*Full Length Research Paper*

# Analyzing performance of investment companies listed in the Tehran stock exchange by selected ratios and measures

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This paper tried to analyze the performance of the investment companies listed in Tehran Stock Exchange that had active portfolio management from 2006 to 2010 by Sharp, Treynor, and Sortino ratios. For more profound study of their performances, this research used some of the measures, including turnover, liquidity, size and diversification of portfolio. After gathering needed test data and relevant statistical tests as Kolmogorov-Smirnov and Shapiro-Wilk, the results showed the distribution of data was not normal. Therefore, the hypothesis was tested by nonparametric tests. The results of the first hypothesis about the three mentioned above ratios and with Freidman and Wilcoxen tests showed the companies had better controls on systematic risk than other components. The result of the second hypothesis by using combined Anova and Multiple Anova showed portfolio turnover in the companies had positive and significant affect in the companies performances than other measures.It is possiblefor anyone to be able to find a company that has a high level of portfolio turnover and a high level of performance than other companies while it has a lower level of other measures.

**Key words:** Investment companies, performance evaluation ratios (Sharp, Sortino and Treynor), performance measures (liquidity, company size, turnover and being diversified in their portfolio).

## INTRODUCTION

Nowadays, investment companies are working in all of the financial markets.The main task of aninvestment company is buying and holding other companies securities with the aim of investing shareholders funds into a co-portfolio consisting of sharing losses and profits for them. Thus, the individual investors invest their funds in securities and make a portfolio while this investment has a lower risk and more favorable returns for their investment. Therefore, investment companies have enough expert individuals to invest funds (Saunders and Millon, 2005).

In this paper, we intend to examine performance of investment companies listed in Tehran Stock Exchange. Therefore, in this regard based on different theories of concern with portfolio performance evaluation, at the beginning of this research using Sharp, Treynor, and Sortino ratios, which evaluate SD (Standard Diviasion), systematic risk, and downside risk against the expected return of investment, we evaluate the performance of investment companies. These ratios werealso used inthe following researches: (Pedersen and Ted, 2003) in London Stock Exchange, (Bengtsson, 2007) in Nordic and Baltic Stock Exchange, (Chaudhry et al., 2008) in Australian Securities Exchange, (Galetsas, 2008) in Greek Stock Exchange, (Rahdari, 2009) in Tehran

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Stock Exchange, (Rao, 2010) in National Stock Exchange of India Limited.

For more detail and precise study of the companies performances, the following researchers: (Lin and Chang, 2004; Hyung et al., 2005; Hernandez-Perez et al., 2006; Gonzalez and Rubio, 2007; Gomes and Kruglianskas, 2009; Hu, 2010) were studied on turnover, liquidity, size and diversification of portfolio.

In our research we tested the ability of Iranian investment companies in controlling systematic risk to comparing the company risk and fluctuating level of risk with their assets allocation in portfolio with the three ratios:Sharp, Treynor and Sortino.

## LITERATURE REVIEW

This study attempted to have a comprehensive evaluation on portfolio performance of Iranian investment companies. In order to achieve this goal, we divided conceptual framework in two parts: performance evaluation ratios and performance evaluation measures. In each part, we mentioned relevant previous studies in detail.

### Performance evaluation ratios

Investment in securities exchange is possible by different methods and motives. In June of 2010, management report on working opportunity fund, presented that almost 75% of portfolio in investment companies is consisting of venture investment and this part of portfolio is composed by 36% common shares, 61% preferred shares and 3% debt instruments or bonds (EVCC, 2010).

There are many theories in concern with portfolio performance evaluation. The modern portfolio theory assumed, the distribution of data is always normal and the main factorin this theory is emphasized sincethe systematic risk (β) has a significant influence on all parts of the market. The ratios in this theory generally examine the levels of changing risk and its effect on portfolio performance. For instance,Treynor evaluates the effects of changing systematic risk on the portfolio performance. The Sharp ratio examines the effect of standard deviation on expected return or risk within the company due to occurring inappropriate allocation of assets in portfolio formation.

The Sharp ratio is one of the most famous ratios in this regard. The majority of previous studies suggested the use of Sharp ratio in performance evaluation (Pedersen and Ted, 2003; Goetzmann et al., 2006; Eling, 2008). The Post modern portfolio theory was created with new assumptions about distribution of data. This theory emphasized that distribution of data in some conditions is not always normal, and introduced downside risk as a new factor for evaluating portfolio performance. By accepting higer level of risk for your investment portfolio, you may gain more favorable return. Thus, risk is assumed as a positive factor. Otherwise, if changes in level of risk doesnot have a positive effect on portfolio return, it is identified as a negative factor. The Sortino ratio is one of the most famous factors in this regard, and used for performance evaluation, optimizing and allocating assets in portfolio (Alenius, 2009).

