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Analysis of Pakistan's Mutual Fund Performance Evidence from Traditional & Modern Methods

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ABSTRACT- Mutual Fund provides an opportunity to small investors who have not any information, skills, or knowledge of investing in capital market. The study was aimed to analyze the performance of mutual Funds industry in Pakistan. This research used monthly data of all Open Ended Mutual funds from 2005 to 2017 for generating risk adjusted return through Traditional method (Ratio method) and Modern (Model) method. Ten different portfolios of mutual funds were generated ranging from low performer to top performer in order to understand their behavior to market return. Time series regressions were applied to find the performance of these portfolios measured through above mentionedratios and models. The annual data of 44 mutual funds characteristics such as Fund size, Fund cash flow, Fund family, Expense ratio, Fund age and fund liquidity was collected to find their impact on risk adjusted return of funds. The results showed that thepast performer funds owe performing better presently due to the significance of the lagged alpha in regression.

Key Words: Mutual Fund, Open Ended, Fund characteristics, Regression, Performance analysis

I. INTRODUCTION

Mutual funds are the assets management companies that provide an opportunity to all those investors who have lack of expertiseor unable to diversify their investment. Mutual Fund act like a bridge between investors and their destine objectives. They act as an agent and invest the investors' investment in different securities. The responsibility of the investment in suitable portfolio for maximizing the stack of the stockholders are totally on these asset management companies (Mutual funds AMC's). The investors simply invest in mutual fund by purchasing units or portion of mutual funds and become a shareholder of that mutual Fund. Comparative to risk and return the Mutual funds provide high return as investing in diversified portfolio. Mutual funds assemble money from investors, and invest it in securities or assets or in mixture of it according to investors' objectives (Afza&Rauf, 2009).The large project needs huge investment; Mutual funds provide this opportunity by making pools through accepting investment from individual.Mutual funds are operated by financial managers and banks for generating income and capital gain for their own interest as well as for investors (Ali, 2015). Mutual fund earns money from the security on two bases, first from obtaining dividend on security, second from the increasing of security price (Razzaq, Gul, Sajid, Khan &Razzaq, 2012).

Mutual Funds also have a professional management having expertise to chin opportunities in the market.They evaluate the opportunities and then make a decision whether to invest or not. The investing decision is not only difficult to an individual but for a corporation as well, if investment is not their core business (MUFAP, 2017).Mutual Funds are divided into two types according to their function, open-end and close-end mutual fund. In open-end there is no compulsion to fix the numbers of shares, the funds issues shares as demanded by investor, no restriction and limitation on investors for purchasing of shares.Dutch merchant Abraham van ketwich introduced the idea of pool investment in 1774 starting Mutual Fund in Netherlands on the basis of the statement "unity create strength". 19th centuryin the Europe especially in England & France brought some advancement andin 1868 "foreign and colonial trust" introduced that is still in operationin London stock exchange.In USA first close-ended fund as"Boston personal property fund" in 1893 was introduced. The 20th century introduced "The Massachusetts investor trust'' (MITTX). MITTX gives identity to the mutual fund industry as we know it today (Ali, 2015).In 1928 State Street launched its first fund. Steven, Clark, and Scudder launched first close ended fund.

Most of the studies across the world applied traditional measures to evaluate Mutual Fund performance particularly in developing countries (Sipra, 2006; Afza&Rauf, 2009; Nazir& Nawaz, 2010). The modern methods have been widely used in developed countries in Mutual Fund evaluation. Fama French 3 factor and carhart 4 factor models have been rarely applied in evaluating Mutual Fund performance in developing countries. In Pakistan these modern methods for evaluating Mutual Fund performance have not been explored. Afza (2010) analyzed Mutual Fund performance, using CAPM, and fund of fund underperform. Most of the researchers used traditional measure to evaluate Mutual Fund performance in Pakistan (Sipra, 2006; Afza&Rauf, 2009; Nazir& Nawaz, 2010). These researchers applied sharp ratio, traynor ratio and jenson alpha to evaluate mutual fund performance. The gap exist to evaluate Mutual Fund performance through both traditional and modern method. This study will explore both traditional and modern methods to evaluate Mutual Fund performance which will fill the gap from Pakistani perspective.

