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The Claim of Mutual Funds Managers Of Having Efficient Portfolio Than Capital Market, Is It True?

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Abstract

This study is about evaluating the level of risk in the returns of mutual funds in Pakistan. This study inherits pioneer characteristics because risk analysis has been done through traditional risk measures such as standard deviation, beta and alpha along with ARCH and GARCH models. The capital market portfolio, closed end mutual funds index and open end mutual funds index has been analyzed. The results show that capital market portfolio is more risky than open end mutual fund index. The results determined from statistical measures and ARCH and GARCH also show that closed end funds are more risky than open end and capital market. Mangers need to be more proactive to select superior stocks to avoid volatility in returns.

Key words: Mutual Funds, Risk, Volatility, ARCH, GARCH

1. Introduction

The mutual funds industry of Pakistan has received vast amount of attention. Mutual funds have been working as investment vehicle not only for individual but also for institutional investors due to the fact that they are managed by professionals. Investing in mutual provides liquidity, diversification and variety to the investment. Limited research has been conducted on the mutual funds industry of Pakistan. Whereas, the industry is going through emerging phase therefore extensive research is required.

Mutual fund industry of Pakistan has worth of billions in Pak rupees. Mutual fund industry is one of the emerging industries 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 the number of mutual funds has also been increased. It is very often claimed by the mutual funds managers that they have efficient portfolio. Despite huge global and local financial setback in 2008, mutual fund industry of Pakistan suffered less by the global and domestic financial recession as compared to some other financial sectors (Nafees, et al., 2011).The liquidity and 12b-1 ratio has significant impact on the performance of mutual funds. The size of the asset should not be considered to find out the superiority or inferiority of mutual fund in Pakistan (Afza & Rauf, 2009).The mutual funds usually underperform due to problem of diversification. The mutual fund management must disclose the level of risk associated with the investment so that investors can make decision about the real performance (Shah & Hijazi, 2005).The ranking of the mutual funds changed frequently due to fluctuation in the capital market of Pakistan. This volatile behavior is not suitable especially for the closed ended mutual funds. It also indicates that mutual funds industry is on flourishing phase(Khalid, Abbas, & Shah, 2010).Most of the equity mutual funds in Pakistan holds large cap portfolio rather than holding value oriented portfolio. The performance of such mutual funds is inconsistent. These mutual would bear extreme negative returns during bearish trend in the market(Nazir & Nawaz, 2010). The expense ratio and asset turnover has positive relation with growth of mutual funds industry in Pakistan. Whereas, management fee and risk adjusted returns are negatively related with growth of mutual funds(Mahmud & Mirza, 2011).

Table 1.1

Years	2006	2007	2008	2009	2010	2011
Returns of Open End Equity Based Funds (%)	28.35	43.53	-3.89	-38.12	20.58	25.79
Returns of Closed End Equity Based Funds (%)	10.9	28.32	-2.6	-37.56	14.61	20.4
Returns of KSE 100 Index (%)	31.55	40.53	-10.77	-41.72	35.74	28.53

Source: MUFAP mutual funds association of Pakistan

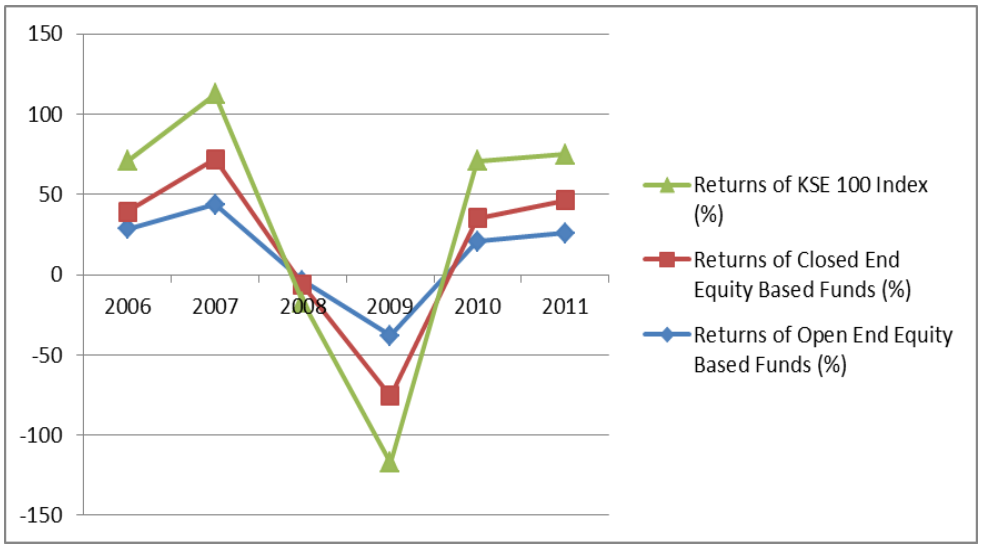


Figure 1.1 Representing returns of KSE 100 index, Closed and Open End equity base mutual funds

Table 1.1 is about numerical representation of returns. Figure 1.1 is the graphical representation about returns of all open and closed end equity based mutual funds and KSE 100.The fund's returns were positive before and after 2008-9. During 2008-9 the performance of capital market went down as compared to mutual funds. The open end mutual funds return was more than closed end mutual funds on the other hand the closed end mutual funds earned less returns than open end mutual funds.

