

DE-FACTO IMPACT OF FUND SIZE ON INDIAN MUTUAL FUND SCHEMES

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Abstract

Fund attributes usually influence the performance and returns of funds. This research aims at determining the impact of the fund size on mutual fund schemes in India. It mainly focuses on the impact of the FUND SIZE on EQUITY, DEBT and HYBRID MUTUAL FUND schemes. The funds analyzed in this research have been chosen on the basis of CRISIL ranks. Factors like expense ratio also impact the performance and returns on the fund. Various other statistical measure like the Sharpe Ratio, Treynor Ratio, Jensen's Alpha and Standard Deviation have been used to analyze VOLATILITY of funds and ratios based on past data which can be referred to while in the process of fund selection keeping in mind the RISK appetite of investors.

Keywords: *Fund, Performance, CRISIL, Sharpe, Treynor*

I. Introduction

Mutual funds are professionally managed investment tools that pool money from various investors to purchase selective securities. Through mutual funds, small or individual investors are given access to professionally managed portfolios of equities, bonds and other securities. Mutual funds are usually operated by a fund manager who is directly appointed by the board of directors. The fund manager is legally obligated to work in the best interest of mutual fund shareholders. The fund managers usually create portfolios for investment with the pool of money. Investment goals differ from one investor to another. Fund size refers to the total asset base and funds can be segregated into large-cap, mid-cap and small-cap funds. Large cap funds include those funds which invest a large proportion of their corpus on reputable and well-established companies with a large market capitalization. The returns generated from large-cap funds are usually steady and have relatively lower risk as compared to small-cap and medium-cap funds. Mid-cap funds usually involve those funds which are part of growing companies. Investors of such funds need to have high-risk tolerance. Small-cap stocks have a high growth potential and are more volatile as compared to large and mid-cap funds. Mutual funds usually include equity, fixed income or debt, hybrid, money market funds etc.

II. Review of Literature

A. Fund Size & its Impact on Fund Performance: An Empirical Evidence from Selected Indian Mutual Fund Companies

The researchers conclude that fund investment decisions are often driven by returns earned on the fund. Fund flow, expense ratio, fund age, portfolio turnover rate, fund size are important attributes that drive performance of mutual funds. This paper has various arguments regarding how the fund size affects mutual fund performance. One argument states that fund size erodes mutual fund performance i.e. there is an inverse relationship between the fund size and returns derived from it – liquidity being the major cause or eroding the performance of American Mutual Funds. Another argument states that there is no relationship between the fund size and performance. However, majority of the researchers conclude that smaller funds earn higher returns than large funds. Findings are contradictory but it has been concluded that fund performance is significantly related to the size of the fund. This study covers a 5-year period and 68 open-ended equity mutual funds have been selected for the purpose of study. An empirical analysis has been carried out using econometric models. (Ramesh & Dhume, 2014)

B. Does Fund Size Affect the Performance of Equity Mutual Funds? An Empirical Study in the Indian Context

This study establishes that the Fund Momentum signifies ‘wealth generated’ by the fund for its unit holders if the Fund Momentum is positive, while negative Fund Momentum indicates ‘erosion of wealth’ of the unit holders. The researcher also introduced two new concepts – ‘Return per Fund Size Quotient’ and ‘Risk per Fund Size Quotient’ to determine the risk and return. There is no conclusive evidence that the fund size affects performance of equity/growth funds, be it micro-, small-, medium- and large sized funds. Various factors like fund size, fund managers, AUM affect the performance. Various performance parameters like risk, return, risk/return and Sharpe ratio have been computed to assess the relationship between funds and their performance and the conclusion is negative. (Rao, 2009)