Problem statement

Investing decision is one of the critical functions of financial manager of any organization, upon which future of the organization hinges considerably.In order to carry out an in-depth empirical analysis of the Pakistani Mutual Fund performance, the research study aim to conduct an empirical analysis of the performance of both types (open & Close) funds using triangulation of methods i.etradition methods (Ratio Analysis) and three factor Fama French and Corhart4 factors models (Modern Method) with a view to validate modern method on one hand and conduct a comparative analysis between the close and open end fund on the other.

Research Question

1) Do ratio analysis better explain mutual fund performance in Pakistan?
2) Do CAPM, Fama French-3 and Carhart-4 factor model explain mutual fund performance in Pakistan?
3) Which Model among the three, better explain and predict the Mutual fund performance in Pakistan?
4) How the Mutual Fund managers capture the market variations in Pakistan?

Objective of the study

The main purpose of this study was to evaluate the performance of mutual funds in Pakistan.

1) To evaluate the performance of mutual fund through traditional measures such as Jensen Alpha, Treynor, Sharp Ratios and Modern Models such as single factor, three factors (FamaFrench), four factors (Carhat).
2) To investigate the suitability of traditional measure as well as modern method in predicting and evaluating Mutual Fund performance in Pakistan.
3) To validate whether traditional measure or modern method explain theMutual Fund performance in Pakistan**.**
4) To suggest measures on the basis of the findings of this study.

Significance of the study

In this modern era, no one can deny the importance of mutual funds. The reason behind it, now days the mutual fund is consider the new pillar of the economy. The mutual funds industry showed a fast growth in recent years. Mutual funds' performance evaluation is so important for the investors.

This study has been ensures vitally important contributions in both literature and practical perspectives. First, this research has been conducted in emerging market having different characteristics from that of the developed market behavior. As most of similar studies have been conducted in developed world.

II. LITERATURE REVIEW:

Mutual Fund offers vide area of research investigations. Many researchers have contributed in the area of Mutual Fund in term Mutual Fund performance. Sharp (1964) introduced Capital Asset Pricing theory

formally known as a CAPM. The same model was used by researcher like Linter (1965), Treynor (1965) and Mossin (1966). Treynor (1965) investigated the impact of market on portfolio return. Jenesen (1968) found the association of funds' performance to particular benchmark. He found that fund having positive alpha outperform market. Carleson(1970) investigated the fund return through regression and fund that majority of fund outperform market return. Modest (1987) tested theJensen (1968) model and reported that selected portfolio return are very sensitive. Murthi et al (1997) investigated the efficiency the investment funds through DEA Technique and found that some of the portfolios of fund were quite efficient in performing. Fama French (1993) used 2factor and 3-factor model for the performance evaluation of funds and found different results for market factor, size factor and value factor. He found that value and size factors also affect the fund performance significantly rather than the market factor. The same model was applied by Caietal (1997) analyzing japani mutual fund industry and found that market factor better explain the funds return than value and size factor. The researcher found results different from the previous researcher in term of size and value factor. Unlikely the previous researchers, Carhart (1997) used 4-factors model for the performance evaluation of funds and stock portfolio. The researcher evidenced similar results for the market, value and size factor, very much inconsistent with that of Fama French (1993). He added one new factor of momentum, which can affect the funds return. He found that the fund outperform the market in term of all its four factors.The same 4-factor model was tested by Otten&Bams (2002) and found similar results for the first three factor very much consistent with the findings of Carhart(1997) but only found results in contrast for its momentum factor in which he evidenced poor performance by the funds. In a similar study the funds were found outperform market in term of all 4- factors, thereby documenting the results of the previous researchers, who found that all equity funds outperform the market in term of market factor, size, value and momentum factor EGB (2004).

Debasish (2009) tested the performance of a few selected mutual funds. The study was conducted by using the risk and return model for the period of nine financial years from 1996-2005. The study proved that Unite Trust of India (UTI), Franklin and Templeton were some of the best mutual funds in that time period. Their performance was better than the Housing Developing Finance Corporation(HDFC), Life Insurance Corporation (LIC) and Birla Sun life. Their study included only six mutual funds which were selected on priority basis to check their performance.

Prabakaran and Jayabal (2010) investigated the performance of 23 mutual funds. These funds were selected from a District in India. The data used in this study was primary and was collected from a survey. They investigated the mutual funds' performance for the period of 2002-2007. This includes the five financial years. The models used in this analysis were Sharp and Jensen. Their results showed that according to Jensen measure the total of 14 out of 23 mutual funds have performed better than the rest of the funds. But on the other hand, 13 mutual funds have performed better by using the Sharp Ratio, total of 13 mutual funds has performed better than rest by using the Treynor Ratio.