It is very often claimed by the mutual funds management that they are professional. Therefore, they maintain efficient portfolio that carry low risk and ensure less volatility in returns. In order to check the claims of mutual fund management an attempt has been made through this study. The main research question that will support to research problem is that amongst market, closed end mutual funds and open end mutual funds which one is more volatile. The second part of the paper is about the literature review, third part is about theoretical framework and research design, the fourth part is about interpretation of results and the last part deals with the conclusion along with future recommendations.

2. Literature Review

The author explored that volatility in timing is from important factors of mutual funds returns. Fund decreases exposure of the market when volatility is high (Busse 1999). Betas of mutual funds portfolio are small during month of bull and betas are bigger for small of such mutual funds that have large market value portfolios. Further, there exist significant differences in the risk or heteroskedasticity between bear and bull trend of the market. The authors also concluded that GARCH (1, 1) model should be employed to determine the time varying volatility (Graham and Saporoschenko,1999). Variance of market index and portfolio index are not same and there exist significant volatility (Yan, 1999).Change in fee of mutual funds become the cause to consider change in level of risk for its portfolio

(Golec& Starks, 2004). Capital market indices are strongly related with the long and short-term performance of equity mutual funds. Further, lower systematic risk leads towards superior returns (Lai & Lau, 2010). If fund will be managed by multiple managers then risk will be higher than objectives of fund. Although the intention of doing so it to bring down cost of management so that economies of scale can be achieved (Bryant & Liu, 2011). The timing ability of managers is not efficient in Portugal therefore volatility exists in the returns of mutual funds(Romacho & Cortez, 2006). There exists significant time varying volatility in the returns of highly rated mutual funds listed on S & P 500index(Vrontos, Meligkotsidou, & Vrontos, 2008). The equity base mutual funds provide superior returns and lower systematic risk and there exists positive short as well as long run correlation(Lai & Lau, 2010). When indices of common equity are used as benchmarks, the alpha generated from frequently trading is substantial and significant. The probability of having negative alpha is high (Guasoni, Huberman, & Wang, 2011). The net asset value of mutual funds match the performance of local indices as far as risk adjusted performance is concerned (Patro, 2001). The majority of mutual funds do not show persistency in ranking because of poorly controlled risk system (Zhao, Wang, & Lai, 2011). The European mutual funds have positive value of alpha especially the small cap funds (Otten & Bams, 2002). If a mutual fund is managed by more than one manager than its risk and volatility in returns is high. The volatility in returns is positively related with recent performance and with characteristics of managers(Bryant & Liu, 2011).The most of mutual funds do not have constant variance in long run but it is reason able to assume short run constant variance assumption in short run(Yan, 1999).

3. Research Methodology

3.1 ARCH Model

ARCH model was developed by Robert Engle in 1982. ARCH stands for (Autoregressive Conditional Heteroskedasticity). ARCH model had become standard tool to model the volatility of a given series. ARCH model is blend of two components one is AR terms known as auto-regressive terms and the other component is conditional heteroskedasticity terms. Earlier traditional models were used to assume constant variance of one period to forecast (Engle2001). Whereas, through ARCH model, variance of a given time series is modeled in terms of past information with other exogenous variables. The ARCH equation has zero mean, with non-constant variances that are serially uncorrelated and it is conditional on the past information. As compare to other traditional models used for forecasting the ARCH model is simple in use and also to handle, ARCH model take care of clustering errors and also take care of non-linearity(Perrelli, 2011).

Following are the equations of ARCH model

$Yt= \alpha_1 + \beta_1 NAV/KSEindex$ (KSE 100/ Open/Closed end mutual funds) + σ*……(i)

Where

$*\sigma^2_t = \omega_1 + \alpha_1 \varepsilon^2_{t-1} + \alpha_2 \varepsilon^2_{t-2} + \alpha_3 \varepsilon^2_{t-3.....} + \alpha_P \varepsilon^2_{t-p}$……(ii)

The equation (i) is about the time series data of indices the error term of this equation is consist and last period news about volatility modeled as square of error term starting from one and goes to p times.

