# AN EMPIRICAL STUDY ON MARKET TIMING AND STOCK SELECTION SKILLS OF MUTUAL FUND MANAGERS IN INDIA

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## Abstract

Stock selection and market timing are essential skills for a fund manager to generate additional risk-adjusted returns over the long term. The mutual fund industry in India includes public sector funds, private sector funds and foreign funds. The three sectors were examined to compare the selectivity and recency of performance based on fund sponsorship. Growth, income, Balanced and tax saving Schemes were selected for the study. Rationale for choosing a 5-year study period from April 1, 2017 to March 31, 2022. Market timing is all about studying the market and determining whether it will be bullish or negative in the future so that mutual fund portfolios can be adjusted accordingly.Stock picking utilizes the knowledge and skills of experts to make reasonable predictions about the direction of market prices.Fund managers themselves can use these tools to compare and evaluate their performance on the markets. The purpose of this article is to empirically test the market timing skills of selected mutual fund managers in India. Using the Jensen Alpha, Fama Return Decomposition and Henriksson-Merton (unconditional) methods, funds were rated based on the fund manager's performance based on market analysis over a five-year period. The results of the study show that fund managers show persistence in their selection skills, but the selected funds have not demonstrated progressive timing skills in the Indian context.

**Keywords:** risk-adjusted returns, fund manager, selection skills, market analysis, market prices.

## 1.Introduction

A mutual fund is a type of investment company that collects money from shareholders and invests it in a range of securities such as stocks, bonds and money market instruments, with the aim of generating growth capital over time. Mutual funds are popular among investors because they can invest with small amounts of capital and do not have to spend time monitoring and managing their assets since everything is managed by a professional investment manager or fund manager. Mutual funds play an important role in maintaining the financial system and ensuring appropriate use of resources. It offers retail investors a unique opportunity to benefit from stock and bond returns that would not otherwise be possible. A mutual fund pools the assets of investors with similar investment goals.Achieving higher returns requires sound operations and effective investment management by fund managers. Mutual funds are becoming increasingly popular in today's market due to their higher returns, relatively low risks and costs to the investor.The growth rate of investments in mutual funds is certainly the most significant phenomenon in modern financial markets. Achieving a similar level of risk reduction through direct stock ownership requires significant investment capital. By pooling the resources of small investors, equity funds can be effectively diversified without imposing huge capital requirements on each investor.

In, it may be necessary to analyze the level of these two skills among Indian mutual fund managers to identify the fund(s) that can perform better despite the vagaries of the market. Market timing and stock selectivity are two very important characteristics for an effective fund manager.Market timing is an important element in testing fund managers' forecasting abilities. Both elements are crucial in ensuring excellent returns from mutual funds. This paper is a modest attempt to examine these capabilities of Indian mutual fund managers. Mutual fund investments can be measured based on their performance using net asset value (NAV). Net asset value is the value of a mutual fund's net assets after deducting liabilities or debts.Unit Trust of India was the first mutual fund established in India in 1963. In the late 1980s, the government allowed banks and public sector institutions to set up mutual funds. In 1992, the Securities and Exchange Board of India (SEBI) Act was passed. Before a mutual fund can accept public money, it has to be registered with the Securities and Exchange Board of India (SEBI), which protects the interests of securities investors and regulates securities markets

## 2.Review of Literature

**Gupta (2000)** examined the market timing ability of fund managers in India using weekly net asset value data of 73 mutual funds during 1994-1999. He stated that the results do not support the hypothesis that managers of closed-end funds can easily time the market.

**Mishra (2002**) evaluates the performance of mutual funds based on 24 schemes with at least 24 months of data covering the period from April Covering 1992 through December 1996.The study shows that about 25% of schemes have the ability to synchronize and 29% have a negative synchronization parameter, which suggests that these schemes caused changes in their portfolio due to incorrect predictions of the market trend.

**Tripathy (2006)** examined the maturity and selection ability of 31 Indian equity-linked savings schemes during the period December 1999 to January 2004 using the Treynor and Mazuya and Henriksson and Merton models. The results also do not favor the selection and timing skills of the fund managers.

**Bhuvaneswari and Selvam (2010)** used the TM model to examine the timing and selection skills of equity fund managers in India between January 2002 and December 2007. They also found that over fifty percent of fund managers were unable to predict the market.

**Ramesh & Dhume (2014)** analyzed the market timing and stock selection skills of Indian fund managers based on 68 mutual funds and concluded that Indian mutual fund managers were not good at market timing but had excellent stock selection skills for portfolio selection.

**In a recent study by Rao et al.(2017)** found that Chinese equity funds actually produce market-beating returns and that fund managers have the ability to time the market positively. They also found that Chinese equity funds did not show the sustained performance seen in developed markets. The funds with the best (worst) performance of the last year no longer offer higher (lower) returns the following year. In addition, they also observed a positive relationship between fund size, age and expense ratio with fund performance. The overall results suggest that emerging market equity funds outperform developed market funds.

