Research Article
Investigating the Relationship between the Price to Earnings Ratio with the Return of Adjusted Stock in Capital Market of Iran

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Abstract: The main objective of this study is to investigate and analyze the relationship between the prices to earnings ratio with the return of adjusted stock through total risk of companies listed on the Stock Exchange market of Tehran in Iran. The main objective of any investment is to achieve higher efficiency. Investors in shares of listed companies on the exchange considered several factors. The price to earnings ratio, return and risk are the factors that investors should consider when they want to invest in them. Therefore 100 companies have been investigated during the period 2004-2008. To test the hypothesis we used the regression analysis and correlation, also the significant of patterns were determined by using F and T test and correlation coefficients. The results show that there is no significant relationship between the prices to earnings ratio and adjusted stock returns in the 95% confidence level.

Keywords: Dividends per share, earnings per share, prices to earnings ratio, returns of each share, risk

INTRODUCTION

Investment is necessary and vital for the economic development of any country. In order to provide funds for investment, you must have some sources for funding. The best resource for funding is saving people in a society. Therefore, there is a powerful mechanism that can drive savings to the productive sector and provides financial need of these sections. Stock Exchange is the best place that provides savings be used in production sectors. So the stock exchange leads wandering savings through production and provides the financial needs of corporations and institutions. Investors are trying to invest their savings in places that will have the highest return with the lowest risk. In this regard they demand a higher yield for bearing more risk. So investors consider investment risk and return, on the other hand, companies should try to somehow provide the needed funds that realized the main aim of the companies' owner, i.e. the increasing in value of company. One of the relative measures that conduct the investors in investment decisions is the price to earnings per share. The price to earnings per share tells us theoretically that how much USD the investors willing to pay per USD in company's earnings. In other words, investors according to the ratio of price to earnings can calculate that how long the share of profits will depreciate their investment. But recognizing the price to low/high benefits ratio is difficult for investors. Buyers who want to invest in the stock market consider the price to earnings ratio with the risk and return on investment simultaneously. As a matter of fact

understanding the relationship of price to earnings per share is important in the risks and returns of investors' decision. Therefore, this study tries to find a significant correlation between the ratios of price to earnings per share with risk-adjusted return according to total risk of stock companies in Tehran Stock Exchange. We assume that there is significant relationship between them. To prove this hypothesis cross-sectional regression method were analyzed data in three stages. At the first stage firms are divided into five portfolios based on price to earnings ratio. The first portfolio includes companies with the least ratio and the fifth portfolio includes the most prices to earnings ratio. At the second stage we used the companies' data annually and at the third stage we used the average data from 2004, 2008. The population of this study is Tehran Stock Exchange that they are not investment companies. And their fiscal year end in March.

LITERATURE REVIEW AND EMPIRICAL STUDIES

- **Foreign study:** Basu (2001) has evaluated investment performance of common stocks in relation to the cost-benefit ratio. He has collected his main data consisting of 500 companies among 1400 industrial companies during 1956-1971. He concluded that the portfolios with low cost-benefit ratio have higher return against to the portfolios with high cost-benefit ratio. Finally, Basu (2001) claimed that the ratio of price to earnings can be

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considered as an index for performance of the investment because of the expectations investors.

Siegel (1999) investigated that whether raised stock prices justify their own high price over the long term or not. He measured 50 growing Returns of the stock that were purchased in the early 1970's. The average of P/E ratio in 50 top shares was double more than the market average in 1972. In the period between 1970 and 1995, the stock of top 50 companies with high relative P/E did not provide a high return. The Siegel investigation does not provide any opportunity to accept or reject the benefit to cost ratio hypothesis. (Siegel, 1999)

Fuller *et al*. (1998) have studied firms that end their fiscal year on October, November, December or January between the periods 1973 to 1990. Portfolio return was calculated for each P/E and for the total stocks sample. Considering the Fuller findings the stock with low P/E has return were higher than normal and the stock with high P/E has return were lower than normal. It seems that the P/E ratio provide a potential strategy in investment for investors that yield better return against to many alternatives that may use it (Fuller *et al*., 1998).

