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International Portfolio Diversification Benefits for Middle Eastern Investors

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Abstract

The idea of investing across countries is rewarding and promising. It is very possible to decrease the risk associated with stock market investing for a given level of expected return by diversifying internationally.

The main objectives of this study are to evaluate the main benefits of international portfolio diversification for Middle Eastern investors; and to recommend these investors to invest in the top stock markets, in order to minimize the risks and enhance the returns of their portfolios. We select seven stocks markets (three developed markets: U.S.A, Germany, and Japan; and four developing emerging markets: Brazil, Jordan, Saudi Arabia, and Oman) to analyze their daily closing values data from January 1, 2008 to December 29, 2010. To achieve these objectives, we use simple correlation, first order partial correlation, and second order partial correlation as our methodology. Our findings reveal that Middle Eastern investors can still enjoy the benefits of international portfolio diversification, even with the existence of relatively high uncertainty in the regional political environment and the recent global financial crises.

Adding to our findings, we propose to typical Middle Eastern investors the followings equity markets for investing: Jordan and Brazil (as the major markets) while, Oman, and Japan (as minor markets). The selected equity markets are the best portfolio diversification prospects for Middle Eastern investors.

Key words: portfolio diversification benefits, international stock markets, partial correlation, S&P 500, Nikkei 225, DAX 30, Brazil, Saudi Arabia, Oman, Jordan

1. Introduction

A Nobel Memorial Prize winning economist, Harry Markowitz, has developed the foundation stone of modern portfolio theory (MPT) in 1952. His theories, which changed the way people invested, have

mainly concentrated on portfolios' risks, portfolios' expected returns, correlations between financial securities, and diversification advantages. Diversifications across financial assets, sectors, and then across countries have captured the attention of investors through the decades due to the potential benefits of diversification.

Investors today have varieties of investment choices unavailable a few decades ago. Improvements in the global communications, the developments in the foreign financial markets, and the relaxations in the international regulations have made it easier for investors to invest domestically and also internationally.

Investing internationally has opened new opportunities for all investors, where they can diversify the risks of their portfolios by simply investing in foreign securities. The main idea behind such diversification is that diversifying across countries that are not perfectly correlated can decrease the variability of investors' returns.[1]

Generally, diversifying portfolio internationally leads to achieve an optimal risk-reward tradeoff in investment. Thus; international portfolio investments can offer variety of benefits for all investors around the world through increasing their expected returns, decreasing the variation of returns, along with lowering the return correlations between domestic securities and foreign securities. (Mansourfar ,et.al, 2010).

Through the decades, investors and portfolio managers have recognized the rewarding benefits of international portfolio diversification. The benefits of international diversification depend on the correlations between the domestic assets' returns and the international assets' returns in a portfolio. These correlations have been known to vary over time. Gupta and Mollik (2008).

Many previous studies, using actual data on stock markets of major developed countries, have illustrated international portfolio diversification benefits. Grubel (1968), Levy and Marshall (1970), Solnik (1974), and many others have proved that including foreign stocks in a portfolio improve portfolio diversification and reduce risk without sacrificing returns. Most of the Studies have illustrated that an internationally diversified portfolio is substantially less risky than a purely domestic portfolio because stock returns display much lower positive correlation across countries than within a specific country.

International portfolio diversification generates benefits for investors in both developed and developing emerging countries. However, these benefits are more substantial for developing emerging countries relative to developed countries; due to the instability of the economical and political conditions in these developing countries.

The high uncertainty in the political or economical conditions in most of the developing emerging markets, as Middle Eastern countries, can affect their performances and increase the risk associated with them. In this case, international portfolio diversification can play major role in decreasing risk and enhancing returns especially during the recent financial crises.

Currently, many Middle Eastern countries are influenced by the global financial crises and the political unrest surrounding the whole region, which have direct negative effects on their economies and financial markets as well. Therefore, investors in these countries have to diversify internationally to minimize the risks and maximize the returns of their portfolios.

Despite the various literatures on the benefits of international diversification, the Middle East is still under investigated region regarding this area.

The main objectives of this study are to illustrate the main advantages of international portfolio diversifications for investors in Middle Eastern countries; and to recommend which equity markets (selected from the equity markets used in the study) are the best portfolio diversification prospects for Middle Eastern investors.

This paper is conducted as follows: the first section gives general view about the benefits of international portfolio diversifications mainly in the Middle East region. The second section reviews briefly the previous studies conducted on the benefits of international portfolio diversification. The

[1] http://www.finance-lib.com/financial-term-international-diversification.html

third section outlines the methodology: describe the sample and data selection, and hypothesis. The fourth section analyzes and explains results. Finally, the paper summarizes the study's findings in the final section.

