

## Mutual Fund Performance Persistence and Competition: Pakistan's Open Ended Mutual Fund Performance Analysis

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### **Abstract**

*Mutual Funds through its professional managers enable small investors to enjoy benefits of capital market with small amount. This study with special focus on Pakistani Mutual Fund industry, tests the suitability of traditional measures and multifactor, asset pricing models on the Mutual Fund performance. Owing to rareness of the applicability of the multifactor models in comparison to traditional measures, in evaluating Mutual Fund performance in modern day Pakistani research, the study uses CAPM, Fama French, Carhart models in the performance evaluation of Pakistan Mutual Fund. The data of 100 open-end Mutual Funds, for the period 2005 to 2017 was collected from Mutual Fund Association of Pakistan; while the risk free rates data was collected from State Bank of Pakistan and Stock data from Pakistan Stock Exchange for predicting the results, Ratio analysis, CAPM, Fama French-3 Factor and Carhart-4 factor model were used to understand its suitability. The results demonstrated that application of CAPM, affect market factors of majority of the portfolios. Where as in other two models (Fama French, Carhart) the majority of the portfolios are insignificantly affected by the size factor, value factor and Momentum factor. The Gibbon Rose Shanken unveils the suitability of the best model and justify CAPM as the better model among the three competing models in evaluate on the Mutual Fund performance in Pakistan. The study has certain implications for the managers of assets management companies as well as useful for the investors in knowing which funds perform better and which kind of funds are ideal for investment.*

**Key Words:** *Mutual Fund, Risk Adjusted Performance, Capm, Fama French-3 Factor, Carhart-4 Factor, GRS*

## **Introduction**

The assets management companies provide an opportunity to all those investors who have lack of financial expertise to manage or unable to diversify their investment. Mutual Fund act like a bridge between investors and their destined objectives, acting as an agent to invest the investors' investment in different securities. Mutual Fund is a collective investment of individual and groups in which experts (Financial Managers) invest the pool investment in various mix of investment (stock, bonds, money markets and others) for maximizing the stake of their stakeholders. The responsibility of making investing decisions in suitable portfolio is totally rests on the asset management companies (Mutual Funds AMC's). The investors invest by purchasing units to become shareholder of the Mutual Fund. Comparative to risk and return, the Mutual Funds provides high return by investing in diversified portfolio. Mutual Funds assemble and collect from small investors, and then invest in securities or assets or in mixture of it according to investors' objectives (Afza & Rauf, 2009). 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 basis, first from obtaining dividend on security, second from the increasing of security price (Razzaq, Gul, Sajid, Khan & Razzaq, 2012). 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. The open ended fund on its holder's demand continuously creates and redeem units. The term unit trust is used for it in financial market. Investor buy units and can redeem as and when deem fit at a prevailing Net Assets Value (NAV). The open ended fund units are bought and redeemed through (AMCs) Management Companies. These AMCs announce offer price and redemption price on daily basis. Similarly the Closed ended fund have fixed number of units and initially are floated same like public companies through IPO (initial Price Offer) and then be sold in Stock Exchange. The buying and selling rate are announced on daily basis in stock exchange (MUFAP 2017). The large project needs huge investment; Mutual Funds provide this opportunity by making pools through accepting investment from individual. The gap exist to evaluate Mutual Fund performance through both traditional and modern method. This study explore both traditional and modern methods to evaluate Mutual Fund performance which will fill the gap from Pakistani perspective.

## **Statement of Problem**

Investing decision is one of the critical functions of financial manager of any organization, upon which future of the organization hinges considerably. In Pakistan there are many options to destined investment; however selection of a particular option is governed by trade-off between risks and return associated with competing options. Pakistan's Mutual Fund is mostly considered as most preferred choice for long term investment by the various organizations on the pretext that it has better returns & less risk. To test the validity of these assumptions there is a dire need to carry out an in-depth empirical appraisal of its performance over the years. To carry out an in-depth empirical analysis of the Pakistani Mutual Fund, the research study aimed to conduct an analysis of performance of both types (Open & Close) funds using triangulation methods of analysis i.e. tradition methods (Ratio Analysis) and Fama French 3 factors, CAPM & Carhart 4 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.

