

Testing the Market Efficiency Hypothesis Using the Strategies of the Value and Growth in the Amman Stock Exchange

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Abstract: The objective of this study is to test the verity of the efficiency of the stock market Hypothesis, which reflects information coming to the market quickly, without achieving abnormal profits when using the basic analysis tools which include using the strategies of value and growth and other strategies. The supporters of these strategies believe that it is possible to predict the investment performance for stocks, and subsequently, portfolios formed of these stocks. The results have found a highly statistical significance for the monthly returns of the value and growth portfolios according to the classification criteria used in the study. Moreover, the surpassing of value portfolio performance on the growth portfolio, and also the results have alluded to the significance of the independent variables used in the model of the study. The exception is the size of the market, which doesn't differ statistically from zero, meaning that the stocks' prices don't respond to the effect of the size in Amman Stock Exchange. Therefore, the results of this study confirm the possibility of achieving abnormal returns by using the strategy of the value and growth and refute the supposition of the efficiency which reflects the incoming information to the market.

Key words: Market efficiency, Value strategy, Growth strategy, Portfolios.

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Introduction

The financial markets in the whole world aim to gather savings in order to direct them towards the investments by forming investment portfolios utilized by the investors to enlarge the returns of their investments. The degrees of risk which might be undertaken by the investors, aligning the returns with the risks, form the portfolios from the exchanged securities in the financial markets.

In order to achieve a balance between the risk and the return, the investors take into consideration having a period of keeping the stock, and then selling it to avoid the losses which might occur upon exchanging the securities. In contrast, the supporters of the Market Efficiency Hypothesis believe that the stock prices reflect all the incoming data to the market, and then there will be no partial values for the value of the stock and in its exchange. This depends on the investment strategy of the portfolios, in which the supporters of the reserved strategy support the idea of the market efficiency; on the other hand, the supporters of the active strategy believe that there are periods when there will be a possibility of achieving abnormal returns through the financial evaluation and analysis, which is done by the manager of the portfolio.

Many studies, like the studies of the growth strategies, refute the idea of the hypothesis of the market efficiency because the strategy of the value portfolio is marked by the low growth averages of the stocks profits, including the formation, while the growth portfolios are marked by a high growth average of the stocks profits forming them.

The point of views have differed in this subject, whereas the studies have shown that the value strategy has a general surpass over the growth strategy in the long run, and that is ascribed to the ability of the portfolio managers to seize the opportunity in the abnormal investment of the returns, besides having the element of the risks in their portfolios performances.

The managers of the portfolios make their decisions according to their forecasting for the returns and the risks created through deferent models in their analysis, so good understanding for the value and growth strategies helps to achieve abnormal returns in the stock exchange market. This will be reflected in the portfolios owners by which their

investments will be directed in their portfolios, thus increasing their fortunes.

Problem of the Research

The problem of the research lies in making sure that the portfolios of the growth and value have the ability to generate abnormal returns in contrast with the hypothesis of the market efficiency, which claims that the "Book Prices" for the securities reflect real cost, and there is no base for making changes to the portfolios components to achieve abnormal returns.

The raised question is this: Can the portfolios of the value and growth generate abnormal returns as a result of the incompetence of the market, or are the used models unable to calculate the relation of the returns with the risks? And can the performance of the value portfolios surpass over the growth portfolios or the results from the exaggerated reactions of the investors in Amman Stock Exchange?

Related literature

Many studies about this subject have been done, and all of them have confirmed surpassing value portfolios over the growth portfolios. On the other hand, these studies have differed in their explanations and conclusions when they evaluated this superiority, and we tried in this study to show the most important studies which dealt with this subject.

The study of (Basu, 1977) aims to test the relation between the performance of the stocks and the hypothesis of the financial market by using the ratio of the price to the earning (P/E) ratio for the sample of (1400) companies in New York Stock Exchange during the periods (1956 - 1971), and through making value and growth portfolios that use the element of risks in their statistical analysis using the (OLS).