2. Previous Studies

Through the decades, substantial amount of research have demonstrated that investors in developed and developing emerging countries can gain from international portfolio diversification. Although most of the studies on international portfolio diversification concentrated on investors in developed countries mainly U.S., but recent studies have focused also on developing countries.

In their paper, Choudhury and Naidu (2009) used a new selection strategy for portfolio diversification in the European Union. They identified the positive opportunities for investment diversification in the EU stock markets by using partial correlation in portfolio selection. Portfolios are constructed using partial correlation (partialing out the effect of world market) and Markowitz correlation approach for two different markets France and Germany. The results that based on performance measure, showed that partial correlation approach produce superior portfolio oppose to Markowitz approach (correlation based).

Meric, et.al, (2009) studied which emerging markets are best for U.S. investor with a sample of 25 national emerging stock market indexes and the U.S. Standard and Poor's 500 index, by using the Principle Components Analysis (PCA) technique as methodology. They computed the weekly index returns for 26 stock markets and use them as input in PCA technique. Their results pointed that emerging markets have low correlation with each others and with developed markets; therefore these emerging markets are attractive to investors in developed countries as U.S.A. Moreover, they identify the most attractive emerging markets for portfolio diversification for U.S. investor.

In his paper, Lessard (2008) studied the possible international diversification among group of developing countries (four Latin American countries) and indicated the feasibility of creating investment unions to meet the political requirements of the participants. The results showed the superiority of the multinational diversification within an investment union over investment of single countries. The used methodology, primarily multivariate analysis, was useful to the examination of all kinds, whether constrained to small set of countries or not.

Gupta and Mollik (2008) tested the varying correlations between Australia's equity returns and twelve emerging markets' returns, from 1988 to 2005, and examined the volatility, which might caused the correlations to vary over time using Linear regression The results indicated that the correlations between equity returns of Australia and equity returns of these emerging markets change overtime and the variation in correlations was influenced by the volatility of the emerging markets returns. The relationship between the correlations and the volatilities was stronger in some country pairs (Brazil, Chile, India, and Malaysia) and weak for Sir Lanka and Turkey.

Fowdar (2008) investigated the potential benefits of a Mauritian investor when diversifying his investment into different African equity markets. Moreover, the paper assessed the benefits that might arise for non-African investor investing in African stock markets. The study illustrated that correlation among African stock market was low, which can reduce risk and enhance return for both Mauritian and global investors when investing in selected African countries.

In their study, Segot and Lucey (2007) investigated the benefit of portfolio diversification into seven Middle East and North Africa (MENA) stock markets. They constructed portfolios in dollars and local currencies. The results revealed the outstanding diversification benefits in the MENA region, both in dollar and local currencies. Adding, the authors indicated that these under-investigated markets could attract more portfolio flows in future.

Sedik and Petri (2006) studied the performance of Amman Stock Exchange (ASE) and its integration with other markets. By implying co-integration techniques, they found that Arab stock markets are co-integrated, which implies little long run risk diversification. On the other hand, there is

no co-integrating relationship between ASE and other developing emerging countries and developed countries.

In his paper, Assaf (2003) analyzed the dynamic relationships among six Gulf countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates) by using weekly data from 1997-2000. Based on vector autoregressive analysis, the results reveled that some decline in the risk reduction benefits of regionally diversified portfolio had happened because of the integration among the Gulf stock markets. Moreover, Markets were not fully efficient in delivering the regional news, therefore, an opportunity for portfolio diversification at the regional level was provided.

Using four co-integration, Driessen and Laeven (2007) showed how the benefits of international diversification differ among countries from the perspective of local investors by using 52 countries as a sample. The authors concluded that there are significant regional and international diversification advantages for domestic investors in both developed and developing countries. However, the benefits of international diversification are larger for investors in developing countries, mainly investors in countries with high country risk.

Abraham,et.al, (2001), analyzed the diversification potential of investing among Middle East stock markets, by selecting three Gulf stock markets (Bahrain, Kuwait and Saudi Arabia) from 1993-1998. He used Markowitz's mean-variance paradigm to predict the efficient frontiers. The results illustrated the low correlation between Middle East and U.S. stock markets, and the positive correlation between Middle East market return with the changes of oil prices, provide these markets to be effective tool to hedge against oil price risk.

In their study, Cosset and Suret (1995) evaluated the advantages of portfolio diversification in the stock markets of politically risky countries, by using monthly data on stock returns and political risk ratings for thirty-six countries from 1982-1991. Their findings indicated that diversification among politically risky countries improves the risk-reward tradeoff of an optimal portfolio. They also concluded that the most superior benefit when including politically risky countries in an international portfolio was the reduction of the overall portfolio's risk.