Garg (2011) studied the performance of mutual funds. His study includes ten mutual funds which have performed well in the previous year. The measurements used for the performance checking were the Treynor ratio, Jensen Alpha and Sharp Ratio. The study also consists of the Carhart four factors model to check the performance of mutual funds. This study was to check the performance of mutual funds for the period of one year. There results revealed two things one was the best performing mutual funds and the second one was the worst performing mutual. The study shows that the Reliance Regular Saving Scheme Fund has been the best performing mutual funds for the year and the Robeco Infra has been the worst performing mutual funds scheme.

Henrikkson (1984) investigated the performance of mutual funds. The study was focused on 116 mutual funds. The main focus of the study was the market timing. Their findings were that only 3 out of 116 mutual funds were having perfect market timing. The rest were not considered in good market timing based on their results. Chua and Woodward (1968) also tested the same, market timinghypothesis in the market of UK, USA and Canada and their results showed that the market timing for the total mutual funds was not good.

Nazir et al. (2010) investigated Pakistani mutual funds. In their study they took the data from 2004-2009. Their data was secondary and was derived from Karachi stock exchange and other sources. They took 13 mutual funds as a sample from Karachi stock exchange. They applied two models for mutual funds growth determinants. It was fixed effect and random effect models. They found positive result of these three ratios, assets turnover, family proportion and expense. On the other hand, management fee and risk adjusted return give them negative result.

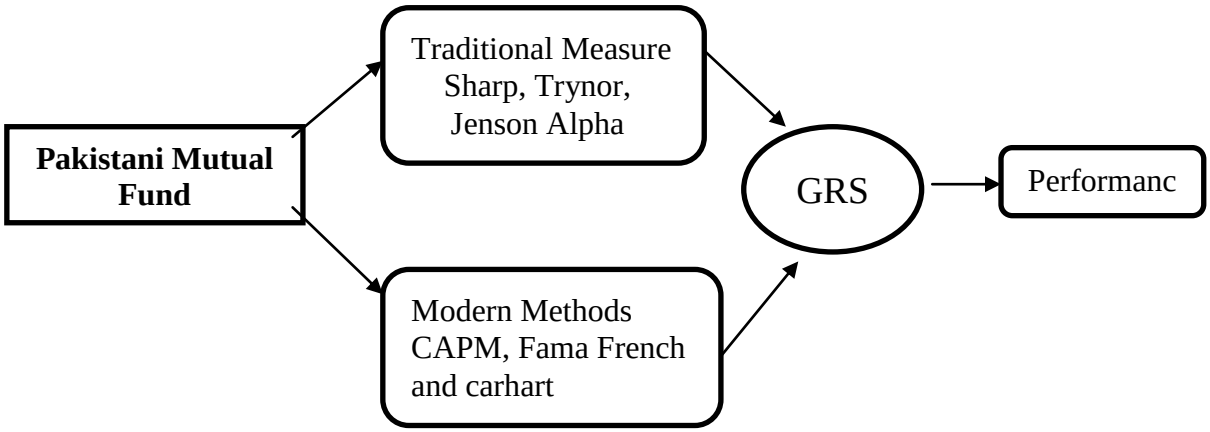
Pakistan is a developing country and here most of the research in the field of mutual fund is carried out through the most traditional measures. Saeed (2004) analyzed mutual fund performance and evidenced

that most of the funds do not outperform the market return, however majority of the fund showed positive return. The similarfindings were documented in the evaluation of balance and equity funds(Sipra, 2006). However, some of the researchers in contrast found, funds outperforming the market return for the equity funds using the same traditional Sharp Ratio (Sipra, 2006; Nazir& Nawaz 2010). Afzal (2009) analyzed fund performance using Treynor Ratio and evidenced positive return for majority of the funds. In the similar study using same TreynorRatio non-significant results were found for most of the funds, there by documenting that most of the funds do not capture the market variations. Arshad (2013) stated that funds characteristics have greater impact on funds return. He calculated adjusted return through Sharp and Treynorratios. However in contrast to the traditional ratios Bhatti et al (2015) generated alpha through Capital asset pricing model and found that most of the high return portfolios do not capture the market variation well as compared to low performing portfolios. This research show that there is need of using more competing and sophisticated evaluation methods or comparing the existing ones to find the best results as for as evaluation of Mutual Fund is concerned.

