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Performance Evaluation of Investment Funds of Shares Based on Sharpe and Sortino Ratio, Treynor Index, and Jensen's Alpha (Case Study: Small and large Institute)

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ABSTRACT

With the development of funds market, the research of funds performance evaluation are becoming an important topic in the field of financial engineering. Common investment funds as one of the most financial intermediaries are responsible in the transfer capital of the resource owners to consumers (manufacturing and services companies and other).The funds were interested for the first time in the securities market act, adopted in 2005 in Iran, and mutual funds stepped in stocks since the beginning of 2008 the capital market. The aim of this study was to evaluate the performance of investment funds of shares, according to the adjusted return on using risk based criteria of Sharpe, Treynor, Sortino and Jensen. In this regard, by consider in the period between 2008 (the beginning funds activity) after the first 3 months of 2010 using the results of the calculated ratios for funds, Eviews 6 software performance of investment funds has been compared with market performance. Based on the results obtained using the analysis ANOVA is not significantly different between adjusted returns based on funds that adjusted based on beta rate with market return. Also according to the criteria of Sharpe, Treynor and Sortino there is no significant difference between performance of common investment funds, but Jensen's differential return measure not rejected significant differences between the performance various investment funds in 2008 and in two-year period 2008-2009.

KEYWORDS: Investment Funds, Evaluation Performance of investment funds, Adjusted returns based on risk.

1. INTRODUCTION

The study of investment funds began in the 1950s. In the early performance of investment funds are evaluated mainly through two indicators, which are funds net assets and ratio of return. These indicators are easy to calculate and intuitive, but failed to systematically and quantitatively analyze the portfolio risk (Guo et al., 2012). Investment funds are financial institutions or institutional investors, which collect funds from their depositors, then place them in short or long-term investment, in various financial forms. Investment funds are financial institutions which draw funds from small individual investors, and in turn issue shares in the financial assets of the fund (Mojsoska & Gerasimoski, 2012). Capital markets play a vital role in economic development of a country as it promotes investment (Zulfiqar et al., 2011). Based on their research, many scholars have put forward a number of portfolio performance evaluation methods, such as Treynor index, Sharpe ratio and Jensen index. These performance evaluation methods were popular with investors and widely used in practice. However, these evaluation methods have theoretical flaw. According to Hanoch and Levy (1969), Leland (1999), the validity of mean variance model must meets the following two conditions: First, the asset return is normal probability distributions; Second, the utility functions of investor preferences are quadratic (Guo et al., 2012). Investment performance be assessed with two pillars of risk and efficiency and the most efficiency with respect to a certain level of risk criterion for investments (Rai and Saidi, 2004). The primary objective of the joint venture funds, maximizing return on assets under management over time. Scientific community debates about criteria for measuring risk lead to the introduction of the first numerical index in the 1950s and 1960s. The index was based on the theory markowitz cart. He introduced the method of calculating the expected return and expected risk for a portfolio invested in stocks. Another important measure of portfolio performance was Treynor in year 1965 that was recorded of the performance based on systematic risk (beta). After introducing these measures, opened the way to measure the performance of portfolio and then investment funds and subsequently, investors Based on these indicators, are ovservated rate of success of capital funds managers. Sharpe ratios and Jensen is two other criteria of the joint investment funds. William Sharpe, introduced Sharpe ratio in 1966. This criterion is designed based on the theory of efficient market and capital assets pricing model. The ratio used of the standard deviation outcomes as the criteria of the risk and measures the efficiency management of investment funds based on rate of return and portfolio diversification. Jensen's differential return is based on pricey model of capital assets, the criterion associated with the indicator's Treynor. Sortino ratio is similar to Sharpe ratio with this differences that unfavorable risk is calculate for calculating of adverse Sortino

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ratio. Set up this fund was the wishes of the old stock market, that by lawmakers and market shares, the first fund invested in stocks started to work since the beginning of 2008 and with approbation development tools and financial institutions law in February 2007, it is hoped the fund activity be further developed. however passing short time of since the beginning activity investment funds in country the question is whether the investment funds do better than the market have or not. The aim of this study was to measure the performance and ranking of investment funds by use of Sharpe ratio, Treynor index, Sortino ratio and Jensen's Alpha.