Several studies related to these theories (Modern and Post modern portfolio) have been done. One of the first surveys conducted in early 2000 was (Redman et al., 2000). They examined the risk-adjusted returns using Sharp, Treynor, and Jensen ratios for seventy portfolios of international mutual funds, in three time periods: (1985 through 1994, 1985-1989, and 1990-1994). The benchmarks for comparison were the U. S. market proxied by the Vanguard Index 500 mutual fund and a portfolio of funds that invest solely in U. S. stocks. Based on their research results in the period reviewed by Sharp and Treynor ratios, it showed better performance for these mutual funds than market performance. Also, Jensen ratio showed a positive surplus for their performance than the base stock return index in the United States. In 2003 (Pedersen and Ted, 2003) also measured risk adjusted performance evaluation with the use of classic and modern performance evaluation ratios. Finally, the results of relevant statistical test based on the performance of selected companies on the London Stock Exchange indicated that the Sharp ratio could be a suitable ratio for performance evaluation.

In this context,the (Goetzmann et al., 2006) paper concluded that the Sharp ratio certainly has a superior ability in comparing with the other ratios for performance evaluating in investment companies. In connection with the performance evaluation ratios based on the post modern portfolio theory (Chaudhry et al., 2008) in a study on the Australian Securities Exchange examined performance of selected companies in their statistical sample. According to lack of normality in data distribution, their research results showed that the Sortino ratio can present ability of mutual funds, because it evaluated the level of downside risk better than other ratios.

Unlike (Chaudhry te al., 2008) paper, (Eling, 2008) in connection with the performance evaluation ratio like Sharp, Sortino, Omega and Kalmar and some other ratios, the results of their research showed abilities of Sharp ratio on performance evaluation in companies is more effective than other ratios as well as Sortino ratio. The paper suggested that only calculating this ratio in assessing performance of investment companies is sufficient. Neverthless in all cases the condition of

asymmetric distribution of data for using postmodernratio is mentioned.

Also addressing this point (Aragon and Ferson, 2006), they mentioned the inability of ratio based on post modern portfolio theory in providing real performance of investment companies. They suggested using modern ratios in this regard (Mau, 2009). Also in a study entitled, "Back to the Basics: A Process Approach for Managing Portfolio Risk" proposed to use a framework that contained both quantitative and qualitative aspects of risk on return. This framework includes seven different strategies that are used under different market conditions.

Finally, one of the most recent researches on the structure of optimal portfolio management by (Ben et al., 2010) has been applying the theory of the rank dependent utility framework. They illustrated how these products can be in accordance to investor's attitude towards risk, whereas, for the standard expected utility case.

## Performance evaluation measures

In order to better understand the relationship between these measures and portfolio performance, we reviewed and pondered the previous researches on these matters.

Associated with firm size: (Lu, 2007) In his master's thesis he wrote, although, much research has been done in connection with the impact of firm size on performance, and and believing that increasing in the size of the company lead to higher company turnover. Therefore, the cost will be dividedinto more units, and has a positive effect on performance of the company. Even so, positive and clear evidence in this case has not been found. The main reason in this matter is the positive perspective about increasing size of a company and its effect on performance, and its relation with the economic sphere and reducing transaction costs in large volume.

In connection with the turnover as firm size: (Lo and Wang, 2000). They xpressed that turnover is defined by the total number of traded shares. In other words, it is the total volume of money that is used in the stock exchange trading on an investment portfolio. The same advantages for high firm size are also conceivable for the high turnover.

According with liquidity portfolio performance: (Donor Advised Funds, 2010). In their Liquidity Portfolio leaflet they mentioned that the Liquidity Portfolio is designed to maintain account balances for active grant making and is comprised primarily of deposits with leading community development and environmental banks; as well as, bonds that offer supporting economic development projects, affordable housing, and environmental initiatives. The

portfolio maximizes diversification among deposit institutions to secure the highest level of federal insurance for its cash deposits. Also, regarding liquidity (Liu, 2006) he said that liquidity of assets is the ability to quickly deal with the high volume of securities with the lowest cost and lowest negative effect on stock prices.

Effect of portfolio diversification on portfolio performance: (Sullivan and Sheffrin, 2003). In connection with the effect of portfolio diversification on portfolio performance they have said, diversification means reducing financialrisk by investment in a variety of assets. If the asset values do not move up and down in perfect synchrony, a diversified portfoliowill have less risk than the weighted mean risk of its constituent assets, and often less risk than the least risky of its constituents.

The following part is about, more recent research mentioned in connection with these indicators: Associated with the impact of turnover of investment portfolio on the performance of investment companies, recently (Rao, 2010) in a research about selected 37 companies from 307 available listed companies in Bombay Stock Exchange. The findings of the study were of mixed nature and lacks evidence that is statistically significant to suggest that increase in portfolio turnover ratio would result in enhanced performance of the fund which implies that high portfolio turnover ratios does not necessarily improve the fund performance consistently over a long time period. There is no conclusive evidence to suggest that there is significant relationship between portfolio turnover ratio and measures of fund performance used for this study, absolute fund return and fund performance relative to Benchmark index.

