Journal of Accounting, Business and Finance Research
ISSN: 2521-3830
Vol. 3, No. 2, pp. 83-92, 2018
DOI: 10.20448/2002.32.83.92

Risk and Return Analysis of Closed-End Mutual Fund in Bangladesh

Tasruma Sharmeen Chowdhury[1]
Md.Habibullah[2]
Nurun Nahar[3]

[1]Assistant Professor, Bangladesh Institute of Capital Market, 34, Topkhana Road, Dhaka-1000, Bangladesh.
[1]*Email: tasruma.bicm@gmail.com*
[2]ACCA Affiliate, Assistant Professor, Bangladesh Institute of Capital Market, 34, Topkhana Road, Dhaka-1000, Bangladesh.
[3]Assistant Professor, Northern University Bangladesh.

Abstract

This study attempts to conduct a five-year performance assessment by analyzing all 24 closed-end mutual funds that had been trading at Dhaka Stock Exchange from December 2011 to January 2017. While analyzing the risk-return profile, the research incorporated both market price and net asset value (NAV) of the mutual funds.NAV depends on the price of securities included in a fund's portfolio whereas, the market price is determined by demand and supply forces. Thus, the market price of a fund is not always equal to its NAV. The study uses market price as a basis for analyzing the risk-return profile of the funds for evaluating the performance of the funds in the market. With the purpose of assessing the performance of asset managers, the study uses NAV as a basis for computing Jensen's α and M squared measure. While assessing performance the study focuses on Jensen's α and M squared measure as other measures like Sharpe and Treynor do not work with negative numerators and do not provide information on whether the mutual fund outperformed the market portfolio. Both Jensen's α and M squared measure can independently describe whether a fund beat the market or not. A positive value of Jensen's α and M squared measure indicates that the fund outperformed the market considering respectively β and σ as a measure of risk. SEBL1STMF, POPULAR1MF, and IFILISLMF1 were among top four funds considering both M2 and Jensen's alpha measures based on both market price and NAV. The M2 measure, a coefficient of variation, Sharpe ratio, and Treynor ranked SEBL1STMF as the best performer in the market. This fund also topped while assessing performance by M2 measure on the basis of NAV. On the basis of market price and NAV, 21 funds and 22 funds could produce positive M2 respectively. In the year 2012, 2013 and 2014 mutual funds provided negative annualized return on an average (On the basis of market price). The average annualized return rebounded on 2015 and further increased on 2016. All mutual funds provided a positive return in 2016. A different picture was found while calculating annualized return on the basis of NAV, asset managers could generate positive annualized returns on an average in 2013, 2014, 2015 and 2016.

Keywords:
Mutual fund
DSE
Performance analysis
alpha
M Square
Risk and return.

JEL Classification:
G10, G11.

Publisher:
Scientific Publishing Institute

1. Introduction

Mutual Fund is a type of collective investment scheme (CIS) or a 'pooled investment'. It is a trust where investors put their money and a professional fund manager invests the collected fund in different types of asset, such as stocks, bond, short-term money market instruments, and other securities. It is also a way to collect small savings from the retail sector. When someone buys a share of the mutual fund it represents his/her portion of the investment portfolio. The mutual fund allows let alone investors avail the opportunity to manage their fund by the professional fund manager, which would otherwise be expensive and in most of the cases out of reach for them. It also allows them to hold a widely-diversified portfolio.

In Bangladesh, mutual funds are established and governed by Bangladesh Securities and Exchange and Commission (Mutual Fund) Rules, 2001, Trust Act, 1882 and Registration Act,1908. Although, the history of mutual fund in Bangladesh is of more than 37 years the sector is still at a nascent stage and very small in size compared to the capital market. Since the beginning of the sector in 1980, there has only been close-ended fund in the country. Investment Corporation of Bangladesh (ICB) launched the first-ever mutual fund named 'the first ICB mutual fund' that created the history of mutual fund in the country. Since then, this sector has been growing very slowly. In 2010, for the first time, an open-end mutual fund was launched in the country. There are 35 mutual funds currently trading in Dhaka Stock Exchange (DSE) by December 2016[1]. The market capitalization of this sector is USD445 million which is only 1.03 percent of total market capitalization. Moreover, based on market capitalization this sector secured 12th place in December 2016[2].

While the mutual fund sector has grown over time, academic studies in this sector have remained narrow. Investors are not well aware of the performance of these funds. Hence, with the development of this sector, it has become necessary to measure the performance of mutual funds in regular interval. In Bangladesh, previous studies evaluated the performance of mutual funds for a shorter period of twelve to eighteen months. In the shorter period, the performance of mutual funds can be affected by the condition of the capital market. In this context, this study considered a five-year period to incorporate both the ups and downs of the market.