## 3.Research MethodologyType of Research

The study is purely empirical in nature as it attempts to analyze the stock selection skills and market timing skills of Indian mutual fund managers based on statistical techniques using fund return, risk-free return and market return.

## Objectives of the Study

1. Assess the stock selection ability of the mutual fund managers based on Fama & HM model.

2. Assessing the stock selection ability of mutual fund managers by using the Jensen model.

3. Checking the consistency of the fund managers timing performance.

**Hypothesis**

In line with the above objectives, the following hypotheses were formulated to guide the study:

H1:The timing performance of fund managers exhibits a notable degree of persistence.

H2: The selection performance of fund managers demonstrates a significant degree of persistence

**Tools Used**

The study used the following tools to determine the selectivity and market timing skills of mutual fund managers in the selected schemes:

(i) Jensen's Alpha

(ii) Fama's Return Decomposition Model

(iii) Henriksson - Merton (Unconditional) Model

**Software (essential) Model used**

The study used MS Excel 2007/2013 and SPSS 19.0 to process and analyze the data.

**Collection of Data**

This study will be conducted over a period of 5 years i.e.from the NAVs selected for the long period from April 1, 2017 to March 31, 2022 and with the value of BSE SENSEX index, the same period is also taken into account. Secondary data is used for analysis.

**4. Analysis And Results**

The main factors that investors take into account while investing in mutual funds are tax responsibility, better liquidity, and capital appreciation.The current study examines the market timing and stock selection skills of mutual funds, utilizing a sample of 40 schemes that span all three economic sectors i.e. public, private, and foreign sector.

**Analysis of Jensen's Alpha's Stock Selectivity:**

In 1968, Michael C. Jensen created a model based on the capital asset pricing model (CAPM) in which the difference between the actual return from an invested fund and the expected return from the same at a particular level of systematic risk is considered under the main premise that the systematic risk of the funds ($\beta p,t$) is stationary over a given time horizon. In deviating from the benchmark, this metric yields the extra return.It can be calculated as:

The Jensen-provided equation is:

