

Who Is the Sharp Manager? A First Comprehensive Sectorial Wise Analysis of Mutual Fund Industry of Pakistan

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Abstract

The purpose of this study is to evaluate the risk adjusted performance measures, such as Sharpe, Treynor, Sortino, Jensen's Alpha and Fama measure. A novelty of this work is using the sectorial wise analysis of the all the available data of mutual fund industry of Pakistan. This study used four categories of Voluntary Pension Fund, ten categories of Open ended mutual fund such as index tracker, income, equity, asset allocation, balanced, capital protected, commodity, money market, fund of fund and fixed aggressive fund, and one category of close ended mutual fund. Study revealed that voluntary pension and closed ended fund out-performed and seem to be more diversified and have ability to generate excess return for compensation of bearing high return. Open ended mutual fund under performed and seems to be poor in diversification and selectivity. This conclusion indicates that mutual fund industry of Pakistan face very extensive problem and the ability of fund managers is question mark.

Keywords: Mutual fund, Sharpe, Treynor, Sortino, Fama measures

Introduction

The concept of mutual fund was initiated when people have extra money but they did not have the skills and knowledge about the timely selection of that security which have high return with low level of risk. To overcome this investment barriers the concept of mutual fund was created. With the passage of time, Asset management companies were formed, they collect the surplus fund from the different people under the umbrella of mutual fund and with better knowledge and expertise invested in different financial instruments to get high reward. Mutual fund is being operated and controlled by the manager which is called fund manager. Fund manager is the only person who make the decisions regarding the buy and sell of the securities to earn maximum profit. A lot of literature available in which researchers investigate the fund manager's ability of diversification, identification and selectivity of optimal combination of securities that provide maximum return with low level of risk. General techniques for evaluation of fund manager's performance includes;

- 1) Sharpe ratio
- 2) Treynor ratio
- 3) Sortino ratio

- 1) Jensen's Alpha
- 2) Information ratio
- 3) Fama Performance Measures

This study comprising the following section which includes the details of techniques, historical work done, methodology, results and discussion and conclusion. Performance evaluation techniques

Sharpe ratio

Sharpe ratio is one of the famous ratio developed by the William Sharpe, he argued that ability of fund manager regarding diversification of unsystematic risk and ability of manager to generate sufficient excess return is measured by the average return of fund minus risk free rate divided by the total risk

Treynor ratio

Jack L. Treynor criticized the Sharpe evaluation technique because in competitive market the unsystematic risk should be zero and fund manager only face the systematic risk which is beta of market.

Sortino ratio

Sortino ratio is first developed by the Sortino, a measure of risk adjusted performance of mutual fund. Sortino ratio

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use only the downside risk, the logic behind, risk is only for downside deviation in values.

Information ratio

Information ratio measures the fund managers' ability to generate sufficient or extra return for the compensation of risk and also measures investor's skill to use knowledge and information to generate fund return with respect to benchmark.

Jensen's Alpha

Generally the required rate of return should be equal to expected rate of return. (Jensen, 1968) measures the ability of fund manager by Alpha which is the difference between required rate of return and expected rate of return.

Fama's performance measure

Succeeding the precious work of the Sharpe, Treynor, Jensens, Fama (Fama, 1972) suggested the overall performance component measure of mutual fund performance. For this purpose, he divided the excess return with respect to risk free rate into mainly three parts; one return due to systematic risk, second return due to diversification risk and third through net selectivity.

Review of Historical Work

(Shah *et al.*, 2005) evaluated risk & return features of equity and balanced type mutual funds. For this purpose, they used Sharp, Treynor ratios, Jensen's alpha to measure the performance. The study's findings show that mutual fund's industry of Pakistan have superior ability to add value in economy of Pakistan and investors get more wealth appreciation and return in mutual fund.

