# Does it Pay to Invest in Middle East and North Africa Markets?

Tarek S. Zaher

**Abstract**

This paper examines the evidence underlying the notion that there is increased integration of MENA and developed country financial markets and that MENA market equities do not represent a separate asset class. We analyzed the correlation structures among individual country equity markets and efficient frontiers over two sub periods. We also analyzed the structure of the correlations among political risk indicators for a similar group of countries over similar time periods. The results of the study suggest that capital market integration has accelerated in recent years, both economically and politically but only for three countries in the MENA region. We therefore, conclude that the MENA market countries should continue to be viewed as a separate asset class from developed countries. These markets seem to be highly segmented and provide great diversification potentials to global investors.

## I. Introduction

The Middle East and North Africa (MENA) region continues to test the patience of both custodians and investors alike. Political instability, arcane market practices, and thin trading volumes mean that many of the region's markets are of only peripheral interest to global custodians and investors. The view of many of the region's sub-custodians is that MENA markets region is one of the most challenging markets in the world. Although progress can seem painfully slow, with many plans and little implementation, there are signs that the region's markets are taking greater efforts to attract foreign investors. None of the MENA countries can claim to meet all of the International Securities Services Association (ISSA) market recommendations, but some of these markets have most of them. However the market's infrastructure is expected to continue to improve dramatically in some of these markets. Many of MENA countries realize the need for a much stronger capital market and that more need to be done to make these market prosper and create a safer atmosphere for investors. As more foreign and local companies set up there operations in The Middle East and North Africa there will be an increase in demand for capital, so MENA markets would need the infrastructure to help that development. Including changes to procedures, laws and the professional infrastructure within the financial market and better dissemination of information. In addition MENA markets should have the ability to provide regional and international connectivity by complying with the international and regional laws. This will make these markets more attractive to foreign investors.

Recently a major boom was observed in the MENA stock markets. Most stock markets in the region have seen heavy investments which have pushed the key indices to very high levels, thus suggesting a bubble in MENA markets for some observers. Almost all of the stock markets registered a noticeable improvement in their performance during the 2003-2005 period. Sedik and Petri (2006) reports that the Arab Monetary Fund (AMF) composite index valued in U.S. dollars went up by 52 percent in 2004 and by about 91.6 percent in 2005. One possible

---

Tarek Zaher is a Professor of Finance, College of Business, Indiana State University, Terre Haute, Indiana. The author can be contacted via Email: tzaher@isugw.indstate.edu

explanation for the improvement in the MENA stock market performance is the increased liquidity and improved economic fundamentals in the region due to high oil prices. This has led to the large accumulation of reserves by oil exporting countries and appears to have contributed significantly to asset price appreciation in the Middle East. Another possible explanation is the relative reluctance of the Arab rich nationals to invest in overseas markets after the events of September 11, 2001 and instead invested in local markets. The improved performance in MENA stock markets did not last for too long and most of these markets witnessed a major correction in the first half of 2006.

In this paper we test whether MENA markets provide global investors the opportunity to earn high return and great diversification potentials. We examine the evidence underlying the notion that there is increased integration of MENA and developed country financial markets and that MENA market equities do not represent a separate asset class. We analyze the correlation structures among individual country equity markets during the 1995-2004 period. In particular we compare the individual country (MSCI) stock return correlation structures and efficient frontiers over the 1995-1999 and the 2000-2004 sub-periods. We also analyze the structure of the correlations among political risk indicators for a similar group of countries over similar time periods.

## II. Literature Review

When they make their portfolio allocation decisions, International investors have historically treated securities in emerging markets including Middle Eastern and North African (MENA) markets as a separate asset class. There is well documented evidence that emerging markets have high average stock returns and low correlations with developed markets and therefore they became an attractive choice for diversifying portfolios. De santis and Gerard (1997) finds that adding assets from emerging markets to a benchmark portfolio that contains US assets creates a new portfolio with considerable improvement in reward-to-risk performance. Harvey (1995a) suggest that adding equity investments from emerging markets to a portfolio of developed equity market shifts significantly the mean-variance efficient frontier to the left. However, recent developments in the economic, legal, accounting, and financial systems in MENA may erode the sources of separation between MENA markets and developing markets and increased the integration between the two markets. Henry (2000) and Bekaert, Harvey, and Lumsdaine (1998) found a whole spectrum of financial liberalization developments that have eased the flow of capital into and out of emerging markets. Included in these liberalizations are capital market reforms that have reduced the constraints and limits on foreign investor's holdings in local firm's equities and the establishment of country funds.