The benefits of international portfolio diversification include most countries, even the politically risky countries. Errunza and Losq (1987) showed that individual investors should diversify their investment among different countries, including the politically risky countries. They argued that investing in politically unstable nations might generate returns that outweigh the risks.

From the previous studies, we can conclude the followings: first, international portfolio diversification is valuable way for any investor to reduce risk and enhance return. Second, low correlation between national stock markets, mainly between developing emerging nations, is presented as evidence in support of the benefits of international portfolio diversification.

3. Methodology

The methodology in this study is mainly applied to evaluate the benefits of international portfolio diversification for Middle Eastern investors and to recommend them the best stocks markets for investing to reduce their portfolios' risk exposures.

The method used in the study is based on Markowitz's theory, which indicates the smaller the degree of correlation the greater the benefits of international diversification. Correlation, a useful statistic that used to measure how two securities move in relation to each other, plays a vital role in the building of diversified portfolio domestically and internationally.

To compute correlation, the correlation coefficient matrix is used to eliminate the stock markets that have high positive correlations with each other. The correlation coefficient matrix indicates whether the relationship within the selected stock markets positive, negative, or not significant.

In order to evaluate the benefits of international portfolio diversification in this study, we create three scenarios. In each scenario we compute the correlation coefficient matrix, which ranges from -1 to +1. A +1 indicates positive perfect correlation, where two returns move in tandem. A – 1 indicates

negative perfect correlation, where two returns move in the opposite direction (vary inversely). A correlation of zero indicates no correlation, which means the two returns are unrelated.

In the first scenario, we apply the simple correlation to select a diversified portfolio that contains the best combination between two stock markets.

In the second and third scenarios we use partial correlation to select the best stock markets in the portfolio and to optimize the correlation coefficient (Choudhury and Naidu, 2009). The main benefit of partial correlation is measuring the relationship strength between two variables, while controlling the effect of other variables[2].

In the second scenario we use first order partial correlation, based on the following formula:

$$r_{YX \cdot Z} = \frac{r_{XY} - r_{XZ}\, r_{YZ}}{\sqrt{(1 - r_{XZ}^2)(1 - r_{YZ}^2)}}$$

Where r_{xy}, r_{xz}, and r_{yz} are the appropriate correlations.

We apply the above formula to evaluate portfolio contains three stocks markets, where two of the stock markets (which selected in the first scenario) are the major stock markets, while controlling the effect of the third stock market. In this scenario we increase diversification by adding third stock market to the portfolio.

In the Third scenario we use second order partial correlation, based on the following formula:

$$r_{YX \cdot Z1Z2} = \frac{r_{XY \cdot Z_1} - r_{XZ_2 \cdot Z_1}\, r_{YZ_2 \cdot Z_1}}{\sqrt{(1 - r_{XZ_2 \cdot Z_1}^2)(1 - r_{YZ_2 \cdot Z1})}}$$

Where $r_{xy\,z1}$, $r_{xz2\,.z1}$, and $r_{XZ_2 \cdot Z_1}$ are first –order partial correlations.

We use the above formula to analyze portfolio contains four stocks markets, where two of the stock markets (which selected in the first scenario) are the major stock markets, while controlling the effects of the third and fourth markets. In this scenario we increase the benefits of internatinal diversification by adding third and fourth stock markets to the portfolio[3] .

3.1. Hypothesis

H_0: - No relationship between International portfolio diversification and minimizing the overall risk of a portfolio.

3.2. Sample and Data Selection

In this section, we describe the data used in this study and how is selected. This method utilized daily closing values data from January 1, 2008 to December 29, 2010 for seven stock markets' indices of selected developed and developing emerging markets[4].

For developed stock markets, we selected The Standard and Poor's 500 index (S&P 500), the Nikkei 225 index, and DAX 30 index to represent the respective stock markets of U.S., Japan, and Germany. The main reasons behind choosing these developed markets are due to the followings; their economies are considered from the top largest economies, and their stock exchanges considered from the top 10 largest stock exchanges in the world[5] . For instance, Germany is one of the world's economic influence and a real power within the European Union and the Euro currency.

