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Evaluation of Ranking of Mutual Funds using the Modern and Post Modern Portfolio Theory

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Abstract- The study was attempted to compare and evaluate the active mutual fund performance in Iran capital market, based on modern and post modern portfolio theory. Therefore, the performance of 40 active mutual funds in the years 2011 to the end of December 2014, based on four indicators Treynor, Jensen, Sortino and Omega were calculated and the indicators of Treynor and Jensen in a group on the represented by the performance indicators of modern portfolio were compared with indicators of Sortino and Omega represented by performance indicator of the post-modern portfolio using t-student test , and finally the hypothesis was formulated so that the significant different between the ranking of mutual fund and portfolio was not confirmed.

Keywords- *Ranking, investment funds, modern portfolio theory, post modern portfolio theory*

I. INTRODUCTION

Mutual funds as one of the most important financial intermediaries are responsible for transfer of capital from the owners of resources (public) to consumers (manufacturing and service companies and other). In Iran, the mutual funds were considered for the first time in the Securities Market Act adopted in 2005 and the funds introduced into the capital market on the stocks at the beginning of 2008.By establishing a mutual fund due to professional management and predetermined investment strategies, investors have been able to pay attention to management of mutual fund, according to their willingness and ability of risk they will be find the motivation to introduce to colony of capital investors and capital market participants. Obviously, to more development of this process, it is necessity that to be strengthened the positive points in the activities of mutual funds so that more investors are willing to take advantage of the mentioned mutual funds. One way to reduce risk is to diversify in the investment. Mutual funds through investing in bonds and securities proceed to formation of the portfolio and reducing the risk of investing at the same time. Thus, the researchers believe that the mutual funds than individual funds has reasonable returns on the capital market, especially in the stock exchange. Therefore the determination of the superior fund has been a concern for investors and the investors evaluate the performance of investment funds to decide which fund to invest has more reliance. Since we know that funds require elite managers and experts and the ranking of fund must be distinguished through segregation of elite manager from the managers who only reached to high returns by accept of high-risk.

II. RESEARCH REVIEW AND LITERATURE

Investing takes place in a dynamic economic environment, where the volatility and uncertainty are the major reasons for the decision based on different predicts and expectations. One of the significant changes that have occurred in the world of investment is the reduction of individual investment in related companies and investment institutions and mutual funds. This shift in how investments can be attributed to the internet and advertising and distribution channels. Another reason could be the result of hard and sometimes uncertain of the information for non-professionals and the general public. (Baker and Nofsinger, 2002). In the stock exchange two parties engaged in investment. The professional people who seen as primarily legal entities and persons who are considered as unprofessional and have very little knowledge about the market capital. The first group is constantly collecting and analyzing data of companies, and hired several experts to examine and analyze the data and are trying to calculate the intrinsic value of the shares, the second group deals without knowledge of the market. The world is recommended the indirect investment in stock to deal with the situation, i.e., the segregation of the professional people from unprofessional without any required knowledge. The investment mutual is an object and suitable situation for the plans and objectives for small investors. That is the pensioner people and others fear from financial market secrets. However, they tend to earn profits by investing in the financial market (Rajeswari and Rama, 2004). Henderson, 1999 noted that, investors to manage their investments show the most reliable for the information that achieved by themselves. Hence, changing and development of technology and markets and its effective factors on the demand of investors, managers for fund have realized that they can be reached their customers to their goals through management and designing an appropriate investment portfolio and provide information to investors. Edelen and Warner (2001) examined the relationship of daily flows of funds with the efficiency.

According to their findings, there is a direct and same relationship between both. When the yield is negative, the flow is negative and when it is positive, the flow at the entrance to fund can be seen a positive. Singal and Oksiov (2011) surveyed how to arrangement of the portfolio in the funds by the managers. They investigated the impact of these factors on the flow and performance of funds.as a result, there is a negative relationship between arrangement of portfolios and performance, as well as the arrangement of portfolios and funds flow; the result shows the direct and inline relationship for the flow and performance.

III. Definitions of Research Terms and Indicators

Modern portfolio theory: Markowitz in fact invented a model for optimal allocation of wealth between risky assets. This model, focused only on two factors: the expected return and variance and based on the assumption that investors are risk-averse.

Post-Modern Portfolio Theory (PMPT): postmodern portfolio theory is based on the relationship between return and adverse risk explored the investor behavior and criteria of selection the optimal portfolio.