Rehman&Baloch (2016) evaluated Mutual Fund performance using sharp ratio for the calculation of the fund's adjusted return and found that most of the funds do not outperform market return. They also found that most of the fund's attributes like expense ratio, management fee, Fund size & Fund age has an impact on Fund's adjusted return.

Rehman&Baloch (2016) evaluated Mutual Fund Performance through CAPM & Fama French 3-Factor model and found that CAPM explain the mutual Fund Performance well than the Fama French 3-Factor models. The CAPM was found, showing substance outcomes for all of its portfolios; however the intercepts of this model were found increasing in size, showing poor performance for the high performance portfolios. The Fama French 3-factor model also evidenced very poor results for size and value factor but the market factor seemed good. The GRS was applied to find the finest model between the two competing models. The GRS revealed that CAPM is the preferred model between these two competing models. The CAPM results showed that the majority of Mutual Funds do not suitably capture the market variation in Pakistan. These results of Fama French 3-factor model are in contrast to the findings of some previous researcher who explored the mutual fund performance in developed world and found the fund's managers capturing well the value and size factor as well (EGB, 2004, Huiji&Verbeek, 2006).

Theoretical Frame Work:



III. RESEARCH METHODOLOGY;

Research Nature

It is quantitative research as the data has been quantitatively quantified. The data of all open ended mutual fundanalyzed through Ratios and CAPM,Fama French 3-Factor and Carhart 4 factor model then GRS (Gibbon Ross Shanken) test has been applied to find the better model among the three models.

Research Population & Sampling

The population of this study includes all open ended mutual fund registered/traded on MUFAP site. The total population based sampling technique has been applied to have more validated results. The sample

size of this research is the100 mutual funds which had been randomly selected from the total targeted population of 220 funds registered with mutual fund association of Pakistan (MUFAP). The sample period of this research is from Jan 2005 to Dec 2017.

Data Collection Procedure

The data has been collected from triangulation sources such as MUFAP, Pakistan stock exchange (PSX), other internet sources and different websites such as business recorder.

Variables

This study consist one dependent and seven independent variables.

Dependent variable

Dependent variable refers to a factor which changes its value due to the effect of other related factors. In this research dependent variable is the performance.

Independent variable

Independent variables refer to those variables whose variation does not depend on other factors. In this study, the following independent variables are taken:

1) Market premium (RM-RFT)
2) Size premium (SMB)
3) Value premium (HML)
4) Momentum premium (WML)
5) Jensen alpha
6) Treynor
7) Sharp Ratio

Research model:

This study consist the combination of ratios and models that has been used for the analysis given below;

On the basis of ratios:

1. Jensen Alpha (Risk Adjusted Portfolio Performance)
2. Treynor (Volatility Ratio)
3. Sharp Ratio (Risk Adjusted performance)

On the basis of Capital Asset pricing models:

1. Single factor Model (Capital Asset Pricing Model) (sharp, 1964)
2. Three factor Model (Fama and French, 1992)
3. Four factor Model (Carhat, 1997)

Jensen ratio

In 1968 Michael Jensen introduced a measure which is used for the performance of a portfolio called Jensen alpha. It is also known as Jensen ratio. On the basis of this ratio has been find out the difference between the actual and the expected return of the portfolio at a systematic level of risk calculated by its beta. It can be calculated by the following equation

$\alpha=r_p-[r_f+\beta_p(r_m-r_f)]$

Where:

α: Parameter of the model

r_p: Expected total portfolio return

r_f: Risk free rate

β_p: Beta of the portfolio

r_m: Return on the market index

The Treynor ratio

The Treynor ratio was developed by Treynor in 1965. This ratio is also known as reward-to-volatility ratio. It tell us about the extra return of the portfolio which cannot be gain by the other risk free investment, per each unit of market risk.

Treynor ratio is calculated as

Treynor Ratio $=r_p-r_f/\beta$

Where

r_p: portfolio Return

r_f: Risk Free Rate

β: Beta

The sharp ratio

The sharp ratio was introduced by William sharp. It is risk adjusted measurement. This ratio is used for the performance evaluation of portfolio. The sharp ration focus on the whole risk measure by using the standard deviation.

