“A taxonomic evaluation of Indian mutual funds’ performance and its determinants – Post-pandemic”

AUTHORS	K. Riyazahmed B. Anitha Kumari B. Diwakar Naidu

ARTICLE INFO	K. Riyazahmed, B. Anitha Kumari and B. Diwakar Naidu (2022). A taxonomic evaluation of Indian mutual funds’ performance and its determinants – Post-pandemic. *Investment Management and Financial Innovations*, *19*(2), 180-190. doi:10.21511/imfi.19(2).2022.15
DOI	http://dx.doi.org/10.21511/imfi.19(2).2022.15
RELEASED ON	Monday, 30 May 2022
RECEIVED ON	Wednesday, 12 January 2022
ACCEPTED ON	Tuesday, 08 March 2022

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
51	1	4

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

K. Riyazahmed (India), **B. Anitha Kumari** (India), **B. Diwakar Naidu** (India)

A TAXONOMIC EVALUATION OF INDIAN MUTUAL FUNDS' PERFORMANCE AND ITS DETERMINANTS – POST-PANDEMIC

Abstract

The COVID-19 pandemic has caused significant disruption in financial markets worldwide and impacted the performance of investment avenues like mutual funds. It has been a challenging scenario for all mutual funds to sustain the pre-pandemic performance. To understand the mutual fund investment scenario further, this study focused on examining the post-pandemic performance in the year 2021 of various categories of mutual funds, the significance of scheme characteristics in determining the performance, risk-adjusted performance, and outperformance of various categories of funds. Out of 4,305 mutual fund schemes, tax planning funds (58%), sectoral funds (57%), and equity diversified funds (55%) achieved better returns. Further, using the ordinary least squares (OLS) regression, the study estimated the effect of fund characteristics like scheme category, scheme type, scheme access type along with the fund's tracking error and corpus size on funds' return. The results show that tax planning, sectoral, and equity diversified funds significantly outperform. Tracking error significantly reduces the fund return by 4.52%. Scheme type, scheme access type, and corpus size were not significant. Equity, index, pension, and balanced category funds exhibit risk-adjusted performance, and only bond funds were able to outperform the respective benchmarks. The study adds to the existing literature by investigating the post-pandemic performance determinants of mutual funds.

Keywords mutual funds, fund performance, Sharpe ratio, information ratio, tracking error

JEL Classification G10, G11

Received on: 12th of January, 2022
Accepted on: 8th of March, 2022
Published on: 30th of May, 2022

K. Riyazahmed, Dr., Assistant Professor – Finance, SDM Institute for Management Development (SDMIMD), India. (Corresponding author)

B. Anitha Kumari, Assistant Professor, School of Management Studies, REVA UNIVERSITY, India.

B. Diwakar Naidu, Professor, REVA Business School, REVA University, India.

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

Mutual funds are efficient in channelizing the investments from savings to the most profitable avenues, particularly in emerging economies like India (Bhandari, 2008). A liquid and stable financial market channels money into long-term investments by offering liquidity to investors (Levine, 2005). Particularly, the post-pandemic market data show that mutual funds play a crucial role in Indian financial markets. Average Assets Under Management (AUM) of the Indian mutual fund industry stood at ₹38.2 Lakh crores as of October 2021. The AUM crossed ₹10 Lakh crore in the year 2014 and exponentially grew to ₹30 Lakh crore in the year 2020 (AMFI). Even during the pandemic, the Indian mutual fund industry has crossed a milestone of 10 crore folios in May 2021 (PTI, 2021). The total number of folios as of October 2021 is 11.44 crore and major folios are into equity, hybrid, and solution-oriented schemes. The Indian mutual fund industry has the potential for exponential growth, since the ratio of AUM to gross domestic product (GDP) is still 15%, whereas the global average is 75% (PTI, 2021). Over the last five years, the mutual fund industry grew at a rate of 20%, specifically, the equity AUM grew by 25%. Mutual fund investments

http://dx.doi.org/10.21511/imfi.19(2).2022.15

are the preferred avenue for risk-averse investors, and the recent pandemic induced investors to move more towards mutual funds. Higher awareness improved investor preference toward mutual funds even in the COVID-19 pandemic environment.

A survey conducted by financial advisory firm Findoc group found that 72% of respondents have opted for mutual funds post-pandemic and 63% felt satisfied with the decision (PTI, 2021). In general, investors choose mutual funds based on past performance, risk profile, and other investment factors like expense ratio and the fund house. Indian mutual fund industry has 4,305 funds in various categories like equity, debt, hybrid, and access types like closed-ended and open-ended funds. However, fund managers dealt with the tough pandemic market condition to sustain the mutual fund performance (Maheen, 2021; PwC, 2021). Even then, all mutual funds were not able to effectively deal with the pandemic disruptions (Ians, 2021; Shanmugam & Ali, 2021). Hence, evaluating the performance of mutual funds by identifying the persuasive factors driving the return of funds helps investors identify the best-performing scheme categories in a pandemic situation.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Indian capital markets have become vibrant and are growing exponentially since the pandemic. Specifically, pandemics cause economic changes in a country and behavioral changes in investors. Stocks of different sectors have got affected at different levels. Sectors like financial services, metals, automobiles, transportation, and construction were highly negatively affected. However, the surge in volumes and Demat accounts are evidence of high liquidity in Indian stock markets. Further, mutual funds in economies with liquid stock markets and strong legal institutions exhibit superior performance (Ferriera et al., 2012).

