A Study on performance evaluation of various mutual fund schemes in India

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MBA 2018-20

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Abstract
Mutual funds allow for portfolio diversification and relative risk aversion through collection of funds from the households and investment of the same in the stock and debt markets. Fixed- Income Funds in India are a kind of mutual fund which makes investment in debt securities that have been issued either by the companies, banks, or government. Fixed Income Funds in India are also known as debt funds and income funds. Using various statistical measures, the present study aims to evaluating the performance of a few selected income or debt mutual funds schemes of India on the basis of their daily NAV. Popularity of income schemes has only increased in the last decade. Income mutual funds they have seen tremendous growth in their number of schemes from 91 on 31st march 2011 to 330 on 31st march 2020. 506 in 2008 was the maximum ever in terms of total schemes floating in the market. This category has seen a decline only twice in the last decade. First fall was posted in the year 2010 and the second fall was reported in the year 2020. One striking fact which comes to light is the huge percentage contribution of income schemes towards the total AUM of the Indian mutual funds industry.

Introduction

Mutual Funds:

A mutual fund is like a bridge or a financial intermediary that allows a group of investors to pool in their money together with a pre-determined investment objective and then this gathered money is invested by the fund manager into specific securities (stocks or bonds). Mutual funds can be considered as one of the best investment avenues because they are very cost efficient and also easy to invest in. Thus by pooling money together in a mutual fund, investors can purchase stocks or bonds with much lower trading costs than if they tried to do it on their own.
Mutual Funds can be categorised according to their nature as below: -

a) Equity funds:
Equity mutual funds invest pooled amount in the stocks of public companies. Equity fund managers apply different styles for stock picking when they make investment decisions for their portfolios. Some fund managers use a value approach to stocks, searching for stocks that are undervalued when compared to other companies. Another approach is to look primarily at growth, trying to find stocks that are growing faster than their competitors, or the market as a whole. Some managers buy both kinds of stocks, creating a portfolio of both growth and value stocks.

b) Debt funds:
Debt mutual fund is a type of mutual fund that is designed especially for the low risk investor whose main aim is capital appreciation coupled with decent returns on investment. These are for investors who prefer funds with lesser volatility and want a regular income.
Debt funds can give:
• Capital Appreciation
• Regular Income

c) Balanced funds:
As the name suggest, they are mixture of both - equity and debt funds. They invest in both equities and fixed income securities, which are in line with pre-defined investment objective of the scheme. Equity part provides growth and the debt part provides stability in returns. These type of funds are meant to diversify away a little of equity risk by exposure to debt, while maintaining decent returns as well. Some investors want just a single choice that offers a decent chance at a good return on their money, and that is more likely to avoid major volatility when the economy slows down, even though this means less upside when there is bull market. A

well-managed balanced fund has the best chance at achieving that because when the stock market falls, the bonds tend to hold their value better, and when the stock market rises, bonds yields are typically lower.
Parameters to choose Mutual Fund for investing:
A good track record is no guarantee for future performance. Investor should also look at some quantitative measures to evaluate which fund is good for them.

a) Expense Ratio: Denotes the annual expenses of the funds, including the management fee, and administrative cost. Low expense ratio is better. Expense ratio is the percentage of total assets that are spent to manage a mutual fund. As returns from bond funds tend to be similar, expenses become an important factor while comparing bond funds. SEBI has stipulated a limit that a fund can charge. The largest component of the expense ratio is management and advisory fees. A lower expense ratio does not necessarily mean that it is a better-managed fund. A good fund is one that delivers good return with minimal expenses.

b) Standard Deviation (SD): The total risk (market risk, security-specific risk and portfolio risk) of a mutual fund is measured by 'Standard Deviation' (SD). In mutual funds, the standard deviation indicates how much the return is deviating from the expected returns based on its historical performance. In other words, it evaluates the volatility of the fund. The standard deviation of a fund measures this risk by measuring the degree to which the fund fluctuates in
relation to its average return of a fund over a period of time. A higher SD number indicates that the net asset value (NAV) of the mutual fund is more volatile and, it is riskier than a fund with a lower SD.