Sharp Ratio: (Mean Portfolio Return-Risk Free Rate)/Standard Deviation of Portfolio Return

Sharp Ratio $=r_p-r_f/$ □

Where:

r_p: Portfolio Return

r_f: Risk free Rate

□: Standard Deviation of portfolio return

Single factor model (CAPM)

This model was introduced by William sharp in the year of 1960. It is often use for the performance evaluation of mutual funds. This model is the retainer of one factor which is risk free rate of return.

Equation of single factor model is

$E(Ri) = RF+[E(Rm) – RF] \beta i+\varepsilon i$

Where

E(Ri): expected return of an assets.

RF: risk free rate

E(Ri): expected return of market

βi : sensitivity

εi: error

Three factor model(Fama/French)

This model was introduced in the year of 1993 by fama and French. It is the upgraded form of single factor model. This model is tell us about the expected return is the total market premium.

The numerical form of this model is

RIT-RFT = a1+bi(RMT-RFT)+Si(SMBT)+Hi(HML)+eit

Where

Market premium: Return on assets minus risk free return.

Size premium: Small minus big capitalization.

Value premium: High minus low return.

Four factor model(Carhart)

This model is the up rise form of three factor model. With the factors it has one extra factor as well which known as momentum. This model is very helpful for the assessment of expected return in Pakistani stock market.

The numerical form of this model is

E(Ri)= Rf+[E(Rm) – Rf] bi+siE(SMB)+hiE(HML)+WML+εi

Where

Rm-Rf: market risk return – risk free rate of return.

SMB: small minus big capitalization of stock portfolio.

HML: high book to market ratio minus low book to market ratio.

CMA: conservative minus aggressive investment.

Ri-Rf: Return on assets minus risk free return.

T test for comparison of traditional method vs modern method

T test has been applied to compare the result of traditional methods and modern method.

Gibbon Ross Shanken Test

Gibbons, Ross & Shanken (1989) have emphasized the importance of this issue for empirical work on positive models of asset pricing. GRS provide a test of the ex-ante unconditional efficiency of some portfolio-that is, when the opportunity set is constructed from the unconditional moments, not the conditional moments. When the riskless rate is changing, then GRS provide a test of the conditional

efficiency of some portfolio given the riskless rate. GRS applied to find the most suitable and validated model among the three models.

IV. DATA ANALSIS AND FINDINGS

This chapter focuses on mutual fund performance analysis of Pakistan industry through different models and statistical techniques. The mutual fund performance has been analyzed through CAPM, Fama French 3-Factor and Carhart 4- factor model. The GRS test has also been used to understand which model among the three better predicts and explain mutual fund performance. Descriptive statistics, correlation and regression have also been used in performance analysis portion of this chapter. Investors investing behavior in mutual fund has been analyzed through tables, bars, charts and Multinomial logistic Regression.

Traditional Method (Ratio Analysis)

Table 1

Style	**Sharpe Ratio**	**Treynor Ratio**	**Jensen Alpha**
Asset	0.4013	0.0756	0.0070
Income	-0.2001	0.0901	0.0079
Balanced	0.8070	0.0048	0.0502
Equity	0.9141	-0.0461	0.0512
Aggressive Fixed income	0.3526	0.0239	0.0084
Total	**2.2739**	**0.1483**	**0.1247**

Table 1 reports the Sharpe ratio, Treynor ratio and Jensen alpha of mutual funds. These funds are further classified by different styles such as, Assets, Income, Balanced, Equity Aggressive fixed income. The Sharpe ratio for equity, income and aggressive income fund perform better. However, overall Sharpe ratio exhibits that Mutual Funds (2.2739) perform better.

Looking at Treynor ratio Income, asset allocation, balanced and aggressive income fund perform better than equity, In a nutshell we can say that based on Treynor ratio again the performance of Mutalfund (0.1483) is better than other investment option in Market.

The Jensen alpha shows equity, asset allocation and balanced fund perform better than other market options. While in case of Income and aggressive income performance is at about par for existing investment option respectively. On overall basis for Jensen alpha Conventional fund (0.1247) the over-all performance is better than others.