Mutual fund: made up of a pool of funds collected from public and many investors for the purpose of investing in securities such as stocks, bonds, money market instruments and similar assets in order to professional management on it.

Fund performance: the performance of the investment fund management to achieve investment opportunities with maximum returns and an appropriate level of risk for its shareholders.

Unsystematic risk: also known the specific risk is in particular for investing stock and it can be avoided through increase the variety of stocks in a portfolio. In more technical terms, this represents that part of the stock returns that are not correlated with the market.

A. Performance evaluation:

1) Treynor index

One of the measures near to historical Alpha criteria for evaluating of the portfolio performance is the reward-to-volatility ratio. In the measure, the line of stock market is used to creating the benchmark index for performance evaluation. But somewhat with different way, the reward-to-volatility ratio to a portfolio can be obtained by dividing the excess return on the portfolios systematic risk.

$$\text{RVOL}=\frac{TR_p-R_f}{\beta_p} \quad (1)$$

2) Jensen Index

One of the criteria for evaluating the portfolio performance is the difference between the portfolio return and the basis portfolio return. This difference is usually called alpha historical portfolio or differential output. In this equation, the positive alpha to a portfolio will mean that the average portfolio had higher return than index return and therefore could be said that its performance was Superior Performance. Negative alpha means an inferior performance.

$$R_p - R_f = \alpha + \beta(R_m - R_f) + \varepsilon_{pt} \quad (2)$$

Where

R_p: the average of total return portfolios over a period of time, R_f returns with no risk, R_m market efficiency, β index of systematic risk of portfolios and ε_{pt} is error coefficient.

B. Post-modern theory

1) Sortino Index

If we used inferior risk measurement replaced to standard deviation, the Sortino index will be resulted. In the index, target semi-deviation (termed downside deviation) is placed at the denominator. It should be noted that if the magnitude of this scale is higher than the benchmark portfolio; the fund will have a better performance. The following formula shows how to calculate the relevant index where MAR is the minimum acceptable return that was considered 17%. LRM is semi-deviation, μRp the average return of the portfolio and m the number of observations.

$$\text{SRp}=\frac{\mu Rp-MAR}{LRM} \quad (3)$$

$$\text{LRM}=\frac{1}{m}\sum_{t=1}^{m}[Min\,(0,(h-R))] \quad (4)$$

2) Omega Index

This measurement focuses on all elements of the distribution of returns and divided the returns higher than the target return to the lower target return. The higher the measurement compared to basis portfolio, the fund will have the better performance. The following function indicates the measure where E(U) represents the expectance of difference of returns higher than risk-free rate and E(L) is the expectance of difference of returns lower than risk-free return from it.

$$\Omega\text{P}=\frac{E(U)}{E(L)} \quad (5)$$

$$E\,(U)=\frac{\sum_{r>mar}(r-MAR)}{n} \quad (6)$$

$$E\,(L)=\frac{\sum_{r\leq mar}(MAR-r)}{n} \quad (7)$$

C. Research hypothesis

The research hypostasis is as follow:

There is significant different among performance of mutual funds through modern and postmodern measures.

IV. Data and Methodology

In this study, total mutual funds that have been taken license to operation by the end of March 2010 and are active from March 2011 to the end of October 2014 (44 funds) were selected and the net value of their assets set as basis in monthly periods and calculated on the basis of mentioned factors the fund's performance through indicators Treynor, Jensen, Sortino and Omega. And then we proceeds to compare the two groups by combining the Treynor and Jensen index in one group as a

modern indicator of and combining the Omega and Sortino index in another postmodern group. Finally, we would like to answer the question that is there significance different among the ranking of mutual funds on the basis of modern and postmodern measurement?

V. DATA ANALYSIS

In this study, using data collected from a sample consisting of 40 mutual funds in the period March 2011 to the end of December 2014; the performance of the funds were calculated by the Treynor, Jensen, Sortino, and omega index and then the hypotheses were tested. We studied the hypothesis testing using the average of two independent (t-test), which will be carried out using SPSS software. Then start to explore more about the population and variables, the descriptive statistics of variables were presented and the normality of distribution of the dependent variable was tested. Next, the hypotheses test and the results analysis are reported based on performed classification for the research hypothesis.

