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9B18N025

Tata Equity P/E Mutual Fund: Performance Measurement and Attribution

Gaurav Singh Chauhan wrote this exercise solely to provide material for class discussion. The author does not intend to illustrate either effective or ineffective handling of a managerial situation. The author may have disguised certain names and other identifying information to protect confidentiality.

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A colleague in your organization suggested that you consider investing through mutual funds to achieve your financial goals. While mutual funds provide adequate diversification by investing in varied securities, they are also managed by professional managers with significant experience in wealth management. In particular, your colleague was impressed by the stellar performance of the Tata Equity P/E Fund (TEPF) and recommended investing in it.

The TEPF had been successful in beating its benchmark by wide margins over a sustained period of time and was considered one of the top performing funds in its category. Importantly, the fund had shown impressive consistency in retaining its position among the top performing funds over time. The fund adopted a value-based investment approach, investing in stocks that were trading at a reasonable bargain compared to the broad market, and could potentially beat the markets in the long run.

Before considering the TEPF as a serious alternative for your personal investment, you wanted to thoroughly evaluate the fund’s performance to find out the extent to which it truly succeeded at generating excess returns after adjusting for risks and to determine the sources of such outperformance, if any. You collected relevant information to find these answers about investing in the TEPF.

Business at Tata Mutual Fund

The investments of the Tata Mutual Fund were managed by Tata Asset Management Limited, part of the esteemed Tata Group, one of the largest and oldest industrial groups in India. The fund had an average assets under management (AUM) of ₹461 billion,[[1]](#footnote-1) which was 2.24 per cent of the industry AUM as of September 2017. Exhibit 1 summarizes the breakdown of the total AUM under Tata Mutual Fund into funds categorized according to their asset classes and their types for the last five years.

As was the industry trend, while most of the fund’s AUM was composed of debt funds (68 per cent), equity and hybrid funds contributed 17 per cent and 15 per cent, respectively, of the total AUM. Within debt funds, liquid funds dominated and contributed 71 per cent of the corpus, followed by income funds (25 per cent). For equity funds, diversified funds contributed a significant share of 71 per cent, followed by other sector-oriented and thematic funds (29 per cent). Importantly, almost all funds under the Tata Mutual Fund were active in nature; the share of passive equity funds was negligible. Within the hybrid category, equity-oriented funds contributed the bulk of the AUM (94 per cent). This was probably due to the favourable tax treatment of equity-oriented hybrid funds, whereby investors were exempt from any long-term capital gains tax.

Exhibit 1 also suggests that the overall AUM had grown at a compound annual growth rate (CAGR) of 36 per cent over the past five years. This growth was particularly fuelled by the growth in hybrid funds (65 per cent), followed by debt funds (36 per cent); equity funds had grown at a rate of 24 per cent per year. Interestingly, within debt funds, the fixed maturity plans witnessed a negative growth rate (−23 per cent). On the contrary, investment in liquid funds had grown at 33 per cent per year. This reflected the increasing participation of institutional investors in these funds.

The growth in the corpus of equity funds was primarily driven by the popularity and, hence, utility of diversified funds among retail investors. While diversified funds had grown at 33 per cent per year, the growth in sector-oriented funds, thematic funds, and index funds had been approximately 10 per cent per year. Similarly, most of the growth in hybrid funds was led by equity-oriented funds, which had grown at a phenomenal rate of 80 per cent per year.

The TEPF

In 2004, Tata Mutual Funds launched the TEPF with the objective of investing in a diversified portfolio of value-oriented stocks. Value stocks were those stocks that traded at a relatively lower price–earnings (P/E) ratio than did their immediate peers. Value-oriented investors believed that valuations for such stocks were temporarily depressed and would increase when markets eventually realized their true potential. The TEPF was an open-ended fund that aimed to invest in stocks whose rolling P/E ratio was lower than that of its benchmark, the Bombay Stock Exchange (BSE) Sensitive Index (SENSEX).[[2]](#footnote-2) As per the key information memorandum floated by the fund, the fund was suitable for investors seeking long-term capital appreciation and reasonable regular income through dividends paid by the constituent stocks. Since April 2016, the TEPF had been managed by Sonam Udasi, who also managed 10 other funds within the Tata Mutual Fund.[[3]](#footnote-3)

Exhibit 2 shows data pertaining to the TEPF and its benchmark for the past five years. As of September 2017, the TEPF had a total AUM of ₹18.15 billion, which was growing at a CAGR of 48 per cent per year. The fund had beaten its benchmark by a wide margin in four of the preceding five years ending September 2017. This was reflected in the fund’s ranking among its peers, where it had stood in the top five funds for three out of the last five years.

