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Evaluation of Portfolio Performance of the Investment Corporation of Bangladesh's Mutual Funds

Abu Bakar Seddeke [α] & Mahbubur Rahman [σ]

Abstract- The number of mutual funds that were professionally managed is on the rise. Consequently, the importance of evaluating the performance of mutual funds has also increased. Investors prefer investing in such stocks that have performed better compared to other alternatives since investors always like to choose fund managers on a comparative basis. This study has endeavoured to address this issue by measuring the performance of mutual funds managed by ICB (Investment Corporation of Bangladesh) through Treynor Index, Sharpe Index, Jensen Alpha, and Fama Decomposition. This study has found that the performance of ICB mutual funds is satisfactory in the context of mutual funds sector of Bangladesh. However, there remain several shortcomings in managing the portfolios by the portfolio managers of ICB. Much of the underperformance of ICB mutual funds is attributable to the bureaucratic systems and structural rigidity of ICB.

Keywords: ICB mutual funds, portfolio performance, tryenor index, sharpe index, jensen alpha, fama decomposition, net selectivity.

I. Introduction

Over the last few decades the debate on the ability of mutual funds to outperform the market remains unsettled. Many early researchers on the performance of mutual fund outlined the difficulty of outperforming the market rather mutual funds frequently perform inferior to the market (Angelidis, Giamouridis, and Tessaromatis, 2014; Fama, 1965; Sharpe, 1966; Jensen, 1968). Some later studies have reported favouring mutual funds, but most of the average funds still fail to exhibit above-normal performance (Treynor and Black, 1973; Blake and Timmermann, 1998; Haslem, 2003). However, the debate on the ability of mutual funds to outperform the market has further steered by the introduction of the methodology of measuring and comparing the performance of mutual funds for better investment decisions. In Bangladesh, the mutual funds sector is subtle compared to the capital market of the country. In many countries, mutual fund assets constitute close to 50% of market capitalisation, but mutual funds asset is less than 3% of total capital market in Bangladesh (ICB, 2016).The investors of Bangladesh are being offered with small and inadequate investment opportunities, mutual funds in particular. Although the investment opportunities are scarce in Bangladesh, Investment Corporation of Bangladesh (ICB) has come up to create new investment opportunities by issuing mutual funds in the capital market. As a state-owned investment bank, ICB played a critical role in accelerating the pace of industrialization and developing a vibrant capital market. ICB helped organizations and individuals to support their equity needs through its mutual funds. Although there remains much debate concerning the performance measurement of mutual funds, this study endeavoured to address this issue by measuring the performance of mutual funds managed by ICB through Treynor Index, Sharpe Index, Jensen Alpha, and Fama Decomposition. This study endeavoured to analyse the portfolio performance of mutual funds of ICB in particular based on composite portfolio measures. However, this study intended to identify the superior selection ability of ICB in constructing the portfolio of all the eight mutual funds as a fund manager.

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II. Literature Review

In financial market, measurement of portfolio performance is crucial. Portfolio performance measurement helps an investor to make better investment decisions and lower its investment risk. However, measurement of portfolio performance is not a new phenomenon rather it has begun in the early 1950s. At that time, investors measured portfolio performance based on the returns of individual securities without considering the risk associated with the individual securities (Khedmatgozar, Kazemi, and Hanafizadeh, 2013). After the introduction of "Modern Portfolio Theory" by Markowitz in 1952 investors and portfolio managers are benefitted by the framework provided by Markowitz (1952). The framework proposed by Markowitz (1952) entails that investors should be compensated for taking additional risk. Later in 1959, Markowitz also developed the Capital Asset Pricing Model (CAPM) which provided a risk-inclusive portfolio evaluation process (Francis and Archer, 1979; Prigent, 2007; Zhao, 2014).

The CAPM model has got popular attraction because it offered a simple framework which predicts

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the risk of a portfolio and measures the relationship between risk and expected return (Brown and Wu, 2016). The empirical literature on portfolio management particularly focused on measurement of portfolio performance. Many researchers have developed several measurement techniques and models. Treynor and Black (1973) developed an index which measures the risk-adjusted performance of a portfolio. Treynor's Index is a useful measurement technique to measure the excess return of a portfolio per unit of risk. Beta measures the risk; the higher the beta score goes, the higher the excess return per unit of risk generated by the portfolio.