TABLE I. ANALYSIS RESULTS FOR T-TEST OF INDEPENDENT SAMPLE TO COMPARE OF THE PERFORMANCE OF MUTUAL FUNDS THROUGH MODERN AND POSTMODERN MEASUREMENT

Measurement	Number	average	Standard deviation	T value	Degree of freedom	P value
Modern	3600	391.010	11976.2858	1.915	7140	.056
Post modern	3542	5.608	225.0703			

According to the significance level (p value) of t-test that is more than 0.05. We conclude that we have no reason to reject the null hypothesis. This means that there is not significant different among the ranking of the performance of mutual funds by modern and postmodern measurement at 95% significance level. In other words, the research hypothesis cannot be confirmed. However, after the rejection of the hypothesis in general, it is realized that the performance ranking of mutual funds by modern and postmodern measurement were evaluated and tested by firm's differentiation. However, the t-test of independent samples was used to compare the performance of mutual funds by modern and postmodern measurement.

TABLE II. DESCRIPTIVE RESULTS FOR PERFORMANCE OF MUTUAL FUNDS BY MODERN AND POSTMODERN MEASUREMENT BY DIFFERENTIATION EACH FUND

Investment fund	Measurement	Number	Average	Standard deviation
Agah	modern	90	-76.839111	448.3723486
	Post-modern	86	-2.993137	37.5297094
Aghigh	modern	90	-131.469222	1011.6984126
	Post-modern	89	.179414	15.2180998
Amin Karafarin	modern	90	4.857111	187.4974265
	Post-modern	89	.468726	24.4891914
Amin Mellat	modern	90	56.309556	690.0666077
	Post-modern	83	3.071174	30.6801084
Amin Saber	modern	90	-155.726778	1836.8433650
	Post-modern	87	184.847119	1410.2932895
Apadana	modern	90	106.542111	2281.1202464
	Post-modern	90	.269330	11.5311009
Arg	modern	90	454.204889	5912.6630668
	Post-modern	89	2.205515	15.3972329
Arzesh Kavan Ayandeh	modern	90	3287.342222	32657.7196251
	Post-modern	88	-3.933290	28.0452056
Ashenaye Dey	modern	90	-123.099778	2519.5009303
	Post-modern	89	1.272007	16.4872976
Novin Atiyeh	modern	90	-145.894667	635.1265645
	Post-modern	87	1.288720	18.4883812
Eghtesad Novin Bank	modern	90	61.535222	676.6590704
	Post-modern	90	2.405204	20.6732910
Keshavarzi Bank	modern	09	-.493000	214.9460586
	Post-modern	90	-1.087143	6.5434818
Maskan Bank	modern	90	-177.141111	1255.5017497
	Post-modern	88	2.585746	10.0007091

Melli Bank	modern	90	-212.054111	1375.6415222
	Post-modern	89	-.877695	8.3566021
Saderat Bank	modern	90	840.382444	6738.8308050
	Post-modern	87	-.597513	16.5172308
Tejarat Bank	modern	90	-574.276333	7604.0926010
	Post-modern	90	1.636619	53.9409504
Iran Stock exchange	modern	90	-47.495667	374.0192693
	Post-modern	90	1.089000	13.8542108
Yekom Iranian	modern	90	91.764889	1297.2558082
	Post-modern	88	-2.921483	16.9810556
Keshavarzi Bank Broker	modern	90	118.381667	806.1067295
	Post-modern	86	10.799108	65.1444617
Farabi	modern	90	162.052111	1014.5857077
	Post-modern	90	2.485434	69.0534812
Firoozeh	modern	90	127.892444	2346.3500812
	Post-modern	88	3.460372	29.3159381
Ganjineh Refah	modern	90	195.953556	1927.0510896
	Post-modern	90	20.879019	179.6386301
Ganjineh Bahman	modern	90	-79.868333	486.3229566
	Post-modern	89	-4.356309	21.0601221
Hafez	modern	90	50.235556	496.5257665
	Post-modern	87	5.015693	20.4260041
Isatis	modern	90	253.109111	1956.0205652
	Post-modern	90	.001155	19.7473927
Iranian Mehr Caspian	modern	90	365.921667	3169.6243441
	Post-modern	90	-2.376641	35.8260939
Naghshe Jahan	modern	90	-37.735222	498.0412548
	Post-modern	90	-.598820	15.6523037
Novin Pendar	modern	90	3590.925000	32408.4902912
	Post-modern	89	-1.708168	14.1955833
Novin Saman	modern	90	127.253000	783.2179039
	Post-modern	84	-4.302286	44.5626491
Omid Novin Iranian	modern	90	20.890778	347.6435541
	Post-modern	89	9.921816	36.4180803
Pishgam	modern	90	29.271333	893.7792706
	Post-modern	89	2.288118	14.7166548
Pishtaz	modern	90	-17.303222	831.4769040
	Post-modern	89	-2.608295	24.0132530
Pooya	modern	90	56.570000	530.6676704
	Post-modern	90	3.466130	16.3999031