2. Research background

Performance evaluation is the most popular topic in Mutual Funds because of the huge amount of money invested in them . There are various measures suggested for performance evaluation of mutual funds. Treynor (1965), Sharpe (1966) and Jensen (1967) provided some of the important contributions (Zulfiqar et al,. 2011). So far, research it is not on performance evaluation of mutual investment funds in the country. However, using the criteria used in this study, to assess research have been for performance evaluation of investment companies. Safari (2002) payment to evaluate the performance of the active investment companies in Tehran Stock Exchange based on Sharpe and Treynor criteria. He came to the conclusion that increasing the number of stocks in the portfolio can be reduced non-systematic risk, and the fact that the baskets are quite diverse, ranking performance will close based on Sharpe and the Treynor indicators. Bigdeli et al., (2005) began examined the relationship between investment companies based on three index Treynor, Jensen and Sharpe. They found no effect ion the size and liquidity of the investment companies on performance. Safarpur and Sheikh (2007) paid to evaluate the performance of investment companies based on exchange portfolios and shares returns monthly. This study considered will be assessed the affection period of investment on firm performance. The evaluation performance of companies accomplished by using the criteria Treynor, Jensen and Sharpe and the results indicate that firms with investment intubation long and short term have the same performance period. The results of this study cold showed that companies using indicators yields and price have poor performance of the stock and based on the index of 50 active companies, have equal performance with stock. Abdo Tabrizi and Sharifian (2008) paid to evaluate the effect of unfavorable risk on adjusted performance based on risk investment companies that listed on the Stock Exchange of Tehran. Researchers paid in this study to explain exist differences inevaluate performance criterions based on modern portfolio theory and postmodern portfolio theory. In this study evaluated the relationship between rank companies according Sharpe and favorable ratio of potential and concluded that there is a relationship between this two ratio that this communication is due of existence negative skewness in the distribution. On this basis the potential use is warranted a more favorable. Arugaslan et al., 2007 study adjusted performance based on risk of 20 joint investment fund of the United States during the period 2000-2004. In this study has been used, a new criterion to evaluate the adjusted performance based on risk has been developed by Modigliani to evaluate the performance of mutual investment funds. The results show that the common investment funds by much yield may be give attractive at a time when the risk is linked to the analysis. Conversely, some invested funds may be seem appealing when their low risk is linked to performance. Swinkels and Rzezniczak (2007) have been evaluated performance of fund joint venture working on the Polish market experimental. Research they have three floors of the invested funds namely the equity funds, balanced funds and bond funds. The results of this study indicate that for each one of this three classes exist a positive relationship but meaningless between directors[1] selectivity and timing[2] skills. Hubner, (2007) offers some empirical evidence about evaluation of performance criteria. Results study him are confirmed excellence of generalized ratio of Treynor as optimization criterion in contrast to the Sharpe ratio (1964) and lytner (1965), in evaluating fund performance. Chen et al., (2007) presented a new criterion for measuring investment fund performance as the performance efficiency. This ratio used of the global deviation basket minimum Criterion efficiency ratio is to correct instability in the ratio adjusted ratio information of Israiilsen. Sorros (2001) paid to evaluate the performance of fund that invest in Greece. In this study is used of the models Tryner and Mazi to evaluate the performance of investment fund in the stock. This study does not offer any evidence of manager's ability Greece for market correct timing or stock selection that the price sub evaluated. Galagedera and Silvapulle (2002) using data envelopment analysis pay to measure the relative efficiency of 257 investment fund in Australia. This researchers have used cross-sectional regression for evaluation of efficiency performance investment funds component, management strategy and operational environment. The results showed that the comprehensive technical efficiency fund Scale is based on the performance effects of joint venture until be based solely on technical efficiency. To in general, the comprehensive technical efficiency and scale efficiency of funds invested for risk aversion, with net current assets are more positive.