$$Rp,t - Rf,t = \alpha + \beta p\,(Rm,t - Rf,t) + \varepsilon p,t$$

**where,**

**$\alpha$ = portfolio alpha value**

**Rp,t = poThe average return of the fund at time 't',**

**Rm,t = mean return on the market portfolio considered over period 't' t m R ,**

**Rf,t = proxy for the riskless rate for period 't' t f R ,**

**βp = estimated sensitivity of the fund returns to the benchmark variations p**

**εp,t = random error term**

**Table 1: Selectivity performance of sample fund managers based on Jensen model**

| **Jensen Model** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scheme | 2018 | 2019 | 2020 | 2021 | 2022 | Average | Variance |
| ICICI Prudential income optimizer fund | 0.3562 | 0.6005 | 0.6449 | -0.6040 | -0.1947 | 0.16058 | 0.294292 |
| Birla Sun Life Asset Allocation Fund-Moderate Plan-Growth Plan | 0.3243 | 0.1874 | 0.8404 | -0.6007 | -0.1540 | 0.11948 | 0.289935 |
| Tata mid cap Growth Fund | 0.1459 | 0.7111 | 0.7128 | -0.6104 | -0.2206 | 0.14776 | 0.33678 |
| Mirae Asset China Advantage Fund - Regular Plan Growth Option | 0.3984 | 0.7761 | 0.1586 | -0.6245 | -0.2399 | 0.09374 | 0.297456 |
| FT India Life Stage Fund of Funds – The 20s Plan - Growth | 0.4719 | 0.8036 | 0.7372 | -0.9336 | -0.2322 | 0.16938 | 0.548501 |
| Nippon india Growth Fund-Growth | 0.2566 | 0.6151 | 1.0377 | -0.5355 | -0.2162 | 0.23154 | 0.396615 |
| Fidelity Wealth Builder Fund - Plan A - Growth Option | 0.4731 | 0.6385 | 0.9542 | -0.5294 | -0.1764 | 0.272 | 0.370866 |
| ICICI Prudential multi asset fund | 0.2963 | 0.5047 | 1.0678 | -0.5134 | -0.2164 | 0.2278 | 0.383414 |
| Birla Sun Life Asset Allocation Fund-Conservative Plan-Growth Plan | 0.2520 | 0.6001 | 1.0100 | -0.6077 | -0.1695 | 0.21698 | 0.401588 |
| Tata large and mid cap Fund-Growth | 0.2202 | 0.7097 | 1.1793 | -0.6142 | -0.2761 | 0.24378 | 0.52481 |
| HDFC Capital Builder value Fund-Growth | 0.3556 | 0.5740 | 0.9686 | -0.5002 | -0.1403 | 0.25154 | 0.336909 |
| FT India Life Stage Fund of Funds - The 30s Plan - Growth | 0.1657 | 0.6164 | 0.8917 | -0.6539 | -0.1540 | 0.17318 | 0.37597 |
| Nippon india value fund-Growth | 0.0028 | 0.5622 | 1.8581 | -0.5186 | -0.1917 | 0.34256 | 0.871893 |
| World Gold Fund - Reg | 0.3099 | 0.5556 | 1.2158 | -0.4478 | -0.1425 | 0.2982 | 0.414778 |
| ICICI Prudential value Discovery Fund – Growth | 0.2348 | 0.6074 | 1.4186 | -0.5768 | -0.1454 | 0.30772 | 0.579218 |
| Birla Sun Life focused equity Fund – Growth | 0.1867 | 0.4635 | 0.4940 | -0.5344 | -0.1440 | 0.09316 | 0.189163 |
| Principal Global Opportunities Fund-Growth | 0.1712 | 0.4525 | 1.0608 | -0.4881 | -0.2050 | 0.19828 | 0.360764 |
| HDFC Prudence Fund | 0.1845 | 0.4012 | 0.1604 | -0.5342 | -0.2220 | -0.00202 | 0.138841 |
| World Mining Fund - Reg | 0.1705 | 0.3694 | 0.1698 | -0.5911 | -0.2101 | -0.0183 | 0.146556 |
| Nippon india Vision Fund | -0.3704 | 0.3893 | 1.3139 | -0.5985 | -0.1452 | 0.11782 | 0.58124 |
| Fidelity Wealth Builder Fund - Plan C - Growth Option | 0.2667 | 0.6038 | 0.1692 | -0.5324 | -0.2041 | 0.06064 | 0.192763 |
| ICICI Pru long term equity fund (Tax saving)-growth | 0.4904 | 0.4055 | 0.1392 | -0.5451 | -0.1600 | 0.066 | 0.181313 |
| Birla Sun Life Frontline Equity fund | 0.2205 | 0.3730 | 0.7926 | -0.6182 | -0.1855 | 0.11648 | 0.291177 |
| Tata Tax savings Fund -Growth | -0.0542 | 0.5806 | 0.7742 | -0.5268 | -0.1816 | 0.11844 | 0.294944 |
| HDFC Tax Saver Fund | 0.3298 | 0.6708 | 0.7923 | -0.5528 | -0.1522 | 0.21758 | 0.319632 |
| FT India Life Stage Fund of Funds - 50s Plus Plan - Growth | 0.0896 | 0.8285 | 0.6575 | -0.4587 | -0.1428 | 0.19482 | 0.291943 |
| Birla Sunlife equity Advantage Fund- Growth | -0.1842 | 0.7375 | 0.5528 | -0.5690 | -0.2545 | 0.05652 | 0.313996 |
| Nippon india Growth Fund | 0.1687 | 0.7401 | 0.7168 | -0.6307 | -0.1567 | 0.16764 | 0.342958 |
| Tata Pure Equity Fund | 0.4195 | 0.6212 | 0.9713 | -0.5869 | -0.1773 | 0.24956 | 0.392445 |
| HDFC Income Fund- Growth | 0.1117 | 0.6783 | 0.8958 | -0.9938 | -0.2078 | 0.09684 | 0.564739 |
| Nippon india equity hybrid fund-growth | 0.2827 | 0.5946 | 0.8770 | -0.5981 | -0.2245 | 0.18634 | 0.359277 |
| Fidelity Global Real Assets Fund-Growth Option | 0.1644 | 0.8755 | 0.9134 | -0.5934 | -0.1805 | 0.23588 | 0.433584 |
| ING Global Real Estate Fund - Retail Plan Growth Option | 0.2107 | 0.4503 | 0.7937 | -0.6292 | -0.1794 | 0.318825 | 0.16757 |
| DWS Global Agribusiness Fund - Regualr Plan - Growth | 0.2148 | 0.7515 | 1.0888 | -0.5527 | 0.0095 | 0.30238 | 0.411194 |
| JPMorgan JF Greater China Equity Off-shore Fund | 0.1131 | 0.6959 | 1.0576 | -0.5802 | -0.1970 | 0.21788 | 0.438417 |
| HDFC flexi cap Fund-Growth | 0.4836 | 0.5510 | 1.1964 | -0.6320 | -0.0160 | 0.3166 | 0.466836 |
| Fidelity Wealth Builder Fund - Plan B - Growth Option | 0.0653 | 0.6752 | 0.9619 | -0.9292 | -0.1955 | 0.11554 | 0.555074 |
| Tata Ethical Fund-Growth | 0.2832 | 0.6133 | 0.9392 | -0.6130 | -0.1850 | 0.20754 | 0.383266 |
| FT India Life Stage Fund of Funds - 40s Plan - Growth | 0.1790 | 0.5733 | 1.0142 | -0.7392 | -0.1846 | 0.16854 | 0.456945 |
| Sundaram Global brand fund - Growth | 0.3920 | 0.8182 | 0.9159 | -0.8624 | -0.1483 | 0.22308 | 0.544723 |

Alpha is a performance metric that can either be positive or negative. A positive alpha signifies that the

strategy has outperformed the market index, whereas negative alpha suggests the exact opposite. Checking for persistence between the two measurement criteria, specifically Jensen (1968), in the stock selectivity performance of the sample fund managers. However, none of the sample funds have demonstrated long-term persistence in their performance, or over the course of the five years, as most of them reported positive alphas in the first three years and negative alphas in the final two years of the study period, or for 2021 and 2022, respectively. As a result, it may be concluded that fund managers haven't regularly outperformed the market over the long term. To test the persistence of stock selectivity performance of the fund managers in the sample, we calculated annual alpha values and assigned each fund a ranking based on excess return (alpha).