The effect of risk reduction through diversification of the investment portfolio (Hyung et al., 2005) in an article reviewed the effect of risk reduction through diversification of the investment portfolio. In this case (Damodaran, 2009) his research alsoexpressed that diversification lead to company risk reduction and has many economic benefits for the companies. Through this way, we can achieve the lowest level of risk for each element in the investment portfolio. However, unlike the twopervious mentioned studies, in a study conducted in Shanghai Stock Exchange (Hu, 2010) expressed over the desirable diversification in the investment portfolio lead to disturbing levels of risk, and it will be gaining the results inconsistent with the principle of diversity.

Recently, many studies about the impact of firm size on portfolio performance have been done and significant results have been expressed. For example, (Hishamuddin, 2006) in a study conducted in the Malaysian Stock Exchange expressed that large companies have higher return and lower risk in comparison with small companies that have fewer volume of investment. He concludes there is a negative relationship

between size and unsystematic risk in which the larger the firm size, the unsystematic risk is lower. In a similar paper (Hernandez-Perez et al., 2006) studied distribution of company size in firms in developing countries and developed countries. The results showed the size of companies in developing countries is different from developed countries with significant basis.

This point will provide suitable information about economic conditions in both developing and developed countries. In another study (Maffini and Clandia, 2009) examined the effect of company in innovative performance in Brazil Stock Exchange. They concluded according to the size of the companies, there are some significant differences in aspects related to the access to technology and the types of external sources of technological information used by the firms (Kalin and Zagst, 2004) explored in an issue about the effect of liquidity of portfolio in German Stock Exchange on portfolio performance. The case study shows how the results can be applied to practical trading problems. And also (Gonzalez and Rubio, 2007) reviewed the portfolio selection and examined the liquidity of portfolio and its effects on portfolio performance.

They used sharp ratio in this regard and their research results showed that companies with positive signs about the ability of liquidity on their portfolio have better performance than those companies with neutral respondents about liquidity on those portfolios. In a recent study, (Kanasro et al., 2009) examined the position of stock market liquidity at Karachi Stock Exchange (KSE) during the period from 1985 to 2006. They found less liquidity causes fewer synchroni-city in prices attracting fewer investors and results is a smaller size of market.

## MATERIALS AND METHODS

The materials and methodsused in this research are as scientificas possible. In addition, the correlation of its main goal is to identify the relation between dependent and independent research variables. Our research did notignored companies which had inactive portfolios for several months during the period of study. Therefore, this study consists of all the investment companies listed in Tehran Stock Exchange during 2006 to 2010.

The relevant data is gathered from Tehran Stock Exchange companies and analyzing stock software's as Dena Sahm and Pars Portfolio. Other needed information is obtained from financial statements, relevant auditing statements and other creditable sources.

## Research objectives

The aims of the investments are to increasing the assets value. Therefore, the investors have to invest some of their assets in bout high and low risk stocks. Portfolio assessment is important for

investors. If the results are not satisfactory to investors, their portfolio performance should be adaptable to change. Thus, portfolio performance evaluation is crucial. Whether a person may evaluate his/her portfolio or have it done by a brokerage company in one of the following three ways:

1. The company perspective: It is instrumental for the investment company to show good results in their performance to attract investors from their competitors.
2. The investors perspective: Investor's bottom line is the maximum return on investment. Therefore, investors consider any firm that whichachieves the highest return on investment.
3. The stock market and economic perspective: Public participation increases or decreases based on economic situation. Entering the market for every investor is based on his/her experience.

## Importance of research

The 2009 financial crisisalarmed us to be more careful in formation of a portfolio. Also, in the same token the managers, shareholders, other interested individuals, and investment institutions are considering the importance of portfolio management more than ever. Therefore, the present study in this regard reviews the following aspects:

1. The organization of a portfolio is an important consideration bythe above interested individuals and companies. Nevertheless,it is essential for them to be informed with the components of investment portfolio.
2. How to organize the portfolio of the company, impacts the performance, and will be effective. Portfolio is relevant with systematic risk of companyand noteworthy for shareholder, financial managers, creditors, as well as competitors of the investment companies.

## The hypotheses

When investors want to make a portfolio, they had to pay attention to several components. For this reason, we identified important parts of the portfolio based on previous research that had significant influence on performance of the investment companies listed in Tehran stock exchange. The main goal of this research is finding the best structure of portfolio for the companies which has the lowest risk while having the highest performance. Hypotheses called in finance, optimum portfolio were defined as follows:

$H_1$: There are a significant differences between the results of performance evaluated by Sharp, Treynor and Sortino ratios.

$H_2$: There is a direct correlation between return on investment and size, liquidity, diversification, and the turnover of the portfolio.

## The ratios and measures

### Performance ratios

This research is done according to (Bacon, 2008) definition of Sharp, Treynor and Sortino ratios as they are shown in (Table 1a).

