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Characteristics of mutual funds with extreme performance☆

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ABSTRACT

We focus on mutual fund characteristics associated with periods of extreme performance. We find that funds with either positive (hot-hand) or negative (icy-hand) persistence tend to have portfolio similarities consistent with riskier positions: compared to no-streak funds, they hold fewer stocks, invest more in top ten holdings, and have a higher portfolio beta. Also both hot-hand and icy-hand funds have significantly higher asset turnover than benchmark funds. Icy-hand funds tend to be more extreme with riskier positions and asset turnover than hot-hand funds. At the same time, icy-hand (hot-hand) funds tend to have larger (smaller) management teams, and are less (more) likely to be managed by one person. Finally, we do not observe many funds changing their management teams either before or after extreme performance. That is, we find no evidence that the beginning of an extreme performance period is associated with changes in management or that it induces changes in management.

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1. Introduction

Mutual fund performance has continually been a focus for both investors and academic researchers. Starting with Jensen (1968), who documented negative average fund alphas net of expenses and trading costs, the academic literature has accumulated a large body of evidence relating a fund's performance to its characteristics. For instance, empirical evidence suggests that larger funds (Chen, Hong, Huang, & Kubik, 2004; Ferreira, Keswani, Miguel, & Ramos, 2013; Indro, Jiang, Hu, & Lee, 1999; Yan, 2008) and funds with higher fees (Carhart, 1997; Gil-Bazo & Ruiz-Verdu, 2009; Prather, Bertin, & Henker, 2004; Volkman & Wohar, 1995) perform worse. Additionally, there is evidence of short-term persistence in fund performance (Hendricks, Patel, & Zeckhauser, 1993; Huij & Verbeek, 2007), as well as a "smart money" effect (Gruber, 1996; Zherng, 1999; Keswani & Stolin, 2008).

The focus of this paper is on the characteristics of mutual funds that experienced continuous periods of either extremely good or extremely bad performance. Following the terminology of Gilovich, Vallone, and Tversky (1985), we refer to a period of continuous extreme positive performance as a hot-hand streak and a period of continuous extreme negative performance as an icy-hand streak. We are interested in two

groups of questions. First, whether funds with hot-hand or icy-hand streaks differ before, during, or after their streaks from funds that do not experience extreme performance. Second, whether characteristics differ between funds with positive extreme performance and funds with negative extreme performance.

Using data from Morningstar® Principia®, we form a panel data set consisting of 10,898 "growth" and "growth and income" funds worldwide from the first quarter of 1999 through the third quarter of 2011. We define a fund as having a streak of extreme positive (negative) performance if it had quarterly returns in the top (bottom) 10% for at least four consecutive quarters. Funds with extreme performance are then compared to two benchmarks: (1) all funds without extreme performance and (2) funds that are matched with extreme performance funds using propensity score matching.¹

Our results are as follows. First, we show that there are common factors in how hot-hand funds and icy-hand funds differ from both the propensity score matched benchmark funds and all other funds. Both hot-hand and icy-hand funds have higher asset turnover and they hold riskier portfolios than benchmark funds. The latter result manifests itself in that funds with extreme performance have portfolios that are less diversified and have higher beta than the benchmark. As properly diversified

☆ The views expressed in this paper are those of the authors and do not necessarily reflect those of Ally Financial.

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¹ Morningstar has 36 objective codes, many with only a small portion of funds. Following the literature, we focus on the two largest objective codes: "growth funds" and "growth and income funds." These two categories also have the largest frequencies of both hot-hand and icy-hand streaks. Although we focus on these two categories of funds, our results still hold when looking at all fund types together.

portfolios are unlikely to exhibit extreme returns, it is intuitive that both negative and positive extreme performance comes from under-diversified portfolios. However, we find the characteristics of icy-hand funds tend to be more extreme than hot-hand funds.

Next, we look at which fund characteristics are responsible for triggering the beginning and ending of periods of extreme performance. Decreases in the total number of holdings and the expense ratio have a significant effect on the probability of a hot-hand streak starting. As for the icy-hand funds, increases in the total number of holdings and the asset turnover have a significant effect on the likelihood of a streak starting. These results highlight that funds that experience positive and negative performance take different paths towards their streaks of extreme performance.

There is also a difference between hot-hand and icy-hand funds in what triggers the end of the extreme performance. For a hot-hand streak, its end is differentiated by increases in the percentage invested in the top ten holdings and decreasing the riskiness of the portfolio (lowering beta). In contrast, for an icy-hand streak, total holdings increase, the overall portfolio is re-allocated, and there is an expansion in the management team. Based on these findings, both managerial skill and pure luck could prompt the end of the icy-hand period.

When examining the duration of a streak, we show that funds with a larger percentage invested in their top ten holdings at the beginning of the streak have a longer hot-hand period. For the icy-hand streaks, the main factor appears to be a change in the percentage invested in the top ten holdings during the icy-hand period. Funds that increase their investment in their top ten holdings tend to have longer periods of negative performance. Additionally, longer icy-hand streaks are associated with larger management teams.