For developing emerging stock markets, we select the following stock markets: Brazil (BVSP), Saudi Arabia (TASI), Oman (MSM), and Jordan (ASE). We mainly concentrate on developing emerging markets (defined as countries with low per capita GNP)[6] due to their attractive benefits, which include higher returns, greater diversifications, and lower correlations between each other and

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[2] http://support.sas.com/documentation/cdl/en/procstat/63104/HTML/default/viewer.htm#procstat_corr_sect017.htm

[3] Formulas used are downloaded from http://support.sas.com/documentation/cdl/en/procstat

[4] Data for U.S., German, Japan, and Brazil markets were downloaded from yahoo finance, while data for Jordan, Saudi Arabia, and Oman were downloaded from their official stocks exchanges Webpages.

[5] http://stocktradingonline.net/stock-trading-basics/worlds-biggest-stock-exchanges/

[6] http://www.investorhome.com/intl.htm

developed markets. In general, most of these selected markets are expected to boom in the future and provide higher returns for investors investing in them. For instance, Brazil is a promising market to invest in since it is one of the top four emerging markets, which is expected to grow rapidly and could provide an ideal alternative investment[7].

Saudi Arabia is the biggest free economy in the Middle East and North Africa and its Stock market is the biggest and most influential in the Arab world. It is presently ranked 11th in the world in terms of market capitalization[8]. Adding, Jordan is important due to its unique location, positioned at the intersection of Asia, Europe and Africa. Its unique location, stable political environment, and its free market economy have encouraged many local and foreign investors, mainly from the region, to invest in its stock exchange. Generally, the Amman Stock Exchange (ASE) has witnessed rapid developments in its market capitalization and net-income. As Jordan, Oman has a strategic geographical location that makes it gateway to the Arabian Gulf, and has free market economic system with stable political system. The stable and developed economical and political system in Oman has assisted in developing its stock market through the years. A well-established growing stock market in Oman has raised confidence among investors domestically and internationally. Generally, foreign investors can raise capital through investing in these developing emerging security markets[9].

For the purpose of our analysis in the three scenarios, we randomly numbered the seven selected stock markets as follows:

1= Saudi Arabia
2= Oman
3=Jordan
4= Brazil
5=Germany
6= Japan
7= U.S.A.

4. Results

According to the first scenario, we describe the degree of the correlation between each two markets of the seven selected stock markets by using the simple correlation to find the following correlation coefficient matrix, which represents the degree to which two markets' movements are associated. We find the results in table (1)

Table 1: Correlation Coefficient Matrix between two markets

	Saudi Arabia 1	**Oman 2**	**Jordan 3**	**Brazil 4**	**Germany 5**	**Japan 6**	**U.S.A. 7**
Saudi Arabia 1	1						
Oman 2	0.945252	1					
Jordan 3	0.814208	0.897461	1				
Brazil 4	0.43926	0.339823	-0.04956	1			
Germany 5	0.794337	0.707953	0.396207	0.793006	1		
Japan 6	0.947965	0.92904	0.802856	0.476549	0.77975	1	
U.S.A. 7	0.897507	0.842696	0.57965	0.713439	0.958673	0.893671	1

In scenario two, we use first order partial correlation to analyze the correlation among three stock markets, and we find the following results in table (2).

[7] http://www.dhandafinancial.com/news-details.asp?NewsID=49
[8] http://www.economywatch.com/stockexchanges/saudi.html
[9] http://www.internationalspecialreports.com/middleeast/99/oman/6.html

Table 2: First order partial correlation

First order partial correlation (portfolio)	Correlation coefficient
$r_{34.1}$	-0.7807
$r_{34.2}$	-0.8546293
$r_{34.5}$	-0.65031
$r_{34.6}$	-0.82454
$r_{34.7}$	-0.81106

In scenario three, we use the second order partial correlation to analyze the correlation among four stocks markets, and we find the following results table (3)

Table 3: Second order partial correlation

Second order partial correlation (portfolio)	Correlation coefficient
$r_{34.12}$	-0.85135
$r_{34.15}$	-0.49544
$r_{34.16}$	-0.84698
$r_{34.17}$	-0.65219
$r_{34.25}$	-0.6075
$r_{34.26}$	-0.88087
$r_{34.27}$	-0.63295
$r_{34.56}$	-0.68847
$r_{34.57}$	-0.71556

4.1. Discussion of Results

From table (1), we note that the highest negative correlation between two markets is the one between Jordan (market 3) and Brazil (market 4), where the correlation coefficient is (-0.04956). We observe this negative correlation between Jordan and Brazil because both are emerging developing markets (where correlations between these markets are usually low or negative) and both are geographically and culturally far from each other. The negative correlation between Brazil and Jordan means: if the value of one stock market increases the other stock market's value decreases and that lead to reduce the overall portfolio's risk.

