



Revisiting mutual fund performance evaluation

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ABSTRACT

Mutual fund manager excess performance should be measured relative to their self-reported benchmark rather than the return of a passive portfolio with the same risk characteristics. Ignoring the self-reported benchmark results in different measurement of stock selection and timing components of excess performance. We revisit baseline empirical evidence fund performance evaluation utilizing stock selection and timing measures that incorporate the self-reported benchmark. We introduce a new factor exposure based approach for measuring the – *static* and *dynamic* – timing capabilities of mutual fund managers. We overall conclude that current studies are likely to be mistating skill because they ignore the managers' self-reported benchmark in the performance evaluation process.

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1. Introduction

An impressive number of researchers have investigated whether mutual fund managers are 'able' investors.¹ Overall, this literature suggests that skill, if it exists, is evident in a small – but not negligible – fraction of the cross-section of mutual fund managers. Critical to the study of managerial ability is the measurement of excess performance. The current literature generally follows either of two approaches to measure excess performance. In studies that

are based on return data, the abnormal return (the fund's 'alpha') is calculated as the return of the fund in excess of the return of a passive portfolio with the same risk characteristics. A positive alpha is considered as evidence of managerial skill. In studies that are based on mutual fund portfolio holdings typically the return adjustment involves controls for risks determined by the market (beta), size, book-to-market, and momentum characteristics of the stocks held by the mutual fund manager. Both approaches measure excess performance as if fund managers make *ex-ante* investment decisions against an *ex-post* benchmark.

We argue in this paper that this assumption is incorrect and inconsistent with the practice followed by the fund management industry. Mutual fund managers are in practice evaluated against the benchmark stated in the fund's prospectus and their actions are to a large extent dictated by the nature of that benchmark. Examples of frequently used benchmarks include the S&P 500 for large stocks, the S&P 500 Value for funds with a value orientation or the S&P 500 Growth index for growth funds. The benchmarks may themselves have significant alphas as well as significant exposures to systematic risk factors. Hence, calculating mutual fund alphas without accounting for the fund benchmark's alpha may bias stock selection related inferences. Similar issues may arise in the analysis of managers' market timing ability. Ignoring

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¹ Examples of stock selection studies include: Grinblatt and Titman, 1992; Elton et al., 1993; Hendricks et al., 1993; Goetzmann and Ibbotson, 1994; Brown and Goetzmann, 1995; Grinblatt et al., 1995; Carhart, 1997; Blake and Timmerman, 1998; Bollen and Busse, 2005; Kosowski et al., 2006; Huij and Verbeek, 2007; Barras et al., 2010; Fama and French, 2010. Examples of market, or broadly speaking factor, timing studies include: Treynor and Mazuy, 1966; Henriksson and Merton, 1981; Henriksson, 1984; Bollen and Busse, 2001; Comer, 2006; Jiang et al., 2007; Swinkels and Tjong-A-Tjoe, 2007; Mamaysky et al., 2008; Busse and Tong, 2008; Elton et al., 2011; Kacperczyk et al., 2011. Excellent reviews of this literature are provided by Ferson (2010), Aragon and Ferson (2006), and Wermers (2011).

the manager's self-reported benchmark would incorrectly classify as timing changes in factor exposures which merely reflect the manager's effort to track the time-varying sensitivities of her benchmark.

The importance of incorporating the fund's benchmark in the process of measuring mutual fund performance is stressed in current studies that are based on mutual fund holdings data (see, e.g. Cremers and Petajisto, 2009; Hsu et al., 2010; Cremers et al., 2010). Our study falls in the category of return-based mutual fund performance evaluation. We propose that a mutual fund's performance is measured relative to its self-designated benchmark, and any deviation be interpreted as an effort to improve the relative performance of the managed portfolio. We show that this framework generates alphas and exposures to systematic risks that by construction differ from those obtained through the traditional approaches. Our objective is not to develop a new performance evaluation model but rather to demonstrate the differences that these considerations imply within the standard set up. Hence we use a standard risk model (Carhart's (1997) model) to derive these differences and argue that similar implications are expected if alternative risk models are used.

Using the proposed methodology, we revisit baseline empirical evidence in mutual fund performance evaluation. The stock selection and timing measures we utilize are exactly parallel to each other. We measure stock selection as the difference between the alpha of the fund and the alpha of its self-designated benchmark. We measure timing as the differential return earned by varying the fund's systematic risk exposures relative to the respective exposures of its benchmark. Our timing measure builds on the thesis that portfolio managers implement timing decisions through changes of the sensitivity of their portfolio to a set of aggregate factors that affect returns (Elton et al., 2011). In this context, we further argue that a manager may seek to exploit long term risk premia (beta, size, value, or momentum) by taking long-term positions that are different relative to the average exposure of her benchmark (*static factor allocation*). Also she may take short-term tactical bets when she believes that current market conditions favor a particular investment style (*dynamic factor allocation*).

