The Effects of Performance Evaluation Market Ratios on the Stock Return: Evidence from the Tehran Stock Exchange

Milad Emamgholipour¹, Abbasali Pouraghajan², Naser Ail Yadollahzadeh Tabari³, Milad Haghparast⁴, Ali Akbar Alizadeh Shirsavar⁵

¹. Young Researchers Club, Babol Branch, Islamic Azad University, Babol, Iran
². Department of Accounting, Qaemshahr Branch, Islamic Azad University, Qaemshahr, Iran
³. Department of Economics, Babol Branch, Islamic Azad University, Babol, Iran
⁴. MA Student, Department of Accounting, Babol Branch, Islamic Azad University, Babol, Iran
⁵. MA Student, Department of Business Administration, Babol Branch, Islamic Azad University, Babol, Iran

Corresponding Author email: m_emamgholipour@yahoo.com

ABSTRACT: The main objective of this study is to investigate the effect of performance evaluation market ratios on the stock return of companies listed in the Tehran Stock Exchange. For this purpose, a sample of 80 companies were investigated and analyzed among the companies listed in the Tehran Stock Exchange during the years 2006 to 2010. In this study is used the variables of earnings per share (EPS), price to earnings ratio (P/E) and the ratio of market value to book value of equity (M/B) to evaluate the market ratios of performance evaluation of companies. The research results indicate that earnings per share has significant and positive effects on stock return of current year, but on the stock return of future year has positive and bound line effects. Also obtained results show that the variables of price to earnings ratio and market value to book value ratio statistically have significant and negative effects on stock return of current and future year.

Keywords: Stock return, Corporate financial performance, Earnings per share, Price to earnings ratio, Market value to book value of equity ratio, Panel data.

INTRODUCTION

The main purpose of investors from investing in the stock of companies is “wealth increase” which this is achieved through “stock return”. Stock return is one of the most important factors in choosing the best investment. Therefore, each investor in their best choice, in order to be able to achieve stock with more efficiently and less risk, need information about that stock. The information which exists about a company's stock is based on internal
information or external information of that company. Internal information of company is reflected in its financial statements, including income statement and balance sheet. External information of company also exist in the stock market that these internal and external factors effect on stock return and determine the price of stock in the market. Which this information has effect on investors’ decisions (Moridi Pour and Mousavi, 2009).

Investors during investment in stocks should consider various factors, because they intend to convert their most cash assets to stocks. Therefore, in any investment, investors are seeking to obtain returns and trying to get information from the future amount of stock returns of companies. One of the most common methods to analyze financial information is to prepare financial ratios. In fact, financial ratios are the summary of financial reports of companies which provide much information content from the internal situation of company (Namazi and Rostami, 2006). Among the financial ratios, a set of market ratios exist for corporate performance evaluation that investors during making their investment decisions have particular attention to it. These market ratios consist of earnings per share ratio (EPS), dividends per share ratio (DPS), Price to earnings per share ratio (P/E), Tobin Q ratio and the ratio of market value to book value (M/B) which in most accounting researches is used to evaluate the performance of the companies.

One of the most important financial statistics that is noteworthy for investors and financial analysts is earnings per share (EPS), which shows earnings that the company has achieved in a fiscal period for an ordinary share and often is used to evaluate the profitability and risk associated with earning and also judgments about stock prices. Price to earnings per share ratio (P/E) is another ratio of market that indicates the willingness of investors to cash purchase of companies’ stock according to the reported earnings. The increase in this ratio shows satisfactory development of company and this ratio is high for the institutions which expected to grow rapidly in the future. But for institutions with more risk, its amount is less. And also, another market measure of corporate performance evaluation is the ratio of market value to book value of equity (M/B) that is noteworthy for most investors. Because its low amount shows fundamental problems in the company and investment risk in the stock. Therefore, management according to market ratio found how will be the past and future performance of the company in according to investors.

According to the mentioned subjects, the present study seeks to answer this question that “Whether the market ratios affect on the stock return of the companies listed in Tehran stock exchange?” To answer this question is used the market measures of corporate performance evaluation, such as earnings per share (EPS), price to earnings per share ratio (P/E) and the ratio of market value to book value (M/B). In the followings, first is reviewed the literature of the conducted studies, then research hypotheses are formulated, then are presented the research method and hypotheses testing with selecting the type of statistical sample and finally the results of research hypotheses testing will be analyzed and interpreted.

**Literature Review**

In this section is described the results of some of the most important researches which conducted in the context of market ratios and the stock return.