3.1.1 Specifications of GARCH (1,1) Model

GARCH model was developed by T bollerslev in 1986. GARCH stands for (Generalized Autoregressive Conditional Heteroskedasticity). GARCH model is the modified form of ARCH model. ARCH and GARCH are used to test homoscedasticity that states that the variance of disturbance term is constant. Literature evidences time series data shows volatility clustering therefore ARCH and GARCH model are used to test such claims. As we know that if variances of error terms vary or are not equal at different points then such errors are said to be suffering from the problem known as heteroskedasticity. In case of heteroskedasticity, confidence interval and standard error determined through conventional procedure would give false sense of precision because the standard error and confidence interval would be too narrow. Rather than treating such characteristic as problem to correct, the ARCH and GARCH models used heteroskedasticity problem to model the variance. Due to this prediction can be made about behavior of time series data and deficiencies of least square are also corrected (Bollerslev, 1986).

The very simple GARCH specification is given below:

$Yt = Xt' \theta + \varepsilon t$…….(iii)

$\sigma^2_t = \omega_1 + \alpha_1 \varepsilon^2_{t-1} + \alpha_2 \varepsilon^2_{t-2} \ldots\ldots + \alpha_p \varepsilon^2_{t-p} + \lambda_1 \sigma^2_{t-1} \ldots\ldots\ldots + \lambda_p \sigma^2_{t-q} \ldots\ldots\ldots$(iv)

The equation (iii) is relating to mean equation and this equation is function of exogenous variable with the error term. The equation (iv) is relating to variance equation. In this equation $\sigma^2 t$ is forecast of one period ahead depending upon past information. This past information is also known as conditional variance. This conditional variation is specifically combination of three components. ω represents to constant term in the equation, ε^2_{t-1} is news relating to volatility measured as lag of residual when squared from the mean equation. It is also known as ARCH term and the third is σ^2_{t-1} which is known as variance of last period it is forecasted in the form of geometrically distributed lag model.

The GARCH (1,1) is related to the presence of auto regressive terms in first order and it is the first term in the parentheses with the combination of first order moving average that is the second term in parentheses. Whereas, an ordinary ARCH model has no lagged forecast variance in the conditional equation of variance.

Before applying ARCH & GARCH models, Auto-Correlation and Heteroskedasticity two conditions were test. The problem of autocorrelation exists when error terms or disturbance terms are correlated with each other. Autocorrelation test has been applied to check behavior of disturbance terms in volatility clustering. Heteroskedasticity is defined as, when the variance of disturbance term is not constant then problem of heteroskedasticity exists. The LM heteroskedasticity test of ARCH residual has been applied to check hetero in the data.

3.2 Risk Measures

Standard Deviation, intercept and beta has been used as risk measure.

3.2.1 Standard Deviation

It is a statistical measure and is known as measure of dispersion from its mean of given set of data. The formula is as following

$$s_t = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(xi - \bar{x})2}$$

In the above stated formula $\bar{x}$ is mean of given set of data and xi is representing each value of x in a given set of data that is subtracted from the mean and then it is squared. Further, value of xi starts from i=1 goes to N and ∑ this Greek symbol mean that all squared values should be added and then this summed value is divided from N-1 that is total number of values of given set of data with minus 1. At the end to calculate standard deviation square root is taken. The same technique has been applied for annual return deviation and form daily return deviation.

3.2.2 Beta

It is measure of volatility and also known and systematic risk of any security. The formula of beta calculation from regression equation is given below

Y (daily returns of fund) = α + βX(daily returns of capital market) + €……..(v)

Y (annual returns of fund) = α + βX(annual returns of capital market) + €…….(vi)

In both equations daily or annual returns of portfolio are taken as dependent variable and return of market index are taken as independent variable. Then regression of Y on X is applied to calculate beta value. β represents beta in both equations.

3.2.3 Intercept

Intercept is usually denoted with α symbol in regression equation. In the regression equation if the value of X or independent variable gets zero then how much value will be of dependent variable.

Intercept has been determined through following formula

Y (daily returns of fund) = α + βX(daily returns of capital market) + €……(vii)

Y (annual returns of fund) = α + βX(annual returns of capital market) + €…….(viii)

In the above written regression equations intercept has been represented with α symbol.