The results of Basu's study have shown that the stocks that have a low (P/E) ratio (value stocks) are superior in their performance over the stocks that have a high (P/E) ratio (growth stocks), more than (0.07) yearly, The results of the study have refuted the idea of the hypothesis of the market efficiency.

(Fama et al., 1992) tested the model of the CAPM by using three criteria (E/P), (D/P), (C/P) and the financial raise through its relation to the size and the ratio of the book value to the market value (B/M), where

it was done on New York Stock Exchange during the periods (1963 - 1990).

The results of the study have shown that the size and the ratio of the book value to the market value limit and explain the returns of the stocks in the American Market and the superiority of the value portfolio over the growth, and that the stocks of value portfolios have a higher risk than the stocks of the growth portfolios. Besides this, the risks cannot be defined by the CAPM model which depends on the measure of Beta to express the risks of the market.

A study was made by (Capual et al., 1993) aimed to form value and growth portfolios using the ratio of the of the price to the market value (P/M) in a sectional study on the markets of (France, Britain, America, Japan, Switzerland and Germany) during the periods (1981 - 1991) by using monthly data. The results of the study showed the superiority of the stocks of value portfolios over the stocks of the growth portfolios; moreover they showed that correlation coefficients between the differences of the stock returns in the portfolios of the value and growth were too small when compared to the samples.

(Jegadeesh et al., 1993) tested the (momentum) strategy to the American Market during the periods (1965 - 1989) which showed that the momentum strategies require buying the stocks which had good performance in the past (profitable stocks or winners), and selling the stocks which had a weak performance (forfeiter stocks or losers). This study achieved positive returns during the period of the study and it refuted the idea of the market efficiency because there were abnormal returns. As the shown by the study, the winning stock portfolios had the ability to achieve abnormal returns and also higher returns than the losing portfolios.

(Jarrow, 2005) aims to suggest a methodology which is based on the concept of statistical arbitrage which supports the previous studies, and which confirms the possibility of generating abnormal profits without any risk. It also provides a statistical test which uses the method of the (MLE) for the restrictive and unrestrictive average in testing the efficiency of the American Market for the period of (1965 - 2003) through time chains. Whereas the studys results show that it could be possible to achieve abnormal returns in the short run which will increase

in the long run, they will increase for more than the half of the momentum strategy and the value will give positive results without any risk. With these results it will be hard to confirm between them and between the efficiency of the market, taking away the minor stock, the contacts of the market and the costs of the applications.

Theoretical Framework:

The financial analyzers agree on the general characteristics for the value and growth portfolios. The growth portfolios consist of the stocks of the companies which have high growth ratios in their profits. Besides the returns of their contributors' rights and their market prices, and usually the ratios of the distributed dividends to the price (D/P), and the book value to the market value (B/M), the earnings to the price (E/P), the cash flow to the price (C/P) for that portfolio is low (high growth ratios). On the other hand, the value portfolios consist of the undesirable stocks by the investors like the stocks of the industrial companies that reached the stage of maturity in the productive life cycle and have a small growing opportunity. The hindered companies' stocks and the stocks of the companies whose their origins were valued at a lesser price than the actual price are marked by low market prices, high (D/P , E/P , B/M , C/P) ratios, and low growth ratios, when compared with the portfolios of the growth stocks (Ibbotson et al., 1997).

Regarding the performance of these portfolios in the financial market, forming the growth portfolios helps the investors to achieve high returns in the long run, whereas the returns of the value portfolios are higher, according to different points of view. The supporters of the Contrarians Approach see that buying the stocks which have bad performance and which achieved losses in the past and selling the stocks which achieved "abnormal returns" explain that the stocks' prices are biased as a result of unstable behavior of the market. The value in the return ensued from the overreaction of the investors, which reflects on evaluating of the growth and value stocks, is considered as one of the most important reasons of the inefficiency of the financial markets (Haugan 1999).