**Table 1.** The Sharp, Treynor and Sortino Ratios (Bacon, 2008).

| Ratio | Formula | Explanation |
|---|---|---|
| Sharp | $$SR = \dfrac{r_p - r_f}{\sigma_p}$$ | $r_p$ = Portfolio Return<br>$r_p$ = Risk Free Ratio<br>$\sigma_p$ = SD of Portfolio |
| Treynor | $$TR = \dfrac{r_p - r_f}{\beta_p}$$ | $r_p$ = Portfolio Return<br>$r_p$ = Risk Free Ratio<br>$\beta_p$ = Systematic Risk of Portfolio |
| Sortino | $$SOR = \dfrac{(r_p - r_f)}{\sigma_p}$$ | $r_p$ = Portfolio Return<br>$r_p$ = Risk Free Ratio<br>$\sigma_p$ = Downside Risk of Portfolio |

The risk Free ratio is defined as the geometric mean of the ratio that central bank of The Islamic Republic of Iran is published during study period of this survey.

**Table 1b.** Result of Kolmogorov-Smirnov and Shapiro-Wilk tests about distributions of data.

| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | | Result |
|---|---|---|---|---|---|---|---|
| Research Variables | T Stat | D.F | Std. Dev. | T Stat | D.F | Std. Dev. | The distribution is not normal. |
| Sharp | 0.461 | 64 | 0.000 | 0.184 | 64 | 0.000 | The distribution is not normal |
| Treynor | 0.431 | 64 | 0.000 | 0.291 | 64 | 0.000 | The distribution is not normal. |
| Sortino | 0.309 | 64 | 0.000 | 0.352 | 64 | 0.000 | The distribution is not normal |
| Turnover of portfolio | 0.440 | 64 | 0.000 | 0.224 | 64 | 0.000 | The distribution is not normal. |
| Size of portfolio | 0.269 | 64 | 0.000 | 0.538 | 64 | 0.000 | The distribution is not normal |
| Diversification of portfolio | 0.258 | 64 | 0.000 | 0.728 | 64 | 0.000 | The distribution is not normal. |
| Liquidity of portfolio | 0.351 | 64 | 0.000 | 0.386 | 64 | 0.000 | The distribution is not normal |

**Performance measures**

We used Turnover, Size and Diversification of portfolio as measures and we gathered required data from financial statements, audition statements and relevant statements published by Tehran Stock Exchange. Another measure that we used in this paper was Liquidity of portfolio that we calculate it according to (Amihud, 2002) as formula I:

$$ILLIO_t^i = \frac{1}{Days_t^i} \sum_{d=1}^{Days} \frac{\left| R_{td}^i \right|}{V_{td}^i}$$

Formula I: Liquildity of Portfolio (Amihud, 2002).

**The variables**

In this research variables according to ratios and measures and

their affecton performance of investment companies are considered as:

**Independent variables**

Are two types: ratios and measures. Ratios are as follow: SD Return, Systematic Risk (β) and Downside Risk of portfolio. Measures are as follow: turnover, liquidity, Size and diversification of the portfolios.

**Dependent variables**

Are two types: Ratios, and measures. Ratios are as follow:

performance evaluated by Sharp,Treynor and Sortino. Measures are as follow: real performance of investment companies. More information will be mentioned in the next section III under hypo testing part.
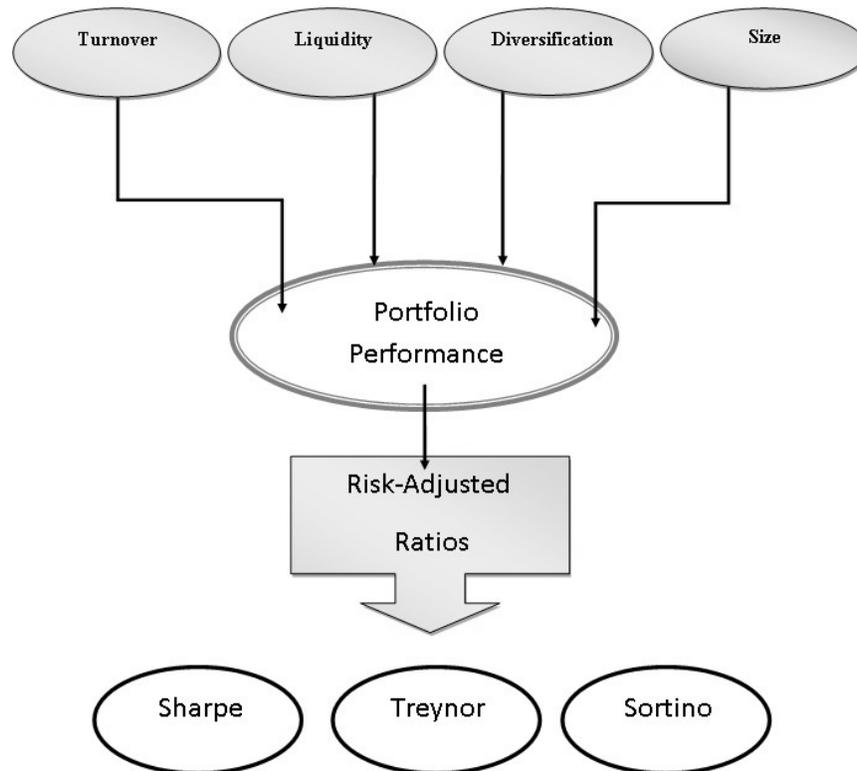
**Figure 1.** The research scheme.