Similarly, mutual funds play a substantial role in improving liquidity and recuperation of stock markets from collapses (Jagannathan et al., 2021). Therefore, liquidity in the Indian stock markets is expected to improve mutual fund performance and vice versa. Even after having a vibrant stock market and liquidity, the dispersion of the Indian mutual fund business is deficient compared to advanced countries. Poor penetration is due to a shortage of objective research, poor financial literacy, poor equity culture, and poor regulatory support in the Indian markets (Kale & Panchapagasan, 2012). To expand dissemination, more quantitative investigation is required. Researchers have analyzed individual characteristics of fund performances. Attributes like fund size, market risk, and expenses are persistent in determining the performance of the equity mutual funds. Older funds, with a larger size, and with a high-expense ratio are found to be better in performance (Deb, 2019). Equally, Mutual funds managed by large fund houses surpass the markets (Ferriera et al., 2012).

However, retail investors trade actively, they are poor in timing and selection of funds, despite access to specialized fund managers (Sourirajan & Nataran, 2021). Though, professional fund managers demonstrate poor stock-assortment abilities and do not seem to show any noticeable ability in timing (Zabiulla, 2014). Interactions between the strategic behavior of investors and fund managers are significant for fund performance (Badrinath & Gubellini, 2010). Hence, examining the fund characteristics in determining the mutual fund performance is crucial to identifying funds exhibiting outperformance.

Babbar and Sehgal (2018) have examined 237 equity growth funds for the period of April 2007 to March 2013 and concluded that fund size negatively influences the Net asset value (NAV), and the fund age has a positive impact. Likewise, Narayan and Ravindran (2003), when analyzing the performance of the funds, found that most of the funds outperformed and gave excessive returns on top of investors' expected returns. In contrast to this, the research study by Malviya and Khanna (2020) discovered that mutual funds were unsuccessful to produce just as the fixed deposit returns. Likewise, Garg (2011), Debasish (2009), Anitha et al. (2011),

Kalpesh et al. (2012), and Sanjay (2011) identified the best-performing funds out of the sample analyzed in Indian mutual funds.

Dhar (2005) investigated the performance of mutual funds in India using Jensen and Fama measures. The study found that most fund managers exhibit superior performance in the Fama criterion. Further, the study found that open-end mutual fund managers perform well than closed-ended fund managers. Likewise, Ashok and Kavita (2010) examined the performance of hybrid mutual funds in the Indian context. The study found that all the hybrid funds showed outperformance during the period of study. Keswani (2011) investigated the impact of fund size on the performance of all balanced funds in India. The study found that there is no significance of fund size on the fund performance. Alam (2019) examined the performance of equity mutual funds in India and found that fund managers exhibit stock selection skills but lack in timing the markets.

Arora (2015) evaluated the risk-adjusted performance of hundred Indian mutual funds using Sharpe and Treynor ratio from 2000 to 2008. The results of the study show that growth funds, tax planning funds, income funds, and balanced funds show significant outperformance. In their research study, Selvam et al. (2011) investigated the risk-return association in mutual fund schemes. The results show that not all mutual fund schemes present risk-return relationships.

Likewise, Guha Deb (2008) assessed the efficacy of funds in outperforming their respective benchmarks. The study found that on average, the funds have not been able to outperform their style benchmarks. However, the research work of Prajapati and Patel (2012) observed outperformance by most of the funds. By examining the factors influencing the mutual fund preference of investors, Ippolito (1992) established that investors prefer mutual funds that have a history of positive returns more than any other related factors. Cognazzo (2021) investigated the ability of investors to take timing decisions and concluded that the normal performance is adverse across all funds. The study found that although the timing is bad irrespective of the fund manager's strategy, the categories like corporate and growth funds display the most unpleasant performance.

Likewise, researchers have examined the factors driving allocation to actively managed yet underperforming and identified a significant effect of lagged fund flows, fund size, fund risk, and market risk on fund flow in general market conditions. Further, research studies found significant changes in the management style of a fund manager to enable tax-adjusted returns during tax relief circumstances. The results of the study disclose that fund managers change asset allocation to increase the after-tax return of investors. This shows that fund managers are significantly influenced by prevailing market conditions like a pandemic.

Berk and Green (2004) derived a parsimonious model and found that factors like fund flow and past performance influence fund performance. Bird et al. (1983) concluded that irrespective of categories all mutual funds underperform during the period of study. Black and Timmerman (1983) found underperformance of funds varies substantially due to different asset categories. In a recent study Mahar et al. (2021) emphasize that fund size, turnover, and management effectiveness significantly influence fund performance. Dahlquist et al. (2000) and Klein (2005) support the impact of fund size on fund performance.

The existing works of literature show that 'fund performance' significantly differs based on 'scheme category, scheme type, and scheme access type'. Likewise, the 'corpus size' of funds was found significant. However, the significance of these factors differs based on the prevailing financial market and economic conditions. Since the pandemic financial market environment largely differs from a normal market condition, an evaluation of factors determining the mutual fund performance is essential.

Hence, the purpose of the study is to identify the best-performing funds that withstand pandemic disruptions and identify the impact of factors like scheme category, scheme type, scheme access type, corpus size, and tracking error on fund performance. The following hypotheses are formulated:

H1: There is a significant impact of scheme category on mutual fund performance.

