2009 Update to "An Examination of Fund Age and Size and Its Impact on Hedge Fund Performance"

Meredith Jones, Managing Director, PerTrac Financial Solutions

Abstract

This short paper updates research originally published in the February 2007 issue of the investment journal *Derivatives Use, Trading & Regulation* (re-titled of as May 2007 to *Journal of Derivatives & Hedge Funds*) and the Spring 2009 *Journal of Investing*. The original papers and this update attempt to discover whether smaller, younger hedge funds offer stronger performance than larger, older hedge funds. Using indices created with six subsets of hedge fund data (small, medium, large, young, mid-age and older funds, as defined herein), and Monte Carlo simulations, we examine the performance, volatility and risk profiles of each fund group.

Introduction

In February 2007, the original paper *Examination of Fund Age and Size and Its Impact on Hedge Fund Performance* which appeared in the investment journal *Derivatives Use, Trading & Regulation* (re-titled of as May 2007 to *Journal of Derivatives & Hedge Funds*) found that smaller hedge funds outperform larger hedge funds and younger hedge funds outperform older ones. Research published in 2008 showed that the trend of emerging manager outperformance was continued through year-end 2007. In 2008, a difficult year for many hedge funds large and small, new and established, the trend of smaller funds outperforming larger funds reversed for the first time since this study and its underlying index numbers began, although young funds continued to outperform older funds as usual. This paper will examine the performance of the six original hedge fund data subsets through December 2009 to determine what performance trends emerged in 2009.

Performance by Size of Fund

As we did in the original studies, we created three size-based hedge fund indices by first combining the hedge fund performance records from the Hedge Fund Research, HedgeFund.net, Morningstar's Altvest and BarclayHedge Global databases into a single "master" database. Duplicate hedge fund records, as well as records for funds of funds, were removed. Reports were then run to find the monthly return and monthly fund size for each fund from January 1996 through December 2009. All funds were recatagorized each month based on its then-current fund size and divided into three classes: funds with less than or equal to $100M under management; funds with over $100M up to $500M under management; and funds with over $500M. A simple mean of all monthly returns in each of the three categories was calculated for each month. If a fund did not have a reported fund size denominated in US dollars in a given month, it was not included in any of the size-based indices for that month. The sample of funds included in each of the three indices varied from month to month. The small-size index contained, on average, 3,008 funds per month. The medium-size index contained, on average, 763 funds per month and the large-size index contained, on average, 240 funds per month. In all three cases, earlier monthly samples contained fewer funds than later samples. The three size-based indices that were created using this information are shown for the full period below in Figure 1, and by calendar years through December 2009 in Table 1.

