Performance Nexus of Mutual Funds: A Case Study of Pakistani Mutual Fund Market

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Abstract— Pakistan is a developing country with a growing mutual fund industry. There have been lack of evidence on the performance and determinates of performance in Pakistani Markets. Most of the models and measures in this regard are developed for the developed world and mature mutual fund markets. This research is conducted to provide comprehensive evidence on the performance measurement of the mutual fund industry in Pakistan.The research considered data of 102 mutual funds, which were divided into eight types. They are (aggressive fixed income, asset allocation, balanced, equity, fund of funds, income, index tracker and money market) for the time frame of five years from 2010 to 2014. Performance of the funds is measured by using performance measures of Sharpe measure, Treynor measure, Jenson's Alpha and Information ratio. The performance of eight types were measured and compared on yearly bases. Further, using Fama-French three-factor model along with an additional factor suggested by Carhart. The research measured abnormal returns on each of the fund and these abnormal returns were explained by fund characteristics of expense ratio, fund size, fund age and fund family size using cross sectional OLS estimation.The research found significant performance differences using Sharpe measure and information ratio, where by index trackers, equity, balanced and fund of funds type of fund remained best performers, while performance of money market and income funds remained lower than all other types. Treynor measure and Jenson's Alpha provided in-consistent and insignificant performance measurements. The research also provided evidence of a negative influence of expense ratio on mutual fund performance in Pakistan. The research will explore the mutual fund industry for better understanding and recommends devising alternative performance measurements and methods consistent with local context.

Index Terms— Mutual Funds Association of Pakistan, Asset Management Companies, Mutual Funds, Securities and Exchange Commission of Pakistan.

1 Introduction

MUTUAL fund industry is growing rapidly around the globe. Mutual funds play a vital role in the growth of economy. It is a very important tool for generating capital, which directly affects the economy. Mutual fund is a pool of assets managed by professional fund managers. Mutual fund invests in various securities and assets like stocks, money market instruments, bonds and other similar assets. Mutual Funds provide investors an opportunity to invest in stocks and financial markets without having any professional skills and help them to achieve their financial goals. Mutual funds provide skilled management, reduced level of risk and approach to financial markets with a diversified portfolio.

Performance evaluation of mutual funds is critical for both the investor and the fund manager. The investor need to know which fund will perform well in order to make the investment decisions, while a fund manager or the asset management company need to know about the performance of the funds in order to enhance and develop more promising portfolio by adjusting their portfolio characteristics. Mutual funds as a viable investment options and a significant player in the financial markets have attracted a lot of research attention and comparative fund performance has been an active area of research for quite some time. Thus, lot of research has been done on different dimensions of mutual fund industry. Lobell (1961) examined the mutual fund and conducted a structural analysis of mutual funds, which helped in understanding the structure and functions of mutual funds. While Friend, Brown, Herman, and Vickers (1962) analyzed the growth and performance of mutual funds along with their investment policies and impact of mutual funds on stock market for Security and Exchange Commission of USA, which later became a base for researchers in the field of mutual fund industry and helped the researchers to investigate and analyze different aspects of mutual fund performance.

In developed countries there is lot of research on mutual funds. However, in developing country like Pakistan mutual fund industry is not mature. There is a lack of empirical work within and lot of work is needed to be done in order to explain dynamics of mutual fund as to provide basic understanding and knowledge of the industry so that industry might grow. Performance of mutual funds depends on many factors i.e. fund characteristics, risks involved, level of diversification, professional skills of managers and the liquidity (Ferreira, Keswani, Miguel, & Ramos, 2013). These factors are also worth consideration in the local context as the mutual fund industry in Pakistan is witnessing a steady growth.

1.1 Mutual Fund Industry in Pakistan

The value of mutual fund industry in Pakistan is multibillions and the history of the investment funds started in 1962 in the country. At first, by the introduction of an open-end fund by an Institute called NIT (National Investment Unit), which was regulated by the government. A significant development in investment industry occurred in late 2000, when the government decided to liquidate ICP (Investment Corporation of Pakistan), which was the regulatory authority of the NIT and decided to privatize the funds managed by the NIT.

The investment funds industry faced rapid growth when individuals were allowed to maintain their investment funds. Statistics for 2010, the total net assets of the investment fund industry was nearly two hundred million, indicating huge development in the industry, in comparison to the 2001 (89.44 %). The investment fund industry in Pakistan must try to earn more confidence of investors to increase the interest of investors in investment funds because it is an old problem, if the investment funds operate to Asset Management Company or to the interest of investors. The performance of an open-ended mutual fund is better than the close-end funds, such as return on equity is concerned. On the contrary, the open-end mutual funds face greater losses than to close by the end of the ven-

ture capital funds in 2008 and 2009. As opposed to the close-ended mutual funds in 2009, the open-end funds beard lot of loss. In 2010, the open -end fund acquired more return on equity by 6.32% than closed-end funds. Mutual Funds Association of Pakistan (MUFAP) is the trade body for Pakistan's multi billion rupees asset management industry. According to MUFAP there are 29 Asset Management Companies (AMC) having 247 mutual funds under 24 types of funds in Pakistan. Pakistan mutual fund industry is worth Rupee 404.266 billion in February 2014 according to MUFAP.

1.2 Problem Statement

This research is would compare and evaluate the performance of different mutual funds from Pakistani mutual fund industry in order to enhance the understanding of the factors that might have some impact on the performance of mutual funds. Various aspects of mutual funds would be examined in this research as to explore the determinants of performance of mutual funds and provide understanding to the investors so that they might be able to make a guided investment decision. This research will also help the fund managers and asset management companies in selecting right portfolio for a fund scheme and in understanding the impact of timing ability and liquidity of funds on the performance of mutual funds.

In this research, different types of funds will be compared and their performance would be measured in order to see which fund performs better and why. In this research, impact of liquidity and fund characteristics on the fund performance would also be examined. This research has two-fold importance, i.e. both theoretical and practical in nature. Theoretically, it would help the new researchers to investigate new avenues in mutual fund industry and practically, it is important for both investors and fund managers as using the findings of this research they would better be able to compare mutual fund performances and devise a better portfolio of their investment. This research will enable the investors to choose the right fund according to their needs i.e. risk and return credentials, keeping in consideration all the fund characteristics along with risks, costs and fund characteristics. Thus, this research would guide the investors in selecting and making the right investment decisions.

This research would also indicate towards the factors, which affect the performance and returns of mutual funds in Pakistan, which ultimately will help the fund managers to understand those factors so that they could develop better fund schemes after keeping in mind all those risks and factors affecting the performance of mutual funds. This research will help the mutual fund managers to understand in a better way the composition of a fund and to develop well-managed and stable funds. This research will become a base for other researches to investigate and help them to understand the basics regarding mutual fund performance evaluation. In Pakistan, there is drought of knowledge in this domain of research. This research will also analyze the impact fund characteristics on the performance of mutual funds, which would be a new dimension in this domain for Pakistani mutual fund industry.