Sharpe (1966) developed a ratio to measure the risk-adjusted return of a portfolio. The Sharpe Index later became the industry standard for measuring the risk-adjusted return from a portfolio. The index is the average return earned more than the risk-free rate per unit of volatility. The performance of a portfolio associated with the risk-taking activities can be isolated when mean return subtracts the risk-free rate (Webster, 2014). The calculation of Sharpe ratio for such a portfolio containing zero risks is very simple as the ratio will be exactly equal to zero. The higher the Sharpe ratio, the more attractive the risk-adjusted return from the portfolio.

Further development of portfolio performance measurement techniques has resulted in Jensen's Alpha, which is another risk-adjusted performance measure. Jensen's Alpha represents the average return on a portfolio over and above that predicted by the CAPM given the portfolio's beta and the average market return. However, these measurement techniques have been widely used to measure the performance of portfolios. Empirical studies also considered studying these measurement techniques and their effectiveness in measuring mutual fund performance. For example, the study performed by Tykvová (2006) entails that average mutual funds had no ability to identify and select undervalued stocks and a negative ability to time the market while a few mutual funds exhibit consistency in identifying and selecting undervalued stocks. The study has utilised the Jensen's Alpha measurement to measure the financial performance of mutual funds.

The factor that controls returns can be monitored in the study of Brown and Wu (2014) and has found that these factors explain the persistence in portfolio performance of mutual funds. This study has utilised the Sharpe Index and Jensen Alpha to measure mutual fund performance. However, the study of Brown and Wu (2014) failed to explain the persistence prevailing in the significant underperformance of the worst mutual funds. Treynor's Index has used in the study performed by Haque (2014) where the survivorship bias in mutual funds has demonstrated. The study concluded that mutual funds performed significantly worse compared to the market at an aggregate level. However, the study carried out by Wu and Brown (2014), and Arora (2015) have also demonstrated that mutual funds failed to perform well compared to the market and also fails to exhibit above-normal performance.

However, the debate on the ability of mutual funds to outperform the market has further steered by the introduction of the methodology of measuring and comparing the performance of mutual funds for better investment decisions. Angelidis, Giamouridis, and Tessaromatis (2014) have examined the effectiveness of benchmarks to weight small mutual funds. The study concluded with a cautious note concerning the use of benchmark because it tracks the calculation of Jensen's Alpha by weighing small mutual funds. The study of Kuhle (2012) further suggested that calculations and measurements that are unique to the period or type of fund or choice of benchmark should not be used to make generalised conclusion concerning the performance of mutual funds.

MacIsaac (2014) has measured the mutual funds' performance considering the Jensen Alpha measurement. The study has concluded that mutual funds performed comparatively better than other industries. However, the study conducted by Khedmatgozar, Kazemi, and Hanafizadeh (2013) found that selection of benchmark, composition of mutual fund portfolio, survivability, and non-CAPM return-generating factors may stress the performance measurement procedure. However, the measurement techniques i.e. Sharpe Ratio, Treynor Index, Jensen Alpha, and so forth are not free from criticisms. Although the measurement techniques, used in this study, have some limitations, these techniques have been investigated by many notable researchers and this study has also considered these techniques to evaluate the mutual funds' performance of ICB.

III. Methodology

This study aimed at applying theoretical knowledge of finance and applying the data and information obtained from ICB and related sources to evaluate the performance of ICB's Mutual Funds. ICB is the pioneer in the mutual funds industry of Bangladesh and one of the best performing investment banks. For these reasons ICB mutual funds have been selected for this study. However, to make the analysis and to conduct this study, all necessary data have been collected from both primary and secondary data sources. Primary data have been gathered from the official database and authorised personnel of ICB. Conversely, secondary data have been collected from annual reports of ICB mutual funds, Planning and Research Division of ICB, online journals, books, and the internet.

This study has used time series data on ICB mutual funds. The performance measurement used in

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this study is based on the162-monthly closing price of ICB mutual funds of DSE from July 2001 to December 2014. DGEN has been used as the benchmark index for the period concerned of this study. This study has considered the 364-days Treasury bill rate as the risk-free rate for the concerned period. The risk-free rate (T-bill rate) that has been used in this study is 5.5%.