C. How Does Size Affect Mutual Fund Performance? Evidence from Mutual Fund Trades

The researchers find that large funds underperform small funds because their stock holdings generate lower return premium. A preference for stocks that generate relatively low return premium likely comes from an over preference for stocks with sufficient liquidity and for lower-turnover strategies. Relatively liquid holdings and longer holding periods help fund managers contain transaction costs. The finding that a fund’s preference to hold a particular type of stock depends in part on the fund’s size provides insight into the competitive equilibrium of the mutual fund industry. A few dominant management companies (e.g. Vanguard, Fidelity, etc) control a significant portion of industry assets, small companies and small funds do exist and, in many cases also prosper. A small fund enjoys the advantage of access various types of stocks (i.e., small cap, high book-to-market, and high momentum) that big funds are less able to exploit. At the same time small funds are not able to compete with big funds on expenses, they make up for this disadvantage with an investment pool that offers higher average returns. In the mutual fund industry the transaction costs correlate positively with trade size. So it is not surprising that big funds compete by charging low expenses whereas small funds have the opportunity to earn higher investment returns. (Busse, Chordia, Jiang, & Tang, 2014)

D. How Does Size Affect Mutual Fund Behaviour?

This study investigates the impact of asset growth on aspects of fund investment behaviour. Although asset growth has very little or less impact on the behaviour of a typical fund, large and small cap funds usually diversify their portfolios in response to growth. Greater diversification leads to greater performance. This paper also focuses mainly on effect of fund size on large and medium cap funds. They emphasize on how diversification of funds positively impacts fund performance. The researchers have used regression analysis in order to determine the fund scale. (Pollet & Wilson, 2008)

E. A Study on the performance of Equity Mutual Funds (With special reference to equity large cap and mid cap mutual funds)

This study finds that India is an emerging market and has shown a strong uptrend in the last decade. India-focused equity mutual funds offer substantial capital gains to investors according to this research. According to this research, there was an increase in NAV of selected five large cap and small& mid cap mutual fund during the study period. The researcher ranks SBI Blue Chip first based on fund return, sharpe ratio, alpha, standard deviation and beta and concludes that these funds have been analysed on these parameters. The schemes have been selected on the basis of Crisil rating. A time period of 5 years has been taken and the data is based on secondary data from various sources. (Nandhini & Rathnamani, 2017)

III. Research Design

Scope of the study

Cap Size	Equity Mutual Funds
Large-Cap	Axis Blue Chip Fund Direct Plan (G)
	Canara Robeco Blue Chip Equity Fund Direct Plan (G)
	Edelweiss Large Cap Fund Direct Plan (G)
	JM Large Cap Fund Direct Plan (G)
	Invesco India Large Cap Fund Direct Plan (G)
Mid-Cap	Axis Mid Cap Fund Direct Plan (G)
	Invesco India MidCap Fund Direct Plan (G)
	Franklin India Prima Fund Direct Plan (G)
	DSP Mid Cap Fund Direct Plan (G)
	Reliance Growth Fund Direct Plan (G)
Small-Cap	HDFC Small Cap Fund Direct Plan (G)
	SBI Small Cap Fund Direct Plan (G)
	Kotak Small Cap Fund Direct Plan (G)
	Reliance Small Cap Fund Direct Plan (G)
	Aditya Birla Sun Life Small Cap Fund Direct Plan (G)

Duration	Debt Mutual Funds
Short Duration	L&T Short Term Bond Fund - D (G)
	IDFC Bond Fund - STP - Direct (G)
	Sundaram Short Term Debt Fund D (G)
	Kotak Bond-Short Term Plan - D (G)
Medium Duration	IDFC Bond Fund - MTP - D (G)
	Axis Strategic Bond Fund - D (G)
	SBI Magnum Medium Duration Fund - D (G)
	HDFC Medium Term Debt Fund - D (G)
	Kotak Medium Term Fund - D (G)
Long Duration	Tata Income Fund - D (G)
	ICICI Pru Long Term Bond Fund - D (G)
	IDFC Bond Fund - LTP - D (G)
	Quant Dynamic Bond - Direct (G)
Type	Hybrid Mutual Funds
Aggressive Hybrid Fund	Principal Hybrid Equity Fund - D (G)
	SBI Equity Hybrid Fund - D (G)
	Shriram Hybrid Equity Fund - D (G)
	CR Equity Hybrid Fund - DP - (G)
	ICICI Prudential Equity & Debt - D (G)
Conservative Hybrid Fund	BNP Paribas Conser. Hybrid - D (G)
	LIC MF Debt Hybrid Fund - D (G)
	Axis Regular Saver Fund - Direct (G)
	ICICI Pru Regular Savings Fund - D (G)
	IDFC Regular Savings Fund - D (G)

