Performance Evaluation of Bangladeshi Mutual Fund: An Analysis of Monthly Return Based on Net Asset Value

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Abstract

The popularity of mutual fund investing among private investors has grown dramatically all over the world during last 40 years. Therefore, the research in mutual fund has increased significantly. Despite this huge demand of mutual fund investing, only a few researches on mutual fund have been conducted in Bangladesh. In this paper an attempt is made to evaluate the performance of 15 close-ends Bangladeshi mutual funds traded in DSE (Dhaka stock exchange) based on monthly net asset value. For this purpose the methodologies employed in this study are risk adjusted performance measures suggested by Jensen, Treynor, and Sharpe widely known as Jensen alpha, Treynor ratio, Sharpe ratio. DSEX index has used as a proxy for benchmark index. The study found that over the research period (from 2013 to 2017) 12 out of 15 funds got superior return compared to benchmark index return. In addition to, diversification, market timing and selectivity skill of fund managers are tested with help of co-efficient of determination (R^2), quadratic regression of Treynor and Mazuy and Fama decomposition model respectively. The paper found that 9 out of 15 funds are well diversified and have reduced its unique risk. Finally this paper has revealed no statistically significant timing skill but moderate level of selectivity in mutual fund market of Bangladesh.

Introduction

Soon after the development of portfolio theories and Capital Asset Pricing Model (CAPM) in 1960s the analysis in mutual fund performance has increased extensively and likewise, the popularity of investing in mutual funds among private investors has grown considerably around the world during the last 40 years. In Bangladesh the market value of mutual fund has increased from approximately Tk. 7.5 million in 1980 to more than Tk. 280 billion in 2017. Notwithstanding this huge increase in market only few studies have been conducted in evaluating Bangladeshi mutual fund performance. Hence, the aim of conducting this study is to provide the evaluation of growth oriented Bangladeshi mutual fund performance on the basis of monthly return compared to benchmark return [1-3].

Having substantial fund and professional management skill, it is easy for large investors to invest their money in a diversified pool of securities. On the other hand small investors are often unable to diversify their investment with limited fund. Mutual fund, an investment vehicle, creates an opportunity for investors, especially for small investors, to take advantages of investing in professionally managed diversified pool of securities with law costs. A mutual fund is a financial intermediary that collects money from money investors and invests the money in stocks, bonds, short-term money-market instruments, other securities or assets, or some combination of these investments depending upon the objectives and need of the investors. Functionally mutual funds are two types' open-end mutual fund and close-end mutual fund. In case of open-end mutual funds, subscription and redemption of shares at Net Asset Value (NAV) per share are allowed on perpetual basis whereas close-end funds with a specific maturity period sell a fixed number of shares at one time (in an initial public offering) and latter trades on secondary market.

In 1980, state-owned investment agency Investment Corporation of Bangladesh (ICB) turned into the pioneer in launching mutual funds in the capital market of Bangladesh. Latter a series of close-end fund had been offered by ICB. The then first ever private organization, AIMS comes into play in 1999 for organizing mutual funds in Bangladesh. Mutual funds developed at a snail's pace over the period of time and had only been close-ended since beginning of its operation in the capital market. In 2010, Prime Finance Asset Management Company introduced the first-ever open-end mutual fund in the capital market. After that, various mutual funds came to the market and mainly operated under the BSEC (Mutual Fund) Rules-2001, Trust Act, 1882 and Registration Act, 1908.

All the related parties involved in the capital market employ their most of the effort to assess information about the performance of active strategy of fund management compare to passive strategy of fund management. Manager, investor and researcher generally want to know whether the active fund managers are able to generate superior return over benchmark market return. The close-end mutual fund traded in Dhaka Stock Exchange reviewed in this study fall into active fund management category whereas DSEX reviewed fall into passive fund management strategy. The main purpose of this study is to evaluate the performance of close-end mutual fund compare to the benchmark index.