Necessary trading data on ICB mutual funds, DGEN, and T-bill rates have been collected from DSE Data Library. All the data were analysed quantitatively; composite portfolio measure and composition analysis have been carried out to gauge the performance of ICB mutual funds. This study particularly focused on risk and return analysis of the mutual funds. The risk and return analysis was aided by beta coefficients measurement, r-squared measurement, and standard deviations of returns of mutual funds. Based on these risk and return analysis this study considered composite portfolio performance measurement analysis. The composite portfolio performance measurement has been carried out by using Treynor's Index, Sharpe Ratio, and Jensen Alpha. This study has further considered Fama's Decomposition analysis to identify the portfolio performance of ICB mutual funds. This study has also examined portfolio composition analysis. The portfolio composition analysis has been performed based on the most dominating portion of stocks (at least 50% of the portfolio) of the respective mutual funds of ICB.

IV. Empirical Analysis and Findings

a) *Analysis of Return*

Both portfolio managers and analysts start their analysis of stocks or portfolios with the calculation of return. More specifically, the arithmetic mean is the frequently used measurement tool to calculate portfolio return. However, the arithmetic mean, in this case, means simply the average annual return of the mutual fund. Arithmetic mean tells how well a stock performs over aperiod. However, Table 1 provides the monthly and annualised returns of ICB mutual funds, DGEN, and DSE20. Analysis of returns of ICB mutual funds clearly exhibits its outperformance compared to the market return. ICB mutual funds outperformed the market as they have higher monthly and annualised return than the return of the market.

Table 1 : Monthly and Annualized Returns of ICB Mutual Funds, DGEN, and DSE20

Name	Monthly Return	Annualized Return
1st ICB	0.95100%	11.41196%
2nd ICB	1.19795%	14.37540%
3rd ICB	1.13450%	13.61401%
4th ICB	1.13341%	13.60096%
5th ICB	1.32519%	15.90226%
6th ICB	1.47064%	17.64768%
7th ICB	1.13344%	13.60126%
8th ICB	1.15732%	13.88784%
DGEN	1.18275%	14.19297%
DSE20	0.22430%	2.69162%

b) *Analysis of Risk*

Investment means it will certainly have some risk although the degree of risk may differ. However, the term 'risk' refers to the possibility of losing principal and any earning or failure to make money from an investment. However, risk can be measured by several means, but this study has considered standard deviation, beta coefficients, and R-squared to gauge the risk of ICB mutual funds. These measurement techniques have been used historically to measure risk and are major components of modern portfolio theory. However, Table 2 exhibits the standard deviation of eight mutual funds of ICB along with DGEN and DSE20. Standard deviation is used to measure the dispersion of data from its mean. This study has applied standard deviation on the annualised return to measure volatility or risk. In the case of mutual funds, standard deviation tells how much return deviates from expected return from the stock.

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Table 2 : Standard Deviation of ICB Mutual Funds, DGEN, and DSE20

Name	Standard deviation
1st ICB	20.69204%
2nd ICB	23.98384%
3rd ICB	22.70051%
4th ICB	22.60077%
5th ICB	22.82556%
6th ICB	33.31826%
7th ICB	23.31629%
8th ICB	24.45745%
DGEN	7.94533%
DSE20	9.95535%

Table 2 exhibits the standard deviations of ICB mutual funds which have been measured based on annualised return. It indicates that the ICB mutual funds have a higher risk compared to the market. Total risk of each mutual fund of ICB is significantly high compared to market risk.

However, another risk measurement technique i.e. beta coefficients have been used to measure the volatility or systematic risk of returns of ICB mutual funds. Beta coefficients have measured by using following formula (Amenc and Le Sourd, 2003):

$$\beta = \frac{Cov(p,m)}{Var_m}$$

Where, $Cov(p,m)$ indicates covariance between individual mutual fund's return and market return while $Varm$ indicates variance of market return. The beta coefficients of ICB mutual funds have been presented in Table 3. From this table, it could be observed that the beta coefficients of ICB mutual funds are well below to the market. This means the calculated betas of considered mutual funds have low biasness to the market.