Beneda (2005) investigated the investment in growing stock. The results indicate that investment in growing stock to achieve short-term benefits may not respond. However Beneda noted that the rotation strategy of growing stock to value stock may be more efficient against to purchase and hold strategy. Similarly, the rotation strategy in the company with high P/E ratio to companies with low P/E ratio in a certain industry may improve return when the ratios of P/E within the industry are high (Beneda, 2005).

Kromis *et al*. (2003) have shown whether the capital stock with low and adjusted P/E ratio against to the assessment levels with market is more consistent or not. To test this hypothesis they compared annual performance of portfolio which only containing low P/E stock with annual performance of the market. Selected stocks contained 1 P/E ratio or lower than it. The results could not verify this view that the stock with low P/E ratio creates better rate of return (Kromis *et al*., 2003).

Aydogan and Gursoy (2000) conducted a similar study in the context of mew fangled markets. They aim to investigate the ability of the average P/E and book value to market to predict future stock market returns in the mew fangled capital markets. The mew fangled markets are distinct from developed markets due to their heterogeneous nature and inherent dynamic. These markets are characterized by their high average return and swing. They have studied whether the return of three, six and twelve months in the future may be predicting at the average amount P/E ratio and book value market ratios or not. They observed that the average values of the return of three, six and twelve

months reduced in both groups for all three horizons by decreasing the P/E ratio. On the other hand, there are more likely that an investor achieves greater return by investing in a market where P/E ratio is high relatively (Aydogan and Gursoy, 2000).

Ahmed (2006) has done a study that called; measuring the relationship between normal stock performance and the ratios of stock prices to earnings. His own data has been collected from Nevada Kamp stat database. He studied stock returns and the ratio of price to earnings of 220 companies from 1992 to 2001. His analysis was conducted in three stages. The first stage was based on average data for the 10-year period, the second stage was based on annual data which considered as a portfolio for each year and also data stage was classified into five portfolios for each year that these portfolios based on the ratio of price to earnings per share from lowest to the highest degree. The results showed that according to the total risk there is no significant correlation between the ratio of price to earnings and adjusted return. (Ahmed, 2006)

- **Internal studies:** Hesady (1998) has investigated the price to earnings ratio associated with stock returns of listed companies in Tehran Stock Exchange. Results of this investigation indicate that with 99% confidence level we cannot predict stock returns by using the price to earnings ratio and the price to earnings ratio has no significant relationship with stock returns (Hesady, 1998).

Ebadzadeh (1999) has studied the relationship between investments returns in common stock and the price to earnings ratio in Tehran Stock Exchange. Results of this investigation indicate that the portfolio based on low price to earnings ratio in the 1993-1998 periods has higher return than portfolio with high price to earnings ratio. The investigation of systematic risk of portfolios has also shown that the market does not move according to the capital market theory. So obtaining higher return did not have high risks, Therefore the higher or lower pricing exist against to the intrinsic value of stock and there are opportunities to earn higher returns (Ebadzadeh, 1999).

Tousi (2005) has examined affecting factors on the common stock return of companies listed on the Tehran Stock Exchange. Finally he came to this conclusion that the three variables; size, ratio of book value to market value and the price to earnings ratio plus fixed amount together explain stock returns significantly (Tousi, 2005).