1.3 Objectives of the Research

The main objectives of the research are:

1. To evaluate and compare the performance of all mutual fund schemes of Pakistani Asset Management Companies.
2. To examine effects of fund characteristics on fund performance.
3. To provide implications with regard to mutual performance in order to better guide investors and fund managers.

Literature Review

This research evaluates the performance of different funds and compares the performance of these funds on the bases of different fund types. Moreover, this research also investigates the impact of fund characteristics on mutual fund performance. Most of the literature is taken from foreign studies conducted on mutual funds because in Pakistan, not much work has been done on this industry. The studies available are narrow in focus and mostly compare mutual fund performance on a limited sample base. This part of the research summarizes the findings of the past studies relevant to the topic of the research.

Rinne and Suominen (2014) Investigate the impact of liquidity and cost of immediacy on the returns of mutual funds. For this purpose, a sample of only equity funds from the USA's mutual fund market was taken, but index funds were excluded from the sample. The sample period was considered for a period of 23 years ranging from 1984 to 2010. Some equity funds were found to earn returns to the investors that demand immediacy by providing liquidity to them. It was also found that cost of immediacy affected the performance and returns of the mutual funds sampled. Investors who want more liquid and less immediacy costs invest in more liquid funds only. While other funds suffer due to the immediacy costs as investors calculate actual returns of mutual funds by subtracting such costs from the shown returns of mutual funds. Therefore, the out performing funds may give lower returns after deducting such costs. It was concluded that cost of immediacy and liquidity are the most important factors for investors in calculating performance and returns of the mutual funds. It was further elaborated that future alphas of mutual funds could be predicted by historical costs of the mutual funds.

Ferreira et al. (2013) took a sample of 16,316 open-end equity funds from 27 countries from 1997 to 2007 and investigated the performance determinants of mutual funds. The purpose of the research was to examine the effect of fund characteristics and country characteristics on the performance of the fund. Fund performance was measured by Fama and French (1992) three-factor model and Carhart (1997) four-factor model. Fund characteristics included fund age, fund size, fund family size, total expenses, total load, flows, past performance, management structure and number of countries in which fund was sold. Country characteristics were further divided into five groups in accordance with the economic development, concentration, investor protection & quality of legal institutions, financial development and mutual fund industry development & concentration of relative country. It was found that equity funds underperform the market. It was concluded that country characteristics were more effective than the fund characteristics as to explain fund performance. It was also found that home-trading environment and the quality of legal institutions had a positive impact on the performance of the mutual funds across countries.

Bodson, Cavenaile, and Sougné (2013) took a sample of 2780 mutual funds from 1970 to 2010. Out of 2780 funds, 1570 were dead at the end of 2010. They excluded Exchange Traded funds and the funds with returns of less than 1 year and only included local equity funds. They investigated mutual fund market timing with respect to liquidity, volatility and return. They used asset-pricing model of Fama and French in order to measure market timing ability of mutual fund managers. They also used Market excess return, size, risk free rate, book to market value. GARCH (1, 1) was used on market return in order to get market volatility measure. Measurement method proposed by Pastor and Stambaugh (2001) was used to measure market wide liquidity. It was found that dead funds show lower volatility and liquidity timing skills while live funds show higher volatility and liquidity timing skills. The research concluded that there are some other factors but not market timing ability of the fund managers that might have affected upon the market exposure of mutual fund but these factors are not

Kaushik, Brinckman, and Rose (2013) constructed a sample of 1,374 actively managed equity funds from USA fund market in order to examine the performance of these funds and to examine the performance evaluation methods and the criteria used for fund selection by the investor. The sample period consisted of 12 years from 2000 to 2011. The purpose of this research was to help the investors in selecting right type of fund and to help them in evaluating the performance of funds and reaching their desired goals. Fund performance was measured by using excess returns based on characteristics like small cap funds, large cap funds, value, size, net asset values, tenure, expense ratio etc. They identified and separated the characteristics of both top performing and low performing funds in order to help the investors in their investment decisions. It was concluded that top performing funds had a lower asset turnover and expense ratio, while longer tenure of fund manager and small cap funds perform better and had higher excess return.

Pukki (2012) took a sample of 21,500 mutual funds of UK from 1980 to 2010. The sample was divided among 3 types of mutual funds i.e. fixed income funds, open-ended equity funds and balanced funds. The purpose of the research was to examine fund's ability to time liquidity in the market. Only one share class of a mutual fund family was considered while the index funds were excluded as they are used to replicate the benchmark index's performance. Trading volume and market turnover were used as a measurement of market liquidity along with a third measurement i.e. Sadka permanent-variable liquidity measure. Fama-French factors were used to measure the returns in case of size and value but Carhat momentum factors were used to measure excess returns. A significant and positive relation of market liquidity with trading volume and turnover was found while turnover had an insignificant relationship with market returns. The research concluded that mutual funds had a positive liquidity timing ability and among all mutual funds, growth funds showed greatest liquidity timing skill.

Nafees, Shah, and Khan (2011) Investigate the performance of mutual funds in Pakistan. A sample of 11 open-end and 8 close-end mutual funds was taken from 2006 to 2010. In this research, market performance was taken as a benchmark and panel data was used for analysis. For evaluation, purpose five measures were used which were; Sharpe measure, Sortino measure, Treynor measure, Thomas Goodwin's information measure and Jensen differential measure. The results showed that the performance of all mutual funds was poor during the period 2007 to 2011.

Gohar, Ahmed, and Niazi (2011) Examine the performance of mutual funds in Pakistan. They compared the performance of equity funds and income funds. In this regard, a sample of 29 mutual funds was taken and data was collected for a period of 5 years from 2005 to 2009. Performance was measured by Sharpe measure, Treynor measure, Jensen alpha measure and information measure. It was found that equity funds outperform the income fund. The research concluded that broker backed mutual funds perform better in equity funds while in case of institutional funds outperform in income fund.

Pollet and Wilson (2008) Study the impact of size on the performance of mutual funds by considering a sample span from 1975 to 2000. In 1975, the number of funds was 253 and it increased to 1421 in 2000. After excluding foreign funds from sample, it found that with increase in flows the funds do not diversify much. The change in assets under management did not impact the portfolio, no change or diversification occurred due to that change, and the funds invest in the same existing portfolio when there is no liquidity constraint. While in case, where there were liquidity constraints, the funds diversify when they grew and when they received new money they scaled less. They concluded that the funds should change the portfolio when the assets under management change and the diversification should be made in response to fund growth. Small cap funds performed well when diversified. They concluded that fund's portfolio strategy might be affected by the fund family and the number of sub-funds in a fund family.

Swinkels and Tjong-A-Tjoe (2007)Investigated the question that whether mutual funds can time investment styles. For this purpose, they took a sample of 153 US based mutual funds with a blend of different investment styles by using Morning star style box classification. The sample period was from 2001 to 2005. The purpose of this research was to examine the ability of mutual fund managers to rotate between different investment styles. These investment styles were based on different characteristics like market capitalization, price momentum and the valuation ratios. Two performance evaluation models namely Treynor and Mazuy (1966)&Henriksson and Merton (1981) were employed to evaluate the performance of the mutual funds. Mutual funds were found to be able to predict the momentum style and the valuation. It was also found that mutual funds were not able to predict the magnitude of that change caused by momentum style and the valuation while funds were unable to deviate and rotate between stocks with small and large market capitalization. The research concluded that mutual funds could time stock market and the mutual funds.