Table 3 : Beta Coefficients of ICB Mutual Funds and DGEN

Name	Beta
1st ICB	0.290333469
2nd ICB	0.353755095
3rd ICB	0.257675094
4th ICB	0.336138189
5th ICB	0.415684339
6th ICB	0.529488738
7th ICB	0.254526598
8th ICB	0.464035555
DGEN	1

R-squared is another measurement that has been used in this study to represent the percentage of a fund portfolio's movements that have been explained by movements in a benchmark index. DGEN has been regarded as the benchmark index for ICB mutual funds. The values of R-squared usually range between 0 and 100 while a value between 85 and 100 for a mutual fund indicates a performance record that isclosely correlated to the benchmark index. However, R-squared has been measured using following formula (Bacon, 2008):

$$r^2 = \left[\frac{\Sigma(R_m - \overline{R_m})(R_p - \overline{R_p})}{(n-1)\sigma_m\sigma_p}\right]^2$$

The results of R-squared have presented in Table 4. The table indicates that the movement of returns of ICB mutual funds could not be explained by the returns from the benchmark index. In such cases, it is recommended that the investors of mutual funds avoid actively managed funds with high R-squared values.

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Table 4 : R-squared of ICB Mutual Funds

Name	R-squared
1st ICB	8.633849%
2nd ICB	5.927977%
3rd ICB	4.785532%
4th ICB	8.295044%
5th ICB	7.956083%
6th ICB	2.463026%
7th ICB	2.188619%
8th ICB	9.476383%

c) *Composite Portfolio Performance Measures*

The composite portfolio performance measurement has been carried out by using Treynor's Index, Sharpe Ratio, and Jensen Alpha. This study further considered Fama's Decomposition analysis to identify the portfolio performance of ICB mutual funds. This study has also examined portfolio composition analysis. The portfolio composition analysis has been performed based on the most dominating portion of stocks (at least 50% of the portfolio) of the respective mutual funds of ICB.

i. *Treynor Measures*

Treynor measure has been the first measurement of composite portfolio performance that includes risk. The objective of Treynor's measure is to find a performance measure that could be applied to all investors regardless of their personal risk preference. According to Treynor's measure, there are two components of risk; risk arising from the fluctuations in the market and the risk produced by the fluctuations of individual securities. However, the Treynor's measure or the reward-to-volatility ratio of this study is defined by (Christopherson, Cariño, and Ferson, 2009):

$$T = \frac{\overline{R_t} - \overline{RFR}}{\beta_i}$$

Where, $\overline{R_t}$ refers to the average rate of return for portfolio iduring specified period; $\overline{RFR}$ refers to the average rate of return on a risk-free investment during the specified time period; and βi refers to the slope of the fund's characteristics line during that time period. The numerator of Treynor's measure identifies the risk premium while the denominator corresponds with the risk of the portfolio. Table 5 presents the Treynor's measure of ICB mutual funds along with DGEN.

Table 5 : Treynor's Measure for ICB Mutual Funds and DGEN

Name	Yearly Return	Risk-free Return	Beta	Treynor Measure
1st ICB	11.4%	5.5%	0.29	0.20
2nd ICB	14.4%	5.5%	0.35	0.25
3rd ICB	13.6%	5.5%	0.26	0.32
4th ICB	13.6%	5.5%	0.34	0.24
5th ICB	15.9%	5.5%	0.42	0.25
6th ICB	17.6%	5.5%	0.53	0.23
7th ICB	13.6%	5.5%	0.25	0.32
8th ICB	13.9%	5.5%	0.46	0.18
DGEN	14.2%	5.5%	1	0.09

From the above table, it can be said that the Treynor's measure of all the ICB mutual funds has outperformed the market as each of the mutual funds had a value higher than the market. 7thICB mutual fund exhibits highest Treynor's measure.

ii. *Sharpe Ratio (Index)*

The Sharpe Index is known as there ward-to-variability ratio which is used to measure the excess return (i.e. risk premium) per unit of total risk in an investment asset. The Sharpe Index is similar to the Treynor's measure, but it considers standard deviation

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of the portfolio rather than the slope of the fund's characteristics line (i.e. systematic risk). However, the Sharpe Index or the reward-to-variability ratio of this study is defined by (Connor, Goldberg, and Korajczyk, 2010):

$$S = \frac{\overline{R_t} - \overline{RFR}}{\sigma_i}$$

Table 6 : Sharpe Index for ICB Mutual Funds and DGEN

Name	Yearly Return	Risk-free Return	Beta	Sharpe Index
1st ICB	11.4%	5.5%	0.29	0.29
2nd ICB	14.4%	5.5%	0.35	0.37
3rd ICB	13.6%	5.5%	0.26	0.36
4th ICB	13.6%	5.5%	0.34	0.36
5th ICB	15.9%	5.5%	0.42	0.46
6th ICB	17.6%	5.5%	0.53	0.36
7th ICB	13.6%	5.5%	0.25	0.35
8th ICB	13.9%	5.5%	0.46	0.34
DGEN	14.2%	5.5%	1	1.10

