



Sentiment hedging: How hedge funds adjust their exposure to market sentiment[☆]



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ABSTRACT

We investigate a new facet of hedging ability among hedge fund managers. Using a sentiment exposure model, we find evidence that fund managers adjust the market exposure of their portfolios to changes in market sentiment. Out-of-sample evidence indicates that hedge funds having the highest negative sentiment exposure outperform funds having the highest positive sentiment exposure by 1.7%–2.4% per year. The results remain persistent for both the sub-period analysis and the analysis excluding crisis periods. We also find that a hedge fund's willingness to take on sentiment exposure decreases with fund age and fund size and increases with incentive fees. Our findings remain robust even after controlling for hedge fund data biases, as well as using alternative sentiment measures.

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1. Introduction

Hedge funds are alternative investment vehicles that use pooled funds and sophisticated strategies to generate a positive return on investment, while adjusting their exposure to various macroeconomic and market factors. The profitability of hedge funds has been remarkable over the past decade. According to AIMA (the Alternative Investment Management Association), hedge funds generated \$1.5 trillion in returns for investors between the years 2005–2014.¹ The impressive performance of hedge funds can partially be attributed to the managerial skills possessed by fund managers; in particular, a manager's hedging ability. [Bali et al. \(2011\)](#) find a positive relation between exposure to financial and macroeconomic default risk premiums and future hedge fund returns. [Fung and Hsieh \(2004\)](#) analyze seven asset-based style factors.² The factors

help explain 80 percent of the monthly return variation of hedge funds and can also be used to manage hedge fund portfolio risk.

The hedging ability of hedge fund managers has been studied from several different aspects. Previous literature focuses on three main types of hedging (i.e. timing) ability: market hedging ([Treyner and Mazuy, 1966](#); [Henriksson and Merton, 1981](#); [Chang and Lewellen, 1984](#)), volatility hedging ([Busse, 1999, 2001](#)), and liquidity hedging ([Cao et al., 2013a,b](#)). In this paper, we investigate a new aspect of hedging ability using investor sentiment. Moreover, we propose a sentiment exposure model that incorporates the time series average of past market sentiment. The model allows us to examine how hedge fund managers move in and out of the market as aggregate market sentiment changes, as well as estimate the economic value created from hedging market sentiment.

We classify sentiment in terms of high and low sentiment periods. We define a high sentiment period as a period characterized by abnormally elevated levels of aggregate market sentiment. Correspondingly, low sentiment periods are defined as periods when aggregate market sentiment is abnormally low. We use the Baker and Wurgler Sentiment Index³ to measure the level of aggregate market sentiment. High sentiment periods are viewed

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¹ Reuters. (2015, January 28). *How much hedge funds earned for investors in last 10 years*. Retrieved from <https://www.cnbc.com/2015/01/28/how-much-hedge-funds-earned-for-investors-in-last-10-years.html>.

² The seven factors are the equity market factor (which measures excess market return), the size spread factor, the bond trend-following factor, the currency trend-following factor, the commodity trend-following factor, the monthly change in the Moody's Baa yield less 10-year treasury constant maturity yield, and the monthly change in the 10-year treasury constant maturity yield.

³ [Baker and Wurgler \(2006\)](#) uses six different proxies to help measure investor sentiment (market turnover, closed-end fund discount, new equity issuances, number of IPOs, first day return on IPOs, and difference in book-to-market ratios between dividend payers and dividend non-payers).

in the context of major speculative episodes or periods in which market sentiment is above its historical average. Hedge funds, in response to these high sentiment periods, can either choose to reduce their portfolio's market exposure (i.e. hedge against the sentiment) or choose to increase it. Previous evidence helps support this theory. Griffin et al. (2011) find that hedge funds and institutional investors took part in both the "run-up and crash" of the Technology Bubble.

In regard to our sentiment exposure model, we begin by estimating the model's parameters and evaluating how a hedge fund's sentiment coefficient in month t changes when realized market-wide sentiment in month t is greater (or less) than the previous time series mean of market sentiment. Our initial results indicate that while some hedge fund managers prefer to take on sentiment exposure, others prefer to reduce their exposure or move out the market during high sentiment periods. This is consistent with different hedge fund managers pursuing different strategies.

Next, a bootstrap analysis is conducted. The bootstrap analysis shows that the sentiment hedging abilities of hedge fund managers (especially the willingness to move out of the market when sentiment is rising) cannot be attributed to chance. Given that previous literature suggests that hedge funds and mutual funds have market, volatility, and liquidity hedging abilities, we also examine the hedging of market sentiment while controlling for these other hedging abilities. Our results reconfirm our previous estimation. Comparing with earlier findings, the sentiment exposure estimates, although slightly decreased, remain significant.

