# Review the relationship between firms size with return and risk firms accepted in Tehran-Iran stock exchange

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Abstract: The aim of the present research is to study and analyze the relationship between firm sixe and return rate and risk in firms accepted in Tehran Stock Exchange. The question posed is that what effect does the firm size has on return and risk. Thus, we will deal with studying the relationship between risk and return and firm size in bourse companies to identify whether big companies are more appropriate for investment or the small ones? Since market value of the firm's stocks was considered as the firm size (independent variable in the present research, the research results will show whether purchasing the stocks of companies with more market values will result in more earnings for the investors or purchasing stocks of companies with low market values? Additionally the risk of these two groups of companies will be investigated. In the present research we considered some criteria to select our sample and chose 84 bourse companies during the time period between 2007 and 2011 and studied the relationships between the variables mentioned by using the statistical software E-Views. According to the results the existence of a linear relationship between firm size and return was approved for the years 2008 and 2009 and the existence of a linear relationship between firm size and systematic risk index was approved for the years 2008, 2009, and 2011. Meanwhile, in all the cases above, the relationship between firm size and return and systematic risk index was direct and the regression line slope was estimated to be positive. [Behnam Samadiyan Yousef Ghanbari, Reza jafarnezhad, Bahram Shadkam Agha. Review the relationship between firms size with return and risk firms accepted in Tehran-Iran stock exchange. Life Sci J 2013;10(5s):340-343] (ISSN:1097-8135). http://www.lifesciencesite.com. 61

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# 1. Introduction

Studying the relationship between the financial and accounting variables in stock exchange is one of the most dominant issues in the researches done in the field. In most of these researches the variables risk and return and the relationship between these variables and other variables was effective and also the effects of these two variables were investigated. In the present research, the researchers opt to study the relationship between firm size and risk and return. Risk and return in investment and financing accompany each other all the time and we cannot separate them from each other because the decisions related to investment is always carried out based on the relationship between risk and return. Each financial decision has a risk element and a return element. The relationship between risk and return is in the form of a risk equilibrium and return and by this we mean that only when there is achieving more return a higher level of risk is incurred. On the other hand, one of the basic presuppositions in risk investment is that the investors often try to run away from the risk and invest their financial resources where there is the highest return and the minimum risk. Risk is the amount of the difference between the real return of investment and the expected return. The

modern investment analysts divide risk resources which create change and dispersion in the return into two groups: systematic risk and unsystematic risk. Unsystematic risk can be reduced by creating portfolios and the remaining part of risk will not be reducible and the risk is related to the market. This part of the risk is called systematic risk. The index for systematic risk is called beta which has been determined as the risk criterion in the present research. Return in investment process is a stimulating force which creates incentives and is considered as a reward for the investors. Return resulted from investment is highly important for the investors because all investing is done to gain returns. An assessment of the return is the only logical way for the investors to compare the alternative and different investments. Stock's return is another dependent variable in the present research which entails two parts: profit resulted from the capital (price change) and cash profit (Raee & Talanghi, 2008, P: 410). Also the criterion intended for determining firm size is the market value of owners' equity which introduces the amount of investment. Market value of the company shows the wealth of stockholders and is one of the firm's performance assessment criteria in balanced assessment of the stock value approach. Therefore, its

prediction is highly important both for the investors and management (Biwar & et al, 2004, P: 12).