The present study has been carried out to evaluate the performance of 24 close-ended mutual funds those had been trading at DSE during the period 2012 to 2016 by means of risk and return analysis using Sharpe ratio, Treynor ratio, Jensen's α and M squared measure. The study intends to evaluate the performance of mutual funds based on both market price and net asset value (NAV). Demand and supply forces determine the market price of the closed-end mutual fund. Net asset value (NAV) represents the value of the mutual fund. NAV is calculated based on the closing price of the securities in the fund's portfolio. The market price does not always equal the NAV. Investors will get NAV per unit at the end of maturity period if he/she holds it till maturity. In order to assess the performance of the asset manager, the study uses NAV as a basis for computing Sharpe ratio, Treynor ratio, Jensen's α, and M squared measure. The market price has been used to assess the performance of mutual funds in the market. This study uses M squared measure and alpha for assessing performance as these measures can provide independent and objective results.

2. Literature Review

A number of researches have been done to study the performance of mutual funds. It is found that by investing in mutual funds investors can diversify their risk (Cumby & Glen, 1990; Eun, Kolodny, & Resnick, 1991). It is also observed that mutual funds are doing better in the domestic market than in the international market.15 US-based international mutual funds' performance has been examined and found that they did better in the domestic market than in the international market (Chen & Jang, 1994). In an alike research, Kao, Cheng, and Chan (1998) found that international mutual fund managers are poor in making investment decisions based on economic and other factors affecting the direction of the market. Whereas, using Chines market setup, Kiymaz (2015) examined the performance of mutual funds by applying different risk-adjusted measures such as Sharpe ratio; Treynor ratio; Jensen's α, and found that these funds outperformed market portfolio. Similarly, Noulas, Papanastasiou, and Lazaridis (2005) examined the performance of Greek equity funds considering risk and return analysis using the coefficient of variation and the systematic risk. They found a positive relationship between risk and return. They also found betas of less than one for the study period.

In a study, Qamruzzaman (2014) used risk-adjusted performance measures; Sharpe ratio, Treynor's ratio, and Jensen Alpha to find the performance of 32 growth-oriented closed-ended mutual funds on a monthly basis.In his study period market was not performing well (average return was negative) so as the mutual funds. Beta, a measure of systematic risk was found to be negative for few mutual fund schemes which resulted in dissimilar ranking of the mutual fund schemes according to the measurements.

Anwar and Hayder (2016) worked on 31 growth-oriented closed-ended mutual funds in Bangladesh and found their performance on the basis of weekly NAV and weekly close price and compared them with the market. During the study period (June 2014- June 2016) average return of the sample is higher when the calculation was based on weekly close price but lower, in fact negative, when the calculation is based on NAV

[1]Dhaka Stock Exchange Monthly Review December 2016.
[2]Dhaka Stock Exchange Monthly Review December 2016.

than that of the market. They took worldwide accepted risk-adjusted performance measures. Positive values of each measurement indicate better performance and vice versa. Results showed consistency in the case of Jensen's measurement. They mentioned that the performance relied on both the asset management companies and the role of regulatory bodies. The authors suggested transparency in disclosing the level of risk associated with a return in the annual reports for the sake of investors and prospective investors can bring back the trust and confidence.

2.1. Objectives of the Study

The objectives of the study are:

- to find the average monthly return based on market price provided by the closed-end mutual fund to investors over 5 years
- to find the average monthly return based on NAV generated by asset managers of the closed-end mutual fund over 5 years
- to compare year-wise annualized returns based on market price and NAV
- to assess the performance of closed-end mutual funds in the market
- to evaluate the performance of asset managers

3. Methodology

This study intends to assess the performance of all Closed-end Mutual Funds that were being traded in the Dhaka Stock Exchange from December 2011 to January 2017. For five-year performance assessment, the research analyzed 24 closed-end mutual funds that were in existence during the stipulated period. Market prices of a mutual fund, as well as net asset value (NAV)s, have been considered for calculating the return. In order to evaluate the performance of the asset manager, the study uses NAV as a basis for computing Sharpe ratio, Treynor ratio, Jensen's α and M squared measure. The market price has been used as a basis of calculation for the assessment of the performance of the mutual fund in the market. Monthly market prices have been collected from DSE library. NAVs (based on market price) have been collected from DSE news. To determine the risk-free rate of return, the returns of 91- days Treasury Bill have been collected from the website of Bangladesh Bank. Then the annual returns have been converted to monthly returns. The broad index of Dhaka Stock Exchange, DSEX index has been considered as a benchmark. Data for DSEX index have been collected from DSE library.

This study estimates risk-return profiles for closed-end mutual funds for the five-year period. Price and NAV for 61 months (December 2011 to January 2017) have been used to compute return for 60 months (January 2012 to January 2017). Monthly returns are used for computing measures of risk as well as return.