Modern Method (Models)

Mutual Fund Performance Analysis through CAPM

Table 2 CAPM

VARIABLES	(1) P1	(2) P2	(3) P3	(4) P4	(5) P5	(6) P6	(7) P7	(8) P8	(9) P9	(10) P10
rm_rf	1.046***	1.853***	1.293***	0.542***	0.838***	2.042***	1.979***	3.414***	4.950***	10.690***
	(0.216)	(0.443)	(0.358)	(0.158)	(0.191)	(0.484)	(0.379)	(0.663)	(0.524)	(1.657)
Constant	0.010	0.019	0.027	0.035**	0.050**	0.016	0.065**	0.078*	0.110**	0.200**
	(0.012)	(0.022)	(0.020)	(0.009)	(0.010)	(0.027)	(0.021)	(0.037)	(0.029)	(0.093)
Observations	68	56	68	68	68	68	68	56	56	44
R-squared	0.263	0.245	0.165	0.152	0.226	0.212	0.293	0.329	0.623	0.498

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) P1	(2) P2	(3) P3	(4) P4	(5) P5	(6) P6	(7) P7	(8) P8	(9) P9	(10) P10
rm_rf	0.847***	1.347**	1.074**	0.423***	0.614***	2.034***	1.995***	3.948***	5.022***	11.979***
	(0.261)	(0.571)	(0.450)	(0.135)	(0.223)	(0.612)	(0.414)	(0.817)	(0.664)	(2.033)
SMB	0.123	-0.166	0.198	0.290*	-0.035	0.580	1.067**	1.889**	0.282	1.531
	(0.303)	(0.776)	(0.523)	(0.156)	(0.258)	(0.711)	(0.480)	(0.907)	(0.737)	(2.222)
HML	-0.547**	-1.283*	-0.894*	-0.094	-0.313	-1.018	0.031	0.274	-0.204	-1.132
	(0.265)	(0.659)	(0.457)	(0.136)	(0.226)	(0.621)	(0.420)	(0.812)	(0.660)	(1.770)
Constant	0.022	0.046	0.051*	0.028***	0.053***	0.056	0.065***	0.103**	0.137**	0.397***
	(0.015)	(0.031)	(0.026)	(0.008)	(0.013)	(0.036)	(0.024)	(0.050)	(0.040)	(0.125)
Observations	56	44	56	56	56	56	56	44	44	32
R-squared	0.299	0.292	0.217	0.213	0.223	0.275	0.335	0.377	0.628	0.608

Standard errors in parentheses

*** p<0.01, ** p<0.05, p<0.1

Mutual Fund Performance Analysis through Fama French 3-Factor Model

Table 3 Fama French 3-Factor Model

Table 3 Mutual Fund Performance Analysis through Carhart 4- Factor Model

VARIABLES	(1) P1	(2) P2	(3) P3	(4) P4	(5) P5	(6) P6	(7) P7	(8) P8	(9) P9	(10) P10
rm_rf	0.978***	1.417**	1.324***	0.488***	0.640***	2.387***	2.107***	4.042***	4.693***	11.892***
	(0.262)	(0.560)	(0.447)	(0.135)	(0.232)	(0.606)	(0.426)	(0.873)	(0.692)	(2.260)
SMB	0.052	0.045	0.062	0.255	-0.049	0.387	1.006**	1.855*	0.400	1.547
	(0.297)	(0.770)	(0.507)	(0.153)	(0.262)	(0.686)	(0.483)	(0.923)	(0.731)	(2.269)
HML	-0.811***	-1.766**	-1.397***	-0.225	-0.366	-1.730**	-0.195	0.104	0.392	-0.996
	(0.288)	(0.709)	(0.493)	(0.149)	(0.255)	(0.667)	(0.470)	(0.967)	(0.766)	(2.284)
MOM	0.481**	0.978	0.915**	0.238*	0.097	1.294**	0.411	0.258	-0.906	-0.199
	(0.236)	(0.592)	(0.404)	(0.122)	(0.209)	(0.547)	(0.385)	(0.778)	(0.616)	(2.051)
Constant	0.020	0.041	0.048*	0.027***	0.052***	0.050	0.063**	0.102**	0.140***	0.395***
	(0.015)	(0.031)	(0.025)	(0.008)	(0.013)	(0.034)	(0.024)	(0.050)	(0.040)	(0.129)
Observations	56	44	56	56	56	56	56	44	44	32
R-squared	0.352	0.338	0.289	0.267	0.226	0.347	0.350	0.379	0.647	0.608