We also examine out-of-sample excess returns for negative sentiment exposure and positive sentiment exposure hedge funds, in order to evaluate the economic value of sentiment hedging strategies. To do so, we estimate a sentiment exposure coefficient for each hedge fund and then form decile portfolios. We then measure out-of-sample excess returns for different holding periods, ranging from three to twenty-one months. We find that top negative sentiment exposure funds earn higher out-of-sample excess returns when compared with top positive exposure funds. For example, the excess return spread between the two most extreme deciles ranges from 0.14% to 0.20% per month, based on different holding periods. These results remain significant for as long as twenty-one months after the ranking period and are also economically significant, indicating there is added value from hedging market sentiment, particularly in regard to negative sentiment exposure. Moreover, the results suggest hedge fund managers can create more value by hedging sentiment risk.

While we observe sentiment hedging ability of hedge funds on average, we also note that across funds there is a wide difference of hedging ability. Therefore, we investigate whether sentiment hedging is related to certain fund attributes. We run a combined cross-sectional and time series analysis where we interact the sentiment exposure variable with various fund characteristic variables. Our results indicate that a hedge fund's tendency to take on sentiment exposure decreases with older or larger funds, but increases for funds with higher incentive fees.

Finally, we test the robustness of our study by controlling for hedge fund biases and using an alternative sentiment measure. We begin by analyzing sentiment hedging abilities in hedge funds by evaluating the impact of backfill bias and survivorship bias on sentiment exposure. Overall, our results are not affected by these data biases. We also repeat the fund-level analysis of sentiment hedging ability with an alternative sentiment measure - the orthogonalized measure of the University of Michigan Consumer Sentiment Index, in place of the Baker and Wurgler Sentiment Index. The pattern of these results is consistent with what we find using the Baker and Wurgler Sentiment Index, thus providing further support that there is sentiment hedging in hedge funds and that this hedging

ability is not subsumed by other aspects of hedging (i.e. market, volatility, and liquidity hedging).

This study contributes to the existing literature in several respects. First, market sentiment represents a unique risk exposure to hedge funds. It is well documented that investor sentiment helps explain the cross-section of asset returns (Baker and Wurgler, 2006). Additionally, Brown and Cliff (2005) argue that if excessive optimism drives asset prices above their intrinsic values, then periods of high sentiment should be followed by low returns as market prices revert to their fundamental values. Thus, market sentiment may be an important source of hedge funds returns; especially, since hedge funds have long been known to exploit mispricings in assets to generate superior performance, as well as closely monitor the overall attitude of investors toward the financial markets. Further, some hedge funds have been known to ride hot markets/bubbles in trying to maximize investor returns (Brunnermeier and Nagel, 2004). Yet, in the face of such sentiment chasing there were still many fund managers who followed a contrarian strategy, or at least held a cautious/prudent view toward a rising equity market. Cautious or prudent investors may trade against irrational/abnormally high sentiment (i.e. hedge) by reducing or eliminating their sentiment exposure (Dass et al., 2008). Moreover, hedge fund fee structures, which include a basic management fee, incentive fee, and a high-water mark (for some funds), may also promote a hedge fund manager's behavior towards taking on sentiment exposure⁴.

Second, we extend the hedging/timing literature for hedge funds. The first market hedging model was pioneered by Treynor and Mazuy (1966). The authors created a methodology to analyze whether mutual funds adjust their market exposure in relation to forecast market returns. Merton (1981) and Henriksson and Merton (1981) expanded the existing hedging literature by developing the Up/Down model. The model provides a better means of assessing a portfolio manager's ability to hedge market risk exposure. Ferson and Schadt (1996) also created a market exposure model, one conditioned on public information variables and that controlled for biases and the underestimation of returns. Busse (1999) extended the hedging ability literature by examining a different type of hedging ability - the ability to hedge volatility exposure (using daily returns). Cao et al. (2013) also extended the hedging literature by examining how hedge funds adjust their portfolios to liquidity exposure. Also, Kacperczyk et al. (2014) find that the hedging ability of fund managers fluctuates with the state of the economy.

Third, our study examines how hedge fund managers create value from sentiment hedging. Several studies have examined the economic value generated from different types of hedging ability. For example, Cao et al. (2013) reveals that the top 10% of liquidity timers delivers economic returns of 0.51% a month. In this study, we investigate the value created from sentiment hedging and find that hedge funds managers with the highest negative sentiment exposure (i.e. funds that hedge against sentiment risk exposure) outperform managers with the highest positive sentiment exposure (i.e. funds that increase sentiment risk exposure) by approximately 2% per annum. This result remains persistent both for the sub-sample periods (1995–2004 and 2005–2014) and to the exclusion of the Technology Bubble period and the period of the most recent financial crisis. The finding emphasizes the importance

⁴ Dass et al. (2008) show that the incentives contained in a mutual funds' advisory contracts induce managers to overcome their tendency to herd. The paper argues that while investing in hot/bubble stocks amounts to herding, advisory contracts with high incentives induce managers to diverge from the herd and thus reduce their holdings of hot/bubble stocks. The differential exposure to these stocks significantly impacted fund performance both in the period prior to March 2000, as well as afterwards.

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