The supporters of the efficiency of the financial markets (EMH) see that the prices of the stocks reflect immediately all the incoming data to the market, whereas the value of the stocks are not biased, and it will not

be possible to achieve abnormal returns by using the available data to buy and sell the stocks (Debondt et al., 1985).

(Jegadeesh et al., 1993) discuss this phenomenon through selling the stocks which have previous losses and buying the stocks which achieved winnings in the past. They have reached to a conclusion which shows that these strategies achieve positive returns in the short run and the conclusions of (Fama et al., 1998) can be explained through the regular risks and Beta measure. The effect of the size, and not the reactions of the investors, determines that the value stocks had higher risks that require a Return Premium. Where the markets have the characteristic of efficiency, this is the thing which completely cancels the possibility of achieving abnormal returns by following simple investment strategies. The reason for the superior performance of the value portfolios is because of its being distinguished by high risks that cannot be defined by normal measures like the standard deviations and Beta coefficient. Therefore, the return premium is a compensation for the risks which the CAPM model cannot control, being one of the anomalies. It can disappear if the CAPM model is adjusted to the variable elements model through total economic variables being added to the model.

Research Methodology

The study is based on building a Standard Model to explain the returns in Amman Stock Exchange as an extension to (Capual et al., 1993) model, and adding it to CAPM model as follows:

$$R_i - R_f = \alpha + B_1(R_m - R_f) + B_2(R_m - R_f)t_{-1} + B_3SMB + B_4HML + ut. \quad (1)$$

Where is:

R_i : The portfolios returns (I) in the month t as a dependent variable

R_f : The average of the return that has no risks in the month t.

α : The of the constant of the regression model which represents the abnormal return for the portfolio i.

$(R_m - R_f)$: The return of the portfolio in the month t.

$(R_m - R_f) t_{-1}$: The return of the portfolio in the month t with slowing down this return to decrease the effect of inaccuracy of the measure Beta of the market as a result of not repeating the exchange.

SMB: The difference between the portfolios returns, which has a low

market value and the stock portfolio, which has high market value, and which expresses the effect of the market size.

HML: The difference between the stock portfolio returns which have a high (B/M) and the stock portfolios which have low (B/M), and which is expressed according to Fama and French about the increased risks for the company.

U_t : The random error margin.

$B_1 B_2 B_3 B_4$: The signs of the Standard Model and they are expected to be more than zero.

The study will adapt for measuring the variables (SMB, HML) depending on the study of Fama and French, in which the stocks were divided into two groups according to the size of the portfolio.

Represented by the Market Value (S = Small, B = Big) according to the value of the medium size. The small stocks represent the stocks whose market value of stocks is less than the value of the medium size. The stocks were divided into three groups according to the ratio value B/M (L "Low" represents 30%, M "Medium" represents 40% H "High" represents 30%), forming six portfolios with the size interaction with the B/M ratio (S-L, S-M, S-H, S-L, B-M, B-H) and calculating the monthly return for the portfolio.

The study included a group of statistical, descriptive and standard tests, analyzing the data to make sure of the accuracy of the normal distribution for the sample of the study, with the level having a kind of stability through extracting the arithmetic means, standard deviations, correlation and skewed coefficients. Their matrices depended on tests of the unit root and the main hypothesis of it, and the tests of Decky and Foulter (Df), testing the sequential correlation in the returns (Auto-correlation) through testing the (Lujing-Box). In addition, the tests of (Homogeneity) which express the similarity of the sample were used. The tests of (Kokran Aurkat) and also the (D.W) were applied to find the varied Autocorrelation between the financial variables.