Investment funds in Iran

Investment Funds in market economies play a key role in the functioning of the market in general and in the development of the capital market. Their role is particularly manifested in the stability in the development of capital markets and mobilization of capital. Their general significance lies in the enrichment of the institutional structure of the banking-financial sector, the increase of the competition and the provision of a modern approach

to market transactions. Investment funds are a modern form of financial institutions in the capital market or a new type of financial intermediaries, which occurred as a result of the rapid development of capital markets in industrialized countries, because the existing banking system was a barrier to their further development (Mojsoska & Gerasimoski, 2012).

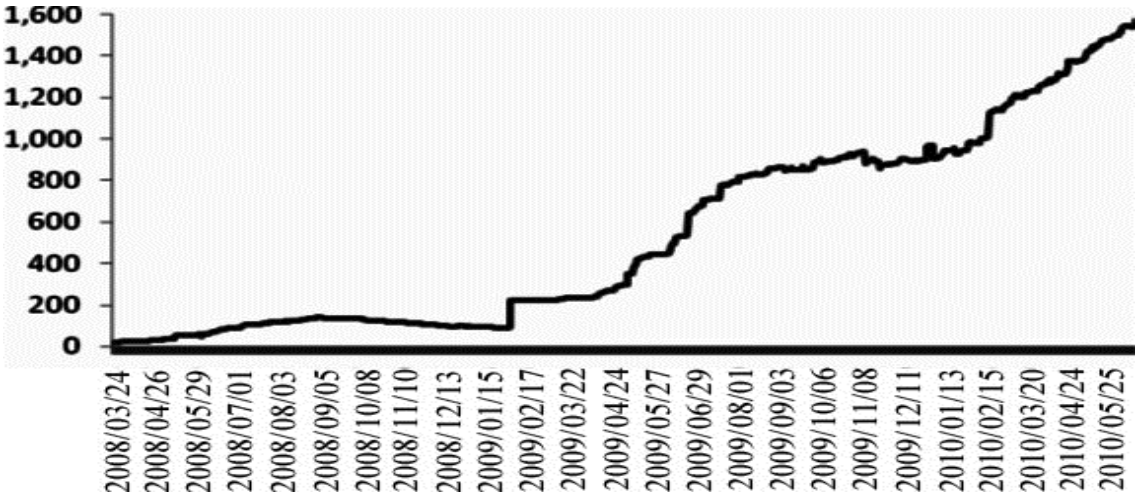
The first mutual funds was launched in the country on 13/06/2007. Fund entrepreneurial venture in securities with fixed income investing, every three months once, action to distribute to profits and at least efficiency 16/5 percent is guaranteed for investors. In addition to fixed-income funds, equity mutual funds have begun its activities in the since 2008. As indicated in table 1, until end of 3 first months of 2010, there are 37 activist investment funds in Iran that of which, 4 fixed-income funds and 33 equity funds work[1] (reporting the securities and exchange,2007) .Value of funds invest in Iran both funds fixed-income and equity funds, until end of 3 first months of 2010, more than 4,100 billion over and over 8700 legal and real investment in the fund have been invested. Growth in the value of investment funds is shown in figure 1. Total value of funds investing in stocks of about 234 billion at the end of the year 1999 reached to 1592 billion at the end of the 3 first months of 2010 and number investors in the fund in during the period similarly, has experienced a significant increase. In figure 2 the process of adding number of investors funds are discussed.

In table 2, the efficiency and risk (beta) investment funds from time established until 21/06/2010 is shown with the market efficiency for comparison. It is noticeable that investment funds beta are mostly less than 1 (market beta) is. In cases where the beta not reported, funds operation period was short and there is not possibility to calculate beta.