## III. Data and Quantitative Evidence

### A. Data

This section compares the empirical characteristics of the Arab MENA markets with those of selected developed markets. The return series were obtained from DataStream data set and consist of monthly stock return series over the ten year period Jan 1, 1995 to December 31, 2004. We use monthly return to avoid biases that could result from non-trading days, non-synchronous trading hours and days, and to avoid the noise commonly associated with them. There are several possible sources for MENA market returns: MSCI, IFC, and local index. Each of these sources started to cover MENA markets at different dates. In this study we chose the provider that started the coverage the earliest. For instance, Jordan and Turkey were covered by

MSCI in the late 80s, while Egypt, Israel, and Morocco were during the 90s. Saudi Arabia, Bahrain and Oman are only covered by IFC. Kuwait, Lebanon and Tunisia price series are only available in local indices and their coverage started in the 90s. The price series for developed markets are available since the 60s or the 70s through MSCI. We chose a starting date of January 1st, 1995 because nine of the eleven MENA return series are only available after 1990. The observation periods for all countries are not the same, but the construction of the indices is based on value-weighted portfolios. MSCI and IFC indices are usually highly correlated and reflect a constant methodology across markets; they capture the spirit of an all-share index by including replicable subsets of shares and targeting sixty percent of total market capitalization. These indices do not take into consideration restrictions on foreign ownership.

The equity returns presented are calculated in U.S. Dollars. This is more appropriate in segmented markets because inflation trends are taken into account through Fisher's equation (Liew, 1995) and it provides uniformity in the comparison of one market to another. When we used local series to collect the return for Kuwait, Lebanon and Tunisia, prices were converted in US dollars using the exchange rate series provided by DataStream.

**B. Risk and Returns Evidence**

Table 2 shows the monthly returns and risks (standard deviations) for ten MENA countries over the period of study (1995-2004) and the two sub periods (1995-1999 and 2000-2004). For comparison purposes, we also show the returns and risks on three international MSCI indexes: the Emerging Market (EM), the World index, and the Middle East Index (ME). We also include monthly equity returns and risks for three developed markets, Japan, UK, and USA. We compute monthly returns as the natural logarithmic difference of the monthly prices times 100, that is 100*Log (Pt/Pt-1). The summary statistics of the monthly stock index returns are presented in U.S. dollar terms. The results show little evidence of risk-return hypothesis (higher risk implies higher return) in selected MENA stock markets. Second, the pattern of higher emerging market returns (means) and high risks (standard deviations) compared to the developed countries that has been documented in a number of studies including De Santis and Gerard (1997), Harvey (1995a) and Saunders and Walter (2002, ) is partially supported in this study. The mean of monthly return during the ten years period (1995-2004) were relatively lower than the selected developed countries and the world index return for most of the MENA countries. Very high return was recorded only for Saudi Arabia (1.33%) and Turkey (0.85%). The returns for Morocco (0.64%), Oman (0.69%), Bahrain (.54%), Israel (0.57%), and Jordan (0.52%) are lower than UK (0.76%) and USA (0.80%), but higher than Japan (0.45%) and the World return (0.46%). The monthly risk adjusted return (Sharp Measure: Mean return/Std Dev.) was also relatively high for the same countries. Saudi Arabia has the highest adjusted return (0.28%).

Relative high return was observed only for three of the MENA countries (Saudi Arabia, Morocco, and Israel) during the 1995-1999 sub periods. There was, however, a major increase in the risk level (Standard deviation) for most of the MENA countries during this sub period. As a result, the risk adjusted return for all of the MENA countries (except Saudi Arabia) dropped below the risk adjusted return for UK, USA, and the world. On the other hand, most of the MENA countries outperformed the emerging market index adjusted return (which turned negative), and some MENA countries also outperformed Japan.

