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Full Length Research Paper

Performance evaluation of open end and close end mutual funds in Pakistan

Bilal Nafees, Syed Muhammad Amir Shah and Safiullah Khan

University of Central Punjab, Lahore, Pakistan.

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The study is about evaluating the performance of close and open end mutual funds in Pakistan. It provides guidance to the investors on how risk-adjusted-performance evaluation of mutual funds can be done and how they can use performance analysis at the time of investment decision making. Different researches had been conducted on mutual fund industry of Pakistan to evaluate the performance but the focus of majority of researches was on close end funds. This research considered both close and open end funds. The risk adjusted performance of both types of mutual funds has been measured through traditional measures such as Sharpe measure, Sortino measure, Treynor measure, Jensen differential measure and information measure. Secondary data has been used for performance evaluation. The results through Sharpe measure and Sortino measure are negative of sample data. It shows risk adjusted negative return to investors. Treynor measure results of few funds are better; however, overall result of Treynor measure is also negative. The Jensen differential measure and information measure results have documented negative performance, whereas, market portfolio result of all measures is positive which shows positive return per unit of risk. The results of all measures indicate that mutual fund industry is below as compared to market portfolio performance. Risk adjusted performance results of mutual funds depict negative risk adjusted returns to investors. The probable reason for negative risk adjusted returns of mutual fund industry can be setback by global financial crisis to the market during sample period.

Key words: Portfolio, mutual funds, risk adjusted performance, open and close end funds.

INTRODUCTION

Mutual fund industry of Pakistan has worth of multibillions. Mutual fund industry nowadays, one of the emerging industry of Pakistan. Mutual fund industry has shown a phenomenal growth over the last few years. The growth is bi-directional, besides the growth in Net Asset Value (NAV), the number of mutual funds has also increased. Despite huge financial setback in 2008, mutual fund industry suffered less by the global and domestic financial recession as compared to some other financial sectors. Pakistan, being an Islamic country, mutual funds are developed on Islamic based concept, that is why people have more tendency to invest in the mutual funds.

The basic concept behind mutual funds is to generate a Pool of money that is collected by the professionals and then invested in profitable activities to maximize the investor's wealth. The management just charges their operating expense for managing the fund. There are several other benefits to invest in the mutual funds, like Liquidity, Diversification, Variety and Convenience. By liquidity, which mean investing in mutual funds provides benefit to the investor to sell shares/units on any business day, by law, the company is bound to buy back at NAV price. Diversification defines investing in mutual fund which provides the opportunity for investors to automatically diversify the investment in such a way that all the money is pooled then invested into many different investment opportunities that allow the investors to automatically diversify them.

Variety implies that the mutual fund industry is emerging that is why numerous varieties of mutual funds are available to the objective investor who has a choice of investment. Convenience implies that while investing in mutual funds, units/shares can be purchased and sold

*Corresponding author. E-mail: bilalnafees_5929@hotmail.com. Tel: +92-42-5880007.

Table 1. Net asset value of the mutual funds industry of Pakistan (2001 to 2010).

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
NAV of funds (PKRMillions)	21,070	25,341	50,455	93,819	1,25,058	1,59,798	3,00,841	3,35,226	2,04,826	1,99,699

Source: MUFAP (Mutual Munds Association of Pakistan).

Table 2. Open end and close end equity based funds returns (2006 to 2010).

Variable	Years				
	2006	**2007**	**2008**	**2009**	**2010**
Returns of Open End Equity Based Funds (%)	27.66	42.93	-3.88	-38.12	19.83
Returns of Close End Equity Based Funds (%)	9.2	24.24	-1.62	-32.16	13.49

Source: MUFAP (Mutual Funds Association of Pakistan).

through broker, investment bank, insurance agent, by e-mail, over the internet via online buying and selling or over the telephone. Companies also send monthly, quarterly, semi annually and annual statement to investors of their account information. All companies are bound to follow the regulations that are oversight by the security exchange commission of Pakistan (SECP). Therefore, it is mandatory for all the funds to give information about their objectives, their investment strategy, Information about how investor can purchase units/shares and how mutual fund would redeem units, risk of investment and information about fund fees and expenses.

The mutual fund industry of Pakistan has worth of multibillions, and the history of the mutual funds industry starts from 1962. At first, an open end mutual fund was introduced by an institute called NIT (National Investment Unit) which was regulated by the government. Substantial development in mutual fund industry took place in late 2000, when the government decided to windup the ICP (Investment Corporation of Pakistan) which was the regulatory authority of NIT and decided to privatize all the funds managed by NIT. The mutual funds industry griped rapid growth when private entities were allowed to maintain mutual funds.