- The study depended on two main measures to evaluate the portfolios:

1. *Sharpe's measure*, which expresses the measure of the portfolio performance during long periods, called the ratio of reward to the variation (risks), means the difference between the return of the portfolio

and the return without the risks. The variation represents the standard deviations for the returns of the assets of the portfolio and it is expressed by the following equation:

$$(R/V) = R_P - R_F \quad (2)$$

O'

In which:

R/V : Sharp's measure (the ratio of the reward to the variation)

R_P : The mean of the portfolio return.

R_F : The mean of the return of no risks.

O' : The standard deviation of the returns of the portfolio assets.

2. **Jensen's measure**, which represents the performance rated with risks, and which is represented by the following equation:

$$R_P - R_F = a + B(R_m - R_F) \quad (3)$$

$R_P - R_F$: The portfolio return.

$R_m - R_F$: The market return

α : represents (Jenson's Alpha), which expresses the evaluation of the temporal return, being bigger than zero. This means that the increase in risk is more than it deserves, and that the portfolio will precede the market in its performance. But if it is less than zero this means that the portfolio will be analyzed and its performance will decrease from the level where it should be.

Also, the study tested performance superiority to confirm that the superiority of the value portfolio over the growth portfolio, making a small slope between the stocks of the portfolio return as an independent variable on the margin between the portfolios of the value and growth as an a dependent variable according to (Capual's Methodology), and for the different variables of classification as follows:

$$Margin = \alpha + B(R_i - R_F) + u_t. \quad (4)$$

Whereas Margin: The margin between the portfolio (i) and the portfolio (j) as dependent variable.

R_i : The return of the portfolio (i) during the period t.

R_F : The return without the risks.

u_t : The random mistake

B_a : The model signs

In order to test the hypothesis of the of the study while analyzing the different correlations between the variables, the study relies on a group of standard and statistical methods using multiple regression during the period of the study, and then processing them by the least squares method.

The study depends on the published data for the stocks of twenty companies listed in Amman Stock Exchange during the periods (1995 - 2005), extended to (120) months, and the book values for the profits of the companies which distribute them and the market value. In addition, the study uses the record number for the stocks' probable prices in the market value and the prices of the profits over the treasury bills (certificate of deposit) as an alternative or a (Proxy) representative for the profit price, which has no risk.

The Results Analysis

This part of the study discusses the statistical and descriptive analysis which concerns the data analysis and the evaluation and stability in the performance tests, and then the statistical analysis for the model of the study.

First: The data analysis

Table (1) shows the results of testing the study data, which highlight the disparity in the mean of the monthly returns for the portfolios, and with different classification criteria for the portfolios of the value and growth, in which all the value portfolios have exceeded, and with different classification criteria during the period of the study (1995 - 2005). Also, the results show that the mean of the value portfolios is bigger than the mean of the growth portfolios, and all the criteria of the classification, which indicate that the data of the studies are slightly skewed towards the right in the normal distribution. As well, the mean of the value portfolios is bigger than the mean of the growth portfolios, which indicates the superiority of the returns of the value portfolios over the growth portfolios, and for the different classification criteria. On the

other hand, the analysis of the standard deviations shows that the value portfolios have higher risks than the growth portfolios.

Table (1)
Analyzing the Description of the Data of the Value and Growth Portfolios
during (1995 - 2005) According to the Classification Criteria

Classification Criteria	Describing the Data Statistically	Value Portfolios	Growth Portfolios
B/M Criterion	Mean	0.162	0.156
	Median	0.034	0.021
	Standard Deviation	0.009	0.009
	Skewness	1.25	1.03
	kurtosis	3.6	4.21
	turn Mean	0.123	0.111
D/P Criterion	Mean	0.09	0.059
	Median	0.02	0.003
	Standard Deviation	0.008	0.007
	Skewness	1.66	1.35
	kurtosis	3.8	5.2
	Return Mean	0.017	0.008
E/P Criterion	Mean	0.20	0.09
	Median	0.031	0.017
	Standard Deviation	0.009	0.002
	Skewness	1.75	1.23
	kurtosis	5.21	6.47
	Return Mean	0.019	0.013

When we compare the returns and the risks of the value portfolios and the growth portfolios, we notice that the value portfolios were the higher in returns and risks according to all classification criteria, and this depends the written relation between the return and the risk, in which the

increase of the risk of the securities needs an increase in the expected returns.