## **Objectives**

The main purpose was to evaluate the Performance of Pakistan Mutual Funds. Study was

conducted with following objectives:

- 1) To evaluate performance of the Mutual Fund through traditional measures; Jensen Alpha, Treynor, Sharp Ratios; and Modern Models such as CAPM, 3 factors (Fama French), four factors (Carhart).
- 2) To investigate suitability of traditional measure as well as modern method in predicting performance of Pakistan Mutual Fund.
- 3) To validate whether traditional measure or modern method explain the Performance of Pakistan Mutual Fund equally in error freeway.

### **Review Of Literature**

Mutual Funds offer wide area of research investigations. Many research studies contributed in evaluating the fund performance. Sharp (1964) introduced Capital Asset Pricing theory formally CAPM. The same model was used by researcher like Linter (1965), Treynor (1965) & Mossin (1966). Treynor (1965) investigated the market impact on portfolio return. Jensen (1968) found the association of funds' performance to particular benchmark. He found that fund having positive alpha beat the market. Carleson (1970) investigated return through regression and found that majority of fund outperform market return. Mutual Funds also have a professional management having expertise to find 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 they are not a professional investor and investment is not their primary business (MUFAP, 2017). 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". 19<sup>th</sup> century in Europe especially in England & France brought some advancement and in 1868 "foreign and colonial trust" introduced that is still in operation in London stock exchange. In USA first close-ended fund as "Boston personal property fund" in 1893 was introduced. The 20<sup>th</sup> 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. Pakistan Mutual Funds were introduced by National Investment Trust (NIT) for the first time in 1962 as open-ended Mutual Fund. In 1966 Investment Corporation of Pakistan (ICP) opened close-ended fund (Ali, 2015).

In 1971 a drastic change made the way open to private section, the investment companies and investment advisor passed the rules and allowed the private sector that they can float closed-end fund, on the basis of such rules on 1<sup>st</sup> May 1983, first private close-end fund was launched as "Gold Arrow selected stock fund". In the 1990, a semi government organization named Investment Corporation of Pakistan was established starting with 26 open-end fund. In 2002 after 12 years it separated into two new lots A & B, ABAMCO and PICIC. Lot A 12 funds owned by ABAMCO limited. They combined the first 9 except 4<sup>th</sup> in one single close-ended fund (ABAMCO capital fund). The certificate holder of 4<sup>th</sup> ICP was not agreed with the process of merging. So in December 30, 2003 ABAMCO growth fund got a position of close-end Mutual Fund. Lot B 13 funds owned by PICIC limited. They combine the overall in PICIC investment fund, a single close-end fund. Afterward the PICIC assets management company owned the 26<sup>th</sup> ICP fund (SEMF) on June 16, 2004. PICIC changed its name from SEMF to PICIC growth fund. On July 30, 2004 Security Exchange Commission of Pakistan authorized PICIC growth fund (PGF) (Shah & Hijazi, 2005). In Pakistan financial sector reforms started in 1990, when private individual and groups were permitted to do their business on corporate level. In other words the Privatization of

Government owned entities changed the day to day business of the corporate sector. In 2000 a huge drastic changes in financial sector were observed when investor invest their investment through financial experts or professional managers in Mutual Fund, which had been considered nonbanking finance institutions ( Afza & Rauf, 2009). According to the survey the Pakistan fund industry worth was Rs 171 billion in 2006. Rapidly grew to PKR 385 billion, with variety of funds attracting investors like deal in fixed income fund, money market , balanced, equity, Islamic, fund of fund and tracker funds(Nazir & Nawaz, 2010). Sharp growth were observed after 2010 as much of the investor trend toward Mutual Fund industry in Pakistan. The number of Mutual Fund increased from 135 in 2010 to 158 in 2013 & in 2014 it jumped to 170, and currently in 2018 it is floating to 220 Mutual Funds. According to MUFAP (2015) the fund's net asset value in 2013 were PKR 356.867 billion out of PKR 332702 million were open ended share and PKR 24165 million were reported as close ended funds and PKR 4822 million as pension fund. These value collectively increased in 2015 to PKR 413973 million. Segmented as increased in open ended for PKR 386568 million, for close ended PKR 21417 million and PKR 5988 for voluntary pension funds (MUFAP, 2015). These figures indicate that growth in Pakistan fund industry are sharply boosting as many investor are investing in secure fund through highly skilled professional fund managers. The constant growth not only motivate investor to invest in such industry but on the other hand the researcher as well trying to dig out the reasons and conclusion for this particular industry to highlight the importance to investors and general public. Though the above facts are showing a sharp boom in fund industry, comparatively the AMC's are increasing in Pakistan at a low rate, almost only 20 AMC in MUFAP are operational.