Statement of the Problem

This research focuses on how the fund size and type impacts the performance of mutual fund schemes in India. This research also involves the methodology used to rank the mutual fund schemes.

Objective of Study

- To determine the impact of fund size on Equity, Debt and Hybrid Mutual Fund.
- To analyze the relationship between the type of fund and the performance of the Equity, Debt and Hybrid Mutual Fund.

Source of Data

Secondary sources of data have been used for this study from the following:

- www.moneycontrol.com
- economictimes.indiatimes.com
- www.valueresearchonline.com

Data Analysis Software(s)

MS Excel

Tableau

IV. Data Analysis

EQUITY MUTUAL FUND SCHEMES						
Cap Size	Fund	Standard Deviation	Expense Ratio	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
Large-Cap	Axis Blue Chip Fund Direct Plan (G)	0.04769347	0.89%	0.70869247	0.03714286	0.29%
	Canara Robeco Blue Chip Equity Fund Direct Plan (G)	0.02639918	1.65%	(1.2197349)	(0.0331959)	(0.05%)
	Edelweiss Large Cap Fund Direct Plan (G)	0.03474191	0.53%	(1.2722388)	(0.0433333)	0.10%
	JM Large Cap Fund Direct Plan (G)	0.02017424	1%	(2.2404808)	(0.063662)	1.88%
	Invesco India Large Cap Fund Direct Plan (G)	0.01408013	0.94%	(3.5653085)	(0.0528421)	(0.21%)
Mid-Cap	Axis Mid Cap Fund Direct Plan (G)	0.02905741	0.99%	1.26645817	0.04487805	5.14%
	Invesco India MidCap Fund Direct Plan (G)	0.05414487	1%	(1.9983427)	(0.1229545)	(1.31%)
	Franklin India Prima Fund Direct Plan (G)	0.04069808	0.99%	(3.9363041)	(0.2053846)	(3.55%)
	DSP Mid Cap Fund Direct Plan (G)	0.05080026	1.12%	(3.2913216)	(0.1797849)	(1.21%)
	Reliance Growth Fund Direct Plan (G)	0.06318425	1.45%	(2.7411893)	(0.1924444)	(1.76%)
Small-Cap	HDFC Small Cap Fund Direct Plan (G)	0.02825332	0.81%	(6.4841941)	(0.2442667)	(4.60%)
	SBI Small Cap Fund Direct Plan (G)	0.06644484	1.24%	(3.9009802)	(0.32)	(0.67%)
	Kotak Small Cap Fund Direct Plan (G)	0.04737352	0.97%	(5.1336701)	(0.3242667)	(10.11%)
	Reliance Small Cap Fund Direct Plan (G)	0.0406653	1.15%	(6.6198945)	(0.3024719)	(2.93%)
	Aditya Birla Sun Life Small Cap Fund Direct Plan (G)	0.05499697	1.07%	(6.0039672)	(0.3839535)	(4.62%)