H2: There is a significant impact of scheme type on mutual fund performance.

http://dx.doi.org/10.21511/imfi.19(2).2022.15

H3: There is a significant impact of scheme access type on mutual fund performance.

H4: There is a significant impact of corpus size on mutual fund performance.

H5: There is a significant influence of tracking error on mutual fund performance.

2. METHODS

To examine the impact of specific factors on mutual fund return, the study uses ordinary least squares (OLS) linear regression analysis. The mutual fund data are extracted from the Association of mutual funds in India (AMFI). Funds more than five years of age are considered and a total of 4,305 mutual fund schemes were collected for analysis. Funds with missing information in all the parameters are excluded and the final data consisted of 4,217 mutual funds. The data set is investigated for the primary difference between the funds in terms of generating returns in different periods i.e., *one year return, 3-year return, 5-year return, and return – since inception*. Then the study analyzed for the significance of scheme category, scheme type, scheme access type, corpus size, and tracking error. The base regression model is given in equation (1).

$$R = \alpha + \beta_1 C + \beta_2 T + \beta_3 AT + \beta_4 TE + \varepsilon, \quad (1)$$

where R represents the return of mutual funds during the year 2021. C denotes scheme category of funds, T denotes scheme type, AT denotes access type, and TE denotes tracking error of the mutual funds. α represents the constant term, β represents the slope or coefficient of the independent variables, and ε denotes the error term of the OLS model. Further to regression analysis, the study examines the performance of mutual funds using the Sharpe ratio and Information ratio. Sharpe ratio measures the performance of a mutual fund compared to the risk-free rate adjusting to the fund's risk (Sharpe, 1994). Sharpe ratio is estimated as the difference between the returns of the investment and the risk-free return, divided by the standard deviation of the investment returns. Sharpe ratio represents the additional amount of return that an investor receives per unit of increase in risk (eqn.2). SR represents the Sharpe ratio, RF is the fund return, Rf denotes the risk-free rate, and σRf represents the standard deviation of the fund returns.

$$SR = \frac{RF - Rf}{\sigma Rf}. \quad (2)$$

Likewise, Information Ratio is a metric that represents the fund return above its benchmarks such as equity indices or sectoral indices (Goodwin, 1998). The information ratio is used to evaluate the skill of a portfolio manager at generating returns more than a given benchmark. Information ratio is estimated as the excess return of a fund (Rp) over its benchmark return (Rb) for every unit of tracking error, which is a standard deviation of the excess return concerning the benchmark rate of return (eqn.3). IR represents the Information ratio. RF denotes fund return, RB denotes the return of the benchmark, and t denotes the tracking error of the funds.

$$IR = \frac{RF - RB}{t}. \quad (3)$$

3. RESULTS

An initial assessment of the data discloses the composition of various categories of funds in the Indian mutual fund market. Most of the funds are bond funds (40%) followed by equity funds (24%) (Table 1). Based on scheme type, dividend funds are higher than growth funds. Most of the funds are open-ended funds (97%) in nature. The maximum return generated by mutual funds is as high as 671% and the minimum return was negative 99%. Based on the estimation of returns by different categories of funds, tax planning (58.63), sectoral (57.17) and equity funds (55.87) generated above-average returns post-pandemic period i.e., 2021. Liquid funds (7.51), Gilt funds (4.69), and bond funds (3.88) performance are comparatively very low. There is a wide difference observed in the corpus size of the funds. Mean and Median 'corpus size' shows that majority of funds are less than ₹1000 lakh crore (Table 2).

Table 1. Classification of mutual funds based on scheme category

Source: Author's calculation.

Category	No. of funds	% of composition	Returns %
Bond Funds	1714	40.65	7.51
Equity Diversified funds	1012	24.00	55.87
Liquid funds	466	11.05	3.88
Balanced funds	287	6.81	38.34
Gilt funds	173	4.10	4.69
Fund of funds	168	3.98	23.64
Tax planning funds	151	3.58	58.63
Index funds	141	3.34	45.39
Sectoral funds	98	2.32	57.17
Pension funds	7	0.17	22.71
???	4217	**100**	

Table 2. Corpus size of the mutual funds

Source: Author's calculation.

Statistics	Corpus size (₹ Lakh crore)
Mean	4437.0
Median	1078.1

Mutual funds widely differ in terms of performance based on the different periods of investments (Table 3). The average one-year return of funds i.e., post-pandemic (25.62%) is greater than the 3-year, 5-year, and inception return. However, the median values are not widely differing and hence the performance could not be accredited to all funds. Hence, to examine the significance of the influence of factors like scheme category, scheme type, and scheme access type, the study used the OLS linear regression model. Further, to fund characteristics, the study also examined tracking error and corpus size as independent variables. Tracking error represents the performance of a scheme with its benchmark or index. Hence, tracking errors helps to determine how active and proficient a portfolio manager's investment strategy is. The tracking error information is collected from factsheets of the mutual fund schemes. Likewise, the corpus size is converted into log transformation and used in the analysis. The dependent variable is the return of funds in the year 2021. Further, since some of the independent variables are categorical, the study used the 'simple contrasting' method in R software, for interpretation of the coefficients of the categorical variables.

Table 3. Mutual fund returns in different time frames

Source: Author's calculation.

