PERFORMANCE EVALUATION OF HDFC MUTUAL FUND SELECTED SCHEMES

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ABSTRACT:

In this paper provides evaluating the performance of selected mutual funds, mainly offering different schemes by HDFC Mutual Fund house has offered under open ended schemes, over the period April 2009 to march 2020. This study focused on Risk and Return, Risk-return relationship of mutual fund schemes in relation to the benchmark portfolio is computed.

Keywords: *Performance evaluation, Risk – return analysis, Treynor, Sharpe, Jenson Model, Alpha, Beta, fund return, Market Return.*

1. INTRODUCTION.

The mutual fund industry in India has witnessed rapid since its liberalization in 1993, prior to 1993, only public sector banks or Insurance companies, along with the Unit trust of India (UTI) was allowed to manage funds. The entry of private fund managers initiated a period of substantial growth in the assets managed by the fund industry. In the financial services mutual funds are mainly helping to small saving of the high number of investors to invest in the capital market with a variety of schemes to enable to investors to take advantage of opportunities not only in the equity, Debt and Money market and also in specific industries and sectors to avowed objective of attractive yields and appreciation in their value. The income earned through these investments and the capital appreciations realized by the scheme are shared by its unit holders in proportion to the number of units owned by them. Thus, a mutual fund is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost. As defined in the pamphlet of the Association of Mutual Funds in India (AMFI). "A mutual fund is a trust that pools the savings of a number of investors who share a common financial goal. Anybody with an investible surplus of as little as a few thousand rupees can invest in mutual funds. These investors buy units of a particular mutual fund scheme that has a defined investment objective and strategy."

1.1. Introduction of HDFC Mutual Fund.

HDFC Asset Management Company Ltd (AMC) was incorporated under the Companies Act, 1956, on December 10, 1999, and was approved to act as an Asset Management Company for

the HDFC Mutual Fund by SEBI vide its letter dated July 3, 2000. HDFC Trustee Company Limited, a company incorporated under the Companies Act, 1956 is the Trustee to HDFC Mutual Fund vides the Trust deed dated June 8, 2000, as amended from time to time. HDFC Trustee Company Ltd is a wholly owned subsidiary of HDFC.

Investment Philosophy

The single most important factor that drives HDFC Mutual Fund is its belief to give the investor the chance to profitably invest in the financial market, without constantly worrying about the market swings. To realize this belief, HDFC Mutual Fund has set up the infrastructure required to conduct all the fundamental research and back it up with effective analysis. HDFC strong emphasis on managing and controlling portfolio risk avoids chasing the latest "fads" and trends.

2. Objective of the Study

- To make awareness of performance evaluation methods.
- To evaluate the performance of selected HDFC Mutual Fund schemes.

3. Data and their sources.

To evaluate the performance of selected 3 mutual fund schemes to examine the investment performance of the HDFC Mutual Funds. The total mutual fund schemes are open – ended Schemes. Table 1 gives the necessary information on the selected sample schemas.

4. The sample Data

The all samples use daily NAV data for the eleven year period April 1, 2009 to March 31, 2020. The necessary data have been collected from the HDFC Mutual fund house, AMFI and other related websites.

5. Benchmark portfolio.

The S&P CNX Nifty index has been used as the benchmark portfolio to compare with the performance of the sample schemes.

6. The Risk –Free Proxy.

In this study purpose used used 91 – day treasury bills (T- bills) as a risk free asset.

7. Hypothesis:

The study tests the following hypothesis in respect of performance evaluation of the HDFC Mutual Funds.

- The performance of a sample of the HDFC Mutual Funds all schemes is distinctly superior in comparison to the relevant benchmark portfolio.

8. Performance evaluation methods.

The purpose of comparing the performance of HDFC mutual fund and Benchmark index, various parameters of financial importance are taken as a basis of comparison. These parameters include

risk, returns, Sharpe's reward to variability index, Treynor's reward to volatility index, Jensen's differential index, Beta and Alpha.
Here are a number of statistics that make it possible to more precisely quantify the relationship between the risk and return. These measurements help to determine.

- Funds volatility (standard deviation) i.e., Variation from the average.
- Funds volatility as records market index (Beta) i.e., The extent of co-movement of fund with that of benchmark index.