Table (1): Activist investment fund in stocks till 21/06/2010

Investors				**Type of fund**	**Row**
Legal		*Actual*			
Possession of the whole	*No.*	*Possession of the whole*	*No.*		
%9	*36*	*%91*	*3.141*	In fixed-income securities	**1**
%15	*7*	*%85*	*1.475*	In fixed-income securities	**2**
%46	*13*	*%54*	*268*	In fixed-income securities	**3**
%59	*12*	*%41*	*48*	In fixed-income securities	**4**
%43	*40*	*%57*	*631*	The large size	**5**
%44	*19*	*%56*	*965*	The large size	**6**
%93	*5*	*%7*	*57*	The large size	**7**
%60	*22*	*%40*	*113*	The large size	**8**
%18	*3*	*%82*	*172*	The small size	**9**
%33	*8*	*%67*	*255*	The small size	**10**
%17	*4*	*%83*	*94*	The small size	**11**
%38	*4*	*%62*	*101*	The small size	**12**
%90	*2*	*%10*	*37*	The small size	**13**
%50	*7*	*%50*	*100*	The small size	**14**
%4	*1*	*%96*	*41*	The small size	**15**
%33	*3*	*%67*	*80*	The small size	**16**
%43	*16*	*%57*	*47*	The small size	**17**
%87	*2*	*%13*	*23*	The small size	**18**
%31	*10*	*%69*	*49*	The small size	**19**
%27	*7*	*%73*	*96*	The small size	**20**
%74	*6*	*%26*	*61*	The small size	**21**
%20	*3*	*%80*	*49*	The small size	**22**
%59	*2*	*%41*	*60*	The small size	**23**
%88	*9*	*%12*	*36*	The small size	**24**
%58	*8*	*%42*	*98*	The small size	**25**
%65	*5*	*%35*	*19*	The small size	**26**
%56	*20*	*%44*	*38*	The small size	**27**
%94	*2*	*%6*	*22*	The small size	**28**
%86	*3*	*1%14*	*20*	The small size	**29**
%72	*4*	*%28*	*12*	The small size	**30**
%90	*3*	*%10*	*35*	The small size	**31**
%93	*3*	*%7*	*20*	The small size	**32**
%24	*1*	*76%*	*49*	The small size	**33**
49%	*2*	*%51*	*28*	The small size	**34**
%100	*3*	*%0*	*1*	The small size	**35**
%57	*2*	*%43*	*31*	The small size	**36**
%25	*1*	*%75*	*34*	The small size	**37**

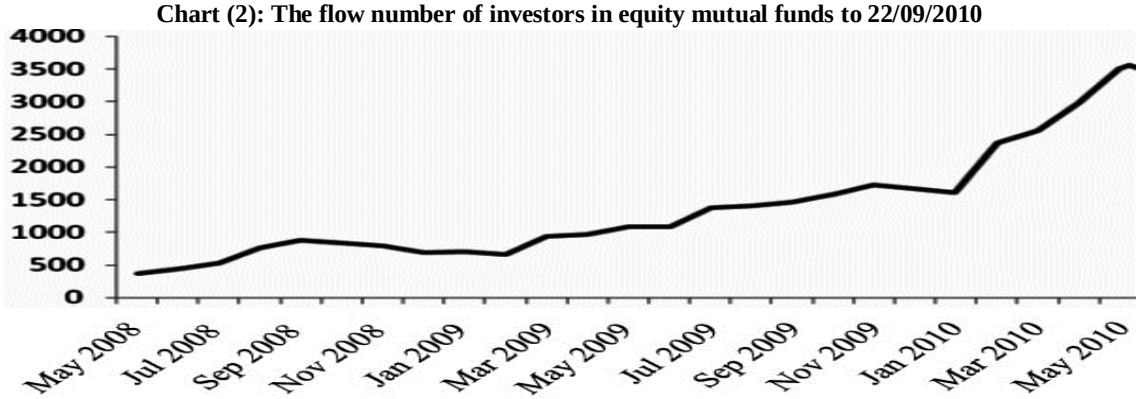
Chart (1): The flow value of funds invested in stocks till 21/06/2010



Source: Report of the securities and exchange

Evaluation performance investment funds suggests that this funds in the short period , could have transactions significant volume, so that according to the stock exchange organization, trading volume of investment funds was at the end of 2008, more than £ 737 billion, and the figure in the end of first 3 months of 2010 rose to more than 4,900 billion rials. In terms of diversity, according to the active funds in Iran stock market activities with hope similar, and there are slight differences between these funds. Differences in pillars journey work expense are more. That in this field the certain roof of the capital market regulatory authority has approved. Cost investment funds is including establishment costs, information costs, website and software Cost,cost pillar journeywork, audit costs, cost of holding meetings,journeywork costs issuance and voidance. Of course each fund's trading costs will vary depending on the activity and there is no mention of this issue in the active funds in Iran.