Chen, Hong, Huang, and Kubik (2004) took a sample of 3,439 U.S equity funds for the period from 1962 to 1999 in or-

der to examine the impact of funds size on its performance. They used CAPM of Sharpe (1964), three factor model of Fama and French (1993) and the momentum model of Carhart (1997) to measure the performance of mutual funds. While they use TNA (total net asset) value to measured the fund size. An insignificant relation between fund size and fund performance was documented by the research. Thus it was concluded that fund size do not erode fund performance. Fund performance of small cap stocks was more effected by fund size than large cap stocks that showed that changes in fund performance by fund size were due to liquidity. They also found that fund performance was eroded by liquidity and diseconomies of the organizations.

Idzorek, Xiong, and Ibbotson (2012) examined the liquidity style of mutual funds by taking sample from US and non-US equity mutual funds for a period starting from 1995 to 2009. The purpose of this research was to investigate that mutual funds having less liquid stocks outperform the mutual funds having move liquid stocks. Turnover measure was used for measuring liquidity. Mutual funds were categorized into 16 groups on the basis of Morningstar division. Out of which nine were size valuation style boxes, three valuation based columns (e.g. value, core and growth) and three were size-based rows (e.g. large, mid and small). It was found that mutual funds holding less liquid stocks outperformed those mutual funds comprising of more liquid stocks and it happened because less liquid funds showed superior performance in down markets. It concluded that liquidity investment style was present in mutual funds that lead to differences in performance of mutual funds.

Cremers and Petajisto (2009) took a sample of 2,650 mutual funds from 1980 to 2003 in order to measure active management by developing a new measure for predicting performance of mutual funds. They called this new measure Active Shares, which is the portfolio holdings deviation from its benchmark index. Active management was measured on two dimensions that were active share and tracking error where-tracking error is the standard deviation of the difference between the fund returns and its benchmark returns. They measured active management level by using active share by comparing the holdings of mutual funds with that of the benchmark holdings. Tracking error for different types of active management is different,that is why they used active share along with tracking error in measuring active management. The impact of fund size, expense and turnover on active management was also examined. It was found that highly active share funds outperform their benchmark indexes irrespective of the expenses. They concluded that most active stock pickers generally create value for investors and fund size had a significant impact on active management of mutual funds.

Huang, Sialm, and Zhang (2011) analyzed the impact of risk shifting on the fund performance by taking a sample of 2335 actively managed equity funds from U.S. market for a period starting from 1980 to 2006. In order to measure risk shifting behavior of mutual funds they used holding-based measure.This measure was the difference between current holdings volatility of a fund and its past realized volatility where current holdings volatility was measured by taking standard deviation of the recent disclosed holdings of that fund while past realized volatility was measured by taking standard deviation of the actual returns of the fund. The risk shifting measure would be positive if the fund had riskier recent holdings than those of actual holdings of that fund. The purpose of the research was to investigate the level of risk shifting by fund managers for increasing their incentives and the impact of that risk shifting on the performance and returns of mutual funds. It was found that the funds having higher expense ratios perform better. It was concluded that funds with stable risk performed well while funds with risk shifting behavior underperformed. Funds expecting more benefit from risk shifting, experienced more risk and performed poor.

Cremers and Petajisto (2009). They uses total expense ratio and loads for measuring fees and expenses charged which also include audit, legal, management and administration fees but exclude front and back end load. To calculate total shareholder costs per year, they used the measure used by Khorana, Servaes, and Tufano (2009) where total expense ratio was added to one fifth of the front-end load after considering that an investor holds a fund for nearly 5 years. They used market share and total shareholder cost for measuring competition in a country's mutual fund industry. They also examined the relationship between indexing and the characteristics of a country's mutual fund industry. They found that countries with weak regulations and laws have less explicit indexing and concluded that explicit indexing improves the level of efficiency and competition among the mutual fund industry of a country.

3 Research Methodology

This is an exploratory research in which we will evaluate and compare the performance of different funds. Moreover, the impact of liquidity on performance will also be examined in this research. For this purpose the methodology will be divided into two parts i.e. performance and impact of firm characteristics and liquidity on the fund performance.

3.1 Performance Comperisons

Performance of each fund will be measured by using four ratios which are Sharpe (1966), Treynor and Mazuy (1966), Jensen (1968) and Information measure of Goodwin (1998). After evaluating the performance of each fund, we will compare all the funds on the bases of their performance. Model for each measure is given below:

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$$\text{Sharpe ratio} = (Rp - Rf)/ \delta P$$

.

Sharpe ratio is calculated by subtracting the risk-free rate (3 month T-bill rate) from the rate of return of a portfolio, and then dividing the result by the standard deviation of the portfolio returns. Higher the Sharpe ratio, the better will be the performance.

$$\text{Treynor measure} = (Rp - Rf) / \beta p$$

.

Where;

Rp = the observed average fund return where the average has been calculated through the geometric mean (GM)

Rf = the average (calculated through GM) risk free return

βp= the non-diversifiable risk (systematic risk) of the portfolio.

Treynor measure defines the relationship between portfolio returns and market rates of returns while beta coefficient is the volatility measure of a stock, portfolio or the market.

$$\text{Jenson's alpha} = Rp - [Rf + \beta(Rm - Rf)]$$

.

Jenson's alpha is the difference of the portfolio return and the return predicted by the CAPM. The positive α indicates good performance whereas a negative α indicates poor performance.

$$\text{Information measure} = IR_j = \frac{\overline{R}_j - \overline{R}_b}{\sigma_{ER}} = \frac{\overline{ER}_j}{\sigma_{ER}}$$

.

Where:

IRj = the information ratio for portfolio j

Rj = the average return for portfolio j during the specified time period

Rb = the average return for the benchmark portfolio during the period

σ*ER* = the standard deviation of the excess return during the period.

Information measure was proposed by Goodwin (1998). It is also called appraisal ratio which measures the average return of a portfolio in excess of benchmark portfolio divided by the standard deviation of that excess return.

3.2 Model

Performance will be measured by calculating the excess returns of funds in case when we would be examining the impact of fund characteristics on the fund performance. For calculating return we will use daily NAVs (net asset values) of all funds calculated on monthly bases in this research. Asset pricing model developed by Fama and French (1992) augmented with the momentum factor of Carhart (1997) will be used in order to examine the impact of liquidity and fund characteristics on fund performance.

$$R_{i,t} = \alpha_i + \beta_{1,i,t} MKT_t + \beta_{2,i} HML_t + \beta_{3,i} SMB_t + \beta_{4,i} MOM_t + \varepsilon_{i,t}$$

Where;

α = Excess returns on the portfolio

MKT = Market index returns

SMB = Return on small portfolio minus return on big portfolio

HML = Return on high book to market portfolio minus return on low book to market value portfolio

MOM = Momentum i.e. Return on past winner portfolio minus return on past loser portfolio

Fund characteristics will be the independent variables. Fund characteristics included in the research are expense ratio, age of the fund, size of the fund and familu fund size (Chen et al., 2004; Ferreira et al., 2013; Yan, 2008; Huang et al., 2011; Sadka, 2012; Robinson & Sensoy, 2011). These fund characteristics are regressed against excess returns as measured by model provided above.

