A network diagram consisting of several blue circles of varying sizes connected by dashed blue lines. The circles are arranged in a roughly triangular shape, with a larger central cluster and smaller clusters at the top and bottom right. A single circle is connected to the central cluster from the bottom left.

Impact of Size and Age on Hedge Fund Performance: 1996 - 2011

6th Annual Update

OCTOBER 2012

A decorative background pattern of light gray dots of varying sizes, arranged in a grid-like fashion with some dots missing or faded, creating a textured effect.

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OVERVIEW

Impact of Size and Age on Hedge Fund Performance: 1996 - 2011 is the sixth annual version of PerTrac's analysis of the performance trends for funds of different sizes and ages. This study provides the most recent full-year data on hedge fund performance along with information dating back to January 1996 for historical and directional consideration.

For consistency with previous versions of the study, the analysis herein defines a fund as "small" if its assets under management (AUM) are less than \$100 million, "mid-size" if assets are between \$100 and \$500 million, and "large" if assets managed exceed \$500 million. A fund is defined as "young" if its start date was within the last two years, "mid-age" if it commenced within the last two to four years, and "tenured" if has been operating beyond four years.

HIGHLIGHTS FOR FULL-YEAR 2011

By Size

- The 2011 annual returns of all three hedge fund size categories were negative. The average large fund declined least, dipping 2.63%, compared to the average small fund's 2.78% and average mid-size fund's 2.95% slides.
- The average large fund outperformed the average small fund in 7 out of 12 months and the average mid-size fund in 8 out of 12.
- The majority of the universe was comprised of funds with less than \$100 million AUM. On average in 2011, small funds comprised 71.6% of a month's universe, mid-size funds 19.6%, and large funds 8.8%. The average monthly number of small funds was 5,953, mid-size 1,632, and large 734 in 2011.

By Age

- The 2011 annual returns of all three hedge fund age categories were negative. The average young fund declined by 2.18%, the least when compared to the 2.93% loss posted by the average mid-age fund and the 4.99% drop by the average tenured fund.
- The average young fund outperformed the average mid-age fund in 6 out of 12 months and the average tenured funds in 8 out of 12.
- The majority of the universe was comprised of funds which were more than four years old. On average in 2011, young funds comprised 30.9% of a month's universe, mid-age funds 23.7%, and tenured funds 45.4%. The average monthly number of young funds was 3,353, mid-age 2,566, and tenured 4,914.

TRENDS DURING 1996 - 2011

By Size

- The average small fund outperformed the average mid-size fund and average large fund in every year except for 2008, 2009, and 2011.
- The average large fund outperformed the average mid-size fund and average small fund in the negative performance years of 2008 and 2011.
- Since 1996, the cumulative return for the average small fund has been 558%, mid-size 356%, and large 307%. The annualized compound ROR for the average small fund is 12.50%, for mid-size 9.95%, and for large 9.16%. The annualized standard deviation for the average small fund is 6.92%, for mid-size 5.94%, and for large 5.95%.
- The average small fund and average large fund have had 135 positive and 57 negative months since 1996, while the average mid-size fund has had 136 positive and 56 negative months.
- The average mid-size fund was the worst performer in 2011. However, the average mid-size fund has outperformed the average large fund in 10 out of 16 years since 1996, and all but two of the years since 2002.

By Age

- The average young fund has outperformed the average mid-age and average tenured fund in 14 out of 16 years since 1996, including every year after 2003.
- Since 1996, the cumulative return for the average young fund has been 827%, mid-age 446%, and tenured 350%. The annualized compound ROR for the average young fund is 14.93%, for mid-age 11.19%, and for tenured 9.85%. The annualized standard deviation for the average young fund is 6.37%, for mid-age 6.99%, and for tenured 6.80%.
- The average young fund has had 144 positive and 48 negative months since 1996, the mid-age has had 136 positive and 56 negative, and the tenured has had 129 positive and 63 negative.
- The average mid-age fund has outperformed the average tenured fund in 9 out of 16 years since 1996.