## The research schema

Figure 1 indicates our research scheme.

## Data analyzing and statistical tests

In the present study data analysis is considered both quantitative and qualitative. Furthermore, statistical analysis of data has been expanded to the research population.

For this purpose, at the beginning, we summarized and classified collected data by using descriptive statistics. Moreover, we calculated relevant central parameters, including mean and median, and dispersion parameters, including variance and standard deviation. Then, we examined relationships between variables by inferential statistic tests, such as Comparison Test Rating and Anova. Process of data analyzing took place by staffing software packages "SPSS" and "Eviews".

## Analyzing the nature of variables and testing hypotheses

The aim of this study is to test and compare performance of investment companies between both dependent and independent variables. In this research data is gathered in a population study consist of 12 members from investment companies listed in Tehran Stock Exchange. During the study period, these 12 companies had active portfolio management. According to hypotheses the suitable tests for examining hypotheses are, test of comparing two pair variables and Anova.

The research data were obtained from our resources which was extracted on an annual basis for the period six years. Combined Anova analysis test was required and were lead us to the best result. The result of Kolmogorov-Smirnov and Shapiro-Wilk (Table 1b) tests showed the distribution of data was not normal, and Table 2 is the test results. Since, the variable distribution is not normal, and sample size was large, and data wereremote, As a result, according to the conditions and status of research data, we used two groups rank comparing test, and several groups rank comparing test.

## Hypotheses testing

### Hypothesis 1

There are a significant differences between the results of performance evaluated by Sharp, Treynor and Sorting ratios.

The distribution of data was not normal. So, we couldnot use parametric test to compare multi dependent mean. In an other word range of changing in observed data was so wide, and they had been remote.

To examine the hypotheses we had to use nonparametric test. So, we used the Fridman and Wilcaxon tests for comparing the relationship among Sharp, Trynor and Sortino ratios in investment companies.

In the first step, the Fridman test was used and in second step the pair compares test was used. We consider two hypotheses for

**Table 2.** Result of Freidman rank test for comparing mean of ranking on performance ratio in investment companies.

| Mean of ranking in compaired ratios | | Result of Freidman rank test | | | |
|---|---|---|---|---|---|
| Ratio | Mean ranking | Number | State square Fischer | D.F | Confidence Level |
| Sharp | 1.85 | | | | |
| Treynor | 2.22 | 67 | 5.224 | 2 | 0.073 |
| Sortino | 1.93 | | | | |

step one as follow:

**H0**: The mean of ranking ofSharp,Treynor and Sortino ratios in investment companies are not diffrent.

**H1**: The mean of ranking of Sharp, Treynor and Sortino ratios in investment companies are different.

$$\begin{cases} H0: mean\ rank_{sSH} - mean\ rank_{TR} mean\ rank_{SO} = 0 \\ H1: mean\ rank_{sSH} - mean\ rank_{TR} mean\ rank_{SO} \neq 0 \end{cases}$$

The results indicate that existence of difference between the three ranking mean in independent variables are not rejected at 95% confidence level. The reason was state square Fischer was (5.224) with two degree of freedom,and it was smaller than critical value (5.99). In the other word calculated level of error (0.073) was larger than (0.05).

Based on results obtained from Fridman rank test, from the largest to the smallest mean of rating for ratios dedicated as follow:

1. Treynor
2. Sortino
3. Sharp

To conclude we can say according to the result of test investment companies listed in Tehran Stock Exchange had better calculated performance with Trynor ratio than the other ratios. The result of test is shown in Table 2.

The Freidman rank test is a general test, and it does not analyze available missing data.In careful and presice study we also used Wilcoxen test, to examine the relationship between three mentioned ratios. We consider three Subsidiary hypotheses about hypotheses one, as follows:

**H₁ₐ**: There is a significant difference between results of performance evaluated by Sharp and Treynor ratios in investment companies.

$$\begin{cases} H0: mean\ rank_{sh} - mean\ rank_{t} = 0 \\ H1: mean\ rank_{sh} - mean\ rank_{t} \neq 0 \end{cases}$$

The result of test indicated that evaluated performance in investment companies listed in Tehran Stock Exchange by Treynor ratio is significant better than evaluated performance by Sharp ratio in the investment company listed in Tehran Stock Exchange. The result of Wilcoxen test is shown in Table 3.

**H₁ᵦ**: There is a significant difference between results of

performance evaluated by Sharp and Sortino ratios in investment companies.

$$\begin{cases} H0: mean\ rank_{SH} - mean\ rank_{SO} = 0 \\ H1: mean\ rank_{SH} - mean\ rank_{SO} \neq 0 \end{cases}$$

The result of test indicated that there is no significant difference between evaluated performances by Sharp and Sortino ratios in investment companies listed in Tehran Stock Exchange. The result of Wilcoxen test is shown in Table 4.