Chart (2): The flow number of investors in equity mutual funds to 22/09/2010



Source: Report of the Securities and Exchange

Table (2): Return on investment fund in stocks in compared to Tehran Exchange

Beta coefficient	Tehran stock market returns in the same period of fund activity	Fund returns since	Raw
0.15	71	38	**1**
1.33	61	194	**2**
1.13	55	168	**3**
1.oo	19	152	**4**
0.98	58	138	**5**
1.00	61	130	**6**
0.32	61	65	**7**
0.92	64	61	**8**
0.66	53	60	**9**
0.95	52	55	**10**

1.11	62	48	**11**
1.39	23	46	**12**
-	21	43	**13**
0.79	21	34	**14**
0.54	22	32	**15**
0.72	61	30	**16**
0.39	19	30	**17**
-	55	24	**18**
-	25	24	**19**
-	17	21	**20**
-	23	21	**21**
0.90	61	19	**22**
0.86	52	15	**23**
-	23	15	**24**
-	18	15	**25**
-	16	14	**26**
-	29	13	**27**
-	16	6	**28**
0.99	50	5	**29**
-	3	3	**30**
-	16	2	**31**
-	2	0	**32**
-	3	2-	**33**

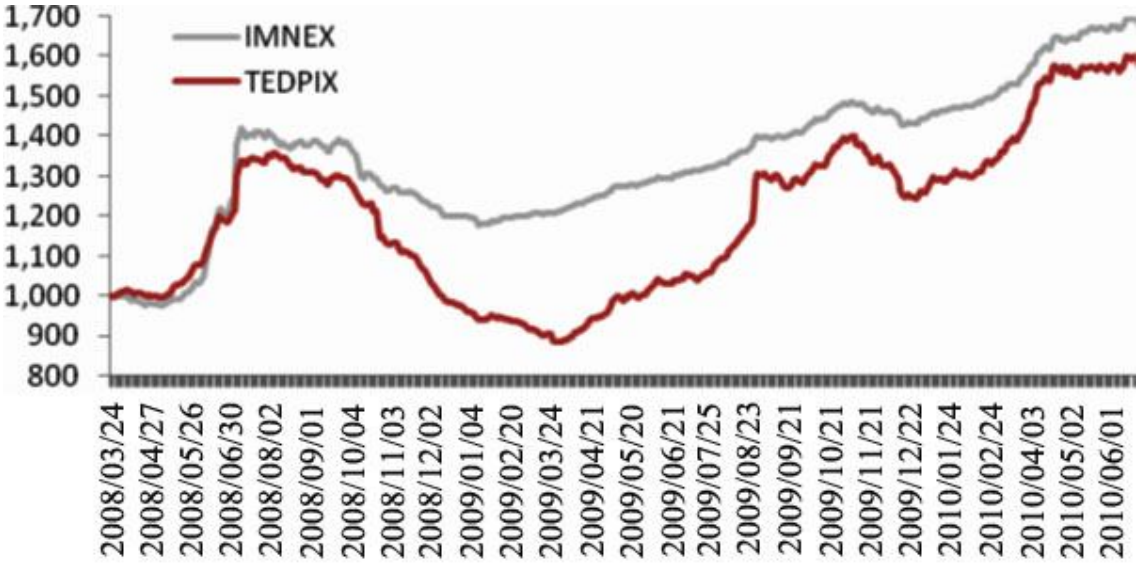
Source: Report of the Securities and Exchange

To evaluate the efficiency investment funds and this subject that there are indicators that demonstrate the performance of this fund the index IMNEX[1] is designed. This index designed to form weighted and forecasted different adjustment modifications in that. The Formula calculation of this index is as follows:

$$\textbf{IMNEX t} = \frac{\sum_{i=1}^{n} \textbf{NAV i,t} \times \textbf{NU i,t}}{\textbf{C t}} \times \textbf{Base Value}$$

n : Number of funds
NAV $_{i,t}$: Net value per unit of the fund **i** at time **t**
NU i,t :Number of units in the fund **i** at time **t**
C t : Baseline values at the time **t**
Base Value : This number is now taken 1000

Chart (3) The flow compares index variations of returns on Fund and market beginning of the year1 until 21/06/2010.