3.3 Data Sources

Data will be collected from secondary sources. Data will be obtained from Securities and Exchange Commission of Pakistan (SECP), Mutual fund association of Pakistan (MUFAP), Pakistan credit rating agency (PCRA) and fund manager reports (FMRs) of Asset Management companies (AMCs). Only open ended mutual funds were considered for the research. Further funds started recently or less than age of 4 were also excluded from the research. Final set of mutual fund contained 102 open ended mutual funds. Three month data relating to T-bill rates will be obtained from state bank of Pakistan. Market risk rate will be calculated based on opening and closing values from KSE-100 index and Karachi Stocks.

3.4 Analysis Procedure

Performance of funds will be calculated and compared using ANOVA and independent sample test. For comparisons funds would be divided according to their nature i.e. Islamic and conventional and according to their type i.e. aggressive fixed income, asset allocation, balanced, equity, fund of funds, income, index tracker and money market. Along with ANOVA and independent sample t-test, descriptive techniques of data analysis would be used such as mean, standard deviation and mean differences. Later in the research, the impact of fund

characteristics will be established in order to check the importance of different fund characteristics and using cross sectional OLS model would do it.

4 Data Analysis

This chapter provides analysis of the data collected for the study. The analysis of the study is divided into two parts, whereby first part of the analysis provides performance comparisons of various types of funds and second part of the analysis assess the impact of fund characteristics on fund performance.

TABLE 1
Sharpe Measure of Performance: Fund Type Wise

Year	Fund Type	N	Mean	Std. Dev.	Min.	Max.	F	Sig
2010	Aggressive Fixed Income	14	-0.66	0.34	-1.34	0.00	8.31	0.00
	Asset Allocation	13	-0.24	0.36	-0.52	0.80		
	Balanced	6	-0.24	0.21	-0.45	0.03		
	Equity	25	-0.19	0.15	-0.54	0.06		
	Fund of Funds	1	-0.21	.	-0.21	-0.21		
	Income	27	-0.79	0.57	-3.38	-0.25		
	Index Tracker	2	-0.10	0.04	-0.13	-0.07		
	Money Market	14	-0.95	0.49	-2.22	-0.42		
	Total	102	-0.52	0.50	-3.38	0.80		
2011	Aggressive Fixed Income	14	-0.61	0.31	-1.44	-0.26	6.91	0.00
	Asset Allocation	13	-0.50	0.15	-0.86	-0.30		
	Balanced	6	-0.47	0.06	-0.54	-0.38		
	Equity	25	-0.47	0.14	-0.92	-0.30		
	Fund of Funds	1	-0.29	-	-0.29	-0.29		
	Income	27	-0.67	0.21	-1.16	-0.23		
	Index Tracker	2	-0.37	0.09	-0.44	-0.31		
	Money Market	14	-0.98	0.45	-2.30	-0.48		
	Total	102	-0.61	0.29	-2.30	-0.23		
2012	Aggressive Fixed Income	14	-0.10	0.67	-1.92	0.54	9.94	0.00
	Asset Allocation	13	0.20	0.26	-0.30	0.61		
	Balanced	6	0.20	0.23	-0.02	0.57		
	Equity	25	0.30	0.25	-0.18	0.78		
	Fund of Funds	1	-0.07	-	-0.07	-0.07		
	Income	27	-0.87	0.86	-3.40	-0.23		
	Index Tracker	2	0.20	0.60	-0.23	0.62		
	Money Market	14	-3.08	3.29	-11.92	-0.56		
	Total	102	-0.55	1.71	-11.92	0.78		
2013	Aggressive Fixed Income	14	-0.57	0.56	-1.97	-0.10	6.99	0.00
	Asset Allocation	13	-0.06	0.14	-0.31	0.23		
	Balanced	6	-0.03	0.12	-0.26	0.08		
	Equity	25	0.08	0.13	-0.12	0.44		
	Fund of Funds	1	-0.33	-	-0.33	-0.33		
	Income	27	-2.65	5.25	-20.94	-0.14		
	Index Tracker	2	0.22	0.13	0.13	0.31		
	Money Market	14	-7.50	6.39	-19.64	-1.32		
	Total	102	-1.80	4.34	-20.94	0.44		
2014	Aggressive Fixed Income	14	-0.32	0.35	-1.39	-0.02	18.57	0.00
	Asset Allocation	13	-0.08	0.13	-0.35	0.14		
	Balanced	6	0.00	0.09	-0.14	0.11		
	Equity	25	-0.04	0.10	-0.21	0.25		
	Fund of Funds	1	-0.05	-	-0.05	-0.05		
	Income	27	-0.46	0.38	-1.39	0.19		
	Index Tracker	2	0.02	0.05	-0.01	0.06		

Sharpe measure value of -0.95 (Standard deviation = .49), which was followed by income funds (Mean = -0.79, Standard deviation = 0.57) and aggressive fixed income funds (Mean = -0.66, Standard deviation = 0.34). The mean differences between the funds were found significant at 1% level of significance (F-Statistics = 8.31).

For the year of 2011, average performance of all of the mutual funds as measured by Sharpe value was -0.61 along with a standard deviation of 0.29 (Minimum value = -2.30, Maximum value = 0.29). Fund of funds performed best in year 2011 with highest Sharpe value of -0.29. After that comes performance of index tracker funds which was represented by average Sharpe value of -0.37 (Standard deviation = .09). After that is the performance of Balanced and Equity funds with a mean Sharpe value of -0.47 (Standard deviations = 0.06 and 0.14 respectively). Worst performance during 2011 was noted for money market funds, which averaged -0.98 (Standard deviation = -0.45), followed by income funds (Mean = -0.67, Standard deviation = 0.21) and aggressive fixed income funds (Mean = -0.61, Standard deviation = 0.31). Mean differences in year 2011 were also found significant at 1% level of significance (F-statistics = 6.91).

Overall performance of the total funds for the year 2012 was represented by average Sharpe value of -0.55 along with a standard deviation of 1.71 (Minimum value = -11.92, Maximum value = 0.78). Best performing funds in year 2012 were of equity type with an average Sharpe value of 0.30 (Standard deviation = 0.25). After that came funds of asset allocation, balanced and index tracker fund type with an average Sharpe value of 0.20 (Standard deviations = 0.26, 0.23 and 0.60 respectively). The worst performance in 2012 was represented by an average Sharpe value of -3.08 (Standard deviation = 3.29) by money market funds. The second worst performer in 2012 was found to be of income type of mutual funds as represented by a mean Sharpe value of -0.87 (Standard deviation = 0.86). Mean differences in 2012 were also significant at 1% level of significance as indicated by F-statistic of 9.94.