DEBT MUTUAL FUND SCHEMES						
Duration	Fund	Standard Deviation	Expense Ratio	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
Short Duration	L&T Short Term Bond Fund - D (G)	0.86794777	0.72%	0.011291	0.00283237	(2.54%)
	IDFC Bond Fund - STP - Direct (G)	1.06887792	0.27%	0.01103961	0.00315508	(3.08%)
	Sundaram Short Term Debt Fund D (G)	0.78528127	0.85%	0.00993275	0.00214876	(2.29%)
	Kotak Bond-Short Term Plan - D (G)	0.90323493	1.14%	0.01417129	0.00341333	(3.63%)
Medium Duration	IDFC Bond Fund - MTP - D (G)	1.15289491	1.26%	0.0058982	0.00957746	0.17%
	Axis Strategic Bond Fund - D (G)	0.95350232	1.05%	0.01237543	0.01311111	0.15%
	SBI Magnum Medium Duration Fund - D (G)	1.06887792	1.06%	0.00729737	0.01054054	0.17%

	HDFC Medium Term Debt Fund - D (G)	0.8660254	0.49%	0.00554256	0.006	0.10%
	Kotak Medium Term Fund - D (G)	0.99666109	1.74%	0.00080268	0.00108108	0.04%
Long Duration	Tata Income Fund - D (G)	1.60934769	1.01%	(0.0094448)	(0.0106294)	0.68%
	ICICI Pru Long Term Bond Fund - D (G)	3.03040151	1.48%	0.00422386	0.00100313	(15.66%)
	IDFC Bond Fund - LTP - D (G)	2.32432786	1.75%	0.0046465	0.00654545	(0.71%)
	Quant Dynamic Bond - Direct (G)	2.34716141	0.10%	0.00076688	0.00233766	0.07%

HYBRID MUTUAL FUND SCHEMES

Type	Fund	Standard Deviation	Expense Ratio	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
Aggressive Hybrid Fund	Principal Hybrid Equity Fund - D (G)	1.95448203	2.20%	(0.0425688)	(0.0914286)	(0.75%)
	SBI Equity Hybrid Fund - D (G)	2.97811462	2.12%	(0.0195426)	(0.0718519)	(1.14%)
	Shriram Hybrid Equity Fund - D (G)	1.6583124	2.43%	(0.0350959)	(0.0701205)	(1.01%)
	CR Equity Hybrid Fund - DP - (G)	1.8427787	1.13%	(0.0191016)	(0.0386813)	(0.29%)
	ICICI Prudential Equity & Debt - D (G)	2.90631496	2%	(0.0348207)	(0.1349333)	(2.55%)
Conservative Hybrid Fund	BNP Paribas Conser. Hybrid - D (G)	0.85244746	0.70%	(0.0154848)	(0.0169231)	(0.28%)
	LIC MF Debt Hybrid Fund - D (G)	1.22474487	1.65%	(0.0246582)	(0.0495082)	(1.19%)
	Axis Regular Saver Fund - Direct (G)	1.06262254	1.32%	(0.0190096)	(0.0269333)	(0.53%)
	ICICI Pru Regular Savings Fund - D (G)	1.46628783	1.36%	0.00259158	0.00436782	0.08%
	IDFC Regular Savings Fund - D (G)	1.65931713	1.68%	(0.0157896)	(0.0315663)	(0.45%)

V. Findings and Interpretation

Standard Deviation

Standard deviation is a statistical measure that shows how much deviation is there from the arithmetic mean (simple average). A higher deviation indicates high volatility and vice versa.

$$\sigma = \sqrt{\frac{\sum(r - \bar{r})^2}{n - 1}}$$

Where;

