Can Book-to-Market, Size and Momentum be Extra Risk Factors that Explain the Stocks Rate Of Return?: Evidence from Emerging Market

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Abstract

The main objective of this study is to test the ability of different asset pricing models Fama & French three factor model and the augmented Fama & French Four Factor model, to explain the variation in stocks rate of return over the period from June 1999 to June 2010. The study also investigates the existence of the size and value Momentum effects in ASE. The study found a strong size and strong positive value effects in ASE. The study results indicate that the Fama & French three factor model provide better explanation to the variation in stocks rates of return for some portfolios and is better than the augmented Fama – French Four – Factor model.

Keywords: Fama and French three factor model, Four-factor model, Momentum effect, Value effect, Size effect, Amman stock Exchange.

Introduction

A vast amount of researcher has been conducted to test the validity of the CAPM that was developed by Sharpe (1964), linter (1965) and Mossin (1966), in explaining the variation in rate of return. However, no conclusive evidence has been found to support this model. Motivated by that Ross (1976) developed a new model called the arbitrage pricing model (APT), this model test the effect of other factors (not only the market return) on portfolio rate of return. Fama and French (1993) examine the effect of size and book to market equity ratio, they suggest that the capital assets pricing beta couldn't provide a full or convincing explanation for the cross section variation in average return in the American stock market, Fama &French developed what is known the Fama & French Three factor model.

The continuous effort of FF in (1996) revealed, that the capital assets pricing model can not provide any logical explanation to the average excess return that firms generate, they argue that, other factors such as; size, long term past return and the past sales provide an explanation as to why firms generate excess rate of return. Moreover, they found that the FF three factor model has the ability to explain more anomalies than the CAPM. But, the model still unable to explain the short term reversal pattern (the stock repeat its performance within 1-3 months). However, this model still performs better than the CAPM in explain the variation in the rate of return. Jagadeesh and Titman (1993) presente what is known momentum strategy. On their paper titled "Return to paying winners and selling losers". The momentum effect was defined as "the effect of the past winners (losers) continues to perform well (poorly)". Trading strategies that take into consideration momentum effect suggests that investor should invest in the stocks that have performed well in the past and sell these stocks that have performed poorly in the past, generate significant positive returns over 3-to12-months). Asness(1997) investigates the interaction between momentum and value strategies, he used monthly data from CRSP and COMPUSTAT data bases, The results indicated that both strategies are effective, and the value strategy work strongest with low-momentum (loser) stocks and weakest with high momentum (winner) stocks, which means that both strategies are negatively correlated. Rouwenhorst (1998) used data from 12 European countries over the period from 1978 to 1995, his sample covers, on average, between 60 to 90 percent of each countries market capitalization with total 2000 firms. The study provides a test of momentum effect, and the effect of the firm size on the stock return, he used similar methodology that used by Jegadeesh and Titman (1993), he indicates that in all countries the winners stocks outperform the losers stocks by one percent monthly. He observed also a negative relation between market capitalization and stocks return. He also postulates that Momentum phenomenon does exist and doesn't appear by chance. Chan *etal*. (2000) examine the profitability of Momentum strategy in 23 countries around the world over the period from 1980 to 1995 using prices indices in these countries; they indicates that Momentum profits are statistically and economically significant in all countries indices, especially very short term momentum effect (from one to four weeks), they also concludes that the effect of the Momentum profitability increases fallowing the increase in trading volume. Carhart (1997) added the effect of the past performance of the stock on it is future performance to the FF three factor model, he called this factor winners minus losers (WML), Carhart (1997) postulates that, by adding this fourth factor to the FF three factor model help reduce the average pricing errors of portfolios sorted by one year return. Using (CRSP) and

(COMPUSTAT) data bases Moskowitz and Grinblatt (1999) provided a comparison between the rates of return generated from investing in individual stock to the return from investing in Industry portfolio taking into consideration the momentum investment strategies. They found that Industry portfolios generate superior returns over individual stock portfolios. The main objective of this study is to test the ability of different asset pricing models Fama & French three factor model and the augmented Fama & French Four Factor model, to explain the variation in stocks rate of return. To achieve this objective, this paper is organized as follows: Literature Review section introduces the related literature. Data and Methodology section discusses the data and methodology. Empirical results section presents the results Summary and Conclusions section provides the summarizes and conclusions the paper.