**H₁꜀**: There is a significant difference between results of performance evaluated by Treynor and Sortino ratios in investment companies.

$$\begin{cases} H0: mean\ rank_{TR} - mean\ rank_{SO} = 0 \\ H1: mean\ rank_{TR} - mean\ rank_{SO} \neq 0 \end{cases}$$

The result of test indicated that there is no significant difference between evaluated performances by Treynor and Sortino ratios in investment companies listed in Tehran Stock Exchange. The result of Wilcoxen test is shown in Table 5.

***Hypothesis 2***

There is a direct correlation between return on investment and size, liquidity, diversification, turnover of the portfolio.

**H₀:** There is no significant relation between four independent variable and return of portfolio in investment companies.
**H₁:** There is a significant relation between four independent variable and return of portfolio in investment companies.

$$\begin{cases} H0: \beta_{TO}, \beta_{SI}, \beta_{VO,}\ \beta_{LI} = 0 \\ H1: \beta_{TO}, \beta_{SI}, \beta_{VO,}\ \beta_{LI} \neq 0 \end{cases}$$

The hypothesis is tested by Combined Anova. Based on results of Combined Anova, among four coefficients independent variables, slope variation of the beta coefficients on turnover variable has significant and positive relation with return of portfolio in investment companies. The reason was calculated T Test was positive and larger than 2.58. Therefore, zero hypotheses are rejected at the confidence level of 95 and 99%, and another hypothesis is acceptable.

The coefficient of three other variable, including: size, diversification and liquidity of portfolio according to calculated T

**Table 3.** Result of Freidman rank test for comparing mean of ranking on performance ratio in investment companies.

| Pair variable | Status | Number | Average rating | Total ranking | Result of test | |
|---|---|---|---|---|---|---|
| | Negative ratings | 26(a) | 33.02 | 858.50 | Z stat | -2.247 |
| | Positive ratings | 44(b) | 36.97 | 1626.50 | Error level | 0.025 |
| Sharp - Treynor | Equality | 0(c) | a Treynor □ Sharp | | | |
| | Sum | 70 | b Treynor □ Sharp | | | |
| | | | c Treynor = Sharp | | | |

**Table 4.** Result comparing mean of ranking by Sharp and Treynor ratios.

| Pair variable | Status | Number | Average rating | Total ranking | Result of test | |
|---|---|---|---|---|---|---|
| | Negative ratings | 32(a) | 27.20 | 870.50 | Z stat | -1.677 |
| | Positive ratings | 35(b) | 40.21 | 1407.50 | Error level | 0.093 |
| Sharp - Sortino | Equality | 0(c) | a Sortino □ Sharp | | | |
| | Sum | 67 | b Sortino □ Sharp | | | |
| | | | c Sortino = Sharp | | | |

**Table 5.** Result comparing mean of ranking by Sharp and Sortino ratios.

| Pair variable | Status | Number | Average rating | Total ranking | Result of test | |
|---|---|---|---|---|---|---|
| | Negative ratings | 40(a) | 32.67 | 1307.00 | Z stat | -1.049 |
| | Positive ratings | 27(b) | 35.96 | 971.00 | Error level | 0.294 |
| Treynor - Sortino | Equality | 0(c) | a Sortino < Treynor | | | |
| | Sum | 67 | b Sortino >  Treynor | | | |
| | | | c Sortino = Treynor | | | |

Test level don't have significant relation with return of portfolio in investment companies.

In changeing turnover of portfolio for the companies are listed in the Tehran Stock Exchange has direct and significant relationship with return on investment, and do not have any relation with three other measures (Liqutity, diversification, and size).

In more careful study, we tested effect of four independent variablesseparatly with dependent variable. The results of this test emphasized the previous test results.

The results of multiple Anova test are shown in model 1 and Table 6.

$MODEL: RE=C(1)+C(2)*TO+C(3)*SI+C(4)*VO+C(5)*LI+[CX=F]$

$RE=21.45-0.0058TO-0.179SI-0.0389VO+0.400LI+[CX=F]$

T=5.900  3.306  -0.619  -0.688  0.595

P= 0.000  0.0017  0.538  0.494  0.553

$R^2 =0.269$  D.W=2.330

Model 1: The results of multiple Anova test

## RESEARCH FINDINGS

### There is a significant relation among Sharp, Treynor and Sortino ratios in investment companies

We used Spearman correlation coefficient to examine relations among Sharp, Treynor and Sortino ratios in investment companies. The result of test indicates that three mentioned ratios have positive and significant relation together in investment companies. The result of test is shown in Table 7. Therefore, we can claim that increasing or decreasing in each of the ratios let to increase or decrease in other ratios in investment companies.