Rate of Return Measure.

The NAV data have been adjusted for bonus and right issues for each of the sample schemes to make the data comparable over time. The returns (daily) for each of the sample schemes have been computed by using the following equation:

$$\text{Return}(Rt) = \frac{\left(NAV_t - NAV_{t-1} + D_t\right)}{NAV_{t-1}}$$

Standard Deviation (σ)

It is a statistic to measure the variation in individual returns from the average expected return over a certain period of time. Also, while the average may be acceptable but year to year swings in the performance may not be acceptable to the investor. Lower the investor's tolerance, less likely he or she will hold the riskier fund long enough to achieve the ultimate return. The factors which affect the variability of the performance of an investment are: The kind of stocks in the portfolio, the degree to which a fund diversifies, the degree to which a manager uses leverage, or borrowing in an effort to enhance performance and the extent to which the manager tries to time the market.

Beta (β):

The Measure of a security's performance in relation to the general movement of the market mathematically, the beta coefficient of a security is the security's covariance with the market portfolio divided by the variance of the market portfolio. A share with a beta of 1 rises and falls corresponding exactly to the market. The rise or fall in a security with a beta higher than 1 is more than that of the market and the rise or fall in a security with a beta less than 1 is less than the rise or fall in the market index.

Alpha (α):

Alpha represents the difference between mutual fund actual performances that could be expected based on the level of risk taken by the manager. A fund produced would be expected return for the level of risk assumed; the fund would have an alpha equal to zero. A positive alpha indicates

that the manager produced greater returns than expected for the risk taken. Alpha is calculated by comparing funds actual performance with the risk adjusted expected return. (The risk free return added to the market actual return in excess of the risk free return adjusted by fund beta). This difference is a measure of manager's contribution to return. If market return is in excess of T-Bills by 10 percent and the fund was 120 percent volatile (i.e., Beta is 1.2) then the fund should have outperformed T-Bills by 12 percent. If actually fund out performs T-Bill by 15 percent then its alpha is 3 percent. While no amount of research can guarantee future fund performance, it certainly can reduce the likelihood of unintended risk by carefully analyzing interpreting risk statistics.

After having the concept of risk to understand the performance could be measured. For the purpose of 3 models, that is Sharpe's reward to variability index (1966), Treynor's reward to volatility index (1965) and Jensen's differential index (1968) have been used in the study. A benchmark against which performance is to measured has been identified as the NSE Nifty Index.

Sharpe Ratio:

It is a reward to variability ratio given by W.F. Sharpe in 1966. It is expressed as the excess return per unit of risk, where the risk is measured by the standard deviation of the rate of return. The ratio is defined as:

$$Sharpe = \frac{\left(R_P - R_f\right)}{\sigma_P}$$

Where Sp = Sharpe's ratio for the Fund p,
Rp = Average return on fund p,
σ p = Standard deviation of the fund p, and
Rf = Return on risk free asset.

This formula suggests that Sharpe prefers to compare portfolios to the capital market line (CML) rather than the security market line (SML). Sharpe index, therefore, evaluates funds' performance based on both rate of return and diversification (Sharpe 1967).

The ratio is based on the fact that preferred portfolio lies on the most counter clock-wise ray in the expected return and the standard deviation space, i.e. The slope of the ray is maximized and is denoted by Sharpe ratio. The ratio views as the views of the decision from the angle of the investor who chooses mutual fund that represents the majority of his investment.

Treynor's Ratio:

The performance measure developed by Jack Treynor is referred to as treynor ratio or reward to volatility ratio. It is concerned with systematic risk (or beta) and therefore, it is the

relationship between reward or risk premium to the volatility of return as measured by the portfolio beta. The formula for calculating treynor index may be stated as follows.

$$Treynor = \frac{\left(R_P - R_f\right)}{\beta_P}$$

Where, Ti = Treynor's performance index
Rp = Portfolio's actual return during a specified time period
Rf = Risk-free rate of return during the same period
βp = beta of the portfolio

Therefore, Treynor assumes that the portfolio under consideration is itself only a part of the investor's total portfolio. The investor can therefore, eliminate any unsystematic risk by ensuring that his total portfolio well diversified.

