



SHORT-TERM MOMENTUM EFFECT: A CASE OF MIDDLE EAST STOCK MARKETS

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Abstract. The objective of this paper is to find short-term momentum effect in stock markets of the Middle East and to examine whether short-term momentum profits can be explained by risk-based CAPM model. Seven major stock markets from the Middle East were selected. Short-term momentum effect was found in all seven stock markets and CAPM does not adequately explain the short-term momentum profits but momentum portfolio returns are statistically significant. This paper is first attempt to bring major stock markets of the Middle East together and examine them for the short term momentum effect phenomenon. Future research should include more stock markets in order to have a better understanding of Middle Eastern stock markets.

Keywords: short-term momentum effect, momentum portfolios, price momentum investment strategy, winner portfolios, loser portfolios, Middle East, momentum profits.

JEL Classification: G15.

Introduction

Short-term momentum effect is still a debatable subject for the researchers and challenges the efficient market hypothesis (EMH). It has been defined by Jegadeesh and Titman (1993). According to them in short run recent past winners will outperform recent past losers. It is known as price continuation behavior (Rouwenhorst 1998). In the stock market, ordinary investors are habitual of under reacting to the new information therefore a smart investor can take advantage of this consistent under reaction from other investors and buy current winners and sell current losers to earn above average return (Jegadeesh, Titman 1993, 2001; Chan *et al.* 1996). Under reaction depends on analyst coverage and it may be the result of herding behavior according to Grinblatt *et al.* (1995). Chan *et al.* (2000) wrote that short-term momentum effect can be predicted from time series data of stock markets or stock indices.

Short-term momentum effect has been found in many stock markets. Griffin *et al.* (2005) wrote a paper “Global

Momentum Strategies: A Portfolio Perspective”. They discovered momentum effect in all countries included in the sample. They found that momentum investment strategy is profitable in going long than taking short position in portfolio which makes it favorable for investors who have institutional capital and momentum investment strategy is found to be significant at international level. Rouwenhorst (1998) also implemented momentum strategy in 12 developed countries of Europe and found that short-term momentum effect existed in all 12 stock markets and it is profitable. Rouwenhorst (1998) found that past winners outperformed past losers by 1%. The author also found that stocks prices have shown price continuation behavior that lasted for at least one year and it shared inverse relationship with the size of the firm. McNish *et al.* (2008) examined 7 stock markets of Asian countries for short-term momentum effect. They considered different factors, for example, investors’ reaction to new information, activities of trading and size characteristics etc. They found the existence of momentum effect

in 5 out of 7 stock markets and they also reported that the momentum strategies are profitable in 5 markets.

The papers discussed above showed that short-term momentum effect has been found and price momentum investment strategies are profitable in many stock markets but there are many research papers in financial literature that raise doubts over the existence of short-term momentum effect and claim that they did not find momentum effect in the stock markets and returns from price momentum investment strategies were not significant.

Chui, Titman and Wei (2000) inspected eight Asian stock markets and they found that short-term momentum effect in Japan was weak and it was not statistically significant. Similarly price momentum investment strategies were not profitable in South Korea and Indonesia. Hameed and Yuanto (2002) also examined 6 emerging stock markets of Asia and reported that “unrestricted” momentum strategy has resulted in non significant momentum profits. They wrote that profits from momentum investment strategies were insignificant due to huge variations in profits of emerging markets. Fernandes and Ornelas (2008) inspected 15 emerging markets from Asia and Europe for the existence of short-term momentum effect. The authors reported that they found no evidence of short-term momentum effect in all the stock markets. Avizinis and Pajuste (2007) also found that short-term momentum effect was not found even in Poland.

There is also a chunk of financial literature that attempted to explain the profits of short-term momentum effect through risk-based models in general and CAPM in particular. Several authors have tried to explain returns of short-term momentum effect but they found that CAPM could not explain the momentum effect. Griffin *et al.* (2003), Grundy and Martin (2001), Jegadeesh and Titman (1993) and Naranjo and Porter (2004) have used CAPM including other risk-based models to explain momentum profits but they were unable to explain momentum.