Statistics	One year return	3-year return	5-year return	Inception return
Mean	25.62	12.545	9.521	10.185
Median	9.11	9.350	7.720	8.400

Before model estimation, outliers are excluded in each variable and diagnostic tests have been done to minimize the chances of bias in the model estimates. Variance inflation factor (VIF) has been calculated for each independent variable to detect the presence of multicollinearity. The stationarity of the independent variables was ensured before the linear regression model. Correlation coefficients of the independent variables were found to be satisfactory for further analysis. The results of the regression model show that scheme category and tracking error are the two variables that significantly influence the return of the schemes (Table 4).

Through the Analysis of variance, the study found that model 5 is more significant than other models. The chosen regression model can be expressed as

$$\begin{aligned} R = {} & 38.87944 - 23.78547 \cdot B + \\ & + 23.78356 \cdot E - 7.32852 \cdot F - \\ & - 26.76693 \cdot G + 13.87754 \cdot I - \\ & - 27.53376 \cdot L + 26.14959 \cdot S + \\ & + 25.93688 \cdot T - 4.51965 \cdot t. \end{aligned} \quad (4)$$

In equation (4), B denotes Bond funds, E denotes equity funds, F denotes fund of funds, G denotes gilt funds, I denotes index funds, L denotes liquid funds, S denotes sectoral funds, T denotes tax planning funds, and t denotes tracking error. For contrasting the categorical variable 'scheme category, 'Balanced Funds' was used as a reference category. The coefficients infer that the grand mean return of the mutual funds is 38.87944%. The bond funds significantly generate –23.78547% when compared to the Balance fund return. Similar are the cases of liquid funds (–27.53376%), Gilt funds (–26.76693%), and Fund of funds (–7.32852%) showing poor performance. However, sectoral funds (26.14959%), tax planning (25.93688%), and equity diversified funds (23.78356%) perform better than the balance funds. The effect of

http://dx.doi.org/10.21511/imfi.19(2).2022.15

tracking error negatively impacts the return by 4.51965. Since tracking error represents the deviation of a fund return from its benchmark, the negative impact is found significant. The results show that Sectoral funds, tax planning funds, and equity diversified funds comparatively generate a superior return in the Indian market, post-pandemic. Likewise, investors must rely on the tracking error of the funds, which reflects the performance of the fund manager's strategy compared to the funds' benchmark.

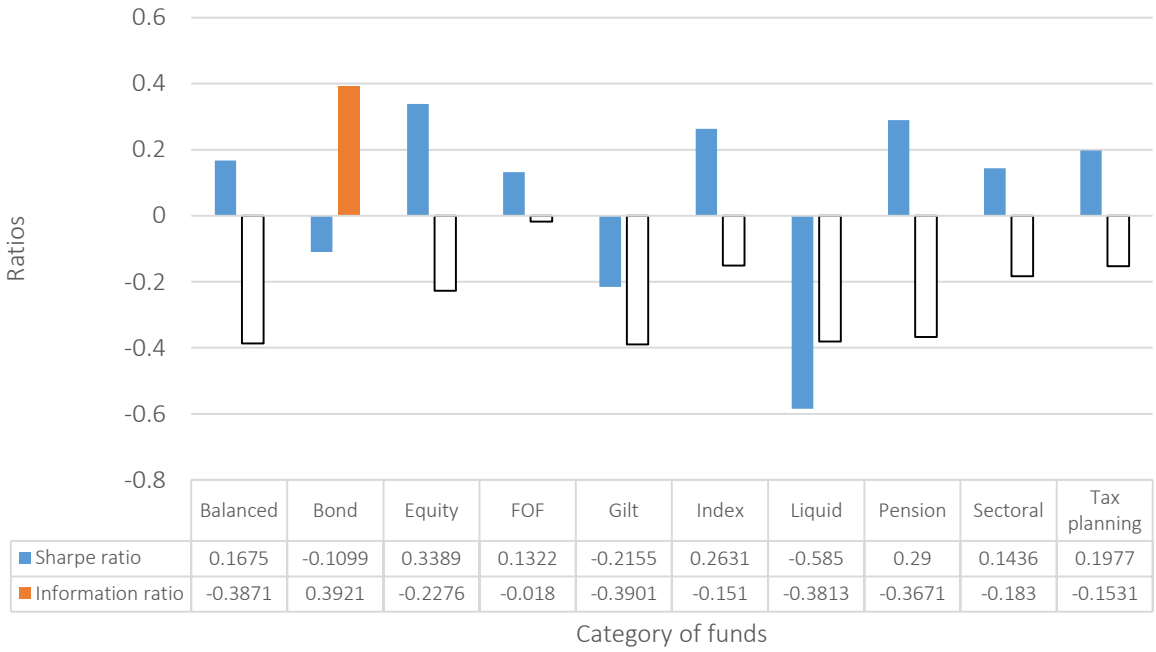
Further to the regression results, the Sharpe ratio for 4,217 funds was estimated and categorically averaged to find the categorical performance (Figure 1). In general, the Sharpe ratio of 1 is considered outperformance, and 0.2 to 0.3 is considered in line with the broader market. The results show that equity funds, index funds, and pension funds have performed in line with the broader market. Likewise, the information ratio of all the funds shows that only 'bond funds' were able to outperform the benchmarks (Figure 1).

Table 4. OLS regression results

Source: Author's calculation.