Figure 1

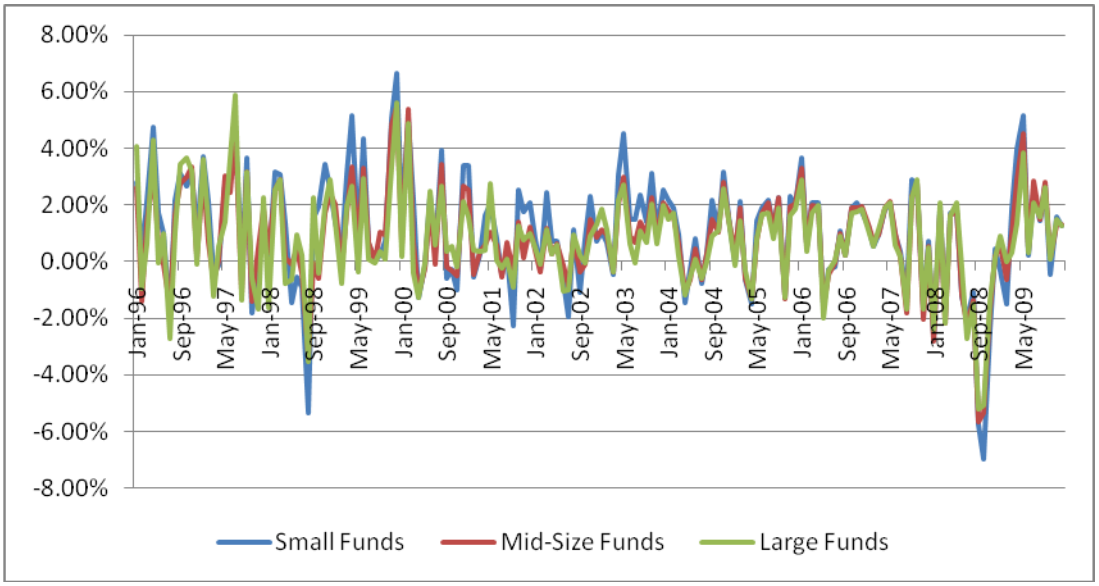


Table 1

	Small Funds	Medium Funds	Large Funds
1996	24.89%	16.62%	18.63%
1997	20.15%	17.17%	18.05%
1998	8.53%	5.92%	6.72%
1999	32.18%	26.54%	18.50%
2000	16.40%	12.85%	12.37%
2001	11.96%	7.34%	7.69%
2002	5.70%	3.92%	3.68%
2003	24.70%	17.13%	15.46%
2004	12.17%	9.44%	7.28%
2005	12.41%	11.32%	9.00%
2006	14.01%	13.24%	11.61%
2007	11.74%	10.27%	10.22%
2008	-17.03%	-16.04%	-14.10%
2009	19.78%	20.18%	17.00%

For only the second time in the history of these indices, smaller managers were not the top performers in 2009. Small managers underperformed their mid-sized hedge fund brethren last year, although the performance differential of less than 50 basis points is one of the closest calls in the history of the index. In 2009, the average return of small funds in the index was 19.78%, while the medium-sized and large funds returned 20.18% and 17.00%, respectively. The small managers outperformed both of the other groups four out of twelve months in 2009, while the mid-sized managers outperformed larger and smaller managers five out of twelve months.

There is likely no single reason why small managers underperformed mid-sized funds during this period. Some factors that likely contributed to the underperformance include:

- Continued flight to quality – Managers reported that raising money had become more difficult for small funds in the wake of the 2008 financial crisis.
- Infrastructure woes – Hedge fund infrastructures were hit hard during the events of the last 12 months. Investor inquiries, legal checks, prime broker switches, and other potential drains on infrastructure increased, while staffing in most cases did not. Larger funds often have more established infrastructure and were likely better equipped to handle the increased activity.
- Larger redemptions for poor performers – As in 2008, the worst-performing funds in any group would be expected to be hit with the largest redemptions and would, by definition, be the ones to lose the most money through trading. After several months of that, the worst-performing large funds would become mid-size funds and the worst-performing mid-size funds would become small funds. So, over time, the small fund index would collect more and more of the "loser" funds, bringing its performance down while leaving the larger two indices with a higher percentage of performing funds.

Despite the small degree of underperformance in 2009, the annualized return and annualized standard deviation over the full length of the study, from 1996 through 2009, continue to be greatest for the smallest funds, at 13.52% and 6.93%, respectively. The annualized returns were lowest for the largest funds, at 9.81%, and the standard deviation was lowest for the mid-sized funds at 5.88%.

Table 2

Annualized Risk Table	Small Funds	Mid-Sized Funds	Large Funds
Compound ROR	13.52%	10.69%	9.81%
Standard Deviation	6.93%	5.88%	5.94%
Semi Deviation	7.59%	6.06%	5.98%
Gain Deviation	4.47%	4.03%	4.21%
Loss Deviation	4.98%	4.20%	4.09%
Down Dev.(10.00%)	4.69%	4.17%	4.25%
Down Dev.(5.00%)	4.09%	3.54%	3.59%
Down Dev.(0%)	3.54%	2.98%	3.01%
Sharpe(5.00%)	1.17	0.93	0.79
Sortino(10.00%)	0.68	0.15	-0.04

Sortino(5.00%)	1.92	1.5	1.26
Sortino(0%)	3.6	3.42	3.12

Simulating Size Based Indices Forward

The pattern of smaller funds outperforming larger funds is repeated when examining Monte Carlo simulations performed on the created indices. The simulations were run five years forward, based on the full historical data of each index (January 1996 through December 2009), using the S&P 500 Index (Total Return) as the market benchmark, and a 5% risk-free rate of return and minimum acceptable return (MAR). Using a Bootstrap method, we ran 10,000 stimulations with quarterly rebalancing, which provided a minimum and maximum predicted return for each index. As shown below, the maximum simulated return for the large hedge fund index was 20.46%, while the medium hedge fund index showed a maximum simulated return of 21.30% and the small hedge fund index produced a maximum simulated return of 26.15%. The mean simulated annualized returns followed the same pattern: best for the small index, worst for the large index.