The output of Sharpe Index has been presented in Table 6. According to the figures reported in this table the Sharpe Index clearly indicates that neither of the ICB mutual funds exhibits superior risk-adjusted return compared to the market. That is, neither of the ICB mutual funds has outperformed the market.

iii. *Jensen Measure*

The Jensen measure is another measurement technique used to measure the excess return that a portfolio generates over its expected return. Jensen measure is alternatively known as Jensen Alpha. However, the Jensen measure or the reward-to-volatility ratio of this study is defined by:

$$\sigma_p = \overline{R_p} - [\overline{RFR} + \beta_p(\overline{R_m} - \overline{RFR})]$$

Where, $\overline{R_p}$ refers to the average rate of return for portfolio during specified time period; $\overline{RFR}$refers to the average rate of return on a risk-free investment during specified time period; βp refers to the slope of the fund's characteristics line during that time period; and $R\bar{m}$refers to the expected return on market portfolio of risky assets.

The output of Jensen measure has been presented in Table 7. From this table, it can be observed that all the ICB mutual funds have managed to generate positive excess return adjusted for market risk. Among the eight mutual funds 6th ICB mutual fund exhibits the highest value of Jensen Alpha. "Therefore, it may be said that 6th ICB mutual fund is the best performing mutual fund while 1st ICB mutual fund is the least performing."

Table 7 : Jensen Alpha for ICB Mutual Funds

Name	DGEN	Yearly Return	R_f	β	Jensen Alpha
1st ICB	14.19%	11.41%	5.5%	.29	0.0340
2nd ICB	14.19%	14.38%	5.5%	.35	0.0581
3rd ICB	14.19%	13.61%	5.5%	.26	0.0588
4th ICB	14.19%	13.60%	5.5%	.34	0.0519
5th ICB	14.19%	15.90%	5.5%	.42	0.0679
6th ICB	14.19%	17.65%	5.5%	.53	0.0755
7th ICB	14.19%	13.60%	5.5%	.25	0.0590
8th ICB	14.19%	13.89%	5.5%	.46	0.0436

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iv. *Fama Decomposition*

Fama's Decomposition is used to finely breakdown the portfolio performance. The overall performance of a portfolio has measured by Fama's Decomposition i.e. excess return from a portfolio. Alternatively, overall performance will be equivalent to the total of portfolio risk and selectivity. Here, the selectivity component represents the portion of the portfolio's actual return beyond that available to an unmanaged portfolio with same systematic risk.

v. *Fama's Decomposition of Risk*

Fama's Decomposition of Risk of this study is defined by:

$$RP_{Risk} = \beta_p(R_m - RFR)$$

Where, $RPRisk$ refers to the portion of portfolio's excess return due to risk taking; βp refers to systematic risk of the portfolio; Rm refers to the expected return on market portfolio of risky assets; and RFR refers to the average rate of return on a risk-free investment during the time period.

However, Fama's Decomposition of Risk is presented in Table 8. From this table, it can be observed that 6th ICB mutual fund exhibits highest excess return due to risk taking.

Table 8 : Fama's Decomposition of Risk for ICB Mutual Funds

Name	R_m	R_f	β_p	RP_{Risk}
1st ICB	14.19%	5.49%	0.29	2.53%
2nd ICB	14.19%	5.49%	0.35	3.08%
3rd ICB	14.19%	5.49%	0.26	2.24%
4th ICB	14.19%	5.49%	0.34	2.93%
5th ICB	14.19%	5.49%	0.42	3.62%
6th ICB	14.19%	5.49%	0.53	4.61%
7th ICB	14.19%	5.49%	0.25	2.22%
8th ICB	14.19%	5.49%	0.46	4.04%

vi. *Fama's Decomposition of Selectivity*

The portion of excess return that cannot explain the portfolio beta and market risk premium refers to selectivity. However, Fama's Decomposition of Selectivity of this study is defined by:

$$RP_{Selectivity} = RP_{Total} - \beta_p(R_m - RFR)$$

Where, $RPSelectivity$ refers to the portion of portfolio's excess return due to superior security selection; $RPTotal$refers to total excess return the of the portfolio; and βp, Rm, and RFR are as same as they were in Fama's Decomposition of Risk.

