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Different strokes by different folks: The dynamics of hedge fund systematic risk exposure and performance[☆]

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ABSTRACT

We study hedge fund performance and exposure to systematic risk factors over different market cycles with a sample of 1821 hedge funds from January 1994 to June 2008. Our findings suggest that hedge funds are exposed to systematic risk factors and minimizing systematic risk exposure by means of, for example, hedging does not always produce good results. Our quantile regression analyses reveal that systematic risk exposure *per se* does not separate high-achievers (positive alphas) from low-achievers (negative alphas). Fund performance is also conditioned on the direction of exposure. Moreover, fund exposure to the types of risk factors depends on market regimes, confirming the argument that hedge funds shift strategies. Choosing the exposure to the right risk factors in the right direction according to economic regimes separates good performers from poor ones.

1. Introduction

Investors seek stable returns and fund managers with superior performance when choosing hedge funds. Besides fundamental fund characteristics, differences in strategies and exposure to risk factors also play central roles in driving fund behaviors and performance. This paper adds to the extant literature on hedge funds' exposure to systematic risk factors. Our empirical study contributes to the hedge fund literature by investigating three important issues that either have been lightly studied or not been explored. First, a fundamental research question to be answered is whether hedge funds are exposed to systematic risk factors? Or, are they "hedged", hence market neutral as suggested by the name? Contrary to the general belief, Bali, Brown, and Caglayan (2012), however, find systematic risk is a highly significant factor in explaining the dispersion of cross-sectional returns. Using a Bayesian time-varying beta model in conjunction with the data from CSFB/Tremont indices, Savona (2014) also finds that hedge fund betas are impacted by factors such as volatility, changes in T-bill rate, and term spread. He concludes that if risk exposure is assumed to be constant while it is time-varying, performance appraisal can be seriously distorted. We add to this line of research by using a different statistical method and providing further supporting evidence.

Second, we examine the relation between funds' systematic risk exposure and performance. Studies on this research topic report inconsistent results. Titman and Tiu (2011) find that lower R-squared funds perform better, suggesting that risk-neutral hedge funds generate the greatest alpha. Bollen (2013) also finds that market neutral funds have lower volatility, higher Sharpe ratios, and higher

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alphas. These results are in stark contrast with Bali et al. (2012) which finds that funds in the highest systematic risk quintile generate 6% more annual returns than funds in the lowest systematic risk quintile. Given these inconsistent evidence, we reexamine this issue and provide explanations that may reconcile the conflicting results. We reason that two hedge funds both exposed to similar systematic risk factors may not perform equally well because one fund simply bets on the same direction as the market trend, while the other one could bet “against” the market trend. In this case, both funds are highly correlated with systematic risk factors, but with opposite directions. In another instance, one fund could load heavily on growth stocks while the other fund focuses on value stocks based upon different beliefs. Therefore, although both funds have high systematic risk exposure, this exposure does not necessary lead to high (low) performance.

Third, a closely related and equally interesting research question to be explored is whether hedge funds’ choices of strategies and risk exposures are in effect economic condition dependent? That is, do hedge funds adhere to their stated strategies all the times or do they change exposures to different risk factors that may not be always the same as their stated strategies when market conditions change? Prior studies regarding mutual funds and equity managers highlight the pitfalls of assuming a constant risk exposure when measuring performance (Ferson et al., 1996; Christopherson et al., 1998). These concerns are especially relevant for hedge funds since hedge funds invest dynamically in a wide range of asset markets, not just equity market, leading to time-varying risk exposures. Indeed, Chen and Liang (2007) finds self-described market timing hedge funds show ability to time the market. Since fund managers are free to change strategies and leverages in response to economic conditions (Bollen and Whaley, 2009), Bollen (2011) documents that hedge funds dramatically change their exposures to risk factors. Racicot and Theoret (2013) present results that show hedge funds betas are procyclical and alphas are also economic cycle dependent, hence suggesting the need of analyzing hedge fund performance in a dynamic setting. Recently, Namvar, Phillips, Pukthuanthong and Raghavendra (2016) document that in weak market states, skilled managers focus on minimizing systematic risk via dynamic allocations across asset classes. As markets strengthen, attention shifts to asset selection within consistent asset classes. Therefore, the understanding of hedge funds’ dynamic strategies becomes more important as hedge funds seldom reveal their changing strategies.

Since hedge funds employ a wide spectrum of financial instruments and portfolio strategies, they are inherently heterogeneous and the return distribution is non-Gaussian. Alphas and risk factor loadings derived from standard regression analyses give only the values of conditional means, which might not be the optimal way to interpret their relationships with fund returns. In the presence of such concerns, it would be judicious to work within a more flexible framework, and in our case, a quantile regression approach to analyze hedge funds’ exposure to systematic risk factors and their relationship with performance. The major advantage of this approach is that it allows us to examine the differences in fund exposure to systematic risks across a wide spectrum of return distributions. Through this analysis, we are able to uncover hedge fund strategies that distinguish stellar from poor performers. Our findings also offer rich information regarding funds’ good/poor performance as a result of their exposure to different systematic risk factors in various market conditions.

A number of interesting results emerge when the quantile regression methodology is adopted. Specifically, our results reveal that hedge funds, good or poor performers alike, are exposed to systematic risk factors. However, high-performing and low-performing funds choose their exposure to risk factors differently depending on their prediction of market movement. A fund, for example, heavily engaged in short positions while the market is in a positive tone, has a significant market exposure but in the wrong direction. In this case, exposure to systematic risk actually produces negative results. A case in point is that the recent sharp decline in crude oil prices is observed to tell two different stories depending on the direction hedge funds previously bet on the oil prices.

Of course, hedge funds also determine the extent of their systematic risk exposure depending on their prediction of market regimes. For example, our results show that good performers tend to have less exposure to the commodity trend-following risk factor during the pre-internet bubble period, but have significantly more exposure to the same risk factor during the post-internet bubble period. Conversely, good performers are found to have larger exposure to the bond trend-following risk factor during the pre-internet bubble period, but such exposure to the same risk factor declines during the post-internet bubble period. Hedge funds, therefore, select the timing of their exposure to systematic risk factors, and the success (failure) of a fund partially depends on its ability to efficiently time these risk factors. Minimizing risk exposure via such means as hedging does not always ensure the desired fund performance. This finding echoes the argument of Bollen and Whaley (2009) that hedge funds shift strategies.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature. Data and descriptive statistics are presented in Section 3. Section 4 discusses the methodology. Detailed quantile regression results are reported and analyzed in Section 5. Section 6 provides a more detailed discussion and comparison of the findings in Section 5. Section 7 conducts robustness analyses, while Section 8 concludes.

2. Literature review

Until recently, most of the literature on hedge funds has been focusing on the following topics: performance, performance persistence, and corporate governance. Differing views and mixed evidence regarding these topics are documented over the years. For example, Ackermann, McEnally and Ravenscraft (1999) report that hedge funds consistently outperform mutual funds, but not standard market indices. Agarwal and Naik (2000) find persistence in fund performance. However, according to Capocci and Hübner (2004) there is limited evidence of persistence in fund performance. Then, Baquero et al. (2005) report positive persistence in hedge fund quarterly returns after controlling for investment style, and to a lesser extent, in annual returns. Kosowski et al. (2007) detect persistent performance at the annual horizon for hedge funds using a robust bootstrap procedure. Relative to the OLS alphas, the bootstrap method yields a 5.5% annual increase in alpha of the spread between the top and the bottom hedge fund deciles. Aragon (2007) contends that hedge funds with lockup restrictions earn higher returns than those without lockup restrictions. Others such as

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