



USING SORTINO RATIO FOR MEASURING RISK: A CASE STUDY OF HDFC MUTUAL FUND

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ABSTRACT

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We examine the performance of a sample of funds of HDFC Mutual Fund which is the largest private sector mutual fund in India. We examine a very popular risk adjusted metric used to evaluate the performance of mutual funds. This metric typically measures only the downside risk and is called the Sortino ratio. This ratio addresses the problem of using standard deviation as a measure of risk as it only takes into account the downward deviations. This is useful for an investor in selecting in mutual fund which matches his/her risk profile. Our sample comprises funds of different categories like Debt, Hybrid, Equity Linked Savings Schemes (ELSS), Equity Funds and Solution Oriented Funds. Our results show that generally their performance has deteriorated in the last one year. Comparatively, these funds had performed better in the last three and five years.

KEYWORDS: *HDFC Mutual Fund, Standard Deviation, Sharpe Ratio, Downward Risk, Sortino Ratio*

1. INTRODUCTION

Mutual funds in India have grown at a phenomenal pace. This can be observed from the fact that at the beginning of the year 2001, the Indian mutual fund industry was managing assets to the tune of Rs.1 billion which grew significantly to around Rs. 12 trillion in 2015. By the end of 2025 it was managing assets of around Rs.75 trillion, a colossal figure by any standards. One of the major reasons for this exponential growth has been availability of a large number of investment opportunities. This has come in the form of many products being offered by mutual funds to meet the risk and return appetite of various types of investors. Investors have also benefitted from the experience and expertise of professionally qualified fund managers who have been able to meet their investment objectives. Some of these funds have given very high returns. Thus, mutual funds have now become a preferred choice of investments amongst the households as they are able to provide returns far better than other avenues for investments like a fixed deposit with a bank. They have been able to do so at a low cost and also provide immediate liquidity of investments. Systematic Investment Plans have made it possible for small investors to invest a small amount every month and participate in wealth creation. This has resulted in huge investment opportunities for the retail investors which hereto were not possible. Thus, they have been able to get the financial benefits from a strong emerging market like India on the back of sound government policies which brought the Indian industrial sector on the fore front. The Indian stock markets have the state-of-the-art technology and by far are recognized as the best in the world. At the same time there has been a phenomenal improvement in investor services been

provided by the Indian mutual funds as they become more technology driven and lifted the traditional barriers in accessing markets. The market regulator also regulates this industry very stringently thus protecting the investors from any misadventures. All of these measures have resulted in an unprecedented growth in their assets. This paper contributes to the existing research by examining Sortino ratios of various funds with different risk-return profile of HDFC Mutual Fund for the last five years. It also brings about the relative advantages and disadvantages of different risk and performance measures like standard deviation, Sharpe ratio and Sortino ratio. The remaining paper is structured as follows: Section 2 does a review of literature while section 3 discusses the research methodology. Section 4 is devoted to the discussion of results and section 5 summaries and gives the conclusion of the study.

2. LITERATURE REVIEW

In this section we do a brief review of research work which has focused on the use of Sortino measure to evaluate mutual fund performance. Sen (2022) used three different ratio-maximization techniques viz., the Sharpe ratio, the Calmar ratio and the Sortino ratio. These three measures were used on examining the performance of shares listed on National Stock exchange of India and belonged to seven industrial sectors. The author concluded that the return on investment from these different sectors provided many insights. The study by Venugopal and Sophia (2020) examined the efficacy of different performance measures in the period of financial crisis and thus selected January, 2020 to July 2020 as their period of study. Their sample comprised around 1,400 equity mutual fund

