



## **“Funds Flow and Performance of Managed Funds in Pakistan”**

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### **ABSTRACT**

The main purpose of this study is to examine the mutual fund industry of Pakistan, to examine the assets allocation pattern of mutual funds, how efficiently they are allocated into various assets categories and how investors base their future investment decisions either on past performance or on the basis of risk, size of fund, and availability of alternative investments. On the basis of results it is noted that on average small and medium investors prefer investments in less risky assets and base their future investment decisions on the basis of past performance whereas big corporate investors calculate risk and make their investment decisions after complete analysis. This study uses panel regression model to test the relationship between past performance and excess returns. The results indicate that fund managers use past performance of a fund as marketing tool to attract investors to invest in a fund which are performing well in recent past. These findings are of immense importance for policy makers as well, to formulate policies which are beneficial for investors and do not allow fund managers to get advantage from investors.

**Key Terms:** Mutual Funds, Investment, Past Performance, Panel Econometric, Balanced Data

### **INTRODUCTION**

Managed Fund is an investment fund run on behalf of an investor by executor; it assumes a fundamental part for allocating idle resources to produce optimal results and reserve funds in the economy and additionally institutional investors. In Pakistan Managed funds are asset management companies which for investors put resources into stocks, securities, currency business sector instruments and different securities. Essential capacity of Managed stock is to pool small investors' funds, proficiently distribute unmoving assets and puts resources into expanded portfolios, which offered chance to investors to reduce or dispose of non- business risk of securities and procure higher returns on their reserve funds and ventures. Managed funds are particularly intended for the investors who do not have their investment funds however they don't have speculation information, data and venture atmosphere and offices and also have low risk tolerance level which is an exceptionally overwhelming aspect of Pakistan capital markets (Afza and Rauf, 2009).

Increased number of mutual funds across globe, mostly in advanced nations, is a sign of investor's preference for low risky investments (Huhmann, 2005). Throughout previous decades, this industry has encountered huge development, while, mutual fund is still in its infancy in developing countries. The development in managed funds market has lead to the formation of different funds of mutual stocks. These categories might be ordered in two

expansive sections: open and closed-end funds. The open-ended funds includes funds whose reclamation and membership of stocks, known as units, is permitted on consistent premise. On the other hand, close-ended funds, are those funds which are called up at once and subscribed at the start of the fund and they are traded in secondary markets among general public.

Managed funds are appropriate mode of investment for individual small investors who don't have market knowledge and they do not directly invest in financial and equity markets. Managed funds are developed to benefit small investors which operate under Asset Management Companies. Establishment of Mutual funds in Pakistan dates back to 1962 when units of National investment Trust were first offered to general public in an IPO, Nazir and Nawaz (2010). Closed end funds were offered to general public in June 2000, when the Investment corporation of Pakistan was privatized.

Although, managed funds industry in Pakistan has witnessed tremendous growth in the past few years but it faced a slight decreasing trend in 2013, with net asset value decreased to PKR 361,690 million in 2013 from PKR 380,538 million in 2012. Managed Funds in Pakistan are mainly divided into open ended fund, close ended fund and pension fund. As on 2013 there are 138 open ended funds, 9 close ended funds and 11 pension funds (MUFAP, 2013). Under open ended, close ended and pension funds they are further categorized into Equity, Income, commodity, capital protected, index tracker, funds of funds, and Islamic funds. Asset management companies are 26 while total numbers of funds operating in Pakistan are 158 (MUFAP, 2013); these funds offer their services to different clients with the most appropriate allocation of their savings into a number of asset categories. Small investors are usually those individuals who do not have understanding of financial markets in its true sense, they are only savers who invest in a mutual fund to channelize their savings and earn certain return on it, they mostly prefer short term gains on their investments without analyzing the market trends, in this way they avoid long term investment opportunities and earn short term gain on their savings.

The research questions for this study will be analyzed by using ten years data on quarterly basis; variables for the study will be funds flow and returns of fund, to check whether there are perceivable examples in the relationship between these two variables that can expedite recognizing investment strategies of the fund participants. The knowledge of this matter will allow fund managers to attract new investors on the basis of past performance and they will be motivated to invest their more savings into mutual funds. This is a paramount thought in advancing approaches to furnish more decisions for fund members. In the event that members of funds begin moving cash crosswise over funds built absolutely in light of past performance, this may not be best investment strategy and can prompt antagonistic results in the longer term.

### **Research Problem**

Managed funds in Pakistan is relatively a recent phenomenon, it came into existence in 1962, when the units of National Investment trust were first offered to general public, the research on this area has been very limited in Pakistan. To study the behavior of open and close ended investors, their investment decision making in securities, analysis of risk and return motivated the author to work specifically on managed funds in Pakistan. There is a great potential in this industry to grow and contribute in the financial stability of the country and motivate individuals to channelize their savings in a more efficient manner.

## Research Questions

- What are assets allocation pattern of mutual fund industry of Pakistan? How effectively they are managed and attract investors towards them?
- How investors are attracted towards investing in a particular fund, what factors motivate them in making investment decisions?
- How past performance helps an investor to invest in good performing funds and withdraws from bad performing funds? While some investors stay connected with funds that perform bad continuously.

## PROBLEM STATEMENT

“Funds Flow and Past performance of managed funds in Pakistan”

## Objectives of the Research

The main objective of this research is to analyze the different fragments of Pakistan's managed funds market and to research if there is any significant difference in the way assets are allocated into different asset categories and to examine if the flow of funds is affected by the past performance of the funds in Pakistan. This is turned out to be the far reaching investigation of assets allocation and funds flow relationship of managed funds in Pakistan. The essential focus of this paper is to study asset allocation patterns inside different subsets of the managed funds industry in Pakistan and to examine if the flow of fund is impacted by the past performance of the funds and how far does past performance helps an investor to invest in a particular fund, holding other external factors constant.

## Significance & Scope of the Research

Pakistan's managed fund industry is a small industry as compared to other developed and emerging economies. This industry has a great potential to grow investment opportunities for small investors, and therefore there is a need to assess the relationship between flow of funds and past performance. The study of assets allocation pattern will be beneficial for small investors, fund managers and policy makers, to channelize their savings/funds in an efficient manner to have more gains for the investors in a safe way. Scope of this research will be to study assets allocation patterns of managed funds, how efficiently fund managers are allocating idle resources of the investors and to examine the relationship between flow of funds and its past performance. Data for this research study will be from the managed funds of Pakistan, including all open ended, close ended and pension funds operating in the country.