During the second sub period (2000-2004), a major shift in the relative performance of developed countries and MENA countries occurred. The high positive return and risk adjusted return for the developed countries and the world changed to a high negative return, while five of

the ten MENA countries continued to have high positive return and risk adjusted return. The tragedy of September 11 may have had a distorting impact on returns and risks of developed countries in the period immediately surrounding the tragedy.

When making their asset allocation decisions to international portfolios, investors and portfolio managers consider individual returns and risks as important ingredients for their decision making process. However, correlations among country returns are also essential and important factors that will influence the investor's decision. For example, if correlations between MENA markets and developed market countries have risen with time, this would support the view that these countries' equity markets are converging toward a single asset class. Thus indicating a greater integration of world capital markets. Therefore, investors or portfolio fund managers are less able to achieve gross diversification gains by allocating some of their assets to investment in MENA markets.

We examined the monthly return correlation relationships using U.S. dollar-adjusted returns to test the degree to which correlations among MENA and developed countries have changed. We computed correlations for each of the two equal sub periods in the study (1995-1999 and 2000-2004) separately. Table 2 shows the correlations among developed and MENA countries in each of the two sub periods analyzed, as well as correlation-by-correlation tests as to whether MENA market-developed country correlations increased over the later sub period (2000-2004) compared to the (1995-1999) sub period.

Table 2 shows that the correlations for most MENA market-developed country did not increase from the first to the second sub-period. The same can be said about the MENA market-World correlations. However, a major increase in the correlation was observed for Tunisia and Morocco, and to a lesser extent for Turkey. The Z-ratio test as to whether a correlation increased to a statistically significant degree is significant at the 10% confidence level (or above) in only three cases. Tunisia is showing statistically significant increase in the correlation with Japan, USA, and the world, but not with UK. Morocco is showing significant increase in correlation with Japan and UK only, while Turkey is having an increase in correlation with USA and the World only.

To test for the effects of the increased correlations (integration) on the potential gains from simple country-by-country diversification, we compared the efficient mean-variance of returns frontier based on monthly country index returns for the 1995-1999 period with the efficient frontier for the 2000-2004 period. Exhibit 1 shows the efficient frontier for both sub periods. It is clear that there are some gains from simple country-by-country diversification in the 2000-2004 sub period over all risk-return ranges. The slightly more convex frontier in the second sub period reflects the low positive or lack of correlation among country returns shown in table 2. These findings indicate that simple asset allocations into some MENA countries will enhance the performance for investors or portfolio managers in some developed countries. In developing their strategies, managers need to be selective in including some of the MENA market countries in their investment plans since only few of these countries showed increased correlation over time with the developed countries. Attention should also be given to industry as well as firm analysis in these countries.

Mei [1999], among others, has found that political events have had significant impact on some capital markets around the world. We therefore, tested also whether political factors have had an impact on return correlations. We used changes in Political Risk Guide's monthly index of political risk to analyze political trends among MENA and developed market countries. According to the ICRG political risk assessment, countries are rated on a scale of 1 to 100, a high

rating means less risky and a low rating means more risky. As it is evident in table 3, little more than half of political risk correlations are positive and the remaining correlations are negative in both sub periods. Further tests of significant differences in correlation of political risk between the two sub periods reveals that there is significant difference in correlations for six of the ten MENA countries with developed countries. But for two of the six countries the correlation is negative. These countries include Tunisia, Morocco, Lebanon, Jordan, and Egypt. It is possible that changes in legal and accounting systems as well as changes in economic policies and regulations have an impact on the increased integration in some of these countries.

## IV. Summary and Conclusion

In this study we examined the notion that MENA market country equities are considered as a similar asset class to developed country equities. The results of the study partially supports the evidence of higher emerging market returns compared to the developed countries that has been documented in a number of studies. High returns were recorded only for some of the countries in the MENA region during the whole period of study. During the first sub period (1995-1999), there was a major increase in the risk level for most of the MENA countries. As a result, the risk adjusted return for all of the MENA countries (except Saudi Arabia) dropped below the risk adjusted return for UK, USA, and the world. During the second sub period (2000-2004), a major shift in the relative performance of developed countries and MENA countries occurred. Five of the MENA countries had high positive returns and outperformed the developed countries. The tragedy of September 11 may have had a distorting impact on returns and risks of the developed countries.