schemes from India. In order to determine which fund performed better on different measures they ranked them. They concluded that the adjusted Sharpe ratio was a better measure in times of increased volatility in the stock markets. Livingston, Yaob and Zhou (2019) reported that mutual funds in which the expense ratio was on the higher side and had higher turnover ratio too showed larger variability in their performance. Kupcik and Gottwald (2016) looked at the measurement and comparison of performance evaluation of a sample of pension funds from a few European countries. They used both the Sharpe ratio and the Sortino ratio for evaluating performance. Their period of the study was from 2005-2013. Their study also brought about the significant differences in the performance of various pension funds. The results were centered on the comparison of the performance of the pension funds due to Sharpe vis-vis Sortino ratio. They also suggested a method to find out the rank of negative Sharpe and Sortino ratios. Barber, Huang and Odean (2016) explained the different areas of concerns for investors. Their research work elaborated at length the various metrics used in performance evaluation including the alpha value, the beta, size of the portfolio, etc. In a study by Capitani (2013), asymptotic confidence intervals for Sortino and Omega ratios were projected and examined. Kolbadi and Ahmadiania, (2011) took three measures of Sharpe, Sterling and Sortino ratios in evaluating the performance of mutual funds and concluded mixed results. Cogneau and Hübner (2009) explained 101 different methods to evaluate mutual fund performance and elaborated on their advantages and disadvantages. Jagric et al., (2007) examined a number of risk-adjusted techniques by taking a sample of mutual funds from Slovenia and concluded that the funds were well diversified.

3. RESEARCH METHODOLOGY

One of the requirements of today's fund management is that the performance of fund managers is evaluated on the basis of risk adjusted measures. This helps an average investor to select those funds which meet his/her risk return objectives while making investments. Another significant point is that the performance of the portfolio managers is compared against a benchmark index which they are required to outperform. This put a lot of pressure on fund managers to select appropriate stocks for their portfolios and should also be able to forecast the swings in the markets, if they have to be successful. Moreover, they have to consistently beat these benchmarks. Herein, we briefly discuss how the Sortino ratio came into existence to address the issues related to standard deviation as a risk measure and the universally used Sharpe ratio as the performance evaluation measure for mutual funds.

3.1 Sharpe ratio

The investment management industry has hugely benefitted by the seminal research work of William Sharpe and creating the first performance evaluation measure now popularly known as Sharpe Ratio in 1966. This ratio was built upon his work on Capital Asset Pricing Model (Kidd, 2011). Sharpe ratio is the first performance measure which separates the extra return per unit of total risk taken by the portfolio managers. Over the years performance evaluation techniques have advanced to comprise the study of such risks and separating them into distinctive unsystematic and systematic risks (Kidd, 2011). Thus, Sharpe Ratio has emerged as the main metric for calculating risk adjusted return. This ratio is useful in providing insights as to

what share of the performance of the portfolio is due to risk and tells us about the addition in value of the portfolio relatively to the risk taken (Kidd, 2011).

3.2 Standard deviation

One of the common statistical techniques used in measuring risk is standard deviation which helps us to understand how far a group of values diverges from the mean. It finds its application in numerous areas particularly in the field of finance. In case of investments, this measure is particularly useful in quantifying risk. Therefore, it is primarily used in evaluating a fund's performance. It specifies by how much the performance of a fund has varied in different periods of time. It is most commonly computed by using historical monthly returns over a period for e.g. one, three or five years. Standard deviation is then annualized and stated as a percentage. If the standard deviation is low then it would mean less variability and conversely if the standard deviation is high then it would imply that the returns could be unstable. Hence, mutual fund schemes would have more taken more risk if their standard deviation is high. This is a good indication that the fund manager has taken more risks to earn the return that they provide to investors and is an indication about the risk these funds carry. Therefore, it is a good measure for the investors to put their money in those mutual fund schemes which are suitable for them as per the risk that they would like to take given their age, income and other factors. Standard deviation as a metric is useful in understanding the variability in the future variability in returns of the mutual fund.