Average Sharpe measure value for all funds in 2013 was -1.80 along with a standard deviation of 4.34 (Minimum value = -20.94, Maximum value = 0.44). Best performing fund type in 2013 was index tracker funds with a Shape measure mean value of 0.22 (Standard deviation = 0.13). After that come equity type funds with an average Sharpe value of 0.08 (Standard deviation = 0.13). Then there are balanced funds (Mean = -0.03, Standard deviation = 0.12) and asset allocation funds (Mean = -0.06, Standard deviation = 0.14). Worst performers in 2013 were again money market funds (Mean = -7.50, standard deviation = 6.39), after that there are income funds with mean of -2.65 (Standard deviation = 5.25) and aggressive fixed income funds (Mean = 0.57, Standard deviation = 0.56). Mean differences in 2013 were also found significant at 1% level of significance (F-statistics = 6.99).

Lastly, average Sharpe ratio for 2014 was -0.32 along with standard deviation of 0.41. (Minimum value = -1.43, Maximum value = 0.25). The best performers in 2014 were index tracker funds (Mean = 0.02, Standard deviation = 0.05), followed by balanced funds (Mean = 0.00, Standard deviation = 0.09). After that equity funds yielded an average value of -0.04 (Standard deviation = 0.10) and Fund of funds yielded average of -0.05. Worst performance in 2014 was witnessed for money market

funds, which is represented by a mean Sharpe value of -0.96 (Standard deviation = 0.32), which is followed by income funds (Mean = -0.46, Standard deviation = 0.38) and aggressive fixed income funds (Mean = -0.32, Standard deviation = 0.35). The mean differences in fund performances of different types of funds as measured by Sharpe measure is also found significant at 1% level of significance as indicated by a F-statistics of 18.57.

Overall, Sharpe measure analysis of performance in relevance to different fund types was found significant, whereby funds of index tracker, fund of funds, equity, asset allocation and equity performed better as compared to money market, income and aggressive fixed income funds. Money market funds consistently performed poor in all of four years considered in the research.

TABLE 2
TREYNOR MEASURE OF PERFORMANCE: FUND TYPE WISE

Year	Fund Type	N	Mean	Std. Dev.	Min.	Max.	F	Sig
	Aggressive Fixed Income	14	1.88	4.86	-0.32	18.11		
	Asset Allocation	13	0.05	0.45	-0.78	1.25		
	Balanced	6	-0.11	0.14	-0.32	0.00		
	Equity	25	-0.05	0.10	-0.48	0.00	1.77	0.10
2010	Fund of Funds	1	-0.02	.	-0.02	-0.02		
	Income	27	0.09	0.16	-0.50	0.38		
	Index Tracker	2	0.03	0.07	-0.01	0.08		
	Money Market	14	0.26	0.42	0.02	1.62		
	Total	102	0.31	1.87	-0.78	18.11		
	Aggressive Fixed Income	14	0.50	1.75	-1.40	6.31		
	Asset Allocation	13	-0.06	0.03	-0.13	-0.02		
	Balanced	6	-0.13	0.20	-0.54	-0.04		
	Equity	25	-0.14	0.42	-2.13	-0.03	1.16	0.34
2011	Fund of Funds	1	-0.03	.	-0.03	-0.03		
	Income	27	0.06	0.18	-0.30	0.45		
	Index Tracker	2	-0.03	0.02	-0.04	-0.02		
	Money Market	14	0.08	0.44	-0.76	1.05		
	Total	102	0.04	0.72	-2.13	6.31		
	Aggressive Fixed Income	14	-0.05	0.20	-0.70	0.10		
	Asset Allocation	13	0.04	0.10	0.00	0.37		
	Balanced	6	0.01	0.01	0.00	0.02		
	Equity	25	0.02	0.02	-0.04	0.04	0.72	0.66
2012	Fund of Funds	1	-0.06	.	-0.06	-0.06		
	Income	27	0.00	0.27	-1.00	0.52		
	Index Tracker	2	-0.17	0.27	-0.36	0.02		
	Money Market	14	-0.17	0.70	-2.23	0.73		
	Total	102	-0.03	0.31	-2.23	0.73		
	Aggressive Fixed Income	14	0.01	0.40	-1.30	0.37		
	Asset Allocation	13	-0.06	0.18	-0.62	0.09		
	Balanced	6	0.11	0.27	-0.01	0.67		
	Equity	25	0.01	0.02	-0.03	0.03	0.13	1.00
2013	Fund of Funds	1	0.06	.	0.06	0.06		
	Income	27	1.03	8.46	-7.94	41.52		
	Index Tracker	2	0.02	0.00	0.01	0.02		
	Money Market	14	0.33	4.30	-7.66	11.74		
	Total	102	0.32	4.58	-7.94	41.52		
	Aggressive Fixed Income	14	-0.15	0.44	-1.59	0.38		
	Asset Allocation	13	-0.01	0.01	-0.03	0.01		
	Balanced	6	0.00	0.01	-0.01	0.01		
	Equity	25	0.00	0.01	-0.02	0.01	3.86	0.00
2014	Fund of Funds	1	0.00	.	0.00	0.00		
	Income	27	0.02	0.33	-0.68	0.61		
	Index Tracker	2	0.00	0.00	0.00	0.00		
	Money Market	14	0.53	0.80	-0.88	1.91		

And after that come equity fund with an average Treynor measure value of -0.05 (Standard deviation = 0.10). All other fund types yielded a Treynor measure average between range from 0.09 to -0.02. Further, F-statistics of 1.77 for performance comparisons among these categories of the funds indicates that performance differences among these funds in 2010 are insignificant.

For 2011, overall mean value of Treynor measure was 0.04 along with a standard deviation of 0.72. (Minimum value = -2.13, Maximum value = 6.31). Maximum average of Treynor measure was found for the fund type of aggressive fixed income (Mean = 0.50, Standard deviation = 1.75). After that come money market funds with an average Treynor value of 0.08 (Standard deviation = 0.44). Worst performing category of funds considering Treynor ratio in 2011 was equity fund type, which yielded a mean of -0.14 (Standard deviation = 0.42). Close to that is the performance of balanced type of fund with a mean value of -0.13 (Standard deviation = 0.20). Overall, the performance differences among different fund types were not found significant even in 2011 as provided by F-statistics of 1.16.

For 2012, overall average Treynor value for all of the funds was -0.03 along with a standard deviation of 0.31 (Minimum value = -2.23, Maximum value = 0.73). In 2012, best type of mutual fund was found to be asset allocation fund with Treynor measure average of 0.04 (Standard deviation = 0.10). After that comes Equity type of funds with Treynor measure average of 0.02 (Standard deviation = 0.02). Worst performance in 2012 was exhibited by index tracker and money market type funds with average Treynor value of -0.17 (Standard deviations = 0.27 and 0.70 respectively). F-statistics of 0.72 indicates that performance differences between different types of funds considering Treynor measure is not significant in 2012 as well.