3.3 Data &Research Design

Population of all mutual funds of Pakistan has been taken because empirical research mainly focuses on mutual funds industry of Pakistan. All funds are equity based or balanced or index tracker funds. Such funds performance can be compared against the market performance. Capital market index has also been taken as portfolio of market. The objective of equity, balanced and index tracker funds is to invest in the equities. Amongst these mutual funds, all those funds are selected whom annual reports from 2006-2011 are available either on their respective websites or at any other databases. All the annual reports have been downloaded from the respective web sites of asset management companies of mutual funds and from data base of KHI stocks ranging from 2006-2011. KSE 100 index funds data has been collected from yahoo finance website that is same as shown on KSE web site. For risk analysis, daily NAVs (Net Asset Values) of closed end mutual funds have been retrieved from KHI stock exchange's website. Further, daily NAVs of open end mutual fund have been obtained from websites of asset management companies and MUFAP (Mutual Funds Association of Pakistan) websites that is association of mutual funds in Pakistan. Profit after taxation amount has been obtained from the Income statement and annual net asset value amount has been taken from statement of assets and liabilities to calculate the returns. To calculate the market returns KSE 100 index closing values have been used. For volatility analysis daily and annual return determined through NAVs data has been used. Different statistical tools have been used for calculation. Microsoft excel has been used to match NAVs of mutual funds with the closing value market index through "look up" formula in excel. Graphical presentation has also been developed in Microsoft Excel to show volatility clustering. ARCH & GARCH model applications have been done through E-views. Autocorrelation and Heteroskedasticity tests have also been applied in E-views.

As ARCH and GARCH model is applied to model the variance of time series. The data of some open end mutual funds was not available from October 2008 to December 2008 on the data collection sources. Application of ARCH and GARCH model on such missing time series would not model true picture of variance. Hence, such situation would lead towards misleading results. The asset management companies stopped reporting daily NAVs in this period and probable reason for this could be worst performance of capital market. As Equity, Balanced or Index Tracker funds have been taken in the sample and these funds invest substantial part of their investment in capital market. This problem was only with open end mutual funds because open end mutual funds NAV is determined and declared by the asset management company. So, to overcome this problem an index has been developed of both open and closed end mutual funds.

The total 1496 number of values have been taken to develop index. Before this, values of NAVs were traced and matched according to dates with respect to the trading dates of capital market because purity in calculation can be ensured. If the value of NAV of any funds was not reported by AMC during trading days due to some reason, then average of previous three days has been taken. The total number of mutual funds used in both index are not same and nine closed end mutual funds NAVs has been used to develop closed end mutual fund index. Further, to develop open end mutual fund index total seven funds NAVs has been taken. Moreover, all NAVs were listed column wise and horizontally mean of all NAVs has been calculated and after this return of funds were calculated through continuous compounding formula that is as following

Return of fund = log (NAVt/NAVt-1)

The logarithm was taken by dividing current day NAV (NAVt) with previous day NAV(/NAVt-1) to calculate return of funds. The same technique has been applied for closed and open end mutual funds indexes.

3.4 Testable Hypothesis

H1: Closed end mutual funds returns are more volatile than open end mutual funds and capital market portfolio.

H1: Open end mutual funds returns are more volatile than closed end mutual funds and capital market portfolio.

H1: Capital market portfolio return is more volatile than open and closed end mutual funds portfolio.

4. Results and Interpretations

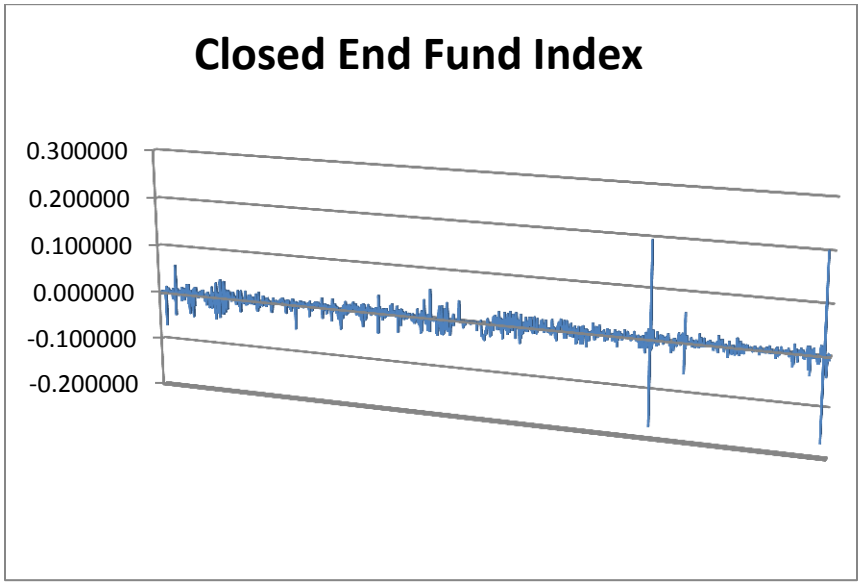
Mutual Fund Name	SDDR*	SDAR**	BDR***	BAR****	IDR*****	IAR******
KSEI 100	0.01	32.79	1	1		
Closed End Funds						
AKDGF	0.0407	28.67	1.01	0.82	-0.00008	-6.51
JVF	0.012	53.71	0.68	1.19	0.67805	-14.89
ASF	0.0156	25.19	0.68	0.58	-0.00069	-18.64
FCMFL	0.0705	35.91	0.8	1.06	0.00096	-13.91
PICICGF	0.0664	22.11	0.9	0.63	0.00055	-9.29
PICICIF	0.0163	25.76	0.96	0.73	-0.00065	-8.74
SMF	0.0466	24.35	0.06	0.72	0.00017	-9.09
FMF	0.0612	40.33	0.71	0.84	-0.0003	-2.64
MBF	0.0108	51.16	0.5	-0.45	-0.00011	-16.06
Open End Mutual Funds						
PCMF	0.0149	22.69	0.54	0.55	-0.00054	-7.88
ASMF	0.0217	30.51	0.48	0.91	-0.0003	-4.95
PSMF	0.0183	21.53	0.76	0.57	-0.00065	-0.81
PSA	0.0158	25.32	0.79	0.74	-0.00045	-8.45
CF	0.0203	40.86	0.4	0.95	-0.00017	-5.48
JSIF	0.0266	50.43	0.86	1.3	-0.00067	-6.09
JSKSE30IF	0.0565	68.18	0.1	1.1	-0.00085	-29.7
JSLCF	0.0179	50.34	0.88	1.32	-0.0007	-8.62
UTP	0.0154	30.01	0.42	0.78	-0.00036	-6.47
AKDITF	0.0159	23.03	0.65	0.55	-0.0003	-16.84
NITU	0.0166	27.01	0.53	0.74	-0.00044	-8.29
MIF	0.0239	27.86	0.86	0.8	-0.0004	-0.68
ALMMF	0.0141	29.17	0.82	0.86	-0.00023	-6.39
FBGF	0.0165	22.69	0.37	0.66	-0.0005	-3.57
PPF	0.0197	30.1	0.73	0.88	-0.00052	-11.75
*Standard deviation of daily returns					**Standard deviation of annual returns	
***Beta of daily Returns					****Beta of annual returns	
*****Intercepts of daily returns					******Intercepts of annual returns	