Standard deviation has been universally used as the primary metric of risk measured as a square root of variance. However, though it is widely used in risk management and in evaluation of performance measurement, it suffers from two limitations. One of them is that in its calculation there is an assumption that the return distribution is symmetric. Thus, it treats both the upward and downward deviations alike. The second limitation is that it uses the average of the returns as the target returns (Kidd, 2012). To address these limitations and with the advent of better computational facilities over the years resulted in the advancement of downside risk measures. Data used to express the share of the downward movements in a return distribution are semi deviation and downside deviation. In case of semi deviation, the computation is the same as that of standard deviation but we only use the returns that are below the mean. Semi deviation is the square root of semi variance (Kidd, 2012). Therefore, when we measure the performance of an investment which has returns which have a normal distribution, it will have the same kind of risks whether we use standard deviation or semi deviation. Since, in both the cases, the upward and the downward variability will be equal (Kidd, 2012). When we use a measure of downward measure it resolves both the limitations of standard deviation.

3.3 Sortino ratio

Sortino ratio is named after Frank A. Sortino who postulated that in case of performance evaluation of mutual funds, a better approach would be the use of downward risk only and thus gave the Sortino ratio. This ratio is the altered form of Sharpe ratio and is used to measure the extra return generated over and above the minimum acceptable return (MAR) by an investor. Sortino ratio mainly focuses on the downward risk of

variability. It is useful for those investors which would like to take less risk while making investments. The calculation of Sortino Ratio is similar to that of Sharpe ratio. In this ratio the risk-free rate is substituted by the minimum accepted return in the numerator and standard deviation is exchanged for downward deviation. The formula is given as:

$$S = (\text{Average Portfolio Return} - \text{Minimum Accepted Return}) / \text{Downward Deviation}$$

If a portfolio has a higher Sortino Ratio then better would be its performance. However, it is worthwhile to note that these measures use past data of risk and return which an investor uses to project returns expected in the future. However, an investor is interested in knowing the variability or volatility in returns which might occur in future. (Kidd, 2012). The manner in which downward deviations are computed may have a significant effect on the projected future returns. Moreover, computation of downward deviations is more complicated. Generally, one uses historical data of returns that fall below the minimum accepted return. This could considerably underestimate the downward risk (Sortino and Forsey, 1996).

Our present research focuses on evaluation of performance of a sample of funds of different categories of HDFC Mutual Fund by using Sortino ratio. HDFC Mutual Fund is by far the biggest private sector mutual fund house in India. It has been launched by the most reputed name in the financial services sector in India. It currently manages assets of around Rs. 8.3 trillion in 97 mutual fund schemes. Its asset management company became a listed entity in the year 2018. The period of our study is last five years i.e. from 2020-2025. We extract the Sortino ratios for the funds from Trendlyne.com.

4. DISCUSSION OF RESULTS

In the following section we discuss the results of the study for schemes belonging to different categories viz., Debt, Hybrid, ELSS, Equity Funds and Solution Oriented Funds. Debt funds include Corporate Bond funds, PSU & Banking funds, Dynamic funds, and Government Bond funds. The Hybrid category includes Aggressive and Arbitrage Funds. Then there are funds in the ELSS category. The Equity category includes funds belonging to the Large Cap and Equity Sectoral/Thematic funds and finally we have Solution Oriented Funds which offer various solutions to an investor depending upon his/her

Table1: Debt-Corporate Bond, PSU & Banking and Dynamic Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Corporate Bond Growth (D)	4.28	2	3	1	1.22	3
HDFC Corporate Bond Growth (R)	3.73	3	2.34	3	0.89	5
HDFC Banking & PSU Debt Growth (D)	4.69	1	2.56	2	1.6	1
HDFC Banking & PSU Debt Growth (R)	3.66	4	1.47	4	0.91	4
HDFC Dynamic Debt Growth (D)	1.03	5	1.2	5	1.35	2
HDFC Dynamic Debt Growth (R)	0.57	6	0.45	6	0.62	6

Source: Trendlyne.com; (D) Direct, (R): Regular

4.2 Debt-Government Bond Funds

In this category, we could find only HDFC Gilt Growth Fund. This is an open-ended debt fund which primarily invests in government securities of varying maturity. These securities are affected by high interest rates but have lower credit risk since they are issued by the government. We observed that Sortino

requirements. We use ‘fund’ and ‘schemes’ interchangeably throughout the paper.