## Limitations

Following are the major limitations of this research within its valid scope:

- Availability of desired data and willingness of the data provider to respond can be a critical constraint in our study.
- Difficulty in gathering data was the biggest limitation, further the data providers were also reluctant to share confidential information
- Time duration of the study is also a limitation,
- The knowledge of researcher is mainly restricted to the objectives of the research

## Key Terms

Mutual Funds, Investment, Past Performance, Panel Econometric, Balanced Data, Unbalanced Data, Asset Allocation, Asset Classes

## LITERATURE REVIEW

Extensive work has been done on Managed funds industry of developed countries, where investing in a mutual funds is an important component for the development of capital markets

since 1960s, however the managed funds industry still needs to be flourished in the developing countries like Pakistan. The existing literature on managed funds is divided into two main categories; one is the performance evaluation of managed funds as an investment opportunity for savers who can allocate their idle resources and earn profit, Mahmud and Mirza (2011), while the other researchers has tried to identify the characteristics which are fund specific and results in increased returns.

Investors make their investment decisions mostly on the past performance of a fund within an asset class. It is likely that funds having superior performance are successful in attracting new investors and inferior performance will result in outflows from the fund. A number of studies examined the relationship between performance of a fund with funds flow, Sirri and Tufano (1998), Ippolito (1992), find a positive relationship between funds flow and past performance, the study cover period from 1964-1984 of US mutual fund industry, and finds a clear underlying movement of mutual funds, that investors are more inclined towards good performers as compare to bad performers. Sirri and Tufano (1998) studied the funds flow of US equity mutual funds, the study concluded that consumers base their investment decisions on prior performance information, but do so asymmetrically, investing disproportionately more in funds that performed very well in prior period.

A study on Cognitive dissonance and mutual fund investment reveals that the investors are biased towards some funds, without any regard to their past performance; they are significant only at top quartile of the fund performance, Goetzmann and Peles (1996). Lynch and Musto (2003) documented that investors interpret past performance consistent with fund incentives, and discard those funds which underperform consistently. The model developed by Lynch and Musto (2003) reveals that change of strategy by fund managers only take place after consistently bad performance of the fund, and hence it is noted that past performance may not reveal future performance of the fund. Sawicki (2003) finds a positive relationship between past performance and funds flow, but not the convexity observed in the US funds market. Performance persistence on Australian managed retails funds was tested by Bilson et al. (2005), it was tested by using five different matrices and they find that the inadequate adjustment of risk may cause spurious persistence in excess fund returns.

The other major aspect of mutual funds is the investor's behavior towards their investment decisions. Behavioral studies on Mutual fund investors Del Guericco and Tkac (2002) reveal that the behavior of investors is significantly different between the US mutual funds and pension funds investors. Pension fund clients move their money away from poorly performing funds and do no flock disproportionately towards winners. They use various risk measurement tools like Jensen's alpha, and tracking error to evaluate performance of the funds. Whereas a mutual fund investor is inclined towards recent winners and avoiding the risk adjusted performance measures. Ranganathan, studied the behavior of individual investors towards mutual funds, and the study was an attempt to understand the financial behavior of managed funds investors in connection with scheme preference and selection.

A study on ability of mutual funds investors by Lu Zheng (1998) discussed that investors base their investment decision on the basis of short term performance of a fund during a period and make future investment decisions on the basis of fund specific information rather than evaluating the overall funds performance. Prospect theory has been originally defined by Kahneman and Tversky (1979), which defines that investors are very much depressed by the losses they face and are equivalently happy with the prospective gains on their investments. Economists have researched over this fact that investors considers the loss of \$1 as twice as

painful as the pleasure of \$1 gain received on their investments. Different investors have different prospects on their gains and losses some are persistent with the fund that is if a fund is continuously performing bad they stick to it while some move to other good performing funds. Kahneman and Tversky gave an example on this scenario about prospects of different investors, they presented groups of subjects with a number of problems, and one of the groups was presented with the following problem:

1. In addition to what you own, you have been given \$1000. You are now asked to choose between
  - a. A sure gain of \$500
  - b. A 50% chance to gain \$1,000 and a 50% chance to gain nothing

Another group of subjects were presented with another problem.

2. In addition to whatever you own, you have been given \$2000. You are now asked to choose between:
  - a. A sure loss of \$500
  - b. A 50% chance to lose \$1,000 and 50% chance to lose nothing

The results were that from the first group 84% of the respondents selected A, while from second group 69% selected B. the two problems were same in terms of net cash, however the phrasing of the question was different and interpreted differently by the respondents. Therefore it is concluded that the investors are always look forward to have gain on their investments rather the term loss is discouraging for them. Bailey et al. (2011) has studied the behavioral aspects of the US mutual funds investors, the study majorly is concerned with the two behavioral biases first being the disposition effect and narrow framing – it is evident that behavioral biased investors are poor in decision making about expenses, trading frequency and time.

The choice of investment vehicles by different groups of investors in Australian retirement funds is investigated by Speelman et al. (2007). Their results provide an interesting insight into the gender differences in investment choices. Female investors are more risk averse than male investors and young female investors exhibit the highest level of risk aversion. As the investors age, there is an indication they tend to become return-chasers. A survey of Australian investors by Fry et al. (2007) find support to the behavioral theory of investor inertia, with few surveyed participants showing an interest in changing their superannuation fund. Phillips (2011) recently examines the relative risk aversion coefficient that characterizes the representative self-managed superannuation fund investor. He shows that this particular category of investor may be too risk averse to maximize their expected growth rate of wealth accumulation.

Malhotra and Robert (1997) reported that the preoccupation of Managed Fund investors with using performance evaluation as selection criteria is misguided because of volatility of returns, which may be due to superior management or just good luck is difficult to determine. The findings of Ferris and Chance (1987), Trzeinka and Zwing (1990), and Chance and Ferris (1991) are consistent with the findings of Malhotra and Robert (1997). Lu Zheng (1998) examined the fund selection ability of MF investors and found that the investor's decisions are based on short-term future performance and investors use fund specific information in their selection decision.

Lyunch and Muso (1997) in their study concluded that the past and future performance is negatively related to fund manager's style of investment, whereas Sirri and Tufano (1998)

studied the investor's behavior towards investing in a managed fund is akin to purchasing an automobile. Marketing plays an important role to highlight the performance of funds that are performing outstanding on the contrary poor performing funds are rarely brought to light and therefore are less performance sensitive. Goetzman and Peles (1997) studied the psychological perspective of investors' investing behavior although they acknowledge that economic costs may actually be causing mutual funds investors' inertia to spend in a particular fund.

Huhmann and Bhattacharyya (2005) has worked on content analysis on advertisements of Mutual funds they studied the investors behavior on the basis of advertisement. Research demonstrates that mutual funds publicize to expand discernments of value, triumph, and respectability frequently without furnishing the data that is an investor's necessity to settle on optimal investment choices. While Gupta and Jithendranathan (2012) studied the Australian Managed funds and identified that fund managers often use past performance to advertise performance of their funds. This is an important point to note for policy makers as many fund managers use their funds past performance to attract small investors. Another study by Chen et al (2004), on fund size erode mutual fund performance, they concluded that fund size does not erode performance but liquidity of a fund and its organizational diseconomies erode the performance of a mutual fund.