These AMC's offering variety of funds to investors, like Islamic fund, equity, income, asset protected and balanced fund etc. Most researcher conducted researches on Mutual Fund in developed countries being the factor of data availability in developed countries using advance modeling techniques, while in developing countries some of the studies are carried out using traditional measure or single factor model which is not best fit to draw any rational conclusion for investor and financial managers. The in-depth research is the need of the day in developing and emerging world. The prevailing researches done on fund performance in emerging markets applying traditional approaches shows most of investors and managers did not understand the theme and problems connected to funds (Nazir & Nawaz 2010). Mutual Funds play a pro-vital role in effective utilization of savings collected from individual or investment of institutional investors. The growth graph of funds moving upward, in the financial market show the interest of the investor toward this mode of investment (Huhmanna, 2005). In 2006, a study conducted in Pakistan on fund industry revealed that total Mutual Fund as Rs 171 billion which is equal to US \$ 2.38 Billion (Ali, 2015). In 2009, there were 43 open-end and 22 close-end Mutual Funds in the private sector (Afza & Rauf, 2009). Currently the numbers of the open ended have reached to 220 (MUFAP) and 9 close ended funds (PSE). Such a rapid increase, since 1962 in mutual market of Pakistan testifies that investors have confidence on the fund performance and the future prospects are over whelming. Mostly studies applied traditional measures to evaluate Mutual Fund performance particularly in developing countries (Nazir & Nawaz, 2010). The modern methods have also been widely used in developed countries in Mutual Fund evaluation. carhart 4 and 3 factors Fama French models have been rarely used in evaluating fund performance in developing countries. Afza (2010), analyzed fund performance, through CAPM, and fund of fund performance. Researchers used traditional measure for evaluating Pakistani fund performance, applied sharp ratio, treynor ratio and Jensen alpha.

### **Mutual Fund Performance Persistence**

Carhart et al. (2002) argued that the survivorship biases exist in the performance persistence sample but if the sample size increased the survivorship biases would be decreased, the survivorship biases is weaknesses to performance persistence. Brown & Goetzmann (1995) argued that the prediction of past performance does not give a clear and reliable result for future, that the past better performance must be better in future, it is quite difficult and unreliable for a fund to predict better future performance on performance persistence. Pastor & Stambaugh (2002b) concluded about the US fund that the persistence is due to some other than factors like managerial ability, investor trends toward fund and financial market position. Researcher of the United Kingdom also contempt that the performance persistence does not give a clear picture of future to be same as was in past. It depend on many other factors that influence the result with time to time (Quigley & Sinquefeld, 2000).

### **Factors affecting Mutual Fund Performance**

Cash flow increased is the sign to fund assets development. As the momentum found in cash would positively affect the fund beta and thus, this would influenced the overall performance of the fund. It is because of the reality that most of the funds getting money inflow and then couldn't invested in a profitable venture as desired resulting a huge reserve of money or high inflow toward funds in the portfolio and lower level of fund beta. On the other hand, high outflow of money in funds make position for manager to liquidate fund assets which is a bad sign for fund on long run. This kind of scenario make the manager negative market time ability of the fund (Rehman & Baloch, 2016).