4.1 Debt-Corporate Bond, PSU & Banking and Dynamic Funds

Table 1 shows the Sortino ratios for the Debt category which includes Corporate Bond funds, PSU & Banking funds and Dynamic Debt funds for the last one, three and five years respectively. Correspondingly, their ranks are also given for these periods. In all there are three mutual fund schemes floated by HDFC Mutual Fund. They offer both Direct Growth and Regular growth plans. This means that an investor has a choice to purchase the units directly from the mutual fund or from a distributor. The performance of the Direct funds would be better as compared to the Regular plan since they would not carry any fees paid to a distributor. Corporate Bond funds are open ended funds which primarily invest in highly rated debt instruments issued by companies which are at least rated AA+. An investor in these funds is exposed to a high degree of interest risk and comparatively moderate credit risk. As per their investment objectives, the fund manager can invest at least 80% of their corpus in such securities and can design a well-diversified portfolio. HDFC Banking and PSU Debt funds are essentially debt funds making investments largely in debt securities issued by government undertakings, municipal bonds and financial institutions. An investor would have to bear high-interest rate risk and relatively moderate credit risk. As per their investment objectives these funds can invest predominantly 80% of their corpus in debt securities and m instruments of money markets. Lastly, Dynamic Debt funds are typically debt funds which are able to change their portfolio on the basis of the outlook forecast of future rates of interest. They invest in different securities in the debt and money market categories. The basic goal of these funds is to achieve capital appreciation and at the same time to earn regular income. We find that all these funds had a positive Sortino ratio during the one, three and five year periods of study. During the last five years and in the last one-year period, HDFC Banking and PSU Debt Direct Growth Fund was ranked one while the lowest rank of six was of HDFC Dynamic Debt Regular Growth Fund. During the last three years, HDFC Corporate Bond Direct Growth Fund was the top performer and HDFC Dynamic Debt Growth Regular was ranked last. All in all, these funds have performed really well with high as depicted by their high Sortino ratios.

ratios of HDFC Gilt Direct pretty low with 1.22, 1.06 and 0.22 during the last one, three and five years respectively. This shows that this fund has not performed well and has not been able to offset the downward risk taken by the investor and compensate them appropriately. We also find that HDFC Gilt Regular Growth Fund has a negative Sortino ratio of -0.01 in

the last five years. The negative ratio of this fund indicates that it generated a return which was lower than even the risk-free rate. This shows that the fund managers of this fund could not appropriately reward the investors for the downward risks taken by them. The negative return of a guilt fund is quite possible

because it essentially invests in securities issued by the government which are highly sensitive to any interest rate changes. The performance of this fund was not good during the last five years. However, it has improved during the last one year as indicate by a reasonable Sortino ratio of around

Table 2: Debt-Government Bond Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Gilt Growth (D)	1.22	1	1.06	1	0.22	1
HDFC Gilt Growth (R)	0.97	2	0.72	2	-0.01	2

Source: Trendlyne.com; (D) Direct, (R): Regular

4.3 Hybrid- Aggressive and Arbitrage Funds

Under these categories we could find three funds viz., HDFC Hybrid Equity Fund, HDFC Arbitrage Wholesale Growth Fund and HDFC Arbitrage Retail Growth Fund. HDFC Hybrid Equity Fund is an open-ended fund, the corpus of which is mostly invested in equity. With around 60% to 80% of investments being made in equity which have a potential for growth and have strong financials with business models that are sustainable. These securities should also offer a high potential for capital appreciation in the future looking at their current valuations. In case of investments in debt instruments the fund, managers would essentially look in for their credit quality, their liquidity and the general scenario on outlook for interest rates. HDFC Arbitrage Fund is an open-ended fund in the hybrid

category that has an investment objective to earn income to earn gains from investments in equity and derivative markets by forming strategies to gain from price differences in them. The risk of the fund is market neutral and is centered on taking hedging positions in equity. We see that during the last five years HDFC Hybrid Equity Direct Growth fund is ranked number one and HDFC Arbitrage Retail Growth is ranked last. But the performance of HDFC Hybrid Equity Direct Growth has come down in the last three years since it was ranked third and in the last one year when it is ranked fifth. During the last three and one year periods, the HDFC Arbitrage Retail Growth Fund has outperformed the other funds and is ranked at number one. Overall, the performance of these funds has declined sharply during the last one year.