Capon et al (1996), investigated the manner in which consumers make their investment decisions, they reported that investors considers many non performance attributes while making their investment decisions. When they are grouped by similarity of investment decision process, a single small group appears to be highly knowledgeable about its investments. However, most investors appear to be naive, having little knowledge of the investment strategies or financial details of their investments.

Managed funds in Pakistan are divided into open ended funds and closed end funds, MUFAP (2013), various specialists have experimentally assessed the relationship of open end funds execution with its characteristics in diverse time periods for the advanced economies, Soderlind et al., 2000; Korkeamaki and Smythe (2004). Sajid and Nawaz (2010) has worked on performance evaluation of open end managed funds in Pakistan, where they explored that among various determinants of performance of managed funds, assets turnover, fund size and expense ratio are positively correlated and have significant impact on performance of the fund, where as management fee and risk adjusted returns are negatively correlated with the fund performance. Afza and Rauf, (2009), witnessed similar trend of performance evaluation of managed funds, according to their study, among a number of funds attributes most important are returns, liquidity and 12B-1 (dummy variable) they all had significant influence on the performance of a fund.

Ali and Qudous, (2012), used panel data analysis tools of Sharpe measure and Treynor measure to evaluate the performance of mutual funds, using monthly price, dividends data and 6 months T-bills rate. The research concluded that the mutual funds in Pakistan are not performing well as there is great potential for this sector for the economic development. Sipra (2006) had criticized the performance of managed funds during 1995 to 2004, according to his research mutual funds were unable to outperform the market portfolio, and virtually all the funds were performing inferior against the benchmark of market portfolio. During the financial crisis of 2008, with the high growth period of mutual funds industry of Pakistan, the industry also faced challenges from the world financial crisis this was the period over which performance of mutual funds industry was evaluated. The industry growth resulted in evolution of a variety of funds that specialize in investments styles and cater to customized

investors' needs. The number of funds has increased dramatically since 2009, soon after the financial crisis, although the worldwide financial institutions faced a decline period but Pakistan's mutual fund industry was having growth at the same time, reason being the limited exposure of our mutual funds with international market.

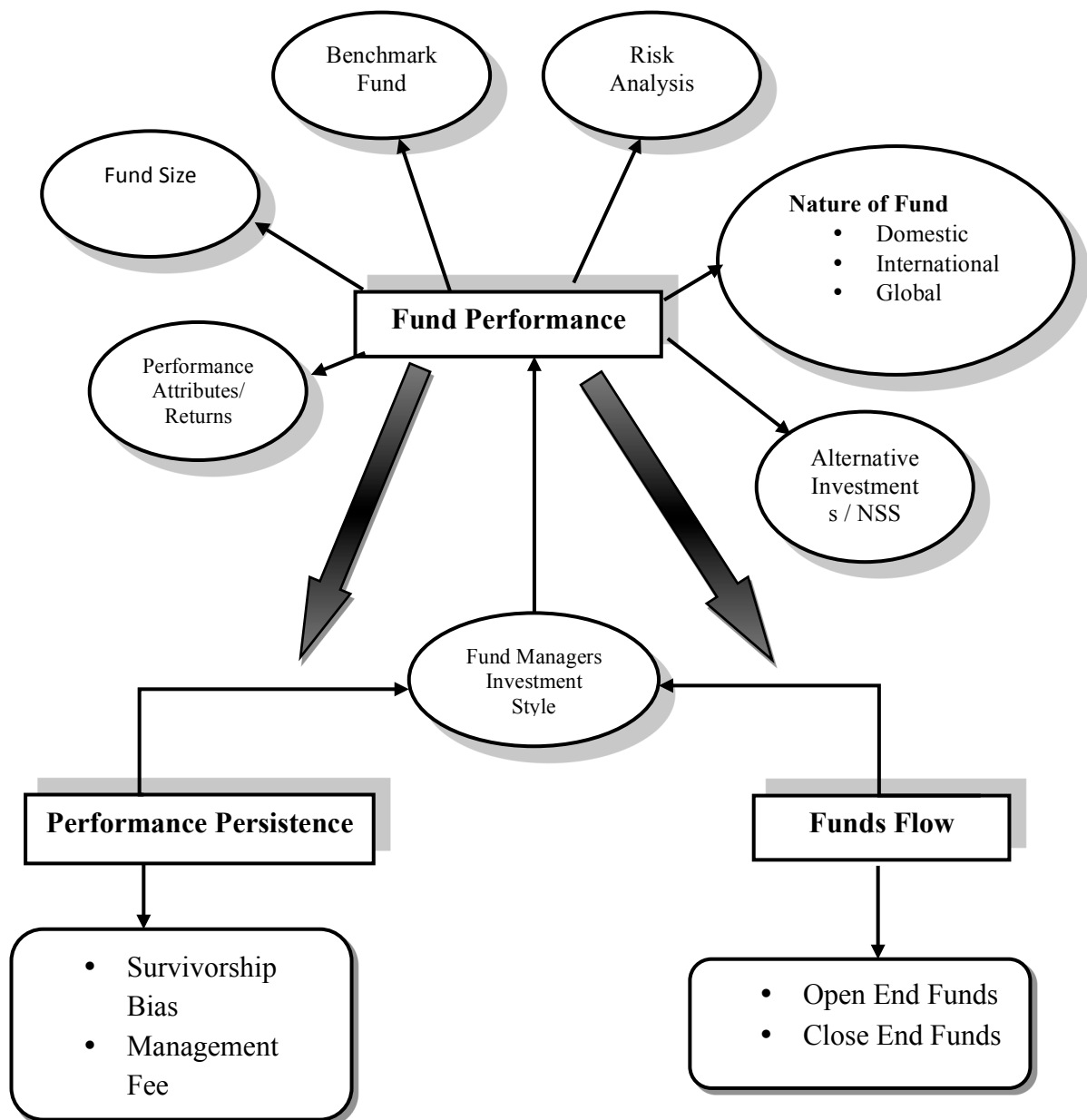
### **THEORETICAL FRAMEWORK**

The illustration below represents a summarized view of literature available on the funds flow and performance of managed funds, the performance of a fund depends on certain factors including, risk analysis, type of fund, nature of fund, comparison with benchmarks and the personal attributes and fund managers style of management in a fund all support its performance. Performance persistence of a fund is another key attribute that allows a fund to perform without having survivorship bias, low management fee and high momentum for the fund to perform under critical circumstances. Individual or retail fund investors are risk averse and prefer stable returns over wholesale investors who invest in risky assets to get higher returns on their investments. All attributes revolve around fund managers investment style, either they may make smart decisions and increase returns for investors or spoil the investment and earn low returns on even less risky assets. There is clear evidence from existing literature that investors base their investment decisions on past performance of the fund, although the fund manager is not performing well but market conditions are good and the fund is performing well then the investor will most probably invest in a fund that has good market value and is performing good in past as well.

