Precision about manager skill, mutual fund flows, and performance persistence ☆

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A R T I C L E   I N F O

A B S T R A C T

Constructing a measure for imprecision about manager skill, *IMP*, by standard deviation of multiple performance-based signals, we examine the role of *IMP* in flow-performance relationship. We find that future fund flows respond more (less) strongly to past performance measured with high (low) precision. Our finding is robust to the inclusion of control variables that are known to affect future fund flows. In addition, short-term performance persistence is observed among funds with lower *IMP*, implying that our *IMP* helps identify funds with performance persistence. Overall, our findings indicate that *IMP* plays a critical role in understanding the cross-section of future flows.

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1. Introduction

Understanding the behavior of fund investors has long been a central research question. From the perspective of investors, one of the most important factors for investment decisions is the past performance of mutual funds. Since the investment decisions of mutual funds investors are reflected in fund flows, numerous researchers have investigated the relationship between fund performance and future fund flows. The literature has documented performance-chasing behavior in fund investors (Chevalier & Ellison, 1997; Goetzmann & Peles, 1997; Gruber, 1996; Ippolito, 1992; Sirri & Tufano, 1998); that is, funds with superior past performance attract disproportionately large money inflows.

In analyzing flow-performance relationship, however, previous studies have not paid attention to one important factor: the precision about past performance, although it should be included in the information set of mutual fund investors. Our motivation is related to the fact that mutual fund investors today receive multiple performance-based signals of uncertain precision.[1] Since past performance estimated from each measure is, at best, a noisy signal about managerial skill, for mutual

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[1] Indeed, numerous measures have emerged in the performance evaluation literature (Carhart, 1997; Daniel, Grinblatt, Titman, & Wermers, 1997; Elton, Gruber, Das, & Hlavka, 1993; Grinblatt & Titman, 1989a, 1989b; Ippolito, 1989; Jensen, 1968; Lehmann & Modest, 1987; Sharpe, 1966, 1992). In addition, different studies adopt different evaluation periods (Bollen & Busse, 2005; Carhart, 1997; Elton et al., 1993).

fund investors, it is unclear what particular measure is the most appropriate. Sirri and Tufano (1998, p. 1597) express their concern on the issue: "Even if performance and riskiness affect fund flows, it is unclear what particular measures and levels of performance (or risk) are most salient to consumers, or over what time period this measure should be calculated."

Therefore, a promising research direction is to investigate how investors take into account multiple signals of uncertain precision in investment decisions.

A key element of our work lies in constructing a proxy for imprecision about manager skill. Since the choices of the particular performance measure and the performance evaluation window affect past performance, we consider both these dimensions.[2] We use seven well-known fund performance measures proposed in both the academic and practice-oriented literature (performance relative to the market benchmark, Sharpe's ratio, Jensen's alpha, Treynor's ratio, information ratio, appraisal ratio, and Carhart's four-factor alpha) over multiple evaluation windows. We employ five past performance evaluation windows of one, two, three, four, and five years, respectively. Given 35 distinct past performance measures for each fund in month t, we define our measure of the imprecision of multiple performance-based signals, *imprecision* (*IMP*, hereafter), as the standard deviation of past performance rankings since the standard deviation has been the most widely used measure in estimating such imprecision.

Our paper provides new evidence on the mutual fund literature, focusing on the two following questions. First, we ask whether *IMP* affects the sensitivity of flow-performance relationship. Consider a Bayesian investor who receives multiple performance-based signals of uncertain precision about managerial skill. For this investor, it is unclear what particular measure is the most salient for investment decisions. Under the circumstances, the Bayesian investor is less likely to respond to signal measured with lower precision, regardless of the content of the signal. This means that when past performance is measured with lower precision, we expect to observe lower flow-performance sensitivity, i.e., less inflows for good past performance funds and less outflows for poor past performance funds. On the contrary, when past performance is measured with high precision, we expect to observe higher flow-performance sensitivity.

We find that future fund flows respond more (less) strongly to past performance measured with high (low) precision. For funds with the lowest *IMP*, the difference in the average future flow between funds with winners (top 20%) and losers (bottom 20%) is 3.84%, with a Newey–West t-statistic of 7.93. The difference monotonically decreases as *IMP* increases, and the difference in the average future flow between funds with winners and losers is 1.98% with a Newey–West t-statistic of 9.32 for funds with the highest *IMP*. Fama and MacBeth (1973) regressions confirm our finding. The interaction term of past performance and *IMP* is negative and statistically significant at the 1% level, implying that flow-performance relationship becomes weaker as imprecision of past performance increases. Our finding is robust to the inclusion of control variables such as fund size, total expense ratios, the logarithm of fund age, fund turnover ratios, and the flow of the previous month. We also confirm that our results are retained in the presence of convexity in flow-performance relationship.

Second, we investigate whether our proxy for imprecision about manager skill helps identify funds with strong performance persistence. This research question arises because *IMP*, by construction, has direct information about the skill of money managers. That is, funds with lower *IMP* have lower uncertainty about manager skill, whether the skill is good or bad, compared to funds with higher *IMP*. We find that performance persistence is observed among funds with lower *IMP*. This finding is intuitive because, among past losers, funds with lower *IMP* have a higher probability of being managed by money managers with low skills than funds with higher *IMP* do. If we apply the same reasoning, we should observe significant positive returns on a portfolio formed by the intersection of the best-performing group and the lowest *IMP* group. However, we fail to find this empirical evidence. While we observe that investors put disproportionately large money into funds with the highest past performance and the lowest *IMP*, our result indicates that these funds do not outperform a passive benchmark. Given that equity funds, on the average, do not outperform the benchmark, such a finding is not surprising. Overall, our empirical findings uncover a critical role for imprecision about manager skill in understanding the cross-section of mutual fund flows and performance persistence.

Our study is related with two recent works by Huang, Wei, and Yan (2012) and Li, Tiwari, and Tong (2016). Huang et al. (2012) show that flow sensitivity to past performance is decreasing with fund return volatility. Our paper differs from theirs in that, while we estimate imprecision about managerial skill by calculating the cross-sectional dispersion of 35 different performance measures, they obtain volatility by computing the time-series dispersion of monthly raw returns of mutual funds. In addition, Li et al. (2016) show that ambiguity-averse mutual fund investors tend to react more strongly to the worst-case scenario. Since the aforementioned studies contribute to the literature, we compare the explanatory power of our *IMP* with those suggested by recent works. We find that the inclusion of competing variables does not drive out the role of *IMP* in explaining flow-performance relationship. Our finding indicates that *IMP* conveys information relevant to explaining the cross-section of future fund flows.

This work contributes to our understanding of the investment decisions of mutual fund investors. An extensive literature studies mutual fund flows to examine the behavior of fund investors. Several empirical works suggest that investors make investment decisions based on past fund performance (e.g., Chevalier & Ellison, 1997; Goetzmann & Peles, 1997; Gruber, 1996; Ippolito, 1992; Sirri & Tufano, 1998) and it is now well-known that fund investors chase good past performance. In

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[2] Previous studies either consider different performance measures or various time horizons in flow-performance relationship. However, for investors, it is hard to prioritize which dimension is more important, and what they understand is that both the two dimensions affect past performance. Since past performance across different performance measures and time horizons are readily available, we think that it is natural for investors to consider both dimensions.