Literature Review

Fama and French (1998) indicate that emerging markets have value premium in there sample that included Jordan and other fifteen markets, they found that the emerging markets need for a special criterions to deal with these markets information, they indicated that on the emerging markets the small firms numbers exuded the numbers of big firms . Liew and Vassalou (2000) investigate the extent to which the profitability of SMB, HML and WML risk factors can be linked to future economic growth; they used data from ten developed contraries. They found significant relationship between both factors SMB and HML and future GDP. They found also that the two factors SMB and HML are positively correlated with economic growth, but they found little evidence that support relation between economic growth and WML risk factor. Brav *et al.* (2000) investigate if the four factors have the ability to explain underperformance that happened to the firms after initial public offering (IPO) ,and seasoned equity offering (SEO) and which firms are affected more with these offerings, using a sample data from CRSP data base covering the period from 1975 to 1992, they found that the four factor model have the ability to explain underperformance in firms' rate of return over the three factor model, they observed also that firms with low book-to-market ratios are effected more than other firms. Tai (2003) used monthly data from NYSE, AMEX and NASDAQ over the period from June 1953 to May 2000; in order to investigated if the Fama & French three factor model and momentum factor (risk factors) related to securities rate of return ,and if these risk factors have the ability to explain the time- series variation in stocks rate of return, he stated that for all risk factors market return (RM-RF), size (SMB), book-to-market (HML) and momentum (MOM) are significantly priced and reflected in stocks rate of return . The results shows that these risk factors provide better explanation to the time- series

variation in stocks return over the CAPM and the anomalies like size, book-to-market . The results also indicated that Momentum is not captured by the CAPM. L'Her *et al.* (2004) used monthly data from Canadian stocks market over the period from 1960 to 2001in order to investigate the ability of the four factor model to provide better explanation to the time- series variation in stocks rate of return over the three factors model, they reported a strong evidence that supports the four factor model, they observed also a strong January effect in Canadian stocks market where small firms generate significant excess return in January relative to other months. Senthilkumar (2009) examines the relationship between expected stocks rate of return, size and book to market equity ratio, he used monthly data for five Indian industries over the period from April 2002 to March 2008. He observed a negative relation between size and average stocks return, he also show that the both factors size and book to market equity have superior explanatory power to the variation in cross-section of average rate of return , and he observed the small firms have certain higher average return than biggest firms. Bello (2008) tests the CAPM, FF three factor model and Carhart four factor model, he found that the FF model defeat CAPM and that Chahart four factor model provide a superior prediction of return over FF model. Taneja (2010) examines the ability of the CAPM and the FF three factor models to explain the variation in the stocks rate of return, using a sample of 187 Indian firms over the period from June 2004 to June 2009; he found that there is a strong size and value effect in this market. He also found that the three factors model explains the variation in stocks rates of return better than the CAPM. Lieksnis (2010) used monthly data over the period from 2002 to 2010 from three Baltic stock exchanges markets (Latvia, Estonia and Lithuania) in order to investigate if the Fama and French three factor model is applicable in these markets, and whether this model has the ability to explain the cross-sectional stocks rate of return in these markets. The findings indicate that the three factor model is fully applicable in these markets and have superior power to explain the cross-sectional stocks rate of return, and that only the investor who follows the book to market equity strategy in stocks' selection to construct his portfolio will generated return over the market portfolio, in other word the (SH) portfolio generates return above the return from other portfolios, he indicated also that the two factors (SMB and HML) are statistically significant in the three markets, but the (HML) factor is more economically significant. Lam *et al* (2010) used a sample from Hong Kong stocks market covered the period from July 1981 to June 2001, they investigated the ability of four factors model to explain the variation in average stocks rate of return and the ability to explain two effects in the stocks market behavior (up and down)market conditions and seasonal behavior They show that the four

factors model provide superior explanation to the stocks average stocks rate of return and the four factors model have significant power in capturing the volatility of mean excess rate of return, they also show that the market conditions have no effect on the explanatory power of the four-factor model, The study results revealed no evidence of seasonality in Hong Kong stocks market. The researchers postulate that their result provide better understanding of how investors price assets and estimate the cost of capital in Hong Kong.