3.1. Return

For analyzing price based performance, monthly returns of mutual funds are calculated using the following formula:

$$R_t = \frac{(D_t + P_t - P_{t-1})}{P_{t-1}}$$

Where,

R_t = Return of mutual fund in period t

P_t = Market price of mutual fund in period t

P_{t-1} = Market price of mutual fund in the period t-1

D_t = Dividend paid by the mutual fund in period t

For analyzing NAV based performance, monthly returns are calculated using the following formula:

$$R_t = \frac{(D_t + NAV_t - NAV_{t-1})}{NAV_{t-1}}$$

Where,

R_t = Return of mutual fund in period t

NAV_t = Net asset value of the mutual fund in period t

NAV_{t-1} = Net asset value of the mutual fund in the period t-1

D_t = Dividend paid by the mutual fund in period t

These prices and NAVs are adjusted for the issuance of re-investment unit (RIU). Number of RIU per unit is calculated by the following equation:

$$No.\ of\ RIU = \frac{No.\ of\ unit\ holding\ at\ record\ date \times Face\ value \times Declared\ RIU\ \%}{NAV\ per\ unit\ market\ price\ basis}$$

Mean monthly returns of a mutual fund (R_i) is found by calculating the arithmetic mean of 60 monthly returns.

Monthly market returns are calculated using the following formula:

$$R_t = \frac{Index_t - Index_{t-1}}{Index_{t-1}}$$

Where,

R_t = Return in period t

$Index_t$ = Index in period t

$Index_{t-1}$ = Index in period t-1

DSEX is used as a market benchmark. Average monthly market return (R_m) is found by calculating the arithmetic mean of 60 monthly market returns.

The study uses the monthly yield of 91- days Treasury Bills over the stipulated period as a proxy of the risk-free rate of return. The average risk-free rate of return (R_f) is found by calculating the arithmetic mean of 60 month's yields of 91- days Treasury Bills.

3.2. Risk

The study uses Standard deviation(σ_i), Coefficient of variation (CV) and Beta (β)for measuring risk.

$\sigma_i$is used for measuring 'Total risk'. It represents the dispersion of observations from the mean. Greater $\sigma_i$indicates greater deviation and higher risk.

CV is used for measuring relative risk. It represents the risk per unit of return. The lower the value of CV the lower the relative risk of the fund.

This study also calculates 'Leverage Factor', which compares the risk of the fund with the risk of a market benchmark.

$$L_i = \frac{\sigma_m}{\sigma_i}$$

σ_m = Standard Deviation of market returns

σ_i = Standard Deviation of individual fund's return

Market risk or systematic risk is estimated by beta. Beta is calculated by using the following formula:

$$\beta = Covarience\frac{R_i, R_m}{(\sigma_m)^2}$$

3.3. Risk-Adjusted Performance

Performance of individual mutual fund is assessed by Sharpe Ratio, Treynor performance measure, Jensen's Alpha, M squared measure and information ratio.

Sharpe ratio represents the risk premium earned per unit of total risk. It can be expressed as:

$$S_i = \frac{R_i - R_f}{\sigma_i}$$

Sharpe ratio assesses the performance on the basis of both the rate of return and total risk or variability. The fund with the higher Sharpe ratio has the better performance. But the Sharpe ratio of an individual fund by itself is not informative. The Sharpe ratio for each fund must be computed for comparing funds. Sharpe ratio with negative numerator provides an incorrect ranking. It is another limitation of the Sharpe ratio.

Treynor performance measure considers market risk or systematic risk. It assumes portfolio of a mutual fund should be completely diversified. Thus, the pertinent risk for achieving higher return compensations should be the market risk which is not diversifiable. Treynor performance measure can be expressed as:

$$T_i = \frac{R_i - R_f}{\beta_i}$$

This represents the risk premium return per unit of systematic risk. The greater value of Treynor measure is preferable to investors. Treynor ratio does not work for negative numerators. It also requires positive beta to provide a meaningful ranking.

Both Sharpe and Treynor ratios do not provide information on whether the mutual fund outperformed the market portfolio. They do not provide information about the degree of superiority of a higher ratio of mutual fund over a lower ratio mutual fund.

As both the Sharpe ratio and Treynor ratio have some limitations, this study uses other measures for ranking purpose. While considering the total risk M Squared (M^2) measure is used and based on market risk Jensen Measure is used for ranking the mutual funds' performance.

M Squared (M^2) measure is an alternative way of raking the performance of mutual funds. It can be expressed as:

$$M^2 = (R_i - R_f) \times \left(\frac{\sigma_m}{\sigma_i}\right) - (R_m - R_f)$$

M^2 value equal to zero indicates that the performance of the mutual fund matches that of the market. A positive value of M^2 indicates that, the mutual fund beats the market on a risk-adjusted basis.

Jensen's alpha is based on market risk. Jensen's Alpha represents the difference of actual mean return and the expected return of each mutual fund. It can be expressed as:

$$Jensen's\ alpha = \alpha_i = R_i - [R_f + \beta_i(R_m - R_f)]$$

A positive value of Jensen's alpha means the mutual fund outperformed the market. On the other hand, a negative value indicates underperformance in comparison with the market.

4. Results

4.1. Analysis Based on Market Price of Mutual Funds

Mean monthly return based on the market price of 24 mutual funds along with their total risk, relative risk, systematic risk, risk-adjusted performance measures is presented in Appendix Table 1.