c) Sharpe Ratio: An indicator of whether an investment's return is due to good investing decisions or a result of excess risk. Higher Sharpe Ratio is better. Sharpe ratio (SR) is another important measure that evaluates the return that a fund has generated relative to the risk taken. This ratio helps an investor to know whether it is safe to invest in this fund by taking the quantum of risk. The higher the Sharpe ratio (SR), the better a fund's return relative to the amount of risk taken. This is because it implies that it has generated higher returns for every unit of risk that was taken. On the contrary, a negative Sharpe ratio indicates that a risk-free asset would perform better than the fund being considered.

d) Beta: Measures the volatility of a particular fund in relation to the market as a whole. It measures a fund's volatility compared to that of a benchmark. It indicates how much a fund's performance would swing when compared to a benchmark. A fund with a beta of 1 means, it will move as much as the benchmark. Conservative investors should focus on mutual funds schemes with low beta. Aggressive investors can opt to invest in mutual fund schemes which have higher beta value.

e) R-square: Measures the percentage of an investment's movement that are attributable to movements in its benchmark index. A mutual fund should have a balance in R-square and ideally it should not be more than 90 and less than 80. As discussed above, beta is dependent on correlation of a mutual fund scheme to its benchmark index. So, while considering the beta of any fund, an investor also needs to consider another statistic concept called 'R-squared' that measures the correlation between beta and its benchmark index. The beta of a fund has to be seen in conjunction with the R-squared for better understanding the risk of the fund. 'R-squared' value ranges between 0 and 100, where 0 represents no correlation and 100 represents full correlation. If a fund's beta has an R-squared value that is between 80 and 90, then the beta of that fund should be trusted. On the other hand, an R-squared value that is less than 80 than it indicates the beta is not particularly useful because the fund is being compared against an inappropriate benchmark index. The lower the R-squared the less reliable is the beta, and vice versa. Beta and R-squared are calculated based on the historical data. They give an adequate estimate of risks to be evaluated by investors before investing.
The parameters used to choose the best debt mutual fund to invest in are:
1. Expense Ratio
2. Standard Deviation
3. Returns

2. Objective of the Study

The objectives of this study are:
• To study the performance of top 10 equity mutual fund schemes in various categories
• To study the best mutual fund house in Equity Mutual Fund category
• To compare the performance of top 10 equity mutual fund schemes according to the performance parameters

3. Review of Literature

The study by Sharad Panwar and Dr. R. Madhumathi of Indian Institute of Technology, Madras (2006) on"CHARACTERISTICS AND PERFORMANCE EVALUATION OF SELECTED MUTUAL FUNDS IN INDIA",identified differences in characteristics of public-sector sponsored & private-sector sponsored mutual funds and compare their performance using traditional investment measures. Net Asset Value (NAV) for the medium-term period May,2002 to May,2005 of selected mutual funds along with the index value of the two benchmark market indices, namely S &P CNX NIFTY and CRISIL Balanced Fund Index were taken. They primarily used Sharpe ratio, Jensen's alpha, excess standard deviation adjusted return (eSDAR) and found out that private-sector Indian sponsored mutual funds have outperformed both Public-sector sponsored and Private-sector foreign sponsored mutual funds.

The paper by Dr. Rao (2002) on "PERFORMANCE EVALUATION OF INDIAN MUTUAL FUNDS" evaluated the performance of Indian Mutual Fund Schemes in a bear market using relative performance index, risk-return analysis, Treynor's ratio, Sharpe's ratio, Jensen's measure, Fama's measure. The study finds that Medium Term Debt Funds were the best performing funds during the bear period of September 98-April 2002 and 58 of 269 open ended mutual funds provided better returns than the overall market returns. One more study by HewadWolasmal and published by Econ WPA on "PERFORMANCE EVALUATION OFMUTUAL FUNDS" looked at some measures of composite performance that combined risk and return levels into a single value using Treynor's ratio, Sharpe's ratio, Jenson's measure. The study analyzed the performance of 80 mutual funds and based on their analysis, it was found that none of the mutual funds were fully diversified. This implied there is still some degree of unsystematic risk that one cannot get rid of through diversification.