(Alptekin, 2009) examined the mutual funds in Turkey by using performance Sharp, Treynor, Sortino ratios, Jensen's alpha, and TOPSIS methods. Study used two types of mutual fund categories which is type A and pension fund over time period of 2007 to 2008. Study find that pension MF have better performance as compared to another mutual fund type in term of ratios.

(Nawang *et al.*, 2011) conducted a study to rank the mutual funds operated in Malaysia by using famous performance measuring techniques such as Sharp, Treynor ratios and Jensen's alpha and Treynor and Mazuy model over 2002 to 2006 with data of 40 mutual fund. The results support the hypothesis that mutual fund enhance the economy and conventional fund performed well than Islamic. It also found that both fund managers have pitiable selection and poor forecast ability.

(Hoepner *et al.*, 2011) conducted a study with the sample size of 20 countries' 265 Islamic fund data by using CAPM and Carhart model to see the relationship.

Study concludes Islamic fund performance in GCC, Western and Malaysian market outperform in relation to international benchmark.

(Mansor and Bhatti, 2011a) examined the one hundred and twenty-eight mutual funds over 1990 to 2009. And ranked the portfolio by using risk adjusted measure of Sharp ratio, Treynor ratio and Jensen's alpha. The results illustrate that Islamic MF outperformed and both fund managers have asset selection skills and market time ability.

(Gohar *et al.*, 2011) analyzed the performance of different mutual fund in Pakistan by using different performance measure ratio such as Sharp ratio, Treynor ratio and Jensen's alpha, information ratio and Treynor and Mazuy model over the period of 2005 to 2009. Study used different subtypes of MF and further divided in to agent possessive and firm possessive MF. Study revealed that equity mutual fund has better performance as compared to income fund and agent possessive fund perform better as compared to firm possessive fund.

(Nafees *et al.*, 2011) examined 11 open ends and 8 close end mutual fund over 2006 to 2010 in Pakistan. Sharp ratio, Treynor ratio, Sortino ratio and Jensen's alpha, information ratio used to get analysis. Results indicates that mutual funds under performed as compared to benchmarks. Additionally, risk adjusted effect negatively the performance of mutual funds in Pakistan.

(Jawadi *et al.*, 2014) used the performance measure ratio and CAPM model to examine the Islamic and conventional stock performance in European and USA market for period from 2000 to 2011. The finding states that conventional stock performance favorable before and during the era of financial instability and Islamic stock outperformed before and during the era of financial instability. Further this study conclude impact of financial instability on Islamic stock is less as compared to conventional counterpart.

(Boo *et al.*, 2017) examined the performance of Islamic and conventional mutual funds in Malaysia by taking the longest sample size by using Sharp ratio, Treynor ratio, Jensen's alpha and modified value at risk. To avoid the problem of survivorship they take all active and non-active funds. The study revealed that Islamic mutual fund performed better than conventional mutual fund during the financial crisis.

(Khan *et al.*, 2017) conducted a study on risk & return measures of Islamic and conventional financial products for this purpose they used mutual funds, Modaraba companies and banks in case of Pakistan by using GARCH model. Study revealed that Islamic and conventional banks performed equally in term of performance and Islamic mutual funds provide better risk management and return over the counterpart.

Gap Analysis

1. Keeping in view the literature survey, the previous studies of Mutual Funds evaluation were cover the

limited time frame and used insufficient sample size and make inferences about the population for example (Abbasi and Shah, 2012) measured the performance of mutual fund in Pakistan using the 30 mutual fund out of 135 with very small time horizon from 2008 to 2010. Another study (Ahmad *et al.*, 2017) investigated the determinants of mutual fund performance in Pakistan using the sample of 100 mutual fund out of 182 without bifurcation of its categories e.g. commodities, money market and index tracker. And generally, previous studies used few selected sectors of the mutual funds.