These data are presented in Table 1, the analysis of which shows that the managers repeated the previous performance with a positive result in terms of selectivity in the first three years for all forty funds of the sample, except for three funds, namely Nippon India Vision Fund, Tata Tax Savings Fund-Growth and Birla Sunlife Equity Advantage Fund -Growth. As noted, another way to test performance persistence is to say that when managers demonstrate general performance persistence, i.e. regardless of the performance of the previous year, it improves in the short term or remains unchanged in the following year, i.e. In the first 3 years of the sample period, 32 sample funds or 80% of the sample funds demonstrated fundamental sustainability. But in the long termThroughout the study period, none of the sampled funds demonstrated overall sustainability, as all sampled funds had positive alpha in the first three years and negative alpha in the last two years. It follows that 80% of the sampled funds demonstrated general persistence in the first three years of the series, but not throughout the series.

**Table 1.1: ANOVA single factor test (Jensen model)**

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Between Groups | 1.444111 | 39 | 0.037028 | 0.096301 | 1 | 1.475066 |
| Within Groups | 61.52097 | 160 | 0.384506 | | | |
| Total | 62.96509 | 199 | | | | |

The above mentioned table 1.1 of ANOVA single factor test shows the F critical value 1.475066 and F value is 0.096301 which means that F value is smaller than the critical value of F, which shows that the means of the five populations are almost equal. This also shows that the fund manager's selectivity skills are consistent according to Jensen's model. So let's assume the following: H2:The selection performance of fund managers demonstrates a significant degree of persistence

**Analysis of Stock Selectivity by Fama's Decomposition of Return Model:**

The model emphasizes performance evaluation through advanced component separation. Therefore, the fund's performance is divided into three categories for valuation purposes. These include the risk-free return, the compensation for systematic risks and the return resulting from the selectivity of the fund manager. Selectivity was then divided into net selectivity and compensation for insufficient diversification. In fact, part of the excess return may be due to the fact that the overall risk of the portfolio ($\sigma p$) does not equal the systematic risk ($\beta p$), suggesting that the portfolio is not sufficiently diversified.