4.2. Return (Based on Market Price)

The highest average monthly return (Based on market price) over a five-year period (2012-2016) was 3.00% earned by POPULAR1MF, and its closest competitor was IFILISLMF1 (2.10%) when market produced 0.77% (DSEX index) average monthly return. The least average monthly return, 0.64% earned by EBLNRBMF. LRGLOBMF1 earned 0.76% average monthly return. These two funds provided a negative market adjusted return (Ri – Rm). However, all of the funds showed positive average monthly returns. All funds except two produced a positive market adjusted return which indicated investing in mutual funds is becoming attractive.

Year-wise annualized return on the funds is presented in Appendix Table 2. An annualized return has been calculated by compounding return relatives for 12 months. On an average return of funds in the year 2012, 2013 and 2014 were negative. Return turned green in 2015 and increased in 2016.

4.3. Risk (Based on Market Price)

1STPRIMFMF showed the highest total risk σ (22.28%, return = 1.82%), the measure of total risk, and SEBL1STMF showed the least risk (5.91%, return = 1.83%) while the standard deviation of the DSEX index was 5.62%. Though total risk varied highly for the two MFs, average monthly returns were almost similar for them which indicated that investment on most risky fund yield as same as an investment on the least risky fund. All of the closed end mutual funds showed total risk lower than that of the market. The fund with the lowest relative risk (3.23) was SEBL1STMF. That means SEBL1STMF bore the lowest risk per unit of return. The highest relative risk (CV) was borne by EBLNRBMF (16.66).

Table 1 also presents the values of fund Betas. 20 out of 24 funds had beta value lower than 1. Those which had betas higher than 1 were POPULAR1MF, GRAMEENS2, IFIC1STMF, and PF1STMF. These funds were more sensitive to market movement. The market beta was 1. The fund with the highest beta was POPULAR1MF (1.13). That means the fund was theoretically 13% more volatile than the market. SEBL1STMF showed the lowest beta (0.29). It indicates that the fund's excess return was expected to outperform by 71% during bearish markets and underperform the benchmark by 71% in bullish markets.

The leverage factor of all funds was below 1, which implies that the total risk of the fund is greater than that of the market index. Investors should not use the borrowed fund to purchase funds having leverage factor less than 1.

4.4. Performance (Based on Market Price)

SEBL1STMF achieved the highest Sharpe measure of 0.2105, which implies that the fund generated 0.2105 units of excess return per unit of total risk. In comparison, the Sharpe measure of the DSEX index was 0.03393.SEBL1STMF also had highest Treynor measure (0.0434) and for DSE index it was 0.0019. SEBL1STMF obtained the highest M^2 (0.0099). Appendix Table 1 shows 21 funds produced positive M^2, that means, 21 funds outperformed market considering σ as a measure of risk. POPULAR1MF produced the highest Alpha, 0.0220 or 2.20%, which represents the fund generated a return of 2.20 percent per period more than that was expected given the portfolio's risk level. Appendix Table 1 presents, all funds except one (EBLNRBMF) generated positive alpha. That means, 23 funds outperformed the market.

Appendix Table 3 represents a ranking of funds based on M^2 and Jensen's alpha. SEBL1STMF, POPULAR1MF, ICB1STNRB, and IFILISLMF1 were among top five funds considering both M^2 and Jensen's alpha measures.

4.5. Analysis Based on NAV of Mutual Funds

Mean monthly return based on NAV of 24 mutual funds and their total risk, relative risk, systematic risk, risk-adjusted performance measures are presented in Appendix Table 4.

4.6. Return (Based on NAV)

ICBEPMF1S1 produced the highest average monthly return (Based on NAV), 1.53%, over a five-year period (2012-2016) and POPULAR1MF produced the second largest average monthly return, 1.51%. DBH1STMF was the least attractive fund (0.61%) to invest considering return only. The year-wise annualized return (based on NAV) of funds is presented in Appendix Table 5. Average annualized return of all mutual funds in year 2012,2013,2014,2015 and 2016 were -5.0784, 11.8044, 13.5473, 8.6336 and 16.1777 respectively. In the year 2012, 15 mutual funds had a negative return (based on NAV). All except one mutual fund generated a positive return (based on NAV) in the year 2015. Annual returns of all mutual fund were positive in 2013, 2014 and 2016.

4.7. Risk (Based on NAV)

The three least risky funds were LRGLOBMF1 (2.51%), SEBL1STMF (2.53%) and RELIANCE1 (2.90%) and the three most risky funds were 1STPRIMFMF (7.51%), ICBEPMF1S1 (6.53%) and ICB1STNRB (6.36%) considering total risk. SEBL1STMF carried the lowest relative risk. Only one fund, 1STPRIMFMF had a beta greater than 1 and SEBL1STMF had the lowest beta value, 0.18.