# 2-Literature and prior studies

al,. Bovd et (2001)found that macroeconomic news have separately time-varying effects on the returns of companies. The results of their study showed that the declaration of severe unemployment increases stock price during economic upturn, and in contrast, such news declines stock value during recession (Namazi & Mohammadtabar, 2007). Pettengill, Sundaram, and Mathur (2002) compared the relation of dual betas with return and that of fixed  $\beta$  and return in market segmentation approach. In general, the results of their research showed that market segmentation approach was a sufficient condition to find a significant relation between return and risk (Perez-Ouiros & Timmermann, 2000). Ho et al (2005) tested a modified version of Pettengill et al' model (2002) and found that when market is segmented into up and down markets, the most important systematic (negative) positive relation exists between realized return and  $\beta$  in up (down) markets (Cenesizoglu, 2006) .Cenesizoglu (2006) studied the asymmetries in the reaction of portfolio return with different specifications (in CRSP) to similar macroeconomic news. The results showed that the return on the portfolio of large companies in the process of growth reacted to economic news more strongly than smaller companies did (Wittink, Dick. R., 2005). Perez-Quiros and Timmermann (2000) studied the relation between firm size and the fluctuations in stock returns under different economic conditions. The results showed that the fluctuations in stock returns were intensified during economic recessions. They also showed that there was a close relation between firm size and fluctuations in returns. Moreover, the fluctuations in the returns of small companies are affected by recessions more significantly (Fama & French, 1992). Zeng et al (2008) used the model introduced by Perez-Quiros & Timmermann (2002) and found that additional returns expected from the stocks of exchange companies during recession, are affected significantly; however, the expected additional returns of the companies in the process of growth are not affected. In Iran, several studies have been conducted on the systematic risk index ( $\beta$ ), firm size, and the relation between these two variables under different market conditions. In the following, some of these studies have been introduced. Bagherzadeh (2003) studied in his PhD thesis the factors affecting the return expected from the stocks of the companies listed on Tehran Stock Exchange. The results of this thesis show that there is a positive relation between the firm size and stock returns of the companies listed on Tehran Stock Exchange (Bagherzadeh, 2005).

Mosaddegh (2006) studied the relation of risk and size with return under different market conditions of the companies listed on Tehran Stock Exchange. The results *showed* that the variable *size* could be used under up market conditions to explain the changes in return. That means large companies have higher returns; but in down markets, the variable *risk index* ( $\beta$ ), which is in inverse relation with the return, can merely be used to explain the changes in return.

*Namazi* and Mohammad Tabar Kasgari (2007) studied the effects of some economic variables (including monetary growth, gold coin price, exchange rate of dollar, and Tehran Stock Exchange price index) on the stock returns of the companies listed on Tehran Stock Exchange. The results of this study showed that no studied variable could explain the changes in stock returns

# 3-Hypothesis

- 1. There is significant relationship between firm size and stock return
- 2. There is significant relationship between firm size and Index of the systematic risk

# **4Research variables**

## 4-1-Stock Return

Stock return volatility means the achievement of real return different from the expectations. This volatility is also known as investment risk (Rai, and Talangi, 2004). To assess such a risk, there are different criteria including standard deviation,  $\beta$  coefficient, financial leverage, etc. In these researches, stock return volatility has been assessed by systematic risk index ( $\beta$ ).

## 4-2-Firm size

In most financial researches carried out the variable of firm size has been calculated regarding the market value of owners' equity (the number of flowing stocks multiplied by stock price in the company). One important research to mention is Fama & French's (1992). In this research we have used market value of owners' equity to calculate firm size, too.

## **5-Sample selection**

The statistical society includes firms accepted in Tehran Stock Exchange. Sampling method has been judgmental in the present research because some of the companies present in the bourse have been selected based on some criteria. The sample selected involves firms which have chosen their fiscal year to be ended on 29<sup>th</sup> Esfand (21<sup>st</sup>. March). Also the companies selected in the sample have had the following characteristics: a) their trademarks were not stopped for more than 3 successive months during one fiscal year, b) firms not having transactions for more than 3 months on the stocks were omitted from the

research, c) the firms in the sample did not lose money during the time period for the research, d) the firms were not active in financial intermediary industries. The reason for not choosing the financial firms is the high amount of the ratio of leverage in those companies which does not necessarily mean that they are financially weak.

Thus, 84 companies having the conditions above were selected to be included in our statistical sample.

#### 6-Research methodology and hypotheses test

The software used in the present research was E-views. To study and test every hypothesis first the regression was carried out for the independent and dependent variables in each year in isolation. Then, the meaningfulness of the estimated regression was investigated. After that we did recognition tests such as normality test, self-correlation test and convergence test and variance for the residuals of each of the relationships estimated.