**Table 2: The sustained efficacy of sample fund managers in their selectivity performance**

**based on Fama model.**

| **Fama Model** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scheme | 2018 | 2019 | 2020 | 2021 | 2022 | Average | Variance |
| ICICI Prudential income optimizer fund | 0.2547 | -0.5018 | 1.5467 | -0.2642 | -0.4518 | 0.11672 | 0.728691 |
| Birla Sun Life Asset Allocation Fund-Moderate Plan-Growth Plan | -0.5447 | -0.5262 | 1.4664 | -0.2118 | -0.3934 | 0.17594 | 0.69219 |
| Tata mid cap Growth Fund | 0.4239 | -0.6111 | 1.3121 | -0.325 | -0.5126 | 0.05746 | 0.656654 |
| Mirae Asset China Advantage Fund - Regular Plan Growth Option | -0.4289 | -0.5996 | 1.6704 | -0.1492 | -0.4219 | 0.18572 | 0.840378 |
| FT India Life Stage Fund of Funds – The 20s Plan - Growth | 0.3678 | -0.3728 | 1.3472 | -0.1351 | -0.4018 | 0.16106 | 0.5348 |
| Nippon india Growth Fund-Growth | 0.2766 | -0.5346 | 1.2858 | -0.1207 | -0.2351 | 0.1344 | 0.498778 |
| Fidelity Wealth Builder Fund - Plan A - Growth Option | -0.6523 | -0.6847 | 1.0179 | -0.5557 | -0.4355 | -0.00114 | 0.607222 |
| ICICI Prudential multi asset fund | 0.0598 | -0.6298 | 1.4278 | -0.5602 | -0.4433 | -0.02914 | 0.736233 |
| Birla Sun Life Asset Allocation Fund-Conservative Plan-Growth Plan | -0.1899 | -0.6007 | 0.184 | -0.5928 | -0.3416 | -0.23224 | 0.157296 |
| Tata large and mid cap Fund-Growth | 0.1872 | -0.6693 | 0.1786 | -0.1627 | -0.4211 | -0.17746 | 0.14031 |
| HDFC Capital Builder value Fund-Growth | 0.1694 | -0.9189 | 0.1625 | -0.2033 | -0.351 | -0.22826 | 0.200875 |
| FT India Life Stage Fund of Funds - The 30s Plan - Growth | 0.1719 | -0.5864 | 0.1607 | -0.1627 | -0.3961 | -0.16252 | 0.112635 |
| Nippon india value fund-Growth | -0.0377 | -0.6696 | 1.4852 | -0.1931 | -0.4881 | 0.01934 | 0.732316 |
| World Gold Fund - Reg | 0.1719 | -0.8203 | 0.1431 | -0.1836 | -0.4951 | -0.2368 | 0.180345 |
| ICICI Prudential value Discovery Fund – Growth | -0.1928 | -0.507 | 0.985 | -0.1547 | -0.396 | 0.02402 | 0.360577 |
| Birla Sun Life focused equity Fund – Growth | 0.3625 | -0.6616 | 1.4748 | -0.1203 | -0.1608 | 0.17892 | 0.656106 |
| Principal Global Opportunities Fund-Growth | 0.4675 | -0.6086 | 1.7004 | -0.1812 | -0.1534 | 0.24494 | 0.809174 |
| HDFC Prudence Fund | 0.1339 | -0.6668 | 1.5855 | 0.2146 | -0.2395 | 0.20554 | 0.717135 |
| World Mining Fund - Reg | 0.3523 | -0.6835 | 1.3108 | -0.2403 | -0.3219 | 0.08348 | 0.609001 |
| Nippon india Vision Fund | 0.3281 | -0.7981 | 1.0184 | -0.1405 | -0.3018 | 0.02122 | 0.472581 |
| Fidelity Wealth Builder Fund - Plan C - Growth Option | -0.1003 | -0.6495 | 1.3256 | -0.1267 | -0.4251 | 0.04492 | 0.59395 |
| ICICI Pru long term equity fund (Tax saving)-growth | -0.2967 | -0.7254 | 1.7858 | -0.2028 | -0.2345 | 0.18396 | 0.932557 |
| Birla Sun Life Frontline Equity fund | 0.6439 | 0.3952 | 1.452 | -0.2313 | -0.4433 | 0.3633 | 0.567294 |
| Tata Tax savings Fund -Growth | 0.4922 | -0.794 | 1.4165 | -0.2233 | -0.3416 | 0.10996 | 0.746317 |
| HDFC Tax Saver Fund | 0.3382 | 0.3778 | 1.4801 | -0.1603 | -0.4756 | 0.31204 | 0.553214 |
| FT India Life Stage Fund of Funds - 50s Plus Plan - Growth | 0.3868 | -0.7073 | 1.4646 | -0.5988 | -0.158 | 0.07746 | 0.787116 |
| Birla Sunlife equity Advantage Fund- Growth | 0.557 | -0.5236 | 1.3163 | -0.2181 | -0.3668 | 0.15296 | 0.595544 |
| Nippon india Growth Fund | 0.5519 | -0.4882 | 1.5996 | -0.5994 | -0.438 | 0.12518 | 0.893607 |
| Tata Pure Equity Fund | 0.3841 | -0.8012 | 2.2403 | -0.2569 | -0.4684 | 0.21958 | 1.463179 |
| HDFC Income Fund- Growth | 0.3652 | -0.8912 | 1.7914 | -0.2323 | -0.3453 | 0.13756 | 1.053826 |
| Nippon india equity hybrid fund-growth | 0.4054 | -0.797 | 1.5515 | -0.1051 | -0.3654 | 0.13788 | 0.814055 |
| Fidelity Global Real Assets Fund-Growth Option | 0.3939 | 0.3506 | 1.5164 | -0.2858 | -0.3942 | 0.31618 | 0.578693 |
| ING Global Real Estate Fund - Retail Plan Growth Option | 0.4765 | 0.3505 | 1.8179 | -0.1965 | -0.4347 | 0.40274 | 0.76781 |
| DWS Global Agribusiness Fund - Regualr Plan - Growth | 0.2923 | 0.3992 | 1.4416 | -0.2298 | -0.3529 | 0.31008 | 0.504902 |
| JPMorgan JF Greater China Equity Off-shore Fund | -0.4919 | -0.7946 | 1.3115 | -0.2233 | -0.3999 | 0.07712 | 0.693358 |
| HDFC flexi cap Fund-Growth | 0.2846 | -0.8747 | 1.4443 | -0.1457 | -0.4665 | 0.0484 | 0.789809 |
| Fidelity Wealth Builder Fund - Plan B - Growth Option | -0.2491 | -0.8154 | 1.4276 | -0.1696 | -0.3746 | 0.06342 | 0.728487 |
| Tata Ethical Fund-Growth | 0.383 | -0.9205 | 1.5115 | -0.2464 | -0.456 | 0.05432 | 0.883134 |
| FT India Life Stage Fund of Funds - 40s Plan - Growth | 0.6088 | -0.8214 | 1.0873 | -0.1888 | -0.3852 | 0.06014 | 0.598374 |
| Sundaram Global brand fund - Growth | 0.3507 | -0.7255 | 1.2299 | -0.2193 | -0.5313 | 0.0209 | 0.622546 |

