2006 to 2008, investment bankers expect around $33 billion though IPOs. Such a large number of new listing companies would have different impacts on capital markets. The first impact is raising volatility of the market, as large number of companies gets listed. However, such increase of the number of listed companies and increase in volatility would force the capital markets to show more normal trading pattern, leading to more reasonable P/E ratios and makes it close to the emerging markets average (that is 15.5).

Increasing the number of listed companies increases the activity in the market and gives investors new investment opportunities. Consequently, this leads to an improvement in the liquidity and depth of the market which are the main links to economic development. However, there is still a lot to be done to attract new companies from the region, the Arab Countries or from outside the region. Basically, the GCC needs to open its companies to foreigner investors.

Ability of the GCC Stock Markets to Enhance Economic Developments

Levine (1996 and 1997a) establishes numerical milestones to differentiate among financial markets that enhance economic development and those that do not enhance economic development. According to Levine, the size of the stock market does not matter. What matters is liquidity, i.e. the ability to buy and sell.

The first measure of Levine is the value traded to GDP. High ratios imply high liquidity. Levine differentiates between different levels. The "very illiquid" market cannot promote economic development and this has a percentage of value traded to GDP 1.4 times or less. The "illiquid" market cannot promote economic growth either. In this kind of market, the ratio of traded value to GDP stands around 2.2 times. The "liquid market" has traded value to GDP equals to 2.6 times and more. This amount of liquidity can enhance partially economic development. The "very liquid" market is the market with a ratio of traded value to GDP of 3.4 times or more.

According to Levine's liquidity classifications and based on the information reported in Table 6, the Saudi Market is considered "very liquid" and it can spur economic development in the long run. Other GCC markets are classified as "very illiquid" markets implying that none of them under the current conditions, is expected to contribute to economic development.

The second measure used by Levine (op. cit.) is volatility. Levine classifies markets with annual volatility of 1.0 as "very stable" market, while markets with annual volatility of 1.7 as "stable markets". At the other end of the spectrum, he classifies markets with annual volatility of 1.8 as "volatile", and those with annual 2.8 as "very volatile" markets. Volatility, by itself, is not a measure of market liquidity and it does not hinder growth. The necessary measure here is the turnover ratio to volatility. The higher the turnover ratio to volatility is, the more liquid the market. More liquid markets should be able to handle high volumes of trading without large price swings. This measure, according to Levine, shows that countries with higher turnover ratios to volatility tend to grow faster.

Table 6. GCC Stock Market Measures to Enhance Economic Development.

	(Traded Value/GDP(X	(%)Mkt. Cap/GDP	Annual Volatility	/Turnover Volatility
Abu Dhabi	0.23	108	1.70	0.13
Bahrain	0.06	139	0.19	0.21
Doha	0.81	251	0.41	0.79
Dubai	0.90	91	0.95	1.03
Kuwait	1.46	190	0.19	3.61
Muscat	0.11	42	0.17	1.48
Saudi	3.59	210	0.35	4.89

Based on Levine's classification of stability of financial markets, all the GCC markets are in the "very stable" zone except for ADSM that would be described as "stable".   Based on the turnover ratio to volatility, the SSM is the most liquid. Thus, it has the ability to absorb large swings in the trading volume without large swings in volatility. The KSE has the same aspects. According to this measure, both KSE and SSM are liquid and eligible to contribute to the long-run economic development.

According to the aforementioned two measures, SSM and KSE (to a lesser extent) are the only GCC markets eligible to participate in the long-run economic development in the region. Additionally, these two markets are highly integrated with some other Arab Markets and affect them significantly as indicated earlier and as a recent study of the IMF suggests.[8]

Factors Hindering the Growth of the GCC Capital Markets

All GCC markets suffer from the small number of listed companies. This problem accounts for the disproportionately high proportion of the total trading volume in the secondary market. This illiquidity has very important aspects on the efficiency of the market and economic development. Accordingly, the GCC countries are required to attract family companies for listing. Except for BSE, some 20 very large companies or so in each country of the GCC, are not listed on the capital markets. A very small number (less than three in each market) of the largest companies are listed. This is attributable to the fact that the most of the largest companies in the GCC are state-owned.

The biggest problem faced by the GCC capital markets and all the Arab markets is the lack of corporate governance, transparency, financial disclosure, and adoption of international standards. Companies may be listed on the stock markets but still have poor corporate governance. This usually discourages investors, especially foreign ones, from participating since they do not receive full information or do not trust the integrity of the information provided. This was part of the problem of the collapse of the GCC financial markets in early 2006.