However, Fama's Decomposition of Selectivity is presented in Table 9. From this table, it can be seen that 6th ICB mutual fund exhibits the highest selectivity due to superior security selection.

Table 9 : Fama's Decomposition of Selectivity for ICB Mutual Funds

Name	R_p	R_f	RP_{Risk}	RP_{Total}	$RP_{Selectivity}$
1st ICB	11.4%	5.5%	2.5%	5.9%	3.4%
2nd ICB	14.4%	5.5%	3.1%	8.9%	5.8%
3rd ICB	13.6%	5.5%	2.2%	8.1%	5.9%
4th ICB	13.6%	5.5%	2.9%	8.1%	5.2%
5th ICB	15.9%	5.5%	3.6%	10.4%	6.8%
6th ICB	17.6%	5.5%	4.6%	12.2%	7.5%
7th ICB	13.6%	5.5%	2.2%	8.1%	5.9%
8th ICB	13.9%	5.5%	4.0%	8.4%	4.4%

vii. *Fama's Decomposition of Diversification*

Fama's Decomposition of Diversification measures the difference between the return that should be earned according to the CML and the return that should be earned according to the SML. However, Fama's Decomposition of Diversification of this study is defined by:

$$RP_{Diversification} = (R_m - RFR)\left(\frac{\sigma_p}{\sigma_m} - \beta_p\right)$$

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Where, βp, Rm, and RFR are as same as they were in Fama's Decomposition of Risk; σp refers to the standard deviation of the specific mutual fund; and σm refers to the standard deviation of the market.

However, Fama's Decomposition of Diversification is presented in Table 10. From this table, it could be observed that 6th ICB mutual fund exhibits the highest diversification.

Table 10 : Fama's Decomposition of Diversification for ICB Mutual Funds

Name	R_m	R_f	β_p	σ_p	σ_m	$RP_{Diversification}$
1st ICB	14.19%	5.49%	29.03%	20.69%	7.95%	20.14%
2nd ICB	14.19%	5.49%	35.38%	23.98%	7.95%	23.19%
3rd ICB	14.19%	5.49%	25.77%	22.70%	7.95%	22.62%
4th ICB	14.19%	5.49%	33.61%	22.60%	7.95%	21.83%
5th ICB	14.19%	5.49%	41.57%	22.83%	7.95%	21.38%
6th ICB	14.19%	5.49%	52.95%	33.32%	7.95%	31.89%
7th ICB	14.19%	5.49%	25.45%	23.32%	7.95%	23.32%
8th ICB	14.19%	5.49%	46.40%	24.46%	7.95%	22.75%

viii. *Fama's Decomposition of Net Selectivity*

Fama's Decomposition of Net Selectivity measures how much of the risk premium comes from the ability to select stocks. Alternatively, Net Selectivity is used to measure how well a portfolio manager performed at earning return through the portfolio's systematic risk and how well a portfolio manager carried out at diversifying unsystematic risk. However, Fama's Decomposition of Net Selectivity is presented in Table 11.

Table 11 : Net Selectivity for ICB Mutual Funds

Name	$RP_{Selectivity}$	$RP_{Diversification}$	Net Selectivity
1st ICB	3.40%	20.14%	-16.74%
2nd ICB	5.81%	23.19%	-17.39%
3rd ICB	5.88%	22.62%	-16.74%
4th ICB	5.19%	21.83%	-16.64%
5th ICB	6.79%	21.38%	-14.59%
6th ICB	7.55%	31.89%	-24.34%
7th ICB	5.90%	23.32%	-17.43%
8th ICB	4.36%	22.75%	-18.39%

From this table, it can be observed that all the mutual funds of ICB have negative Net Selectivity. From this finding, it can be inferred that the portfolio managers of ICB fail to diversify away the unsystematic risk properly through their portfolio selection ability.