For 2013, overall average of Treynor measure was calculated to 0.32 along with a standard deviation of 4.58, whereas minimum value was -7.94 and maximum value was 41.52. Best performing fund type in 2013 was found for the fund type of income funds with mean value of 8.46 and standard deviation of 8.46. After that come money market funds with an average Treynor value of 0.33 (Standard deviation = 4.30). Worst performing category of funds considering Treynor ratio in 2013 was asset allocation fund type, which yielded a mean of -0.06 (Standard deviation = 0.18). After that is the performance of aggressive fixed income type of fund with a mean value of 0.01 (Standard deviation = 0.40). Overall, the performance differences among different fund types were not found significant even in 2013 as well as indicated by a low F-statistics of 0.13.

Regarding 2014, overall average Treynor measure for all funds was found to be 0.05 (Standard deviation = 0.42). The minimum value was -1.59 and maximum value was 1.91. Best performing fund type in 2014 considering Treynor measure of performance was money market funds with a mean value of 0.53 (Standard deviation = 0.80). After that is the fund type of income funds with average Treynor value of 0.02 (Standard deviation = 0.33). Worst performance in 2014 was exhibited by aggressive fixed income funds with average Treynor value of -0.15 (Standard deviation = 0.44). After that is asset allocation

fund with mean Treynor value of -0.01 (Standard deviation = 0.01). The mean value for fund types of balanced, equity, fund of funds, and index tracker was 0.00 (Standard deviations = .01, .01, -, 0.00 respectively). F-statistics of 3.86 indicated that performance differences between different fund types are significant at 1% level of significance.

Overall, no repetitive performance pattern was exhibited by the different types of funds considering Treynor measure. Further, except 2014 no significant differences were located for different types of funds.

TABLE 3
JENSON'S ALPHA: FUND TYPE WISE

	Fund Type			St			
	Aggressive Fixed Income	14	-0.01	0.01	-0.02	0.00	
	Asset Allocation	13	-0.02	0.02	-0.08	0.01	
	Balanced	6	-0.02	0.01	-0.03	0.00	
	Equity	25	-0.02	0.02	-0.07	0.00	
2010	Fund of Funds	1	-0.01	-	-0.01	-0.01	1.43 0.20
	Income	27	-0.01	0.00	-0.02	0.00	
	Index Tracker	2	-0.02	0.01	-0.03	-0.01	
	Money Market	14	-0.01	0.00	-0.01	-0.01	
	Total	102	-0.01	0.01	-0.08	0.01	
	Aggressive Fixed Income	14	-0.02	0.02	-0.05	-0.01	
	Asset Allocation	13	-0.02	0.01	-0.03	-0.01	
	Balanced	6	-0.02	0.00	-0.03	-0.01	
	Equity	25	-0.03	0.01	-0.06	-0.01	
2011	Fund of Funds	1	-0.02	-	-0.02	-0.02	10.19 0.00
	Income	27	-0.01	0.00	-0.02	0.00	
	Index Tracker	2	-0.02	0.00	-0.02	-0.02	
	Money Market	14	-0.01	0.00	-0.01	-0.01	
	Total	102	-0.02	0.01	-0.06	0.00	
	Aggressive Fixed Income	14	0.00	0.01	-0.01	0.02	
	Asset Allocation	13	0.00	0.02	-0.05	0.01	
	Balanced	6	0.01	0.01	0.00	0.01	
	Equity	25	0.01	0.01	-0.01	0.04	
2012	Fund of Funds	1	0.00	-	0.00	0.00	9.37 0.00
	Income	27	-0.01	0.00	-0.01	0.01	
	Index Tracker	2	-0.01	0.03	-0.03	0.02	
	Money Market	14	-0.01	0.00	-0.01	-0.01	
	Total	102	0.00	0.01	-0.05	0.04	
	Aggressive Fixed Income	14	-0.01	0.00	-0.01	0.00	
	Asset Allocation	13	0.00	0.01	-0.01	0.02	
	Balanced	6	0.00	0.01	-0.01	0.00	
	Equity	25	0.00	0.01	-0.03	0.03	
2013	Fund of Funds	1	-0.06	-	-0.06	-0.06	14.92 0.00
	Income	27	-0.01	0.00	-0.01	0.00	
	Index Tracker	2	0.01	0.01	0.01	0.02	
	Money Market	14	-0.01	0.00	-0.01	-0.01	
	Total	102	0.00	0.01	-0.06	0.03	
	Aggressive Fixed Income	14	0.00	0.00	-0.01	0.00	
	Asset Allocation	13	0.00	0.01	-0.01	0.00	
	Balanced	6	0.00	0.00	-0.01	0.01	
2014	Equity	25	0.00	0.01	-0.01	0.02	0.61 0.75
	Fund of Funds	1	0.00	-	0.00	0.00	
	Income	27	0.00	0.01	-0.01	0.06	
	Index Tracker	2	0.00	0.00	0.00	0.00	

Equity in 2011, which was depicted by an Alpha value of -0.03 (Standard deviation = 0.01). The performance differences among different types of funds were found significant at 1% level of significance as indicated by a t-value of 10.19.

For the year of 2012, overall Alpha average for all of the funds was found to be .00 along with a standard deviation of .01, while minimum value of Alpha in the whole period of 2012 was -0.05 and maximum value was 0.04. Fund types with better performance were aggressive fixed income, asset allocation and fund of funds with a mean Alpha of .00 along with a respective standard deviation of .01, .02 and -, while mean alpha value of balanced, equity, income, index tracker and money market funds was -.01 (Standard deviation = .01, .01, .00, .03 and .00 respectively). F-statistics of 9.37 indicated that the performance differences between different types of funds are significant at 1% level of significance.

Considering 2013, average Alpha value of all funds was .00 and standard deviation of .01 along with minimum value of -0.06 and maximum value of .01. Best performance as indicated by highest average Alpha value was found for index tracker funds i.e. 0.01 (standard deviation = .01). After that, fund types of asset allocation, balanced and equity yielded an average Alpha value of .00 and Standard deviations of .01. Fund types of aggressive fixed income, income and money market yielded an average Alpha value of -0.01 (Standard deviation = .00). Lastly, fund of funds yielded the lowest Alpha value of -.06. Overall, the Alpha performance differences between different types of funds were found significant at 1% level of significance as indicated by a F-statistics of 14.92.

Lastly, average Alpha value for all fund during the year of 2014 was .00 (standard deviation = .01) along with a minimum value of -0.01 and maximum value of .06. The average Alpha value for all of the fund types i.e. aggressive fixed income, asset allocation, balanced, equity, funds of fund, income, index tracker and money market is averaged at .00 with respective standard deviation of .01, .00, .01, .00, .01, -, .01, .00 and .00. There was not much performance difference among various types of funds as indicated by a lower t-statistics of 0.61.

Overall, no significant differences were witnessed among different types of funds for the years of 2010 and 2014, while in 2011, 2012 and 2013 performance differences as measured by Jenson's Alpha were significant. Further, no consistent pattern of performance superiority was witnessed for the years performance was found significantly different.