Statistics of 2010 shows the total net worth of mutual funds industry is near two hundred million (Table 1), indicating huge development in the industry as compared to year 2001 (89.44%). The mutual fund industry of Pakistan should try to earn more trust of the investors to increase the interest of investor for investment in mutual funds because it is a longstanding issue if mutual funds operate for the interest of Asset Management Company or for the interest of the investors.

The performance of open end funds is better than close end funds as far as return on equity is concerned. On the contrary, the open end equity funds faced more loss as compared to close end equity funds during 2008 and 2009. In 2009, open end funds faced 5.96% more loss as compared to close end funds. In 2010, open end fund earned 6.32% more return on equity as compared to close end funds (Table 2).

LITERATURE REVIEW

Sharpe (1966) conducted research to develop such technique that can help the investors to evaluate mutual fund performance. He concluded that performance can be determined by considering risk of returns and dividing average excess return by risk, which is a meaningful and theoretical measure. If return of fund's portfolio is volatile, then it means that fund carry risky portfolio.

Jensen (1967) conducted a research and determined the technique, Jensen alpha, to measure the risk adjusted performance of mutual funds. To provide better returns to the investor, the cost and benefits analysis of the decision should be done more closely before making investment decision.

Daniel et al. (1997) who did a research to measure the performance of mutual funds based upon benchmark, concluded that when a strategy is proposed by the managers based on fundamental analysis, then he/she should expect that strategy will outperform simpler. Mechanical nature of strategies can be implemented at a cost which is substantially lower. So, if the active portfolio is unable to beat the performance of market than mechanical strategies, that mean managers may be wasting their time.

Carhart (1997) conducted a research to determine the persistence performance of the mutual funds, where he explored that the funds expense and all the charges of any type have significant impact on the performance of the mutual funds, and as long as the expense increases, the fund return decreases. Further, having a look over the net asset value (NAV) of the mutual funds (Figure 1), it can be determined easily that the load funds performance is not better than no- load funds and investors should not invest in such funds whose performance is not constantly

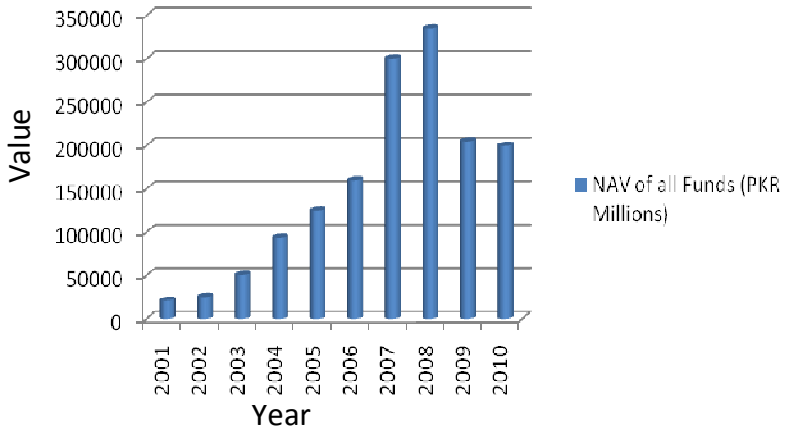

Figure 1. Net Asset Value of All Mutual Funds in Pakistan.

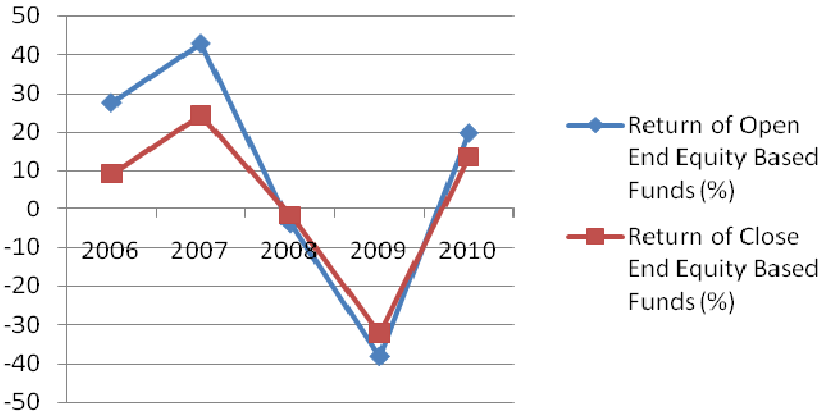

Figure 2. Return of open and close end equity based mutual funds in Pakistan.

positive (Figure 2).