The paper is organized as follows. In the next section the article describes the current scenario of capital market of Bangladesh and mutual fund market, section 3 concentrates on earlier studies of mutual fund performance evaluation i.e., review of related literature. section 4 describe research objective, section 5 describes sources of data, sample design, and methodology, section 6 present performance evaluation

techniques, empirical results and discussion. Section 7 enumerates limitation of this study and Section 8 concluding remarks.

Current Status of Mutual Fund Market in Bangladesh

At present mutual fund experiences lower position based on the sector-wise transactions among all the sector-wise listed securities in Dhaka Stock Exchange nevertheless massive market value of mutual fund has increased from 1980 to 2017. An analysis of the sector-wise transactions of listed securities of the DSE showed that the mutual funds sector secured almost lower position in FY 2015-2016 with 1.21% of the total transactions.

At the end of 2015-2016 fiscal total numbers of listed securities stands at 559 at Dhaka Stock Exchange Limited. Of the securities, 292 are Equity Companies, 36 mutual Funds, 8 Debentures, 221 Treasury Bonds and 2 Corporate Bonds. Total issued capital of these securities stands at Tk. 1,127,410 mn or US$ 14,380 mn total number of certificates stands at 57,141 mn. The total number listed securities stood at 555 at Dhaka Stock Exchange Limited at the end of 2014-2015 fiscal. Of the securities, 283 were equity companies, 41 mutual Funds, 8 Debentures, 221 Treasury Bonds, 2 Corporate Bonds. Total issued capital of these securities stood at Tk. 1,091,953 mn or US$ 14,035 mn and the total number of certificate stood 53,590 mn.

At the beginning of the FY 2015-2016, total 41 mutual Funds were listed with unit value of Tk. 43,650 mn and market value of Tk. 28,850 mn. During the FY 2015-2016, 2 new mutual funds got listed through IPO with unit value of Tk. 1,543 mn and 8 mutual Funds delisted during the FY 2015-2016. At the end of FY 2015-2016 total numbers of listed mutual funds stood 35 with unit value of Tk. 46,062 mn and market value of Tk. 30,280 mn. At the beginning of the FY 2014-2015, total 41 mutual Funds were listed with unit value of Tk. 40,804.41 mn. During the FY 2014-2015, 1 new mutual fund got listed through IPO with unit value of Tk. 605.91 mn and 1 mutual fund delisted during the FY 2014-2015. At the end of FY 2014-2015 total number of listed mutual funds stood 41 with unit value of Tk. 43,650.12 mn. Mutual fund represents 1.15% of total tradable market capitalization in FY 2015-2016 where as it was 1.07% in the FY 2014-2015.

Besides close-end mutual fund current some open-end mutual funds are managed by different asset management companies (AMCs) in Bangladesh such as Investment Corporation of Bangladesh (ICB), ICB Asset Management Co. Ltd. (a subsidiary of ICB), VIPB Asset Management Company limited, VANGUARD Asset Management Limited, LR Global Bangladesh Asset Management Company (BAMCO) etc.

Review of Related Literature

Numerous theoretical and empirical researches have been conducted on the performance evaluation of mutual fund both in the context of developed and developing countries around the world. This section presents a brief review.

Brown and Vickers [4] conducted a study on mutual fund portfolio activity, performance, and market impact and found that performance of funds, on an average, is almost similar to that of composite markets from which fund managers select securities. The study reveals that there has no linked between variations in fund portfolio turnover rates and variations in performance, and fund portfolio activity influences market prices, especially in the short run for individual securities.

Sharpe's [3] article is among the earliest research to evaluate the performance of mutual funds using some of the concept from modern portfolio theory. He has developed a composite measure that considers return and risk. He evaluated the performance of 34 open-end mutual funds during the period 1944-1963 by the measures developed by him. He concluded that the average mutual fund performance was distinctly inferior to an investment in the DJIA (Dow Jones Industrial Average). It was also revealed in his study that good performance was associated with low expense ratio and only low relationship was discovered between fund size and performance.