From scenario one, we conclude the best-diversified portfolio (that exhibits less volatility) is the one that contains Brazil and Jordan stock markets. We consider this major portfolio as our primary foundation for analysis in scenarios two and three.

According to table two, we observe that the highest negative correlation among three markets is the one between Jordan, Brazil (the major two stocks markets in the portfolio from scenario one), with controlling the effect of Oman stock market ($r_{34.2}$ = -0.8546293). The correlation coefficient between Jordan & Brazil becomes (-0.8546293) from (-0.04956) when adding a third market (Oman), using first order partial correlation. This indicates that the negative correlation (reflected by correlation coefficient of (-0.8546293) between the two markets become stronger and closer to -1, where stock markets tend to move in the opposite direction. Thus, adding the third stock market decreases the risk of the major portfolio (from scenario one).

From scenario two, we select the best-diversified portfolio that includes the following three stock markets: Jordan, Brazil, and Oman.

According to table three, we note that the highest negative correlation among four stock markets is the one between Jordan, Brazil, (the major two stocks markets in the portfolio from scenario one) with controlling the effects of Oman and Japan stock markets ($r_{34.26}$ = -0.88087). The correlation coefficient among Jordan, Brazil, and Oman becomes (-0.88087) from

(-0.8546293) when adding the fourth stock market (Japan), using second order partial correlation. The strength of their negative correlation is reflected in their correlation coefficient, which is (–0.88087). With a correlation coefficient so close to –1, these stock markets have a strong negative

correlation. Hence, Adding the fourth market caused the risk of the portfolio (from scenario 2) to decrease by greater degree, which is considered important and beneficial for any investor.

From scenario three, we select the best- diversified portfolio that includes the following four stock markets: Jordan, Brazil, Oman, and Japan.

To sum up, from our results we conclude that the benefits of international diversification are larger for investors in developing emerging countries (as Jordan, Saudi Arabia, Brazil, and Oman) than developed countries.

5. Conclusion

The numerous benefits offered by international portfolio investment, where risk reduction is the main benefit, encouraged many investors worldwide to diversify across countries, mainly investors in emerging developing markets as Middle Eastern markets. It is very possible for any investor to decrease the risk associated with stock market investing for a given level of expected returns by diversifying internationally.

The aims of this study are to evaluate the main benefits of international diversification for Middle Eastern investors and to recommend these investors the best stock markets to invest in. For the purpose of our study's aims, we select seven stock markets (three developed markets and four developing emerging markets) and analyze their daily closing values data from January 1, 2008 to December 29, 2010. By employing simple correlation, first order partial correlation, and second order partial correlation as our methodology; we explore the major opportunities Middle Eastern inventors can enjoy when diversifying across countries.

Our Findings Indicate the Followings

First, from our results we conclude that the more we add stock markets to the major portfolio selected from scenario one (where correlation coefficient is negative), the stronger the negative correlation coefficient among the selected stock markets becomes and the closer it is to -1. This means the lower the risk and/ or the higher the expected return for the major portfolio. This finding complies with the findings of many previous studies: such as (Grubel 1968), (Levy and Marshall 1970), (Solnik 1974).

Second, the benefits of international diversification are likely to be larger for developing emerging markets, which face high political risk, relative to developed markets. For instance, as for Jordanian investors investing in foreign stock markets can reduce their portfolios' risks. This finding is consistent with the findings of (Driessen and Laeven 2002), (Cosset and Suret 1995), and (Errunza and Losq 1987).

Third, from table one we note the negative correlation between Brazil and Jordan (both considered developing emerging markets) reduces the portfolio risk, while adding another developing market (Oman) reduces the portfolio risk by greater degree. The study illustrates that the negative correlation among these stock markets strengthen and becomes closer to -1, which means these stock markets' returns move inversely. This can reduce risk and enhance return for Middle Eastern investors desiring to invest in these selected stock markets.

Finally for Middle Eastern investors (mainly Jordanian investor), our study recommends the followings stock markets: Jordan, Brazil (as the major stock markets for investments), Oman, and Japan (as minor stock markets for investments). Investing in these markets, can offer a well-diversified portfolio with better risk-reward tradeoff. However as another alternative investment, Middle Eastern investors can invest in the following developing emerging markets: Jordan, Brazil (as the major stock markets), Oman, and Saudi Arabia (as minor stock markets). From our findings, the select equity markets that considered the best portfolio diversification prospects for Middle Eastern investor.

The bottom line, diversification domestically may not give Middle Eastern investors all the protection they want and desire. However, diversifying across countries does provide major safety, by

reducing their portfolios' risk exposures, in the events of negative market developments and high uncertainty of political environments.

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