Data and Methodology

Data

Amman stock market was established in March 1999 as an expansion of Amman Financial Market (AMF) that was established in 1976. The number of listed firm in this market at the end of 2010 was 274 firms with a market value equal to 22.5 billion JD.

In order to obtain a suitable data analysis for the empirical estimation of the model, a set of sample selection criteria is used to select stocks included in the analysis, these criteria are:

(I) each stock should have trading record at Jun of year t-1 and on Jun of year y, and should have positive book value on December of year t-1, (FF, 1993, 1996). (II) To exclude the extremely thinly traded stocks, the stock should have at least three consecutive months trading record.

The monthly rate of return for each stock is calculated to run the time-series test, the monthly rate of return for each stock in the sample is calculated as follows

$$RJt = (PJt - PJt\text{-}1)/ PJt\text{-}1) + DJt \quad (1)$$

Where:

RJt: is the rate of return of stock J at month t. PJt: is the average daily closing price of the stock J at month t. PJt-1: is the average daily closing price of the stock J at month t-1. DJt: is the dividend yield of stock J at month t. All of the information about the book value for the firms and the dividend has been obtained from the monthly statistical bulletin that is published by ASE. In order to calculate the rate of return for the market, this study used the equally weighted index for ASE as proxy for the market portfolio rate of return, using the same equation the market rate of return is calculated. This study use the Three month treasury bills as a proxy for the risk free rate of return.

Methodology

Fama and French (1996) documented that the three factor model perform well in explaining the variation in the excess rate of return among different portfolios if the three factors are calculated using equally-weighted method. To investigate their suggestions, the rates of returns for the portfolios that represent the independent variables (ten portfolios) and for the portfolios that represent the dependant variables (nine portfolios) are recalculated using equally-weighted method. To calculate the excess rate of return for the market portfolio the study uses average monthly changes in ASE equally -weighted price index as proxy for the Market return.

The Model

To achieve the study objectives, the following time-series regression is used

$R_{pt}-R_{ft} = à_0+\beta_1 [R_{mt} - R_{ft}] + \beta 2\ SMB_t + \beta_3 HML_t + \beta_4 WML_t + \varepsilon$…… (2)

Where:

R_{pt}= the realized return on portfolio at month t R_{ft} =is the risk free rate at month t. $à_0$= the intercept. R_{mt}= the realized return on the market at month t .SMB=the difference in returns on small firms and large firms during time period t. HML_t = the difference in returns of firms with high book-to-market value (B/M) ratios and the returns of firms with low B/M ratios. WML_t= difference between the return on a portfolio of winner-stocks and the return on a portfolio of loser-stocks. . β_1, β_2, β_3 and β_4: sensitivity associated with each corresponding factor. ε: is the error in estimation.

Portfolios Construction procedures

In order to construct the SMB, HML and WML factors, this study used similar constructing mimicking that used by Fama and French (1996), in June of each year (t) all stocks on the study sample are ranked based on the firm size (average daily closing price times the shares outstanding) stocks are assigned into two portfolios of size (Small (S) and Big (B)) based on split point which is 50%, that means the highest 50% stocks are the big and the lowest 50% stocks are the small.

SMB (small minus big) is the difference each month between the simple average rate of return on the three small stocks portfolios (SL, SM, and SH) and the simple average rate of return on the three big stocks portfolios (BL, BM, and BH).(FF,1993).

SMB= ((SL- BL) + (SM -BM) + (SH- BH))/3…… (3)

The same stocks are independently resorted into three portfolios based on the book to market equity ratio at December of year t-1, Based on the break point for the bottom 30 % (Low), middle 40% (Medium), and top 30% (High), based on the intersection between two market capitalization groups(S&B) and three Books to market equity groups (L, M and H).