Shah and Hijazi (2005) who conducted a research to evaluate the performance of mutual fund industry of Pakistan concluded that the funds which underperform usually face diversification problem. In the annual report, the risk associated with the fund should also be stated, so that investors can compare risk with expected returns to before making investment decision. Further, to enhance the investor interest to invest in the mutual funds can be made possible through the offer of new mutual funds which should be distinctive on the base of objectives.

Bauer et al. (2005) conducted a research on ethical perspective of the mutual funds and determined that the funds which have unprecedented growth is due to ethical run of mutual fund markets. After keeping the constant to different variables such as size of the funds and transaction cost, they determined that statistically results are insignificant. On the contrary, statistically returns of mutual funds are less as compared to mutual funds, which operate through conventional manner. Bauer et al. (2005) conducted a research on New Zealand mutual funds, and concluded that the balanced funds underperformed the market, whereas the funds whose objective is to invest in the equities of such mutual funds is usually excess than the market because of active management style. They concluded that the persistence performance of the mutual funds is due to the passive investment strategy and not the active management strategy. Further, the management expense ratio of the equity based funds and load charges are negatively correlated. As long as the fund size increases, the funds return also increases. It helps to achieve the economies of scale and led the basis of more actively managed portfolio. Using statistical technique, they argued that funds whose alpha value is negative significantly, their future performance is likely to be risky. So the investors should avoid investing in such funds.

Keswani and Stolin (2006) conducted a research to determine the performance of the mutual fund sector and concluded that sector competitiveness affect the mutual fund performance because if number of players are small, then the competition will be less intensive and mutual

funds will not be able to perform well. The persistent performance of mutual funds depends on the competitiveness of the sector. Moreover, performance of mutual funds sector can be determined through the use of total number of funds available in the sector and total number of matured mutual funds in the sector.

Sipra (2006) conducted a research to evaluate the performance of mutual fund industry of Pakistan for 1995 to 2004 and concluded that performance of funds is not better, relative to the market performance, only small number of funds performance was above the market performance and that performance was not consistent in nature. Further, results denotes semi strong form of market efficiency.

Afza and Rauf (2009) who conducted a research to evaluate the performance of open end mutual funds explored that returns which are risk adjusted is positively correlated with the age, turnover and expenses of the fund. Further, using regression analysis, they found no significant difference in the results of funds which have load charges and which do not have load charges. The size of assets cannot be used as a measure to distinguish the superior and inferior fund. Moreover they stated that investor should have a look over the past performance of funds while selecting superior and inferior fund.

Crespo (2009) who conducted a research on Spanish mutual fund to determine the ethical implication of the fees, used Logit model to determine the relationship among the fees or charges of the mutual funds and investor behavior, explored that funds which contain no front load, investors tendency to invest in such mutual funds is subject to price sensitivity. That mutual funds which charge high fee and redemption charges, investors of such funds expects more return because of imposition of high charges charged by the fund management. High charges made by the fund imply that the management is earning more and it also indicates high expense; so the ultimate benefit obtained by the management rather gives benefit to the investors. Although the load funds charged high fee due to lack of sophistication of the investors, investors usually own small capital that is why they avoid spending their search cost.

Joop and Verbeek (2009) for research used multifactor model to evaluate the performance of mutual funds, explored that proxies of the model use to evaluate the performance of mutual funds return provides better result. Proxies to evaluate the performance of mutual funds are based on the portfolio of hypothetical stock, which do not take into account the cost of a transaction, impact of trade, and restriction of trading, further that with use of multi factor model it can also be determined that whether managers were able to take in account the effect of value premium, size premium and premium of momentum, for this purpose the excess return of the funds were determine. Moreover, they claimed that if the alpha value comes zero, it means that fund manager run the fund with the value factor and if the value comes non-zero it means that manager run according to the market factor.

Khalid et al. (2010) conducted a research to evaluate the performance of close end mutual funds using two new ratios which have not been used earlier to evaluate the performance of mutual funds, concluded that the close end mutual are not performing well due to fluctuations in the capital market. The managers need to be more efficient to earn good returns and use such strategies which can ensure better returns. Budiono and Martens (2010) did a research on how an investor can make decision while investing in mutual funds, explored that considering ability ratio and expense ratio as variables along with the traditional variables, like determining the excess return by using tools that help to determine the risk adjusted returns can be much more helpful to determine the real performance of the mutual funds in longitudinal way. The use of past performance to determine the alpha value is not suitable because this technique does not predict the significant alpha while using the other information along with the past performance data like fees, load charges increases the value of alpha significantly.