RESEARCH METHODOLOGY

A main hypothesis tested in this study that can be expressed as follows:

Table 1: P/E ratios, adjusted return during the study

Portfolio	The number of firms	2004		2005		2006		2007		2008		The average of 5 years	
		RVAR	P/E	RVAR	P/E	RVAR	P/E	RVAR	P/E	RVAR	P/E	RVAR	P/E
1	20	3/432	3/3605	0/276	3/909	3/736	-0/534	4/1425	-0/0615	4/229	0/922	-	-
2	20	2/819	4.341	1/775	5/025	5/217	-0/029	6/1135	3/049	6/225	0/013	-	-
3	20	3/957	5/49	3/097	6/280	6/594	-1/574	7/286	0/304	7/621	0/746	-	-
4	20	4/704	6/614	5/953	7/797	10/372	4/730	9/646	0/3315	10/644	-1/190	-	-
5	20	6/481	12/639	5/682	12/746	22/166	4/492	20/7105	1/307	21/687	-2/109	-	-
Total	100	4/279	6/488	3/357	7/151	9/617	1/416	9/579	0/986	10/081	-0/323	1/93	8/567

Table 2: Summary of hypothesis test results

The types of relationship	R	R^2	p-value	t-test (T_0)	T	F-test (F_0)	F	Portfolio	Year
Negative relationship significant	-0/416	0/212	0/041	-2/202	2/1009	4/847	4/41	1	
Positive relationship, no significant	0/089	0/008	0/708	0/380	2/1009	0/144	4/41	2	
Negative relationship, no significant	-0/012	0/000	0/959	0/052	2/1009	0/003	4/41	3	2004
Positive relationship, no significant	0/301	0/091	0/197	1/341	2/1009	1/799	4/41	4	
Negative relationship, no significant	-0/442	0/195	0/051	-2/090	2/1009	4/369	4/41	5	
Positive relationship, no significant	0/320	0/102	0/169	1/433	2/1009	2/054	4/41	1	
Negative relationship, no significant	0/302	0/091	0/196	1/344	2/1009	1/807	4/41	2	
Positive relationship, no significant	0/285	0/081	0/223	1/261	2/1009	1/591	4/41	3	2005
Positive relationship, no significant	-/166	0/028	0/485	-0/713	2/1009	0/509	4/41	4	
Positive relationship, no significant	-0/201	0/040	0/397	-0/868	2/1009	0/754	4/41	5	
Negative relationship, no significant	-0/073	0/005	0/760	-0/309	2/1009	0/096	4/41	1	
Negative relationship, no significant	-0/082	0/007	0/731	-0/349	2/1009	0/122	4/41	2	
Positive relationship, no significant	-/0218	0/048	0/355	-0/949	2/1009	0/901	4/41	3	2006
Negative relationship, no significant	0/383	0/147	0/096	1/758	2/1009	3/092	4/41	4	
Negatives relationship, no significant	-0/333	0/111	0/151	-1/498	2/1009	2/254	4/41	5	
Positive relationship, no significant	0/365	0/133	0/114	1/663	2/1009	2/766	4/41	1	
Negatives relationship, no significant	0/346	0/120	0/135	1/564	2/1009	2/446	4/41	2	
Positive relationship, no significant	0/213	0/120	0/368	0/923	2/1009	0/852	4/41	3	2007
Positive relationship, no significant	0/151	0/023	0/526	0/646	2/1009	0/418	4/41	4	
Positive relationship, no significant	-0/167	0/028	0/483	-0/716	2/1009	0/513	4/41	5	
Negative relationship, no significant	0/213	0/045	0/367	0/926	2/1009	0/857	4/41	1	
Negative relationship, no significant	0/065	0/004	0/786	0/276	2/1009	0/076	4/41	2	
Positive relationship, no significant	0/319	0/102	0/170	1/429	2/1009	0/042	4/41	3	2008
Positive relationship, no significant	-0/409	0/168	0/073	-1/904	2/1009	3/626	4/41	4	
Positive relationship, no significant	-0/370	0/137	0/109	-1/688	2/1009	2/850	4/41	5	
Positive relationship, no significant	-0/040	0/002	0/690	-0/400	1/9845	0/160	3/92	-	2004
Negative relationship, no significant	0/208	0/043	0/038	2/108	1/9845	4/426	3/92	-	2005
Negative relationship, no significant	0/130	0/017	0/197	1/299	1/9845	1/687	3/92	-	2006
Positive relationship, significant	-0/022	0/000	0/826	-0/220	1/9845	0/048	3/92	-	2007
Positive relationship, no significant	-0/280	0/078	0/005	-2/883	1/9845	8/310	3/92	-	2008
Positive relationship, no significant	0/208	0/043	0/038	2/101	1/9845	4/416	3/92		The average of 5 year