From the above discussion, it is found out that there is no consensus over the existence of short-term momentum effect among authors and there is also no unanimity over the significance of momentum profits in financial literature. Similarly CAPM model has not been successful in explaining the profits of momentum in different stock markets. Therefore the objective of this paper is to seek the presence of momentum effect and explanation of profits from price momentum strategy through CAPM. Seven stock markets from Middle East have been chosen for this purpose. This paper is an attempt to explore the stock markets of Middle East, examine them for the presence of momentum effect and to explain the profits through CAPM and to determine the significance of momentum profits. Rest of the paper consists of literature review, data, methodology, analysis and conclusion.

1. Literature review

Joseph D. Vu (2012) wrote a paper in which the author empirically examined the profits of momentum strategy by using the stock indices of countries. In his paper, the main focus was on the momentum strategy and its application on emerging markets. Author is of the opinion that random walk hypothesis has received empirical support from early studies but recent literature in finance does not lend its support to this hypothesis. Lo and MacKinlay (1990) negated the random walk theory and claimed that historical prices contained information that could be used to predict future prices. Author was of the view that many scholars have written papers in the past in which they have challenged efficient market hypothesis and came up with the theories of overreaction and under reaction of investors to new information or other investment strategies. For instance DeBondt and Thaler (1985, 1987), Shefrin and Statman (1985), DeLong *et al.* (1990), Lehmann (1990) and Conrad *et al.* (1991) have presented above mentioned theories or investment strategies in their respective papers. While mentioning the reasons behind the writing of this paper, author wrote that past studies or research papers focused on developed markets when it came to short-term momentum effect phenomenon. Author, while mentioning reasons, wrote that previous studies were also not unanimous on the outcomes of the existence of short-term momentum effect and ended in opposite results for instance Bekaert *et al.* (1997) reported that momentum strategies are not consistent in emerging markets whereas Rouwenhorst (1999) and Chan *et al.* (2000) wrote in their respective papers that momentum strategies worked very well in emerging markets and produced good returns. While writing about the contribution of this study, author wrote that the sample was consisted of 48 stock markets indices. Author termed it as the largest sample so far for the momentum study and it was dominated by indices of emerging stock markets. Through this research, the author wanted to see whether short-term momentum effect is present or not in the emerging markets. Sample period of the study started from 1987 and ended on 2001. Their sample included 28 emerging stock markets from Africa, Asia, Europe, Middle East and Latin America but rest of the stock markets was developed stock markets. Author found that short-term momentum effect was found in all countries and momentum investment strategies can generate significant profits in all kind of portfolios they have developed. They also found that momentum profits were huge in emerging markets.

Swinkels *et al.* (2010) wrote a paper on frontier emerging markets to examine the short-term momentum effect. They were of the view that established stock markets have been disrupted abruptly in the past few years both from financial and economic perspective. The frontier markets differ hugely in numbers from economic development. For

instance, there is huge variation when it comes to the GDP number for such countries. They are of the view that traders who want to balance their risk and return relationship can include the frontier markets in their portfolios. Goetzmann *et al.* (2005) wrote that, to have a diversified portfolio, investment of the investor should include stocks of such market which is relatively not only new but isolated as well. Speidell and Krohne (2007) also found that frontier emerging markets are the key attraction for the investors when they decided to have diversified portfolio. Authors of the paper claimed that above mentioned studies regard such markets as a group of frontier markets. But there is no full information available on profit and risk features of investment strategies and the stock markets. In their view, the motive behind this paper is to tackle the above mentioned issue in the context of frontier emerging stock markets group. While mentioning about the contribution of this paper, they wrote that they have produced out of sample results about existence of momentum effect and the results produced by this paper further strengthen the international evidence of existence of short-term momentum effect as it was previously documented by Griffin *et al.* (2003) and Rouwenhorst (1998, 1999). Frontier cum emerging market is isolated markets and short-term momentum effect existed everywhere as stated by Asness *et al.* (2009). Their sample period started from January, 1997 and ended on November 2008. They analyzed over 1400 stocks and studied 24 frontier emerging markets. In order to inspect the momentum strategies, they used historical price data. They found that momentum investment strategies were profitable in frontier markets and managed to earn 1% excess return on monthly basis. They found that such scale of profits from developed or emerging markets have also found in previous studies. In their view, it was totally surprising because such markets are isolated markets and their integration with developed or emerging market was not high. In the paper, they inspected the diversification aspect of momentum strategy and found through the mean variance spanning test that those investors who include frontier emerging markets stocks in their portfolios, indirectly, are making their portfolios more efficient. They also found the correlation has been increased between frontier and emerging markets and frontier and developed markets. They wrote that if traders enhanced a portfolio by taking in the stocks listed on frontier markets then such traders can correct the risk and return balance of their portfolios. They concluded by confirming that short-term momentum effect has been found in frontier markets resulted in significant returns and traders can make their portfolios efficient by including frontier markets. Venter (2009) wrote a paper in which Johannesburg Stock Exchange was examined for momentum and reversals effects. The focus of this review will remain on momentum effect. The author studied the