The correlation tests, on the other hand, show that capital market integration has accelerated in recent years, both economically and politically, but only for three countries in the MENA region. Therefore, we conclude that the MENA market countries should continue to be viewed as separate asset class from developed countries. These markets seem to be highly segmented and provide great diversification potentials to global investors. It is clear that a number of frictions and barriers still restrict MENA markets from being fully integrated, especially in the areas of legal enforcement and accounting standards. However, the steps towards liberalization of MENA capital markets, their increased openness, and the new developments in information technologies will have a positive impact on the degree of integration with other world's capital markets

Table 1. Summary Statistics: Descriptive Statistics for each Monthly Return Series

PANEL A: 1995.12 to 2004:12

| | Obs. | Mean | Std. Dev. | Mean/Std Dev. | Skewness | Kurtosis | JB |
|---|---|---|---|---|---|---|---|
| Bahrain | 70 | 0.54% | 3.82% | 14.136% | 0.045 | 4.873 | 10.258 |
| Egypt | 106 | 0.11% | 7.46% | 1.475% | 0.506 | 2.900 | 4.571 |
| Israel | 94 | 0.57% | 7.51% | 7.590% | -0.643 | 3.118 | 6.538 |
| Jordan | 238 | 0.52% | 4.41% | 11.791% | 0.266 | 3.897 | 10.786 |
| Lebanon | 70 | -0.50% | 8.11% | -6.165% | 0.319 | 3.543 | 2.046 |
| Morocco | 106 | 0.64% | 4.94% | 12.955% | -0.225 | 3.448 | 1.782 |
| Oman | 70 | 0.69% | 5.75% | 12.000% | 0.588 | 3.797 | 5.890 |
| Saudi Arabia | 82 | 1.33% | 4.73% | 28.118% | -0.440 | 3.185 | 2.760 |
| Turkey | 214 | 0.85% | 18.43% | 4.612% | 0.134 | 3.455 | 2.491 |
| Tunisia | 106 | -0.74% | 5.28% | -14.015% | 0.028 | 6.214 | 45.626 |
| ME Index | 106 | 0.29% | 5.85% | 4.957% | -1.419 | 7.115 | 110.34 |
| EM Index | 238 | 0.60% | 6.59% | 9.105% | -0.946 | 5.881 | 117.826 |
| Japan | 237 | 0.45% | 6.95% | 6.475% | 0.094 | 3.248 | 0.956 |
| UK | 237 | 0.76% | 5.24% | 14.504% | -0.341 | 4.652 | 31.553 |
| USA | 237 | 0.80% | 4.54% | 17.621% | -1.053 | 6.637 | 174.434 |
| World | 201 | 0.46% | 4.21% | 10.926% | -0.553 | 3.777 | 15.300 |

PANEL B: 1995:1 to 1999:12

| | Obs | Mean | Std. Dev. | Mean/Std Dev | Skewness | Kurtosis | JB |
|---|---|---|---|---|---|---|---|
| Bahrain | 12 | 0.28% | 1.60% | 17.500% | -0.82 | 4.85 | 3.056 |
| Egypt | 48 | 0.60% | 7.63% | 7.864% | 0.92 | 3.48 | 7.177 |
| Israel | 36 | 1.30% | 6.82% | 19.062% | -0.26 | 2.23 | 1.295 |
| Jordan | 60 | 0.33% | 3.51% | 9.402% | 0.43 | 2.76 | 2.010 |
| Lebanon | 12 | -1.65% | 11.73% | -14.066% | 0.42 | 2.81 | 0.377 |
| Morocco | 48 | 1.62% | 4.67% | 34.690% | 0.09 | 3.48 | 0.521 |
| Oman | 12 | 0.58% | 9.72% | 5.967% | 0.48 | 1.97 | 0.991 |
| Saudi Arabia | 24 | 0.17% | 5.44% | 3.125% | 0.07 | 2.25 | 0.582 |
| Turkey | 60 | 2.44% | 16.93% | 14.412% | 0.25 | 4.98 | 10.422 |
| Tunisia | 48 | -1.36% | 6.45% | -21.085% | -0.01 | 5.30 | 10.545 |
| ME Index | 48 | -0.41% | 7.08% | -5.791% | -1.32 | 6.16 | 33.881 |
| EMIndex | 60 | -0.11% | 7.04% | -1.563% | -1.38 | 7.02 | 59.528 |
| Japan | 60 | 0.11% | 6.25% | 1.760% | 0.20 | 2.38 | 1.358 |
| UK | 60 | 1.29% | 3.16% | 40.823% | -0.34 | 3.17 | 1.201 |
| USA | 60 | 2.02% | 4.07% | 49.631% | -1.44 | 6.58 | 52.913 |
| World | 60 | 1.31% | 3.86% | 33.938% | -1.43 | 7.33 | 67.441 |