### **PAKISTAN MUTUAL FUND INDUSTRY OVERVIEW MUFAP**

Mufap is a trade body representing country major portion of investment, the investment of multi billion rupees in asset management industry. Assets management companies invest the pool investment of the small investors in various mix of investment (stock, bonds, money markets and others). These investments are manage in a wide variety of investment by skilled managers under the MUFAP. The role of MUFAP is to ensure transparency, Mutual Fund industry growth and high ethical conduct. AMC's operate by the Mutual Fund and these AMC's are control by Mutual Fund association of Pakistan registered as Public limited Company which is limited by Guarantee without share capital, companies ordinance 1984 (now Company Act 2017) MUFAP was established in 1996 licensed by the ministry of commerce. Mr. Zaigham Mahmood Rizvi was the founder member and ex-chairman of MUFAP. It was incorporated as public company in 2001. Initially the Mutual Fund was controlled by the Corporate Law Authority which was security wings of Finance Division Government of Pakistan, CLA was then gradually become independent in 2001 as security exchange commission of Pakistan which was a part of Asian Development Bank (ADP) capital development program. In short the assets management companies are registered as public company limited by guarantee without share capital launch Mutual Funds under Non-Banking Finance Companies NBFC rules 2008 (MUFAP 2017).

### **Meaning of Mutual Fund**

Mutual Funds is an ancient scheme of investment representing the small investors by investing their investment in a pool of money in a diversified manner by skilled and professional fund managers. These fund are invested in different business by making portfolio of bond, Bank deposits, shares, debenture, certificate and other financial instruments. MUFAP control the Mutual Fund AMC which give a safety and security to the investors.

### **Mutual Fundtypes in Pakistan**

Basically two types of Mutual Funds deals in Pakistan

- Open ended.
- Close ended.

#### **1 Open-Ended**

Open ended Mutual Funds continuously create and redeem units. These are also called Unit trusts. The management companies announce the offer and redemption prices on daily basis so one can purchase and redeem the units through these AMC's. The holder of these fund can redeem units at a prevailing Net Asset Value (NAV). Open ended fund continuously redeemed as and when the holder demands and then further purchased by other investors. Old units are redeemed on demand at a daily NAV and new units launched and traded at their daily NAV.

#### **2 Close-Ended**

Closed Ended Mutual Funds are same like stock of the public limited company. These funds have fixed number of share traded through initial public offer (IPO) initially and after yards traded in secondary market (Pakistan Stock Exchange) , the daily market rate of these close ended funds are announce on stock exchange.

#### **Mutual Fund Categories**

Security and exchange commission of Pakistan describe the following categories of Mutual Fund:-

##### **1 Equity Scheme**

The equity schemes invest in stock more often, and the revenue source of this fund consist upon capital gain and dividends, that add more value to the fund long term growth.

##### **2 Balanced Scheme**

The balance schemes invest in debts instruments and in stock as well giving investor growth via differentiated investment.

##### **3 Asset allocation Fund**

Asset allocation fund invest fund in various securities in market for maximizing the investor investment with diversified investment choices.

##### **4 Fund of Fund Scheme**

Fund of fund scheme further reinvest in other Mutual Funds which seem and persist to be give better result in future. The diversified portfolio of, money market, equity, fixed income, and balanced funds increased the capability of the fund.

##### **5 Shariah Compliant (Islamic) Scheme**

Sukak & ijara sukak is the best example of the Shariah compliant (Islamic) Schemes.

##### **6 Capital ProtectedScheme**

In Capital protected scheme original investment is guaranteed on the maturity of contact with some capital gain.

##### **7 Index TrackerScheme**

Index tracker schemes index the whole market and invest in those area which is highly in rank like investment in Pakistan Stock Exchange KSC 100 index working in selected indexed funds.

##### **8 MoneyMarketScheme**

These are considers safer comparative to other funds. Money market schemes are short investment schemes like T-bills.

##### **9 Income Scheme**

Income schemes invest in instruments like long term debt for example treasury bills, Preference shares, and TFCS, providinglong lasting income stream of fixed income.