4.8. Performance (Based on NAV)

SEBL1STMF obtained the highest Sharpe measure (0.2571, the portfolio manager generated 0.2571 units of excess return per unit of total risk). SEBL1STMF had the highest Treynor measure (0.0368) also. The fund with the highest M^2 (0.0125) was also SEBL1STMF. Treynor ratio and Sharpe ratio provided an identical ranking for the fund, which can be interpreted as that this fund is theoretically completely diversified. Table 6 shows, 22 funds had positive M^2 that means 22 funds beat market. POPULAR1MF had the highest Alpha value (0.0085). Table 1 presents, all funds except 2 generated positive Alpha. That indicates based on NAV, 22 funds could realize an abnormal return. These 22 funds outperformed the market and generated return more than what would have been expected given the risk level of the funds.

Appendix Table 6 represents a ranking of funds based on M^2 and Jensen's alpha. SEBL1STMF, POPULAR1MF, IFILISLMF1, and ICB2NDNRB were among top seven funds considering both M^2 and Jensen's alpha measures.

5. Conclusion

The study assessed the performance of mutual funds based on both market price and net asset value (NAV). The market price has been used as a basis of calculation for evaluating the performance of the mutual fund in the market. In order to assess the performance of asset manager, the study uses NAV as a basis for computing Sharpe ratio, Treynor ratio, Jensen's α, and M squared measure. The highest average monthly return (based on market price) over a five-year period was 3.00% earned by POPULAR1MF (3.00%). In the year 2012, 2013 and 2014 mutual funds demonstrated a negative annualized return on an average (on the basis of market price). The average annualized return became positive in 2015 and further increased in 2016. All mutual funds provided a positive return on 2016. On the basis of NAV on average mutual funds provided positive annualized returns in 2013, 2014, 2015 and 2016. The five-year analysis shows SEBL1STMF had the highest Sharpe ratio, Treynor ratio, and M^2. It also carried the lowest CV. This fund also topped while assessing performance on the basis of NAV. SEBL1STMF, POPULAR1MF, and IFILISLMF1 were among top four funds considering both M^2 and Jensen's alpha measures based on both market price and NAV. On the basis of market price, 21 funds demonstrated positive M^2 whereas 23 funds produced positive alpha. On the other hand,on the basis of NAV 22 fund could produce positive M^2 as well as alpha. However, while evaluating the performance of Mutual Funds, this study does not address the management techniques and strategies

followed by asset managers. In the future, research can be conducted evaluating the strategies followed by asset managers.

References

Anwar, S. R., & Hayder, A. T. M. (2016). Evaluation of mutual funds performance in Bangladesh: Investors and market perspective. *Global Journal of Management and Business Research, 16*(9), 1 - 10.

Chen, S.-N., & Jang, H. (1994). On selectivity and market timing ability of U.S.-based international mutual funds: Using refined Jensen's measure. *Global Finance Journal, 5*(1), 1-15.

Cumby, R. E., & Glen, J. D. (1990). Evaluating the performance of international mutual funds. *Journal of Finance, 45*(2), 497-521. Available at: 10.1111/j.1540-6261.1990.tb03700.x.

Eun, C. S., Kolodny, R., & Resnick, B. G. (1991). U.S.-based international mutual funds: A performance evaluation. *Journal of Portfolio Mangement, 17*(3), 88-94. Available at: 10.3905/jpm.1991.409337.

Kao, G. W., Cheng, L. T., & Chan, K. C. (1998). International mutual fund selectivity and market timing during up and down market conditions. *Financial Review, 33*(2), 127-144. Available at: 10.1111/j.1540-6288.1998.tb01373.x.

Kiymaz, H. (2015). A performance evaluation of Chinese mutual funds. *International Journal of Emerging Markets, 10*(4), 820-836. Available at: 10.1108/IJoEM-09-2014-0136.

Noulas, A. G., Papanastasiou, J. A., & Lazaridis, J. (2005). Performance of mutual funds. *Managerial Finance, 31*(2), 101-112. Available at: http://dx.doi.org/10.1108/03074350510769523.

Qamruzzaman, A. M. (2014). Comparative study on performance evaluation of mutual fund schemes in Bangladesh: An analysis of monthly returns. *Journal of Business Studies Quarterly, 5*(4), 190-209.

Appendix

Table-1. Five-year performance (Based on market price) of closed -end mutual funds of DSE on a monthly basis using DSEX index as benchmark (Feb 2012- Jan 2017).