σ = standard deviation of a stock

$(r - \bar{r})$ = deviation, that is nothing but difference between return and average return

n = period of data used for calculation i.e. number of months

In our study, with regard to Equity Mutual Fund schemes, we found that the standard deviation of Invesco India Large Cap Fund-Direct Plan (G) (Ranked #3 by Crisil) is 0.014080128. This implies that there is a deviation of 0.014080128 from the mean which indicates that this fund has low volatility compared to other funds in this category but that does not mean that lower standard deviation is preferred by all investors. It depends largely on the investors' investments and their ability to assume risk. From the Debt Mutual Fund schemes, we found that the standard deviation of Reliance Nivesh Lakshya Fund - DP (G) is 4.7 and this implies that there is a deviation of 4.7 from the mean. This indicates that this fund has the highest volatility compared to other funds in this category. Aggressive growth-oriented funds will have a high deviation since the fund managers make aggressive bets to generate alpha and so higher volatility is assumed. Amongst the Hybrid Mutual Fund Schemes, we found that the standard deviation of BNP Paribas Conserv. Hybrid D (G) (Ranked #1 by Crisil) is 0.85244746 and this implies that there is a deviation of 0.85244746 from the mean, which indicates that this fund has low volatility compared to other funds in this category.

Expense Ratio

Expense Ratio is the fee (Management fees, Administrative costs, Distribution fees) charged by the mutual fund houses to manage the funds of investors.

$$\text{Expense Ratio} = \frac{\text{Total Operating Expenses}}{\text{Assets Under Management}}$$

In our study, we found that the expense ratio of Edelweiss Large Cap Fund Direct Plan (G) (Ranked #2 by Crisil) from the Equity Mutual Fund scheme is 0.53% and this implies that the fund house charges 0.53% to each investor within the fund for their gross investment to manage their portfolio. A lower % is great from an investor since it means more profitability on the investment for the investor. Amongst the Debt Mutual Fund Schemes, we found that the expense ratio of Quant Dynamic Bond D (G) is 0.10% which means that 0.10% is charged by the fund house to each investor within the fund for their gross investment to manage the portfolio. It is the lowest expense ratio as compared to the other funds within this category. Hybrid Mutual Fund Schemes usually have a higher expense ratio as compared to Debt and Equity Mutual Fund Schemes. The Shriram Hybrid Equity Fund D (G) (Ranked #2 by Crisil) has an expense ratio of 2.43% which is the highest expense ratio amongst all the funds in this category taken into consideration. Although a high expense ratio might mean less profitability, it is not always necessary that a high expense ratio indicates low returns.

Sharpe Ratio

Sharpe Ratio is a statistical tool that assists the investors in understanding the average return earned in excess of the risk-free rate per unit of total risk (standard deviation). In simple terms, this ratio shows the additional returns an investor earns by taking additional risk. Higher ratio indicates a greater return per unit of risk and vice versa.

$$S_p = \frac{r_p - r_f}{\sigma_p}$$

Where;

S_p = Sharpe's ratio of a fund

r_p = expected return of the fund

r_f = risk free rate of return

σ_p = risk of the fund

Within the Equity Mutual Fund schemes and the Debt Mutual Fund Schemes, in our study, we found that the Sharpe ratio of Axis Mid Cap Fund-Direct Plan (G) (Ranked #1 by Crisil) is 1.266458173 and L&T Short Term Bond Fund D (G) (Ranked #1 by Crisil) is 0.011291. This implies that the fund has generated a 1.26645173 and 0.011291 excess return respectively for the extra volatility from holding a riskier asset over a period of time. A higher ratio is preferred by fund managers and investors because it shows that they are properly compensated for holding the riskier asset over a risk-free asset. Amongst the Hybrid Mutual Fund schemes, in our study, we found that Sharpe Ratio of Principal Hybrid Equity Fund - D (G) (Ranked #1 by Crisil) is -0.04256882. This implies that the fund has generated a -0.04256882 less return for the extra volatility from holding a riskier asset over a period of time. A negative ratio shows that investors and fund managers are not being properly compensated for as the asset is not generating enough return to match the risk taken by the investor/fund manager.