A study performed by Treynor and Mazuy [2] found that none of the investment managers of the 57 funds (1953-1962) outguess the market and that these managers should not be held responsible for failing to anticipate changes in market direction. Jensen [1], evaluated 115 funds performances using "alpha" which is an indicator of the fund managers forecasting ability. He found that fund managers did not have superior performance to offset their research expenses and management fees. To evaluate objectives and performance of 123 mutual fund using monthly data for the period 1960-1969 McDonald(1974)[v] has examined four measures; non-risk-adjusted measure of average return, reward-to-volatility ratio, Jensen's alpha, reward-to-variability ratio and found that significant performance of fund are not being recorded differently than the market overall.

Kon and Jen [5] used Sharp-Lintner-Mossine (SLM) and Black models of market equilibrium to examine mutual fund stock selectivity performance when management is concurrently engaged in market timing activities. He found that on average, fund managers as well as individuals are unable to select individual securities perfectly to coup up with the expenses and fees of research, management and commission. E. Fama [6] introduced a model for evaluating investment performance of managed portfolios. He recommended that the overall performance of managed portfolios could be broken down into several components. He argued that the observed return of a fund could be, due to the ability of fund managers, to pick up the best securities at a given level of risk (their selectivity ability). Some portion of this return could also arise due to the prediction of general market price movements (their market timing ability). Fama suggested that return on a portfolio could be subdivided into two parts-the return for security selection and return for bearing risk. Various finer subdivisions of both selectivity and risk were also suggested. The model developed by him, combined concepts from modern theories of portfolio selection and capital market equilibrium with those of traditional concepts of what constitute good portfolio management [7].

To evaluate market timing and investment performance of a sample of 67 mutual funds, Chang and Lewellen [8] employ a market-timing and security selection test methodology and fund no evidence of skilful market timing or superior security selection abilities.

Henriksson and Robert [9] provided an equation and Henriksson [10] estimated this equation for 116 mutual funds (1968-1980) and found little evidence of market timing ability. Grinblatt and Titman [11,12] found that superior performance may exist among mutual funds but expenses eliminate abnormal investor return thereby investors cannot take advantage of the portfolio managers' skills. Volkman [13] found that in a high volatility periods only few managers of 332 funds (1980-1990) are able to predict market movements although most of the funds outperform the market via security selection.

A research conducted by Jayadev [14] in India found that mutual funds have not performed better than their benchmark indicator and fund managers are not sufficiently able to use their market timing

and selectivity skills. Motivated by Jayadev [14], Dave [15], Thomas [16] and Kulkarni [17] all the author try to evaluate performance of mutual fund in india and found very little evidence that mutual funds outperform benchmark index fund.

Qamruzzaman [18] investigate performance of mutual fund schemes in Bangladesh considering 32 mutual funds based on risk adjusted performance measures suggested by Jenson, Treynor and Sharpe and found that many funds made abnormal returns comparing to the market returns. For evaluating performance of mutual fund in Bangladesh, widely known risk adjusted performance ratios are also used by Das [19], Rahman et al. [20].

Objectives of the Study

The main objective of this paper is to evaluate the overall performance of mutual fund in Bangladesh. This study has set the following specific objectives relating to mutual funds "performance";

I.   To measure the returns earned by the sample mutual funds and compare against the benchmark market return in terms of risk.

II.   To find out the mutual fund schemes offering the advantages of diversification, market timing and selectivity of securities to their investors.

Data and Methodology

To depict a synopsis of current performance trend of the Bangladesh mutual fund industry, secondary data has been used in this study. The data source is Monthly Net Asset Value (NAV) based on the current market price published in the Dhaka stock Exchange (DSE) news server. Monthly NAV is the last announced NAV by the respective manger of any particular month. DSEX Index is assumed as market index or the benchmark market index. Further 6-month post office savings instrument has been assumed as benchmark for the risk free rate.

The sample in this study consist of 15 mutual fund traded in DSE having maturity over 4 years and the sample period is February 2013 to March 2017 (50 month).