Table 3 - Small Fund Index Monte Carlo Simulation – Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	13.58%	-6.38%
Median	13.54%	-6.27%
Standard Deviation	3.50%	-2.80%
Maximum	26.15%	-21.66%
Minimum	-0.62%	-0.79%

Table 4 – Mid-Sized Fund Index Monte Carlo Simulation – Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	10.73%	-5.43%
Median	10.71%	-5.40%
Standard Deviation	2.92%	-2.39%
Maximum	21.30%	-20.08%
Minimum	-0.86%	-0.70%

Table 5 - Large Fund Index Monte Carlo Simulation – Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	9.84%	-5.55%
Median	9.82%	-5.23%
Standard Deviation	2.93%	-2.35%
Maximum	20.46%	-21.71%
Minimum	-1.44%	-0.80%

However, while the small fund index in the study produced, and had the potential to produce in the future, a higher annualized return, it also had a higher volatility profile than did the larger and medium-size indices. In Table 1 above, we have already noted that the smaller funds had the highest standard and downside deviation of the three fund groups. Using the same Monte Carlo simulation methods as above, we can extrapolate potential drawdowns for the three indices. The mean simulated maximum drawdown of the small fund index is -6.38%, while the medium-size fund index came in significantly lower at -5.43% and the large fund index fell in the middle with a mean simulated maximum drawdown of -5.55%.

Performance of Funds by Age

Similarly, we created three age-based indices from the same master hedge fund database referred to above, created from the Hedge Fund Research, HedgeFund.net, Morningstar's Altvest and BarclayHedge Global databases. Reports were then run to find the monthly return for each fund from January 1996 through December 2009. All funds were recatagorized each month based on its then-current fund age and divided into three classes: funds with less than a two year track record, funds with two to four years of performance, and funds with more than four years of performance. A simple mean of all monthly returns in each of the three categories was calculated for each month. The sample of funds included in each of the three indices varied from month to month. The young fund index contained, on average, 1,435 funds per month. The mid-age index contained, on average, 1,071 funds per month and the older fund index contained, on average, 1,760 funds per month. The indices that were created using this information are shown below in Figure 2, and calendar year performance through December 2009 is shown in Table 6.