Table (2)
Testing the Description of the Variable Study Suring
1995 - 2005

Variable → Test ↓	Rm - Rf	Rm - Rf t-1	SMB	HML	Ri- Rf
Mean	0.098	0.016	0.08	0.05	0.011
Median	0.033	0.014	0.03	0.01	0.06
Standard Deviation	0.004	0.003	0.002	0.001	0.006
Skewness Coefficient	0.7	0.8	0.9	0.6	0.7
kurtosis Coefficient	0.04	0.03	0.05	0.022	0.022
VIF	3.1	3.9	2.5	2.8	4.1

Table (2) shows the correlation matrices for the variables of the standard model during the period of the study 1995 - 2005. This aims to show that there is a correlation problem between the variables of the study (Multicollinearity) and the range of distributing the sample of the study in a normal distribution through the test of (VIF).

The result of the test shows that the mean is bigger than the median for the all variables of the study, which means that the data of the study is slightly skewed toward the right from the normal distribution, and also the standard deviation is too little in comparison with mean of all variables. This means that if we move to the right or to the left in one standard deviation from the mean, the result will be that (68%) of the study sample will be located within this range, and (10 %) will be abstract level, but if we move two standard deviations to the left or right then (95%) from the sample of the study will be located within the double range of the standard deviation, and within all the variables of the study.

This means that the data of this study is normally distributed within statistically significant level.

We can see from table (2) that the value of the (VIF) is less than (5) which means that the data of the study lacks the problem of the (Multicollinearity).

Table (3)
Testing the Lujing-box for the Returns of the Value
and Growth Portfolios

Classification Criterion → Portfolio ↓		Lag1	Lag2	Lag3	Lag4	Lag5	Lag10
Value	E/P ratio	12.2*	12.4*	13.6*	17.5*	19.9	22.1*
	D/P ratio	13.6*	13.65*	13.4*	13.51*	17.8	19.5*
	B/M ratio	19.3*	16.8*	13.6*	13.8*	18.9	20.2*
Growth	E/P ratio	14.9*	16.4*	15.4*	16.5*	19.2	21.4*
	D/P ratio	5.2**	4.9**	19.6*	20.5*	22.2	26.1*
	B/M ratio	4.6**	7.8**	4.2**	6.6*	9.2*	14.3*

* Significant at 1% level

** Significant at 5% level

Table (3) shows the results of the (Lujing-Box) test which examines the hypothesis that all the autocorrelation in the returns during the periods of (Lags) equals zero, where the results confirm that there is strong evidence on the Sequenced Correlation, even at the Lag 10, between the series of the monthly returns of the value and growth portfolios. These were formed on the base of the three classifications of criteria. This problem is not considered as a mathematical problem, but it does exist in the main series and related to the of the study, which is usually generated from the big samples. The most important reason, according to (Dimson et al,2000) is the weak exchange in the market or the market inefficiency.

In spite of the autocorrelation of the returns, which is considered as one of the traditional tests for the random movement, the results show that the series of the returns for all the portfolios do not follow the random movement. They are also not stable, which indicates the inefficiency of the market on the weak level.