Exhibit 3 shows the constitution of typical portfolio holdings in the fund, along with the benchmark. While the benchmark was a pure large-cap portfolio, the fund also invested significantly in mid- and small-cap securities.[[4]](#footnote-4) Exhibit 4 shows additional information on TEPF attributes relevant to its investors.

The Decision to Invest

Although you were quite impressed by the seemingly stellar performance of the TEPF, there were several matters that you wanted to clarify before deciding whether to invest in the fund. Specifically, you were perplexed by the portfolio constitution of the TEPF versus that of its benchmark. Exhibit 3 suggests a possible benchmark mis-specification, as the TEPF’s investment style differed significantly. Thus, although the fund’s returns nominally exceeded those of the benchmark, you wanted to assess the risk-adjusted performance of the fund versus the benchmark.

You recalled from your basic knowledge of financial concepts that the risk could be measured as the volatility in returns in absolute terms or as compared to the benchmark. That is, either the standard deviation of a fund’s returns or its beta might be useful in assessing the risk-adjusted performance. However, in a case where the benchmark itself was incorrectly specified, you wondered if such a measure would be useful for studying the fund’s outperformance, even on a risk-adjusted basis. You were of the view that in such situations, the fund’s performance should rather be evaluated with respect to a benchmark that reflected the true style of the fund’s operation.

While collecting the inputs required to create a style-adjusted benchmark, you considered the required properties of such a benchmark. Although a modified benchmark should reflect the fund’s typical style of operation, it should be devoid of any active management—that is, first the modified benchmark and the fund should have similar exposure to factors that could influence stock prices in general. According to the asset-pricing literature,[[5]](#footnote-5) these factors were usually the size, growth orientation, and momentum in stock returns. Second, the style-adjusted benchmark should not bet on any specific security. That is, the benchmark should be a truly passive portfolio.

After going through some studies on performance attribution,[[6]](#footnote-6) you envisioned that a style-adjusted benchmark could first be created by mapping each constituent TEPF stock to a representative portfolio reflecting the stock’s concurrence with the three asset-pricing factors. Portfolios representing the interaction of these three factors could be created by sorting the universe of all available stocks in the broader market into quintiles based on these factors. Accordingly, a total of 125 (5 × 5 × 5) portfolios would serve as representative portfolios for each month. Each constituent TEPF stock could then be mapped exclusively to one of these 125 portfolios for each month. For example, assuming a TEPF stock XYZ at the end of a month was among the top quintile of stocks of all the available stocks trading in the broader market in terms of its size, the bottom quintile of stocks in terms of its growth orientation, and the third quintile of stocks in terms of its momentum, then XYZ could be classified as the constituent of a portfolio of stocks representing these three quintiles for the given month. Second, the monthly returns of these 125 representative portfolios would be recorded and assigned to the respective stocks for each month. Third, the average weights of each constituent stock over the period of analysis would provide the TEPF’s specific style tilt during this period. Finally, the product of these average weights and the assigned monthly returns of the representative portfolios would provide the style-adjusted benchmark returns for the given month. Importantly, if the stated benchmark truly reflected the TEPF’s typical style, there would not be any significant difference between the returns on stated and modified benchmarks.

Panels A, B, and C of Exhibit 5 (provided as an Excel supplement to the case, Ivey product no. 7B18N025) provide relevant information on TEPF holding percentages at the end of a month, monthly returns for these constituent stocks, and the monthly returns of assigned representative portfolios, respectively, over the last 12 months. Note that Exhibit 5C was created using data from Exhibits 5D and 5E. Exhibit 5D shows the assigned number of the 125 representative portfolios to each stock. Exhibit 5E shows monthly returns for these 125 portfolios for the last 12 months. Exhibit 6 shows additional relevant information about the fund and its benchmark.