Table 1 (continued). Summary Statistics: Descriptive Statistics for each Monthly Return Series

PANEL C: 2000:1 to 2004:12

| | Obs. | Mean | Std. Dev. | Mean/Std Dev | Skewnes | Kurtosis | JB |
|---|---|---|---|---|---|---|---|
| Bahrain | 60 | 0.59% | 4.14% | 14.251% | 0.02 | 4.26 | 3.831 |
| Egypt | 60 | -0.30% | 7.35% | -4.082% | 0.12 | 2.13 | 1.958 |
| Israel | 60 | 0.12% | 7.93% | 1.513% | -0.75 | 3.20 | 5.506 |
| Jordan | 60 | 1.24% | 4.27% | 29.040% | 0.41 | 2.42 | 2.424 |
| Lebanon | 60 | -0.26% | 7.26% | -3.581% | 0.35 | 3.32 | 1.431 |
| Morocco | 60 | -0.17% | 5.05% | -3.366% | -0.38 | 3.16 | 1.450 |
| Oman | 60 | 0.72% | 4.67% | 15.418% | 0.58 | 4.03 | 5.757 |
| Saudi Arabia | 60 | 1.80% | 4.36% | 41.284% | -0.68 | 4.15 | 7.644 |
| Turkey | 60 | -1.07% | 18.17% | -5.889% | -0.45 | 3.18 | 2.052 |
| Tunisia | 60 | -0.24% | 4.04% | -5.941% | 0.74 | 4.42 | 10.096 |
| ME Index | 60 | 0.88% | 4.58% | 19.214% | -0.92 | 3.86 | 10.044 |
| EM Index | 60 | 0.06% | 5.64% | 1.064% | -0.51 | 2.88 | 2.544 |
| Japan | 60 | -0.87% | 5.65% | -15.398% | 0.29 | 2.13 | 2.602 |
| UK | 60 | -0.43% | 4.47% | -9.620% | -0.02 | 2.79 | 0.114 |
| USA | 60 | -0.57% | 4.84% | -11.777% | -0.10 | 2.65 | 0.380 |
| World | 60 | -0.52% | 4.58% | -11.354% | -0.27 | 2.60 | 1.046 |

## Table 2.Correlations in Returns

### Panel A: 1995-1999

| | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|
| Bahrain | 1.00 | | | | | | | | | |
| Egypt | 0.25 | 1.00 | | | | | | | | |
| Israel | -0.08 | 0.17 | 1.00 | | | | | | | |
| Jordan | -0.06 | 0.60 | 0.39 | 1.00 | | | | | | |
| Lebanon | -0.34 | 0.32 | 0.28 | -0.06 | 1.00 | | | | | |
| Morocco | 0.27 | 0.22 | -0.65 | -0.02 | -0.09 | 1.00 | | | | |
| Oman | 0.45 | 0.14 | -0.51 | -0.25 | -0.18 | 0.66 | 1.00 | | | |
| Saudi Arabia | 0.43 | 0.13 | 0.05 | -0.10 | 0.07 | 0.11 | 0.06 | 1.00 | | |
| Turkey | 0.24 | 0.31 | 0.56 | 0.50 | -0.13 | -0.34 | -0.11 | -0.09 | 1.00 | |
| Tunisia | -0.20 | -0.03 | -0.41 | 0.27 | -0.27 | 0.11 | -0.28 | -0.56 | 0.02 | 1.00 |
| ME Index | 0.77 | 0.34 | 0.45 | 0.18 | 0.02 | 0.10 | 0.15 | 0.56 | 0.36 | -0.50 |
| EMg Index | 0.47 | -0.05 | 0.55 | 0.02 | 0.19 | -0.22 | -0.06 | 0.45 | 0.23 | -0.54 |
| Japan | 0.51 | -0.03 | 0.24 | -0.12 | -0.25 | 0.07 | 0.15 | 0.68 | 0.25 | -0.61 |
| UK | 0.72 | 0.23 | 0.29 | 0.36 | -0.30 | -0.10 | 0.01 | 0.37 | 0.65 | -0.08 |
| USA | 0.57 | 0.44 | 0.35 | 0.20 | 0.27 | 0.11 | 0.04 | 0.38 | 0.06 | -0.40 |
| World | 0.68 | 0.42 | 0.39 | 0.18 | 0.19 | 0.09 | 0.10 | 0.56 | 0.28 | -0.49 |