[1] . Iranian Mutural Fund NAV Index (IMNEX)

Since the beginning of 2008 to the end of 3 months of 2010 (27 months) returns of IMNEX equal to 69%, and returns of TEDPIX equivalent 59%.

Hypothesis of research

The hypothesis of this study, include five hypotheses are as follows:

1. Between the performances of common investment funds based on Sharpe ratio there is not difference significant.

2. Between the performances of common investment funds based on the Treynor ratio there is not significant difference.

3. Between the performances of common investment funds based on the Jensen ratio there is not significant difference.

4. Between the performances of common investment funds based on the Sortino ratio there is not significant difference.

5. Between efficiency based on the risk common investment funds and market returns are not significant difference.

DATA AND METHODS

The period of this study from the beginning of 2008 until the end of the first quarter of 2010 is. According to the activity beginning of funds of first 2008, this study is in two periods of investment funds common. in period of time beginning years 2008 until the end 3 first month of year 2010 , eight investment fund (that was established of beginning 2008 and have begun its activities) and according to activity of more number of funds,19 investment fund have been studied in year 2007. Due to the short period of the activity of funds that are of intrinsic limitations of funds, this division was inevitable. Investment funds that selected at the beginning of 2008 until the end of the 3 first -month period in 2010, in table 3, and investment funds that in the period beginning in 2007 until the end of the first quarter of 2010 selected, in table 4 was shown respectively. Evaluation is based on weekly investment funds returns and in time periods that mentioned information about 115 and 63 week in respectively this study was applied.

Table (3): selected investment funds in first period beginning 2008 until end of 3 first -month in 2010

fund inception date of the activity	Row
2008/03/24	16
2008/03/24	6
2008/03/30	22
2008/04/22	3
2008/04/26	7
2008/05/10	2
2008/05/13	5
2008/05/07	29

Source: Report of the Securities and Exchange

Number of rows in Table 3 is based on Table 2

In this study, the following methods were used for data analysis:

Sharpe ratio: Sharpe paid to evaluate the performance of 34 mutual investment fund with in the years 1954 to 1966 and was ratio that is known to "ratio of the reward to variability" (RVAR)[1]. This ratio is based on the theory of capital markets.

$$RVAR = \frac{TRp - Rf}{SDp} = \frac{\text{Excess Return}}{\text{Risk}}$$

TR_p the return average of total portfolio in a time period .R_f return average rate of return risk-free during a period, SD p ceriterion deviation of weekly returns of the portfolio's return in the period under review and Excess Return is additional efficiency.

Table (4): selected investment funds in first period beginning 2007 until end of 3 first -month in 2010

fund inception date of the activity	Row
2008/03/24	16
2008/03/24	6
2008/03/30	22

2008/04/22	3
2008/04/26	7
2008/05/10	2
2008/05/13	5
2008/05/07	29
2008/07/2[illegible]	14
2008/08/[illegible]	4
2008/08/[illegible]	17
2008/08/24	15
2008/09/01	12
2008/12/22	8
2009/02/02	1
2009/05/16	11
2009/06/30	9
2009/07/18	10
2009/07/17	23

713

Source: Report of the Securities and Exchange

Number of rows in Table 4 is based on Table 2

Ratio of reward to variability of excess return per unit of portfolio risk is measured, if this ratio is greater, portfolio performance will be better.

Treynor Index: Professor Treynor in the mid-1960s a similar criterion to name of reward ratio to variability (RVOL)[1] raised. Like Sharpe, Treynor tried to create a link between the risk of the portfolio and return it.

$$RVOL = \frac{TRp - Rf}{\beta p}$$

In that $\overline{TR}_p$ the return average of total portfolio in a time period**,** R_f return average rate of return risk-free during a studied period, **βp** was index of the systematic risk and calculated with using of regression between fund returns and returns the Tehran stock exchange. This criterion implies that for a unit of systematic risk, income earned investor how much.