Return	Model 1	Model 2	Model 3	Model 4	Model 5
Scheme Category					
Balanced Funds	**Reference Category**				
Bond funds (B)	–30.831*** (1.161)	–30.7936 *** (1.1618)	–30.5448*** (1.1656)	–30.52392*** (1.16694)	–23.78547*** (0.87776)
Equity diversified (E)	17.533*** (1.217)	17.4984*** (1.2180)	17.3839*** (1.2183)	17.42025*** (1.22226)	23.78356*** (0.92815)
Fund of funds (F)	–14.700*** (1.768)	–14.7689*** (1.7703)	–14.7848*** (1.7685)	–14.86118*** (1.77970)	–7.32852*** (1.48257)
Gilt funds (G)	–33.647*** (1.752)	–33.6436 *** (1.7517)	–33.6429*** (1.7499)	–33.65647 *** (1.75039)	–26.76693*** (1.44937)
Index funds (I)	7.048*** (1.872)	6.9143*** (1.8804)	6.8834*** (1.8784)	6.83051*** (1.88361)	13.87754*** (1.57398)
Liquid funds (L)	–34.456*** (1.365)	–34.4047*** (1.3674)	–34.3927*** (1.3659)	–34.30295*** (1.38570)	–27.5337*** (1.09954)
Pension funds (P)	–15.630* (6.962)	–15.7651* (6.9643)	–15.7966* (6.9570)	–15.76093* (6.95834)	–9.95056* (6.12540)
Sectoral funds (S)	18.829*** (2.129)	18.7817*** (2.1302)	18.77*** (2.1280)	18.80278*** (2.12979)	26.14959*** (1.80104)
Tax planning (T)	20.296*** (1.829)	20.2463*** (1.8309)	20.0247*** (1.8331)	20.06564*** (1.83635)	25.93688*** (1.52689)
Scheme Type					
Dividend fund	**Reference Category**				
Growth fund		0.4319 (0.5874)	0.5322 (0.5881)	0.52670 (0.58834)	0.59581 (0.58143)
Access type					
Closed-ended	**Reference Category**				
Interval			–10.2225** (3.3399)	–10.36416 (3.36035)	–10.15534 (3.32076)
Open-ended			–4.5293 (2.6821)	–4.37139 (2.7133)	–3.99611 (2.68155)
Corpus size				–0.05601 (0.1450)	–0.09923 (0.14340)
Tracking error (*t*)					–4.51965*** (0.44755)
Constant	31.7867 (0.7842)	38.1695 (1.0997)	42.6586 (2.9005)	42.86524 (2.9497)	**38.87944** (2.82605)
Observations	4217	4217	4217	4217	4217
Adj. ***R***-squared	0.6058	0.6058	0.6066	0.6065	0.6158

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.



	Balanced	Bond	Equity	FOF	Gilt	Index	Liquid	Pension	Sectoral	Tax planning
Sharpe ratio	0.1675	-0.1099	0.3389	0.1322	-0.2155	0.2631	-0.585	0.29	0.1436	0.1977
Information ratio	-0.3871	0.3921	-0.2276	-0.018	-0.3901	-0.151	-0.3813	-0.3671	-0.183	-0.1531

Figure 1. Sharpe ratio and Information ratio for different categories of funds

4. DISCUSSION

The findings of the study show that the scheme category has a significant impact on the fund performance in a post-pandemic market condition. Particularly, sectoral funds outperform (26.15% higher than the reference category) all the other scheme categories. This is since, after the outbreak of COVID-19, the stock markets witnessed a significant fall and after the announcement of massive fiscal, and monetary stimulus the stock markets bounced back with the additional support of optimism due to vaccine rollout benefiting sectors like pharma, information technology, banking, and consumer discretionary, which continued to draw the attention of investors (Neogi, 2021). The sectoral funds examined in the study belong to categories like pharma, infotech, Fast Moving Consumer Goods (FMCG), and diversified categories and so witnessed significant outperformance.

Likewise, the study found equity diversified and tax planning funds also outperformed in post-pandemic market conditions. Deb (2019) and Sathya (2009) claim that equity diversified funds show persistent performance. Further, the post-pandemic rally in the Indian equity markets attributes to the equity fund performance (Madia, 2021). The study also found that bond funds (-23.78%), gilt funds (-26.7%), and liquid funds (-27.53%) showed poor performance. The poor performance of bond, gilt, and liquid funds is due to poor money market and bond market conditions because of the uncertain economic prospectus (Sen, 2020). In general bond fund returns are found lower than the market average during the crisis period (Leite & Armada, 2017; Samarbakhsh & Shah, 2021). Likewise, tax planning shows significantly better performance (25.93%) than other funds. Cho and Yoon (2021) found fund managers significantly change the management style of the fund in a tax relief scenario and hence the better performance of the tax planning funds is attributed because of the investment strategies of fund managers Kumar et al., 2021; Sehgal & Shery, 2021).

Analyzing the performance of funds based on access type, Ali et al. (2017) found that closed-ended mutual funds perform well. However, there is no significant difference between open-ended and close-ended fund performance based on the findings of this study. Further to identifying the best performing category of funds in the post-pandemic condition, the results of the study show that corpus size is not a significant determinant of fund performance. This contrasts with the findings of Chen et al. (2004) and Yan (2008) in which the researchers found a significant impact of corpus size on mutual fund returns.

http://dx.doi.org/10.21511/imfi.19(2).2022.15

However, Ciccotello and Grant (1996) and Ali et al. (2017) found no significance of corpus size on mutual fund return even in a normal market condition. Correspondingly, the study found the significance of tracking error in determining fund performance. Panday (2016) emphasized the significance of tracking error for exchange-traded funds, and Gunning and Vuvveren (2019) found the impact of tracking error on fund performance, which is reliable to this study's results. Hence among the tested hypothesis, the scheme category and tracking error determine mutual fund returns, and factors like scheme type, scheme access type, and corpus size do not found to be significant determinants.