	Average monthly return (%)	**σ(%)**	**CV**	**β**	**Sharpe ratio**	**Treynor ratio**	**α**	**L_i**	**M^2**
1JANATAMF	0.84	9.77	11.59	0.82	0.0265	0.0032	0.0010	0.5749	-0.0004
1STPRIMFMF	1.82	22.28	12.24	0.55	0.0555	0.0225	0.0113	0.2520	0.0012
AIBL1STIMF	1.39	12.46	8.95	0.66	0.0648	0.0122	0.0068	0.4507	0.0017
DBH1STMF	1.17	11.91	10.14	0.80	0.0496	0.0074	0.0044	0.4717	0.0009
EBL1STMF	1.01	9.10	9.01	0.85	0.0469	0.0050	0.0026	0.6172	0.0007
EBLNRBMF	0.64	10.63	16.66	0.71	0.0051	0.0008	-0.0008	0.5282	-0.0016
GRAMEENS2	1.37	12.85	9.37	1.09	0.0612	0.0072	0.0058	0.4370	0.0015
GREENDELMF	1.59	13.13	8.27	0.80	0.0765	0.0125	0.0085	0.4276	0.0024
ICB1STNRB	1.83	9.32	5.08	0.54	0.1343	0.0230	0.0115	0.6028	0.0056
ICB2NDNRB	1.63	10.68	6.54	0.86	0.0982	0.0121	0.0088	0.5257	0.0036
ICB3RDNRB	1.56	11.75	7.55	0.73	0.0828	0.0133	0.0083	0.4778	0.0027
ICBAMCL2ND	1.74	11.82	6.78	0.85	0.0982	0.0136	0.0100	0.4750	0.0036
ICBEPMF1S1	1.68	12.31	7.34	0.77	0.0888	0.0143	0.0095	0.4560	0.0031
IFIC1STMF	1.38	10.58	7.68	1.06	0.0751	0.0075	0.0059	0.5307	0.0023
IFILISLMF1	2.10	12.13	5.77	0.89	0.1253	0.0171	0.0135	0.4629	0.0051
LRGLOBMF1	0.76	10.07	13.34	0.57	0.0170	0.0030	0.0006	0.5574	-0.0009
MBL1STMF	1.04	11.08	10.68	0.97	0.0410	0.0047	0.0027	0.5070	0.0004
PF1STMF	1.93	14.64	7.59	1.01	0.0918	0.0133	0.0115	0.3837	0.0033
PHPMF1	1.22	12.64	10.32	0.95	0.0507	0.0067	0.0046	0.4443	0.0009
POPULAR1MF	3.00	17.89	5.96	1.13	0.1352	0.0214	0.0220	0.3140	0.0057
PRIME1ICBA	1.35	12.70	9.43	0.79	0.0601	0.0097	0.0061	0.4421	0.0015
RELIANCE1	1.25	8.64	6.89	0.72	0.0776	0.0093	0.0053	0.6502	0.0025
SEBL1STMF	1.83	5.91	3.23	0.29	0.2105	0.0434	0.0119	0.9496	0.0099
TRUSTB1MF	0.99	10.80	10.86	0.89	0.0380	0.0046	0.0024	0.5199	0.0002
DSEX	0.77	5.62	7.25	1.00	0.0339	0.0019	0.0000	1.0000	0.0000
91 days Treasury Bill	0.58	0.23	2.59	0.00	0.0000	0.0000	0.0000	24.9553	-0.0019

Table-2. Year-wise annualized return (Based on market price) of closed -end mutual funds of DSE.

Annualized returns (%)					
	2012	**2013**	**2014**	**2015**	**2016**
1JANATAMF	-21.3483	-14.2857	-4.9105	-7.2212	43.6581
1STPRIMFMF	51.5648	-6.1427	-32.2680	-31.1617	26.3830
AIBL1STIMF	-11.9048	-2.7027	-32.4449	62.2222	34.5167
DBH1STMF	-14.4578	-21.1268	-16.8085	15.7845	59.4711
EBL1STMF	-2.3392	-14.1438	-7.3571	-15.5721	60.3938
EBLNRBMF	-10.4762	-9.9764	-31.4188	-11.9509	76.2024
GRAMEENS2	26.7930	-10.3945	-25.4275	-5.9230	45.8439
GREENDELMF	1.4706	-23.1884	-13.2075	12.3913	66.2571
ICB1STNRB	5.0845	5.7173	-5.5889	17.0936	33.8099
ICB2NDNRB	9.8416	-14.5991	-6.9232	27.8193	23.8027
ICB3RDNRB	-10.3896	-26.0870	-4.7659	17.9996	59.2795
ICBAMCL2ND	-10.0931	-20.5479	-10.8504	18.1564	57.7210
ICBEPMF1S50	2.9476	-29.6296	-10.8273	62.7912	27.0348
IFIC1STMF	12.3604	-10.2895	-14.8145	-8.0992	29.5141
IFILISLMF1	-1.5873	-9.6774	21.3599	27.5304	28.1366
LRGLOBMF1	-2.0816	-24.3063	-24.0619	30.0000	38.1818
MBL1STMF	-25.0000	-8.6957	-25.9897	26.6667	46.3659
PF1STMF	8.5135	-26.0274	-5.3498	1.2287	57.7381
PHPMF1	-1.4706	-17.9104	-6.5384	-7.0260	31.7073
POPULAR1MF	4.3478	-14.7000	-7.9500	-7.5580	140.3727
PRIME1ICBA	-13.6374	-21.4286	-11.1111	15.2174	43.7710
RELIANCE1	-9.6095	5.5748	-4.1616	11.1111	57.7236
SEBL1STMF	6.6102	1.9100	18.3812	30.6250	48.5709
TRUSTB1MF	4.2141	-10.0166	-18.2950	-12.9289	42.4182
DSEX	-19.7484	11.4219	14.0257	-4.8371	8.7784
Average of 24 Closed-end mutual funds	-0.0270	-13.4448	-11.7221	11.2165	49.1198

Table-3. Five-year ranking (Based on market price) of closed -end mutual funds of DSE on a monthly basis using DSEX index as benchmark (Feb 2012- Jan 2017).