Hartzalli et al. (2010) who conducted a research to evaluate the performance of real estate mutual funds concluded that funds which are actively managed by the managers due aggressive and timing market strategy are more likely to generate the higher return for the investors. Moreover, funds whose tendency is not to invest in single segment, for them, other benchmark is selected based on the preferred horizon of investment. Moreover, fund can earn superior return on the basis of information available to the fund manager because the manager can use this information to come up with the best diversified portfolio to earn more return.

RESEARCH METHODOLOGY

Population

Population of all mutual funds operating in Pakistan has been taken because research mainly focuses on the performance of mutual funds industry of Pakistan. Data can be obtained conveniently; this is another reason of selecting the population of mutual fund industry of Pakistan.

Sample data

A total of eight close end and eleven open funds from the mutual fund industry of Pakistan have been selected for performance evaluation from the population and all funds are equity based and balanced funds. Moreover, all those funds are selected whom annual reports from 2006 to 2010 are available. The objective of equity and balanced funds is to invest in the equities and balanced funds also prefer to invest most of the portion of investment in the equities. That is why market performance has been selected as relative benchmark performance to determine the excess returns. Panel data has been used for the analysis which, stacked by the unit, such as, after selection of the mutual fund, data from 2006 to 2010 has been taken for each fund. The data is a balanced pool.

Data collection sources

All the reports have been downloaded from the respective web sites of asset management companies of mutual funds ranging from 2006 to 2010. Market data has been collected from Business Recorder web site. Treasury bills data has been collected from Economic data of the state of Pakistan that is available on web site of state bank of Pakistan.

Variables selections

Profit after taxation amount has been obtained from the income statement, and net asset value amount has been taken from statement of assets and liabilities to calculate the returns. Treasury bills data has been used as risk free rate or as bench mark rate. For beta calculation, fund returns have been used on y-axis and market returns on x-axis. To calculate the market return, KSE-100 index values have been used. For information measure, high average return has been used as benchmark that reflects highest average performance.

Measures for analysis

Fives measures have been used for performance evaluation of mutual funds for both open end funds and close end funds: 1) Sharpe measure; 2) Sortino measure; 3) Treynor measure; 4) Jensen differential measure; 5) Information measure.

Sharpe measure

This measure was developed by William F. Sharpe in 1966 to determine risk adjusted performance such as the average excess return earned by funds over per unit of risk, during time span taken for performance evaluation. It tells whether returns of portfolio are due to smartness of management or due to taking excess risk. The formula of Sharpe measure is as follow:

$$\text{Sharpe measure} = \frac{R_p - R_f}{Stdv_{RP}}$$

Where: Rp= average return of portfolio; Rf= average risk free; $Stdv_{RP=}$ standard deviation of portfolio returns.

Sharpe measure is divided into three components: average return of funds, average risk free return and standard deviation of portfolio returns. Average return is calculated by geometric mean of portfolio's return. Average excess return is calculated by subtracting average fund return from average risk free return and then average excess return is divided by the standard deviation of fund returns. If answer is positive and more than one that means fund has performed well and indicates smartness in decisions, higher measure result represent better risk adjusted performance. The negative Sharpe measure represents that performance of risk free assets is better than the performance of the securities selected for the investment.

Sortino measure

Sortino measure was introduced by Frank Sortino in 1944. Sortino measure also measures risk adjusted performance of funds. It is modified form of Sharpe measure. Down side risk is taken for calculation of Sortino measure to divide excess returns of portfolio instead of standard deviation that is the major difference between Sortino and Sharpe measures. The Sortino measure ensures that risk, more realistically, has been taken into account for performance evaluation because negative values of the excess returns are used to calculate downside risk, whereas in Sharpe Measure calculation down side and upside both risk are used to calculate standard deviation. The formula of Sortino measure is as follow:

S=(R-T)/DV

Where; R= average portfolio return; T= average (MAR) minimum acceptable return; DV= downside-volatility.