### **10 Aggressive Fixed Income Scheme**

Aggressive fixed income schemes invest in fixed income securities.

### **11 Commodity Scheme**

The commodity scheme invests the investors' fund in various commodities like gold etc. and mostly about 70% of their investment in commodity like future contracts.

According to the choice and appetite of the investor the above funds are available to cheer the thirst of the investor regarding Mutual Funds. The investor if earn high return over a long run period could choose Equity Funds while those who intend to invest for a short term with reasonable return can select the money market fund.

### **Reason For Preference To Invest In Mutual Fund**

Mutual Fund is having incredible role in the capital market growth, mostly the investor trend in the capital market are towards Mutual Fund. The preference is due to the following reasons.

#### **1 Diversification**

Mutual Fund investment is an investment in portfolio comprising the investment by many investors allocated by fund managers using different instruments of capital market. The fund manager diversifies the investor investment for maximizing the wealth of the fund holder.

#### **2 Accessibility**

The very plus point in Mutual Fund investment is the easy accessibility of the fund the investors can buy the fund portion by filling the prescribed form available with Asset Management Companies by writing the required numbers of units intends to purchase then deposit the ascertained amount at prescribed rate.

#### **2 Professional Management**

The Mutual Fund investment procedures are performed through very technical, professional and skilled managers who know the up and down persistence of the fund in the capital market for achieving safer and yield return.

#### **Liquidity**

The Mutual Fund investment is very much liquid, as it can be very easily converted into cash as and when needed by the holder on the daily NAV or as rate prescribed by the MUFAP and PSX.

#### **Tax Credit On Investment To Individual**

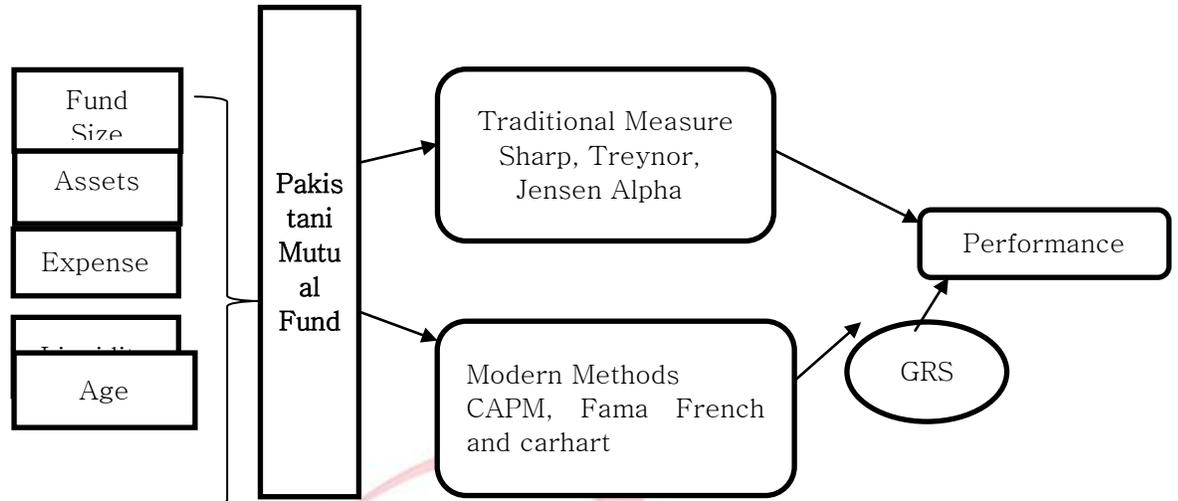
Income tax ordinance 2017, section 62, allow tax credit to the individual who is resident tax payer but not in the state of the company are entitled on investment in public limited company shares listed on Pakistan stock exchange.

Individual can enjoy the following Tax credits.

- a) Up-to 22% credit on annual taxable income of Rs. 6000000 which is maximum tax credit up-to Rs 220,417 .
- b) Up-to 20% Credit on annual taxable income of Rs. 7000000 which is maximum Tax credit to Rs 203,571.