Treynor Ratio

Treynor Ratio is a statistical measure that calculates returns in excess of the risk-free rate of return for a given level of market risk. It focuses on the risk-adjusted returns generated by a mutual fund scheme.

$$T = \frac{r_p - r_f}{\beta_p}$$

Where;

T =Treynor's Ratio

r_p = expected return of the fund

r_f = risk free rate of return

β_p = Beta of the fund

In case of Equity Mutual Fund schemes and Hybrid Mutual Fund schemes in our study, we found that the Treynor ratio of Aditya Birla Sun Life Small Cap Fund Direct Plan (G) (Ranked #3 by Crisil) is -0.38395349 and LIC MF Debt Hybrid Fund - D (G) (Ranked #1 by Crisil) is -0.049508197. This implies that the fund has generated a -0.38395349 and -0.049508197 return respectively for every additional unit of risk assumed by the fund. A lower Treynor ratio signifies that the fund is unable to compensate an investor enough for the risk taken on the asset. From the Debt Mutual Fund schemes we found that the Treynor ratio of Axis Strategic Bond Fund - D (G) (Ranked #1 by Crisil) is 0.013111111. This implies that the fund has generated a positive return of 0.013111111 for every additional unit of risk assumed by the fund. A higher Treynor ratio signifies that the fund is capable of compensating an investor for the risk taken on the asset. However, the investment depends from one investor to another and their risk appetite.

Jensen's Alpha

Jensen's Alpha is a statistical measure that calculates the return on a portfolio in excess of its theoretical expected risk-adjusted return suggested by the CAPM model.

$$JA = r_p - (r_f + \beta_p * (r_m - r_f))$$

Where;

JA = Jensen's Alpha

r_p = expected return of the fund

r_f = risk free rate of return

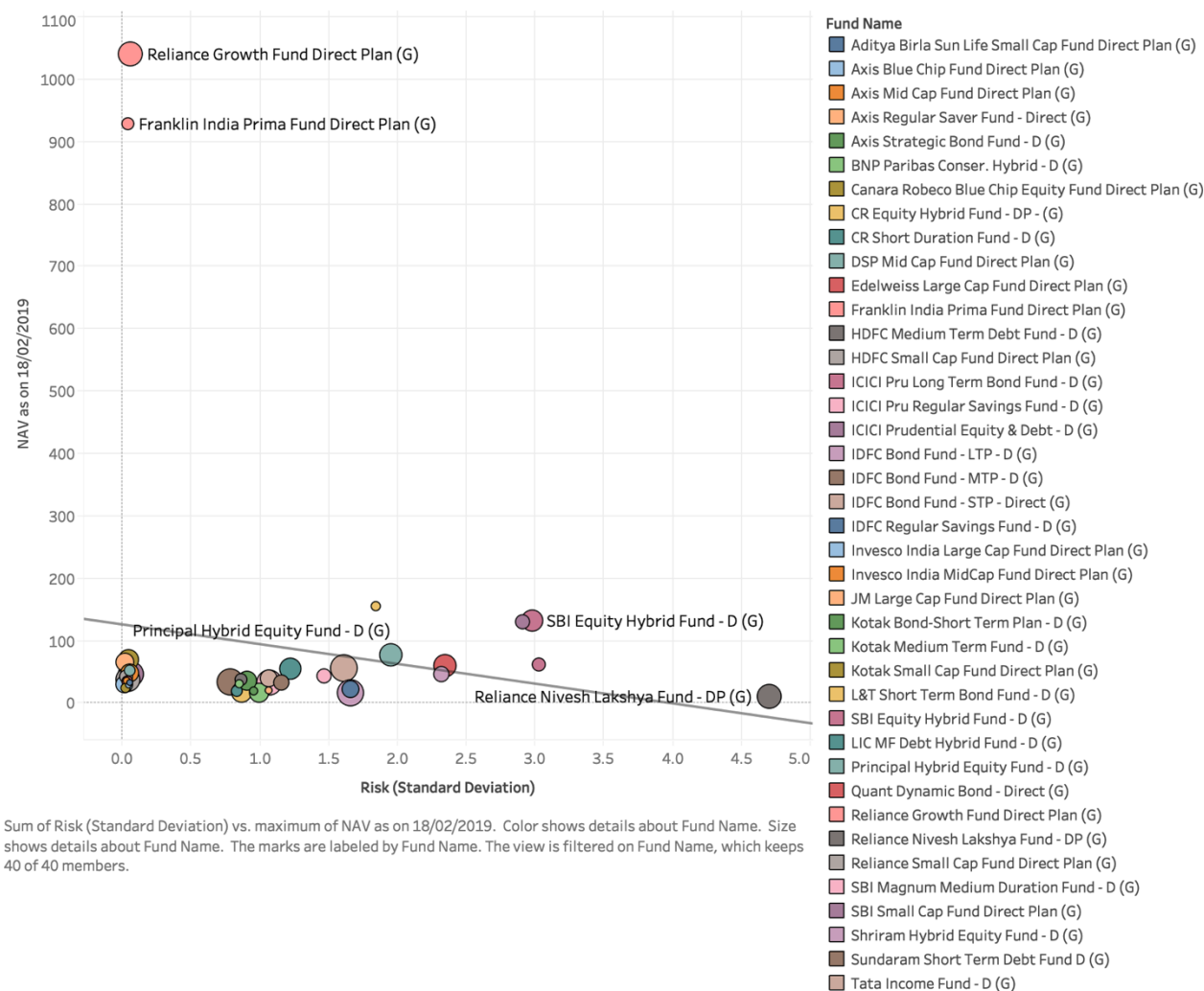
r_m = expected market return of the fund

