

Mutual Funds with Hedge Fund Characteristics: Diversification Benefits and Costs

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Abstract

Hedge funds claim higher returns with lower risk and low correlation with the U.S. stock market, albeit at a higher cost than alternative investments. This paper examines the corresponding properties of mutual funds that employ hedge fund type strategies. Results show that mutual funds in the Morningstar long-short category, compared to a matched mutual fund samples, have slightly lower total returns but higher risk-adjusted performance measures based on lower risk statistics. Lower beta and R^2 for the long-short funds highlight their main benefit as a portfolio diversifier. Expense ratio and turnover costs are higher for long-short funds.

I. Introduction

The poor performance of the stock market since March 2000 highlights the benefits of the “market neutral” strategy employed by many hedge funds. As a result an increasing number of traditional mutual funds began to seek greater flexibility from their investors to employ strategies that mimic those of their hedge fund competitors (Laise, 2006). New mutual funds recently launched specifically to replicate hedge fund methods prompted Morningstar to create a separate “long-short” category in 2006, which contained 51 funds in 2007 (after controlling for multiple classes of the same fund).

The category has existed long enough for an examination of the performance characteristics of the mutual funds employing hedge fund strategies listed in the long-short category and a comparison of the performance of these funds to mutual funds that are similar based on the funds stated objective in their prospectus, the equity style box category created by Morningstar, and size as measured by total assets.

Results indicate mutual funds employing hedge fund strategies generate lower three-year returns, higher three-year alphas and lower Sharpe ratios than comparable funds. The long-short category has lower risk (beta and standard deviation) which improves its risk-adjusted performance (alpha and Sharpe). Lower R^2 and beta highlight the comparatively low correlation of long-short funds and their potential diversification benefits. Those benefits are offset by higher turnover rates and expense ratios than comparable funds.

II. Literature Review

This section discusses hedge fund characteristics and details the diverse types of strategies included under the long-short category of mutual funds. Following the rapid expansion in hedge fund investing during the nineties, a large volume of academic literature explored various aspects of the industry including performance, risk, risk-adjusted performance, and costs. The persistence of hedge fund performance is examined by Agarwal and Naik (2000) and Malkiel and Saha (2005). Survival rates of hedge funds are detailed by Brown, Goetzmann, and Park (2001) and Liang (2000). Our study builds on the literature that focuses on the risk-adjusted performance of hedge

fund strategies. Articles by Liang (1999) and Ackerman, McEnally, and Ravenscraft (1999) study the performance of hedge funds and compare that performance to mutual funds using data that ranged from 1988 to the late nineties. Liang finds that hedge funds do provide significant systematic risk reduction benefits, as evidenced by beta coefficients that were significantly below 1.0 when returns were regressed on the S&P 500 index. The funds did not completely neutralize market risk, however, as the betas were also significantly above zero. The study employs Sharpe ratios to compare the risk-adjusted performance of hedge funds with that of mutual funds for the period 1992-1996. The Sharpe ratio is defined as,

$$\frac{(R_i - R_{rf})}{\sigma_i},$$

where R_i is the return on the fund, R_{rf} is the risk-free return as measured by short-term treasury bills, and σ_i is the standard deviation of the fund's return. The results show that hedge funds outperformed mutual funds on a risk-adjusted basis, with hedge funds producing an average Sharpe ratio of 0.44 compared with 0.26 for the mutual funds. This difference was significant at the 1 percent level. Ackerman et al. find similar results using 2-, 4-, 6-, and 8-year samples all ending in December 1995. The average Sharpe ratio for hedge funds is 21 percent higher than that for comparable mutual funds. Our study employs the Sharpe ratio to assess whether the long-short category of mutual funds has produced similar risk-adjusted performance.