HML (high minus low) is the difference each month between the simple average rate of return on two high book to market equity stocks portfolios (SH and BH) and the simple average rate of return on the two low book to market equity stocks portfolios (SL and BL). (FF, 1993)

HML= ((SH- SL) + (BH- BL))/2……(4)

Six equally weighted portfolios are constructed (SL, SM, SH, BL, BM, BH) stocks with small market value and low book-to-market ratio assigned into (SL) portfolio and so on. The equally weighted monthly rate of return on the six portfolios is calculated each month over the twelve month following portfolios constructed.

To construct the WML (momentum factor) for each month from July of year t-1 to Jun of year t, stocks are ranked based on size and prior performance. The size is based on the firm size (average daily closing price times the shares outstanding) at the end of Jun in year t-1 and the prior performance is based on the previous 11-month nominal stock return lagged 1 month. stocks are assigned into two portfolios of size (Small (S) and Big (B)) based on the split point of 50%, that means the highest 50% stocks are the big and the lowest 50% stocks are the small. The same stocks are independently resorted into two portfolios based on previous 11-month nominal stock return lagged 1 month (Jegadeesh and Titman, 2001). Winners (W) are the top 30% of the total stocks with the highest average prior performance. Losers (L) are the bottom 30% of the total stocks with the lowest average prior performance.

WML (winner minus loser)) is the difference each month between the simple average rate of return on two winner stocks portfolios (SW and BW) and the simple average rate of return on the two loser stocks portfolios (SLs and BLs)

WML= ((SW- SLs) + (BW- BLs))/2……..……(5)

Four equally weighted portfolios (SLs, SW, BLs, and BW) are formed based on the intersection of size and prior performance. The equally weighted monthly rate of return on the four portfolios is calculated each month over the twelve month following portfolios construction.

In order to construct the dependent variables (rate of return for the stocks), Davis *et al.* (2000) procedure is used. Nine portfolios are formed in the same way the six portfolios of

book to market equity portfolios were formed. In June of each year (t) all stocks in the study sample are sorted by the size (average daily closing price times the shares outstanding) and distributed into three size quintiles groups (S, M, B) by allocating equal number of stocks for each group, in other word, the smallest third goes to smallest group, the second third goes to medium group and the highest third goes to big group. The same stocks are independently resorted into three portfolios based on the book to market equity ratio as of December of year t-1, and distributed into three books to market equity ratios quintiles groups (L, M, and H). Nine portfolios are formed (SL, SM, SH, ML, MM, MH, BL, BM, and BH) as the intersection of three size and three BE/ME groups, for example, the SL portfolio is comprised of stocks in the smallest third of firms and the lowest third of book to market equity ratio. The equally weighted monthly rate of return on the nine portfolios is calculated from July of year y to June of year t+1. The number of stocks in the nine portfolios was 114 stocks in the first year and it reaches to 205 stocks in 2010.

Empirical results

Summary statistics

Brooks (2008) argues that conducting regressions with non-stationary data leads to spurious regressions, therefore the Augmented Dickey-Fuller was used, and table (1-1) reports the result for this test.

Table (1-1)

Stationarity test using Augmented Dickey--Fuller test

Stationarity test using Augmented Dickey--Fuller test						
	book to market equity					
Size	A DF *t-Statistic*			Test critical values*		
	Low	Medium(M)	High(H)	Low	Medium(M)	High(H)
Small(S)	-10.67	-6.83	-7.22	-3.49	-3.49	-3.49
Medium(M)	-8.02	-7.71	-7.76	-3.49	-3.49	-3.49
Big(B)	-7.19	-6.60	-8.12	-3.49	-3.49	-3.49
RM-RF	-6.73			-3.49		
SMB	-8.71			-3.49		
HML	-8.36			-3.49		
WML	-8.48			-3.49		

*at 1%level

Table (1-2) shows the average monthly rate of return for these portfolios and the standard deviation for dependent variables.