METHODOLOGY

Fifteen leading global databases, derived from eight different data providers, were included in this study:

- BarclayHedge, LTD (Barclay CTA, Barclay Global, and Barclay Graveyard Databases);
- Channel Capital Group Inc. (HFN Global Database);
- Cogent Investment Research, LLC (CogentHedge Database);
- EurekaHedge Pte Ltd. (Global Hedge Fund Database, which includes dead fund records);
- Hedge Fund Research, Inc. (HFR Global and HFR Graveyard Databases);
- Lipper, A Thomson Reuters Company (Tass Live Hedge Funds, Tass Graveyard Hedge Funds, Tass Live CTA, and Tass Graveyard CTA Databases);
- MondoHedge S.p.A (Premium Package Database – Italian and Swiss HF, Offshore Funds, Eurizon Indices);
- Morningstar, Inc. (Global Active Hedge Fund and Global Dead Hedge Fund Databases).

Since many of these databases contain records on the same share-classes, combining the databases introduces duplicate data. In order to accurately assess the impact of size and age on hedge fund performance it was necessary to scrub the data. We began by removing the records for funds of hedge funds and indices. Next, duplicate records for hedge funds were removed based on the analytical and statistical structure of PerTrac ID, which is included in PerTrac Analytics. A single instance of hedge fund records was retained in our study to create a holistic industry list.

We then identified, where applicable, the fund-level data, because funds typically report their information to databases at the share-class level to account for variations in fee structures, minimum investment limits, currencies, redemption periods, etc., for each share-class.

IMPACT OF SIZE ON HEDGE FUND PERFORMANCE

Constructing the Size Universes

For the *Impact of Size on Hedge Fund Performance* section of the study, the key statistic examined was the AUM for each of the baseline share-classes. The PerTrac ID de-duplication tool was the proper starting point for removing performance biases associated with double-counts; however, manual exception reporting of the AUM data was necessary because a number of funds reported their asset data by repeating the same total AUM across all records, irrespective of the various fund share-classes. In other words, a substantial number of funds did not distinguish their AUM at the share-class level from the AUM at their overall fund-level.

To cleanse duplicate AUM data, we began by removing all share-classes without reported AUM data in a given month. Next we identified and removed share-classes from the same fund with identical reported AUM data and removed these matching instances. The AUMs of the remaining share-classes were then converted into U.S. Dollars, using the month-end conversion rate for that specific month, and share-classes from the same fund with identical converted AUM data across were then removed. Lastly, we used correlation analysis of performance returns to refine the fund-level roll-up of investments. Aggregating the converted AUMs of share-classes into one master, fund-level investment mitigates the potential of inflating or deflating average performance return figures arising from multiple instances of share-classes with near-identical performance returns.

This entire process was repeated for each individual month in 2011, and it explains why the total number of funds by age fluctuated throughout the year.

The remaining fund-level investments were then classified and re-classified on a monthly basis based on their then-current AUM size into one of the three following categories:

- Small: Less than \$100 million in AUM*
- Mid-Size: \$100 million in AUM to \$500 million in AUM*
- Large: Greater than \$500 million in AUM*

This re-classification system explains why the monthly number of funds by size fluctuated. For the *Impact of Size on Hedge Fund Performance* section, all monthly averages were calculated on an equal-weighted basis.

Number of Funds by Size

Figure 1 below presents the number of funds in each size category along with the average of their monthly totals. Values fluctuated because, (1) funds were re-categorized each month based on their then-current AUM size, (2) funds may have closed or ceased reporting data, and/or (3) new funds may have begun reporting.

Figure 1: Number of Funds by Size in 2011

Month	Small	Mid-Size	Large	TOTAL
January	5,602	1,629	685	7,916
February	5,694	1,610	700	8,004
March	5,709	1,612	717	8,038
April	5,928	1,682	764	8,374
May	6,028	1,660	738	8,426
June	6,027	1,685	770	8,482
July	6,008	1,678	767	8,453
August	6,088	1,645	768	8,501
September	6,165	1,600	710	8,475
October	6,065	1,610	754	8,429
November	6,023	1,586	716	8,325
December	6,100	1,592	723	8,415
Average	5,953	1,632	734	8,319

PerTrac 2012

Consistent with previous *Impact of Size and Age on Hedge Fund Performance* studies, the average monthly number of funds was the largest among small funds, at 5,953. The average of mid-size funds was second highest at 1,632, followed by the 734 average of the large funds. The data shows that, on average, only 8.8% of funds—or, about one in eleven in our universe—managed over \$500 million in a given month. Although relatively small in the number of funds they represented, the monthly average AUMs of the large funds dwarfed those in the small and mid-size categories. Figure 2 on the following page shows the monthly average AUMs of funds based on their respective size tiers.