Ownership structure of companies listed is another problem. Governments have more than 50% of the equity of most of the listed large companies. The involvement of Governments in these companies always limits foreigners' ownership in these companies. The GCC capital markets are still not totally open in practice to foreign or non-GCC investors. The major investors in the GCC capital markets are citizens of GCC countries. Companies are almost close to non-GCC nationals. Governments have started to ease such controls, but the majority of companies remain closed to non-GCC nationals.

Bahrain lately lifted the restrictions on foreign ownership and allowed other GCC citizens to own up to100% of the shares of listed Bahraini companies. Non-GCC nationals are allowed to own up to 49% (24% previously). In spite of this lifting of controls, the participation of foreigners is still very limited. Generally, the percentage of trading by non-GCC nationals is less than 10%. GCC nationals on the other hand, accounts for more than 30 % of the value traded.

The same issue applies to the UAE Markets. In ADSM, foreigners are allowed to invest in 32 companies with percentages ranging from 20% to 49%. However, actual ownership by foreigners is still very low, and most of the non-UAE investors are of GCC nationality. For DFM, only 18 UAE companies are open to foreign investors with ownership percentages ranging from 15% to 49%. However, for bonds, foreigners are allowed to own up to 100%, and for some bonds, actual ownership structure by foreigners has reached 50%.

In Oman, foreigners are allowed to own up to 70% in some of the companies. However, actual ownership in Omani companies for foreigners is still less than 10% for non-Arabs, less than 1% for the non-GCC Arabs and around 15% for GCC nationals. In DSE, the rules limit maximum ownership for non-

Qatari to 25%. Such controls also exist in Kuwait. Saudi Arabia recently started to allow non-Saudis to trade in the capital market directly rather than through mutual funds, as previously stated.

A promising issue for the GCC markets is that most of them allow for listing foreign companies and allow foreigners to invest up to 100% in these foreign companies. Opening the GCC markets to foreign companies has attracted new companies to be listed or cross listed to benefit from the excess financial liquidity available in the GCC, especially after the dramatic increase in oil prices.

Another factor hindering the GCC market development is that the GCC markets suffer from delays in transactions' execution. This was very obvious in the recent collapse of the GCC markets. Investors were not sure that they were getting their orders transacted immediately at the right prices.

Conclusion and Recommendations

Highly liquid financial markets spur growth and economic development. This result has been documented in many academic works. Although research in this topic has a long history, its application on the GCC region is very limited.

This paper contributes to existing literature by investigating whether the GCC financial markets act as spur to economic growth and development. While pursuing this objective, the paper tested for some theories and stylized facts in financial literature.

Results indicate the following:

- All the GCC financial markets are weak form inefficient, a result consistent with Simpson (2004).

- Volatility in the markets has long memory and shocks to volatility persists for long periods in most of the GCC capital markets, except for BSE.

- Risk is internally priced and investors get compensated for holding more risk (with the exclusion of DSM)

- The GCC markets are highly integrated. As such, investing across the region has very little impact on risk diversification.

- The dynamics in the Saudi Stock Market and the Kuwaiti Stock Exchange

spillover to other markets is noted. Abu Dhabi Securities Market and the Saudi Market seem to be least affected by other markets and Dubai Financial Market appears to be affected the most by other markets.

To evaluate the potential roles of the GCC financial markets in enhancing regional economic development, the paper employs Levine's (1996, 1997a) two milestones for identifying capital markets that serve as spur to growth. Levine's measures focus on liquidity as the link between financial market development and economic development. According to Levine, only liquid financial markets boost economic growth regardless of its sizes. Results indicate that the SSM, and to a lesser extent, the KSE, are the only markets that can lead the economic development process. The Saudi Market is one of the largest and most active and liquid markets among all emerging markets. With its high liquidity, it has the potential to lead the growth and development in the region, especially with its high integration with other Arab Markets.

GCC markets suffer certain problems including the low number of companies listed, the lack of good governance, transparency, financial disclosure and adoption of international standards and the need for these markets to be more open to foreign investors. This scenario requires authorities of the GCC markets to adopt certain measures and procedures including:

- Improving corporate governance, disclosures and adopting international accounting standards;

- Establishing an independent securities market regulatory to regulate markets in some GCC countries like Kuwait;

- Increasing the depth of the market by increasing the securities available to investors;

- The unit of measurement and the price bands of the changes in the stock prices changed from currency units to percentages (namely for KSE).