momentum effect with intraday movements of stocks' prices and argued that few papers were written involving intraday momentum effect. The author wrote that, in intraday momentum effect, formation as well as holding period consists of a small amount of hours. However technical trader can earn a return of more than 1% if they predict the movements of prices appropriately. The author wrote that Kang (2005) also had written the paper on intraday momentum effects by examining 2000 stocks of NYSE by adopting the methodology of winners' and losers' portfolio and found that intraday momentum effect was present in NYSE and profits were statistically significant. The author collected intraday trading data of 144 stocks over the period of one year. The year was 2007. The author argued that intraday momentum effect had been found in JSE and it was statistically significant when mid-quote prices are incorporated in this regard, however, when bid-ask spread was assumed and returns were determined under this assumption, it was found out that intraday momentum effect was not profitable rather it disappeared. But, there is a chance to earn intraday momentum returns if investor is smart and predicts price movements in appropriate manner. Alphonse and Nguyen (2013) wrote a paper on Vietnamese stock market and examined it for short term momentum effect. The centre point of the paper was the profitability of momentum investment strategies. Gutierrez and Kelley (2008) wrote that momentum appeared in weekly returns. Gutierrez and Kelley (2008) collected the weekly data of share prices from the stock market of United States for the period starting from 1983 and ending on 2003 and found that short term momentum effect existed and resulted in significant returns. The profits of momentum investment strategy were persistent and good enough to counterbalance reversal effect. The authors wrote that momentum effect is most likely to appear in weekly returns. Therefore, they took at the weekly data and examined it for short term momentum effect by adopting the methodology of Jegadeesh and Titman (1993). The stock market that was chosen by the authors was Ho Chi Minh Stock Exchange and weekly data was collected for the period starting from January, 2007 and ending on June, 2012. They found that momentum profits were statistically significant but they tend to decline as holding period gets longer. The highest profit earned by momentum portfolio was 0.83% per week. They found that momentum portfolios result in profits than transaction cost if trading value is large. They also found that momentum effect is persistent and it also conforms to the overreaction hypothesis. Fernandes and Ornelas (2008) wrote a paper "Momentum and Reversal Puzzle in Emerging Markets" in which they examine the existence of momentum effects in emerging markets. They choose 15 stock markets of economically emerging countries. According to the authors, the purpose of the paper is to inspect these economies again

for the existence of momentum effect and to see whether profits are statistically and economically significant or not. Although reversals phenomenon was also tested in their paper but momentum effect will remain the focus of this paper. Emerging stock markets have always been the point of attraction to the authors because they are not as integrated as developed markets and their data is independent in nature, the authors wrote. They also reported that Bonomo and Dall'Agnol (2003) and Bildik and Gülay (2002) did a research on the stock market of Brazil and Turkey but instead of finding the evidence of short-term momentum effect, they found the existence of long term reversals. The authors took the monthly data starting from January, 1995 and ending on December, 2004. They came up with the finding that they did not find any evidence about the existence of short-term momentum effect even after exerting the control for systematic risk and size. They also found that momentum profits were general but they were not statistically and economically significant. They wrote that they found such results because information spread is faster than ever before and big chunk of information is available currently which gives rise to overconfidence and overreaction in return. They explained that internet brokers are on rise. They argued that investor behaviour is getting changed or transformed from specialized investor to small investor. As a result they behaved differently which resulted in the change of the price behaviour of stocks. Another explanation they gave about different results was that they included high number of stocks and they also wrote that future research can be done by including more risk factors for instance liquidity and book to market ratio. From the literature review, it is very obvious that there is no agreement over the existence of short-term momentum effect. Some authors reported that they found the strong existence of momentum in developed markets but weak existence of momentum has been found in emerging markets. There is a group of authors who have not found the evidence of short-term momentum effect in emerging markets at all. The results are not unanimous and there is a huge disagreement over the existence of momentum effect.