Figure 2

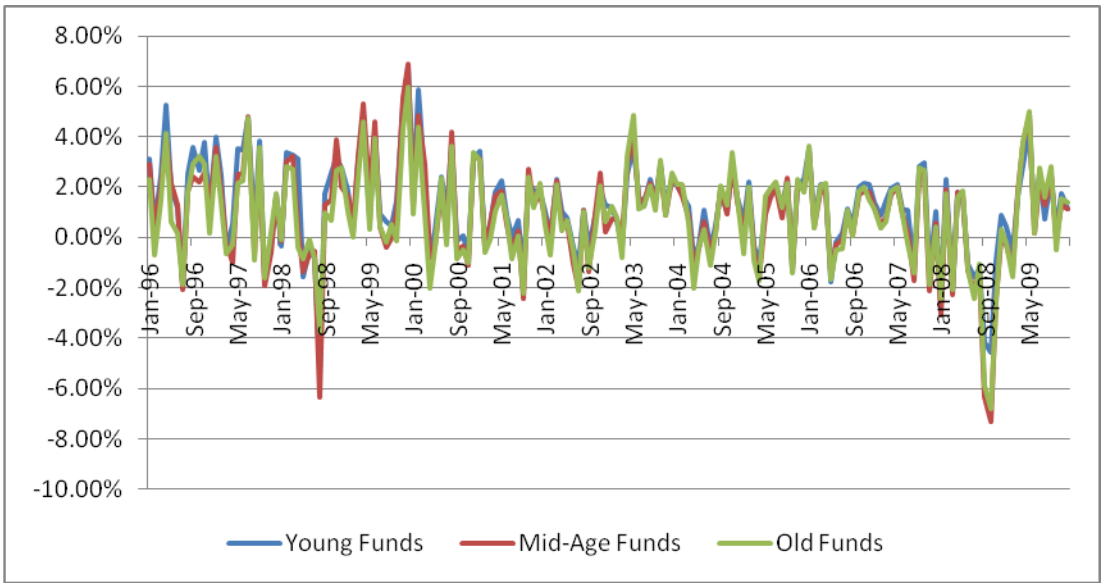


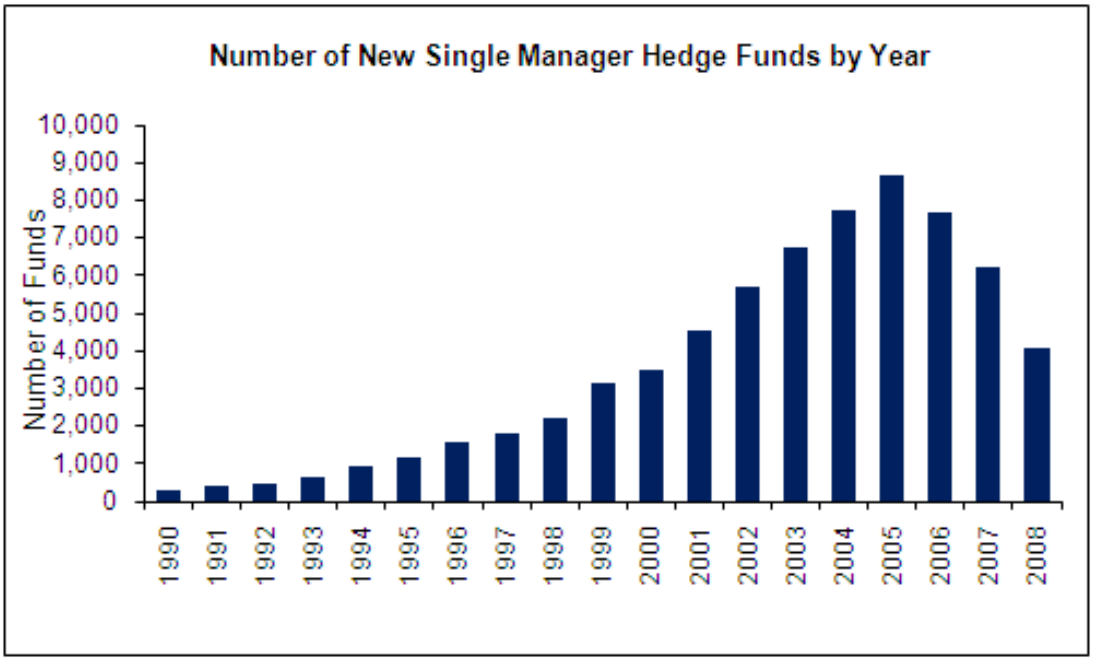
Table 6

	Young Funds	Mid-Age Funds	Older Funds
1996	29.14%	22.74%	18.28%
1997	24.17%	16.41%	16.92%
1998	11.61%	5.83%	6.60%
1999	34.54%	34.67%	25.26%
2000	20.44%	16.45%	10.80%
2001	14.27%	10.64%	8.72%
2002	8.63%	4.61%	2.80%
2003	22.77%	22.95%	23.33%
2004	12.76%	10.94%	10.35%
2005	14.10%	10.62%	10.87%
2006	15.29%	12.56%	12.71%
2007	15.02%	9.45%	9.53%
2008	-11.31%	-19.46%	-17.85%
2009	19.81%	18.65%	19.80%

In 2009, the youngest funds returned an average of 19.81%, while the mid-age and older funds gained an average of 18.65% and 19.80%, respectively. 2009 was the closest year for performance in the history of the study, with young funds outperforming older funds by only 1 basis point. The reasons for this drop in outperformance need to be further explored. However, perhaps the best reason is a marked decline in the number of new funds started in 2008 and early 2009 (Figure 3). The number of potential managers

choosing to sit out the market meltdown and wait for both a better trading and capital raising environment could have been a drain on overall performance. 2010 numbers will better tell the tale.

Figure 3



In Table 7, you can see on an annualized basis over the full 13-year period that the return of the young funds was 16.02%, while the mid-age and older funds produced an annualized return of 11.98% and 10.78%, respectively. It is interesting to note that the youngest funds index continues to exhibit the lowest volatility of the three groups, posting an annualized standard deviation of 6.35%. The mid-age index ranked worst of the three on volatility, with an annualized standard deviation of 7.03%, while the older funds ranked in the middle with an annualized standard deviation of 6.72%.