For the purpose of satisfying main objective as well as specific objectives raised in objective section this paper has initially calculated monthly returns based on the NAVs of fifteen funds and simple averages of such returns (ARp). The net asset values (NAV) have been corrected to include dividends at T+4 month, where T is the declaration month. It has been assumed that the dividend will affect NAV in the 4th month of declaration. Total risk for both portfolios and market, systematic risk and unsystematic risk (unique risk) have been measured with the help of Standard Deviation (σ), Beta co-efficient (β) and Standard Deviation of Error term (SDEt) respectively. Latter different methodologies suggested by Jenson, Treynor, Sharpe, Fama, Treynor and Mauzy have been employed to conclude about the overall mutual funds market of Bangladesh.

Performance Analysis of Mutual Funds: Empirical Results and Discussion

a) The Jensen's alpha

Michael Jensen (1968) has introduced a portfolio performance measure called Jensen alpha also known as Jensen ratio. Jensen alpha represent the difference between the actual return of the portfolio and required return of the portfolio or expected return of the portfolio at a given level of systematic risk as measured by its beta. In case of Jensen's alpha underlying assumptions of Capital Asset Pricing Model (CAPM) holds true without being tested [21]. Jensen's alpha is computed by the following equation:

$$a_p = AR_p - EAR_p$$

Where,

a_p is the Jensen Alpha

AR_p is the average portfolio return

EAR_p = Equilibrium Average Return = $AR_f + \beta p \ (Ar_m - AR_f)$

Positive alpha indicates superior return of a portfolio hence better portfolio performance and negative alpha indicates worse performance of the portfolio against the bench mark, i.e., the market index.

The result shows (Table 1; Column 2) that based on dividend adjusted return twelve funds out of fifteen could generate positive Jensen alpha. Although three funds show negative alpha, on overall basis fund industry alpha is positive alpha of 0.3063. Of the fifteen mutual funds under consideration it has been found that PRIME1MF with alpha of 0.5716 got the highest Jensen alpha. Precisely, finding overall positive alpha from this study indicates that funds are able to generate higher return than equilibrium return using CAPM.

b) The Treynor ratio

Treynor (1965) was the first researcher developing a composite measure of portfolio performance which is called Treynor ratio. It is the ratio of the risk premium to the volatility of the return measured by portfolio systematic risk (beta). This is why this ratio is commonly known as reward-to-volatility ratio. Treynor ratio provides a measure of excess return per unit of systematic risk (beta). The underlying assumption of the Treynor index is that a multi-asset portfolio diversifies unsystematic risk away and the relevant risk that remains is systematic risk (beta). Treynor ratio is calculated as:

$$T_p = \frac{AR_p - AR_f}{\beta_p}$$

Where

T_p is the Treynor ratio

Treynor ratio of market is:

$$T_m = \frac{AR_m - AR_f}{\beta_m} = AR_m - AR_f \qquad [\beta_m - 1]$$

Here, excess returns of market over risk free return ($AR_m - AR_f$) are the benchmark. Greater value of the portfolio over the market indicates a superior performance of the fund.

The result shows (Table 1; Columns 3 and 4) that all the funds except GREENDELMF, MBL1STMF and DBH1STMF have experienced higher than market return in case of Treynor ratio also called reward to volatility ratio i.e., return per unit of systematic risk (β). ABB1STMF got the highest excess return over risk-free return (0.9975) for taking per unit of systematic risk (β) followed by 1JANATAMF (0.8813), POPULAR1MF (0.8395), PHPMF1 (0.6889), IFIC1STMF (0.5533).

The aforesaid two measures of portfolio performance are based on the standard CAPM security market line. Both measures only consider systematic risk (beta) as a relevant risk and ignore unique risk. Hence,