Second: The models analysis

When we estimated the equation number (1) through the style of multiple regression which was treated by the least squares method using

(Panel Data) for the period of the study (1995 - 2005), the results are according to the criteria of the classification as follows:

Firstly: B/M Criterion for the Value Portfolio:

$$R_i - R_F = 0.15 + 0.35Rm - R_F + 0.27Rm - R_F - 0.012SMB + 0.19 HML$$

(t-ratio) (6.8) (2.8) (3.67) (1.2) (2.7)

$R^2 = 0.98$ $F = 16.9$ $D.W = 1.9$ $n = 10$

Secondly: E/P Criterion for the Value Portfolio:

$$R_i - R_F = 0.13 + 0.21Rm - R_F + 0.31Rm - R_F - 0.09SMB + 0.20 HML$$

(t-ratio) (4.6) (2.2) (3.9) (1.43) (2.7)

$R^2 = 0.98$ $F = 15.98$ $D.W = 2.1$ $n = 10$

Thirdly: D/P Criterion for the Value Portfolio:

$$R_i - R_F = 0.10 + 0.22Rm - R_F + 0.28Rm - R_F - 0.095SMB + 0.25 HML$$

(t-ratio) (3.1) (1.9) (2.2) (1.6) (2.1)

$R^2 = 0.97$ $F = 12.5$ $D.W = 1.78$ $n = 10$

Fourthly: B/M Criterion for the Growth Portfolio:

$$R_i - R_F = 0.087 + 0.12Rm - R_F + 0.09Rm - R_F - 0.02SMB + 0.11 HML$$

(t-ratio) (4.1) (1.99) (3.1) (2.1) (3.5)

$R^2 = 0.96$ $F = 9.3$ $D.W = 1.77$ $n = 10$

Fifthly: E/P Criterion for the Growth Portfolio:

$$R_i - R_F = 0.06 + 0.100Rm - R_F + 0.07Rm - R_F - 0.05SMB + 0.12 HML$$

(t-ratio) (3.5) (1.7) (2.7) (1.8) (3.6)

$R^2 = 0.98$ $F = 12.2$ $D.W = 1.95$ $n = 10$

Sixthly: D/P Criterion for the Growth Portfolio

$$R_i - R_F = 0.09 + 0.15Rm - R_F + 0.12Rm - R_F - 0.09SMB + 0.08 HML$$

(t-ratio) (5.5) (2.1) (2.7) (1.87) (2.4)

$R^2 = 0.98$ $F = 19.3$ $D.W = 2.3$ $n = 10$

The results of the analysis show the rising of the explanatory power for the estimated model of the value portfolio for the different classification criteria, where the ratio of (0.98) of the changes occurring to the sequent variable result from the variables which occur in the independent variables. The ratio is (0.02) of the changes, resulting from

variables which were not included by the standard model, or a mistake in the measuring, which means that the model was able to explain (0.98) of the discrepancy of the study variables as (f-test) has shown to the model's incorporeal as a whole. In addition, the accuracy of choosing the variables which form the standard model, and the value of (t-ratio) shows the acceptance of the alternative hypothesis and the refusal of the hypothesis of the nullity ($H_0 = 0$) to the whole model variables, except the incorporeal of the variable SHB, which doesn't differ from statistically from zero because the value of (t-ratio) calculated as being bigger than the classified (t-ratio) at different significant levels accepted statistically.

The value of (α) is shown to be bigger than zero, which means that the value strategies achieve abnormal returns, and therefore the results of this study can retuse the hypothesis of the market efficiency. The results criticize such strategies and their statistical methodology for not having any theoretical base as seen by the supporters of the market efficiency.

On the other hand the values of the size coefficient (B3) do nothave a statistical significance, which means that the effect of the small size of that agrees with the study of (Omet, 2001), which pointed to the existence of a small trace for the size variable in Amman Stock Exchange.

By looking at the signs of the estimated model we find that they have a statistical significance at accepted levels, which means a strong corrrelation between the market portfolio and the market during a deceleration period, with the normative value portfolio and the return of the value portfolio as an dependent variable. For example, when we increase the market portfolio by 1%, the portfolio returns will increase successively to (0.15, 0.18, and 0.12) according to criteria of the classification for the value portfolio.