Sotino measure is divided into three components: average portfolio return, average minimum acceptable return and down side volatility. After calculating excess return of each year which is the difference of portfolio return and MAR (risk free return), if value of excess return is positive then zero is allocated to that value and if the excess return is negative then the same value is used with negative sign to calculate standard deviation. The standard deviation of all values is taken over a time span and taken into account for calculation. In such a way, the down side risk is calculated. The average return of portfolio is calculated by geometric mean over the time span taken into account for evaluation which is of five years. Average (MAR) represents average risk free return, and it is also calculated by geometric mean and is used as benchmark return. The difference of average return of portfolio and average minimum acceptable return is taken to calculate average excess return. The average excess return is divided by the down side risk to calculate Sortino measure. If its answer is positive and higher, it indicates better performance of fund.

Treynor measure

Treynor measure was developed by Jack Treynor. It measures risk adjusted performance of fund over per unit of systematic risk. Treynor's risk adjusted performance indicates how much excess return has been earned by over per unit of systematic risk. This measure is also known as reward to volatility. The formula of Treynor measure is as follow:

$$\text{Teynor measure} = \frac{R_p - R_f}{\beta}$$

Where Rp = the observed average fund return; Rf = the average risk free return; β = coefficient as a measure of systematic risk.

$$\beta = \frac{\sum(rm - rf) * (ri - rf) - n * \sum(rm - rf)/n * \sum(ri - rf)/n}{\sum(rm - rf)^2 - n * \sum((rm - rf)/n))^2}$$

Where rm = market return; ri = portfolio return; rf = risk free return; n = number of observations.

Three different values are used for calculation of Treynor measure; average return of portfolio, average risk free return and beta. Average return of portfolio and average risk free return is calculated by geometric mean of fund's return over the time span taken into account for performance evaluation. The average return of the portfolio is subtracted from average risk free return to determine excess return. Beta is the value which represents degree of volatility of mutual fund returns against the returns of financial market. Beta value can be determined through regression, assuming the returns of the fund as Y-axis values and market returns as X-axis values. The average excess return is divided by the beta of each fund to determine the Treynor measure. If the answer of Treynor measure is

high, it means that fund management has earned high yield over per unit of market risk. Treynor measure tells the performance of mutual fund in relation to volatility of fund against market, not in relation to its own volatility. It is the most important advantage of Treynor measure.

Jensen differential measure

Jensen measure was developed by Michael Jensen in 1967. It is also known as Jensen alpha. Jensen measure is used to measure risk adjusted performance. It is used to compare the average excess return of the portfolio with predicted return determined through CAPM (Capital Asset Pricing Model) for given beta of portfolio and market return. To evaluate the performance of the mutual fund manager, investor should not look at overall portfolio return but also look at the risk attached with the portfolio. If two mutual funds have same level of return on equity but the risk of both portfolio is different than investor will prefer to invest in such fund which carry low risk. Formula of Jensen measure is as follow:

$$R_p - R_f = \alpha_p + \beta_p [R_m - R_f] + €_p$$

Rp = average return of portforlio; Rf = average risk free return; Rm = average market return; €p= error term; α p and β p = both are parameters of the model.

Three different values are used to calculate Jensen alpha average return of portfolio, average risk free return and average market return. Excess returns of the portfolio are determined by taking the difference of portfolio returns and risk free returns each year and values of this difference are considered as Y-axis values. Excess market returns are determined by taking the difference of market return and risk free returns and values of the market excess returns are considered as X-axis values. By applying regression on Y and X values, alpha value and significance (t-value) value is considered for analysis. Positive value of alpha denotes that fund has earned excess return and if value of alpha is negative that means fund has unable to outperform against market performance. Positive alpha also denotes that manager has outperformed the market with better stock picking skills.

Information measure

Information measure was introduced by Thomas Goodwin in 1998. Information measure determines alpha component over per unit of standard deviation of excess returns. Alpha return is attributable to manager skills regarding stock picking option. It deducts the effect of movements of market in returns and adjusts it for the risk taken. It gives pure figure that is used to evaluate good portfolio management. The formula of information measure is as follow:

$$\text{Information measure} = \frac{(R_p - R_f)}{S_{p-1}}$$

Where Rp = average return of portfolio; Ri= return of benchmark; Sp-i = average tracking error (standard deviation of the excess returns determined by taking the difference of portfolio returns and benchmark returns).

Three different values are required to calculate information measure average return of portfolio, average bench-mark return and average tracking error. Average return of the portfolios is determined by geometric mean over the time span taken into account for analysis, after that, highest average return is selected as benchmark return. The difference of portfolio returns and benchmark returns is taken to determine excess return for each year. Standard deviation of excess returns is calculated. Average excess return is calculated by taking the difference of average portfolio return and average benchmark return after this average excess return is divided by standard deviation of excess returns. In such way, information is calculated. If the answer of information measure is positive, then it means fund performance is better over per unit of risk of excess returns. If the funds have earned higher return than information measure, result will be high.