**Table 6.** Result comparing mean of ranking by Treynorand Sortino ratios.

| Independent Variable: Return of Portfolio | | | | |
|---|---|---|---|---|
| Method: panel weight Total courses: 6 period Total level: 12 companies Views of unbalanced: 67 View | | | | |
| Variable | Coefficient | Standard error | T State | Confidence level |
| Fixed coefficient | 21.45269 | 3.635810 | 5.900388 | 0.0000 |
| TO | 0.005813 | 0.001758 | 3.306076 | 0.0017 |
| SI | -0.179708 | 0.289990 | -0.619704 | 0.5382 |
| DI | -0.038923 | 0.056528 | -0.688561 | 0.4942 |
| LI | 0.400021 | 0.671204 | 0.595975 | 0.5538 |
| | | | | |
| Detection factor | 0.269131 | Mean dependent variable | | 11.82923 |
| Improved detection coefficient | 0.054170 | SD dependent variable | | 97.02115 |
| SD Waste | 95.05254 | Durbin- Watson State | | 2.330620 |

**Table 7.** Results of multiple Anova analysis between the four independent variables and the Return of portfolio.

| Variable & Ratio | | Sharp | Treynor | Sortino |
|---|---|---|---|---|
| Sharp | Spearman correlation coefficient | 1.000 | 0.269 | 0.668 |
| | Significant Level | 0.000 | 0.024 | 0.000 |
| | Number | 70 | 70 | 67 |
| | | | | |
| Treynor | Spearman correlation coefficient | 0.269 | 1.000 | 0.332 |
| | Significant Level | 0.024 | 0.000 | 0.006 |
| | Number | 70 | 70 | 67 |
| | | | | |
| Sortino | Spearman correlation coefficient | 0.668 | 0.332 | 1.000 |
| | Significant Level | 0.000 | 0.006 | 0.000 |
| | Number | 67 | 67 | 69 |

**Among independent research variables, liquidity variable has significant relation with portfolio return in investment companies**

We used Spearman correlation coefficient to examine relations among research independent variables including Turnover, Size, Diversification and Liquidity of portfolio with Return on investment in brokerage firms. The result of the test indicates that among independent variable only Liquidity of portfolio has positive and significant relation with Return on investment in brokerage companies. The result of test is shown in Table 8.

**Among independent research variables, turnover and size of portfolio variables have significant relation with Sharp ratio in investment companies**

We used Spearman correlation coefficient to examine

relations among research independent variables including Turnover, Size, Diversification and Liquidity of portfolio with calculated Sharp ratio in investment companies. The result of test indicates that among independent variables Turnover of portfolio has positive and significant relation with Treynor ratio, and Size of portfolio has negative and significant relation with Sharp ratio in investment companies. The result of test is shown in Table 9.

**Among independent research variables, diversification of portfolio variable has significant relation with Treynor ratio in investment companies**

We used Spearman correlation coefficient to examine relations among research independent variables including Turnover, Size, Diversification and Liquidity of portfolio with calculated Treynor ratio in investment companies. The result of test indicates that among

**Table 8.** The result of Spearman correlation coefficient test among performance Ratios.

| Variable and Ratio | | Turnover | Size | Diversification | Liquidity |
|---|---|---|---|---|---|
| | Spearman correlation coefficient | 0.194 | -0.064 | -0.066 | -0.449 |
| Return of Portfolio | Significant Level | 0.102 | 0.597 | 0.579 | 0.000 |
| | Number | 72 | 71 | 72 | 67 |

**Table 9.** The result of Spearman correlation coefficient test among Return of Portfolio and Independent variables.

| Variable and Ratio | | Turnover | Size | Diversification | Liquidity |
|---|---|---|---|---|---|
| | Spearman correlation coefficient | 0.270 | -0.250 | -0.020 | -0.006 |
| Sharp | Significant Level | 0.024 | 0.037 | 0.870 | 0.959 |
| | Number | 70 | 70 | 70 | 67 |

**Table 10.** The result of Spearman correlation coefficient test among Sharp ratio and Independent Variables

| Variable and ratio | | Turnover | Size | Diversification | Liquidity |
|---|---|---|---|---|---|
| | Spearman correlation coefficient | 0.074 | -0.048 | -0.285 | 0.148 |
| Treynor | Significant Level | 0.0542 | 0.690 | 0.017 | 0.232 |
| | Number | 70 | 70 | 70 | 67 |

**Table 11.** The result of Spearman correlation coefficient test among Treynor ratio and Independent Variables

| Variable and Ratio | | Turnover | Size | Diversification | Liquidity |
|---|---|---|---|---|---|
| | Spearman correlation coefficient | 0.195 | -0.164 | -0.047 | 0.214 |
| Sortino | Significant Level | 0.108 | 0.180 | 0.703 | 0.090 |
| | Number | 69 | 68 | 69 | 64 |

independent variable only Diversification of portfolio has negative and significant relation with Treynor ratio in investment companies. The result of test is shown in Table 10.

**There is not any significant relation between independent variables and Sortino ratio in investment companies**

We used Spearman correlation coefficient to examine relations among research independent variables, including Turnover, Size, Diversification and Liquidity of portfolio with calculated Sortino ratio in investment companies. The result of test indicates that, there is not any significant relation among independent variables and Sortino ratios in investment companies. The result of test

is shown in Table 11.