Difference Index of Jensen returns: one of the criterions relevant with RVOL, difference criterion of Jensen returns or Alpha. These two criterions can provide almost the same ranking of performance of the portfolio. Criterion performance Jensen is based on the capital asset pricing mode.

$$E(R_p) = R_f + b_p (E(R_m) - R_f),\ R_{pt} = R_{ft} + b_p (R_m - R_f) + E_{pt}$$

In that R_{pt}**:** portfolio returns, p: in period t, R_{ft}**:** the risk-free rate of return in period t, R_{mt}**:** market returns in period t, E_{pt}**:** standard error of portfolio p in period t.
In this equation portfolio risk is coefficient of portfolio systematic risk

Sortino ratio: In calculating Sortino criterion, unfavorable risk is criterion for calculating. Indeed its calculating is simillar Sharpe criterion, with this difference that is in the unfavorable risk[1] denominator detraction.

$$SOi = \frac{TRp - Rf}{DD\ i}$$

$$DD\ i = \sqrt{\frac{1}{n-1}\sum_{j=1}^{n}(Max\{0, Rf - Rij\})}$$

In Sortino ratio efficiency average is adjusted with unfavorable risk. This risk focused on efficiency that have failed in going beyond the risk-free return.
For test significant differences between ratio of Sharpe, Treynor and Sortino and Jensen alpha for each mutual investment funds during the period under study, and for compare the efficiency of funds with market, was used analysis of variance [2]one factor.

Data analysis and hypothesis testing
Information obtained during two time periods is analyzed as follows:
1.The beginning of 2008 until the end of the first quarter of year 2010 (for funds that of beginning 2008 have been established).

2. The beginning of 2007 until the end of the first quarter of year 2010 (for funds that of beginning 2007 have been established).

Results

Results obtained using Sharpe ratio as follows:

Table 5: ANOVA analysis about the Sharpe ratio of investment funds (2008-2010)

Method	df	Value	Probability
Anova F-test	(7.212)	0.921217	0.4909

Table 6: ANOVA analysis about Sharpe ratio of investment funds (2007-2010)

Method	df	Value	Probability
Anova F-test	(18.269)	1.166495	0.289

Hypothesis of $\mathbf{H_0}$ is not rejected in the level of significance 5%, according to the results between the performance of investment funds using the Sharpe measure, there is no significant difference.

Results obtained using the Treynor ratio is as follows:

Table7: ANOVA analysis about Treynor ratio of investment funds (2008-2010)

Method	df	value	Probability
Anova F-test	(7,212)	0.115376	0.9973

Table8: ANOVA analysis about Treynor ratio of investment funds (2007-2010)

Method	df	Value	probability
Anova F-test	(18.269)	0.538622	0.9381

Hypothesis of $\mathbf{H_0}$ is not rejected in the level of significance 5%, according to the results between the performance of investment funds using the Treynor measure, there is no significant difference.

The results obtained with using the of the Jensen criterion as follows:

Table9: ANOVA analysis about Jensen alpha of investment funds (2008-2010)

Method	df	Value	Probability
Anova F-test	(7.212)	2.655	0.0119

Table10: ANOVA analysis about Jensen alpha of investment funds (2007-2010)

Method	df	Value	Probability
Anova F-test	(18.269)	1.306061	0.183

Hypothesis of $\mathbf{H_0}$ is not approved for the period from 2008 to 2010, thus in the level of significance 5% Can not say significantly different there is not between performance investment funds by using Jensen's alpha. The difference between the return of investment funds with market can be causes that Hypothesis $\mathbf{H_0}$ are not approved.

Hypothesis of $\mathbf{H_0}$ is not rejected for the period from 2007 to 2010, so in the level of significance 5%, between the performances of investment funds using the Jensen's alpha there is no significant difference.