Table (1-2)

Average Monthly Rate of Return and Standard Deviation for Dependent Variables (Nine portfolios) for equally-weighted method.

	book to market equity					
Size	Means			Standard Deviations		
	Low	Medium(M)	High(H)	Low	Medium(M)	High(H)
Small(S)	0.31	0.77	1.12	7.61	4.63	5.18
Medium(M)	0.04	0.19	0.86	5.65	4.50	6.51
Big(B)	-0.27	0.62	1.18	4.61	6.10	7.50

Source: Calculated by the researchers. SL: Portfolio of stock with small market capitalization and low book-to-market ratio

SM: Portfolio of stock with small market capitalization and medium book-to-market ratio .SH: Portfolio of stock with small market capitalization and high book-to-market ratio .BL: Portfolio of stock with big market capitalization and low book-to-market ratio .BM: Portfolio of stock with big market capitalization and medium book-to-market ratio .BH: Portfolio of stock with big market capitalization and high book-to-market ratio.

The results in table(1-2) indicates a positive relationship between excess rate of return and book to market equity, while a negative relationship between size and excess rate of return for portfolios. This result provides evidence supporting the size and value effect in Amman stock exchange and these finding are consistent with the finding of Fama and French (1993) and Bareber and Lyon (1996) in US market, they found that small firm tend to have higher rate of return than big firm, also consistent with Senthilkumar(2009) and Taneja (2010) in Indian Stock Market, Daniel *et al*. (2001) observed a stronger value premium in Japan than United States.

Table (1-3) shows the statistical description for the explanatory Variables of the time-series regression.

Table (1- 3)

Summary statistics and correlations between the four factors monthly returns (Rm-Rf, SMB and HML) period (N =120).

	Rm-Rf	SMB	HML	WML
Panel A				
Mean (%)	0.64	0.08	1.43	0.11
Standard deviation (%)	5.36	3.11	4.12	3.43
t(mean)	1.30	0.27	3.80	0.35
Minimum (%)	-15.87	-8.29	-13.42	-9.67
Maximum (%)	12.69	12.01	13.42	15.56
Panel B				
Rm-Rf	1.00			
SMB	-0.57	1.00		
HML	0.47	-0.25	1.00	
WML	0.15	-0.16	-0.11	1.00

Source: Calculated by the researcher

Rm –Rf: is the market risk premium, SMB: is the difference in rate of return between portfolios with small market capitalization and the portfolios with big market capitalization, HML: is the difference in rate of return between portfolios with high book to market equity ratio and portfolios with low book to market equity ratio, WML: is the difference in rate of return between portfolios with highest prior performance and the portfolios with lowest prior performance.

T (mean): is the mean rate of return divided by its standard error (Standard Deviation/119^.5).

Table (1-3) Panel A reported the average monthly rates of return and the standard deviation for explanatory variables (Rm-Rf, SMB, HML and WML) for Amman stocks exchange market for the period from July 2000 to Jun 2010, its shows that the HML factor (value premium) has the highest average excess rate of return and has a reliable value premium in return (1.43) percent per month, t = 3.80).Thus, not surprisingly, there is a strong value premium in rate of return, and this result consistent with Fama and French (1998),the market risk premium came next to the value premium followed by WML and SMB. Table (1-3) Panel B reported the correlation coefficients between the explanatory variables, the independent variables should not be correlated or at lest the correlation between independent variables should be low. However, the correlation coefficients between size risk premium (SMB) and market risk premium (Rm-Rf) is (ρ=-0. 57), Thus, value to ρ indicated that the (SMB) and (Rm-Rf) variables are both highly negatively correlated and that mean the variation in (Rm-Rf) variable have a strong effect in the SMB variable estimation.

Regression Results

The Fama & French Three-Factor test:

Table (1-4) reports the results of the three factors model include ((R_m-R_f), SMB, and HML)

Table (1-4)

(Fama & French Three-Factor test): the Excess Rates of Return on the Nine Portfolios are the Dependent Variables and Three Factors are the Independent Variables.