CONCLUSION

Globally, financial markets have become more volatile since the COVID-19 outbreak. The performance of the investment avenues like mutual funds was also disrupted due to the pandemic. In a standard market condition, factors like scheme category, scheme type, scheme access type, corpus size, and tracking error play importance in mutual fund performance. However, to address the pandemic scenario, this study has examined mutual fund data consisting of 4,217 mutual fund schemes offered in India using OLS regression analysis. The results show that sectoral funds, tax planning, and equity diversified funds perform well, and tracking errors have a negative impact. So, investors can rely on funds in sectoral, tax planning, and equity fund categories with lesser tracking error in a pandemic environment to get a better return. However, due to insignificant impact, investors are not required to consider the choice of mutual funds based on corpus size *(small-cap, mid-cap, large-cap)*, scheme types *(dividend or growth funds),* and access type *(open-ended, close-ended, and interval type).*

The study also examined the mutual funds through the 'Sharpe ratios' to find their risk-adjusted performance. The results show that equity funds, pension funds, index funds, and balanced funds are better than other categories. Likewise, to ascertain the outperformance of funds than the benchmarks, the study investigated the 'information ratio' of mutual funds. Only bond funds could outperform the benchmarks during the post-pandemic year. The findings of the study are useful to investors and portfolio managers in selecting funds for investment during a pandemic-affected environment and help maximize returns or protect investment in an extremely uncertain environment. The scope of further research from this study is that the historical data of outperforming fund categories shall be examined to estimate the effect of external macro-economic factors like gross domestic product, inflation, and internal fund characteristics like fund age, turnover, and management effectiveness on the pre-and post-pandemic investment situation.

AUTHOR CONTRIBUTIONS

Conceptualization: K. Riyazahmed.
Data curation: K. Riyazahmed, B. Anitha Kumari, B. Diwakar Naidu.
Formal analysis: K. Riyazahmed, B. Anitha Kumari.
Investigation: K. Riyazahmed, B. Diwakar Naidu.
Methodology: K. Riyazahmed.
Resources: B. Anitha Kumari, B. Diwakar Naidu.
Validation: K. Riyazahmed.
Writing – original draft: K. Riyazahmed.
Writing – review & editing: K. Riyazahmed, B. Anitha Kumari, B. Diwakar Naidu.

