

Alternative Risk Indices for the Mutual Fund Industry

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The monitoring of mutual funds continues to rely on the application of traditional performance indices. Such indices rely either on portfolio beta (either directly through the Treynor index, or indirectly through Jensen's alpha) or on portfolio total variance (through the Sharpe index) or the bench-mark corrected measure (MM index).

Methodologically, a number of issues are relevant for this research. Firstly, due to the asymmetry of returns, conventional computations of the above standard indices likely lead to a bias in favour of *under* performing funds (and a bias against *over* performing funds). The outcome is that, in calculating the standard measures for portfolio performance (Sharpe index, Jensen's alpha, Treynor index, MM index) occurrences of *high* performance for the portfolio generate both higher betas and higher variances. So what is of itself desirable creates higher attributes of risk. To be reliable as a proxy for risk measurement, beta should be invariant to the state of the market, whether the market is up or down: there are reported cases of even negative betas in applications. A related concern, which the project aims to rectify, is the observation that a fund's relationship with risk measures differs between bull and bear markets (Faff and Brooks, 1998; Bhardwaj and Brooks, 1993). In addition, there is the issue of the instability of beta over longer time horizons (switching funds is costly for investors so that working off updated risk measures may not reflect the investor's perspective). Another issue is the instability of beta itself (Faff and Brooks, 1998; Ariff, Brooks and Faff, 1997). These characteristics of beta disqualify the use of beta as an efficient measure.

- **Significance and innovation:**

The above noted biases – whereby a fund's *under*performance generates *lower* apparent risk sensitivities and hence a *positive* contribution to the calculation of performance indices or that the beta is unstable - are largely ignored by the practitioners. Yet, the effect can be quite dramatic. To offset such biases, the project will advance new and relevant industry performance measures for assessing mutual funds - Jensen's alpha, Sharpe index, the Treynor index and the MM index – in relation to betas and standard deviations computed in terms of *downside* market movements. This can be expected to off-set to a large extent the above biases.

A second concern is that performance indices generally relate fund performances to regularly updated measures of the fund's risk exposure. An investor for whom switching funds is costly, however, requires to know the likely relevance of a fund performance index *at the time of entry* to the subsequent *long-term* performance of the fund. The project is also aimed at addressing this issue.

The fact that short-selling of funds, diversification across funds, and even regular switching between funds are unlikely to be practical, leads to a further concern namely that the outcome choice of a fund by an investor will not necessarily conform to a choice in favour of the most superior index. For example, if a fund has high average performance expectations but a small negative alpha, does that make it inferior to a fund with a slightly positive alpha? In response, a third significance of the project is the recognition that the risk-return trade-off may ultimately be subjective. In which case, what is required by investors is a meaningful *range* of indices for the predictability of a fund's performance based on historical performance – which allows thereby for intelligent choices.

- **Description of Approach:**

In seeking to relate risk measures to downside market outcomes, various approaches are open. For example, we can partition the market between periods of positive and negative returns, between periods when the market return exceeds the risk-free rate and when it falls short, or (following Bhardwaj and Brooks,

1993) between when the market exceeds and falls short of the average market return over the period. The last-mentioned approach has the advantage that the market returns divide equally between “bull” and “bear” market.

To test whether such measures of risk are meaningfully associated with performance, the empirical procedure is proposed as follows. Funds are first ranked on the basis of beta measured over a down-market (for comparison the process must be repeated with conventional betas over both up- and down- market movements) over the prior 5-year period. The performance of each fund is then observed over the subsequent 5-year period (to capture the fund return performance with no rebalancing over such investment horizon). Thereby, a Treynor index is computed for each fund. For each fund, a regression is then made on excess fund return against excess market return to calculate the fund’s Jensen’s alpha for that period. The whole process is then repeated at the start of the next year, and so on. Thereby, average indices are calculated for each fund along with the variability (standard deviation) of the indices across time. To provide the same statistics for Sharpe-type indices, the methodology is repeated with down and up-market periods with standard deviations in place of betas.¹

The methodology will be repeated on (i), 10-year, and 20-year windows (to reflect such investment horizons) and (ii) on in-sample windows (to capture the *commensurate* inter-relationships between fund return performances and the risk variables). The latest refinements on the specifications of the variables and the mode of regression will be followed in order to address statistical and econometric concerns.

- **Nature of expected outcomes (National Benefit):**

In practice, it is costly for investors to change their choice of investment fund, even though in law investors could switch between funds. For this reason, it is important that investors have independent and reliable guidance as to the claims made by mutual funds. To this end, the project is aimed at providing investors with meaningful indices as to the predictability of a fund performance based on their historical performance. Our project is aimed at evaluating and ranking fund management performance.

The inherent significance of the findings to the industry will justify the hosting of a Mutual Funds Work-shop aimed at communicating the likely range of project outcomes and findings to the industry. This is proposed to be done in association with the MCFS. Additionally, the project will deliver articles for publication in top-ranking journals and conferences.

References:

- Ariff, M., Brooks, R. W., and Faff, R.K. 1997, “An Investigation into the Extent of Beta Instability in the Singapore Stock Market,” *Pacific Basin Finance Journal*, vol. 14, no. 1: 35-59
- Bhardwaj, R.K., and L.D. Brooks. 1993. "Dual Betas from Bull and Bear Markets: Reversal of the Size Effect." *The Journal of Financial Research*, vol. 16, no. 4: 269–83.
- Faff, R.W. and R.D. Brooks. 1998. "Time-varying Beta Risk for Australian Industry Portfolios: An Explanatory Analysis." *The Journal of Business and Finance and Accounting*, vol. 25, no. 5: 721–45.

¹ Since the down-market lasts for less than a 5-year period, adoption of an adjustment procedure will be explored.