In the first part of our empirical analysis, we study the impact of incorporating the fund's self-designated benchmark into the performance evaluation process for stock selection related inferences. We find in our sample, consistent with the current empirical evidence, that mutual fund alphas are on average negative. However, alphas estimated with the approach we advocate are generally less negative and less statistically significant than the alphas computed with the typical approach in the literature. This finding reflects the fact that the commonly used self-designated benchmarks have negative alphas in the sample period. The differences between the approach we advocate and the standard approach are more pronounced when we focus on mutual funds of particular investment styles. The average alpha for example of small cap growth funds is -3.66% (t -statistic = -3.12) per annum when it is computed with the standard approach. Using our approach the average alpha rises to -1.48% per annum and becomes statistically insignificant (t -statistic = -1.01). Ignoring the self-designated benchmarks in our sample generally puts growth mutual funds managers as a group at a disadvantage vis a vis value fund managers. Similarly it puts small-cap managers at a disadvantage relative to large-cap managers.

Next, we study the implications of the proposed framework for measuring timing. We find convincing empirical evidence of significant timing by mutual fund managers. More than half the standard deviation of a mutual fund's excess return is due to market and investment style timing decisions. More than a third of all managers take statistically significant bets against the factor exposures of the self-designated benchmarks. Despite the importance of

timing decisions, timing makes a small contribution to total mutual fund performance. Our evidence suggests that on average mutual funds underperform their benchmarks by about 1.90% per annum. Almost two thirds of that underperformance is due to bad stock selection decisions. The negative contribution of stock selection is significant and consistent across all investment styles. Timing contributes -0.65% per annum to average mutual fund underperformance. Elton et al. (2011) also report negative albeit larger in absolute terms, timing returns. Not accounting for the fund's benchmark may misclassify – with respect to their timing skill – funds that simply track the sensitivities of their benchmark to systematic risk factors.

This article makes several contributions to the existing literature. First, we study mutual fund performance within a context that is more in line with current institutional asset management practices. We find that ignoring the fund's benchmark leads to incorrect assessments of a manager's performance. Second, we introduce a new factor exposure based approach for measuring the timing capabilities of mutual fund managers that utilizes mutual fund return data. From a conceptual point of view, our approach is consistent with the notion that managers – on top of stock selection – move assets in and out of various sectors and securities as part of a dynamic factor timing strategy. Our approach has advantages over existing approaches that rely on mutual fund holdings data. Moreover, our approach on factor timing skill measurement disentangles the two aspects of factor timing that is, short- and long-term. Thirdly, we provide new empirical evidence on the importance of stock selection versus timing decisions.

Our findings add new insights to the literature on mutual fund performance evaluation. The use of 'implicit' rather than self-designated ('explicit') benchmarks in current academic performance evaluation practices, misstates the finding of lack of managerial skill. The 'explicit' benchmark plays a central role in portfolio construction and risk management in current investment management practices. Pure stock selection decisions account for less than 50% of portfolio tracking error. A significant portion of active risk is due to factor timing decisions and in particular factors like value, size and momentum. This has implications for manager evaluation, manager selection, risk budgeting, and risk management practices of institutional investors.

This paper proceeds as follows. In Section 2 we discuss the inconsistency (with asset management practice) of the risk-adjustment approach that most studies have in common and demonstrate what amendments we believe are necessary to maintain consistency. We also develop a new method for measuring factor timing skill. Section 3 discusses the data we use in our empirical analysis. Section 4 illustrates the impact of inappropriate risk-adjustment on measuring stock selection skill. It also reports the results of the analysis on the factor timing ability of mutual fund managers which uses the proposed method. Section 5 presents the results of the robustness analysis and Section 6 concludes.

2. Measuring skill against a self-designated benchmark

2.1. Self-designated versus implicit benchmark

The standard approach for measuring skill in the literature uses the following regression:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i1}(R_{m,t} - R_{f,t}) + \beta_{i2}SMB_t + \beta_{i3}HML_t + \beta_{i4}MOM_t + e_{i,t} \quad (1)$$

where $R_{i,t}$ is the return of fund i , $R_{f,t}$ is the short term risk free rate at time t , $R_{m,t}$ is the return of the market portfolio, SMB_t , HML_t , and MOM_t are the returns of portfolios of stocks sorted on market value, book-to-market, and past returns (Carhart, 1997) all at time t ; $e_{i,t}$ is

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