REFERENCES

1. Alam, M. (2019). Mutual fund performance – Evidence from India. *International Journal of Recent Technology and Engineering, 8*(4), 11714-11723. https://doi.org/10.35940/ijrte.D4284.118419
2. Ali, M. (2017). Performance evaluation of selected open-ended mutual funds in Pakistan. *Journal of Administrative & Business Studies, 2*(2). https://doi.org/10.2139/ssrn.2649336
3. AMFI. (2021). Indian Mutual Fund Industry's Average Assets Under Management (AAUM) stood at ₹ 37.92 Lakh Crore (INR 37.92 trillion). *Association of Mutual Funds in India*. Retrieved from https://www.amfiindia.com/indian-mutual#:~:text=The%20AUM%20size%20crossed%20%E2%82%B9,the%20month%20of%20May%202021.
4. Anitha, R., Radhapriya, C., & Devasenathipathi, T. (2011). A Comparative Analysis of Market Returns and Fund Flows with Reference to Mutual Funds. *International Journal of Research in Commerce, IT & Management, 1*(4). Retrieved from http://ijrcm.org.in/download.php?name=ijrcm-4-Ivol-1_issue-4_art-11.pdf&path=uploaddata/ijrcm-4-Ivol-1_issue-4_art-11.pdf
5. Arora, K. (2015). Risk-adjusted Performance Evaluation of Indian Mutual Fund Schemes. *Paradigm, 19*(1), 79-94. https://doi.org/10.1177/0971890715585203
6. Ashok, K., & Kavita, P. (2010). Hybrid mutual funds: An analysis. *Asia Pacific Journal of Research in Business Management, 1*(2), 94-109. Retrieved from https://www.indianjournals.com/ijor.aspx?target=ijor:apjrbm&volume=1&issue=2&article=007
7. Babbar, S., & Sehgal, S. (2018). Mutual Fund Characteristics and Investment Performance in India. *Management and Labour Studies, 43*(1-2), 1-30. https://doi.org/10.1177/0258042X17745183
8. Badrinath, S. G., & Gubellini, S. (2010). Mutual Fund Performance: A synthesis of taxonomic and methodological issues. *IIMB Management Review, 22*(4), 147-164. https://doi.org/10.1016/j.iimb.2010.08.002
9. Berk, J. B., & Green, R. C. (2004). Mutual fund flows and performance in rational markets. *Journal of Political Economy, 112*(6), 1269-1295. Retrieved from https://www.journals.uchicago.edu/doi/abs/10.1086/424739
10. Bhandari, S. B. (2008). *Capital market efficiency and the performance of Indian mutual funds* (Unpublished Thesis). University of Delhi.
11. Bird, R., Chin, H., & McCrae, M. (1983). The Performance of Australian Superannuation Funds. *Australian Journal of Management, 8*(1), 49-69. https://doi.org/10.1177/031289628300800104
12. Blake, D., & Timmermann, A. (1998). Mutual Fund Performance: Evidence from the UK. *Review of Finance, 2*(1), 57-77. https://doi.org/10.1023/A:1009729630606
13. Cagnazzo, A. (2022). Market-timing performance of mutual fund investors in emerging markets. *International Review of Economics & Finance, 77*(1), 378-394. https://doi.org/10.1016/j.iref.2021.10.004
14. Ciccotello, C. (1996). Equity fund size and growth: Implications for performance and selection. *Financial Services Review, 5*(1), 1-12. https://doi.org/10.1016/s1057-0810(96)90023-2
15. Dahlquist, M., Engström, S., & Söderlind, P. (2000). Performance and characteristics of Swedish mutual funds. *Journal of Financial and Quantitative Analysis, 35*(03), 409-423. https://doi.org/10.2307/2676211
16. Deb, S. G. (2019). Persistence in performance of actively managed Equity Mutual Funds: New Indian evidence. *IIMB Management Review, 31*(2), 145-156. https://doi.org/10.1016/j.iimb.2019.03.014
17. Dhar, J. (2005). Investment Management of Mutual Funds: Evidence of Timing and Selectivity from India. *Macroeconomic and Finance Conference of Indira Gandhi Institute of Development Research* (pp. 1-29). Retrieved from http://www.igidr.ac.in/conf/money/mfc-12/Investment%20management%20of%20mutual%20funds_joyjit%20dhar.pdf
18. Ferreira, P. S., Shamsuzzoha, A. H. M., Toscano, C., & Cunha, P. (2012). Framework for performance measurement and management in a collaborative business environment. *International Journal of Productivity and Performance Management, 61*(6), 672-690. https://doi.org/10.1108/17410401211249210
19. Goodwin, T. H. (1998). The information ratio. *Financial Analysts Journal, 54*(4), 34-43. https://doi.org/10.2469/faj.v54.n4.2196
20. Guha, D. (2008). Performance of Indian Equity Mutual Funds vis-à-vis their Style Benchmarks. *The ICFAI Journal of Applied Finance, 16*(4), 49-81.
21. Gunning, W., & Van Vuuren, G. (2019). Exploring the drivers of tracking error constrained portfolio performance. *Cogent Economics & Finance, 7*(1), 1684181. https://doi.org/10.1080/23322039.2019.1684181
22. Ians. (2021). *How mutual fund space has grown over Covid-19 pandemic – smaller fund houses outpace major players in 2021*. Zee Business – Personal Finance News. Retrieved from https://www.zeebiz.com/personal-finance/news-how-mutual-fund-space-has-grown-over-covid-19-pandemic-smaller-fund-houses-outpace-major-players-in-2021-164422
23. Ippolito, R. A. (1992). Consumer Reaction to Measures of Poor Quality: Evidence from the Mutual Fund Industry. *The Journal of Law & Economics, 35*(1), 45-70. Retrieved from http://www.jstor.org/stable/725554

http://dx.doi.org/10.21511/imfi.19(2).2022.15

24. Jagannathan, R., Pelizzon, L., Schaumburg, E., Sherman, M. G., & Yuferova, D. (2021). Recovery from fast crashes: Role of mutual funds. *Journal of Financial Markets*, 100646. https://doi.org/10.1016/j.finmar.2021.100646

25. Kale, J. R., & Panchapagesan, V. (2012). Indian mutual fund industry: Opportunities and challenges. *IIMB Management Review, 24*(4), 245-258. https://doi.org/10.1016/j.iimb.2012.05.004

26. P. P., & Mahesh, K. P.(2012). Comparative study on Performance Evaluation of Mutual Fund Schemes of Indian Companies. *Researchers World, Journal of Arts, Science & Commerce, 3*(3), 47-59. Retrieved from https://www.semanticscholar.org/paper/COMPARATIVE-STUDY-ON-PERFORMANCE-EVALUATION-OF-FUND-Prajapati-Patel/bb937394fad0e590a00da7bc3237e9e1864de266

27. Keswani, S. (2011). Effect of fund size on the performance of balanced mutual funds an empirical study in Indian context. *International Journal of Multidisciplinary Research, 1*(4), 18-38. Retrieved from http://www.zenithresearch.org.in/images/stories/pdf/2011/Aug/2%20vol-1_issue-4_02_SARIKA.pdf

28. Klein, S. L. (2005). Does fund size erode mutual fund performance? the role of liquidity and organization. *CFA Digest, 35*(3), 59-60. https://doi.org/10.2469/dig.v35.n3.1727

29. Kumar, J., Prasad, S., & Anand, P. (2021). Performance of Tax Saving Mutual Fund Schemes: A Case Study of Selected asset Management Companies Operating in India. *Design Engineering, 1*(6), 1512-1536. Retrieved from https://www.researchgate.net/publication/352677975_Performance_of_Tax_Saving_Mutual_Fund_Schemes_A_Case_Study_of_Selected_asset_Management_Companies_Operating_in_India

30. Leite, P., & Armada, M. R. (2016). Bond Fund performance during recessions and expansions: Empirical evidence from a small market. *International Review of Finance, 17*(1), 163-170. https://doi.org/10.1111/irfi.12098

31. Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of Economic Growth, 1*, 865-934. Retrieved from https://www.nber.org/papers/w10766

32. Madia, C. (2021). *Active large-cap funds outperform benchmarks on back of broad rally.* Business Standard. Retrieved from https://www.business-standard.com/article/markets/active-large-cap-funds-outperform-benchmarks-121121701127_1.html#:~:text=Market%20participants%20say%20the%20outperformance,the%20data%20from%20Value%20Research.