Table 2 shows Fama's annual net selectivity and the positions held by each fund. From the data in the

above table, it can be seen that all 40 funds in the sample except four funds namely Birla Sun Life Asset Allocation Fund - Conservator Plan - Growth Plan, Tata Large and Mid Cap Growth Fund and HDFC Capital Builder- Growth Value, FT India Life Stage Fund and Fund of Funds – 30 Plan – Growth observed neither in the short term (2018-20) nor in the long term i.e. throughout the sample period, a sustained level of stock selectivity based on selectivity minus fame.When it comes to persistence in general; Overall, none of the funds demonstrated persistence. It is also clear from the above table that based on Fama's net selectivity, none of the sampled funds demonstrated persistence selectivity performance, but in the last two years of the time series, all sampled funds consistently reported negative net selectivity. From the above discussion of persistence performance in selectivity based on Jensen Alpha, it is clear that most funds have achieved persistence selectivity performance in the short term. Long term, i.e. However, over the entire time series, no persistence of selectivity could be observed in the funds examined.However, based on Fama Net's selectivity, there was no evidence of the short- or long-term persistence of the selectivity of the sampled fund managers' performance. The lack of persistence indicates that the fund managers failed to acquire systematically undervalued stocks, which suggests a low selectivity of the fund managers surveyed during the sample period. This lack of long-term persistence can potentially be attributed to several factors. One of them is the reduction of investment opportunities for performance funds. Another option is to increase management fees over time to benefit from good performance.After all, the most successful managers may simply want to capitalize on their reputation and find more lucrative employment, such as at a hedge fund.

***Table 2.1: ANOVA single factor test (Fama Model)***

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Between Groups | 4.613585 | 39 | 0.118297 | 0.184759 | 1 | 1.475066 |
| Within Groups | 102.4443 | 160 | 0.640277 | | | |
| Total | 107.0579 | 199 | | | | |

The above mentioned table 2.1 of ANOVA single factor test shows the F critical value 1.475066 and F value is 0.184759 which means that F value is smaller than the critical value of F, which shows that the means of the five populations are almost equal. This also shows that the fund manager's selectivity skills are consistent according to the Fama's model. So let's accept the hypothesis: H2: The selection performance of fund managers demonstrates a significant degree of persistence.

**Analysis of Stock Selectivity by Henriksson-Merton (HM):**

Analysis of the Henriksson-Merton (HM) Stock Selectivity and Market Timing Model Robert C. Merton and Roy D. Henriksson developed this model in 1981 by adopting a more qualitative view of market timing. According to the Hendriksson and Merton model: Alpha (α ) denotes the excess return resulting from the fund manager's experience in stock selection, β (Rm-Rf) denotes the reward for systematic risk and the third term, γ [D ($R_m$-$R_f$)], denotes the excess return from market timing ability

Henriksson and Merton used a dummy "D" in contrast to the TM model; to represent the fund

manager's ability to time the market when D = 1 in a bullish scenario (i.e.for example Rm > Rf) and D = 0 in the bearish scenario (i.e., Rm< Rf )when a manager is able to accurately predict market conditions, he or she can successfully generate excess returns, as evidenced by them being positive and significant. Here is the statistical model:

$$(R_p - R_f)t = \alpha + \beta + (R_m - R_f)_t + \gamma [D(R_m - R_f)_t] + \varepsilon_{p,t}$$