Auret and Sinclaire (2006) studied the relationship between the ratio of book value to market value (BTM) and stock return in the years 1990 to 2000 in the companies listed in the Johannesburg Stock Exchange (JSE). In this study is used from the ratio of book value to market value (BTM), price to Earnings (P/E), dividend yield (DY), cash flow to price (CF/P), price to net asset value (P/NAV) and firm size as independent and control variables. The results indicate that there is a positive and significant relationship between the ratio of book value to market value and stock
return. But there is no significant relationship between the ratio of price to earnings and stock returns.

Kheradyar and Ibrahim (2011) investigated the role of financial ratios as empirical predictors of stock returns in the 100 companies listed on the Malaysian Stock Exchange during the period 2000 to 2009. In their study is used from the variables of dividend yield (DY), earnings yield (EY) and Book-to-market ratio (BTM) as financial ratios to predict stock returns. To estimate the regression model used from panel data and generalized least squares (GLS) methods. Research findings indicate that there is a significant and positive relationship between financial ratios and stock return of next year. Also, the results showed that the ratio of book value to market value is superior against dividend yield and earnings yield in explaining stock return of next year.

Mirfakhr et al. (2011) studied the relationship between financial variables and stock price through Fuzzy regression in Iran Khodro Company (Accepted in Tehran Stock Exchange) during the years 1998 to 2007. They used the variables of earnings per share (EPS), dividends per share (DPS) and the ratio of price to earnings as financial variables. The research findings showed that there is a significant and positive relationship between earnings per share (EPS) and stock price, but the relationship between cash dividend per share (DPS) and the ratio of price to earnings (P/E) with stock price is negative and significant.

Lau et al. (2002) investigated the relationship between stock returns and systematic risk with firm size, the ratio of book value to market value of equity, price to earnings ratio, the ratio of cash flow to price and sale growth in both Malaysia and Singapore. Their studied sample is 82 companies listed in the Singapore Stock Exchange and 163 companies listed in the Kuala Lumpur Stock Exchange during the period 1988-1996. Results for Singaporean companies are indicating that there is no significant relationship between the ratio of book value to market value (BTM) and earnings to price ratio (E/P) with stock returns. The results for Malaysian companies show that there is significant and positive relationship between the ratio of earnings to price (E/P) and stock returns. But the relationship between the ratio of book value to market value (BTM) and stock returns is not significant.

Zeytinoglu et al. (2012) tested the effects of market ratios on the stock return of current and future year of insurance companies listed in the Istanbul Stock Exchange during the years 2000 to 2009. In this study, the market ratios include price to earnings ratio (P/E), ratio of market value to book value (M/B) and earnings per share (EPS). Research findings suggest that there is no significant relationship between market ratios and stock return of current and future year and only the relationship between the ratio of market value to book value (M/B) and stock return of current and future year is positive and significant.

Kothari and Shanken (1997) in their study tested the relationship between the ratio of book value to market value and dividend yield with the expected market return. Results have shown that there is a significant and positive relationship between the ratio of book value to market value (BTM) and the dividend yield with market returns of future year. Also, the results indicate the superiority of book value to market value ratio against dividend yield in explaining future market returns.

Fun and Basana (2012) investigated the relationship between the ratio of price to earnings (P/E) and stock return in 45 companies listed in the Indonesia Stock Exchange during the period 2005 to 2010. The results indicate that there is no significant relationship between the ratio of price to earnings (P/E) and stock returns. But in Maxwell and Kehinde (2012) study that conducted on the 50 companies listed in the Nigerian Stock Exchange during the period 2001 to 2006, reached to this conclusion that there is a significant linear relationship between price to earnings ratio (P/E) and stock return.

The research results of Fama and French (1988), Hodrick (1992) and Keim and Stambaugh (1986) have shown that the variables of earnings to price ratio, the ratio of dividends to the price and short-term interest rates can
Research Hypotheses

To investigate the effect of market measures for evaluating the performance on the stock return of companies listed in the Tehran Stock Exchange, following hypotheses are formulated to test:

$H_1$: There is significant relationship between the earnings per share (EPS) and stock return.

$H_2$: There is significant relationship between the price to earnings ratio (P/E) and stock return.

$H_3$: There is significant relationship between the ratio of market value to book value (M/B) and stock return.

The meaning of stock return in the above hypotheses is the stock returns in current and future year.