2. Data

In order to examine the existence of short-term momentum effect and its explanation through risk-based model CAPM, 7 stock markets of 6 countries from Middle East were selected. The countries are UAE (United Arab Emirates), Egypt, Jordan, Morocco, Oman and Saudi Arabia. It is important to mention that two stock markets are included from UAE. One stock market is from Abu Dhabi which is known as Abu Dhabi Securities Exchange and second is from Dubai which is known as Dubai Financial Market. The stock markets from Egypt, Jordan, Morocco, Oman and Saudi Arabia are Egypt Stock Exchange, Amman Stock Exchange,

Casablanca Stock Exchange, Muscat Securities Market and Tadawul respectively. Monthly Stock prices of all the stock markets have been downloaded from DataStream for the period starting from 1st January, 2008 and ending on 1st December, 2013. Similarly monthly risk free rates and market indices for all countries with the exception of Oman have been downloaded from *DataStream* for the same time period mentioned above. It is important to mention that risk free rate of Oman was not available on *DataStream*. Although Turkey is also located in the same region but it is not included in the sample because it has already been examined for momentum effect by Ejaz and Polak (2013).

3. Methodology

Methodology consists of two parts i.e. Construction of j6k6 price momentum strategy and estimation of CAPM.

3.1. Construction of j6k6 price momentum strategy

Stock prices of all the stocks listed on 7 stock markets, mentioned above, have been downloaded from *DataStream* for the time period mentioned above. All stock prices were in their respective domestic currencies but they are converted into returns because returns are unit free whereas prices are not. It is important to mention here that any stock that resulted in abnormal returns is left out. The formula which has been used to calculate returns is:

$$Returns = \frac{Price - Price_{t-1}}{Price_{t-1}} \times 100. \quad (1)$$

In order to construct rolling portfolios from j6k6 price momentum strategy, a methodology has been adopted which was designed and implemented by Jegadeesh and Titman (1993). The corner stone of price momentum strategy is to have winner portfolios and loser portfolios and then they form momentum portfolios or W-L portfolios. It means that returns of winner portfolios will be subtracted from loser portfolios to get momentum portfolios. W-L portfolios or momentum portfolios also mean that going long in winner portfolios and taking short position in loser portfolios. The returns of momentum portfolios will be used to examine the existence of short-term momentum effect and significance of its profits. In order to make a rolling portfolio, a stock return is placed according to deciles on the bases of its past j-month return at the end of each month. It is important to mention that “j” represents formation period and equals 6 months. As a result each month gives an average return portfolios based on the formation period i.e. 6 months. The top 10 stocks that give highest average returns are chosen and given the name of winner portfolios whereas bottom 10 stocks that result in lowest returns are chosen and given the name of loser portfolios. In other words, top 10 performing stocks are known as winner portfolios whereas

bottom 10 performing stocks are known as loser portfolios. After that winner portfolios and loser portfolios are held of “k” succeeding months. “k” stands for holding period and equals 6 months. So a portfolio on 1st July, 2008 will show the return performance from 1st January, 2008 till 30th June, 2008 and then portfolio will be held from 1st July, 2008 till 31st December 2008. Seven j6k6 price momentum strategies will be constructed for seven stock markets to examine the presence of short-term momentum effect in Middle East.

A j6k6 price momentum strategy is selected to construct portfolios because it takes into account whole one year and it is also very popular among authors whenever they want to examine momentum effect in more than two stock markets. Swinkels *et al.* (2010) used j6k6 momentum strategy while examining frontier markets. Fernandes and Ornelas (2008) also implemented j6k6 momentum strategy while inspecting emerging markets for short-term momentum effect. Chui *et al.* (2010) implemented j6k6 price momentum strategy while examining 55 stocks markets from across the globe. Similarly Hong *et al.* (2003) and Griffin *et al.* (2005) constructed momentum portfolios using j6k6 price momentum strategy to examine the stock markets of 12 countries and 40 countries respectively.