A study on performance persistence, measuring short term performance persistence on mutual funds industry of India, Jhanwar and Sehgal (2007) examined there is no persistence found on monthly data of mutual funds, while every day information, they studied that for funds plans sorted on former period four-component unusual returns, the victors portfolio does give terrible anomalous returns of 10% per annum on post-development groundwork. Therefore observational discoveries are steady with the effective business sector theory and have suggestions for mutual funds and other oversaw portfolios depending on creative financing styles, including the "funds of fund" exchanging systems that certainly expect transient industriousness. Lynch and Musto (2003) in their study has focused on the fund managers performance which is at the core of investment, the investors invest in a mutual fund as they have less information about market trends it is fund managers who are market players and study the market trends they play tactics in investing funds in open market and generate returns for their customers. If a fund is performing continuously bad then question mark is on the performance of fund manager. Therefore our model also predicts that the relationship between fund performance with its persistence and funds flow mainly depends on the performance of fund managers which are the key players in the market.

Following Diagram is the snapshot of Studies on Performance of Mutual funds categorized by key attributes:

**Figure I: Theoretical Framework**



### Hypothesis

If investors base their future investment decisions on the basis of past performance and if they are in accordance with our literature findings then we expect to find the following;

**H1:** a performance flow relationship between funds flow and their returns, as investors would base their future investment decisions on the basis of past excess returns

**H2:** an observable, but possibly weaker performance flow relationship among the best performing funds as investors would believe that the fund will perform similar in future

**H3:** negative relationship between risk and funds flow (holding other factors constant) as the general perception of investors is to have low risk and high returns



**H4:** negative relationship between alternative investments and funds flow, as small investors would inclined towards investing in risk free investments

## RESEARCH METHODOLOGY

### Data

This research is a quantitative panel data study; panel regression model will be developed to examine the cash flows and past performance relationship of the managed funds. Data for this study is obtained from Mutual Funds Association of Pakistan and Karachi Stock Exchange, it covers the period from September 2007 to December 2013, and it contains quarterly data about the managed funds, including net cash flows, returns and Net Asset as a measure of size, risk was calculated from returns and NSS rate is used as a control variable. Numbers of funds incorporated in this study are 158 of which 138 are open ended funds, 9 close ended and 11 pension funds currently operating in Pakistan. Investments into these funds are further divided in fifteen major categories; Equity, Income, Money Markets, Aggressive income, capital protected, commodity, fund of funds, Index tracker, Islamic equity, Islamic income etc. further allocation of funds into asset classes are shown in Table I and category description are presented in Table II in Appendix. The funds flow pattern in conventional and Islamic funds are entirely different, it is assumed that conventional funds have high risk tolerance as investors are risk takers as compare to Islamic funds which are less risky and investors are also risk averse. During the past few years the investors' inclination towards investing in Islamic funds has increased tremendously.

Funds are mainly categorized into two streams first, according to the investment category and secondly, product markets. Market capitalization of open ended funds in terms of Net Asset Value (NAV) is PKR 332,702 million as on 2013, YoY growth is negative -10.88% as compared to 2012 NAV was PKR 354,309 and YoY growth was 43.90%. Market capitalization of close ended funds in terms of Net Asset Value (NAV) is PKR 24,165 million in 2013 and in 2012 NAV was PKR 23,488 million. Table III presents the complete funds profile with average returns, maximum and minimum returns for the period of the study.

**Table I: Total investments in Open End and Close End Funds**

| Category        | Average Funds under Management* | Funds under Management in 2007* | Funds under Management in 2013* | Annual Rate** | Growth |
|-----------------|---------------------------------|---------------------------------|---------------------------------|---------------|--------|
| Open End Funds  | 290,571                         | 248440                          | 332,702                         |               | 23.79% |
| Close End Funds | 38,283                          | 52401                           | 24,165                          |               | -3.44% |
| Pension Funds   | 2,622                           | 420                             | 4,823                           |               | 54.90% |
| Total Funds     | 331,476                         | 301261                          | 361,690                         |               |        |

**Note:** \* Funds under Management are PKR in Millions  
**\*\*Annual Growth Rate is in %age**

Rate of returns are calculated using the following formula, Gupta and Jithendranathan (2012);

$$\text{Equation 1: } \text{ROR}_{i,t} = \frac{\text{Net Earnings after Tax}_{i,t}}{\text{Size}_{i,t} + \frac{1}{2}\text{NCF}_{i,t}}$$

Size of the fund is measured using Net Assets during a quarter; data has been taken from MUFAP official website, NCF is the net funds flow for the  $i$ th fund for the quarter  $t$ .

For regression analysis a panel data will be created for each individual investment category. To avoid the survivorship bias, funds that were terminated or transferred are included in the dataset, provided each fund had at least 14 continuous quarterly data points. One of the likely issues that may arise in the analysis is the sudden increase or decrease in net flows during a

quarter. To address this issue, those outliers in the net flows the data for a quarter where the net flows is greater than 0.75 of the funds under management at the beginning of the quarter, will be dropped from subsequent analysis.

### **Empirical Methodology**

Investment in mutual fund involves two steps - first to identify which asset category to be selected for investment and then select a fund type within an asset category. Some investors are risk averse while others are risk takers; the decision of investment into a particular fund type depends on the risk preference of the investors. Small and medium investors have low preference for risk they invest in stable funds with constant returns, while wholesale investors have more capacity to tolerate risk, Gupta and Jithendranathan (2012). Fund managers uses their past performance as advertisement tool for future investments, if a fund is performing well in past they advertise to investors and gain their confidence, ultimately resulting in investment by investors in that particular fund type, resulting in more investment into high performing funds and withdraw their investments from low performing funds.

Returns are the most common measurement tool for investment by investors in a fund, a benchmark is used for comparing the returns however, Sensoy (2009) reported that the benchmark used are mostly not correct for the funds true investment style in US Mutual funds market. To avoid this problem the researchers used weighted average index of fund returns for each asset category. The rate of return for each category is calculated using the following formula, investment rate of return and risk free rate of return;

$$\text{Equation 2: } r_{i,t} = ROR_{i,t} - ROR_{\text{index},t}$$

The next important factor is to find an appropriate measure of risk, Sharpe ratio, Jensen's alpha, treynor ratio and tracking error are mostly commonly used measures of risk. Standard deviations being the simple of all measures of risk, as investors are also unaware of risk measurement tools therefore standard deviation is used by them to get bird's eye view of the risk component in investments. A review of the US managed funds investors by Capon et al. (1996) demonstrated that just 25 percent of the mutual funds investors knew the investment style of the fund and just 26.7 percent of those surveyed contrasted the fund return with the benchmark. They find that 14 percent of the respondent's utilized standard deviation as the measure of risk and just 4 percent utilized alpha or Sharpe measure to recognize the risk.