We also use Jensen's alpha (α) as a risk-adjusted performance measure controlling for the fund's systematic risk, as estimated by the following regression of excess fund return on expected return given the risk premium of the benchmark index, $(R_m - R_{rf})$, and the fund's estimated Beta (β):

$$R_i - R_{rf} = \alpha + \beta(R_m - R_{rf}).$$

Beta (versus standard deviation) measures the risk contribution to a diversified portfolio of assets and long-short portfolios are seldom, if ever, recommended as a large percentage of an investor's portfolio. Thus, alpha is an appropriate risk-adjusted performance measure for the long-short category.

The long-short category broadly defines a diverse set of strategies that seek to neutralize the effect of the direction of the overall stock market on portfolio returns. The most common of these strategies are characterized as "market neutral" and "equity variable long-short". The market neutral approach utilizes long and short positions of roughly equal value to neutralize the impact of the overall market direction. As such, a key selling point of long-short funds is their ability to provide returns that exhibit substantially lower correlation with the broad market, greatly reducing portfolio systematic risk and enhancing measures of risk-adjusted performance. In addition to offering risk reduction benefits, the manager seeks to purchase undervalued shares and short overvalued shares with similar market correlations, thus providing the opportunity to earn strong returns in both up and down markets. Alternatively, a more conservative strategy is to short a market index rather than attempting to identify specific overvalued securities for short sale. The equity variable long-short strategy also uses short sales to enhance returns. However,

unlike the market neutral approach, managers of these funds may move from a net long or short position to take advantage of their expectation for the direction of the market.

Other funds categorized by Morningstar as long-short utilize other popular hedge fund strategies. For example, in merger risk arbitrage, the manager may go long the stock of the target firm and short the stock of the acquiring firm, with a larger position in the target if the manager believes the deal is likely to be consummated. Distressed debt and equity investing is another example of an event-driven strategy that may be included in long-short investing, where managers attempt to take advantage of market imperfections that require the sale of these securities by certain institutional investors. Global macro investing involves taking long and short positions in various asset classes including stocks, bonds, currencies, commodities and their derivatives, with an emphasis on relative valuation across national economies and markets. While relatively new, the long-short category encompasses a variety of investment strategies and techniques (Norton, 2008).

The alternative strategies involved in long-short investing also result in differences in fund structure and costs. The methods described above employ transactions that are usually limited by mutual fund bylaws. These include the use of short sales, leverage, and derivative contracts on equities, debt, currencies and commodities. These funds may also invest in illiquid securities. Existing funds seek approval from their investors to allow managers to more fully utilize these techniques. Long-short strategies may also result in significantly higher costs to investors. Maintaining the market hedge can require higher portfolio turnover, resulting in increased trading costs and taxes. In addition, these funds typically have higher expense ratios associated with their more aggressive management style (Kinnel, 2003). Similarly, hedge funds are often cited for high costs for their investors (Cassidy, 2007).

III. Data and Methodology

Morningstar created a separate long-short category in its Principia database in 2006. The category contained 51 funds in 2007 after controlling for multiple share classes of the same fund (A shares are employed when available). Twenty-five of the 51 funds had at least three years of return data and those 25 funds make up the long-short portfolio. The performance characteristics evaluated include three-year total return, three year alpha, Sharpe ratio, three-year beta, three year R^2 , three year standard deviation, turnover ratio, and the audited expense ratio (see http://search.morningstar.com/Glossary/Glossary_Q_S.html for a description of all the statistics). All data is taken from the Morningstar Principia database with data updated through January 31, 2008.

To find comparable mutual fund portfolios the Principia database was searched using three criteria that matched funds in the long-short portfolio: prospectus objective, equity style box, and size by total assets. Each fund in the long-short category was matched with three funds selected as comparable based on the above criteria. One of the comparables for each fund was randomly selected without replacement for inclusion in a portfolio and three comparable portfolios of 25 funds each were constructed. The risk and return measures for all four portfolios are calculated on an equally weighted basis. Results detail the statistics cited above for the long-short portfolio, the three comparison portfolios, and an aggregate comparison portfolio

composed of the entire comparison sample (75 funds). This allows for analysis of the variability inherent in the comparison sampling process.