Apart from knowing the TEPF’s true outperformance, you were also interested in knowing specific sources of value addition. For example, managers could change their portfolio constitution in the short run so as to gain from the new information that they continuously gathered about stocks. Similarly, fund managers often claimed to exhibit superior stock-selection and market-timing abilities. An exploration into the sources of outperformance would yield helpful information about the value added by the fund manager through her trading activities, management of cash, security selection, and market timing.

You further recalled that, although the above-mentioned approach would decompose the portfolio returns at a granular level, there were other ways to study the extent of managerial skill. For example, one could use multiple-factor models with the three asset-pricing factors as explanatory variables to study the portfolio’s average outperformance after controlling for these factors. Further, one could track the changes in the portfolio’s style configuration over time using a style analysis. You wondered what the specific advantages and disadvantages of these alternate approaches to conducting an attribution analysis might be.

Exhibit 1: Assets under management for the Tata Mutual Fund (₹ Billion)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Sep-2017** | **Sep-2016** | **Sep-2015** | **Sep-2014** | **Sep-2013** |
| Debt | 312.75 | 237.95 | 177.48 | 126.82 | 92.56 |
| FMPs | 7.56 | 7.01 | 6.41 | 16.61 | 0.00 |
| Gilts | 3.49 | 3.40 | 3.15 | 1.65 | 1.85 |
| Income | 79.20 | 72.27 | 54.12 | 21.25 | 19.71 |
| Liquid | 222.50 | 155.27 | 113.80 | 87.31 | 70.99 |
| Equity | 77.60 | 57.68 | 47.52 | 41.49 | 32.92 |
| Diversified | 54.99 | 41.07 | 35.27 | 23.66 | 17.49 |
| Large-cap | 28.86 | 16.56 | 15.40 | 13.20 | 10.32 |
| Mid-cap | 6.41 | 5.79 | 5.46 | 3.10 | 1.75 |
| Multi-cap | 19.71 | 18.73 | 14.41 | 7.36 | 5.42 |
| Others (active) | 22.46 | 16.46 | 12.08 | 17.71 | 15.32 |
| Index | 0.16 | 0.14 | 0.17 | 0.12 | 0.10 |
| Hybrid | 68.92 | 72.04 | 51.11 | 14.76 | 9.22 |
| Equity-oriented | 65.01 | 68.60 | 47.68 | 11.85 | 6.23 |
| Debt-oriented | 3.91 | 3.44 | 3.43 | 2.91 | 2.99 |
| Others | 2.02 | 1.61 | 1.21 | 0.80 | 0.59 |
|  |  |  |  |  |  |
| Total | 461.30 | 369.29 | 277.32 | 183.88 | 135.29 |

Note: FMPs = fixed maturity plans

Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018).

Exhibit 2: Tata Equity P/E Fund versus its benchmarks and peers in the category

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Sep-2017** | **Sep-2016** | **Sep-2015** | **Sep-2014** | **Sep-2013** |
| AUM (₹ billion) | 18.15 | 6.58 | 6.02 | 5.14 | 3.79 |
| NAV (₹ billion) | 131.80 | 103.37 | 83.90 | 77.14 | 44.13 |
| Fund (growth option) returns (%) | 27.51 | 23.21 | 8.77 | 74.77 | −8.15 |
| Benchmark (total return index) returns (%) | 15.11 | 9.77 | 0.87 | 51.00 | 1.82 |
| Rank within large-cap funds | 3 | 2 | 29 | 2 | 51 |
| Total number of funds in category | 62 | 65 | 63 | 61 | 62 |
| Note: AUM = assets under management; NAV = net asset value  Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018). | | | | |  |

Exhibit 3: Constitution of the Tata Equity P/E Fund’s portfolio versus its benchmark

|  |  |  |
| --- | --- | --- |
|  | **Fund** | **Benchmark** |
| Average market cap of constituents (₹ billion) | 644.83 | 2,731.71 |
| Giant (%) | 46.26 | 88.34 |
| Large (%) | 29.24 | 11.66 |
| Mid (%) | 22.64 | - |
| Small (%) | 1.87 | - |

Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018).