#### **Theoretical Framework**

Theoretical framework has been framed for Pakistani funds' performance analysis based on literature review. This study finds the open ended funds, adjusted return through CAPM, Fama French Three Factor and Carhart four Factor model. After finding the adjusted return of these funds, to understand the best fitted model in the three models used, Gibbon rose Shanken test has been applied for better explaining the Mutual Fund performance in Pakistan. After the GRS the fund adjusted returns are regressed on the selected funds characteristics



### Research Methodology

The current research study was an effort to explore and analyze Pakistan Mutual Fund performance: evidence from traditional and modern measure. The current research study is limited to open ended mutual fund and examines mutual fund growth and development, framework regulating investment in mutual funds, assessment of risk-return, efficiency assessment of Pakistani mutual fund systems.

### Research Study Sample And Technique

This current study covers the performance analysis of Mutual Fund. Sample size for analysis of Pakistan Mutual Fund performance has been selected as the open ended fund on MUFAP from 2005 to 2017. CAPM, Fama French 3 factor and Carhart 4 factors model as modern methods and Treynor, Jensen Alpha and sharp ratio as traditional method were used to investigate and analyze the adjusted return using monthly data of 211 open ended Mutual Funds. 10 portfolios were derived from the data, random sampling techniques were used and annual panel data of (100) open ended funds selected for finding the impact of performance analyses of fund characteristics. The selected funds data derived for the period amid 2005 to 2017. Currently 20 AMC's are operating over 211 open ended mutual funds. Sampling consisting upon all those open ended mutual funds that intercept before July 2005 and exist till June 2017. Some of fund were dropped due to the non-availability of data for the study period. 66 funds were left which were exist from 2005 and included in the sample of the study, the remaining 34 funds were incepted after 2007, for such funds the monthly NAV of the missing period were added as average of the subsequent years so that our sample consisted on 100 open ended mutual funds. 12 years data time period started from 2005 to 2017 selected to get the return of more than 60 months data, as for estimating the beta 60 observations are commonly used (Simons, 1998).

**Mutual Fund Performance Analysis**  
**Table 4.12 Portfolio Sample Frame work**

S.No	Name and Fund Category	Number of Funds
1	Equity	20
2	Asset Allocation Fund	14
3	Fund of Fund	2
4	Capital Protected	3
5	Income Scheme	18
6	Index Tracker fund	3
7	Aggressive Fixed fund	19
8	Commodity	3
9	Islamic Sharia fund	6
10	Balanced	12
	<b>Total</b>	<b>100</b>

**Mutual fund Average risk and return (from July 2005 to June 2017)**

Fund Category	Excess Return over Benchmark(%)	Excess return over risk free (%)	$\sigma$	Cooff. Of Variation (%)	$\beta$
<b>Equity</b>	-0.191	-0.190	0.681	4.091	0.321
<b>Asset Allocation Fund</b>	-0.901	0.013	0.071	7.001	0.199
<b>Fund of Fund</b>	-0.649	0.199	0.051	3.601	0.089
<b>Capital Protected</b>	-0.691	0.023	0.023	2.321	0.210
<b>Income Scheme</b>	-1.199	-0.361	0.019	1.901	0.071
<b>Index Tracker fund</b>	-0.799	0.071	0.080	7.501	0.332
<b>Aggressive Fixed fund</b>	1.719	-0.860	0.031	20.999	0.110
<b>Commodity</b>	-0.701	0.392	0.021	3.091	0.210
<b>Islamic Sharia fund</b>	-1.287	-0.438	0.013	3.130	0.039
<b>Balanced</b>	0.849	-0.004	0.039	5.000	0.310

**Ratio Analysis**

1. Sharp Ratio

Fund Category	Sharp Ratio	Numbers of Fund having - value	Numbers of Fund having + value
<b>Equity</b>	0.792	0	20
<b>Asset Allocation Fund</b>	-0.682	12	2
<b>Fund of Fund</b>	-0.381	2	0
<b>Capital Protected Fund</b>	0.231	0	3
<b>Income Scheme</b>	-0.212	18	0
<b>Index Tracker fund</b>	-0.341	2	1