V. Conclusion

In light of these analysis above, this study has endeavoured to understand the operations and management of Investment Corporation of Bangladesh. Investment Corporation of Bangladesh (ICB) has come up to create new investment opportunities by issuing mutual funds in the capital market. As a state-owned investment bank, ICB played a critical role in accelerating the pace of industrialization and developing a capital vibrant market. ICB helped organizations and individuals to support their equity needs through its mutual funds. Although there remains much debate concerning the performance measurement of mutual funds, this study endeavoured to address this issue by measuring the performance of mutual funds managed by ICB through Treynor Index, Sharpe Index, Jensen Alpha, and Fama Decomposition. The findings reported in this study clearly indicate that there remain several shortcomings in managing the portfolios by the portfolio managers of ICB. Although there are some shortcomings but the area of operations and scope of activities have been narrowed down with the creation of Capital Market Development Program (CMDP).

References Références Referencias

1. Amenc, N. and Le Sourd, V. (2003). Portfolio theory and performance analysis. Hoboken, NJ: Wiley.
2. Angelidis, T., Giamouridis, D., and Tessaromatis, N. (2014). Revisiting Mutual Fund Performance Evaluation. SSRN Electronic Journal.

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3. Arora, K. (2015). Risk-adjusted Performance Evaluation of Indian Mutual Fund Schemes. Paradigm, 19(1), pp.79-94.
4. Bacon, C. (2008). Practical portfolio performance. Chichester, England: Wiley.
5. Blake, D. and Timmermann, A. (1998). Mutual Fund Performance: Evidence from the UK. Review of Finance, 2(1), pp.57-77.
6. Brown, D. and Wu, Y. (2014). Mutual Fund Families and Performance Evaluation. SSRN Electronic Journal.
7. Brown, D. and Wu, Y. (2016). Mutual Fund Flows and Cross-Fund Learning within Families. The Journal of Finance, 71(1), pp.383-424.
8. Christopherson, J., Cariño, D. and Ferson, W. (2009). Portfolio performance measurement and benchmarking. New York: McGraw-Hill.
9. Connor, G., Goldberg, L. and Korajczyk, R. (2010). Portfolio risk analysis. Princeton: Princeton University Press.
10. Fama, E. (1965). Portfolio Analysis in a Stable Paretian Market. Management Science, 11(3), pp.404-419.
11. Francis, J. and Archer, S. (1979). Portfolio analysis. Englewoods Cliffs, N.J.: Prentice-Hall.
12. Haque, T. (2014). Cross-Fund Subsidization in Australian Mutual Fund Families. SSRN Electronic Journal.
13. Haslem, J. (2003). Mutual funds. Malden, MA: Blackwell Pub.
14. ICB, (2016).::Investment Corporation of Bangladesh :: - ICB Mutual Fund Scheme ::. [online] Icb.org.bd. Available at: http://www.icb.org.bd/mutual_fund.php [Accessed 2 May 2016].
15. Jensen, M. (1968). The Performance of Mutual Funds in the Period 1945-1964. The Journal of Finance, 23(2), p.389.
16. Khedmatgozar, H., Kazemi, A., and Hanafizadeh, P. (2013). Mutual fund performance evaluation: a value efficiency analysis approach. International Journal of Electronic Finance, 7(3/4), p.263.
17. Kuhle, J. (2012). Manager Tenure - Real Estate Mutual Fund (REMF) Versus Equity Mutual Fund Performance. Journal of Business & Economics Research (JBER), 11(1), p.17.
18. MacIsaac, K. (2014). Mutual Fund Performance Evaluation with Active Peer Benchmarks. CFA Digest, 44(6).
19. Prigent, J. (2007). Portfolio optimization and performance analysis. Boca Raton: Chapman & Hall/CRC.
20. Sharpe, W. (1966). Mutual Fund Performance. The Journal of Business, 39(S1), p.119.
21. Treynor, J. and Black, F. (1973). How to Use Security Analysis to Improve Portfolio Selection. The Journal of Business, 46(1), p.66.
22. Tykvová, T. (2006). How do investment patterns of independent and captive private equity funds differ? Evidence from Germany. Financial Markets and Portfolio Management, 20(4), pp.399-418.
23. Webster, D. (2014). Mutual Fund Performance and Fund Age. SSRN Electronic Journal.
24. Wu, Y. and Brown, D. (2014). Performance Evaluation in Mutual Fund Families. SSRN Electronic Journal.
25. Zhao, Y. (2014). A Dynamic Model of Active Portfolio Management and Mutual Fund Performance Evaluation. SSRN Electronic Journal.

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