First Capital Mutual funds LTD has highest standard deviation value of daily returns i.e.0.0705 therefore this fund is more risky than others. Meezan Balanced fund is lesser risky because its standard deviation value on the basis of daily return is 0.0108. Whereas, as far as annual returns standard deviation is concerned JS Value fund has highest Standard Deviation value i.e. 53.71 therefore is more risky. Whereas PICIC Growth Mutual Fund has lowest S.D value i.e. 22.11. Amongst open end mutual fund on the basis of daily returns Al Meezan mutual fund is lesser risky and JS KSE 30 is more risky than other mutual funds because their standard deviation values are 0.0141 and 0.0565 respectively. Standard deviation calculated on the basis of annual returns decribe that Pakistan Stock Market is lesser risky and JS KSE 30 is more risky having values of S.D are 21.53 and 68.18 respectively.

Amongst closed end mutual funds AKD Golden fund has 1.01 beta value it also depicts aggressive nature of behavior inherent in it's portfolio. Further, Meezan Balanced fund has lowest aggressive beta value on the basis of daily returns i.e. 0.50. On the basis of annual returns JS Value fund has aggressive beta and PICIC Growth Fund has lowest beta value than all mutual funds in the sample and there beta values are 1.19 and 0.63 respectively. Whereas, amongst open end mutual funds JS Large Capital fund has highest beta value and JS KSE 30 has lowest beta value on the basis of daily returns and their beta values are 0.88 and 0.10 respectively. On the basis of annual returns JS large capital fund has highest beta i.e.1.32 therefore is highly riskier and Pakistan Capital Market and AKD Indexed Tracker has lowest beta value i.e. 0.55 therefore are less risky.