Standard errors in parentheses

Correlation Analysis

	capm_a~a	ff_alpha	carhat~a	exp_ra~o	Lage	lfam	cflow	ltna	turnover
capm_alpha	1								
ff_alpha	0.7583	1							
carhat_alpha	0.7749	0.8681	1						
exp_ratio	0.0059	-0.0601	-0.0105	1					
Lage	0.14	0.1795	0.1427	0.0218	1				
Lfam	-0.0181	-0.1057	0.075	-0.0173	-0.1413	1			
Cflow	0.1642	0.2072	0.2078	-0.0875	-0.0975	0.1561	1		
Ltna	0.1256	0.0988	0.0492	-0.2363	0.0094	0.005	0.0264	1	
Turnover	-0.1815	-0.2505	-0.2622	0.0206	0.0798	0.0246	-0.1176	0.1366	1

Regression Analysis

	(1)	(2)
VARIABLES	CAPM	CAPM_lagged alphas
lcapm_alpha		0.567***
		(0.069)
exp_ratio	0.225	0.448
	(0.359)	(0.302)
Lage	0.422**	0.182
	(0.178)	(0.167)
Lfam	-0.079	-0.139
	(0.099)	(0.090)
Cflow	0.251**	0.253**
	(0.122)	(0.109)
Ltna	0.087*	0.007
	(0.045)	(0.039)
Turnover	-0.078**	-0.015
	(0.032)	(0.028)
year2		
year3		
year4		
Constant	-1.356	-0.107
	(1.046)	(0.911)
R-squared	0.112	0.448

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1. The Asset Pricing Models applied on the data of Pakistani open ended mutual fund, declared that most of the portfolios of high return do not have significant association with the market variations, therefore it is suggested that the fund's managers should properly analyze the market variations, so that to ensure the outperforming practices by the mutual funds over the market return. They can do so by closely and continuously monitoring the market variations. Better understanding of the market variations by the managers will improve funds' performance.
2. The results indicate a negative impact of funds family and liquidity on funds adjusted return, therefore it is suggested that the fund's manager should avoid increasing the number of funds and should mature the existing fund's portfolio. As the fund family tends to increase in size than funds managers diversify their concentration and yield poor results in term of performance. The managers should stay with the same old funds, rather than launching new funds. The liquidity shows a negative impact on funds' performance, keeping the negative impact, it is suggested that these open ended mutual funds should minimize its cash holding for the redemption of its units of the investors or other strategic reasons. As excessive cash holding impact the funds return negatively. The managers should invest the excessive cash in different portfolios to generate return.
3. The results indicate a positive impact of funds age and size on funds adjusted return. Keeping in view the positive impact, it is suggested that the managers of these funds should try not to liquidate or stop investing in any of its fund and should continuously try to motivate and encourage investment in funds to increase its size in terms of assets.
4. The results also revealed a positive impact of fund expense ratio on fund adjusted return. It is therefore suggested that, if the fund's managers increase their expenses, they should ensure increase in the funds return. It is suggested for the mutual funds investors that they should not hesitate from those funds charging high expenses for their professional management.
5. The results indicate a positive impact of cash flow on fund performance. It is suggested that fund managers should encourage positive cash flow to motivate investors and enhance funds return.

V. CONCLUSION

Mutual Fund is an investment choice for small investors across the world. Mutual Fund provides an opportunity to the small investors who have not enough skills, information and knowledge of investing in capital market. This study was aimed at knowing about the Pakistan Mutual Fund industry and the investors investing behavior in mutual fund. Mutual Fund performance of Pakistan industry was first ascertained with Traditional measure (Ratios) then asset pricing models. As the single and multi-factor model show different results across the world. Some researchers believe that single factor beta is the most favorable and viable risk Factor, which determine the Returns. However many researchers believe that multi factor asset pricing models better explain the risk adjusted Return. This research study was focused on CAPM, Fama French 3-factor model and Carhart 4-Factor model. These models were applied to Mutual fund data in Pakistan from 2009 to 2017. The open ended mutual Fund data of 220 were collected on monthly basis and created sorted portfolios and ranked all portfolios on the bases of their returns. The results revealed that CAPM better perform as most of its portfolios co-efficient were found significant as compared to Fama-French 3- factor and Carhart 4-factor model. The GRS test was applied to find out which model among the three competing models better explain and predict mutual fund performance. The GRS test results documented that CAPM better explain the mutual fund performance in Pakistan as compare to Fama French-3 Factor and Carhart 4-Factor Model.

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