- Improving the followed rules and practices of the IPO processes. Subscription prices for IPOs should be set through professional underwriters (and not through government agencies) based on appropriate company valuation;

- Replacing the current system that sets multiple margin rates for the same publicly traded security based on the nature of the loan by a single rate for each class of securities;

- Increasing the size of the public float of securities to promote deeper and more liquid markets;

- Increasing the size of institutional investors markets;

- Improving the collection and dissemination of statistical information; and

- Authorities in the region should start a comprehensive assessment of the capital markets regime against the International Organization of Securities Commissions standards.

In short, despite the fact that GCC capital markets are among the most active financial markets in the Arab Region, they are still incapable of actively participating in the regional development and poverty alleviation, as the noble economic theories suggest. It may be generalized that among the 15 Arab capital markets, only one market - the Saudi Market - has the potential to foster economic development in the region. Nevertheless, even the Saudi market still has to adopt many reforming acts to play this role efficiently. Other Arab markets still have a marathon menu of structural and socio-economical changes to be able to catch up.

Footnotes

[1] For a detailed survey of economic literature on the impact of financial development on economic growth, see Boulila and Trabelsi (2004).

[2] These numbers are very high compared with the percentages in emerging economies. According to the World Economic Outlook, in April 2006, the average market capitalization for emerging countries in Asia as a percentage of the 2005 GDP was 39.8%; emerging markets in Europe 54.7% and Latin America Emerging Markets was 49.5%.

[3] Price-Earning ratio (P/E), also known as price multiple, represents the amount the investor will have to pay for each dollar of profits. It is calculated as the ratio of current closing price of the share to the earning per share. P/E ratio changes dramatically, so financial analysts use the price to book value ratio, which is the ratio of the market capitalization to book value (net assets – net liabilities) per share. High P/E ratios reflect high demand on the stock, but very high P/E ratios indicate miss pricing or disequilibrium since the market price does not reflect the fundamentals of the firm. Thus, high P/E ratios imply that the stock prices will eventually decline to reach it is equilibrium levels.

[4] The numbers in brackets for ANOVA-F (6, 4145) refer to the degrees of freedom of the numerator and denominator of the F-test respectively. The first number (6) is the number of series (S) minus 1, whereas the second number is the total number of the observations in the 7 series (T) minus the number of series (S). More about ANOVA-F test for mean differences is presented in the Appendix 4, (see also Judge et al., 1985).

[5] The degrees of freedom for Levene and Brown-Forsythe are the same as ANOVA F test. The degrees of freedom for Barlett is the number of series minus 1(S-1). More about the variances differences tests is presented in the Appendix 4, see also Brown and Forsythe (1974a, 1974b), Levene, (1960) and Neter et al., (1996).

[6] Summation of α and βs as a short hand for $\sum_{Min(\alpha, \beta j)}^{Max(p,q)} (\alpha_i + \beta_j)$ is used to simplify notations.

[7] Results of Cointegration and Granger Causality Tests are available upon request.

[8] See IMF (2006e) draft working paper for comments.