Lastly, we look at managerial turnover and management size. Management team size influences fund performance and characteristics. We find that hot-hand funds are more likely to be managed by one person, while icy-hand funds are less likely to be single-manager funds as compared to both hot-hand funds and no-streak funds. The former result is consistent with results found in the literature (Baer, Kempf, & Ruenzi, 2005; Chen et al., 2004); however, the latter result is new to the literature.

In studying managerial turnover, we find that funds exhibiting one streak, whether positive or negative, are likely to retain the same managerial team before, during, and after the streak. However, funds demonstrating multiple streaks are likely to change the managerial team differently across hot- and icy-hand periods. In addition, we examine the impact managerial turnover has on the portfolio, separating its impact on buying and selling. The results clearly show no impact on the buy-side; however funds with managerial changes for hot and icy-hand periods are impacted, albeit differently, on the sell side.

Some of our findings are related to evidence in the literature. First, our results suggest that funds with extreme performance have higher expense ratios than benchmark funds. While the earlier literature shows that poorly performing funds charge higher fees (e.g., Carhart, 1997; Gil-Bazo & Ruiz-Verdu, 2009; Prather et al., 2004; Volkman & Wohar, 1995), our results suggest that funds performing extremely well also charge higher fees, just not necessarily as high as those fees charged by the poorly performing funds.

Second, we study the relation between assets under management (AUM) and periods of extreme performance. There is an inverse relation between fund size and fund performance (e.g., Chen et al., 2004; Ferreira et al., 2013; Indro et al., 1999; Yan, 2008). However, as we show for funds with continuous extreme performance, the results are more nuanced. Both hot-hand and icy-hand funds have lower AUM than benchmark funds. For icy-hand funds, a higher AUM is associated with a lower probability of the start of the icy-hand period, but also with a lower probability of the end of an icy-hand period. For hot-hand funds, AUM has a positive and significant effect on the start of a hot-hand period.

Third, several papers provide evidence of investors rewarding outperformance with disproportionately high capital inflows, but not penalizing underperformance equivalently.² We provide evidence supporting the existence of what has been deemed “smart money.” Higher (lower) levels of new funds are associated with a higher probability of a fund entering a hot-hand (icy-hand) period. This evidence implies that investors are able to pick the winners and losers.

Lastly, we observe that icy-hand funds have only a single manager less frequently than do hot-hand funds. Also, we find the size of management team for icy-hand funds is significantly larger than for hot-hand funds. This adds evidence in line with Chen et al. (2004) and Baer et al. (2005), who provide weak evidence showing that a management team is detrimental to fund performance. It is worth noting that Prather and Middleton (2002) and Karagiannidis (2010) find no significant difference in performance between single manager and team managed funds.

Overall, the contributions of our paper to the literature are as follows. First, to the best of our knowledge, this is the first paper that focuses on a comparative analysis of funds with positive and negative extreme performances. Second, we show that there are many similarities between hot-hand funds and icy-hand funds. This result has not been previously documented in the literature. Third, we document that icy-hand funds tend to be managed by larger teams and are less frequently managed by one manager. Fourth, we analyze the start, duration, and end of streaks of extreme performance, both positive and negative. Fifth, we show that for funds exhibiting extreme performance, the common determinants of performance can have different effects from those previously reported in the literature. Lastly, we document that most firms have the same management team before, during, and after a performance streak.

The remainder of the paper is organized as follows. Section 2 provides a discussion of the data and the methodology used. Section 3 presents the results. Section 4 concludes with a summary of the key findings.

2. Data and methodology

Our data set is formed using Morningstar Principia, a database that does not suffer from survivorship bias since it contains data on any fund in existence between January 1999 and September 2011. In particular, it includes data on mutual funds that lasted the entire sample period, disappeared during the sample period, and formed during the sample period.

The original Morningstar Principia database contains quarterly mutual fund data on 42,801 mutual funds from January 1999 to September 2011. Following the methodology of Karagiannidis (2012), share classes of the same fund are removed by matching based on four variables: asset turnover, number of holdings, percentage invested in stocks, and percentage invested in the top ten holdings. After removing these share classes, the data set contains 25,990 mutual funds. For each fund-quarter observation, fund characteristics such as alpha, beta, Sharpe ratio, managerial tenure, asset turnover, and team size are collected. The quarterly data files are merged based on “fund code,” which is a unique identifier assigned to a fund both during and between quarters.

Upon constructing an unbalanced panel, funds with consistently superior or inferior performance are identified, and the quarters of such performance are noted. We use the following procedure. First, all funds are divided into groups based on their Morningstar objective code (36 total). We focus on funds in the growth and growth and income objective codes (the two largest), which contain 10,898 mutual

² See Keswani and Stolin (2008) for a detailed overview of the literature.

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