The results obtained with using the of the Sortino criterion as follows:

Table11: ANOVA analysis about Sortino ratio of investment funds (2008-2010)

Method	df	Value	Probability
Anova F-test	(7.177)	0.942421	0.4752

Table12: ANOVA analysis about Jensen ratio of investment funds (2007-2010)

Method	df	Value	Probability
Anova F-test	(18.214)	0.825812	0.6687

Hypothesis of $\mathbf{H_0}$ is not rejected in the level of significance 5%, according to the results between the performances of investment funds using the Sortino measure, there is no significant difference.

The results about comparisons of the returns Tehran Exchange based on cash returns and prices (TEDPIX) with investment funds as follow, should be noted that for of adjusted return comparisons based risk of investment fund with market, efficiency investment funds based on the beta coefficient is adjusted.

Table 13: ANOVA analysis about differences in efficiency investment funds with Tehran Stock Exchange (2008-2010)

Method	df	Value	Probability
Anova F-test	(1.228)	0.390814	0.5325
t-test	228	0.625151	0.5325

Table14: ANOVA analysis about differences in efficiency investment funds with Tehran Stock Exchange (2007-2010)

Method	df	Value	Probability
Anova F-test	**(1.124)**	**0.06704**	**0.7961**
t-test	**124**	**- 0.258921**	**0.7961**

Hypothesis of $\mathbf{H_0}$ is not rejected in the significance level 5%, according to the results between performances of the investment funds with Tehran Stock Exchange there is not significantly difference based on index of cash return and price.

For greater certainty, adjusted returns based on investment funds risk is compared with index free float. This compare is important because returns of funds with efficiency shares available. Since index free float is calculated of the beginning 2007, this comparison for the period beginning 2007 until the end of 3 the first quarter of 2010 is done.

Table 15: ANOVA analysis about differences in efficiency investment funds with Tehran Stock Exchange (2007-2010)

Method	df	Value	Probability
Anova F-test	**(1.124)**	**0.17517**	**0.6763**
t-test	**124**	**- 0.418533**	**0.6763**

Hypothesis of $\mathbf{H_0}$ is not rejected in the significance level 5%, according to the results between performance of the investment funds with Tehran Stock Exchange there is not significantly differences based on free float index funds.

SUMMARY OF RESULTS

During the period under review significant difference there is not between the performance of investment funds according to criteria Sharpe, Treynor, Sortino. Using the Jensen's alpha ratio, the lack of significant difference between performances of investment funds in the period from 2008 to 2010 cannot be ruled out.

Ranking of mutual funds in the period under study are as follows

Table 16: Ranking of investment funds (2008-2010)

Jensen's alpha	Sortino	Treynor	Sharpe	Row
1	1	2	3	2
2	2	3	2	3
3	3	4	1	5
4	4	5	4	6
5	5	1	5	7
6	6	6	6	24
7	7	7	7	16
8	8	8	8	22
9	9	9	9	29

Number of rows in Table 16 is based on Table 2

Between adjusted returns based on beta coefficient investment funds with the returns on Tehran Exchange (index TEDPIX) there is not significant difference. In the period under study the efficiency some of investment funds more than market and some of them is less than market.

According to the results, the introduction and launch investment fund which may be [1]invested in available funds, as a method of Iran capital markets, could be investigated in future studies.

Table 17: Ranking of investment funds (2007-2010)

Jensen's alpha	Sortino	Treynor	Sharpe	Name
1	1	2	1	**4**
4	2	5	2	**6**
7	5	4	3	**1**
10	3	10	4	**33**
3	4	1	5	**17**
2	8	3	6	**9**
9	6	9	7	**5**
5	10	6	8	**10**
6	7	7	9	**3**
15	12	14	10	**8**
8	9	8	11	**15**

13	15	12	12	**22**
11	14	11	13	**8**
13	13	13	14	**9**
18	11	16	15	**6**
19	16	18	16	**13**
17	17	17	17	**16**
12	18	15	18	**5**
16	19	19	19	**1**
20	20	20	20	**19**

Number of rows in Table 17 is based on Table 2

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Appendix:

Member institutes of investment funds was not willing to disclose his name.