Figure 2: Monthly Average AUMs by Fund Size in 2011

Month	Small	Mid-Size	Large
January	\$24,738,517	\$224,362,648	\$2,327,271,232
February	\$24,929,878	\$226,423,821	\$2,221,713,044
March	\$24,850,979	\$227,243,054	\$2,335,741,991
April	\$24,765,558	\$225,005,924	\$2,250,958,264
May	\$24,489,090	\$225,531,978	\$2,153,563,409
June	\$24,585,140	\$225,349,278	\$2,335,238,084
July	\$24,447,306	\$225,662,624	\$2,238,525,842
August	\$24,092,253	\$226,068,851	\$2,195,739,556
September	\$23,606,257	\$227,146,591	\$2,357,383,169
October	\$23,860,811	\$224,157,193	\$2,181,319,150
November	\$23,548,481	\$227,055,214	\$2,196,391,511
December	\$23,647,997	\$227,202,888	\$2,320,918,308

Source: PerTrac 2012

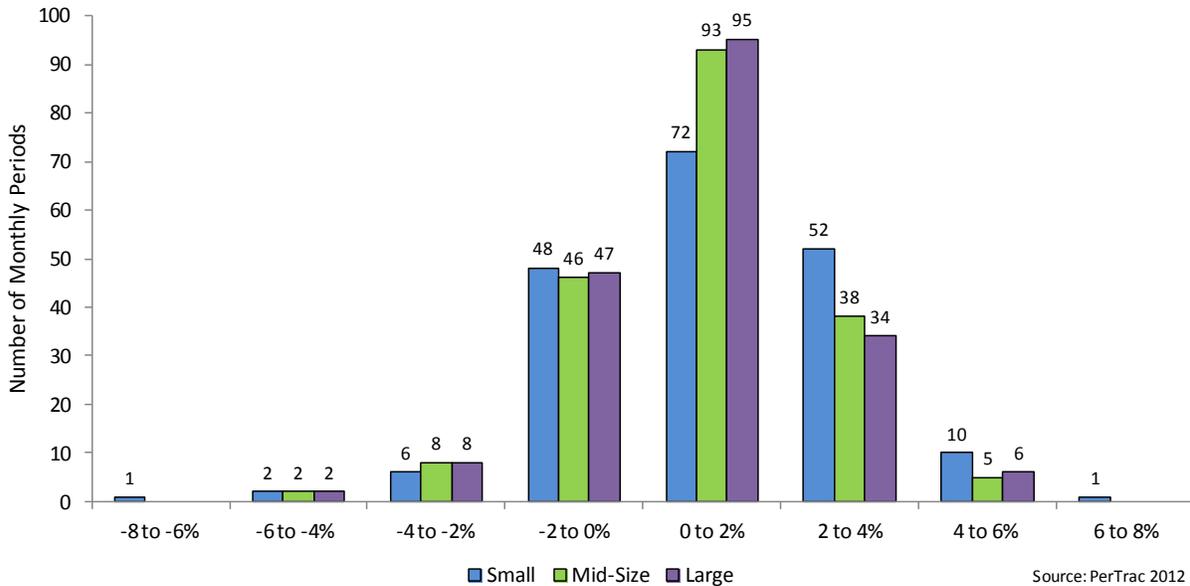
As shown, the monthly average AUMs of large funds were consistently above \$2.1 billion throughout 2011, while the averages of mid-size funds remained near \$225 million and that of the small around \$24 million. In other words, an average large fund's AUM was close to 10 times bigger than an average mid-size fund's AUM and roughly 90 times that of the average small fund.

In 2011, the largest monthly average AUM for small funds was \$24,929,878 (February), for mid-size funds \$227,243,054 (March), and for large funds \$2,357,383,169 (September).

Distribution of Monthly Returns by Size

Historically, a larger AUM has been associated with less robust performance. Figure 3 below exhibits the distribution of average monthly returns for funds according to their AUM size from January 1996 to December 2011. *The distribution chart reveals that the average small fund has outpaced the other sized funds in the number of months in which it has returned beyond 2%.*

Figure 3: Distribution of Average Monthly Returns by Fund Size from January 1996 to December 2011



The distribution chart above shows that the average small fund was able to generate positive returns of 2% to 4% in 52 months, which was 14 more periods than the average mid-size fund and 18 more period than the average large fund accomplished. The average small fund also generated returns of 4% to 6% in 10 months, compared to 5 months for average mid-size fund and 6 months for the average large fund. The average small fund was the only one of the size segments that generated returns in the 6% to 8% range; in December 1999, the average small fund returned 6.66%.