	The Jensen's alpha (α)	The Treynor ratio (T_p)	Benchmark market return Trynor ratio (T_m)	The Sharpe ratio: (S_p)	Benchmark market return Sharpe ratio (S_m)
1STPRIMFMF	0.1400	0.0971	-0.0178	0.0189	-0.0038
GREENDELMF	-0.0705	-0.1184	0.0342	-0.0206	0.0069
ABB1STMF	0.4102	0.9975	0.0337	0.1359	0.0068
TRUSTB1MF	0.2853	0.4974	0.0342	0.0796	0.0069
PRIME1ICBA	0.5716	0.4901	-0.0178	0.0936	-0.0038
POPULAR1MF	0.4231	0.8395	0.0342	0.1507	0.0069
PHPMF1	0.3997	0.6889	0.0342	0.1244	0.0069
MBL1STMF	-0.0360	-0.0373	0.0335	-0.0060	0.0068
IFIC1STMF	0.2999	0.5533	0.0342	0.0855	0.0069
ICBEPMF1S1	0.5531	0.4477	-0.0178	0.0860	-0.0038
ICBAMCL2ND	0.4321	0.3510	-0.0178	0.0685	-0.0038
ICB3RDNRB	0.4249	0.3600	-0.0178	0.0690	-0.0038
ICB2NDNRB	0.4199	0.3907	-0.0178	0.0660	-0.0038
DBH1STMF	-0.1358	-0.2089	0.0342	-0.0341	0.0069
1JANATAMF	0.4766	0.8813	0.0342	0.1525	0.0069
Overall position /Industry	0.3063	0.4153	0.0133	0.0713	0.0026

Table 1: Risk adjusted performance measure.

it is necessary to evaluate the performance of the fund in terms of its total risk. The following measure is used for the purpose.

c) The Sharpe ratio

The Sharpe ratio is a risk-adjusted measure of performance developed by William Sharp, which is often used to evaluate the performance of a portfolio and its manager. The Sharp ratio uses standard deviation to measure total risk of a portfolio rather than to consider only the systematic risk summarized by beta factor. This ratio basically indicates risk premium return earned per unit of total risk. Sharpe introduced the following reward to variability ratio (known as sharp ratio) as follows:

$$S_p = \frac{AR_p - AR_f}{\sigma_p}$$

The bench mark is extra return of market in excess of risk free return associated with market portfolio's total risk:

$$S_m = \frac{AR_m - AR_f}{\sigma_m}$$

A fund which performed better according to first two measures namely Jensen and Treynor measures and not according to the third measures indicates the direction in which fund manager has to change the portfolio structure.

The result shows (Table 1; Column 5 and 6) that 12 funds out of fifteen funds have generated higher Sharp ratio also called reward to variability ratio i.e., return per unit of total risk (σ) than that of benchmark market index. 1TJANATAMF (0.1525) got the highest excess return over risk-free return for taking per unit of total risk.

The general conclusion in Table 1 is that most of the funds have been able to over-perform their passive benchmark. In addition Table 1 concludes that over the research period, overall position of mutual fund in Bangladesh is better than benchmark index.

d) Diversification

It can be possible to remove unsystematic risk (unique risk) through well diversification of portfolio. The statistical tool, coefficient of determination (R^2) can be used to measure diversification. Coefficient of determination (R^2) can be obtained by regressing the portfolio's

additional return ($r_p - r_p$) against the market additional returns ($r_m - r_f$). A high value indicates greater diversification of fund and vice-versa [22].

The result shows (Table 2) that over the research period, mutual funds selected for this study have R^2 within 0.46 to 0.85. Nine funds have found with strong R^2 (ranging from 0.74 to 0.85) means that return generated by those funds are mostly depends on systematic risk (βp). Though other six funds have found lower R^2 means that mangers are taking some level of diversifiable risk (unsystematic risk). From Table 2 it can be identified that ABB1STMF with low R^2 (0.46) has experienced high unique risk (2.3053) relative to its total risk (3.1245). Both 1STPRIMFMF and ICBAMCL2ND value have experienced high R^2 (0.85) indicating that those funds are well diversified and have reduced its unique risk (σEp).

e) Market timing

A fund manager who would like to prefer market timing, structures the portfolio to have a relatively high beta during a market rise and relatively low beta during market decline. Because of this investors will benefit out of both the market rise and market fall situations. Treynor and Mazuy were the first to propose estimating such a line by adding a squared term to the usual linear index model:

$$r_{pt} - r_{ft} = a + b (r_{mt} - r_{ft}) + c(r_{mt} - r_{ft})^2 + \varepsilon_{pt}$$

Where,

r_{pt} is the portfolio return, and

a, b and c are estimated by regression analysis.