An alternate significant pointer of fund performance is its size, Chen et al. (2004) show that the performance of the funds diminishes with size and to control for the size impact we will utilize the lagged log size of the fund as a control variable. To modify for the momentum impact of net funds, the lagged worth of the net funds is incorporated as an autonomous variable. A panel data for each of the asset categories is created using the available quarterly data for the funds and the fixed effects regression will be conducted using the following equation:

$$NCF_{i,t} = \beta_1 r_{i,t-1} + \beta_2 \sigma_{i,t} + \beta_3 \text{Size}_{i,t} + \beta_4 NCF_{i,t-1} + \beta_5 \text{NSS}_{i,t} + \epsilon_t$$

$NCF_{i,t}$  is the log value of net cash flow of the fund,  $r_{i,t-1}$  is the excess return on investment measured by quarter to corresponding quarter change in returns, sigma is the tracking error (Standard deviation),  $\text{Size}_{i,t}$  is the log value of fund size, NSS rate is the national Saving scheme rate an alternative to the mutual fund investment which gives risk free return, and FE is the fixed effect of  $i$ th fund.

### DATA ANALYSIS

This section of the report covers the analysis of the results. Table II presents descriptive statistics (fund category wise) based upon quarterly data. According to the results on average the highest return yielding fund is fund of funds with mean return of 11.29% and standard deviation 1.066, the lowest return yielding fund is Islamic capital protected fund -8.43% and its standard deviation is 0.2495. Whereas balanced fund is high on risk 0.0405 and its volatility is 0.0732, while Islamic income fund is low on risk 0.00093 and deviation from mean is 0.0019. However pension funds and Islamic Pension funds are big in size while low on risk and return, net cash flows inward and outward movement of cash is high in pension and Islamic pension fund.

**Table II: Descriptive Statistics (Fund Category Wise)**

| Fund Category Name        | Return   |        | Risk   |        | Size    |         | NCF    |        | NSS Rate |        |
|---------------------------|----------|--------|--------|--------|---------|---------|--------|--------|----------|--------|
|                           | Mean     | SD     | Mean   | SD     | Mean    | SD      | Mean   | SD     | Mean     | SD     |
| Equity                    | 0.0921   | 0.7319 | 0.0190 | 0.0236 | 1,172   | 383     | 102    | 119    | 0.1183   | 0.0140 |
| Income                    | 0.0998   | 0.4664 | 0.0078 | 0.0206 | 633     | 1,293   | 22     | 43     | 0.1183   | 0.0140 |
| Money Market              | 0.0442   | 0.6946 | 0.0171 | 0.0508 | 944     | 1,964   | 2,532  | 10,893 | 0.1183   | 0.0140 |
| Aggressive Income         | 0.0840   | 0.4769 | 0.0084 | 0.0394 | 2,518   | 3,837   | 66     | 393    | 0.1183   | 0.0140 |
| Asset Allocation          | (0.0418) | 0.4364 | 0.0155 | 0.0275 | 507     | 369     | 47     | 53     | 0.1195   | 0.0139 |
| Balanced                  | 0.1129   | 1.0665 | 0.0405 | 0.0732 | 1,962   | 1,330   | (75)   | 202    | 0.1183   | 0.0140 |
| Capital Protected         | 0.0289   | 0.2256 | 0.0018 | 0.0031 | 9,020   | 40,459  | 78     | 275    | 0.1183   | 0.0140 |
| Fund of Funds             | 0.0481   | 0.1296 | 0.0056 | 0.0189 | 1,251   | 545     | 166    | 242    | 0.1143   | 0.0116 |
| Index Tracker             | 0.0248   | 0.4665 | 0.0078 | 0.0177 | 221,082 | 61,783  | 1,433  | 12,969 | 0.1183   | 0.0140 |
| Islamic Equity            | 0.1118   | 1.0216 | 0.0371 | 0.0697 | 5,528   | 2,160   | 306    | 843    | 0.1183   | 0.0140 |
| Islamic Income            | 0.0407   | 0.1615 | 0.0009 | 0.0019 | 3,030   | 1,365   | 144    | 190    | 0.1183   | 0.0140 |
| Islamic Money Market      | 0.0110   | 0.1265 | 0.0012 | 0.0022 | 7,425   | 741     | 42     | 481    | 0.1143   | 0.0116 |
| Islamic Asset Allocation  | 0.0235   | 0.2713 | 0.0026 | 0.0037 | 2,050   | 3,005   | 78     | 270    | 0.1183   | 0.0140 |
| Islamic Balanced          | 0.0927   | 0.3798 | 0.0082 | 0.0105 | 947     | 509     | 47     | 376    | 0.1167   | 0.0114 |
| Islamic Capital Protected | (0.0843) | 0.2495 | 0.0047 | 0.0088 | 591     | 259     | 23     | 409    | 0.1165   | 0.0117 |
| Pension                   | 0.0295   | 0.2812 | 0.0029 | 0.0037 | 363,131 | 302,081 | 21,560 | 21,930 | 0.1183   | 0.0140 |
| Islamic Pension           | 0.0204   | 0.2618 | 0.0025 | 0.0037 | 133,845 | 60,650  | 9,971  | 8,952  | 0.1183   | 0.0140 |

**Note:** Returns (%), Risk (%), Size (Millions), NCF (Million) and NSS rate (%)

On average mutual funds have volatile returns and risk factor is also not high except of balanced fund. Coming towards the control variable of National Saving Scheme rate it is evident that during the period of study the highest yield on this form of investment is 11.95% and the lowest is 11.429%, simultaneously it is less risky and the volatility in the market rates is very rare as the government announces saving rates in every quarter. The skewness and kurtosis (see Appendix) shows that the data is rightly skewed. Value of Kurtosis is greater than 3, in four variables and less than 3 for two variables which indicates that leptokurtic

distribution of data exists with sharper than normal distribution with values concentrated around mean and thicker tails.