RESULTS AND INTERPRETATION

Sharpe measure

Market performance is better and above as compared to close and open end mutual funds having Sharpe measure of 0.513. Atlas Stock Mutual Fund performance is better over the last five years because it has the highest Sharpe measure which is 0.33 and Pakistan stock market fund performance is lowest over last five years and its Sharpe measure result is -1.36, on average, Sharpe measure result is -0.51 as far as all open end mutual funds are concerned in the sample. First capital mutual fund performance is better because of having highest Sharpe measure which is 0.46 and Meezan Balanced Fund performance is lowest and its Sharpe measure result is -1.39, on average Sharpe result of Sharpe measure is -0.29 as far as all close end funds are concerned in the sample. Average performance of the industry including close end and open end mutual funds is -0.42 over the last five years calculated through Sharpe measure (Table 3).

Sortino measure

Performance of market portfolio is better and above the performance of open and close end mutual funds, the result of market performance calculated through Sortino measure is 1.02. Atlas Stock Market Fund performance is better and its Sortino measure result is 0.42 which is better as compared to other mutual funds in the sample. Pakistan Stock Market Fund performance is lowest with -1.69, average Sortino measure answer is -0.61 of all open end mutual fund in the sample. First Capital Mutual fund performance is above over the performance of all close end funds in the sample which is 0.62 and Meezan Balanced Fund performance is lowest (-1.86) as compare to other mutual funds in the sample, average value of Sortino measure result is -0.38 of all close end funds in the sample. The overall result of the industry calculated through Sortino measure for sample data is -0.52 including open and close end funds (Table 4).

Treynor measure

The beta of most open end mutual funds is less than one,

Table 3. Sharpe measure results.

Mutual fund name	Average returns	Excess returns	Standard deviation	Sharpe measure
Market KSE 100	29.06	18.35	35.78	0.513
Open end mutual funds				
Pakistan Capital Market Fund	-15.23	-25.94	24.52	-1.06
Atlas Stock Market Fund	21.53	10.82	32.33	0.33
Pakistan Stock Market Fund	-21.39	-32.10	23.62	-1.36
Pakistan Strategic Allocation	14.50	3.80	27.26	0.14
Crosby Fund	-29.31	-40.01	45.22	-0.88
JS Islamic Fund	22.31	11.60	42.86	0.27
JS KSE30 Index Fund	21.46	10.75	59.30	0.18
JS Large Cap Funds	-20.29	-31.00	50.83	-0.61
Unit Trust of Pakistan	-23.77	-34.48	33.23	-1.04
AKD Index Tracker Fund	-9.91	-20.61	25.59	-0.81
National Investment Trust Unit	-16.07	-26.78	29.84	-0.90
Close end funds				
AKD Golden Fund	-17.64	-28.35	31.89	-0.89
Meezan Balanced Fund	-10.59	-21.30	15.33	-1.39
Asian Stock Fund	10.37	-0.34	26.20	-0.01
First Capital Mutual Fund LTD	22.40	11.69	25.53	0.46
Pakistan Premier Fund Limited	19.75	9.04	33.57	0.27
PICIC Growth Fund	14.05	3.34	23.92	0.14
PICIC Investment Fund	15.86	5.15	28.02	0.18
Meezan Islamic Equity Fund	-23.63	-34.34	30.08	-1.14

which means that managers' strategy against market risk is defensive and those whose beta is greater than one means that fund was being managed through aggressive strategy. Atlas Stock Market fund has highest result of Treynor measure (12.2), Pakistan Stock Market fund performance is lowest because of having low Treynor measure (-56.6) and the average result of Treynor measure of all open end funds of sample is -22.77. Beta of all close end funds is less than one which means all close end funds had defensive strategy against market movement. First Capital Mutual Fund performance is better, while on the contrary, Meezan Balanced Fund performance is lowest at .94 and -49.78 respectively; average performance result of all close end funds of sample is -4.27. Average result of Treynor measure including all open end and close end funds of sample is -17.1 (Table 5).