In this manner, when we analyze the growth portfolios, we will notice the rising of the explanatory power of the model and the good choice for the variables by looking to the values (f-test) and the incorporeal of the whole variables which were contained by the standard model, which means accepting the alternative hypotheses and rejecting the hypotheses of the nonentity, because the calculated (t-ratios) are bigger than the listed (t-ratios), the means for supporting the method of choosing and forming the hypothesis of the study.

The DW test shows the disappearance of sequenced autocorrelation for the different classification criteria of the value and growth portfolio after processing it, using the method of (DF) and testing the unit root, because the value of DW is located at the area of the statistical acceptance. Therefore, the data of the study is distributed normally and points to the accuracy of its results and the financial functions.

The results of the analysis point to surpassing the performance of the value portfolio over the growth portfolio, which agree with the previous studies' results, which dealt with using different statistical methods. All of the results have agreed, reaching the same conclusion.

Table (4)
The results of Sharpe & Jensen's
Crierion during (1995 - 2005)

Classification Criterion	Portfolio	Sharp's Criterion	Jensen's Criterion
D/P Criterion	Value	0.25	0.016
	Growth	-0.06	-0.002
E/P Criterion	Value	0.27	0.016
	Growth	0.008	0.004
B/M Criterion	Value	0.14	0.05
	Growth	-0.06	-0.002

When we estimated the two equations (2, 3) the results were as seen in table (4) which shows that the value portfolio achieved a high return for each unit in comparison with the growth portfolio, according to Sharp's criterion and according to the Classification Criterion. The growth portfolio achieved the lowest return for each risk unit in comparison with the value portfolio, and these results agree with the results of (Capual et al, 1993).

The results of Jensen's criterion show that the value (α) in the equation of deviation is bigger than zero (positive) for the value portfolio and higher than the growth portfolio, according to classification criterion where it has reached successively (5%, 16%, 16%). This means that the performance of this portfolio precedes the performance of the market, where the top (α) of the market equals zero. The performance of the

growth portfolio did not surpass the performance of the market, in which it has appeared negative in some of the classification criteria and a little positive in other criteria, agreeing with the study of (Basu, 1997) on many sides which have been reached by the American Market.

By estimating equation number (4) through the method of (OLS) through the method of the simple alarm to prove the superiority of the value portfolio performance over the growth portfolio, the results have appeared as follows:

1 - According to B/M Criterion:

$$\text{Margin} = 0.08 + 0.03 R_i - R_F$$

$$\text{t-ratio} = (2.3) \quad (3.6)$$

$$R^2 = 0.32 \quad F = 12.2 \quad \text{D.W} = 2.078 \quad n = 10$$

2 - According to D/P Criterion:

$$\text{Margin} = 0.07 + 0.042 R_i - R_F$$

$$\text{t-ratio} = (1.9) \quad (4.8)$$

$$R^2 = 0.39 \quad F = 16.6 \quad \text{D.W} = 1.79 \quad n = 10$$

3 - According to E/P Criterion:

$$\text{Margin} = 1.05 + 0.5 R_i - R_F$$

$$\text{t-ratio} = (1.5) \quad (4.8)$$

$$R^2 = 0.35 \quad F = 16.2 \quad \text{D.W} = 1.887 \quad n = 10$$

The results of analyzing equation (4) show statistically that the top of (B) for the value portfolio stock return on the HH margin between the portfolios of the value and growth is (positive) and has a statistical function with an incorporeal range of 1% according to all classification criteria. The coefficient of the particular points the ratio of (0.35, 0.39, 0.32) successively from the disparity on the margins was due to the disparity in the value portfolio stock return, meaning that if the returns of the value portfolio increase or the returns of the growth portfolios decrease, the margin will increase, affected by the increase of the value portfolio stock return. This means that the margin is more sensitive in regards to the movement of the return of the value portfolio.

This leads us to the conclusion that the increase in the value of the margin between the portfolios of the value and the market often results from the increase in the return of the value portfolios as is indicated by

the value (DW). Not having any autocorrelation in the rest of the equations of the standard deviationssupports the possibility of using the equations of the standard deviations in prediction. This in turn supports the superiority of the value portfolio performance over the growth portfolio, and because of the values on the margins being positive, there is a statistical function after the statistical assessment.