RESEARCH METHOD

Statistical Population and Sample

The statistical population of present research is consisted of all companies listed in Tehran Stock Exchange during the five year period of 2006-2010. Sampling is performed randomly and with the following conditions:

1. In order to compare the data, the end of fiscal year of companies lead up to December 31.
2. In order to information homogeneity, the activity of companies is manufacturing.
4. During the time span of research, their financial period may not be changed.
5. Required financial information of companies exists in the studied period.

Thus, by considering the above criteria, 80 companies were chosen as sample. Financial information required by the companies has been collected through the site of Tehran Stock Exchange (Note 1) and CDs of financial data in the companies listed in Tehran Stock Exchange.

Methods of Data Analysis and Hypothesis Testing

To test the hypotheses in the present study is used from the multiple regression models and to estimate regression models is used panel data econometrics. In this method, time-series data (the studied years) and the cross-sectional (the studied companies) are combined with each other. Integration the cross-sectional and time-series data and the need to use it, mostly is due to the increasing the number of observations, raising the degree of freedom, reducing heteroscedasticity and reducing multicollinearity between variables (Hsiao, 2003). To estimate the efficiency of a regression model using panel data, it is necessary to select one of the common effects, fixed effects and random effects models using appropriate tests. Therefore, first is used from F-Limer test to select between the common effects and fixed effects models. Then if fixed effects method is selected, Hausman test is performed for the selection between the fixed effects and random effects methods. If the results of F-Limer test approve using the common effects, in this situation you do not need to perform Hausman test and the model is estimated using common effect method.

Research Variables an How they are Measured

Dependent Variables

Stock returns of current ($R_{it}$) and future ($R_{it+1}$) year: In the present study have been used annual common stock returns of companies in current and future year as dependent variable. To calculate the stock returns, we used the
following equation:

$$R = \frac{(1+\alpha)P_1 - P_0 + D}{P_0}$$

Where; $R$: stock returns of company, $P_1$: stock market price at the end of period, $P_0$: stock market price in the first period, $D$: dividends per share of company and the percentage of capital increasing.

In this study, the stock returns of studied companies according to the above equation are calculated for the 12 months from the first to the end of fiscal period.

**Independent Variables**

In this study were used the following variables as independent variables:

Earnings per share (EPS): Earning per share is obtained through dividing net profit after tax by the number of issued ordinary shares.

Price to earnings ratio (P/E): This ratio is measured through dividing the market price of per share by the earnings per share.

Ratio of market value to book value (M/B): This ratio is obtained through dividing the market value of equity by the book value of equity.

Market value to book value at the end of year $t = (\text{Market value at the end of year } t) / (\text{Book value at the end of year } t)$

Market value at the end of year $t = \text{Market price of per share at the end of year } t \ast \text{Number of issued ordinary shares}$

Book value at the end of year $t = \text{Total equity} - \text{Preferred equity}$

**Models Related to the Hypotheses Testing**

In the present study, the models (1) and (2) have been estimated to test hypotheses.

$$R_{it} = \beta_0 + \beta_1 \text{EPS}_{it} + \beta_2 P/E_{it} + \beta_3 M/B_{it} + \epsilon_{it}$$  (1)

$$R_{i(t+1)} = \beta_0 + \beta_1 \text{EPS}_{it} + \beta_2 P/E_{it} + \beta_3 M/B_{it} + \epsilon_{it}$$  (2)

In these models:

$R_{it}$ = stock return of firm $i$ in year $t$.

$R_{i(t+1)}$ = stock return of firm $i$ in year $t+1$.

$\text{EPS}_{it}$ = earnings per share of firm $i$ in year $t$.

$P/E_{it}$ = price to earnings ratio of firm $i$ in year $t$.

$M/B_{it}$ = ratio of market value to book value of firm $i$ in year $t$.

$\epsilon_{it}$ = the remaining component of firm $i$ in year $t$.

$\beta_0$ = constant coefficient (intercept), and $\beta_1$, $\beta_2$ and $\beta_3$ = coefficients of the independent variables.

**Research Findings**

**F-Limer test**

In this part we use F-Limer test to investigate homogeneity of sections and whether we can use model with a common intercept for all sections or not. To perform this test first should estimate parameters of fixed effects model.
which is indicating the plenary function and once also estimate parameters of general model which is indicating pent function and finally we obtain the F statistic for testing homogeneity test. In these circumstances, according to the result of applying this test about both two models reviewed in this study and the corresponding p-value, $H_0$ hypothesis indicating the homogeneity in intercept between sections in both models are strongly rejected. As a result, in estimating the proposed models can use the general model with a common intercept for all sections.