β_p = Beta of the fund

In case of Equity Mutual Fund and Debt Mutual Fund schemes, in our study, we found that Jensen's alpha of JM Large Cap Fund Direct Plan (G) (Ranked #3 by Crisil) and Reliance Nivesh Lakshya Fund - DP (G) is 1.88% and 2.68% respectively. This implies that the fund is able to generate a 1.88% return over the market on a risk-adjusted basis. A higher % (positive) is always preferred by fund managers because it shows that the fund has overperformed the market. This is usually a sound investment decision for an investor. From the Hybrid Mutual Fund schemes we found that Jensen's alpha of Principal Hybrid Equity Fund - D (G) (Ranked #1 by Crisil) is -0.75% This implies that the fund is underperforming in the market on a risk-adjusted basis. A negative % indicates that the fund has not earned the required return for the given level of risk it has taken in the market.



Risk-NAV Tradeoff



Sum of Risk (Standard Deviation) vs. maximum of NAV as on 18/02/2019. Color shows details about Fund Name. Size shows details about Fund Name. The marks are labeled by Fund Name. The view is filtered on Fund Name, which keeps 40 of 40 members.

VI. Conclusion

As we look into volatility in our study, we find that Equity Funds have the lowest average volatility and Hybrid has the highest average volatility when compared between the 3 types of funds. Debt funds are most consistent in terms of returns over the period of one year. Debt and Equity funds on an average have earned a positive return in excess of the risk-free rate for per unit of risk. Within the Equity Fund Schemes, the large-cap funds give a better return to investors than a mid-cap and small-cap funds. The expense ratio for small-cap funds are higher than mid-cap and large-cap funds. In case of debt funds, short term debt funds have been able to generate a better return with a lower expense ratio for investors than a medium or long term debt funds. Amongst the hybrid funds, the conservative type of funds have generated a better return with a lower expense ratio for investors as compared to an aggressive hybrid fund. A trend is analysed where larger and long-term funds with lower expense ratios attract a certain category of investors. However, this does not necessarily apply to the performance of the fund. Performance depends on various factors like the market condition, the efficiency of the market, the skill of the fund manager. In the study, we found that for equity schemes, large-cap funds performed best; amongst the debt funds we find that short term funds have performed better and for hybrid funds, the conservative funds show better performance than aggressive funds.

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