Conclusions

- 1 - The results show a high and significant correlation for the monthly returns of the portfolios of the value and growth.
- 2 - The results show the possibility of achieving abnormal returns which exceed the return of the market portfolio by forming the portfolios of the value and growth.
- 3 - The results show the performance superiority of the value portfolios over the growth portfolios, and for different classification criteria during the period of the study.
- 4 - The results show the inefficiency of the market efficiency hypothesis by using the strategies of the value and growth in Amman Stock Exchange.
- 5 - The results of forming the portfolios which are based on classification criteria (B/M, E/P, D/P) which form the portfolios of the value and growth, show their ability of analyzing the performance of the stocks in the future In Amman Stock Exchange, beside the ability of the managers of the portfolios to make use of listing these indicators in their analysis and readings when they decide to sell, buy, or keep the stocks for certain periods.
- 6 - Jensen's test shows the importance of the return of the time and that analyzing the return of the portfolio precedes the market in performance.
- 7 - The results of tests of (Lujing - Box) show the existence of evidence on the sequenced correlation between the chains of the monthly returns for the value and growth portfolios which were formed, and that was a result of having a problem in the data of the financial market, and not mathematical or inappropriate methodological statistics.

Recommendations:

- 1 - Reconsidering the supervision and the legislations on Amman Stock Exchange through modernizing the legislations in order to attract the investors.
- 2 - Studying the ability of having a market maker in order to protect the small investors and also to avoid the difficulty of selling and buying the stocks that have weak performance.
- 3 - The commitment of the authorities responsible for the investment with the necessity of ensuring enough critical data for the investors in order to activate the movement of the exchange in the financial market.
- 4 - Doing profound studies and research on the Amman Stock Exchange within advanced statistical methodologies to be available to the investors to make use of them in order to make their own futuristic strategies to vary their portfolios and to develop their analysis methods.
- 5 - The two scholars recommend doing studies on other strategies like the strategy of the momentum and the statistical revision on Amman Stock Exchange.

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Testing the Market Efficiency

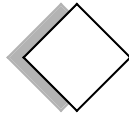
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اختبار فرض كفاءة السوق باستخدام إستراتيجيات القيمة والنمو في سوق عمان المالي

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ملخص: تهدف هذه الدراسة إلى اختبار صحة فرض كفاءة الأسواق المالية التي تعكس بسرعة كافية المعلومات الواردة إلى السوق دون تحقيق أرباح غير عادية عند استخدام أدوات التحليل الأساسي، بما في ذلك استخدام إستراتيجيات القيمة والنمو وغيرها مما يرى أنصار هذه الإستراتيجيات أنه يمكن التنبؤ بالأداء الاستثماري للأسهم والمحافظ المشكلة منها.

ولقد دلت النتائج على ظهور ارتباط عالٍ ومعنوي للعوائد الشهرية لمحافظ القيمة والنمو وفقاً لمعايير التصنيف المعتمدة في الدراسة، وتفق أداء محفظة القيمة على محفظة النمو، كما أشارت النتائج إلى معنوية المتغيرات المستقلة المستخدمة في نموذج الدراسة باستثناء أثر الحجم الذي لا يختلف إحصائياً عن الصفر؛ مما يعني أن أسعار الأسهم لا تستجيب لأثر الحجم في سوق عمان المالي، ومن ثم فإن نتائج هذه الدراسة تؤكد إمكانية تحقيق عوائد غير عادية باستخدام إستراتيجية القيمة والنمو وتدحض فرض الكفاءة التي تعكس المعلومات الواردة إلى السوق.

المصطلحات الأساسية: كفاءة السوق، إستراتيجية القيمة، إستراتيجية النمو، محافظ استثمارية.

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