TABLE 4
INFORMATION RATO: FUND TYPE WISE

Year	Fund Type	N	Mean	Std. Dev.	Min.	Max.	F	Sig
	Aggressive Fixed Income	14	-0.37	0.10	-0.47	-0.07		
	Asset Allocation	13	-0.39	0.16	-0.59	0.01		
	Balanced	6	-0.48	0.22	-0.85	-0.29		
	Equity	25	-0.44	0.22	-0.91	0.05	0.99	0.44
2010	Fund of Funds	1	-0.40	-	-0.40	-0.40		
	Income	27	-0.38	0.19	-1.00	-0.25		
	Index Tracker	2	-0.15	0.30	-0.36	0.06		
	Money Market	14	-0.38	0.16	-0.92	-0.29		
	Total	102	-0.40	0.19	-1.00	0.06		
	Aggressive Fixed Income	14	-0.09	0.18	-0.27	0.13		
	Asset Allocation	13	-0.15	0.13	-0.42	0.02		
	Balanced	6	-0.12	0.09	-0.27	-0.02		
	Equity	25	-0.19	0.10	-0.42	0.02	14.28	0.00
2011	Fund of Funds	1	-0.05	-	-0.05	-0.05		
	Income	27	0.05	0.06	-0.15	0.17		
	Index Tracker	2	-0.06	0.01	-0.06	-0.05		
	Money Market	14	0.06	0.04	0.00	0.16		
	Total	102	-0.06	0.14	-0.42	0.17		
	Aggressive Fixed Income	14	-0.75	0.39	-1.58	-0.08		
	Asset Allocation	13	-0.68	0.27	-1.12	-0.32		
	Balanced	6	-0.73	0.23	-0.97	-0.39		
	Equity	25	-0.32	0.28	-0.87	0.18	21.96	0.00
2012	Fund of Funds	1	-0.41	-	-0.41	-0.41		
	Income	27	-1.03	0.15	-1.20	-0.73		
	Index Tracker	2	-0.42	0.10	-0.49	-0.34		
	Money Market	14	-1.12	0.06	-1.26	-1.01		
	Total	102	-0.75	0.38	-1.58	0.18		
	Aggressive Fixed Income	14	-0.58	0.09	-0.72	-0.43		
	Asset Allocation	13	-0.48	0.11	-0.68	-0.24		
	Balanced	6	-0.47	0.09	-0.55	-0.33		
	Equity	25	-0.26	0.15	-0.47	0.09	41.40	0.00
2013	Fund of Funds	1	-0.32	-	-0.32	-0.32		
	Income	27	-0.68	0.08	-0.77	-0.48		
	Index Tracker	2	-0.37	0.10	-0.44	-0.30		
	Money Market	14	-0.70	0.01	-0.73	-0.68		
	Total	102	-0.52	0.20	-0.77	0.09		
	Aggressive Fixed Income	14	-0.44	0.07	-0.56	-0.34		
	Asset Allocation	13	-0.41	0.13	-0.66	-0.26		
	Balanced	6	-0.29	0.09	-0.40	-0.15		
	Equity	25	-0.25	0.17	-0.69	0.12	5.69	0.00
2014	Fund of Funds	1	-0.26	-	-0.26	-0.26		
	Income	27	-0.40	0.13	-0.55	0.23		
	Index Tracker	2	-0.63	0.44	-0.94	-0.32		
	Money Market	14	-0.44	0.06	-0.61	-0.34		
	Total	102	-0.37	0.15	-0.94	0.23		

Table 4 provides comparison of the performance of various fund types considering information ratio as performance measure. Overall average of performance ratio for the year of 2010 was found to be -.40 along with a standard deviation of .19. The minimum value of information ratio was -.27 and maximum value was .13 for whole of the funds in 2010. Best performing fund type in 2010 was index tracker funds with average information ratio of -.15 along with a standard deviation of .30. Then come aggressive fixed income funds with information ratio average of -.37 (Standard deviation = .10). After that fund types of income and money market has average information ratio of -.38 (Respective standard deviation = .19 and .16). Asset allocation and fund of funds yielded respective average information ratio of -.39 and -.40 with standard deviation of .16 and none respectively. The worst performing fund in 2010, considering information ratio was balanced funds with an information ratio average of -.48 (Standard deviation = .22) and after that come equity funds with average information ratio of -.44 (Standard deviation = .22). F-statistics of .99 indicated that no significant differences existed between these fund types for performance as for as information ratio was concerned.

Overall average information ratio for the year of 2011 was found to be -.06 (standard deviation = .14) along with a minimum value of -.42 and maximum value of .17. Highest average information ratio value was yielded by money market funds i.e. .06 (Standard deviation = .04) followed by income funds with average information ratio of .05 (Standard deviation = .06). Averages of information ratio for fund types of fund of funds, index tracker and aggressive fixed income were -.05, -.06 (Standard deviation = .01) and.-09 (Standard deviation = .18) respectively. The lowest value of information ratio in 2011 was found to be for equity funds (Mean = -.19, Standard deviation = .1), followed by asset allocation (Mean = -.15, Standard deviation = .13) and then by balanced funds (Mean = -.12, Standard deviation = .09). F-statistics of 14.28 indicates that the performance differences between different types of funds are significant in 2011.

For next year of 2012, information ratio yielded an overall mean of -.75 along with a standard deviation of .09, minimum value of -1.58 and maximum value of .18. Maximum value for the information ratio was located for equity type of funds (Mean = -.32, Standard deviation = .28), which is followed by fund of funds type (Mean = -.41) and index tracker type of funds (Mean = -.42, Standard deviation = .10). After that ranks asset allocation with average information ratio value of -.68 (Standard deviation = .27) and balanced type with average information ratio of -.73 (Standard deviation = .23). After that there comes aggressive fixed income type with average of -.75 (Standard deviation = .39). Least value of information ratio average in 2012 was located for money market funds, i.e. -1.12 (Standard deviation = .06) which is followed by income funds (Mean = -1.03, Standard deviation = .15). F-Statistics of 21.96 indicates that significant differences in the performance of various types of funds existed for the year 2012.

Subsequently, average of information ratio for the year of 2013 for all funds was found to be -.52 along with a standard deviation of .20. The minimum value of information ratio was -.77 and maximum value was .09 for complete sample of the funds in 2013. Best performing fund type in 2013 was equity funds with average information ratio of -.26 along with a standard deviation of .15. Then come fund of funds with information ratio of -.32. After that fund types of index tracker has average information ratio of -.37 (Standard deviation = .10). Funds of balanced and asset allocation type on the other hand had average information ratio of -.47 and .48 respectively (Respective standard deviation = .09 and .11). Aggressive fixed income funds yielded an average information ratio of -.58 with standard deviation of .09. The worst performing fund in 2013, considering information ratio was money market funds with an information ratio average of -.70 (Standard deviation = .01) and after that come income funds with average information ratio of -.68 (Standard deviation = .08). F-statistics of .41.40

indicated that significant differences existed between these fund types for performance as for as information ratio was concerned in 2013.