Table 3: Hybrid- Aggressive Hybrid and Arbitrage Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Hybrid Equity Growth (D)	0.18	5	2.07	3	2.81	1
HDFC Hybrid Equity Growth (R)	0.09	6	1.91	4	2.63	2
HDFC Arbitrage Wholesale Growth (D)	7.17	2	2.32	2	1.54	4
HDFC Arbitrage Retail Growth (D)	7.32	1	2.35	1	1.55	3
HDFC Arbitrage Retail Growth (R)	0.98	4	-0.21	6	-0.46	6
HDFC Arbitrage Wholesale Growth (R)	1.53	3	0.38	5	-0.08	5

Source: Trendlyne.com; (D) Direct, (R): Regular

4.4 Equity Linked Savings Schemes (ELSS)

Under the ELSS Category, HDFC Mutual fund has launched only one fund that is HDFC ELSS TaxSaver Growth Fund. This fund is suitable for investors who would like to take tax benefits under the Income Tax Act, 1961 under section 80C. Since these funds largely invest in equities, an investor looks for gains arising out of capital appreciation. A disadvantage of these

funds is that an investor cannot sell his/her units before three years of investment due to a compulsory lock in period as per the regulations of SEBI. We find that during the last one year this fund's performance has fallen sharply as indicated by its low Sortino ratio of around 0.3. This tax saving fund's performance in the last three and five year was very good as shown by its high Sortino ratio of around 3.

Table 4: ELSS Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC ELSS TaxSaver Growth (D)	0.39	1	3.2	1	3.5	1
HDFC ELSS TaxSaver Growth (R)	0.32	2	3.05	2	3.35	2

Source: Trendlyne.com; (D) Direct, (R): Regular

4.5 Equity Large Cap Funds

Equity large cap funds are essentially open-ended funds which make investments primarily in companies which have a very high market capitalization. An investor in these funds looks at long term capital appreciation and thus creation of wealth. At least 80% of the corpus of such funds are invested in equity

shares of big companies. SEBI has provided the definition of large cap stocks which includes the biggest Indian 100 corporates according to their market capitalization. The benefits of investing in such companies are that they are mature, old companies with established, diversified businesses and thus benefit from synergy in their operations and are able to absorb

the market risks and other business uncertainties due to their large capital and asset base. HDFC has come out with one Growth fund viz., HDFC Large Cap Growth fund, with both Regular and direct plans. Table 5 provides the Sortino ratios. This fund had performed well during the last five and three-year period respectively as per their Sortino ratios. However, its performance has fallen drastically during the last one year with a negative Sortino ratio. This clearly indicates that its return

generation in the last one year is below the minimum rate or the risk less rate of return. Thus, an investor in this fund is now not being rewarded for the downward risk taken by investing in such a fund. In other words, the fund is earning losses on the investments it makes and is not able to generate adequate returns to balance the losses. Thus, HDFC Large Cap Growth fund is an underperformer.

Table 5: Equity Large Cap Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3 Year	Rank	Sortino Ratio 5Year	Rank
HDFC Large Cap Growth (R)	-0.15	2	1.89	2	2.38	2
HDFC Large Cap Growth (D)	-0.09	1	1.99	1	2.49	1