Table 7

Annualized Risk Table	Young Funds	Mid-Age Funds	Older Funds
Compound ROR	16.02%	11.98%	10.78%
Standard Deviation	6.35%	7.03%	6.72%
Semi Deviation	6.61%	7.67%	7.14%
Gain Deviation	4.41%	4.46%	4.38%

Loss Deviation	4.18%	5.48%	4.47%
Down Dev.(10.00%)	3.87%	5.01%	4.79%
Down Dev.(5.00%)	3.31%	4.41%	4.12%
Down Dev.(0%)	2.79%	3.87%	3.52%
Sharpe(5.00%)	1.62	0.96	0.84
Sortino(10.00%)	1.39	0.36	0.15
Sortino(5.00%)	3.04	1.47	1.31
Sortino(0%)	5.36	2.94	2.92

Simulating Age-Based Indices Forward

The pattern of younger funds outperforming older funds is repeated when examining Monte Carlo simulations performed on the created indices. As with the size-based indices, the simulations were run five years forward based on the full history of the indices from January 1996 through December 2009. The S&P 500 Index (Total Return) was again used as the market benchmark, with a 5% risk-free rate of return and minimum acceptable return (MAR). Using a Bootstrap method, we ran 10,000 stimulations with quarterly rebalancing, which provided a minimum and maximum simulated return for each index. As shown below, the maximum simulated return for the older hedge fund index was 22.02%, while the mid-age hedge fund index showed a maximum simulated return of 26.13% and the young hedge fund index produced a maximum simulated return of 27.19%. Mean simulated returns followed the same pattern.

Table 8 – Young Fund Index Monte Carlo Simulation– Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	16.07%	-4.83%
Median	16.01%	-4.66%
Standard Deviation	3.27%	-2.04%
Maximum	27.19%	-18.86%
Minimum	2.38%	-0.50%

Table 9– Mid-Age Fund Index Monte Carlo Simulation– Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	12.04%	-7.10%
Median	12.01%	-7.11%
Standard Deviation	3.50%	-3.17%
Maximum	26.13%	-25.42%
Minimum	-2.42%	-1.08%

Table 10– Older Fund Index Monte Carlo Simulation– Annualized Return and Maximum Drawdown

All Portfolio Statistics	Annualized Return	Maximum Drawdown
Number Simulations	10,000	10,000
Mean	10.84%	-6.58%
Median	10.81%	-6.43%
Standard Deviation	3.31%	-2.85%
Maximum	22.02%	-23.64%
Minimum	-2.00%	-1.04%

Using the same Monte Carlo simulation methods as above, we can extrapolate potential drawdowns for each group of funds. The simulated mean maximum drawdown of the young fund index is -4.83%, while the old fund index came in at -6.58% and the mid-age fund group posted a mean simulated maximum drawdown of -7.10%. Like the original study, the mid-age hedge fund index continues to display the highest simulated maximum drawdown of the group, at least suggesting that those funds exhibit somewhat of a "sophomore slump" before moving towards the more institutional profile of their older peers.

In the 2008 update published last year, and in contrast to the original study, older managers beat their younger peers with a smaller maximum simulated maximum drawdown. However, the 2009 study update shows a return to prior form, with the young managers displaying the lowest maximum simulated drawdown by more than four percentage points.

Conclusion

As in the original study, the updated analysis of hedge fund performance suggests that investors who wish to maximize return should start their search by looking for younger funds. With the small fund deviation from the historical performance pattern, however, further research will be necessary to determine if 2008's underperformance by smaller managers is an anomaly or the beginning of a trend.

About the Author

Meredith A. Jones is a Managing Director at PerTrac Financial Solutions, a software company founded in 1996 whose mission is to provide analytic and workflow solutions for investment professionals. She is responsible for researching, speaking and writing about alternative and traditional investments as well as developing and implementing marketing initiatives and strategic partnerships for PFS. She has written articles for a number of financial publications, including the *Journal of the Alternative Investment Management Association, Alternative Investment Quarterly*, the Investment Management Consultants Association's *Monitor* and the Managed Funds Association *Reporter*. Her research has appeared in the *Wall Street Journal*, *Bloomberg Wealth Manager*, *Hedge Fund Alert*, *Infovest 21* and other publications.

Prior to joining PFS, Ms. Jones was Vice President and Director of Research for Van Hedge Fund Advisors International, Inc., a global hedge fund consultant with $500 million under management. There, she led a staff of ten research analysts in manager selection, evaluation and ongoing monitoring. Ms. Jones conducted quantitative and qualitative due diligence, onsite visits and portfolio construction, as well as a number of other research functions.