### Panel B: 2000-2004

| | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|
| Bahrain | 1.00 | | | | | | | | | |
| Egypt | 0.47 | 1.00 | | | | | | | | |
| Israel | 0.19 | 0.09 | 1.00 | | | | | | | |
| Jordan | 0.33 | 0.31 | 0.10 | 1.00 | | | | | | |
| Lebanon | 0.10 | 0.31 | 0.09 | 0.05 | 1.00 | | | | | |
| Morocco | 0.16 | 0.31 | 0.26 | 0.23 | 0.30 | 1.00 | | | | |
| Oman | 0.34 | 0.33 | 0.21 | 0.22 | 0.00 | 0.20 | 1.00 | | | |
| Saudi Arabia | 0.21 | 0.28 | 0.15 | 0.23 | 0.27 | 0.16 | 0.17 | 1.00 | | |
| Turkey | 0.40 | 0.21 | 0.21 | 0.13 | 0.16 | 0.01 | -0.18 | 0.18 | 1.00 | |
| Tunisia | 0.31 | 0.33 | 0.21 | 0.17 | -0.06 | 0.17 | 0.31 | 0.12 | 0.08 | 1.00 |
| ME Index | 0.39 | 0.39 | 0.49 | 0.17 | 0.26 | 0.46 | 0.17 | 0.49 | 0.36 | 0.25 |
| Emerging Index | 0.50 | 0.41 | 0.33 | 0.30 | 0.19 | 0.31 | 0.04 | 0.35 | 0.64 | 0.18 |
| Japan | 0.30 | 0.38 | 0.19 | 0.09 | 0.20 | 0.36 | 0.22 | 0.34 | 0.30 | 0.04 |
| UK | 0.35 | 0.19 | 0.31 | 0.17 | 0.25 | 0.29 | 0.08 | 0.27 | 0.56 | 0.15 |
| USA | 0.30 | 0.18 | 0.41 | 0.16 | 0.28 | 0.17 | -0.01 | 0.23 | 0.63 | 0.01 |
| World | 0.38 | 0.26 | 0.45 | 0.20 | 0.26 | 0.26 | 0.05 | 0.29 | 0.65 | 0.09 |

### Panel C: Tests for significance in correlation difference in the two sub periods

| Z test | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|
| Middle East Index | -1.06 | 0.22 | 0.20 | -0.04 | 0.67 | **1.78** | 0.06 | -0.27 | 0.03 | **3.76** |
| Emerging Index | 0.08 | **2.35** | -1.02 | **1.50** | -0.02 | **2.65** | 0.29 | -0.39 | **2.21** | **3.59** |
| Japan | -0.58 | **2.04** | -0.25 | 1.15 | 1.27 | **1.45** | 0.18 | **-1.34** | 0.26 | **3.24** |
| UK | -1.02 | -0.25 | 0.11 | -1.01 | **1.53** | **1.94** | 0.19 | -0.39 | -0.47 | 1.15 |
| USA | -0.74 | -1.33 | 0.29 | -0.25 | 0.03 | 0.35 | -0.15 | -0.59 | **3.07** | **2.04** |
| World | -0.85 | -0.80 | 0.31 | 0.11 | 0.18 | 0.89 | -0.13 | -1.03 | **1.95** | **2.91** |