<b>Aggressive Fixed fund</b>	0.312	2	17
<b>Commodity</b>	-0.214	3	0
<b>Islamic Sharia fund</b>	-0.003	4	2
<b>Balanced</b>	-0.002	10	2

**Treynor Ratio**

<b>Fund Category</b>	<b>Treynor Ratio</b>	<b>Numbers of Fund having - value</b>	<b>Numbers of Fund having + value</b>
<b>Equity</b>	0.080	0	20
<b>Asset Allocation Fund</b>	-0.031	12	2
<b>Fund of Fund</b>	-0.021	2	0
<b>Capital Protected Fund</b>	0.020	0	3
<b>Income Scheme</b>	-0.008	17	1
<b>Index Tracker fund</b>	-0.018	2	1
<b>Aggressive Fixed fund</b>	-0.031	0	19
<b>Commodity</b>	-0.002	3	0
<b>Islamic Sharia fund</b>	-0.023	4	2
<b>Balanced</b>	-0.907	12	0

**3. Jensen Alpha**

<b>Fund Category</b>	<b>Jensen Alpha</b>	<b>Numbers of Fund having - <math>\alpha</math></b>	<b>Numbers of Fund having + <math>\alpha</math></b>
<b>Equity</b>	0.058	3	17
<b>Asset Allocation Fund</b>	-0.052	12	2
<b>Fund of Fund</b>	0.004	0	2
<b>Capital Protected</b>	0.001	0	3
<b>Income Scheme</b>	-0.050	18	0
<b>Index Tracker fund</b>	-0.041	0	3
<b>Aggressive Fixed fund</b>	- 0.060	2	17
<b>Commodity</b>	-0.009	0	3
<b>Islamic Sharia fund</b>	-0.007	4	2
<b>Balanced Fund</b>	0.003	5	7

**Research Findings**

The result showed that all models like CAPM, Fama French-3 factor and Carhart-4 Factor explain Mutual Fund performance of Pakistan. The result predicted CAPM as the best model in predicting the Mutual Fund performance in Pakistan as the GRS test quite well revealed that CAPM outperformed the rest of the two models. The result reported positive sharp ratio value for equity Fund, Fund of Fund and balanced Fund, which the rest of style funds were found having negative sharp ratio, demonstrating that equity, fund of fund and balanced funds outperform the bench

mark while the rest falls short of the bench mark. The results of treynor ration also showed positive value for equity fund, fund of fund and aggressive income fund that show a result of almost best performance comparative to the other categories of fund. Jansen Alpha result reported positive value for equity Fund, Capital protected Fund and balanced Fund, which the rest of style funds were found having negative Jensen alpha, demonstrating that equity, fund of fund and balanced funds outperform the bench mark while the rest falls short of the bench mark. The result predicted that both sophisticated and traditional measures can be used to evaluate the Mutual Fund performance of Pakistan. These can provide a vital picture for investors having intention in their area.

### Conclusion

This paper focused on knowing testability of multifactor assets pricing models to the Mutual Fund performance in Pakistan. The Mutual Fund analysis across the world is debatable concerns for the researchers. Mutual Funds channelize the saving of small investor who find hard to invest at their cost and manage these investment in profitable avenues. The study analyzed the various categories of open-end funds in Pakistan through the application of CAPM, Fama French 3-factor and Carhart-4 factor model. The study used the daily NAV of funds and stocks were obtained and then applied the validated mechanism of conversion in the light of past validated researches. The results demonstrate that CAPM along with Fama French-3 factor and Carhart-4 can explain the Mutual Fund performance but CAPM showing better suitability among the three competing models. This study has certain implications for the managers of asset management companies and the investors, who can be benefited from this study. This research can be extended to use more sophisticated and advance performance measures i.e. Fama French -5 factor model. Similar studies can also apply multi-level techniques for better comprehending the Mutual Fund performance in Pakistan. The same models can be tested for comparing conventional and Islamic Mutual Fund in Pakistan as well as emerging economies.

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