If c turns out to be positive, we have evidence of timing ability, because this last term will make the characteristic line steeper as $(r_{mt} - r_{ft})$ is larger [23].

The result shows (Table 3) that except 1STPRIMFMF (-0.0078) all the funds have positive **c** value meaning that these funds consist high beta securities at the time of high market return and low beta securities at the time of low market return. None of the positive **c**-coefficient has been found statistically significant at any level of significance. Moreover using Treynor and Mauzy Quadratic equation Table 3 shows a (alpha) which represent selectivity of fund. Out fifteen 11 funds have positive selectivity but none of the fund is statistically significant at any level of significance.

	Total risk (σ_p)	Systematic risk (β_p)	Unsystematic risk (σE_p)	Diversification (R²)
1STPRIMFMF	6.2504	1.2189	2.4177	0.85
GREENDELMF	2.6497	0.4617	1.3303	0.75
ABB1STMF	3.1245	0.4257	2.3053	0.46
TRUSTB1MF	3.8494	0.6158	2.3401	0.63
PRIME1ICBA	5.8919	1.1255	2.5275	0.82
POPULAR1MF	2.9265	0.5254	1.3284	0.79
PHPMF1	3.3794	0.6104	1.4971	0.80
MBL1STMF	3.1675	0.5086	1.9225	0.63
IFIC1STMF	3.7369	0.5777	2.3964	0.59
ICBEPMF1S1	6.1849	1.1880	2.5875	0.83
ICBAMCL2ND	6.0081	1.1718	2.3227	0.85
ICB3RDNRB	5.8665	1.1247	2.4758	0.82
ICB2NDNRB	6.0811	1.0278	3.6549	0.64
DBH1STMF	3.4191	0.5588	1.9997	0.66
1JANATAMF	3.2505	0.5626	1.6638	0.74

Table 2: Risk and diversification.

	a_i	P-value of a_i	b_i	c_i	P-value of c_i
1STPRIMFMF	0.3104	0.4864	1.2266	-0.0078	0.5294
GREENDELMF	-0.1310	0.5978	0.4551	0.0025	0.6931
ABB1STMF	0.2837	0.5091	0.4116	0.0053	0.6324
TRUSTB1MF	-0.0479	0.9112	0.5792	0.0139	0.2131
PRIME1ICBA	0.3168	0.4948	1.1141	0.0116	0.3669
POPULAR1MF	0.3160	0.2041	0.5136	0.0045	0.4830
PHPMF1	0.2955	0.2912	0.5990	0.0043	0.5457
MBL1STMF	-0.1405	0.6940	0.4970	0.0044	0.6345
IFIC1STMF	0.0071	0.9872	0.5456	0.0122	0.2863
ICBEPMF1S1	0.2009	0.6695	1.1721	0.0161	0.2216
ICBAMCL2ND	0.1423	0.7369	1.1587	0.0132	0.2631
ICB3RDNRB	0.1821	0.6882	1.1138	0.0111	0.3804
ICB2NDNRB	0.0718	0.9146	1.0121	0.0159	0.3944
DBH1STMF	-0.1754	0.6386	0.5544	0.0016	0.8635
1JANATAMF	0.4178	0.1823	0.5562	0.0024	0.7589

Table 3: Treynor and Mauzy quadratic equation.

($t=50$)

The general conclusion in Table 3 is that fund managers of all the 15 funds have been unable to achieve both statistically significant market timing and selectivity.

f) Selectivity

Selectivity means the ability of a fund manager to generate return by selecting undervalued securities (priced lower than their intrinsic value at a point of time). It can be known with the help of Fama's (1972) decomposition measure:

$$\left(AR_p - AR_f\right) - \frac{\sigma_p}{\sigma_m\left(AR_m - AR_f\right)}$$

A positive high value indicates that the fund has achieved superior returns and investors are benefited out of the selectivity exercised by the Fund Manager.