3.2 Estimation of CAPM

CAPM will be used to seek the explanation of momentum profits through risk-based model. In CAPM, it will be examined that whether momentum profits have been explained by CAPM or not? Many well known authors, for instance, Fama and French (1996), Grundy and Martin (2001), Jegadeesh and Titman (2001), Conrad and Kaul (1998), Moskowitz and Grinblatt (1999) have used CAPM as risk-based standard model to explain the profits from momentum investment strategy. But CAPM never fully explained the short-term momentum effect. The purpose here is to find whether CAPM can explain the momentum profits of the stock markets of Middle east or not? CAPM regression is run in E views in the following manner to achieve the purpose.

$$R_p - R_f = \alpha_p + \beta_p(R_m - R_f) + \varepsilon, \quad (2)$$

where: R_p – Monthly portfolio return;

R_f – risk free rate;

R_m – Stock market index return;

$R_p - R_f$ – excess return on the portfolio;

$R_m - R_f$ – the risk premium;

β_p – Portfolio Beta.

All the risks free rates (rf) of six countries were yearly but they have been converted to monthly risk free rates to bring uniformity in the data. Similarly market rates, (rm), have been calculated using the market indices of their respective countries. There are total 6 CAPM regressions (regression results can be found in Appendix section) that have been

run for 6 stock markets excluding Oman. CAPM regression has been run in E views.

4. Analysis

The aim of analysis or paper is to find the existence of short-term momentum effect in 7 stock markets of Middle east and profits from price momentum investment strategy have been explained by CAPM or not? In order to examine the existence of short-term momentum effect, a j6k6 price momentum investment strategy has been run separately for 7 stock markets from Middle East.

First column in the Table 1 shows the list of countries considered for the existence of short-term momentum profits. Second column shows the momentum profits resulted from j6k6 price momentum strategy and third column shows the t- stat for the momentum profits. It is clear from the Table 1, that both stock markets of UAE reported the existence of short-term momentum effect. It is also existed in the stock markets of Egypt, Jordan, Morocco, Oman and Saudi Arabia. So it can be clearly stated from the results that short-term momentum effect is very much present in the stock markets of countries included in the sample.

The presence of short-term momentum effect in the Middle East is a significant finding and it is in line with the findings of previous authors. The presence of short-term momentum effect clearly indicates that stock markets of Middle East work much similar to stock markets of developed economies or emerging economies. These stock markets are not isolated and there are bigger chances of greater integration between the stock markets of Middle East and the stock markets of the developed countries. It can also be inferred from the results of Table 1, that an investor can earn above average return by using price momentum investment strategy in the stock market of Middle East. In other words a smart investor can make profits by taking long position in winner portfolios and going short in loser portfolios. Middle Eastern stock markets are attractive for the investors who want to earn above average positive momentum profits.

Table 1. Short – term Momentum Profits (source: own calculation)

Country	MP (j6k6)	t stat
Abu Dhabi, UAE	10.60877791	31.03705
Dubai, UAE	10.74698341	15.80765
Egypt	9.175037543	42.28385
Jordan	14.72645511	73.99146
Morocco	9.489600264	52.35359
Oman	7.597171484	24.28733
Saudi Arabia	13.94580752	27.58471

It is clear from the Table 1, that all the stock markets included in the sample reported handsome momentum returns and all the profits resulted from j6k6 price momentum investment strategy are statistically significant. This paper's finding is line with the finding of Rouwenhorst (1998) who found that short-term momentum profits are statistically significant in 12 stock markets of Europe. Although all the stock markets in the sample are reporting positive above average returns but Jordan gives the highest positive return that is, 14.72% and it is statistically significant whereas the stock market of Oman reported the lowest momentum profits among the sample countries i.e. 7.6% but it is also statistically significant. The stock market of Saudi Arabia is also regarded as the thriving stock market of the region and it is posting a statistically significant return figure of 13.94%. The stock markets of Egypt, Jordan, Morocco and UAE are giving the returns of 9% to 11% and all the returns are statistically significant. It means that there is meager difference of 1% to 2% among the profits of five stock markets. The return figures posted by all the Middle Eastern stock markets show that stock markets in Middle East are closely integrated with each other and give positive returns. It is quite clear from the profits percentages that j6k6 price momentum strategies are posting above average positive abnormal returns which indicate that Middle Eastern stock markets are attractive for both domestic and foreign investors. Hong *et al.* (2003) wrote that price momentum investment strategy will result in higher returns as it comes with a potential risk. There are many authors who have explained profits of j6k6 price momentum strategy through risk-based models like CAPM but they found that CAPM has been unable to explain the short-term momentum profits. Therefore in this part of analysis it will be examined whether momentum profits of stock markets of Middle East have been explained by risk based model CAPM or not?