**where,**

**D is the dummy variable which is 1 in up market and 0 in down market.**

$R_p$ **= annual daily return on the funds**

$R_f$ **= annual weekly risk-free return**

$R_m$ **= annual daily return on market portfolio**

$\varepsilon_{p,t}$ **= residual term**

$\alpha, \beta, \gamma$ **are the model parameters**

**Persistence in Timing Performance**

**Table 3: Selectivity performance of sample fund managers based on HM model**

| **HM Model** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scheme | 2018 | 2019 | 2020 | 2021 | 2022 | Average | Variance |
| ICICI Prudential income optimizer fund | 0.5851 | 0.5986 | 0.5581 | 0.0670 | 0.4567 | 0.4531 | 0.0497 |
| Birla Sun Life Asset Allocation Fund-Moderate Plan-Growth Plan | 0.6172 | 0.6623 | 0.6807 | 0.0219 | 0.4141 | 0.4792 | 0.0766 |
| Tata mid cap Growth Fund | 0.6133 | 0.6073 | 0.5220 | 0.0146 | 0.3905 | 0.4295 | 0.0619 |
| Mirae Asset China Advantage Fund - Regular Plan Growth Option | 0.6022 | 0.8538 | 0.6940 | 0.0290 | 0.3239 | 0.5006 | 0.1065 |
| FT India Life Stage Fund of Funds – The 20s Plan - Growth | 0.7040 | 0.6417 | 0.5100 | 0.0351 | 0.4365 | 0.4655 | 0.0690 |
| Nippon india Growth Fund-Growth | 0.7797 | 0.9968 | 0.3901 | 0.0258 | 0.3338 | 0.5052 | 0.1474 |
| Fidelity Wealth Builder Fund - Plan A - Growth Option | 0.6891 | 0.6968 | 0.4703 | 0.0478 | 0.4221 | 0.4652 | 0.0700 |
| ICICI Prudential multi asset fund | 0.8702 | 0.8923 | 0.4344 | 0.0392 | 0.3573 | 0.5187 | 0.1316 |
| Birla Sun Life Asset Allocation Fund-Conservative Plan-Growth Plan | 0.9998 | 0.5415 | 0.3351 | 0.0407 | 0.2929 | 0.4420 | 0.1289 |
| Tata large and mid cap Fund-Growth | 0.6937 | 0.6978 | 0.4675 | 0.0106 | 0.3744 | 0.4488 | 0.0800 |
| HDFC Capital Builder value Fund-Growth | 0.6886 | 0.8592 | 0.3572 | 0.0365 | 0.2879 | 0.4459 | 0.1075 |
| FT India Life Stage Fund of Funds - The 30s Plan - Growth | 0.7530 | 0.6491 | 0.3603 | 0.0419 | 0.3295 | 0.4268 | 0.0795 |
| Nippon india value fund-Growth | 0.6656 | 0.8407 | 0.5284 | 0.0569 | 0.3297 | 0.4843 | 0.0921 |
| World Gold Fund - Reg | 0.7652 | 0.9603 | 0.0002 | 0.0237 | 0.3795 | 0.4258 | 0.1865 |
| ICICI Prudential value Discovery Fund – Growth | 0.7269 | 0.7346 | 0.4862 | 0.0309 | 0.3179 | 0.4593 | 0.0879 |
| Birla Sun Life focused equity Fund – Growth | 0.7319 | 0.9961 | -0.0006 | 0.0504 | 0.4337 | 0.4423 | 0.1851 |
| Principal Global Opportunities Fund-Growth | 0.7780 | 0.8554 | 0.5915 | 0.0308 | 0.3816 | 0.5275 | 0.1106 |
| HDFC Prudence Fund | 0.6913 | 0.6592 | 0.5468 | 0.0348 | 0.3832 | 0.4631 | 0.0718 |
| World Mining Fund - Reg | 0.7686 | 0.7582 | 0.5804 | 0.0118 | 0.3336 | 0.4905 | 0.1027 |
| Nippon india Vision Fund | 0.6908 | 0.8087 | 0.6149 | 0.0144 | 0.3735 | 0.5005 | 0.0992 |
| Fidelity Wealth Builder Fund - Plan C - Growth Option | 0.7987 | 0.9850 | 0.8118 | 0.0232 | 0.4632 | 0.6164 | 0.1457 |
| ICICI Pru long term equity fund (Tax saving)-growth | 0.7212 | 0.8445 | 0.0004 | 0.0366 | 0.6556 | 0.4517 | 0.1611 |
| Birla Sun Life Frontline Equity fund | 0.6808 | 0.8556 | 0.4615 | 0.0454 | 0.4395 | 0.4966 | 0.0927 |
| Tata Tax savings Fund -Growth | 0.6274 | 0.7513 | 0.0226 | 0.0354 | 0.4025 | 0.3678 | 0.1113 |
| HDFC Tax Saver Fund | 0.9269 | 0.6624 | 0.0234 | 0.0476 | 0.3857 | 0.4092 | 0.1531 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FT India Life Stage Fund of Funds - 50s Plus Plan - Growth | 0.8611 | 0.6367 | 0.5322 | 0.0646 | 0.4059 | 0.5001 | 0.0871 |
| Birla Sunlife equity Advantage Fund- Growth | 0.8872 | 0.5588 | 0.5124 | 0.3067 | 0.5392 | 0.5609 | 0.0435 |
| Nippon india Growth Fund | 0.8486 | 0.7595 | 0.5208 | 0.0379 | 0.3294 | 0.4992 | 0.1080 |
| Tata Pure Equity Fund | 0.8539 | 0.8942 | 0.4698 | 0.0295 | 0.4352 | 0.5365 | 0.1251 |
| HDFC Income Fund- Growth | 0.7399 | 0.7574 | 0.5111 | 0.4263 | 0.3779 | 0.5625 | 0.0312 |
| Nippon india equity hybrid fund-growth | 0.6840 | 0.7062 | 0.6059 | 0.3283 | 0.3187 | 0.5286 | 0.0365 |
| Fidelity Global Real Assets Fund-Growth Option | 0.6047 | 0.0008 | 0.5600 | 0.0406 | 0.4175 | 0.3247 | 0.0820 |
| ING Global Real Estate Fund - Retail Plan Growth Option | 0.5599 | 0.0897 | 0.4746 | 0.0132 | 0.3467 | 0.2968 | 0.0567 |
| DWS Global Agribusiness Fund - Regualr Plan - Growth | 0.6656 | 0.8749 | 0.6498 | 0.0441 | 0.3802 | 0.5229 | 0.1025 |
| JPMorgan JF Greater China Equity Off-shore Fund | 0.6891 | 0.7859 | 0.7104 | 0.0430 | 0.3265 | 0.5110 | 0.1000 |
| HDFC flexi cap Fund-Growth | -0.0006 | 0.0003 | 0.0006 | -0.0007 | -0.0004 | -0.0002 | 0.0497 |
| Fidelity Wealth Builder Fund - Plan B - Growth Option | -0.0004 | -0.0004 | -0.0184 | -0.0088 | -0.0007 | -0.0057 | 0.0001 |
| Tata Ethical Fund-Growth | -0.0005 | 0.0000 | -0.0007 | -0.0011 | -0.0006 | -0.0006 | 0.0000 |
| FT India Life Stage Fund of Funds - 40s Plan - Growth | -0.0324 | -0.0192 | -0.0145 | -0.0035 | 0.0152 | -0.0109 | 0.0003 |
| Sundaram Global brand fund - Growth | -0.0241 | -0.0213 | -0.0008 | -0.0064 | 0.0244 | -0.0056 | 0.0004 |