Jensen differential measure

JS KSE30 fund performance is better amongst all open end funds because its alpha value is positive (0.96), while all other funds in the sample has negative alpha value, Js Islamic fund performance is lowest in the sample of open end mutual fund (-16.85). The average result of alpha of all mutual funds is -8.32. No fund among close end funds in the sample has positive alpha, the Asian Stock Fund performance is lowest (-20.53). The average value of alpha is -7.39 of all close end funds of sample. The overall average value of alpha is -7.93 including open and close end funds (Table 6).

Information measure

The result of market portfolio measured through information measure is 0.21, which means that market has earned excess return of 0.21 over per unit of volatility of excess returns. Js Islamic Fund performance is better as compared to all funds in the sample and its average return has been used as benchmark return to calculate information measure of all open end funds (22.63). The performance of Js Large Capital Fund is lowest and result of its information measure is -3.32. The average value of information measure of all open end mutual funds is -1.53. The First Capital Mutual Fund performance is above over the performance of all close end funds (0.46) and its average return value has been used as benchmark return. Meezan Balanced Fund performance is low amongst all close end mutual funds (-1.39). The information measure result of all close end mutual funds is -0.29. The average

Table 4. Sortino measure.

Mutual fund name	Average returns	Excess returns	Down side risk	Sortino measure
Market KSE 100	29.06	18.35	18.07	1.02
Open end mutual funds				
Pakistan Capital Market Fund	-15.23	-25.94	17.04	-1.52
Atlas Stock Market Fund	21.53	10.82	25.73	0.42
Pakistan Stock Market Fund	-21.39	-32.10	18.97	-1.69
Pakistan Strategic Allocation	14.50	3.80	24.17	0.16
Crosby Fund	-29.31	-40.01	37.93	-1.05
JS Islamic Fund	22.31	11.60	39.01	0.30
JS KSE30 Index Fund	21.46	10.75	37.94	0.28
JS Large Cap Funds	-20.29	-31.00	44.75	-0.69
Unit Trust of Pakistan	-23.77	-34.48	29.41	-1.17
AKD Index Tracker Fund	-9.91	-20.61	25.08	-0.82
National Investment Trust Unit	-16.07	-26.78	25.28	-1.06
Close end funds				
AKD Golden Funds	-17.64	-28.35	25.93	-1.09
Meezan Balanced Fund	-10.59	-21.30	11.46	-1.86
Asian Stock Fund	10.37	-0.34	26.36	-0.01
First Capital Mutual Fund LTD	22.40	11.69	18.79	0.62
Pakistan Premier Fund Limited	19.75	9.04	29.10	0.31
PICIC Growth Fund	14.05	3.34	20.30	0.16
PICIC Investment Fund	15.86	5.15	23.01	0.22
Meezan Islamic Equity Fund	-23.63	-34.34	23.83	-1.44

value of information measure of industry is -1.01 including all open and close end funds of the sample (Table 7).

SUMMARY AND CONCLUSION

This study evaluates risk adjusted performance of mutual funds over five years ranging from June 2006 to June 2010. After evaluating the risk adjusted performance of open and close end funds, the following results have been inferred. Sharpe measure result of nine funds is positive including market portfolio but less than one, which indicates over per unit of portfolio risk the excess return is less than one. The result of Sharpe measure reflects bad performance of the industry. Sortino measure results of eight funds are positive but less than one, which means over one unit of down side risk the excess return is less than one and the average result of the industry is negative.

Treynor measure depicts that beta value of most mutual funds is less than one that means defensive strategy had been adopted, only few funds whose beta is more than one against market movement that were being managed aggressively. Performance of eight funds from the sample of twenty portfolios is positive, which is better and average result of the industry give a picture of low as well as negative performance.

The Jensen alpha measure results show that only one fund has positive alpha but t-value of that fund is not significant and all the other funds in the sample has negative alpha value that means no fund except one has performed well. The results of information measure also represent such situation which is similar to the other measures. Performance of many funds is substantially low as compared to benchmark performance.

The average result of information measure represents negative performance of the industry over per unit of risk calculated through excess returns. The KSE-100 index portfolio results calculated through all measures of risk adjusted performance are positive, which means that market portfolio performance is better as compared to mutual fund performance. Mutual fund industry faced huge set back due to recession of financial year 2008 and due to which performance of the industry sharply went down but the performance in 2010 is better and positive as far as terminal performance is concerned.

There are few limitations of this research such as Fama French Measure which has not been applied. This research is only on the equity and balanced mutual funds, irrespective of whether open or close end fund.

Table 5. Treynor measure.