**Table III: Funds Investment Profile**

| <b>Fund Category</b>      | <b>Net Assets (Millions)</b> | <b>Average (%)</b> | <b>December 2007 (%)</b> | <b>December 2013 (%)</b> | <b>Minimum (%)</b> | <b>Maximum (%)</b> |
|---------------------------|------------------------------|--------------------|--------------------------|--------------------------|--------------------|--------------------|
| <b>Open Ended Funds</b>   |                              |                    |                          |                          |                    |                    |
| Equity                    | 59,936                       | 0.07               | 0.04                     | 0.21                     | 0.44               | -0.07              |
| Income                    | 64,955                       | 0.09               | 0.08                     | 0.08                     | 0.13               | 0.07               |
| Money Market              | 78,917                       | 0.10               | 0.09                     | 0.08                     | 0.12               | 0.08               |
| Aggressive Income         | 2,831                        | 0.08               | 0.09                     | 0.12                     | 0.12               | 0.04               |
| Asset Allocation          | 3,781                        | 0.04               | -0.08                    | 0.05                     | 0.63               | -0.08              |
| Balanced                  | 4,536                        | 0.05               | 0.02                     | 0.11                     | 0.29               | -0.04              |
| Capital Protected         | 2,675                        | 0.04               | 0.05                     | 0.02                     | 0.14               | 0.02               |
| Commodities               | 57                           | (0.09)             | -                        | (0.07)                   | -0.01              | -0.16              |
| Fund of Funds             | 285                          | 0.08               | 0.11                     | 0.06                     | 0.11               | 0.05               |
| Index Tracker             | 107                          | 0.09               | -0.16                    | 0.13                     | 0.15               | -0.16              |
| Islamic Equity            | 8,274                        | 0.08               | -0.01                    | 0.13                     | 0.31               | -0.06              |
| Islamic Income            | 21,383                       | 0.10               | 0.09                     | 0.09                     | 0.12               | 0.08               |
| Islamic Money Market      | 5,779                        | 0.10               | 0.08                     | 0.08                     | 0.13               | 0.08               |
| Islamic Aggressive Income | 324                          | 0.07               | 0.05                     | 0.12                     | 0.10               | 0.03               |
| Islamic Asset Allocation  | 1,181                        | 0.04               | 0.05                     | 0.08                     | 0.23               | -0.05              |
| Islamic Balanced          | 897                          | 0.06               | -0.01                    | 0.09                     | 0.15               | -0.02              |
| Islamic Capital Protected | 527                          | 0.05               | 0.00                     | 0.02                     | 0.19               | 0.00               |
| Islamic Funds of Fund     | 305                          | 0.07               | -                        | 0.07                     | 0.07               | 0.07               |
| Islamic Index Tracker     | 196                          | 0.11               | -                        | 0.14                     | 0.15               | 0.06               |
| <b>Close Ended Funds</b>  |                              |                    |                          |                          |                    |                    |
| Equity                    | 27,167                       | 0.13               | -0.38                    | 0.19                     | 0.65               | -0.3787            |
| Balanced                  | 1,104                        | 0.06               | -0.29                    | 0.17                     | 0.58               | -0.293             |
| Income                    | 2,102                        | 0.11               | 0.06                     | 0.07                     | 0.19               | 0.0554             |
| <b>Pension Funds</b>      |                              |                    |                          |                          |                    |                    |
| General Pension Funds     | 752                          | 0.08               | -0.01                    | 0.11                     | 0.22               | -0.02              |
| Islamic Pension Funds     | 1,204                        | 0.07               | -0.06                    | 0.10                     | 0.18               | 0.01               |

Source: MUFAP Yearbook 2013

### Assets Allocation Pattern of Mutual Funds in Pakistan

Table III, presents the assets allocation pattern of mutual funds in Pakistan, first objective of the study, which mainly classifies the funds into two main categories; first Open ended funds and second close ended funds. Open end funds are those funds in which new units are created on continuous basis and redeem issued units on demand, whereas close ended funds are those funds which have fixed number of shares like a public company and are floated in market as an IPO. While studying the assets allocation pattern of mutual funds in Pakistan it was noticed that the major investments by investors are in open end funds as compare to close end fund, and within open end funds the major inclination of investment is in Equity, Income, Money Market and Islamic Income funds, with respect to size. As far as returns are concerned highest yield on return is in Islamic Index tracker fund 11% and money market and Islamic income and

money market funds give 10% return on average. The pattern also predicts that the Islamic funds perform better as compare to conventional funds, as Islamic funds involve less risky assets and give investors stable returns, high volatility is not witnessed in Islamic funds.

Other major finding of assets allocation pattern is that in close end funds all fund perform good and have high returns Equity fund 13%, Income fund 11% and balanced fund 6%. In comparison with open end and close end funds pension funds are also growing with an extraordinary pace, its growth is almost 54%, the objective of pension fund is to provide steady returns with a moderate risk for investors by investing in a portfolio of equity, debt, and money market instruments. Pension Funds are means for individuals to save for their retirement encompassing a broad array of savings plan from social security to individual contribution defined or benefit defined company plans. The awareness of investing in pension fund is growing among pension holders which earlier were not well informed, but now as the advertisement of various AMCs are increasing the pension holders are getting knowledge about investment into moderate risky assets and channelizing their savings in a proper way.

### Correlation Matrix

Correlation matrix in Table IV presents the correlation among dependent and independent variables of 21 fund categories, the correlation between net flow and return is 9.79%, for net assets and net flows it is 67.99% statistically significant at 1% level of significance, risk and net flows is 7.31% and funds flow and NSS rate is 9.52%. The correlation between size and return is 2.12% highly significant at 5% level of significance, correlation between risk and return is 6.52%, risk and size is 15.83%, NSS with return, size and risk is 3.06%, 5.00% and 8.52% respectively. Correlation matrix indicates that the chances of multicollinearity is very low as there is no clear pattern seen in the data as not a single variable has high collinearity with another variable, the results are statistically significant at 1% level of significance.

|                   | <b>Net flows</b> | <b>Return</b> | <b>Net Assets</b> | <b>Risk</b> | <b>NSS Rate</b> |
|-------------------|------------------|---------------|-------------------|-------------|-----------------|
| <b>Net flows</b>  | 1.0000           |               |                   |             |                 |
| <b>Return</b>     | 0.0979           | 1.0000        |                   |             |                 |
| <b>Net assets</b> | 0.6799**         | (0.0212)      | 1.0000            |             |                 |
| <b>Risk</b>       | (0.0731)         | (0.0652)**    | 0.1583**          | 1.0000      |                 |
| <b>NSS Rate</b>   | (0.0952)         | (0.0306)      | (0.0500)          | 0.0852      | 1.0000          |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The higher correlation does not indicate that there is sufficient evidence that there will be higher cointegration among the variables. Correlation matrix only shows the magnitude of relationship among variables whereas the coefficient of correlation shows the magnitude and direction of the relationship among variables. However from the correlation matrix it is evident that NSS rate has least relationship between the variables of funds flow and past performance, this is might be because NSS is a substitute for investments in mutual funds of those investors who prefer risk free investments and fixed returns on their investments.