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Appendices

Appendix 1. Major Market Indicators of Some Emerging Non-Arab Markets, 2004

	Number of Listed Companies	Mkt. Cap mil$	Avg. Mkt. Cap mil$	Avg. Mthly Trading Value $mil	Turnover ratio (%)	(%) Return	(%) Risk	CV	P/E	P/BV	Dividend Yield (%)
Argentina	104	46,432	446	637	1.37	10.90	47.80	4.39	**47.24**	**2.24**	1.00
Brazil	357	330,347	925	7,798	2.36	21.50	39.70	1.85	**10.80**	**1.84**	4.43
Chile	239	117,065	490	966	0.83	17.70	22.20	1.25	**23.06**	**1.78**	3.01
China	1,384	639,765	462	62,356	9.75	8.20	26.20	3.20	**13.83**	**1.98**	2.26
Colombia	114	25,223	221	122	0.48	71.30	30.50	0.43	**17.67**	**1.92**	2.52
Czech Republic	54	30,863	572	1,472	4.77	45.10	23.10	0.51	**26.64**	**1.34**	4.29
Hungary	47	28,711	611	1,084	3.78	29.10	26.90	0.92	**11.26**	**2.62**	1.95
India	4,730	387,851	82	31,590	8.14	20.60	25.40	1.23	**17.65**	**3.63**	1.53
Indonesia	331	73,251	221	2,297	3.14	32.60	36.00	1.10	**12.91**	**3.10**	3.23
Malaysia	962	190,011	198	4,990	2.63	9.20	18.10	1.97	**16.05**	**1.95**	2.22
Mexico	152	171,940	1,131	3,570	2.08	24.70	22.70	0.92	**15.02**	**2.58**	1.87
Pakistan	661	29,002	44	6,156	21.23	40.30	35.40	0.88	**9.45**	**2.39**	7.04
Peru	194	20,115	104	94	0.47	33.50	24.30	0.73	**11.88**	**2.28**	3.28
Philippines	233	28,948	124	305	1.05	5.10	25.50	5.00	**14.87**	**1.61**	1.65
Poland	225	71,102	316	1,381	1.94	15.00	31.00	2.07	**13.27**	**2.11**	1.28
Russia	215	276,957	1,288	10,903	3.94	42.30	31.50	0.74	**8.19**	**1.11**	3.12
South Africa	402	455,536	1,133	13,569	2.98	23.50	24.70	1.05	**14.97**	**2.43**	2.63
South Korea	1,573	428,649	273	53,241	12.42	33.60	31.90	0.95	**8.24**	**1.36**	2.40
Sri Lanka	245	3,657	15	49	1.34	33.50	41.10	1.23	**11.03**	**1.43**	2.63
Taiwan	697	441,436	633	59,885	13.57	7.00	30.20	4.31	**12.40**	**1.88**	2.95
Thailand	465	115,400	248	9,162	7.94	28.90	31.80	1.10	**11.49**	**2.41**	3.03
Turkey	296	98,299	332	12,286	12.50	16.90	58.50	3.46	**13.61**	**1.92**	1.93
Venezuela	59	6,117	104	38	0.62	5.90	44.40	7.53	**12.44**	**1.63**	5.75
Mean¹	597	174,638	292	12,346	5.19	25.06	31.69	2.04	**15.39**	**2.07**	2.87
Median	245	98,299	316	3,570	2.98	23.50	30.50	1.23	13.27	1.95	2.63
Standard Deviation	988	١٨٤,٨٤٤	371	19,642	5.43	١٠.٧٥	9.52	1.80	8.17	0.58	1.41
Maximum	4,730	639765	1,288	62,356	21.23	71.30	58.50	7.53	47.24	3.63	7.04
Minimum	47	3657	15	38	0.47	5.10	18.10	0.43	8.19	1.11	1.00

Source: S&P Global Stock Market Fact Book (2005).

N.B.

• Average of return is a simple average, the market capitalization weighted average return equals 20.78%.

• The average risk is a simple average also.

• Risk as measured by standard deviation of returns on a US dollar basis over the five-year period ended December 31, 2005.

• The P/E, P/BV and Dividend Yield pertain to the 4th quarter of 2004 and the average represents the average for the total emerging markets, not only the listed markets.