To examine the relationship between momentum profits and CAPM (regression results can be found in Appendix section), analysis of β (beta) is required in this regard. β is a risk factor which measures the responsiveness of the market with respect to the stock and it is a potential risk factor that a portfolio bears. First column shows the list of countries. Second column indicates the coefficients of Beta for each country. Third and fourth columns demonstrate the values of t-state and p-value respectively. T-stat and p-value will decide the statistical significance of Beta coefficient. R^2 shows the strength of relationship.

It is clear from Table 2, that CAPM has been unable to explain the momentum profits for any country included in the sample. The beta coefficients of all the stock markets are not statistically significant. P value is also greater than 5% which confirms that CAPM cannot explain short-term momentum profits. R^2 defines that to what extent dependent variable has been explained by independent variable. It is

Table 2. j6k6 Momentum Strategy and CAPM

Country	Beta coefficient	t stat	p value	R^2
Abu Dhabi, UAE	-0.049626	-0.74	0.458	0.953
Dubai, UAE	-0.016635	-0.20	0.839	0.071
Egypt	0.001897	0.741	0.456	0.958
Jordan	-0.082935	-1.55	0.125	4.010
Morocco	-0.007044	-0.15	0.888	0.0342
Saudi Arabia	0.061306	0.7233	0.472	0.894

clear from the Table 2, that the values of R^2 are very low for all the countries and indicate that strength of relationship is very weak which further reaffirms that risk-based models cannot explain short-term momentum profits of j6k6 price momentum investment strategy. This finding suggests that source of momentum profits is not the risk. The origins of momentum profits are still not known. Short term momentum effect does exist and its gives above average abnormal return to the investor but the source of momentum profits is not confirmed. Future search should be focused on finding the source of momentum profits.

This paper attempts to bring the major stock markets of Middle East together in order to examine the short-term momentum phenomenon for the first time and future research may include more Middle Eastern stock markets into sample countries in order to have a complete and clear understanding of how stock markets work in Middle East and how closely they are integrated to the world in general and with each other in particular.

Conclusions

This paper aims to establish the existence of short term momentum effect and explains its profit the CAPM. This paper is first of its find to bring major stock markets of the region together and examine them for short term momentum effect phenomenon. The results are interesting. It is evident from the results of "Short – term Momentum Profits" that a short term momentum effect has been found in the all stock markets of Middle East included in the sample. The presence of short term momentum effect in the Middle East is a significant finding and it is in line with the findings of previous authors. This finding is in line with the findings of Jegadeesh and Titman (1993, 1999) and Alphonse and Nguyen (2013) who found the existence of short-term momentum effect in the stock market of developed and emerging countries but it goes against the finding of Fernandes and Ornelas (2008) who could not find the existence of momentum effect in the stock markets included in their research paper. This finding suggests that the stock markets in the Middle East are not isolated which

opens the door of opportunities of cooperation between the stock markets of Middle East and developed countries. All the profits resulted from j6k6 price momentum investment strategy are statistically significant. It is clear from the Table 2, that CAPM has been unable to explain the momentum profits for any country included in the sample. The beta coefficients of all the stock markets are not statistically significant. It can be stated clearly that risk-based model CAPM is unable to explain momentum profits and it reaffirms the finding of Zoghiami (2011) and Jegadeesh and Titman (1993) who had also not been able to explain momentum profits through a risk-based model CAPM. Future research may include more Middle Eastern stock markets in sample in order to have a complete understanding of how closely they are integrated with the stock markets of developed countries.