IV. Analysis and Results

Table I presents the data for eight measures used to compare long-short mutual funds with hedge fund characteristics, parsed by the 25 fund sample of long-short funds, the three 25 fund comparison mutual fund samples, and an aggregate sample of all 75 comparison funds. Performance measures (three-year returns, alpha and Sharpe) indicate that the long-short mutual funds have a lower three-year return (5.75% versus 7.47%, 7.39% and 7.6%) and lower Sharpe (.14 versus .32, .35 and .36) but a higher alpha (.41% versus -.48%, -.43% and -.04%). Alpha is a risk-adjusted performance measure that uses beta as a risk measure, thus it's best used when the mutual fund is expected to be a smaller percentage of an investor's diversified portfolio. Since the Sharpe uses standard deviation as its risk measure, it is more applicable when the mutual fund is expected to be a larger percentage of an investor's portfolio. Because no reputable financial advisor would recommend that long-short mutual funds be held as a large percentage of an investor's portfolio, alpha is the more appropriate risk-adjusted performance measure for this category. Taken together, performance results show that the lower three-year return for the long-short category is more than compensated for by a lower beta (see below) and that the long-short category is a reasonable investment as a portfolio diversifier, held as a smaller percentage of an investor's portfolio.

Correlation and risk measures in Table I (R^2 , beta and standard deviation) also highlight the role of the long-short category in reducing overall portfolio risk. R^2 , the coefficient of determination, measures the percentage of the change in the mutual fund that can be explained by changes in the S&P500 stock market index, so lower R^2 s indicate lower correlation with the overall stock market. The long-short category R^2 , 31%, is much lower than all of the comparison sample R^2 s (74.6%, 75% and 77%). The average standard deviation of the long-short category is also lower than the three comparison samples (6.3% versus 10.3%, 10.26% and 10.3). Beta measures the contribution to the risk of a well-diversified portfolio and the average beta is one by definition. Most telling, the long-short category beta (.34 versus 1.09, 1.06 and 1.07) indicates that the long-short category has much less than average risk when held as a smaller percentage of a diversified portfolio.

Table I also details cost comparisons for the long-short category versus the three comparison portfolios. Turnover represents the total amount of buy/sell transactions compared to the total assets held by a fund and thus proxies for transactions costs incurred by fund investors. The long-short category turnover, 280%, is considerably higher than the three comparison samples (78%, 83% and 72%). The audited expense ratio contains all the year-by-year charges as a percentage of total assets, including the 12b-1 and management fees. The long-short category expense ratio of 1.95% is higher than each of the three comparison samples (1.21%, 1.27% and 1.17%). Results also show average load/deferred load for long-short category is .90/.43. By comparison, the large blend category is .76/.57, midcap blend .76/.50, and small blend .72/.46. There is some evidence that long-short funds have relatively higher front loads and smaller deferred loads. Overall, this evidence shows that the high cost of hedge fund investments is mirrored in the long-short mutual fund category.

ANOVA tests show that the long-short sample mean was significantly different from the three comparison portfolios at the .01 level for beta, R^2 , and standard deviation (all lower than the comparison portfolios), and audited expenses and turnover (higher). The three-year return, alpha and Sharpe were not significantly different. Overall, results show that long-short category returns are slightly below comparison funds, a fact mitigated by the lower risk and correlation of the category, especially when these funds are held as a smaller percentage of a diversified portfolio. The cost of this portfolio diversification is higher average turnover charges and expense ratio.

Table II presents year-by-year total returns from 1998-2007 for the long-short category, big stock (S&P500) and small stock (Russell 2000) market indexes, and selected Morningstar mutual fund categories (the same 3 X 3 matrix discussed above). Its results are highlighted by the long-short category's lowest annual standard deviation (8.9%) and low downside potential (only one negative year, -1.5% in 2002). So even though the long-short category mean return of 8.8% is middling compared to other table categories, its coefficient of variation, a measure of variability around the mean, is lowest of all by a healthy margin. Overall, the purported lower risk of hedge fund returns seems to be emulated in the long-short category over the longer ten year period (versus three years for Table I).