## Panel Regression Model Selection Criteria

| <b>Table V: Model Selection Criteria</b> |                |               |                |
|--|----------------|---------------|----------------|
|  | 1              | 2             | 3              |
| VARIABLES                                | Pooled<br>NCFL | fixed<br>NCFL | Random<br>NCFL |
| Return                                   | 2.409***       | 2.062***      | 2.227***       |
|  | -0.559         | -0.651        | -0.641         |
| Net assets L                             | 0.0436         | -0.088        | 0.0111         |
|  | -0.0283        | -0.0663       | -0.0393        |
| Risk                                     | 0.0195         | -0.0256       | 0.0246         |
|  | -0.12          | -0.105        | -0.103         |
| NSS rate                                 | 11.07***       | (7.500)*      | 9.008**        |
|  | -4.255         | -4.482        | -4.455         |
| NCF L1                                   | 1.35E-06       | 2.59E-06      | 1.95E-06       |
|  | -1.85E-06      | -1.69E-06     | -1.66E-06      |
| Constant                                 | 2.579***       | 4.047***      | 3.062***       |
|  | -0.604         | -0.777        | -0.632         |
| Observations                             | 303            | 303           | 303            |
| R-squared                                | 0.70           | 0.560         |                |
| Number of fund                           | 17             | 17            | 17             |

Standard errors in parentheses

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

For selection of appropriate model first poolability test of Baltagi (2005) was applied, the results are presented in Table V, suggests that Pooled regression model can be applied to data. Returns, size and NSS rate are significant at p<0.01, the value of rho is 0.24047 which is greater than 0 therefore fixed effect model can be applied, whereas the results of Hausman Specification test shown in Table VI; are also significant for pooled regression but the value of adjusted R square is 70.04% which is very high for panel data, therefore moving towards fixed effect it is noted that its results are also statistically significant and value of adjusted R square is 55.90% meaning that there is less probability of multicollinearity error in the data as compare to pooled results and the Hausman test favored to apply Fixed Effect model on the data. Therefore for this study we may apply both pooled and fixed effect model, but the results of fixed effect are theoretically sound as compare to pooled regression model.

## Standard Error Robustness

**Table VII: Standard Errors Robustness**

| VARIABLES    | 1               | 2            | 3            | 4            | 5            |
|--------------|-----------------|--------------|--------------|--------------|--------------|
|              | Control<br>NCFL | Ind1<br>NCFL | Ind2<br>NCFL | Ind3<br>NCFL | Ind4<br>NCFL |
| Return       |                 | 2.363***     | 2.437***     | 2.440***     | 2.409***     |
|              |                 | -0.512       | -0.515       | -0.517       | -0.515       |
| Net assets L |                 |              | 0.0484**     | 0.0486**     | 0.0436*      |
|              |                 |              | -0.0207      | -0.0208      | -0.0224      |
| Risk         |                 |              |              | 0.0194       | 0.0195       |
|              |                 |              |              | -0.0185      | -0.0186      |
| NSS Rae      | 9.520*          | 10.86**      | 10.87**      | 10.92**      | 11.07**      |
|              | -4.948          | -4.809       | -4.791       | -4.825       | -4.841       |
| NCF L1       |                 |              |              |              | 1.35E-06     |
|              |                 |              |              |              | -9.30E-07    |
| Constant     | 3.254***        | 2.952***     | 2.569***     | 2.560***     | 2.579***     |
|              | -0.605          | -0.595       | -0.634       | -0.64        | -0.641       |
| Observations | 303             | 303          | 303          | 303          | 303          |
| R-squared    | 0.13            | 0.55         | 0.68         | 0.68         | 0.70         |

Robust standard errors in parentheses

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

Table VII, presents the results of Robustness of standard errors for all funds, from the table it can be concluded that the control variable NSS rate is robust with all variables. While other variables returns, net assets, risk and lagged net flows are also significant as per their p-values, and showing the robustness of standard errors. By applying the different mix of variables for the regression model the value of adjusted R square is lowest at control variable and highest in the model when all the independent and control variables are used. Robust standard errors are used to correct standard errors of the model misspecification, which could give bias results.

## RESULTS

An important result of this study is the statistically significant negative relationship between funds flow and size of fund, which is evident from the past studies as well, Chen et al. (2008), Pollet and Wilson (2008) Gupta and Jithendranathan (2012). The magnitude of negative relationship is high in open ended funds as compare to close end funds, however close ended fund are irresponsive to the control variable and open ended funds have statistically strong negative relationship with National Saving scheme, as they are an alternative investment for investors who are risk averse and look forward for stable return, similar relationship between risk and return is reported by Nafees and Ahmed (2012). The possible explanation of this would be that while investing in an open end fund, size of fund does not matter to them however the presence of alternatives like National Saving schemes may attract customers towards alternative investment while they give less importance to risk as a measure of future investment decisions. However, investors of open ended fund do cater credit risk factor somehow (by investing with healthy capitalized mutual fund), however they may face liquidity issues (if there exists some lock-up period), while close-ended fund investors can liquidate their holding anytime in the market.

Similarly size of fund has negative relationship with funds flow of close ended funds and

negative relationship with risk, as the investors of close ended funds are risk averse and the alternative investment like NSS have impact on their investments. High yield rates on NSS are detrimental to the close ended funds, since they are traded on exchange, any systematic risk cannot be ruled out for example if NSS rates raised, the equity market will face pressure as fixed avenue is now yielding more, once equity face pressure, anything listed on exchange such as closed end funds face some systematic risk.

### Panel Regression model

$$NCF_{i,t} = \beta_{jri,t} + \alpha \sigma_{i,t} + dSize_{i,t} + eNCF_{i,t-1} + fNSS_{i,t} + \epsilon_t$$

$$NCF_{i,t} = 4.046 + 2.062r_{i,t} - 0.0256\sigma_{i,t} - 0.087Size_{i,t} + 0.00000259NCF_{i,t-1} - 7.500NSS_{i,t} + \epsilon_t$$

The results of overall panel regression of all funds are outlined above while individual funds panel regression results are attached in Appendix, of the 13 major fund categories 10 have positive relationship between excess returns and net funds flow, whereas only 3 funds show negative trend including balanced, index tracker and Islamic Equity fund, the results are significant at 1% level. The coefficients of risk are significant for all funds at 1%.

The negative sign of coefficients of risk indicates that there exists negative relationship between net flows and returns. On average small investors are very much influenced by past performance of the funds rather than analyzing the variability of the returns by standard deviation of lagged excess returns<sup>1</sup>. Ratings of funds are another major proxy for investors to make their investment decisions either to invest in a particular fund or invest in another fund which yields higher return and have well past performance. A possible explanation can be found in the way investors choose their funds using fund ratings. Unlike the developed countries mutual fund rating methodology, which until recently was completely based on quantitative assessment, while some rating agencies use mixture of qualitative and quantitative factors for assessment of a fund (Faff et al., 2007). Since risk is one of the quantitative variables, its relative weight within the Pakistani mutual fund rating system may be lower than in the developed countries.