Result: There is a significant relationship between the ratio of price to earnings and adjusted stock return according to the total risk

[H₀] Assumption: There is no significant relationship between the price to earnings ratio and the adjusted stock returns.

[H₁] Assumption: There is a significant relationship between the price to earnings ratio and the adjusted stock returns.

At this stage, we used analysis of variance and correlation coefficient and tested once per year for portfolios, once based on all companies per year and once based on the average of firms in 5 years. The results of main hypothesis explain in Table 1.

For significance test of variance the act is as follows:

It's the condition of H₀ acceptance: $F_0 > F$ Also it's the condition of H₁ acceptance: $F_0 < F$

For significance test of the correlation coefficient the act is as follows:

It's the condition of H₀ acceptance: $T_0 < T$ or p-value > α

Also it's the condition of H₁ acceptance: $T_0 > T$ or p-value < α

Testing results are summarized in Table 2.

[H₁] Assumption asserts that the relationship between the ratio of price to earnings and adjusted stock returns is significant.

- **Regression coefficients significance test: t-test:** The value of T according to research finding. It is outside the critical region from 2000 for portfolio 1, in the period of 2001-2004 and also the average of 5 years. Therefore, [H₁] assumption has been accepted at α = %5, but T test is inside the critical region in the rest portfolios and also in the period of 2001-2008. So [H₀] assumption has been accepted at α = %5. Finally, we can conclude that in the significant level of 5%, there is no significant relationship between the price to earnings ratio and adjusted stock return.

- **Analysis of variance test:** According to the research finding, F-test from 2000 for portfolio 1, in the period of 2001-2004 and also the average of 5 years is larger than the F. Therefore, [H₁] assumption has been accepted at α = %5, but F-test

in the rest of portfolios is smaller than F. So [H$_0$] assumption has been accepted at α = %5. Finally, we can conclude that in the significant level of 5%, there is no significant relationship between the price to earnings ratio and adjusted stock return.

- **Correlation coefficients significance test:** According to research finding the p-value is smaller than α at α = %5, from 2000 for portfolio 1, in the period of 2001-2004 and also the average of 5 years. Therefore, [H$_1$] assumption has been accepted at α = %5, but p-value in the rest of portfolios is larger than α at α = %5, so [H$_0$] assumption has been accepted at α = %5. Finally, we can conclude that in the significant level of 5%, there is no significant relationship between the price to earnings ratio and stock return.

CONCLUSION AND RECOMMENDATIONS

Conclusion: According to the information and results in three testing, hypotheses showed that there is no significant relationship between the price to earnings ratio and stock return. Therefore according to the ratio of price to earnings the stock return cannot be predictive in the future. The results are consistent with the findings of Ahmed and Hesady. Also these results are contrast with the findings of Basu, Aydogan, Fuller, Kromis, Beneda, Tousi and Ebadzadeh.

In the second test, we concluded that according to the total risk there is no significant relationship between the price to earnings ratio and stock return. (It's consistent with Ahmed findings)

Recommendations: As a result the relationship between the ratio of price to earnings and stock return and adjusted return is not significant, so the following suggestions are offered.

- According to the results of research on the relationship of price to earnings ratio and stock and adjusted returns, we can offer investors to use other indices such as the ratio of book value to market value, return on assets, return on equity etc.
- Most researches in this field of research had short-term trend, it is suggested that this research should be done in long-term period, for example in 10 year.
- This topic should study in different industries.
- We should consider this subject with high and low ratios of price to earnings.
- We should consider this subject in small and large companies.

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