Source: Trendlyne.com; (D) Direct, (R): Regular

4.6 Equity-Sectoral/Thematic Funds

Table 6 provides the Sortino ratios and their ranks for Sectoral and Thematic funds launched by HDFC Mutual Fund. A look at the Table shows that it has come out with many funds under this category. This category of equity funds are essentially sectoral funds which predominantly make investments in certain sectors of the economy whose future outlook is very promising and thus could provide long term capital appreciation. Typically, such funds would invest in securities of companies belonging to a particular sector like for example manufacturing, exports, pharmaceuticals, financial services, banking, etc. In case of thematic funds, the investments would largely focus on an economic sector having a similar theme. Such funds have a much higher risk profile since their objective is to achieve high degree of returns for their investors. Therefore, compared to diversified equity funds they are riskier investments. For the last five-year period, HDFC Infrastructure Growth is ranked at

first position while HDFC Gold ETF Fund of Fund Growth is ranked at last. These were the only funds in operation during that period. The Fund’s high Sortino ratio of 2.62 implies that an investor is protected by downward risk by 2.62 times and the fund has generated adequate returns to cover such risks. During the last three-year period HDFC Infrastructure Growth is again ranked at first position while HDFC Banking and Financial Services Growth is ranked at last. Three funds were operating during this period. In the last one-year period HDFC Gold ETF Fund of Fund Growth is ranked at first position with a Sortino ratio of 3.68. This fund is an outperformer. While HDFC Infrastructure Growth Fund (Regular) is ranked in the last position with a ratio of -0.32. HDFC had launched many new funds in this category and their performance was available for the last one year. By and large, the performance of these sectoral funds has come down sharply during the last one year as per their Sortino ratios.

Table 6: Equity Sectoral/Thematic Funds

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Banking & Financial Services Growth (R)	0.79	10	2.62	6	NA	NA
HDFC Banking & Financial Services Growth (D)	0.97	6	2.94	3	NA	NA
HDFC Gold ETF Fund of Fund Growth (D)	3.68	1	2.74	4	1.18	3
HDFC Gold ETF Fund of Fund Growth (R)	3.6	2	2.65	5	1.12	4
HDFC Infrastructure Growth (D)	-0.24	13	3.21	1	3.11	1
HDFC Infrastructure Growth (R)	-0.32	14	3.07	2	2.99	2
HDFC Pharma and Healthcare Growth (R)	1.8	4	NA	NA	NA	NA
HDFC Pharma and Healthcare Growth (D)	1.93	3	NA	NA	NA	NA
HDFC Technology Direct Growth (D)	1.03	5	NA	NA	NA	NA
HDFC Technology Regular Growth (R)	0.91	8	NA	NA	NA	NA
HDFC Non-Cyclical Consumer Growth (D)	0.26	11	NA	NA	NA	NA
HDFC Non-Cyclical Consumer Growth (R)	0.17	12	NA	NA	NA	NA
HDFC Silver ETF Fund of Fund Growth (R)	0.9	9	NA	NA	NA	NA
HDFC Silver ETF Fund of Fund Growth (D)	0.93	7	NA	NA	NA	NA

Source: Trendlyne.com; (D) Direct, (R): Regular

4.7 Solution Oriented Funds

In the category of Solution oriented funds, HDFC Mutual Fund has come out with four funds viz., HDFC Children’s Fund, HDFC Retirement Savings Equity Fund, HDFC Retirement Savings Hybrid Equity Fund, and HDFC Retirement Savings Hybrid Debt Fund with both the direct and regular plans.

Table 7A shows the Sortino ratios for HDFC Children’s Fund and their ranking respectively. This is an open-ended fund designed particularly for children and has a compulsory lock in

period of five years or when the child is of mature age, whichever happens earlier. The investment objective of the fund is to create a substantial corpus for the child. The fund manager would invest a minimum of 65% to 80% of the corpus of the fund in equity shares and other equity related instruments, while the remaining corpus in debt securities and other instruments of money markets. Its primary objective is to earn returns over a longer time horizon and to keep control of the risk.

We find that the performance of these funds has sharply declined in the last year with HDFC Children’s Fund Direct (Lock in) having a ratio of 1 and HDFC Children’s Fund (R), a negative Sortino ratio of -0.1. The negative ratio of this fund indicates that it generated a return which was lower than even the risk-free rate. This shows that the fund managers of this fund could not appropriately reward the investors for the

downward risks taken by them. In other words, it suggests that the fund has earned losses or returns which do not even compare with the current risk-free rate at which an investor could have invested without taking any risks. It also implies that the fund has witnessed negative variability or volatility. However, the fund’s performance was good in the last two and five years respectively with high Sortino ratios of around 2 and 3.