Fama & French Three-Factor Model						
Rp-Rf = a + β_1(Rm-Rf) + β_2SMB + β_3 HML + +ε						
	Book-to-Market ratio			Book-to-Market ratio		
	Low	Medium(M)	High(H)	Low	Medium(M)	High(H)
portfolio	Intercept			t-statistic		
Small(S)	-0.03	0.15	-0.19	-0.04	0.47	-0.76
Medium(M)	0.37	-0.45	-0.46	0.87	-1.51	-1.30
Big(B)	-0.48*	-0.01	0.19	-2.59	-0.05	0.45
portfolio	β_1			t-statistic		
Small(S)	0.69*	0.66*	0.67*	4.37	8.70	11.37
Medium(M)	0.70*	0.60*	0.69*	6.96	8.68	8.35
Big(B)	0.72*	0.88*	0.88*	16.58	14.05	8.80
portfolio	β_2			t-statistic		
Small(S)	1.22*	0.37*	0.61*	4.91	3.14	6.61
Medium(M)	-0.15	0.15	-0.05	-0.93	1.37	-0.36
Big(B)	-0.30*	-0.32*	-0.36*	-4.38	-3.21	-2.28
portfolio	β_3			t-statistic		
Small(S)	-0.14	0.12	0.58*	-0.78	1.43	9.00
Medium(M)	-0.54*	0.17*	0.61*	-4.85	2.22	6.76
Big(B)	-0.16*	0.07	0.32*	-3.36	1.02	2.90
portfolio	AdjustedR^2			s(e)		
Small(S)	0.18	0.49	0.75	6.91	3.32	2.58
Medium(M)	0.39	0.55	0.69	4.41	3.03	3.61
Big(B)	0.83	0.80	0.66	1.91	2.74	4.37

Source: Calculated by the researcher* significant different from zero at the 5% level. ** Significant different from zero at the 10%

Table (1-4) reports the estimation results of the Fama & French Three-Factor model, the results show that the Fama &French three factor model have the ability to provide better explanation to the variation in the stocks rate of return, also the three factors model have superior power to predict the portfolios rates of return , for more specification the both factors (SMB and HML) have the ability to explain the variation in rate of return, but the (HML) factor have more constant relation with the portfolios rate of return . The adjusted R^2 s for the Fama & French three factor model for all portfolios range from (13% to 83%). This evidence about the superiority power to the three factors model are consistent with result that found by

Fama & French (1993), Faff (2001) for Australian market, Griffin (2002) for Japan, United Kingdom and Canada, Djajadikerta and Nartea (2005) for New Zealand stocks exchange market.

The Augmented Fama & French Four-Factor test:

Table (1-5) reports the estimation results of the Augmented Fama & French four factor model.

Table (1-5)

The Augmented Fama French Four Factor test : the Excess Rates of Return on the Nine Portfolios are the Dependent Variables and Four Factors are the Independent Variables.

The augmented Fama & French four-Factor Model						
$Rm-Rf = a + \beta_1 (Rm-Rf) + \beta_2 SMB + \beta_3 HML + \beta_4 WML + \varepsilon$						
	Book-to-Market ratio			Book-to-Market ratio		
	Low	Medium(M)	High(H)	Low	Medium(M)	High(H)
portfolio	Intercept			t-statistic		
Small(S)	-0.09	0.16	-0.17	-0.15	0.50	-0.71
Medium(M)	0.39	-0.44	-0.44	0.91	-1.50	-1.26
Big(B)	-0.48*	-0.01	0.19	-2.58	-0.05	0.46
portfolio	β_1			t-statistic		
Small(S)	0.59*	0.67*	0.70*	3.96	8.78	12.10
Medium(M)	0.72*	0.60*	0.72*	7.10	8.57	8.69
Big(B)	0.72*	0.88*	0.88*	16.27	13.84	8.72
portfolio	β_2			t-statistic		
Small(S)	1.30*	0.36*	0.59*	5.61	3.03	6.55
Medium(M)	-0.17	0.15	-0.07	-1.04	1.34	-0.54
Big(B)	-0.30*	-0.32*	-0.36*	-4.33	-3.20	-2.30
portfolio	β_3			t-statistic		
Small(S)	0.01	0.10	0.54*	0.06	1.16	8.49
Medium(M)	-0.57*	0.17*	0.58*	-5.04	2.12	6.29
Big(B)	-0.16*	0.07	0.31*	-3.23	0.97	2.75
portfolio	β_4			t-statistic		
Small(S)	0.77*	-0.11	-0.21*	4.30	-1.15	-3.04
Medium(M)	-0.16	-0.02	-0.21*	-1.33	-0.20	-2.08
Big(B)	0.01	-0.01	-0.05	0.23	-0.10	-0.42
portfolio	$Adjusted R^2$			s(e)		
Small(S)	0.28	0.49	0.77	6.44	3.31	2.49
Medium(M)	0.39	0.54	0.70	4.40	3.04	3.56
Big(B)	0.83	0.80	0.66	1.92	2.75	4.38

Source: Calculated by the researcher

* Significant different from zero at the 5% level.