Mutual fund name	Average returns	Excess returns	β=Slope of funds	Treynor measure
Market KSE 100	29.06	18.35	1	18.35
Open end mutual funds				
Pakistan Capital Market Fund	-25.94	-15.23	0.54	-47.9
Atlas Stock Market Fund	10.82	21.53	0.89	12.2
Pakistan Stock Market Fund	-32.1	-21.39	0.57	-56.6
Pakistan Strategic Allocation	3.8	14.5	0.73	5.2
Crosby Fund	-40.01	-29.31	0.96	-41.8
JS Islamic Fund	11.6	22.31	1.14	10.2
JS KSE30 Index Fund	10.75	21.46	1.45	7.4
JS Large Cap Funds	-31	-20.29	1.23	-25.2
Unit Trust of Pakistan	-34.48	-23.77	0.79	-43.9
AKD Index Tracker Fund	-20.61	-9.91	0.6	-34.5
National Investment Trust Unit	-26.78	-16.07	0.75	-35.6
Close end funds				
AKD Golden Funds	-17.64	-28.35	0.84	-33.86
Meezan Balanced Fund	-10.59	-21.3	0.43	-49.78
Asian Stock Fund	10.37	-0.34	0.54	-0.63
First Capital Mutual Fund LTD	22.4	11.69	0.38	30.94
Pakistan Premier Fund Limited	19.75	9.04	0.91	9.93
PICIC Growth Fund	14.05	3.34	0.62	5.36
PICIC Investment Fund	15.86	5.15	0.73	7.06
Meezan Islamic Equity Fund	-23.63	-34.34	0.79	-43.42

Table 6. Jensen differential measure.

Mutual fund name	Alpha value	t -value
Open end mutual funds		
Pakistan Capital Market Fund	-12.21	-1.36
Atlas Stock Market Fund	-6.02	-1.33
Pakistan Stock Market Fund	-2.94	-0.37
Pakistan Strategic Allocation	-9.74	-1.85
Crosby Fund	-0.73	-0.04
JS Islamic Fund	-16.85	-1.78
JS KSE30 Index Fund	0.96	0.06
JS Large Cap Funds	-16.13	-0.91
Unit Trust of Pakistan	-5.89	12.78
AKD Index Tracker Fund	-12.26	-1.28
National Investment Trust Unit	-9.74	-1.09
Close end funds		
AKD Golden Funds	-5.19	-0.91
Meezan Balanced Fund	-1.64	-3.45
Asian Stock Fund	-20.53	-2.30
First Capital Mutual Fund LTD	-2.25	-0.20
Pakistan Premier Fund Limited	-9.93	-2.37
PICIC Growth Fund	-9.52	-2.05

Table 6. Contd.

PICIC Investment Fund	-8.88	-1.65
Meezan Islamic Equity Fund	-1.20	-0.23

Table 7. Information measure.

Mutual fund name	Average returns	Average excess returns	Standard deviation of excess returns	Information measure
Market KSE 100	29.06	6.6	31.05	0.21
Open end mutual funds				
Pakistan Capital Market Fund	-15.23	-37.54	27.06	-1.39
Atlas Stock Market Fund	21.53	-0.78	13.02	-0.06
Pakistan Stock Market Fund	-21.39	-43.70	20.85	-2.10
Pakistan Strategic Allocation	14.50	-7.81	15.73	-0.50
Crosby Fund	-29.31	-51.62	20.19	-2.56
JS KSE30 Index Fund	21.46	-0.85	34.89	-0.02
JS Large Cap Funds	-20.29	-42.60	13.83	-3.08
Unit Trust of Pakistan	-23.77	-46.08	13.90	-3.32
AKD Index Tracker Fund	-9.91	-32.22	20.95	-1.54
National Investment Trust Unit	-16.07	-38.38	15.06	-2.55
JS Islamic Fund*	22.31	11.60	42.86	0.27
Close end funds				
AKD Golden Funds	-17.64	-40.04	20.99	-0.89
Meezan Balanced Fund	-10.59	-32.98	21.49	-1.39
Asian Stock Fund	10.37	-12.03	29.26	-0.01
Pakistan Premier Fund Limited	19.75	-2.64	26.31	0.27
PICIC Growth Fund	14.05	-8.35	17.68	0.14
PICIC Investment Fund	15.86	-6.54	18.60	0.18
Meezan Islamic Equity Fund	-23.63	-46.03	25.61	-1.14
First Capital Mutual Fund LTD*	22.40	11.69	25.53	0.46

*Performance of these funds has been used as bench mark performance.

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