Table 7A: Solution Oriented Funds (HDFC Children’s Fund)

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Children’s Fund (D) (Lock-in)	0	1	2.35	1	3.14	1
HDFC Children’s Fund (R)	-0.1	2	2.15	2	2.9	2

Source: Trendlyne.com; (D) Direct, (R): Regular

Table 7B shows the Sortino ratios for HDFC Retirement Savings Equity Fund and HDFC Retirement Savings Hybrid Equity Fund and their ranking. HDFC Retirement Savings Equity Fund is again an open-ended fund offering solution for retirement with a mandatory lock in period of five years or upon retirement which ever happens earlier. As per its investment objective, the fund would invest at least 80% of its corpus in equity shares and other equity related instruments. It’s noteworthy that this fund is a notified tax savings cum pension fund. HDFC Retirement Savings Hybrid Equity Fund is similar to HDFC Retirement Savings Equity Fund in its allocation for equity. However, its fund manager can also invest the corpus in

debt and money market instruments. Its investment objective is to earn returns on a long-term period while effectively managing risk. We observe that the performance of these funds has also sharply declined in the last one year with HDFC Retirement Savings Equity Fund (R) having a ratio of -0.01 and HDFC Retirement Savings Equity Fund (R), a Sortino ratio of 0.02 respectively. The performance of the funds was far better in the last three and five years with Sortino ratios of more than 2 and 3 respectively. This is exceptional performance. HDFC Retirement Savings Equity Fund (D) was ranked one in the last three years while HDFC Retirement Savings Equity Direct ranked at one in the last five years.

Table 7B: Solution Oriented Funds (HDFC Retirement Savings Equity)

Fund Name	Sortino Ratio 1Year	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Year	Rank
HDFC Retirement Savings Equity (R)	-0.01	4	2.55	2	3.36	2
HDFC Retirement Savings Equity (D)	0.1	2	2.79	1	3.65	1
HDFC Retirement Savings Hybrid Equity (D)	0.17	1	2.54	3	3.31	3
HDFC Retirement Savings Hybrid Equity (R)	0.02	3	2.22	4	2.93	4

Source: Trendlyne.com; (D) Direct, (R): Regular

Table 7C shows the Sortino ratios and their ranking for HDFC Retirement Savings Hybrid Debt Fund with Direct and Regular options respectively. HDFC Retirement Savings Hybrid Debt Fund is an open-ended fund offering solution for retirement with a mandatory lock in period of five years or upon retirement which ever happens earlier. As per its investment objective, the fund can invest 55% to 90% of its corpus in debt and money market instruments. It can also invest in equity shares and other

equity related instruments and is a notified tax savings cum pension fund. Like other funds in this category, this fund’s performance has also deteriorated in the last one year compared to its far better performance earlier. It is also evident that a direct purchase of units from the mutual fund has a big impact on its return compared to when the units are purchased from a distributor due to its lesser expenses.

Table 7C: Solution Oriented Funds (HDFC Retirement Savings Hybrid Debt)

Fund Name	Sortino Ratio 1Yr	Rank	Sortino Ratio 3Year	Rank	Sortino Ratio 5Yr	Rank
HDFC Retirement Savings Hybrid Debt (D)	0.49	1	2.33	1	2.81	1
HDFC Retirement Savings Hybrid Debt (R)	0.08	2	1.61	2	1.95	2

Source: Trendlyne.com; (D) Direct, (R): Regular

5. CONCLUSION

In this paper, we discussed advantages and disadvantages of various measures like standard deviation, Sharpe ratio and Sortino ratio generally used in the evaluation of performance of mutual funds. Taking a sample of different categories of funds of HDFC Mutal Fund with different investment objectives and thus different risk-return profile for investors, we examined

their performance on the basis of Sortino ratio. Our findings indicate that overall, the majority of these funds had performed well in the last three and five-year period. However, their performance has sharply declined in the last one year.

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