33. Mahar, S. W., Mangnejo, G. M., & Brohi, M. A. (2021). Determinants of Mutual Funds Performance: A Review Article. *Research Journal of Social Sciences and Economics Review, 2*(2), 61-67. https://doi.org/10.36902/rjsser-vol2-iss2-2021(61-67)

34. Maheen, M. S. (2021). Impact of COVID-19 on the performance of emerging market mutual funds: evidence from India. *Future Business Journal, 7*(37). https://doi.org/10.1186/s43093-021-00081-w

35. Malviya, M., & Khanna, P. (2020). Performance of mutual fund industry in India, *International Journal of Creative and Innovative Research in All Studies, 2*(1), 66-76. Retrieved from http://www.ijciras.com/PublishedPaper/IJCIRAS1557.pdf

36. Narayan, R. S., & Ravindran, M. (2003). Performance Evaluation of Indian Mutual Funds. *SSRN Electronic Journal*. http://dx.doi.org/10.2139/ssrn.433100.

37. Neogi, S. (2021). *Mutual Funds: Investing in sectoral funds? Proceed with caution*. Financial Express. Retrieved from https://www.financialexpress.com/money/mutual-funds/mutual-funds-investing-in-sectoral-funds-proceed-with-caution/2266922/

38. Panday, F. (2016). Evaluating Index fund performance and measuring tracking error in India. *Pacific Business Review International, 1*(1). http://www.pbr.co.in/2016/2016_month/June/20.pdf

39. Press Trust of India. (2021, October 7). Mutual fund industry has potential to grow exponentially, says Deepak Parekh. Retrieved from https://timesofindia.indiatimes.com/business/india-business/mutual-fund-industry-has-potential-to-grow-exponentially-says-deepak-parekh/articleshow/84483599.cms

40. PwC. (2021). *COVID-19 and the mutual fund industry – An acceleration of trends.* Retrieved from https://www.pwc.com/us/en/industries/financial-services/library/mutual-fund-outlook.html

41. Samarbakhsh, L., & Shah, M. (2021). Did the stock act impact the performance, risk, and flow of hedge funds? *International Journal of Managerial Finance*. https://doi.org/10.1108/ijmf-04-2021-0174

42. Sanjay, G. (2011). A Study on Performance Evaluation of Selected Indian Mutual Funds. *International Journal of Innovation, Creativity and Management, 1*(1), 1-10. Retrieved from https://ijcrt.org/papers/IJCRT1801340.pdf

43. Sathya, D. S. (2009). Investigating Performance of Equity-based Mutual Fund Schemes in Indian Scenario. *KCA Journal of Business Management, 2*(2), 1-15. Retrieved from https://www.ajol.info/index.php/kjbm/article/view/52160

44. Sehgal, A., & Sherry. (2021). Performance analysis of selected tax saving mutual fund schemes in India. *International Research Journal of Engineering and Technology, 8*(3), 7121-716. Retrieved from https://www.irjet.net/archives/V8/i3/IRJET-V8I3153.pdf

45. Selvam, Murugesan, Palanisamy, & Bhuvaneswari. (2011). Analysis of Risk and Return *Relationship of Indian Equity (Dividend) Mutual Fund Schemes, 21*(1), 1-7. Retrieved from http://ssrn.com/abstract=1862214.

46. Sen, J. (March 31, 2020). *Why debt mutual funds are giving negative returns and what should you do about it?* Livemint – opinion. Retrieved from https://www.livemint.com/mutual-fund/mf-news/why-debt-mutual-funds-are-giving-negative-returns-and-what-you-should-do-about-it-11585593909078.html

47. Shanmugam, V. P., & Ali, K. A. A. (2021). Impact of COVID-19 pandemic on equity-oriented mutual funds: A preliminary analysis of Indian mutual funds industry. *International Journal of Financial Engineering, 8*(1). https://doi.org/10.1142/S2424786321500067

48. Sharpe, W. F. (1994). The Sharpe ratio. *The Journal of Portfolio Management, 21*(1), 49-58. https://doi.org/10.3905/jpm.1994.409501

49. Sourirajan, S., & Natarajan, S. (2021). Do retail mutual fund investments represent "Dumb money"? *IIMB Management Review, 33*(1), 71-87. https://doi.org/10.1016/j.iimb.2021.03.004

50. Yan, X. S. (2008). Liquidity, investment style, and the relation between fund size and fund performance. *Journal of Financial and Quantitative Analysis, 43*(3), 741-767. https://doi.org/10.1017/s0022109000004270

51. Zabiulla. (2014). Portfolio strategies of fund managers in the Indian Capital Market. *IIMB Management Review, 26*(1), 28-58. https://doi.org/10.1016/j.iimb.2013.12.003

http://dx.doi.org/10.21511/imfi.19(2).2022.15