V. Conclusion

In recent years a number of mutual funds have been developed that attempt to mimic the strategies employed by hedge funds. Like hedge funds, these long-short mutual funds seek to provide their investors enhanced risk-adjusted returns, typically by taking short positions against the overall market. The market for long-short mutual funds has only recently matured to a point where their costs and benefits can be quantified.

Our results indicate that long-short funds deliver higher-risk adjusted returns than similarly positioned traditional mutual funds, especially when the funds are held as a smaller percentage of an investor's diversified portfolio. While these funds generated slightly lower three-year returns, their lower beta more than compensated for the lower returns, as evidenced by a higher alpha for the period. The risk reduction benefits are also evidenced by an R^2 statistic that was less than half that of the comparison portfolios and a portfolio standard deviation that was about 40% lower. However, long-short category diversification benefits do not come cheap as turnover and the expense ratio are significantly higher. Taken together, the results indicate that, as a group, funds in the long-short category generally share the risk, risk-adjusted performance, and cost characteristics of the hedge funds that they are purported to mimic. The findings suggest that for those investors seeking portfolio diversification but lacking access to hedge funds, long-short mutual funds may offer a useful alternative.

Table I
Descriptive Statistics for Performance, Correlation, Risk and Cost for Long-Short Category Mutual Funds and Three Comparison Samples

Data as of December 31, 2007. The long-short sample includes the 25 Morningstar Long-Short Category mutual funds with data for the three-year period used to calculate the statistics, after controlling for multiple share classes. The three comparison samples were chosen randomly based on matching prospective objective, equity style box, and fund total assets for each long-short fund as described in the text. Using three samples gives an indication of the volatility inherent in the sampling procedure. The aggregate comparison sample simply sums the three comparison samples. Alpha, beta, and R^2 calculated versus the S&P500.

* Indicates ANOVA test shows the comparison sample mean is significantly different from long-short category mean at the 1% level. The long-short sample mean was significantly different from the three comparison portfolios at the .01 level for beta, R^2 , and standard deviation (all lower than the comparison portfolios), and audited expenses and turnover (higher).

Total Return

Sample Description	N	Mean %	Standard Deviation %	Maximum %	Minimum %
Long-Short Sample	25	5.75	3.65	12.83	-3.35
Comparison Sample 1	25	7.47	4.38	23.32	1.32
Comparison Sample 2	25	7.39	2.93	13.75	3.45
Comparison Sample 3	25	7.60	2.29	11.81	3.32
Aggregate Comparison	75	7.49	3.27	23.32	1.32

Alpha

Sample Description	N	Mean %	Standard Deviation %	Maximum %	Minimum %
Long-Short Sample	25	.41	3.53	8.61	-7.75
Comparison Sample 1	25	-.48	3.07	6.18	-6.76
Comparison Sample 2	25	-.43	2.55	5.12	-3.99
Comparison Sample 3	25	-.04	1.96	3.44	-4.43
Aggregate Comparison	75	-.31	2.56	6.18	-6.76

Sharpe Ratio

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	.1408	.63197	1.08	-1.98
Comparison Sample 1	25	.3252	.30071	1.18	-.18
Comparison Sample 2	25	.3500	.30369	1.26	-.04
Comparison Sample 3	25	.3568	.21326	.77	-.04
Aggregate Comparison	75	.3440	.27235	1.26	-.18

Beta*

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	.3448	.3635	1.23	-.27
Comparison Sample 1	25	1.0960	.2481	1.50	.40
Comparison Sample 2	25	1.0576	.2887	1.47	.21
Comparison Sample 3	25	1.0660	.2218	1.67	.66
Aggregate Comparison	75	1.0732	.2514	1.67	.21