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<tr>
<th>Table 1. Results of F-Limer test</th>
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<td>Research Models</td>
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<td>Model (1)</td>
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<th>Table 2. Results of research hypotheses testing</th>
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<tr>
<td>Panel A: (Model 1) $R_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 P/E_{it} + \beta_3 M/B_{it} + \epsilon_{it}$</td>
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<tr>
<td>Variables</td>
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<td>Constant</td>
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<td>EPS</td>
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<td>Adjusted $R^2$</td>
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<td>F-Statistics</td>
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<td>Prob(F-statistic)</td>
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<td>Durbin-Watson</td>
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| Panel B: (Model 2) $R_{it+1} = \beta_0 + \beta_1 EPS_{it} + \beta_2 P/E_{it} + \beta_3 M/B_{it} + \epsilon_{it}$ |
| Variables | Coefficient | t-statistics | P-value |
| Constant | 0.3320 | 14.3780 | 0.0000 |
| EPS | 6.2005 | 1.7261 | 0.0856 |
| P/E | -0.0037 | -5.5578 | 0.0000 |
| M/B | -0.1168 | -9.1320 | 0.0000 |
| Adjusted $R^2$ | 0.2355 | |
| F-Statistics | 25.4381 | |
| Prob(F-statistic) | 0.0000 | |
| Durbin-Watson | 1.6976 | |

Panel B shows the results of estimating model (2). As can be seen, coefficient of earnings per share variable (EPS) is equal to 6.2005 and t-statistics related to it indicates the existence of bound line significance effects (at the 90% confidence level) of this variable in the common stock return of future year ($R_{it+1}$). The results also indicate that the ratio of price to earnings (P/E) and the ratio of market value to book value (M/B) have highly significant and negative impact on stock returns of future year ($R_{it+1}$). This indicates that by increasing these ratios (P/E and M/B), stock returns of future year decline.
Also, by correcting the standard errors and covariance of these models, respectively by using the options of White cross-section and White diagonal have not concern about existence of autocorrelation and heteroscedasticity between disturbing sentences of estimation models, as a result we reach to the accurate estimates of the model coefficients and hypothesis tests and statistical interpretations are valid.

Results from Hypotheses Testing

Table (2) shows the results from estimating research models using the common effects method. As it is obvious from the results of estimating model (1) in Panel A, Earnings per share (EPS) has positive and highly significant impact on the stock return of current year \( R_t \) which indicates that by increasing of earnings per share in the investigated period, the stock returns of studied companies increase. Also, the results of estimating model (1) indicates that the variables of price to earnings ratio \( P/E \) and the ratio of market value to book value \( M/B \) have significant and negative effects on the stock returns of current year \( R_t \), at the error level less than 1% and 5%, respectively.

CONCLUSIONS

The present study investigated the relationship between market ratios of performance evaluation and stock return of companies listed in Tehran Stock Exchange. Statistical universe of this research is all companies that are listed in Tehran Stock Exchange from the beginning of 2006. Among the companies member of universe were randomly selected 80 companies during the period 2006 to 2010 for review. To test the hypotheses is used from panel data (combining time-series and cross-sectional data). Common effects method using F-limer test is selected to estimating regression model.

The results of testing first hypothesis are indicative of this hypothesis confirmation. Of course, the hypothesis related to future stock returns is confirmed bound line. According to the results, it can be stated that if net profit of company in current year increase, companies are required to pay dividends and this dividends payment which place in the numerator of stock return calculation, with its increase the stock return in the same year increases. The results of the first hypothesis test are agree with the research results of Mirfakhr et al. (2011), but are opposite with the research results of Zeytinoglu et al. (2012). The findings of second study have shown that the two ratios of price to earnings \( P/E \) and market value and book value \( M/B \) have significant and negative effects on stock returns. As a result, the second and third hypotheses of research are confirmed. According to the results, it can be noted that by increasing the ratios of \( P/E \) and \( M/B \), stock return of current and future year will decline. Because the stock market price is used in the calculation of these two ratios, if the market price rises, the value of two ratios of \( P/E \) and \( M/B \) increases and on the other hand is used from the stock market price at the end of current year and the beginning of current year or the end of previous year in the calculation of stock return, thus the increase in market price will cause to decrease in the stock return of current and future year. The reason for decrease in the stock return of future year is using market price of the previous year in numerator and denominator of stock return calculation.

REFERENCES


Notes