Name of Mutual Fund	**Ranking based on M^2**	**Ranking based on Jensen's alpha**
SEBL1STMF	1	3
POPULAR1MF	2	1
ICB1STNRB	3	5
IFILISLMF1	4	2
ICBAMCL2ND	5	7
ICB2NDNRB	6	9
PF1STMF	7	4
ICBEPMF1S1	8	8
ICB3RDNRB	9	11
RELIANCE1	10	16
GREENDELMF	11	10
IFIC1STMF	12	14
AIBL1STIMF	13	12
GRAMEENS2	14	15
PRIME1ICBA	15	13
1STPRIMFMF	16	6
PHPMF1	17	17
DBH1STMF	18	18
EBL1STMF	19	20
MBL1STMF	20	19
TRUSTB1MF	21	21
1JANATAMF	22	22
LRGLOBMF1	23	23
EBLNRBMF	24	24

Table-4. Five-year performance (Based on NAV) of closed -end mutual funds of DSE on a monthly basis using DSEX index as benchmark (Feb 2012- Jan 2017).

	Average monthly return (%)	**σ**	**CV**	**β**	**Sharpe ratio**	**Treynor ratio**	**α**	**L_i**	**M^2**
1JANATAMF	1.20	3.26	2.72	0.46	0.1892	0.0134	0.0053	1.7204	0.0087
1STPRIMFMF	1.04	7.51	7.25	1.06	0.0602	0.0043	0.0025	0.7479	0.0015
AIBL1STIMF	0.77	3.15	4.10	0.33	0.0584	0.0056	0.0012	1.7854	0.0014
DBH1STMF	0.61	3.67	6.02	0.45	0.0069	0.0006	-0.0006	1.5307	-0.0015
EBL1STMF	1.06	4.28	4.03	0.58	0.1116	0.0082	0.0037	1.3110	0.0044
EBLNRBMF	0.80	3.51	4.40	0.39	0.0613	0.0056	0.0014	1.5978	0.0015
GRAMEENS2	1.19	3.88	3.25	0.45	0.1575	0.0136	0.0052	1.4489	0.0069
GREENDELMF	0.70	2.93	4.21	0.36	0.0385	0.0031	0.0004	1.9137	0.0003
ICB1STNRB	1.37	6.36	4.64	0.96	0.1239	0.0082	0.0061	0.8828	0.0051
ICB2NDNRB	1.47	6.07	4.14	0.92	0.1456	0.0096	0.0071	0.9257	0.0063
ICB3RDNRB	1.42	6.20	4.36	0.93	0.1353	0.0091	0.0066	0.9056	0.0057
ICBAMCL2ND	1.39	6.26	4.51	0.96	0.1285	0.0084	0.0062	0.8969	0.0053
ICBEPMF1S1	1.53	6.53	4.26	0.98	0.1451	0.0096	0.0076	0.8604	0.0062
IFIC1STMF	1.00	3.61	3.60	0.46	0.1161	0.0091	0.0033	1.5546	0.0046
IFILISLMF1	1.38	5.02	3.62	0.68	0.1596	0.0117	0.0067	1.1193	0.0071
LRGLOBMF1	0.64	2.51	3.93	0.32	0.0219	0.0017	-0.0001	2.2344	-0.0007
MBL1STMF	0.74	3.75	5.05	0.39	0.0426	0.0041	0.0009	1.4969	0.0005
PF1STMF	1.21	6.05	5.00	0.93	0.1033	0.0067	0.0045	0.9287	0.0039
PHPMF1	0.90	3.55	3.93	0.42	0.0901	0.0075	0.0024	1.5798	0.0032
POPULAR1MF	1.51	5.86	3.88	0.39	0.1579	0.0237	0.0085	0.9586	0.0070
PRIME1ICBA	1.19	5.83	4.88	0.91	0.1046	0.0067	0.0044	0.9634	0.0040
RELIANCE1	1.17	2.90	2.48	0.31	0.2022	0.0190	0.0053	1.9361	0.0094
SEBL1STMF	1.24	2.53	2.05	0.18	0.2571	0.0368	0.0062	2.2169	0.0125
TRUSTB1MF	0.93	3.84	4.11	0.50	0.0911	0.0070	0.0025	1.4643	0.0032
DSEX	0.77	5.62	7.25	1.00	0.0339	0.0019	0.0000	1.0000	0.0000
91 days Treasury Bill	0.58	0.23	0.39	0.00	0.0000	0.0000	0.0000	24.9553	-0.0019

Table 4: Five-year performance (Based on NAV) of closed -end mutual funds of DSE on a monthly basis using DSEX index as benchmark (Feb 2012- Jan 2017)

Table-5. Year-wise annualized return (Based on NAV) of closed -end mutual funds of DSE.