Jensen's Measure:

Another type of risk adjusted performance measure has been developed by Michael Jensen (1968), and is referred to as the Jenson measure ratio. This ratio attempts to measure the differential between the actual return earned on a portfolio and the return expected from the portfolio given its level of risk. Writes the following formula in terms of realized rates of return, assuming that Capital Asset Pricing Model (CAPM) is empirically valid:

$$Jensen = \alpha_P = R_P - \left[R_f + \beta_P\left(R_M - R_f\right)\right]$$

Rjt = Rf + βj (Rm - Rf) + ujt
Subtracting Rf from both sides he obtains:
Rjt - Rf = βj (Rm - Rf) + ujt

9. Empirical Results:

An analysis of the data furnished in Table 2 reveals that during the study period the HDFC - Capital Builder Value Fund has maintained average returns at 0.0585 which is higher than the market (bench mark) returns i.e., 0.0472 and this fund obtained an average standard deviation of 0.9888, while the bench mark standard deviation has been around 1.0944 of Benchmark, which is much higher than the fund standard deviation. This clearly indicates that the fund is less risky than the market. The Sharpe's ratio 0.0549 has been quite impressive and higher than the bench mark ratio 0.0442. The same is in the case with Trenoy Ratio. Hence, it can be concluded that the fund generated positive returns to the investors. The same can be observed from the fund's alpha

and Jensen Ratio which are positive. This indicates that the fund has given more returns than the expected returns with the given amount of risk of the fund. The fund returns are 89 percentage correlated with the benchmark. The coefficient of determination of the fund is 0.7994 which indicates 80 percentage of the variation in the fund's returns is due to the variation in the market and the remaining 20 percentage is due to other causes. The Beta value of 0.8315 indicates that the fund has lower risk when compared to market, it may be due to high risk diversification of the fund. All in all, it is concluded that the fund managers are able to generate higher returns to the investors, vis-à-vis the market timing.

A detailed analysis of the fund's risk adjusted performance measures furnished in the Table 3 indicates that starting from the year 2009 till the year 2020; the fund has generated average returns of 0.06 percentage for the period of the study which is higher than the benchmark index average returns of 0.0472 percentage. The fund maintained an average standard deviation of 1.1642 this indicates that the fund is risky to the investor compared to the benchmark standard deviation of 1.0944.The fund (over the years) generated on an average a Sharpe ratio of 0.0443 against the benchmark Sharpe ratio of 0.0442. Therefore, it can be said that the fund is providing good returns to the investors. It is evident from the analysis that the fund is less risky than the market risk as the average systematic risk (0.9753) is lower than the benchmark beta '1'. The Sharpe as well as the Treynor values of the fund is significantly higher than the bench mark index. The alpha value and Jensen Ratio being positive it's indicates that the fund has provided the expected returns with the given amount of risk involved in the fund. The fund returns have correlated with benchmark by 88 percentage. The coefficient of determination of the fund is 0.7779 which indicates 78 percentage of the variation in the fund returns is due to the variation in the market and the remaining 22 percentage is due to other causes.

Table 4 presents the risk adjusted performance measures of HDFC - Focused 30 Fund. From the Table 4 it is observed that the standard deviation of the fund 1.1133 is higher than the benchmark standard deviation (1.0944). This indicates that the fund is associated with more risk than that of the market. The Alpha and Jensen measures are positive and higher than the Benchmark indicating clearly that there is ability to generate superior returns compared to the market. Sharpe and Treynor ratio is positive but Sharpe ratio is less them the Benchmark and Treynor ratio is higher than the Benchmark its indicates that the returns are more due to systematic risk consideration. The fund returns are correlated with benchmark by 84 percentage. The coefficient of determination of the fund is 0.7070 which indicates 71 percentage of the variation in the fund returns is due to the variation in the market and the remaining 29 percentage is due to other causes. The funds beta (0.8871) value clearly indicates that the fund has lower risk compared to the market as the beta is less than '1'. Hence, it is clear from the analysis that the fund, HDFC Focused 30 Fund with growth option is capable of generating higher returns compared to the market.

9. Scope for future Research.

There is a lot of scope for improvement in the research for evaluating mutual fund performances. Testing of fund performance in the long run can be done. Extended sample of public sector sponsored, private sector sponsored mutual fund can be taken for generating results.