Table 4 present breaks up of Portfolio returns with the help of Fama's decomposition measure. The result shows (Table 4; Column 5) out of 15 funds 12 funds have positive values indicating that funds have earned superior monthly return because of the security selection ability on the part of the fund managers. For GREENDELMF (-0.0729) MBL1STMF (-0.0404) DBH1STMF (-0.1403), the net selectivity is negative. It means that fund managers have taken diversifiable risk that has not been compensated by the extra returns.

Table 5 shows that based on dividend adjusted return all the funds except GREENDELMF (0.7753), MBL1STMF, (0.8110) DBH1STMF (0.7133) earned higher than benchmark market index. On the other hand some mutual funds have higher total risk and some mutual funds have lower total risk than benchmark. In addition some funds return are more sensitive (beta) than market and some funds return are less sensitive. But it doesn't mean anything until the risk adjusted return is analysed. Table 5 also shows that over research period from February 2013 to March 2017 on an average mutual fund earned return of 1.1392% monthly with standard deviation of 0.2192 monthly based on monthly NAV. Whereas average monthly return of DSEX index in this period was 0.84332 with the standard deviation of 0.0263 which indicates mutual funds' performance was better than DSEX index.

Limitations of the Study

This study has some limitations. These are given below:

a) The study only focuses on 15 closed-end mutual funds out of 36 traded in Dhaka stock Exchange (DSE) because of unavailability of data.

b) The period of study is restricted to 50 month starting from

	1. Risk free return (R_f)	2. Impact of systematic risk $\beta_p^*(AR_m-AR_f)$	3. Impact of imperfect diversification $(\frac{\sigma_p}{\sigma_m} - \beta_p)^* (AR_m-AR_f)$	4. Return for taking risk (2+3)	5. Net superior return due to selectivity $[(AR_p-AR_f)-(\sigma_p/\sigma_m)^* AR_m-AR_f)]$	6. % of net selectivity of total return	7. Portfolio return (1+4+5)
1STPRIMFMF	0.83	-0.0217	-0.0018	-0.0236	0.1419	14.96	0.9483
GREENDELMF	0.83	0.0158	0.0025	0.0182	-0.0729	-9.4058	0.7753
ABB1STMF	0.83	0.0144	0.0069	0.0213	0.4033	32.1474	1.2546
TRUSTB1MF	0.83	0.0210	0.0055	0.0265	0.2798	24.6265	1.1363
PRIME1ICBA	0.83	-0.0201	-0.0021	-0.0222	0.5738	41.5310	1.3816
POPULAR1MF	0.83	0.0179	0.0022	0.0201	0.4209	33.1162	1.2711
PHPMF1	0.83	0.0209	0.0024	0.0233	0.3973	31.7676	1.2505
MBL1STMF	0.83	0.0171	0.0044	0.0215	-0.0404	-4.9869	0.8110
IFIC1STMF	0.83	0.0197	0.0060	0.0257	0.2940	25.5683	1.1497
ICBEPMF1S1	0.83	-0.0212	-0.0021	-0.0233	0.5552	40.7678	1.3619
ICBAMCL2ND	0.83	-0.0209	-0.0018	-0.0226	0.4339	34.9568	1.2413
ICB3RDNRB	0.83	-0.0200	-0.0021	-0.0221	0.4270	34.5770	1.2349
ICB2NDNRB	0.83	-0.0183	-0.0046	-0.0229	0.4245	34.4666	1.2316
DBH1STMF	0.83	0.0191	0.0044	0.0235	-0.1403	-19.6649	0.7133
1JANATAMF	0.83	0.0192	0.0032	0.0224	0.4735	35.7108	1.3258

Table 4: Break up of portfolio returns.