This study magnificent then the previous work because of the following points

- 1) Use all available data of all listed companies from the time of beginning to till possible end date.
- 2) Use available tools of performance evaluation of portfolio

Data and Methodology

Data

To find out the correct and precise parameters for strategically decision making, this novel study used all the available data of whole Mutual fund industry of Pakistan. The detail is given below;

1. Data from the inception of each fund till 30th September 2017.
2. 19 Total Asset Management Companies (AMC).
3. 275 Total Mutual funds.
4. Daily NAV of relevant mutual fund collected from the Mutual fund Association of Pakistan² website and fund respective website.
5. 12-month Treasury bill rate used as proxy for Risk free rate collected from State bank of Pakistan³ website.

Funds distribution pattern as on 30th September 2017

Sector	Category	No of Funds
Voluntary Pension Fund	Equity	19
	Debt	19
	Money Market	19
	Commodity	4
Close Ended Fund	Equity	3
Open Ended Mutual Fund	Index tracker fund	2
	Equity fund	40
	Balanced fund	8
	Fund of Fund	54
	Asset allocation fund	21
	Commodity fund	2
	Capital protected fund	4
	Income fund	47
	Money market fund	25
	Fixed aggressive fund	8
	Total No of Funds	275

² <https://www.mufap.com.pk/>

³ <http://www.sbp.org.pk/>

Methods

$$\text{Sharpe ratio} = \frac{R_i - R_f}{\sigma_i} \quad (1)$$

$$\text{Treynor ratio} = \frac{R_i - R_f}{\beta} \quad (2)$$

$$\text{Sortino ratio} = \frac{R_i - R_f}{DR} \quad (3)$$

$$\text{Alpha} = R_i - [R_f + \beta(R_m - R_f)] \quad (4)$$

$$\text{Return due to diversification} = (R_m - R_f) \left(\frac{\delta_p}{\delta_m} - \beta \right) \quad (5)$$

Where;

R_i = Average daily return of fund

R_f = Risk free rate

β = Beta

R_m = Average market return

R_p = Average daily return of fund

δ_p = Standard deviation of fund

δ_m = Standard deviation of market

Results and Discussion

Descriptive statistic

The table I shows the descriptive analysis of all categories of the mutual fund industry of Pakistan with the mean return, excess return and standard deviation of each category.

Table I: Descriptive statistics

	Mean return	Excess return (Ri-Rf)	Standard deviation
Voluntary Pension Fund			
Commodity fund	0.2283	0.00304	7.6799
Equity fund	0.1164	0.09366	1.0539
Debt fund	0.0741	0.05137	0.762
Money Market fund	0.0923	0.03502	1.2451
Close ended fund	0.0450	0.01997	2.206
Open ended fund			
Index tracker fund open ended	0.0331	0.00879	1.4735
Income fund	0.0238	-0.00009	0.7615
Equity fund	0.0228	-0.00038	1.4831
Asset allocation fund	0.0222	-0.00122	1.21
Balanced fund	0.0189	-0.00640	1.2315
Capital protected fund	0.0092	-0.00872	0.598
Commodity fund	0.0079	-0.01085	0.7647
Money market fund	0.0031	-0.02131	0.3356
Fund of fund	-0.013	-0.03001	0.7749
Fixed aggressive fund	-0.833	-0.85984	0.6792

Table 1 indicates that overall pension fund and close ended mutual fund sector outperformed and fund manager perform better in securing high mean return and generate excess return for their investors. Only one category (Index tracker) of open ended MF out of ten fund perform better in term of mean and excess return and remaining nine categories of open ended MF facing

difficult condition and ability of fund manager to generate sufficient return for investors is question mark.