From the above study, it is evident that most of the sampled funds demonstrated excellent and sustained performance compared to regular scheduled performance throughout the study period, while the sampled fund managers did not report consistency in their investment performance.The coefficient γ was positive and statistically significant for all five years, even at the 1 percent level, confirming the above conclusion regarding the persistence of market timing performance of the fund managers in the sample. During the study, all funds in the sample recorded neither an upward nor a downward trend in the "γ" coefficient, but a variable trend.

Another thing that can be observed in the above table is that the five funds are HDFC Flexi Cap Fund-Growth, Fidelity Wealth Builder Fund - Plan B - Growth Option, Tata Ethical Fund-Growth, FT India Life Stage Fund of Funds – 40s plan– Growth and Sundaram Global brand fund – Growth, recorded a negative "γ" of during the five-year study period. Therefore, it was hypothesized that Indian fund managers lack persistence in timing the market.Table 3 shows the Y ratio of each fund in the sample on an annual basis. The table above shows that 35 funds, or 87.5% of the sampled funds, had a positive "γ coefficient" in all five years. These funds namely Birla Sun Life Asset Allocation Fund - Moderate Plan - Growth Plan, Nippon India Value Fund - Growth, Fidelity Wealth Builder Fund - Plan A - Growth Option, HDFC Prudence Fund, Nippon India Vision Fund HDFC Income Fund - Growth registered positives "γ" coefficients in all years except 2021. In 2021, the "γ" coefficient for all funds in the sample was very low compared to other years.It can be seen that the funds in the sample recorded their best performances in 2018 and 2019, deteriorated in 2020 and reached the lowest level in 2021, but in 2022 all funds showed a significant improvement. Continuous and timely presentation of results is the true test of a fund manager. The fund manager must always be able to predict the market. Only these managers would be able to deliver above-average returns to unit holders with consistent performance. Once a fund manager becomes successful, whether or not it maintains the same level of quality becomes of utmost importance to the various stakeholders.

So if you want to comment on a fund manager's timing ability, you need to check whether the

manager has managed to time the market, if not every time, but at least most of the time. From this perspective, we also attempted to examine the sustainability of the timing activities of the sampled fund managers by assessing the Persistence of their timing skills.

**Table 3.1: ANOVA single factor test (HM Model).**

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Between Groups | 5.673766 | 39 | 0.145481 | 1.671415 | 0.014574 | 1.475066 |
| Within Groups | 13.92652 | 160 | 0.087041 | | | |
| Total | 19.60029 | 199 | | | | |

The above mentioned table 3.1 of ANOVA single factor test shows that the critical value of F is 1.475066 and the F value is 1.671415, which means that the F value is greater than the critical value of F, which shows that the average of five larger populations is not equal. This also shows that the timing skills of fund managers are not consistent according to the HM model, so we do not accept the hypothesis: H1:The timing performance of fund managers exhibits a notable degree of persistence. H1:The timing performance of fund managers exhibits a notable degree of persistence.

## 5.Conclusion

If a fund manager manages to consistently outperform, i.e. Quarter after quarter or year after year, its performance in selecting the right type of stocks for the portfolio can be considered satisfactory.Conversely, if a fund manager's performance varies significantly from period to period, it is a sign that something is wrong with his stock selection or market timing skills. It is common practice for a fund manager to outperform the market and, more importantly, deliver consistent performance.Therefore, it is necessary to analyze persistence in fund managers' stock selection. Using the models of Jensen (1968), Fama (1972) and Henriksson & Merton (1981) to calculate five-year alpha and gamma returns for a selected sample. To test this hypothesis, annual return was tested using a one-way ANOVA test for all three models. The study mainly focused on the persistence of fund managers' performance, taking into account both mutual fund choices and timing. To test this hypothesis, annual returns were tested using a one-way ANOVA test for all three models.The test bench was also found to have selectivity capabilities when testing the Jensen and Fama models. However, the same means did not take into account the consistency of synchronization skills over the duration of the study. Therefore, it is assumed that fund managers with good selectivity skills do not necessarily have good timing skills and vice versa. The study concludes that fund managers in India should place more emphasis on timing skills and show consistency in their performance.

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