Exhibit 4: Fund-specific details pertaining to the Tata Equity P/E Fund as on September 30, 2017

|  |  |  |
| --- | --- | --- |
|  | **Regular Plan** | **Direct Plan** |
| NAV, growth option (₹ billion) | 131.7969 | 135.8717 |
| NAV, dividend option (₹ billion) | 60.2378 | 61.0523 |
| Expense ratio (%) | 2.53 | 1.55 |
| Launch date | Jun 29, 2004 | |
| Benchmark | S&P BSE SENSEX | |
| Type | Open ended | |
| Turnover ratio (%) | 36 | |
| Exit loads | 1% for redemption within 540 days of investment | |

Notes: NAV = net asset value; S&P BSE SENSEX = S&P Bombay Stock Exchange Sensitive Index

Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018).

Exhibit 5: information on TEPF holding percentages and returns

Please see the Excel supplement to the exercise (see Ivey product no. 7B18N025) for Exhibit 5. This Exhibit contains information on TEPF holding percentages at the end of a month, the monthly returns of these holdings, and the monthly returns of assigned representative portfolios over the last 12 months

Note: TEPF = Tata Equity P/E Fund

Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sep-17** | **Aug-17** | **Jul-17** | **Jun-17** | **May-17** | **Apr-17** | **Mar-17** | **Feb-17** | **Jan-17** | **Dec-16** | **Nov-16** | **Oct-16** |
| Fund returns | 0.011 | 0.008 | 0.054 | 0.002 | −0.015 | 0.060 | 0.046 | 0.048 | 0.058 | −0.008 | −0.042 | 0.030 |
| BSE SENSEX TRI returns | −0.013 | −0.015 | 0.061 | −0.007 | 0.035 | 0.014 | 0.035 | 0.038 | 0.046 | −0.005 | −0.046 | 0.003 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Expense ratio | 2.508 |  |  |  |  |  |  |  |  |  |  |  |
| Risk-free rate Rf\* | 0.066 |  |  |  |  |  |  |  |  |  |  |  |
| Beta\*\* | 1.010 |  |  |  |  |  |  |  |  |  |  |  |

Exhibit 6: Additional information pertaining to the TEPF and its benchmark

Note: TEPF = Tata Equity P/E Fund; BSE SENSEX = Bombay Stock Exchange Sensitive Index; TRI = total returns index

\* Risk-free rate estimated by annualizing the monthly returns on a portfolio of all available liquid funds during October 2016 and September 2017. Importantly, because liquid funds invest in treasury securities with a maximum maturity of 91 days, the annualized return so obtained is a good proxy for the current risk-free rate.

\*\* Estimated as the slope.

Source: Compiled by the author using data from *ACE MF* (Accord Fintech, 2018).

1. ₹ = INR = Indian rupee; US$1 = ₹63.85 on September 1, 2017. [↑](#footnote-ref-1)
2. The SENSEX is a widely known index of 30 blue-chip, large-cap stocks trading on the BSE. It is a value-weighted portfolio such that the weight of each constituent stock is proportional to its own market capitalization at any time. [↑](#footnote-ref-2)
3. Key information on the TEPF is available in “Scheme Information Document (SID): Tata Equity P/E Fund,” Tata Mutual Fund, accessed December 6, 2018, www.tatamutualfund.com/docs/default-source/scheme-documents/tata-equity-pe-fund1cc3e4d5d15e4e0f8d84369151b4159c.pdf?sfvrsn=36c7fba\_2. [↑](#footnote-ref-3)
4. According to the Securities and Exchange Board of India, large-cap stocks were the top 100 stocks in terms of their market capitalization, mid-cap stocks were the next 150 stocks, and small-cap stocks were the remaining stocks. See Securities and Exchange Board of India, *Categorization and Rationalization of Mutual Fund Schemes*, October 6, 2017, accessed November 11, 2017, www.amfiindia.com/Themes/Theme1/downloads/1507291273374.pdf. [↑](#footnote-ref-4)
5. Eugene F. Fama and Kenneth R. French, “Common Risk Factors in the Returns on Stocks and Bonds,” *Journal of Financial Economics*, 33, no. 1 (1993), 3–56. [↑](#footnote-ref-5)
6. Russ Wermers, “Mutual Fund Performance: An Empirical Decomposition into Stock‐Picking Talent, Style, Transactions Costs, and Expenses,” *The Journal of Finance*, 55, no. 4 (2000): 1655–1695. [↑](#footnote-ref-6)