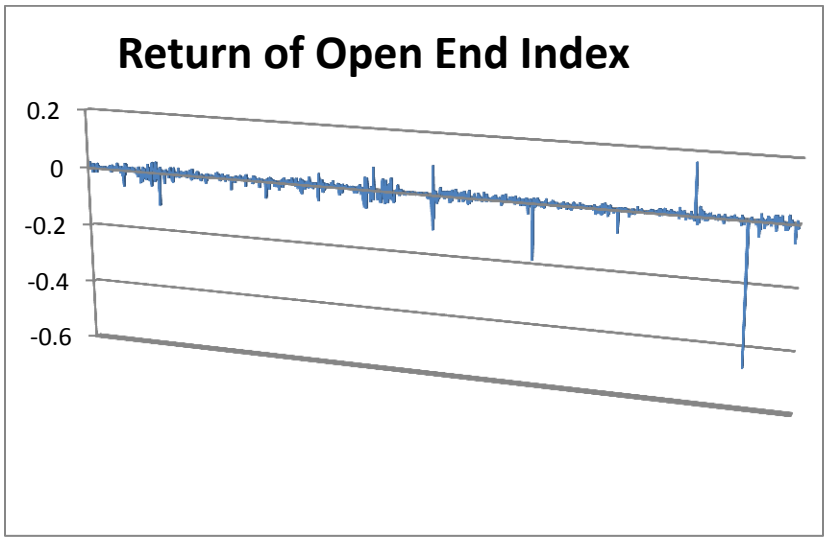
On the basis of daily returns most of the closed end mutual funds in the sample have negative intercept values except three mutual funds. Amongst positive values of intercepts JS Value has highest positive intercept value i.e. 0.67805 and PICIC Growth Fund has lowest positive intercept values i.e.0.00055 therefore is more risky. Further, on the basis of daily returns AKD Golden fund has highest negative intercept value i.e.-0.0008 and Asian Stock has lowest negative intercept value i.e.-0.00069 and therefore is less risky. Amongst negative values First Dawood Mutual fund has highest negative intercept i.e. -2.64 and Asian Stock Mutual fund has lowest negative value -18.64 therefore it is less risky. Pakistan Stock Market Mutual Fund has highest negative intercept of daily returns i.e. -0.00017 and JS KSE 30 Index Mutual Fund has lowest negative intercept i.e. -0.00085. Amongst open end mutual funds the Meezan Islamic mutual fund has highest intercept of annual returns i.e. -0.68. JS KSE30 Index Fund has lowest negative intercept i.e.-29.70.

5.1 ARCH and GARCH Results and Interpretation

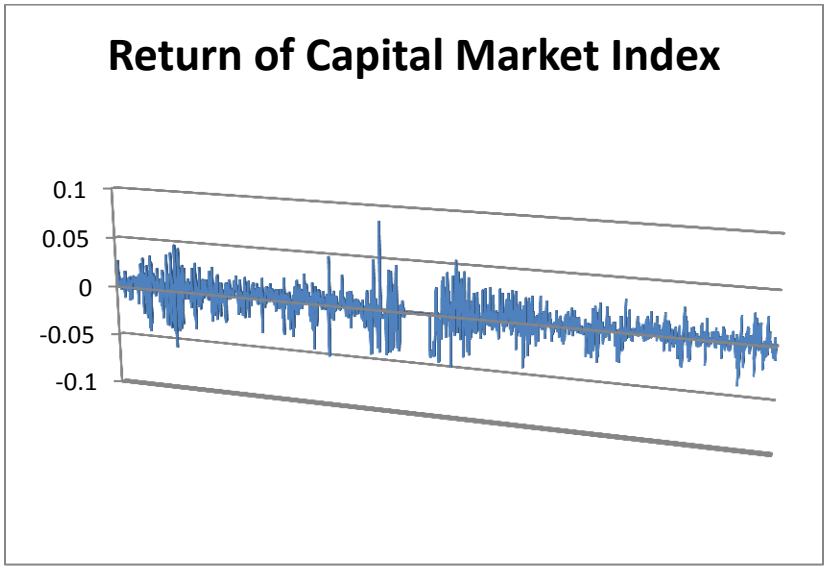


The above figure is the graphical representation of returns calculated for closed end mutual funds index. Graph shows in certain time period there is high volatility and visual idea about volatility can be taken from this figure

about returns of closed end mutual fund index.



Through graphical representation it can be concluded that open end funds are less volatile than closed end mutual funds. The periods in which volatility exist these are more risky than other periods.



The above figure is representing daily returns of KSE 100 index. Volatility can also be traced graphically from the above figure, therefore graphically market index seems more volatile than closed and open end fund index.

Auto Correlation Test Results					
Index Name	**Variable**	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Closed End Index	CLOSED END Index(-1)	-0.159984	0.025564	-6.25826	*0.000
Open End Index	Open End Index (-1)	0.011405	0.025885	0.440601	*0.6596
KSE 100 Index	Market Index (-1)	0.15179	0.025569	5.936521	*0.000
Heteroskedasticity Test					
Closed End Index	RESID^2(-1)	0.492964	0.02254	21.87078	*0.000
Open End Index	RESID^2(-1)	0.002287	0.025906	0.088266	*0.9297
KSE 100 Index	RESID^2(-1)	0.307762	0.024649	12.48584	*0.000

*Significance of P-value at 5%

The auto-correlation exists in the returns series of closed end mutual funds index. The auto-correlation does not exist in the open end mutual funds index because P value is above from 5% level of significance. The auto-correlation exists in the returns of KSE 100 index.

Having done auto-correlation test, heteroskedasticity test has been applied of ARCH affects on residuals. Heteroskedasticity exists in the time series in the closed end mutual fund index and KSE 100 index. Therefore, the disturbance term has volatile clustering. In case of open-end mutual fund index the null hypothesis of hetero test of residual also cannot be rejected that errors are homoscedastic because P value is above than 5% level of significance.