Appendix 2: GCC Markets Daily Indices
(May 29th, 2002-June 28th, 2006)
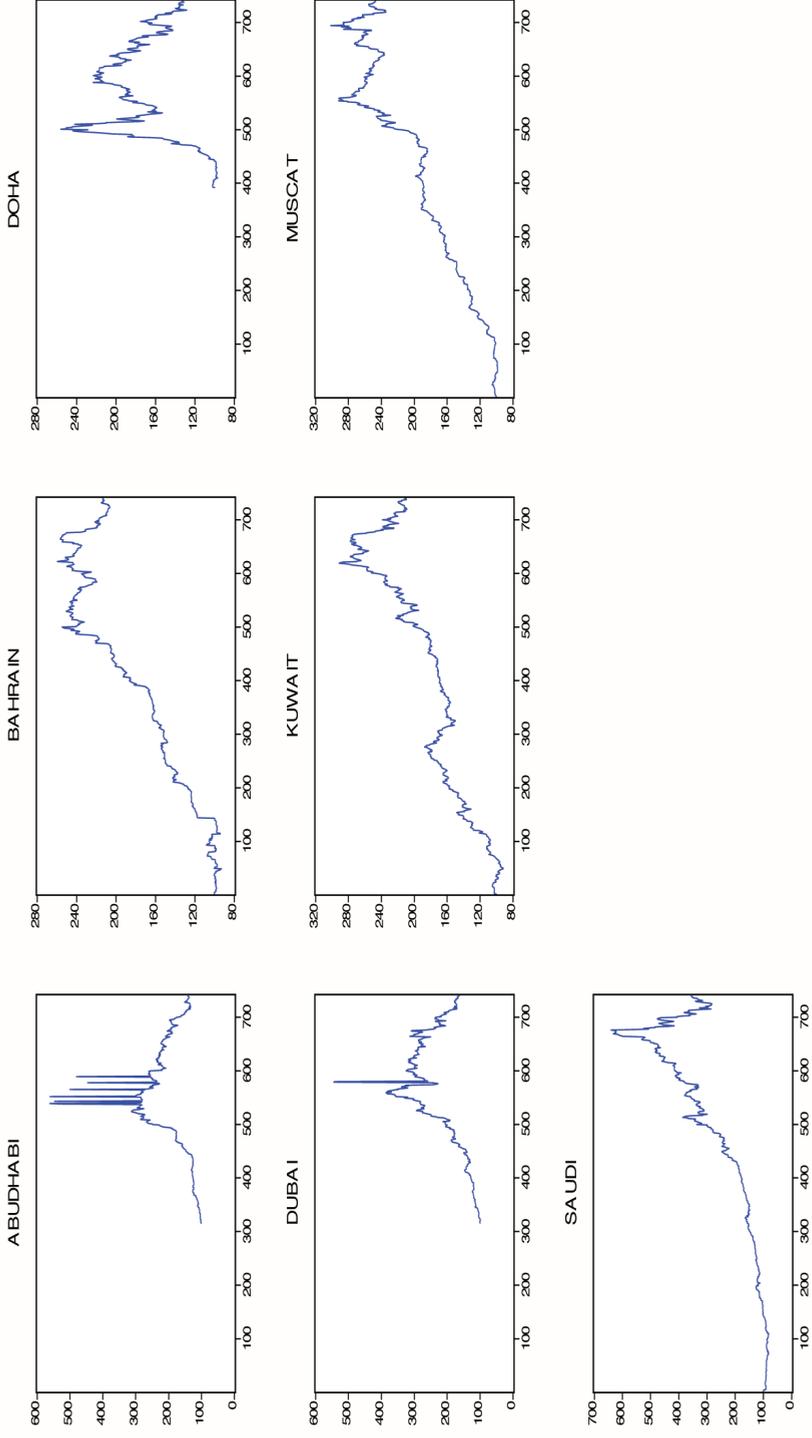
Source: Arab Monetary Fund, Arab Capital Markets Data Base. Various issues.

Appendix 3. GCC Markets Daily Returns (May 29, 2002 - June 28, 2006)
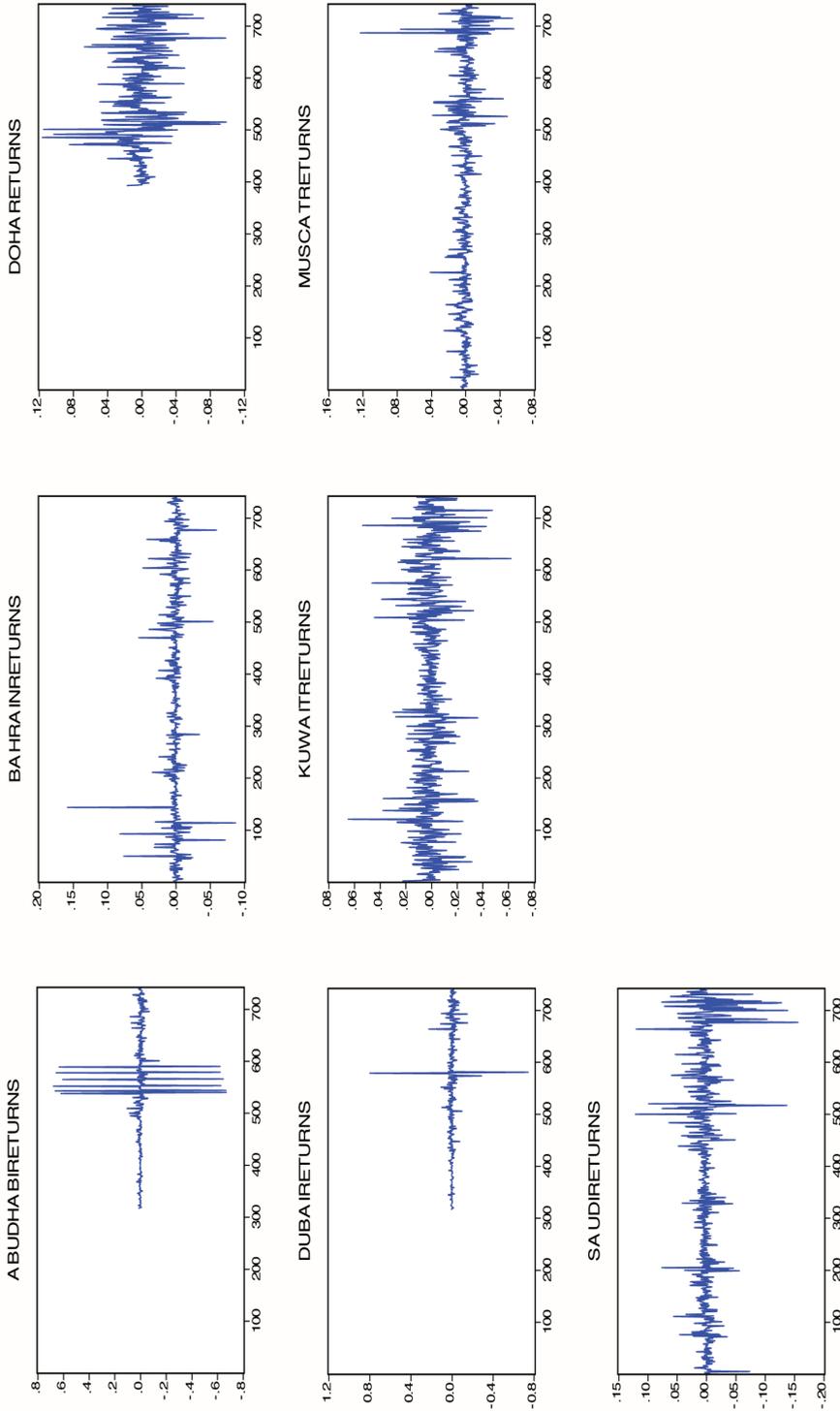
Source: Arab Monetary Fund, Arab Capital Markets Data Base.