# 7-Firs hypothesis test

H0: There isn't significant relationship between firm size and stock return H1: There is significant relationship between firm size and stock return

Age	α	β	R2	DW	P-Value	Prob1(normality)	Prob2(autocorrelation)	Prob3(heteroskedasticity)
86	-115	7	0.11	1.9	0.21	0.05	0.97	0.85
87	-130	8	0.31	1.6	0.06	0.06	0.4	0.92
88	-120	5	0.24	1.7	0.1	0.04	0.2	0.12
89	-18	1	0.05	1.5	0.9	0.08	0.5	.05
90	27.9	-2	0.06	1.6	0.4	0.09	0.3	0.64

Table 1: statistical results of studying the first hypothesis

As it can be seen in table 1, only in the years 2008 and 2009 the existence of a linear relationship between the independent and dependent variables was approved because only during these two years P-Value has been less than 0.05. The slope of the regression line in these two years has been positive which shows that there was a positive relationship between dependent and independent variables at that time. Regarding the correlation coefficient e can also state that during the years 2008 and 2009 the coefficients were 0.31 and 0.24, respectively which have been the highest amounts compared to other years and this also show a small amount of correlation. To test the self-correlation of the

residuals of the regression we used Durbin-Watson's statistics. The amount of Durbin-Watson's statistics in all 5 years was almost 2 which showed that there was not self-correlation between the residuals of the regression. Thus, the hypothesis of self-correlation between the residuals was rejected. In testing the normality of the residuals and regarding the amount of Prob1 in all the years, the hypothesis of normality of the residuals was approved. Regarding the variance divergence, since the amount of Prob2 is higher than 0.05 during the whole 5 years, the hypothesis of convergence of the variances was not rejected and the hypothesis of convergence of the variances in all 5 years was approved.

#### 8-Second hypothesis test

H0: There isn't significant relationship between firm size and Index of the systematic risk H1: There is significant relationship between firm size and Index of the systematic risk Beta= $\alpha+\beta$  {Ln (MV)} + $\epsilon$ 

Age	α	β	R2	DW	P-VAlue	Prob1(normality)	Prob2(autocorrelation)	Prob3(heteroskedasticity)
86	-3	0.2	0.14	1.95	0.12	0.08	0.58	0.32
87	-5	0.3	0.03	1.58	0.00	0.09	0.35	0.06
88	-3	0.08	0.18	1.68	0.03	0.12	0.06	0.84
89	-2	0.07	0.15	1.91	0.13	0.05	0.006	0.3
90	-6	0.31	0.30	2.1	0.01	0.06	0.64	0.62

Fable 2: statistical	results	of studying	the second	hypothesis.
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The amount of P-Value showed that during the years 2008, 2009, and 2011 there was a linear relationship between independent and dependent variables (firm size and beta) with %95 reliability. Because only during these 3 years the amount of P-Value has been less than 0.05 and in the 2 other years it was higher than this amount and the linear relationship between these two variables is not approved. During the whole years the coefficient  $\beta$ was positive and less than 1 which showed that the regression line has had a lower slope. Also the correlation coefficient has been considerable during the year 2011 and it was only %18 in the year 2009. Durbin-Watson's test result was nearly 2 during the whole time period and even in the year 2011 the linear relationship of the variables has been approved which was higher than 2 and it showed that there was a lack of self-correlation among the regression residuals. The amount of Prob<sub>1</sub> during the whole 5 years period was higher than 0.05 ad this does not approve the normality hypothesis of the residuals during the period. In testing variance convergence in the year 2010, the amount of Prob<sub>2</sub> was less than 0.05 and thus the convergence of the variances in this year is not approved but in other years and due to the high number of this statistics, the convergence hypothesis of the variance was approved.

# 9-Results

In first hypothesis, during the 5 years' time period under investigations, only during the years 2008 and 2009 the existence of a meaningful relationship between size and return was approved and during the other 3 years this linear relationship was not approved. In these two years the linear relationship between size and return of the company with &95 assurance level was approved and regarding the positive estimation amount for the slope of the regression both these variables have a direct relationship. This means that during these two years by increasing the firm size, stock return has also increased. The results of investigating about the second hypothesis showed that the linear relationship between the variables investigated was approved for the years 2009, 2009, and 2011. These results showed that during these 3 years there was a direct relationship between firm size and systematic risk index. In other words, by increasing firm size, the risk will increase. In both hypotheses during the years between 2008 and 2009 there has been a direct risk in the relationship between risk and return. Regarding the studies carried out about this model, these 3 factor emotional effect of Fama and French has been approved regarding the hypothesis approved in Tehran Stock exchange.

Considering other criteria for the variable of the size and studying the relationship of each of these criteria with risk and return can be useful in achieving a reliable criterion for the firms' sizes variables.

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