ARCH Test Results Variance Equation					
Index Name	**Variable**	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Closed End Index	RESID(-1)^2	0.272866	0.037931	7.193659	*0.000
Open End Index	RESID(-1)^2	0.108811	0.020807	5.229559	*0.000
KSE 100 Index	RESID(-1)^2	0.397345	0.044879	8.853758	*0.000
GARCH Test Results Variance Equation					
Closed End Index	RESID(-1)^2	0.27279	0.019943	13.6786	0.000
	GARCH(-1)	0.716797	0.012558	57.07889	*0.000
Open End Index	RESID(-1)^2	0.093739	0.020362	4.603662	0.000
	GARCH(-1)	-0.025745	0.042212	-0.609899	0.5419
KSE 100 Index	RESID(-1)^2	0.168072	0.017387	9.666402	0.000
	GARCH(-1)	0.788203	0.015842	49.75434	*0.000

*Significance of P-value at 5%

ARCH (1,0) test has been applied after auto-correlation and heteroskedasticity test. There are two parts of results in the table of ARCH and GARCH. One is derived from mean equation and other is derived from variance equation. The volatility is determined from variance equation coefficient. The P value is less than 5% significant level and it means that ARCH effect exist in the data. As we know that ARCH effect exist in the data therefore GARCH (1,1)

test has been applied to more generalize the volatility. The first part of results in GARCH equation is also derived from mean equation. The second part of GARCH results is derived from variance equation. Variance equation has P-value 0.000 that shows the presence of volatility clustering. Therefore volatility of one period is different than the other periods. So, depending upon results the null hypothesis of homoscedasticity can be rejected. Although it is clear from the P- value that GARCH effect also exist in the data but level of volatility is determined from coefficients of variance equation that are $(\alpha + \beta)$. The level of volatility in the above given results is 0.98. It is closer to one it means that volatility is quite persistent. The values of these coefficients of variance equation are also statistically significant. Another conclusion can also be drawn from these results that previous information must be used to capture the volatility in returns of closed end mutual fund index. The ARCH effect is blend of auto-correlation and heteroskedasticity. According to P value i.e.0.000 result ARCH effect exist in the returns of open end mutual fund index irrespective of results autocorrelation and heteroskedasticity. GARCH effect does not exist in the data because P value is above from 5% level of significance. So, the null hypothesis of open end mutual funds developed cannot be rejected on the basis of results.

The coefficients of the equations are also not statistically significant. The ARCH effect exists in the data because according to results P value is below the level of significance like 0.000. The GARCH effect also exists in the data determined at 5% level as significance of P value. It means that in the returns of market index there is volatile clustering. The sum of coefficients of variance equation is 0.95. It is also closer to one that indicates the volatility exists. The coefficients of GARCH equation are statistically significant also. The previous information cannot be neglected to forecast the future returns of KSE index or in other words future return of capital market are conditional on the previous information.

5. Conclusion

The study evaluates risk analysis of mutual funds and market index over six years ranging from June 2006-June 2011 through ARCH, GARCH and other statistical measures such Standard deviation, Intercepts and Beta of returns. Risk analysis was done to determine that amongst capital market index, open and closed end mutual funds index which one has more volatility in its returns. The results of closed end mutual index accept the alternate hypothesis that closed end mutual funds are more volatile than open end mutual funds and capital market portfolio. The results of open end mutual funds index determined through ARCH and GARCH model depicts that open end mutual funds are less volatile than closed end mutual funds and capital market because results were fail to reject null hypothesis i.e. open end mutual funds are not more risky than closed end mutual funds and capital market portfolio, developed for open end mutual funds.

As far as market volatility is concerned, the market is also less volatile than closed end mutual funds. Whereas, market is more volatile than open end mutual funds. So, according to results the null hypothesis cannot be rejected i.e. capital market portfolio is not more risky than open and closed end mutual funds portfolio. As far as risk analysis determined through other statistical measures is concerned reveals that closed end mutual funds are more risky than open end mutual because First Capital Mutual Fund has highest standard deviation of daily returns i.e.0.0705 amongst the sample of study which is closed end mutual fund. AKD Golden Mutual Fund has highest Beta value i.e.1.01 which also closed end mutual fund. Whereas AKD Golden Mutual Fund has highest negative intercept value i.e.-0.0008 this mutual funds also fall in the category of closed end mutual funds.

This research is only on the equity and balanced mutual funds irrespective of whether open end or closed end fund. Sampling has been done from all equity and balanced mutual funds population on the basis of availability of annual reports ranging from 2006-2011. Time frame that has been taken for this research starts from 2006 to 2011 because the data of most mutual funds was available from 2006.The market performance has been measured through KSE (Karachi Stock Exchange) 100 index, not from the overall market capitalization.