Appendix 4. Means and Variances Equality Tests

ANOVA-F Means Equality Test

This test is based on a single-factor analysis of variance (ANOVA). The basic idea of this test is that if the data sub-samples have the same mean, then the variability between means of the overall samples should be the same as the variability within any sub-samples (within the overall sample).

If $x_{s,i}$ is the i-th observation in series s, where i=1, 2, …, n_s for sub-samples s = 1, 2, …S the between and within sums of squares are identified as :

$$SS_B = \sum_{s=1}^{S} n_s (\bar{x}_s - \bar{x})^2 \qquad \text{(A-4-1)}$$

$$SS_W = \sum_{s=1}^{S} \sum_{i=1}^{n_s} n_s (\bar{x}_{is} - \bar{x}_s)^2 \qquad \text{(A-4-2)}$$

Where the $\bar{x}_s$ is the sample mean within sub-series s, and $\bar{x}$ is the overall sample mean. The F-statistic for the equality of the mean is computed as

$$F = \frac{SS_B / (S-1)}{SS_W / (T-S)} \qquad \text{(A-4-3)}$$

Where T is the total number of observation. The F-statistic has an F-distribution with S-1 numerator degrees of freedom and T-S denominator degrees of freedom with respect to the null hypothesis of IID distribution, with equal means and variances in each sub-sample. In this case, S equal 7, and T equals 4152, thus the test is ANOVA (6,4145).

Variance Equality Tests

Variance equality tests assesses the null hypothesis that the variances in all S sub-samples are equal against the alternative that at least one sub-sample has a different variance.

Bartlett Test

This basically compares the logarithm of the weighted average variance with the weighted sum of the logarithms of the variances. Under the joint null hypothesis that the sub-sample variances are equal and that the samples are normally distributed, the test statistic is approximately distributed as a x^2 with $S = 1$ degrees of freedom. However, the joint hypothesis implies that this test is sensitive to departures from normality. For details, see Judge, et al. (1985).

Levene Test

This test is based on an analysis of variance (ANOVA) of the absolute difference from the mean. The F-statistic for the Levene test has an approximate F-distribution with numerator degrees of freedom and denominator degrees of freedom under the null hypothesis of equal variances in each sub-sample. For more, see Levene (1960) and Neter et al. (1996).

Brown-Forsythe

This test is a modification of the Levene test in which the absolute mean difference is replaced by the absolute median difference. The Brown-Forsythe test appears to be superior in terms of robustness and power. For more, see Brown and Forsythe (1974a and 1974b) and Neter, et al. (1996).