Table 2: Risk adjusted measures

	Sharpe Ratio	Treynor Ratio	Sortino Ratio
Pension fund			
Debt fund	32.42820	51.0297	75.8897
Money Market fund	30.24250	171.6768	74.9625
Equity fund	15.54560	2.6602	33.1383
Commodity fund	3.23674	0.6680	12.1727
Close ended fund	0.43160	-0.6800	2.0322
Open ended fund			
Index tracker fund	0.66040	0.0613	1.0998
Equity fund	-0.27140	-6.2090	-0.2934
Balanced fund	-0.60350	-0.9760	-0.4334
Fund of Fund	-0.97010	3.7929	6.5274
Asset allocation fund	-1.18210	-13.2617	0.5432
Commodity fund	-1.42110	1.5130	-2.0851
Capital protected fund	-3.08000	0.4833	-2.7239
Income fund	-4.36650	-11.7780	-0.5746
Money market fund	-6.55500	10.9775	-1.5213
Fixed aggressive fund	-60.78090	-5.2215	-63.6855

Table 2 indicates the risk adjusted measures of mutual fund industry of Pakistan, the values of Sharpe, Treynor and Sortino ratio for all funds in pension fund and close ended MF sector are positive which indicates that these two sectors outperformed and fund manager have ability to diversification and generate excess returns per unit of risk that compensate investors for bearing high risk. Categories of open ended MF sector have negative Sharpe (except Index tracker have positive Sharpe and Treynor ratio), Treynor and Sortino ratio which indicates the failure of fund manager to compensate the investor for risk. Finding of all ratios support each other.

Table 3: Jensen's Alpha and Return due to diversification

	Alpha	RDDR
Pension fund		
Debt fund	0.0500	0
Money Market fund	0.0692	0
Equity fund	0.0949	0
Commodity fund	0.2942	0
Close ended fund	-0.0248	0
Open ended fund		
Index tracker fund	0.0065	0.1759
Equity fund	0.0023	0.1426
Balanced fund	-0.0056	0.0374
Fund of Fund	-0.0444	0.0037
Asset allocation fund	-0.0012	0.0195
Commodity fund	-0.0111	0.0252
Capital protected fund	-0.0098	0.0096
Income fund	-0.0012	0.0722
Money market fund	-0.0218	0.0761
Fixed aggressive fund	-0.9027	0.0947

Table 3 represent Jensen's Alpha and return due to diversification (RDDR), Jensen's Alpha measures the fund manager ability to generate excess return and ability to

beat the market. All funds in pension fund and closed ended sector have positive alpha which lead to conclusion that pension fund's manager beat the market and outperformed to generate excess return, the value of return due to diversification (RDDR) for all pension's funds is zero which indicate that pension fund have fully diversified portfolios and fund manager have ability to select the optimal securities in the basket of portfolio. On the other hand all funds in open ended MF sectors (except index tracker and equity fund) have negative value of alpha which lead to conclusion that fund manager not generate sufficient return in order to beat the market and positive value of RDDR indicate inability of fund manager to diversify and selectivity of well diversified securities in portfolio. The findings of table 3 support the findings of previous ratios.

Conclusion

The purpose of this study is to evaluate the risk adjusted performance measure of mutual fund industry of Pakistan over available data. We divided the whole population in to three main sectors such as Voluntary Pension Fund, Close Ended Fund and Open Ended Fund. Further Voluntary Pension Fund subdivide in to four categories Debt, Equity, Money market and Commodity. Open Ended Fund subdivide in to ten categories such as index tracker, income, equity, asset allocation, balanced fund, capital protected fund, commodity fund, money market fund, fund of fund and fixed aggressive fund. Sharpe ratio, Treynor ratio, Sortino ratio, Jensen's Alpha and Return due to diversification (RDDR) used for performance evaluation.

The finding of study reveals mix trend, on average mutual fund industry of Pakistan face critical situation and fund managers ability to generate excess return, diversification and selection of appropriate securities is question mark, but voluntary pension fund and close ended mutual fund generate excess return and managers of these fund have superior ability to diversification and selectivity. Further not any signal category of open ended mutual fund outperformed in term of risk adjusted return and unable to give sufficient return to compensate the risk. On the basis of above discussion it is recommended that investors does not rely only on fund managers' report but also conduct his own analysis to see the actual fund performance.

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