R² *

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	31.08	27.58	80	0
Comparison Sample 1	25	74.56	16.17	93	32
Comparison Sample 2	25	74.96	16.14	98	27
Comparison Sample 3	25	77.48	12.19	100	53
Aggregate Comparison	75	75.67	14.80	100	0

Standard Deviation *

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	6.325	2.922	14.80	3.00
Comparison Sample 1	25	10.276	3.313	16.45	3.20
Comparison Sample 2	25	10.262	2.835	14.55	2.62
Comparison Sample 3	25	10.259	2.993	17.59	4.45
Aggregate Comparison	75	10.266	3.012	17.59	2.62

Turnover *

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	280.22	417.18	2110	3
Comparison Sample 1	25	78.32	62.94	224	1
Comparison Sample 2	25	83.13	67.44	315	7
Comparison Sample 3	25	71.76	65.51	233	5
Aggregate Comparison	75	77.66	64.56	315	1

Audited Expense Ratio *

Sample Description	N	Mean	Standard Deviation	Maximum	Minimum
Long-Short Sample	25	1.956	.782	3.999	.95
Comparison Sample 1	25	1.209	.637	3.490	.68
Comparison Sample 2	25	1.270	.440	1.800	.14
Comparison Sample 3	25	1.174	.413	2.350	.25
Aggregate Comparison	75	1.217	.502	3.490	.14

Table II
Year-by-Year Total Return Comparison by Category*

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean	Ann. Std. Dev.	Coeff. of Var.
	%	%	%	%	%	%	%	%	%	%	%	%	%
Morningstar Long-Short Category	20.1	27.1	3.5	1.6	-1.5	13.7	6.9	4.7	8.0	4.4	8.8	8.9	1.00
Number of long-short funds ex multi-share classes	6.0	11.0	12.0	16.0	17.0	21.0	24.0	25.0	33.0	47.0			
S&P 500 TR	28.6	21.0	-9.1	-11.9	-22.1	28.7	10.9	4.9	15.8	5.5	7.2	17.3	2.39
Russell 2000 TR	-2.6	21.3	-3.0	2.5	-20.5	47.3	18.3	4.6	18.4	-1.6	8.5	18.6	2.20
MSCI World Ex US LCL	10.1	32.1	-7.8	-17.5	-26.9	17.8	10.3	25.8	13.9	1.7	6.0	18.7	3.14
Morningstar Large Core TR	23.2	17.8	4.2	-14.4	-23.8	24.7	14.0	3.8	15.5	8.7	7.4	15.8	2.14
Morningstar Large Growth TR	51.2	42.6	-33.5	-29.1	-33.2	30.7	0.2	3.4	5.7	12.3	5.0	30.5	6.06
Morningstar Large Value TR	17.9	0.6	5.7	-3.4	-15.1	26.3	14.1	7.1	25.8	-0.4	7.8	13.2	1.69
Morningstar Mid Core TR	2.9	1.9	14.8	6.1	-12.4	38.7	19.1	10.1	14.7	2.0	9.8	13.5	1.39
Morningstar Mid Growth TR	9.5	52.5	-11.1	-21.6	-32.5	40.0	15.5	16.3	9.6	19.7	9.8	26.1	2.67
Morningstar Mid Value TR	5.9	-6.8	24.6	5.1	-10.0	35.9	24.3	11.5	18.8	-5.5	10.4	15.4	1.48
Morningstar Small Core TR	-7.6	16.7	23.2	14.6	-14.2	42.6	23.6	6.3	21.2	-5.4	12.1	17.4	1.43
Morningstar Small Growth TR	-6.6	46.8	-12.1	-12.9	-36.9	52.7	13.5	5.8	10.0	11.1	7.1	27.1	3.80
Morningstar Small Value TR	-3.7	-5.2	18.7	18.6	-8.2	48.9	24.0	5.1	20.0	-8.2	11.0	18.4	1.67

* From Morningstar Principia Pro database, as of January 31, 2008.

Coefficient of variation = standard deviation/mean

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