BIBLIOGRAPHY

Afza, T. and A. Rauf (2009). "Performance Evaluation of Pakistani Mutual Funds." Pakistan Economic and Social Review 47(2): 199-214.

Bollerslev, T. (1986). "Generalized autoregressive conditional heteroskedasticity." Journal of econometrics 31(3): 307-327.

Bryant, L. L. and H. C. Liu (2011). "Mutual Fund Industry Management Structure, Risk and the Impacts to Shareholders." Global Finance Journal.

Busse, J. A. (1999). "Volatility timing in mutual funds: Evidence from daily returns." Review of Financial Studies 12(5): 1009-1041.

Engle, R. (2001). "GARCH 101: The use of ARCH/GARCH models in applied econometrics." The Journal of Economic Perspectives 15(4): 157-168.

Golec, J. and L. Starks (2004). "Performance fee contract change and mutual fund risk." Journal of Financial Economics 73(1): 93-118.

Graham, J. E. and A. Saporoschenko (1999). "The Varying Risk Market Model: A Reexamination Based On Heteroskedastic Conditions and Other Statistical Robustness Tests." Quarterly Journal of Business and Economics: 25-45.

Guasoni, P., Huberman, G., & Wang, Z. (2011). Performance maximization of actively managed funds. Journal of Financial Economics, 574-595.

T. A. R. Perrelli "Introduction to ARCH & GARCH models."

Khalid, S. I., Abbas, Z., & Shah, S. A. (2010). Performance Evaluation of Close-ended Mutual Funds by Investment Objectives in Pakistan's Economy. Interdisciplinary journal of contemporary research in business, 193-219.

Lai, M. M. and S. H. Lau (2010). "Evaluating mutual fund performance in an emerging Asian economy: The Malaysian experience." Journal of Asian Economics 21(4): 378-390.

Mahmud, M., & Mirza, N. (2011). an evaluation of mutual fund performance in an emerging economy: Case of Pakistan . Lahore Journal of Economics.

Nafees, B., S. M. A. Shah, et al. (2011). "Performance evaluation of open end and close end mutual funds in Pakistan." African Journal of Business Management 5(28): 11425-11434.

Nazir, M. S., & Nawaz, M. M. (2010). The Determinants of Mutual Fund Growth in Pakistan. International Research Journal of Finance and Economics, 75-84.

Otten, R., & Bams, D. (2002). European mutual fund performance. European financial management, 75-101.

Patro, D. k. (2001). Measuring performance of international closed-end funds. Journal of Banking and Finance, 1741-1767.

Romacho, J. C., & Cortez, M. C. (2006). Timing and selectivity in Portuguese mutual fund performance. Research in International Business and Finance , 348–368.

Shah, S. M. A. and S. T. Hijazi (2005). "Performance Evaluation of Mutual Funds in Pakistan." Pakistan Development Review 44(4): 863.

Vrontos, I. D., Meligkotsidou, L., & Vrontos, S. D. (n.d.). Performance Evaluation of Mutual Fund Investments: The Impact of Non-Normality and Time-Varying Volatility.

Yan, Y. (1999). "Measuring the timing ability of mutual fund managers." Annals of Operations Research 87: 233-234.

Zhao, X. and S. Wang (2007). "Empirical Study on Chinese Mutual Funds' Performance." Systems Engineering-Theory & Practice 27(3): 1-11.

Annexure		
Sr.No	**Full Name**	**Abbreviation**
1	**Market KSE 100 Index**	**KSEI**
	Closed End Funds	
2	AKD Golden Fund	AKDGF
3	Js Value Fund	JVF
4	Asian Stock Fund	ASF
5	First Capital Mutual Fund LTD	FCMFL
6	PICIC Growth Fund	PICICGF
7	PICIC Investment Fund	PICICIF
8	Safeway Mutual Fund	SMF
9	First Dawood Fund	FMF
10	Meezan Balanced Fund	MBF
	Open End Mutual Funds	
11	Pakistan Capital Market Fund	PCMF
12	Atlas Stock Market Fund	ASMF
13	Pakistan Stock Market Fund	PSMF
14	Pakistan Strategic Allocation	PSA
15	Crosby Fund	CF
16	JS Islamic Fund	JSIF
17	JS KSE30 Index Fund	JSKSE30IF
18	JS Large Cap Fund	JSLCF
19	Unit Trust of Pakistan	UTP
20	AKD Index Tracker Fund	AKDITF
21	National Investment Trust Unit	NITU
22	Meezan Islamic Fund	MIF
23	Al Meezan Mutual Fund	ALMMF
24	Faysal Balanced Growth Fund	FBGF
25	Pakistan Premier Fund	PPF