Table 1: Sample of the Mutual Fund Schemes

Sl.No	Fund Name	**Scheme Category**	Period
1	HDFC - Capital Builder Value Fund	Growth	01/04/2009 to 31/03/2020
2	HDFC - Equity Fund	Growth	01/04/2009 to 31/03/2020
3	HDFC - Focused 30 Fund	Growth	01/04/2009 to 31/03/2020

Table 2. HDFC - Capital Builder Value Fund

Year	Market Returns (BSE)	Risk free return	Fund Returns	Risk	Coefficient of correlation	Coefficient of determination	Beta	Alpha	Sharpe Ratio	Treynor Ratio	Jensen Measure	Market Sharpe Ratio	Market Treynor Ratio
	R_m	**R_f**	**R_p**	**σ_p**	**r**	**r^2**	**β**	**α**	**S**	**T**	**J**	**S_m**	**T_m**
2009-10	0.2530	-0.0324	0.3102	1.4010	0.6183	0.3823	0.4516	0.1960	0.2446	0.7587	0.3249	0.1491	0.2854
2010-11	0.0470	0.2142	0.0586	0.8655	0.9133	0.8340	0.7151	0.0250	-0.1799	-0.2177	-0.0946	-0.1513	-0.1673
2011-12	-0.0363	0.0864	-0.0180	0.9852	0.9202	0.8468	0.7067	0.0077	-0.1059	-0.1477	-0.0790	-0.0956	-0.1227
2012-13	0.0349	-0.0379	0.0292	0.6926	0.9050	0.8189	0.7891	0.0017	0.0968	0.0850	0.0591	0.0916	0.0728
2013-14	0.0748	0.0735	0.0884	0.9509	0.9273	0.8599	0.8021	0.0284	0.0157	0.0186	0.0294	0.0012	0.0013
2014-15	0.0952	-0.0275	0.1518	0.8896	0.9116	0.8311	0.9348	0.0628	0.2016	0.1918	0.1775	0.1415	0.1227
2015-16	-0.0340	-0.0507	-0.0040	1.1297	0.9443	0.8918	0.9922	0.0297	0.0413	0.0470	0.0463	0.0156	0.0167
2016-17	0.0659	-0.0872	0.1022	0.8243	0.9052	0.8194	0.9712	0.0382	0.2298	0.1950	0.1869	0.1992	0.1531
2017-18	0.0455	0.0203	0.0576	0.6786	0.8807	0.7756	0.9508	0.0143	0.0549	0.0392	0.0383	0.0401	0.0252
2018-19	0.0673	0.0144	0.0277	0.7587	0.8968	0.8043	0.8897	-0.0321	0.0175	0.0149	0.0149	0.0691	0.0529
2019-20	-0.0945	-0.1393	-0.1603	1.7003	0.9637	0.9287	0.9431	-0.0712	-0.0124	-0.0223	-0.0290	0.0258	0.0447
Average	0.0472	0.0031	0.0585	0.9888	0.8897	0.7994	0.8315	0.0273	0.0549	0.0875	0.0613	0.0442	0.0441

Source: Computed NAV data.