	Average monthly return on mutual fund (AR_p)	Average monthly return on Benchmark (AR_m)	Average monthly risk free return (AR_f)	Portfolio risk (σ_p))	Risk of the benchmark portfolio (σ_m)	Volatility (β) (Digit)
1STPRIMFMF	0.9483	0.8122	0.83	6.2504	4.7287	1.2189
GREENDELMF	0.7753	0.8642	0.83	2.6497	4.9631	0.4617
ABB1STMF	1.2546	0.8637	0.83	3.1245	4.9545	0.4257
TRUSTB1MF	1.1363	0.8642	0.83	3.8494	4.9631	0.6158
PRIME1ICBA	1.3816	0.8122	0.83	5.8919	4.7287	1.1255
POPULAR1MF	1.2711	0.8642	0.83	2.9265	4.9631	0.5254
PHPMF1	1.2505	0.8642	0.83	3.3794	4.9631	0.6104
MBL1STMF	0.8110	0.8635	0.83	3.1675	4.9500	0.5086
IFIC1STMF	1.1497	0.8642	0.83	3.7369	4.9631	0.5777
ICBEPMF1S1	1.3619	0.8122	0.83	6.1849	4.7287	1.1880
ICBAMCL2ND	1.2413	0.8122	0.83	6.0081	4.7287	1.1718
ICB3RDNRB	1.2349	0.8122	0.83	5.8665	4.7287	1.1247
ICB2NDNRB	1.2316	0.8122	0.83	6.0811	4.7287	1.0278
DBH1STMF	0.7133	0.8642	0.83	3.4191	4.9631	0.5588
1JANATAMF	1.3258	0.8642	0.83	3.2505	4.9631	0.5626
Descriptive summary statistics of mutual funds and DSEX index						
Performance of Mutual Fund (Monthly NAV)			Performance of DSEX			
Average return	1.1392		Average return	0.84332		
Standard deviation	0.2192		Standard deviation	0.0263		
Maxima	1.3816		Maxima	0.8642		
Minima	0.7133		Minima	0.8122		
Median	1.2349		Median	0.8637		

Table 5: Return and risk on portfolios (figure in %).

February, 2013 to evaluate the performance of selected mutual fund but not from their commencement.

c) This paper only consider monthly net asset value (NAV) to evaluate the performance of selected mutual fund but most closed-end mutual funds are currently traded in Dhaka Stock Exchange at 20-40% discount to net asset value (NAV) even less than their face value due to 2010 share swindle.

d) The study is limit only to Bangladeshi mutual fund industry.

Concluding Remarks

To mobilize savings and accelerate economic growth of a country, mutual fund offers numerous advantages of diversification, variety, flexibility, as well as tax benefit to the investors. In a developed country, mutual fund industry is growing day by day, but developing countries, like Bangladesh, the conditions of mutual fund industry are far behind.

This paper provides an overview of the Bangladeshi mutual fund industry and examines the performance of mutual funds by using risk adjusted performance models. It has been found that most of the Closed-end mutual funds can beat benchmark market index (DSEX) in terms of risk and return. Moreover diversification, selection and timing ability have been analyzed by applying various different models as the co-efficient of determination (R^2), quadratic Treynor, Mazuy model and Fama decomposition model. Concerning diversification, selection

and timing ability it has been revealed that there is a good amount of diversification, moderate level of selectivity but no significant relationship between timing skill and return of funds.

Bangladesh is now facing some severe problems regarding the development of mutual fund industry which in turns make the job more difficult for Fund managers. Though most of the selected funds over research period are over-perform benchmark market index but market index itself is underestimated. In Bangladesh most investors have general lack of trust for professionally skilled mutual fund manager because of irregular redemption of closed-end fund. Recently High interest rate of government savings product, Lack of demand, Lack of disclosures by the mutual fund managers, Lack of inspection, High transaction cost, High inflation, Inexperienced investor are creating very tough time for the industry.

Timing skill was not also evident for mutual fund market for Bangladesh. To achieve this beta of the funds are required to adjust according to the market movement. Close-end mutual funds should be redeemed by fund managers on the date of its maturity mentioned on the prospectus and trust document which may help mangers to gain investors trust [24,25]. They should disclose all the relevant information of their diversified pool of securities to public. BSEC (Bangladesh Security and Exchange commission) should be inspecting and monitoring the fund's portfolio, operation and investment decision process on regular basis [26-29]. Finally Bangladesh should develop its poor performance in mutual fund market by developing its macroeconomic environment, institutional environment, equity market development, corporate governance, voice and accountability, political stability, financial stability and regulatory quality.

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