Relationship between net flows and lagged net flows is insignificant for all funds while it is highly significant for aggressive income fund. Whereas for the overall panel regression model the magnitude of net flows and lagged net flows is highly significant with positive relationship, similar results are noted by Frino et al (2005), they stated that the relationship between past net flows and current quarter net flows is rather difficult to explain, however a possible explanation could be that this positive relationship is due to general growth in the particular asset class. Gruber (1996) explained such a relationship may have been due to the fact that investors are locked into a particular fund due to restricted choices allowed by their savings accounts and this restriction may also be associated with the effect of marketing and reputation of the fund.

The results of control variable NSS rate for this regression model are insignificant for individual funds except money market fund, but it is highly significant for overall panel regression model. It is due to the fact the individually funds are not affected by NSS rate but as

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<sup>1</sup> Lagged Excess returns are calculated by: Quarter to corresponding quarter change in returns



a whole it affects the entire mutual funds industry and it is a potential alternative for channelizing savings and making effective investment decisions. While discussing the various aspects of panel regression model we should not overlook the fact there are some differences between the investors and choice of their investment into a particular type of fund. For example, it is evident that the investors who chose equity, income and Islamic investments clearly increased the cash net flows to those funds that performed well, on contrary investors of other funds did not increase their investments based on past returns.

### CONCLUSION

Pakistan's mutual fund industry has grown tremendously over the last decade, the inclination towards savings and investment has led this industry to grow and excel. This paper is an attempt to study various segments of managed funds market in Pakistan, and to examine whether there are any significant differences in how assets are allocated into various assets categories. One aspect of this paper is to evaluate how investors base their investment decisions on the basis of inflows and outflows in funds. We have analyzed our data by categorizing the funds into two major categories; open ended fund and close ended fund, on the basis of this it is concluded that there is significant differences in asset allocation pattern and investment behavior of investors.

Investors base their future investments decisions primarily based upon past performance of the fund, this is evident in this study as well, however the investment pattern in scenario of Pakistan is such that major investments are in open ended fund and a few investors invest in close ended funds, therefore the inclination is majorly towards studying the investment patterns of open ended funds. Risk is the least significant variable of this study as small investors in Pakistan are not educated about the risk involved in their investments, they are only concerned about earning returns, however corporate investors carry out complete risk analysis before making the investments decisions for their company. Risk appetite of balanced fund is highest among all other funds reason being the investments in hybrid securities, Islamic income fund in Pakistan has the lowest risk involved in investment. It is clearly evident from the results that the Islamic funds are low on risk as compare to conventional funds, as Islamic Funds has grown tremendously over the past few years.

This study is of severe importance for policy makers to study and analyze the patterns of asset allocation in Pakistan mutual fund industry in order to erode the probability of misallocation of investments by uninformed investors, who play in the market to generate artificial hype and get advantage of increased prices, similarly like stock market's major players, who artificially create bullish trend in market and when the market collapse they are safe while the small investors have loss on their investments. This study is an important contribution in the mutual fund industry of Pakistan, which is still in its growth stage and there is ample potential in this industry. Lastly, our findings are of immense importance to policy makers as far as understanding investors' behavior and creating appropriate policies, particularly in light of those strategies pointed at furnishing investors without lifting a finger of moving their investments crosswise over various types of funds.

*In the words of Morgan Stanley Dean Witter,*

***"In the end, not all asset management (mutual fund) companies will survive, [but] for firms that have built a 'culture of excellence' over the years, have segmented their customers efficiently, built brand, and delivered performance, the ongoing opportunities to take market share have never been more significant."***

**Table II: Fund Category Classification**

| <b>Fund Category Name</b> | <b>Definition</b>  |
|---------------------------|--|
| Equity                    | Mutual funds investors investments in shares, also known as Stock Fund   |
| Income                    | A type of mutual fund that emphasizes current income, either on a monthly or quarterly basis, as opposed to capital appreciation.  |
| Money Market              | A money market fund's portfolio is comprised of short-term (less than one year) securities representing high-quality, liquid debt and monetary instruments. Investors can purchase shares of money market funds through mutual funds, brokerage firms and banks. |
| Aggressive Income         | The investment objective of the portfolio is to provide an efficient investment medium whereby investors can participate in a portfolio that will seek to generate a high level of income, as well as the potential for capital growth.                          |
| Asset Allocation          | A mutual fund that provides investors with a portfolio of a fixed or variable mix of the three main asset classes - stocks, bonds and cash equivalents - in a variety of securities.   |
| Balanced                  | A fund that combines a stock component, a bond component and, sometimes, a money market component, in a single portfolio. Generally, they are called "Hybrid funds".   |
| Capital Protected         | A type of mutual fund that guarantees an investor at least the initial investment, plus any capital gains, if it is held for the contractual term.   |
| Commodity                 | These funds are true commodity funds in that they have direct holdings in commodities. For example, a gold fund that holds gold bullion would be a true commodity fund.  |
| Fund of Funds             | A mutual fund that invests in other mutual funds. This method is sometimes known as "multi-management".  |
| Index Tracker             | An index fund that tracks a broad market index or a segment thereof. Such a fund invests in all, or a representative number, of the securities within the index.   |
| Islamic Equity            | Funds invested in shares in compliance with Shariah  |
| Islamic Income            | To generate superior risk adjusted returns by investing in short, medium and long-term Shariah Compliant Fixed income instruments.   |
| Islamic Money Market      | Funds invested in Money Markets in compliance with Shariah   |
| Islamic Aggressive Income | Funds invested in Aggressive income in compliance with Shariah   |
| Islamic Asset Allocation  | Funds invested in Asset allocation in compliance with Shariah  |
| Islamic Balanced          | Funds invested in balanced fund in compliance with Shariah   |
| Islamic Capital Protected | Funds invested in capital protected securities in compliance with Shariah  |
| Islamic Fund of Funds     | Funds invested in Mutual Funds in compliance with Shariah  |
| Islamic Index Tracker     | Funds invested in Index tracker in compliance with Shariah   |
| Pension                   | A fund, from which pensions are paid, accumulated from contributions from employers, employees, or both.   |
| Islamic Pension           | Similar to Pension Fund but in Islamic way.  |

**Table VI: Hausman Test**

| VARIABLES      | 1                     | 2                     |
|----------------|-----------------------|-----------------------|
|                | Fixed<br>NCFI         | Random<br>NCFI        |
| Return         | 2.062***<br>-0.651    | 2.227***<br>-0.641    |
| Net assets     | -0.088<br>-0.0663     | 0.0111<br>-0.0393     |
| Risk           | -0.0256<br>-0.105     | 0.0246<br>-0.103      |
| NSS Rate       | (7.500)*<br>-4.482    | 9.008**<br>-4.455     |
| NCF L1         | 2.59E-06<br>-1.69E-06 | 1.95E-06<br>-1.66E-06 |
| Constant       | 4.047***<br>-0.777    | 3.062***<br>-0.632    |
| Observations   | 303                   | 303                   |
| R-squared      | 0.056                 |                       |
| Number of fund | 17                    | 17                    |

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

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