Annualized returns (%)					
	2012	**2013**	**2014**	**2015**	**2016**
1JANATAMF	1.3605	10.8501	19.2076	12.1241	6.7434
1STPRIMFMF	-17.1082	10.5234	9.4640	-1.7644	19.2063
AIBL1STIMF	0.3195	6.4756	5.7717	17.5124	4.0155
DBH1STMF	-4.0752	7.4074	2.2380	11.6619	1.3041
EBL1STMF	2.0944	0.6287	18.6071	11.4929	26.1434
EBLNRBMF	1.2488	6.0196	9.8059	6.3468	42.3294
GRAMEENS2	-0.4050	22.5239	16.5555	2.5409	23.5011
GREENDELMF	-1.0078	6.6742	7.2110	7.9045	5.2755
ICB1STNRB	-14.5570	13.8443	13.8410	8.2909	24.7929
ICB2NDNRB	-14.0197	15.6142	13.3787	14.0362	22.6911
ICB3RDNRB	-15.6499	15.0943	15.5227	12.2934	20.9518
ICBAMCL2ND	-17.2797	13.9276	15.5948	11.1589	22.2416
ICBEPMF1S50	-16.2726	14.7920	20.1711	10.5218	23.9541
IFIC1STMF	6.8331	4.7316	13.3191	7.4914	8.5252
IFILISLMF1	-9.2308	26.8362	20.3592	4.8631	14.9961
LRGLOBMF1	0.2343	10.4842	2.6859	8.8889	5.3554
MBL1STMF	0.1081	6.9114	4.2736	13.5458	3.8920
PF1STMF	-16.0545	12.7962	19.1663	3.6564	13.4323
PHPMF1	-1.3378	9.1525	15.5971	9.8160	0.9506
POPULAR1MF	1.1518	9.0357	16.1494	9.2363	38.4757
PRIME1ICBA	-16.4388	14.5706	20.2877	4.3372	12.8626
RELIANCE1	-0.1648	26.9326	12.5535	2.8891	17.8009
SEBL1STMF	9.4435	11.2351	20.4005	10.2965	20.1121
TRUSTB1MF	-1.0736	6.2447	12.9748	8.0652	8.7108
DSEX	-19.7484	11.4219	14.0257	-4.8371	8.7784
Average of 24 Closed-end mutual funds	-5.0784	11.8044	13.5473	8.6336	16.1777

Table-6. Five-year ranking (Based on NAV) of closed -end mutual funds of DSE on a monthly basis using DSEX index as benchmark (Feb 2012- Jan 2017).

	Ranking based on M²	**Ranking based on Jensen's alpha**
SEBL1STMF	1	7
RELIANCE1	2	10
1JANATAMF	3	9
IFILISLMF1	4	4
POPULAR1MF	5	1
GRAMEENS2	6	11
ICB2NDNRB	7	3
ICBEPMF1S1	8	2
ICB3RDNRB	9	5
ICBAMCL2ND	10	6
ICB1STNRB	11	8
IFIC1STMF	12	15
EBL1STMF	13	14
PRIME1ICBA	14	13
PF1STMF	15	12
TRUSTB1MF	16	16
PHPMF1	17	18
EBLNRBMF	18	19
1STPRIMFMF	19	17
AIBL1STIMF	20	20
MBL1STMF	21	21
GREENDELMF	22	22
LRGLOBMF1	23	23
DBH1STMF	24	24

Table-7. Name of Mutual Funds.

	Name of the fund
1JANATAMF	First Janata Bank Mutual Fund
1STPRIMFMF	Prime Finance First Mutual Fund
AIBL1STIMF	AIBL 1st Islamic Mutual Fund
DBH1STMF	DBH First Mutual Fund
EBL1STMF	EBL First Mutual Fund
EBLNRBMF	EBL NRB Mutual Fund
GRAMEENS2	Grameen One : Scheme Two
GREENDELMF	Green Delta Mutual Fund
ICB1STNRB	ICB AMCL 1st NRB Mutual Fund
ICB2NDNRB	ICB AMCL 2nd NRB Mutual Fund
ICB3RDNRB	ICB AMCL Third NRB Mutual Fund
ICBAMCL2ND	ICB AMCL Second Mutual Fund
ICBEPMF1S1	ICB Employees Provident MF 1: Scheme 1
IFIC1STMF	IFIC Bank 1st Mutual Fund
IFILISLMF1	IFIL Islamic Mutual Fund-1
LRGLOBMF1	LR Global Bangladesh Mutual Fund One
MBL1STMF	MBL 1st Mutual Fund
PF1STMF	Phoenix Finance 1st Mutual Fund
PHPMF1	PHP First Mutual Fund
POPULAR1MF	Popular Life First Mutual Fund
PRIME1ICBA	Prime Bank 1st ICB AMCL Mutual Fund
RELIANCE1	"Reliance One" the first scheme of Reliance Insurance Mutual Fund
SEBL1STMF	Southeast Bank 1st Mutual Fund
TRUSTB1MF	Trust Bank 1st Mutual Fund