This paper by Mr. Soumya Guha Deb, Prof. Ashok Banerjee & Prof. B B Chakrabarti (2007) on"PERFORMANCE OF INDIAN EQUITY MUTUAL FUNDS VIS-A VIS THEIR STYLE BENCHMARKS: AN EMPIRICAL EXPLORATION", used Return Based Style Analysis (RBSA) to evaluate equity mutual funds in India using quadratic optimization of an asset class factor model proposed by William Sharpe and analysis of the relative performance of the funds with respect to their style benchmarks. Their study found that the mutual funds generated positive monthly returns on the average, during the study period of January 2000 through June 2005. The ELSS funds lagged the Growth funds or all funds taken together, with respect to returns generated.
Another study by Richard Stehle and Olaf Grewe (2001) on "LONG-RUN PERFORMANCE OF GERMAN STOCK MUTUAL FUNDS", examined the risk-adjusted performance of open-end mutual funds which invest mainly in German stocks using Jenson's measure and Sharpe's measure. The study finds out that the rates of return of the mutual funds and the rates of return of the chosen benchmark both must include identical return components. Either both must include dividends or exclude them. The performance estimates are not very sensitive with respect to the benchmark choice.

This paper authored by Juan Carlos (2005) on "PORTFOLIO PERFORMANCE: FACTORS OR BENCHMARKS?"`analyzed whether it was more appropriate to apply a factor-based or a characteristic-based model - both known as benchmarks in portfolio performance measurement using the Linear model, asset pricing model and Fama and French factors. The study showed that if information on returns was used and a linear model was proposed that adjusted return to a set of exogenous variables, then the right side of the equation reported the achieved performance and the passive benchmark that replicated the style or risk of the assessed portfolio.

4. Research Methodology

4.1. Research Methodology:

Research methodology is a collective term for the structured process of conducting research. There are many different methodologies used in various types of research and the term is usually considered to include research design, data gathering and data analysis.

4.2. Selection of Data:

Data selection is defined as the process of determining the appropriate data type and source, as well as suitable instruments to collect data. The primary objective of data selection is the determination of appropriate data type, source, and instrument(s) that allow investigators to adequately answer research questions. To conduct this analysis, daily NAV of each mutual fund scheme along with their benchmark values, for the period of

Oct, 2007 to Oct, 2012 is considered. Net asset value (NAV) represents a fund's per share market value. This is the price at which investors buy bid price fund shares from a fund company and sell them ("redemption price") to a fund company. To calculate a Mutual Fund's Net Asset Value or NAV, Mutual Fund NAV = Total Assets - Liabilities / Total number of shares or units. The assets of a mutual fund would consist of its investments and cash. The liabilities of a mutual fund include operating expenses.

4.3. Statistical Tools:

Various statistical tools are used like Standard Deviation, Beta, Sharpe ratio, R- Square are used. All the calculations are done in excel sheet. Performance Parameters:

i. Standard Deviation:

The total risk (market risk, security-specific risk and portfolio risk) of a mutual fund is measured by 'Standard Deviation' (SD).

ii. Sharpe Ratio:

Sharpe ratio (SR) is another important measure that evaluates the return that a fund has generated relative to the risk taken. Risk here is measured by SD.

Formula to calculate Sharpe Ratio is:

Sharpe Ratio : (Rx – Rf) / StdDev Rp

where,

rx = Mean rate of return on NAV of MF

rf = risk-free rate of return

Std Dev = standard deviation of MF

iii. **Beta:**

Beta is a measure of the volatility of a particular fund in comparison to the market as a whole, that is, the extent to which the fund's return is impacted by market factors. Beta is calculated using a statistical tool called 'regression analysis.'

iv. R-Square

So, while considering the beta of any fund, an investor also needs to consider another statistic concept called 'R-squared' that measures the correlation between beta and its benchmark index.

The beta of a fund has to be seen in conjunction with the R-squared for better understanding the risk of the fund.