Table 3. HDFC - Equity Fund

Year	Market Returns (BSE)	Risk free return	Fund Returns	Risk	Coefficient of correlation	Coefficient of determination	Beta	Alpha	Sharpe Ratio	Treynor Ratio	Jensen Measure	Market Sharpe Ratio	Market Treynor Ratio
	R_m	**R_f**	**R_p**	**σ_p**	**r**	**r^2**	**β**	**α**	**S**	**T**	**J**	**S_m**	**T_m**
2009-10	0.2530	-0.0324	0.3290	1.7261	0.6096	0.3716	0.5486	0.1902	0.2094	0.6588	0.3468	0.1491	0.2854
2010-11	0.0470	0.2142	0.0760	0.9508	0.9246	0.8549	0.7953	0.0386	-0.1454	-0.1739	-0.0944	-0.1513	-0.1673
2011-12	-0.0363	0.0864	-0.0248	1.1875	0.9181	0.8429	0.8497	0.0060	-0.0936	-0.1309	-0.0982	-0.0956	-0.1227
2012-13	0.0349	-0.0379	0.0182	0.8884	0.9093	0.8268	1.0169	-0.0173	0.0631	0.0551	0.0567	0.0916	0.0728
2013-14	0.0748	0.0735	0.0872	1.1365	0.9160	0.8390	0.9469	0.0163	0.0120	0.0144	0.0176	0.0012	0.0013
2014-15	0.0952	-0.0275	0.1487	1.0746	0.8931	0.7976	1.1062	0.0433	0.1639	0.1593	0.1791	0.1415	0.1227
2015-16	-0.0340	-0.0507	-0.0401	1.2897	0.9414	0.8863	1.1293	-0.0018	0.0082	0.0094	0.0171	0.0156	0.0167
2016-17	0.0659	-0.0872	0.1122	0.9856	0.8996	0.8093	1.1540	0.0362	0.2024	0.1728	0.2129	0.1992	0.1531
2017-18	0.0455	0.0203	0.0383	0.9037	0.8244	0.6797	1.1853	-0.0156	0.0199	0.0152	0.0142	0.0401	0.0252
2018-19	0.0673	0.0144	0.0612	0.9250	0.8643	0.7469	1.0453	-0.0092	0.0505	0.0447	0.0461	0.0691	0.0529
2019-20	-0.0945	-0.1393	-0.1454	1.7386	0.9498	0.9021	0.9504	-0.0555	-0.0035	-0.0064	-0.0130	0.0258	0.0447
Average	0.0472	0.0031	0.0600	1.1642	0.8773	0.7779	0.9753	0.0210	0.0443	0.0744	0.0622	0.0442	0.0441

Source: Computed NAV data.

Table 4 HDFC - Focused 30 Fund

Year	Market Returns (BSE)	Risk free return	Fund Returns	Risk	Coefficient of correlation	Coefficient of determination	Beta	Alpha	Sharpe Ratio	Treynor Ratio	Jensen Measure	Market Sharpe Ratio	Market Treynor Ratio

	R_m	R_f	R_p	σ_p	r	r^2	β	α	S	T	J	S_m	T_m
2009-10	0.2530	-0.0324	0.3407	1.6521	0.5953	0.3543	0.5127	0.2110	0.2258	0.7277	0.3573	0.1491	0.2854
2010-11	0.0470	0.2142	0.0539	0.8886	0.8776	0.7702	0.7056	0.0208	-0.1804	-0.2272	-0.0972	-0.1513	-0.1673
2011-12	-0.0363	0.0864	-0.0344	0.9327	0.8719	0.7602	0.6338	-0.0114	-0.1295	-0.1906	-0.0892	-0.0956	-0.1227
2012-13	0.0349	-0.0379	-0.0175	0.8721	0.8481	0.7193	0.9312	-0.0499	0.0234	0.0219	0.0178	0.0916	0.0728
2013-14	0.0748	0.0735	0.0754	1.2125	0.8746	0.7650	0.9647	0.0032	0.0016	0.0020	0.0045	0.0012	0.0013
2014-15	0.0952	-0.0275	0.1408	1.1718	0.8534	0.7282	1.1527	0.0311	0.1437	0.1460	0.1725	0.1415	0.1227
2015-16	-0.0340	-0.0507	-0.0073	1.2790	0.9050	0.8191	1.0766	0.0293	0.0339	0.0403	0.0473	0.0156	0.0167
2016-17	0.0659	-0.0872	0.1033	0.8851	0.8356	0.6983	0.9627	0.0399	0.2152	0.1979	0.1872	0.1992	0.1531
2017-18	0.0455	0.0203	0.0435	0.7963	0.7884	0.6215	0.9987	-0.0019	0.0291	0.0232	0.0232	0.0401	0.0252
2018-19	0.0673	0.0144	0.0068	0.8436	0.8088	0.6542	0.8922	-0.0532	-0.0091	-0.0086	-0.0061	0.0691	0.0529
2019-20	-0.0945	-0.1393	-0.1452	1.7123	0.9413	0.8861	0.9277	-0.0575	-0.0035	-0.0064	-0.0160	0.0258	0.0447
Average	0.0472	0.0031	0.0509	1.1133	0.8364	0.7070	0.8871	0.0147	0.0318	0.0660	0.0547	0.0442	0.0441

Source: Computed NAV data.

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