**Summing up the results**

The results of the first research hypothesis test showed that a Treynor ratio presents better performance for investment companies(Iranian companies) compared with other ratios. As we expressed in the theoretical framework section,Thisratio present the ability to manage the risk in the market for the  companies. As a result, the investment firms control the market risk (beta factor). Also, this ratio is more precise than others, and thus Iranian investment firms have been able to have better performance depending on the incoming risk. Among the three performance evaluation ratios, Sortino ratio have also acquired the middle position. Investment  companies

that considered this ratio havemoderately managed to avoid the related downside risk of their portfolio development. Actually, they still have to pay more attention to this important factor. Iranian investment firms considered Sharp ratio still have not been managed to control the existing risk in their internal structure appropriately.

In regard with the second hypothesis, results show that the portfolio turnover has had the greatest impact on the companies' return on investment. Therefore, investment companies that have had the greatest turnover, are known for having investment priorityaccording to the result of the statistic tests for the investor and since the diversity and liquidity measeares have not had many relationships with the companies return on investment. We can concluded that these companies have not yet achieved the optimal structure of the portfolio, and they should perform more active in this regard. Furthermore, there is not any correlation between the firm size and the companies' return on investment. Inefficient application of investing funds in the portfolio,either by the investment companies and by inappropriate allocation of the assets may cause higher or lower retun on investment. We may found an investments company with a small sizewhich has acquired much better efficiency than a large company.

## Results interpretation based on the previous research

In the present study, it has been indicated that the Treynor ratio is a suitable ratio for evaluating performance of the investment companies while the research of (Pedersen and Ted, 2003) and (Goetzmann et al., 2006) recommended using the Sharp ratio for evaluating the performance of companies of this caliber also the Sortino ratio acquired the second place in evaluation of the investment companies' performance, while this result, with the little difference, is parallel with the result of (Chaudhry et al., 2008) research. In fact, a significant point that be able to obtained from the first hypothesis test, and superiority of the investment companies' performance by Treynor ratio is that given that systemic risk in the reviewing investment companies is better than other controller ratio as they were anticipated, these companies have reacted upon the changes of the market economic conditions, that this fact, according to the research of (Ben et al., 2010) recommends using a more optimal structure of the portfolio to these companies in addition to controlling systemic risk, they may educe the causes of risk enhancement within these companies.

Moreover, according to the results of the second hypothesis and the other findings of the research, since

corporate functions have no relation with the size and diversifying and liquidity of portfolio, it canbe stated based on the research of (Maffini and Clandia, 2009) that an above the marketperformance and innovative function should not be expected from investment companies. Nevertheless, due to the lack of firm size in the companies performance, the results of the this research is inconsistent with the results of (Hishamuddin, 2006) research which stated that thelarge companies acquire better performance and it is possible smaller companies in Iran have better performance. The result fromour second hypothesis of the study shows that the portfolio turnover has a significant affecton the performance of portfolio. This results is inconsistent with results of (Rao, 2010) research that does not regard this relationship as significant. On the other hand, the results of the other findings in our research indicated that the Treynor ratio has a reverse relationship with portfolio diversity, and the more diversified portfolio, the better investment companies maycontrol the systematic risk in the market that this result is parallel with (Mau, 2009) research which proposed using an approach with an appropriate framework for risk control. Regarding to the firm size impact on the Sharp ratio,In summary, we state that the bigger Iranian investment companies are, the bigger is standard deviation from their efficiency. As a result, we found out that investments companies with smaller investment portfolio, have presented a better performance.

## LIMITATIONS OF RESEARCH

Basis for any research is data that researchers collected and analyzed them in his research. Obviously, if much more transparent and complete information has been available, the results of the investigation will be more creditable. In this research, we had some limitation of research as follow:

1. We didnot consider changes in macroeconomic conditions, political and social changes over the years of studied.
2. Due to limited statistical community of investment companies listed in Tehran Stock Exchange, distributions of results to other economic units should be done with caution.
3. We did not consider banks and other credit institutes in Tehran Stock Exchange and omit which did stablished less than one year.

## SUGGESTIONS

As we mentioned in our first hypostasis, there are a

significant differences between the results of performance evaluated by Sharp, Treynor and Sortino ratios. After we examine the three above ratios in our research, we found out that Treynor ratio will shows better result in an Iranian investment companies. Not to mention, it suggests investor to use verity of stock in their portfolio which allow them to have systematic control than other ratios.

In our second hyposthasis, we stated there is a direct correlation between return on investment and size, liquidity, diversification and the turnover in portfolio. Result from our research is pointing out that the return on investment just had direct correlation with the turnover. We suggest in managing portfolio considering the importance of turnover.

## SUGGESTIONS FOR THE FUTURE RESEARCHES

According to the previous researches and our founding we are pointing out the following propositions and suggestions:

1. The assessment and comparison of ratios in organizing a portfolio.
2. The assessment verity of industrial companies in terms of their performance.
3. Examine and recognize precise competency of companies' performance with verity of models to organize a portfolio.

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