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APPENDIX

Table 3. Abu Dhabi (CAPM regression result) (source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:52				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.44705	0.340823	30.65244	0.0000
RM_RF	-0.049626	0.066417	-0.747196	0.4580
R-squared	0.009534	Mean dependent var		10.42206
Adjusted R-squared	-0.007543	S.D. dependent var		2.617411
S.E. of regression	2.627264	Akaike info criterion		4.802528
Sum squared resid	400.3458	Schwarz criterion		4.872339
Log likelihood	-142.0758	Hannan-Quinn criter.		4.829835
F-statistic	0.558302	Durbin-Watson stat		0.090388
Prob(F-statistic)	0.457964			

Table 4. Dubai (CAPM regression result) (source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:54				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.57430	0.685149	15.43358	0.0000
RM_RF	-0.016635	0.081959	-0.202965	0.8399
R-squared	0.000710	Mean dependent var		10.56027
Adjusted R-squared	-0.016519	S.D. dependent var		5.236968
S.E. of regression	5.280047	Akaike info criterion		6.198512
Sum squared resid	1616.976	Schwarz criterion		6.268324
Log likelihood	-183.9554	Hannan-Quinn criter.		6.225819
F-statistic	0.041195	Durbin-Watson stat		0.104780
Prob(F-statistic)	0.839872			

Table 5. Egypt (CAPM regression result)
(source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:56				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.954665	0.022432	-42.55839	0.0000
RM_RF	0.001897	0.002533	0.749117	0.4568
R-squared	0.009583	Mean dependent var	-0.954333	
Adjusted R-squared	-0.007493	S.D. dependent var	0.173075	
S.E. of regression	0.173723	Akaike info criterion	-0.629947	
Sum squared resid	1.750416	Schwarz criterion	-0.560136	
Log likelihood	20.89842	Hannan-Quinn criter.	-0.602640	
F-statistic	0.561177	Durbin-Watson stat	0.105436	
Prob(F-statistic)	0.456814			

Table 6. Jordan (CAPM regression result)
(source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:57				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.81044	0.208142	66.35115	0.0000
RM_RF	-0.082935	0.053278	-1.556647	0.1250
R-squared	0.040103	Mean dependent var	13.92429	
Adjusted R-squared	0.023553	S.D. dependent var	1.527539	
S.E. of regression	1.509442	Akaike info criterion	3.694123	
Sum squared resid	132.1481	Schwarz criterion	3.763934	
Log likelihood	-108.8237	Hannan-Quinn criter.	3.721430	
F-statistic	2.423149	Durbin-Watson stat	0.259482	
Prob(F-statistic)	0.124995			

Table 7. Morocco (CAPM regression result)
(source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:59				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.076302	0.187640	48.37074	0.0000
RM_RF	-0.007044	0.050006	-0.140864	0.8885
R-squared	0.000342	Mean dependent var	9.080816	
Adjusted R-squared	-0.016893	S.D. dependent var	1.420158	
S.E. of regression	1.432104	Akaike info criterion	3.588931	
Sum squared resid	118.9534	Schwarz criterion	3.658743	
Log likelihood	-105.6679	Hannan-Quinn criter.	3.616238	
F-statistic	0.019843	Durbin-Watson stat	0.392687	
Prob(F-statistic)	0.888466			

Table 8. Saudi Arabia (CAPM regression result)
(source: own calculations)

Dependent Variable: RD_RF				
Method: Least Squares				
Date: 01/29/14 Time: 14:59				
Sample: 2009M01 2013M12				
Included observations: 60				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.78642	0.513130	26.86729	0.0000
RM_RF	0.061306	0.084758	0.723311	0.4724
R-squared	0.008940	Mean dependent var	13.84786	
Adjusted R-squared	-0.008148	S.D. dependent var	3.903983	
S.E. of regression	3.919855	Akaike info criterion	5.602751	
Sum squared resid	891.1850	Schwarz criterion	5.672563	
Log likelihood	-166.0825	Hannan-Quinn criter.	5.630058	
F-statistic	0.523178	Durbin-Watson stat	0.075388	
Prob(F-statistic)	0.472396			

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