** Significant different from zero at the 10% level.

Table (1-5) presents the estimation results of the Augmented Fama French Four Factor; the results are in consistent with the results reported in table (1-4) about the ability of two factors namely (SMB) and (HML) to provide better explanation to variation in the portfolios excess rate of return than market beta coefficients. The coefficients for (WML) factor are statistically significant at $\alpha = 5\%$ for (SL, SH, and MH) portfolios only. The (WML) factor does not provide clear relationship for the portfolios that are sorted according to the intersection between market capitalization and book-to-market ratio. The explanatory power for the Fama & French three factor model in explaining the variation in excess rates of return for portfolios does not improved much by adding the (WML) factor. But, for portfolios that the (WML) factor coefficients are significant, the adjusted R^2 s was increased; for example the adjusted R^2 s of the four factor model equal to 28% for the (SL) portfolio, while the adjusted R^2 s of the three factor was provided is 18%, This evidence about failure of (WML) can be attributed to the fact that both strategies of collecting stocks in portfolios (value strategy and momentum strategy) are negatively correlated (Table 1-3). This evidence is consistent to somewhat with Asness (1997) in the U.S.A stocks markets.

Summary and Conclusions:

The main objective of this study is to test the ability of different asset pricing models (the Fama & French three factor model and the augmented Fama & French Four Factor model), to explain the variation in stocks rate of return over the period from Jun 1999 to June 2010. The study also investigates the existence of the size and value Momentum effects in ASE. based on the result that are found in the tables (1-2), this study observed a strong size and value effects in Amman stock exchange during the period from June 1999to June 2010. The (SH, MH, BH) portfolios generated average rate of retune that exceed the average rate of return generated in (SL, ML, BL) portfolios respectively. And the (SM, MM, BM) portfolios generated average rate of retune exceed the average rate of return generated in (SL, ML, BL) portfolios respectively, and this can be attributed to the overreaction of the firm performance or irrational price behavior from the investor. The results revealed that the Fama &French three factor model have the ability to provide better explanation to the variation in the stocks rate of return, for more specification both factors (SMB and HML) provide good explanatory power to the variation in stocks rate of return, but the (HML) factor have more constant relation with the portfolios rate of return in the all methodology that used to test the three factors model. Finally this study provides evidence that the WML factor does not provide clear relationship between portfolios sorted according to the market capitalization and book-

to- market ratio and excess rate of return for these portfolios, also for the nine portfolios the added of the (WML) factor does not adds much to the explanatory power for the Fama & French three factor model in explaining variation in the excess rates of return for portfolios

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The market reacts little, if at all, to the component of funds rate changes that are anticipated by futures market participants. A comparable reaction is observed at a monthly unit of observation. These results are broadly consistent with those of other studies which have looked at the link between monetary policy and the stock market.Â between policy actions that affect the expected level of future interest rates, versus those that affect only the timing of rate changes. Section 3 takes up the question of what explains equity pricesâ€™ response, an issue not addressed by any of the papers cited above. The approach taken here is an adaptation of the VAR method proposed by Campbell (1991) and Campbell and Ammer (1993). A strong national market force seems to dominate industry and other stock-specific influences. Contrary to what happens with the mature markets, little is known about the main factors that drive the structure of returns for emerging markets. 1 A lot of studies show that the correlation of returns between emerging markets and mature markets is low, and that portfolio diversification into emerging markets would have provided increased returns and lower risks Â½e.g. Errunza and Pabmanabhan, 1988; Harvey, Yet the literature has not examined whether those results are driven by different industrial c