Exhibit 1.Efficient Frontiers Sub-period Comparison

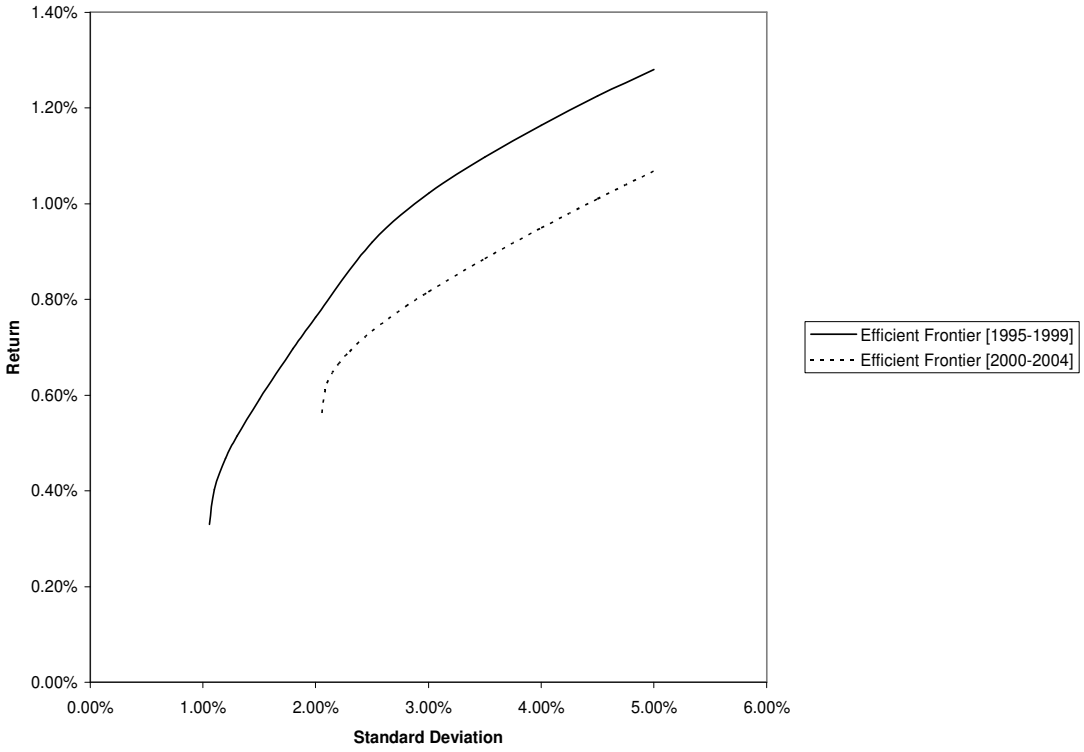

Table 3. Political Risk

Panel A: Correlations of Political risks

| 1995-1999 | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|
| Bahrain | 1 | | | | | | | | | |
| Egypt | 0.23 | 1 | | | | | | | | |
| Israel | 0.69 | -0.05 | 1 | | | | | | | |
| Jordan | 0.57 | 0.40 | 0.50 | 1 | | | | | | |
| Lebanon | 0.83 | 0.30 | 0.60 | 0.46 | 1 | | | | | |
| Morocco | -0.09 | 0.67 | -0.33 | 0.15 | 0.07 | 1 | | | | |
| Oman | -0.64 | 0.47 | -0.76 | -0.36 | -0.46 | 0.63 | 1 | | | |
| Saudi Arabia | 0.09 | 0.05 | 0.25 | 0.24 | 0.26 | 0.12 | -0.16 | 1 | | |
| Turkey | 0.61 | -0.22 | 0.60 | 0.30 | 0.69 | -0.39 | -0.71 | 0.18 | 1 | |
| Tunisia | -0.65 | 0.40 | -0.54 | -0.09 | -0.52 | 0.57 | 0.78 | 0.13 | -0.68 | 1 |
| Japan | -0.10 | -0.55 | 0.07 | -0.28 | 0.14 | -0.35 | -0.30 | 0.45 | 0.34 | -0.24 |
| UK | -0.73 | 0.25 | -0.69 | -0.39 | -0.53 | 0.55 | 0.85 | 0.09 | -0.73 | 0.83 |
| US | -0.71 | 0.06 | -0.81 | -0.65 | -0.54 | 0.31 | 0.80 | -0.37 | -0.54 | 0.48 |
| 2000-2004 | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
| Bahrain | 1 | | | | | | | | | |
| Egypt | -0.56 | 1 | | | | | | | | |
| Israel | 0.47 | -0.08 | 1 | | | | | | | |
| Jordan | -0.04 | 0.65 | 0.35 | 1 | | | | | | |
| Lebanon | -0.36 | 0.60 | -0.16 | 0.53 | 1 | | | | | |
| Morocco | 0.67 | -0.21 | 0.83 | 0.31 | -0.30 | 1 | | | | |
| Oman | -0.35 | 0.60 | 0.08 | 0.45 | 0.46 | 0.09 | 1 | | | |
| Saudi Arabia | 0.37 | 0.15 | 0.08 | 0.43 | 0.51 | 0.07 | 0.19 | 1 | | |
| Turkey | 0.21 | -0.11 | 0.56 | 0.30 | -0.03 | 0.52 | -0.02 | -0.16 | 1 | |
| Tunisia | -0.87 | 0.72 | -0.19 | 0.34 | 0.48 | -0.32 | 0.61 | -0.25 | -0.02 | 1 |
| Japan | 0.81 | -0.25 | 0.31 | 0.14 | 0.03 | 0.44 | -0.16 | 0.65 | -0.04 | -0.65 |
| UK | -0.61 | 0.63 | -0.48 | 0.26 | 0.42 | -0.61 | 0.29 | 0.21 | -0.52 | 0.48 |
| US | -0.84 | 0.83 | -0.22 | 0.46 | 0.55 | -0.43 | 0.59 | -0.03 | -0.12 | 0.87 |