Lastly, average information ratio for the year of 2014 was found to be -.37 (standard deviation = .15) along with a minimum value of -.94 and maximum value of .23. Highest average information ratio value was yielded by equity funds i.e. -.25 (Standard deviation = .17), closely followed by fund of funds with average information ratio of -.26. Averages of information ratio for fund types of balanced funds, income fund and asset allocation funds were -.29, -.40 and -.41 respectively (Standard deviation = .01) and.-09 (Standard deviations = .09, .13, .13 respectively). Further aggressive fixed income funds and money market funds yielded an average information ratio of -.44 with respective standard deviations of .07 and .06. The lowest value of information ratio in 2014 was found to be for index tracker funds (Mean = -.63, Standard deviation = .44). F-statistics of 5.69 indicated that the performance differences between different types of funds were significant in 2014 at 1 % level of significance.

Pakistan is a developing country with a growing mutual fund market. Although mutual fund industry in Pakistan is very old, but private sector started to aggressively take part in the market after privatization of NIT funds. Mostly, individual investors do not actively participate in the mutual funds and other sophisticated forms of investments due to lack of knowledge, awareness and information. There have been no significant empirical and theoretical contributions in this regard as to better guide investors and fund managers to construct a better portfolio. This research, bridges this gap by investigating the performance of different fund types operating in the local mutual fund industry. Further, impact of mutual fund characteristics on fund performance is also investigated by this research. The purpose of this research is rather exploratory and it provides first hand evidence with regard to mutual fund performance and its determinants.

This research considers time from of five years from 2010 to 2014, whereby monthly NAVs of mutual funds were used to compare the performance of different types if mutual funds i.e. aggressive fixed income, asset allocation, balanced, equity, fund of funds, income, index tracker and money market. Four established way of mutual fund performance measurement were employed by the research i.e. Sharpe measure, Treynor measure, Jenson's Alpha and Information ratio.

This research found inconsistencies of performance measurement for different type of performance measures and also for different years. Sharpe measure yielded consistent results whereby best performers were index trackers, equity, balanced and fund of funds, while performance of money market and income funds remained lower for all of the periods and these performance differences were significant as well. Treynor measure on the other hand yielded insignificant and inconsistent results. Jenson's Alpha yielded significant but inconsistent results and lastly information ratio yielded results somewhat consistent with Sharpe's measure where equity funds remained on the top performing list and money market and income fund remained on the lower side of performance. Further, from fund characteristics, only expense ratio significantly impacted mutual fund performance in Pakistan and that was in a negative manner. Other characteristics considered i.e. size, age and fund family size were found insignificant.

5 Conclusion

Pakistan is a developing country with a growing mutual fund market. Although mutual fund industry in Pakistan is very old, but private sector started to aggressively take part in the market after privatization of NIT funds. Mostly, individual investors do not actively participate in the mutual funds and other sophisticated forms of investments due to lack of knowledge, awareness and information. There have been no significant empirical and theoretical contributions in this regard as to better guide investors and fund managers to construct a better portfolio. This research, bridges this gap by investigating the performance of different fund types operating in the local mutual fund industry. Further, impact of mutual fund characteristics on fund performance is also investigated by this research. The purpose of this research is rather exploratory and it provides first hand evidence with regard to mutual fund performance and its determinants.

This research considers time from of five years from 2010 to 2014, whereby monthly NAVs of mutual funds were used to compare the performance of different types if mutual funds i.e. aggressive fixed income, asset allocation, balanced, equity, fund of funds, income, index tracker and money market. Four established way of mutual fund performance measurement were employed by the research i.e. Sharpe measure, Treynor measure, Jenson's Alpha and Information ratio.

This research found inconsistencies of performance measurement for different type of performance measures and also for different years. Sharpe measure yielded consistent results whereby best performers were index trackers, equity, balanced and fund of funds, while performance of money market and income funds remained lower for all of the periods and these performance differences were significant as well. Treynor measure on the other hand yielded insignificant and inconsistent results. Jenson's Alpha yielded significant but inconsistent results and lastly information ratio yielded results somewhat consistent with Sharpe's measure where equity funds remained on the top performing list and money market and income fund remained on the lower side of performance. Further, from fund characteristics, only expense ratio significantly impacted mutual fund performance in Pakistan and that was in a negative manner. Other characteristics considered i.e. size, age and fund family size were found insignificant.

5.1 Implications of the Research

This research was exploratory in nature and provided a detailed and first hand evidence with regard to mutual fund performance. Following implication is drawn from this research:

- There have been confusing and conflicting evidence with regard to the performance comparisons of different ratios and different years implying that there a need to test the exist-

ing measure and models of performance to validate these for the local context.

- Determination of the fund performance should be considered in a broader manner where other fund related, market related and economic measures should be taken into account.
- Mutual fund industry is growing at a fast pace and many mutual funds are of age less than 3 years. There a serious need to consider the growth factors of mutual funds in this regard.
- There is a serious need to realign mutual fund industry according to individual investor demand and needs. Awareness of investors regarding mutual fund industry as a viable investment options is very important in this regard.

5.2 Recommendations

Following recommendations are put forward by the researcher in the light of the findings of the research:

- First and foremost, there is a need to make individual investors aware on the prospects and credentials of mutual funds for improvements in mutual fund industry.
- Due to non-presence of bond market in Pakistan, mutual funds lack a significant investment segment. There is a serious need to develop alternative debt markets like sukuk market or separate derivate markets.
- Mutual funds could invest in real estate and in derivatives in order to add more characteristics to their portfolio.
- Investor should not be lured by the type of mutual fund and investment in mutual funds should be based on thorough analysis of mutual fund's portfolio, exposure, risk and return credentials.
- There are less index trackers and fund of the funds type of funds in Pakistani mutual fund industry and these should be focused upon. Apart from that there is a lot of room for creatively in devising new scheme of funds and attract investors to the unattended investment opportunities.
- An investor and fund manager should be aware of the fact that different performance measure rely on different mechanism and factors for mutual fund performance calculations. Fund seem lucrative by one performance measure could be a failure according to the other. So, a careful analysis of the portfolio composition of the fund should be made and acted upon accordingly.

5.3 Limitations and Directions for Future Research

Following are the limitations of the research:

- This research only considers mutual funds of open ended scheme and close ended schemes and pension fund schemes are avoided by the research.
- Fund newly started (age less than 4 years) are excluded from the analysis of the research and relatively mature funds are considered for the analysis in the research.
- This research only considered limited set of fund characteristics for determination of fund performance and other market and economic factors are not considered by the research.

With regard to the future research, this research provides a base to the future researchers considering investigating mutual fund industry. Future research could be directed to address limitations of this research. Apart from limitations, following avenues could also be investigated:

- Individual investor preferences for different types of the mutual funds could be assessed and new fund scheme could be designed, proposed and started accordingly.
- Determinants of growth of mutual fund and mutual fund industry could be investigated.
- Structural links between growths of mutual fund industry could be established in comparison to economic growth of developing countries like Pakistan.
- As entailed previously, there is a serious need to validate the existing models and performance measures in local context and new measures and models could ne proposed according to local needs and demands.

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