4.4. Data collection:

Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. Only secondary mode of data collection is involved. Secondary information is collected from company and other mutual fund websites. (e.g. www.hdfcfund.com). Sampling has been done on the basis of CRISIL Ranking. That means, the company selected for this study have top CRISIL ranks. The data of the following mutual fund schemes are collected:

Sr.no.	Equity Mutual Fund Scheme	Debt Mutual Fund Scheme
1	Fidelity Equity Fund	IDFC Dynamic Bond - IP B
2	UTI Opportunities Fund (G)	SBI Magnum Income Fund (G)
3	ICICI Pru Focused BluechipEqty (G)	HDFC Short Term Opportunities (G)
4	Birla Sun Life MNC Fund (G)	IDFC G Sec Fund - Investment Plan - Plan B
5	HDFC MidCap Opportunities	Kotak Gilt – Investment
6	SBI Magnum Emerging Busi (G)	Birla Sun Life Ultra Short Term Fund
7	Mirae (I) Opportunities-RP (G)	HDFC Cash Management Fund – Treasury Advantage Plan
8	Quantum Long-Term Equity (G)	ICICI Prudential Flexible Income Plan
9	Can RobecoEqty TaxSaver (G)	JM Money Manager Fund Plan
10	Franklin India Tax Shield (G)	UTI Treasury Advantage Fund

4.5. Analysis of data:

Analysis of data is a process of inspecting, cleaning, transforming, and modelling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains. Data collected has been analysed and presented in the form of tables and figures in next chapter i.e. Data Analysis.

5. Data Analysis

The NAV of the top 10 equity mutual fund schemes has been collected and compared in this chapter. The sampling has been done on the basis of CRISIL Rating.

Equity Mutual Funds

These funds invest a majority part of their asset into equities holdings and therefore they rank high on the risk-return matrix.

S.No.	Mutual Fund Scheme	3-Yr CAGR	5-Yr CAGR	Beta	RSquare	Expense Ratio (%)	Standard Deviation	Sharpe Ratio
1	Franklin India Tax Shield	15.21%	4.72%	0.806	0.977	1.84	0.015	0.002
2	Can RobecoEqty TaxSaver	18.83%	8.18%	0.076	0.009	1.85	0.015	0.010
3	Quantum Long-Term Equity	18.29% -	-	0.685	0.533	1.83	0.017	0.025
4	Mirae (I) Opportunities-RP	28.93%	14.88%	0.678	0.741	2.35	0.011	0.025
5	SBI Magnum Emerging Business	26.37%	10.56%	0.737	0.897	1.91	0.013	0.014
6	HDFC MidCap Opportunities	11.15%	5.94%	1.036	0.744	2.21	0.028	0.012
7	Birla Sun Life MNC Fund	18.67% -	-	1.043	0.928	2.36	0.022	0.036
8	ICICI Pru Focused BluechipEqty	19.66%	11.25%	0.709	0.887	1.25	0.014	0.015
9	UTI Opportunities Fund	19.07%	3.60%	0.814	0.843	2.32	0.017	0.001
10	Fidelity Equity Fund	18.55%	5.02%	0.836	0.951	2.11	0.015	0.003

After comparing all the above mutual fund schemes, we can observe that HDFC MidCap Opportunities (G) and Quantum Long-Term Equity (G) stand out to be the clear winner among all other mutual fund schemes with respect to all the performance parameters taken into consideration

6. Recommendations and Conclusion

Based on the research of different types of equity and debt mutual funds, the following conclusion can be made. It is found that while comparing the 3-year and 5-year CAGR of all equity mutual funds, HDFC MidCap Opportunities (G), Birla Sun Life MNC Fund (G) and Quantum Long-Term Equity (G) becomes the best mutual fund schemes. But among these, Birla Sun Life MNC Fund (G) has the highest expense ratio which is 2.35 as compared to all other mutual fund schemes. Therefore, it goes out of the competition. Now, between HDFC MidCap Opportunities (G) and Quantum Long-Term Equity (G), the latter has the least expense ratio which is 1.25. But on comparing their standard deviation, HDFC MidCap Opportunities (G) has lesser risk associated with it which is 0.013. Beta and Rsquare is almost similar in both the cases. Thus, we can infer HDFC MidCap Opportunities (G) is the best mutual fund scheme among the all.

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