TABLE III. ANALYSIS RESULTS OF INDEPENDENT SAMPLES T-TEST FOR PERFORMANCE OF MUTUAL FUNDS BY MODERN AND POSTMODERN MEASUREMENT BY DIFFERENTIATION EACH FUND

Firm	T value	Degree of freedom	P value	Standard deviation
Agah	-1.522	174	0.13	-73.846
Aghigh	-1.227	177	0.221	-131.649
Amin Karafarin	0.219	177	0.827	4.388385
Amin Mellat	0.702	171	0.484	53.23838
Amin Saber	-1.38	175	0.169	-340.574
Apadana	0.442	178	0.659	106.2728
Arg	0.721	177	0.472	451.9994
Arzesh Kavan Ayandeh	0.945	176	0.346	3291.276
Ashenaye Dey	-0.466	177	0.642	-124.372
Novin Atiyeh	-2.16	175	0.032	-147.183
Eghtesad Novin Bank	0.829	178	0.408	59.13002
Keshavarzi Bank	0.026	178	0.979	0.594143
Maskan Bank	-1.343	176	0.181	-179.727
Melli Bank	-1.448	177	0.149	-211.176
Saderat Bank	1.164	175	0.246	840.98
Tejarat Bank	-0.718	178	0.473	-575.913
Iran Stock exchange	-1.231	178	0.22	-48.5847
Yekom Iranian	0.685	176	0.494	94.68637
Keshavarzi Bank Broker	1.234	174	0.219	107.5826
Farabi	1.489	178	0.138	159.5667
Firoozeh	0.497	176	0.62	124.4321
Ganjineh Refah	0.858	178	0.392	175.0745
Ganjineh Bahman	-1.463	177	0.145	-75.512
Hafez	0.849	175	0.397	45.21986
Isatis	1.228	178	0.221	253.108
Iranian Mehr Caspian	1.102	178	0.272	368.2983
Naghshe Jahan	-0.707	178	0.48	-37.1364
Novin Pendar	1.046	177	0.297	3592.633
Novin Saman	1.537	172	0.126	131.5553
Omid Novin Iranian	0.296	177	0.768	10.96896
Pishgam	0.285	177	0.776	26.98322
Pishtaz	-0.167	177	0.868	-14.6949
Pooya	0.949	178	0.344	53.10387
Rahnema	-1.267	178	0.207	-186.122
Razavi	-0.69	178	0.491	-100.502
Industry and Mine	0.759	176	0.449	131.8257
Karafarin Index	0.871	178	0.385	208.1925
Sina	0.365	176	0.715	14.10548
Tadbirgaran Sarmayeh	-0.939	176	0.349	-177.853
Tadbirgaran Farda	1.218	177	0.225	7532.615

According to the significance level of t-test that was less than 0.05 only for the Novin Atiyeh company and was more than 0.05 for other studied companies, we conclude that unless in the Novin Atiyeh we have not a reason to reject of the null hypothesis. In most studied companies, there is not significance different among performance of mutual funds by modern and post-modern measurement. However, we have not a reason to confirmation of the hypothesis by the differentiation of studied companies.

VI. CONCLUSIONS AND RECOMMENDATIONS

In this research, the combination of indexes and determination of the parameters in both modern and postmodern groups was investigated. Of course, it has not been studied previously and the past research focused on the relationship among indexes of modern and postmodern performance evaluation; in most studies, there was no significant difference among the performance of the index. With previous studies, it was thought that the research hypothesis to be rejected and as the results show, the ranking of funds whether by modern and whether by post-modern measurement has not significant different.We recommended to investors who are planning to invest in investment funds and to undergraduate student that since there has not been significant difference on the ranking funds basis of modern and postmodern measurement that used to combination of the measurement in their evaluations and proceed to evaluate the performance of funds through weighing of each index.

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