Panel B: Significant Differences in Correlation of Political Risks

| Ztest | Bahrain | Egypt | Israel | Jordan | Lebanon | Morocco | Oman | Saudi Arabia | Turkey | Tunisia |
|---|---|---|---|---|---|---|---|---|---|---|
| Japan | **4.81** | **1.57** | 1.29 | **2.21** | -0.56 | **4.17** | 0.74 | 1.06 | **-2.04** | **-2.21** |
| UK | 0.62 | **2.04** | 1.10 | **3.41** | **5.04** | **-6.14** | **-2.95** | 0.64 | 1.09 | **-1.87** |
| US | -0.72 | **4.07** | **3.10** | **5.88** | **5.80** | **-3.95** | -1.11 | **1.78** | **2.25** | **2.08** |

## References

Bekaert, G., C. Harvey, and R.L. Lumsdaine, 1998, Dating the Integration of World Equity Markets. *Working paper, Stanford University, 1998*.

De santis G, and S. Imrohorgolu, 1997, Stock returns' volatility in emerging financial markets, Journal *of International Money and finance,* 16: 561-579.

De santis G, and B. Gerard, 1997, International Asset Pricing and Portfolio Diversification with time varying risk, *Journal of finance, 52: 5, 1881-1912.*

Harvey, Campbell, 1995a, the cross-section of volatility and autocorrelation in emerging markets, *Finanzmarkt und Portfolio Management,* 9: 12-34.

Henry, P.B., 2000, Stock Market Liberalization, Economic Reform and Emerging Market Equity Prices, *Journal of Finance*. 55: 29-546.

Liew, John, 1995, Stock returns, inflation and the volatility of growth in the money supply: Evidence from emerging markets, *University of Chicago, Working Paper Series.*

Mei, J.P., 1999, Political Risk, Financial Crisis and Market Volatility, Working paper, *Stern School, New York University*,

Saunders, A. and I. Walter, 2002, Are Emerging Market Equities a Separate Asset Class? *Journal of Portfolio Management*, 28: Issue 3, 102-115

Tahsin S. and P. Martin, 2006, The Jordanian Stock Market-Should You Invest in It for Risk Diversification or Performance, *IMF working paper series*.