In 2011, the distribution of returns for the average small fund and average mid-size fund were equally split between six positive and six negative months. Compared to these size segments, the average large fund generated one additional month of positive performance.

Annual Performance Returns by Size

Since 1996, the higher amount of positive average monthly returns for the average small fund has, in general, meant that these funds have outperformed the average mid-size and average large funds in annual figures. Figure 4 below displays the annual returns for funds based on their AUM size, showing that *the average small fund has ended on top in 13 of 16 years since 1996*. Each annual return is the cumulative total of the average monthly performance for each size category within that year.

Figure 4: Annual Performance by Fund Size from January 1996 to December 2011

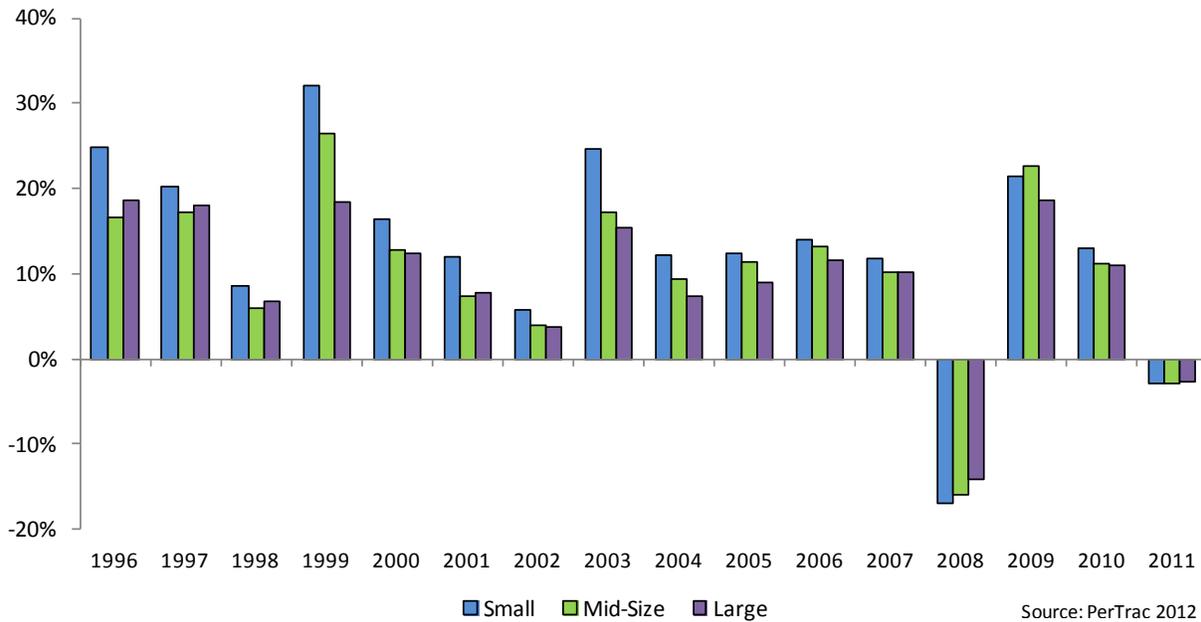


Figure 5 below provides the annual performance returns of the above chart.

Figure 5: Annual Performance Returns by Fund Size from January 1996 to December 2011

Year	Small	Mid-Size	Large
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	21.50%	22.61%	18.72%
2010	13.04%	11.14%	10.99%
2011	-2.78%	-2.95%	-2.63%

Source: PerTrac 2012

It is interesting to note that, *in the negative performance years of 2008 and 2011, the average large fund outperformed the average small fund. The average large fund might not have generated the same robust annual performance figures as the average small fund since 1996, but the large fund's returns have been more consistent and its losses less severe*

Figure 3, shown previously, displayed that the distribution of average monthly returns for the average large fund has been overwhelmingly concentrated within the 0% to 2% range, which is the range in which the majority of average monthly returns have fallen for all fund sizes. Figure 3 presented the consistency in returns of the average large fund by showing that 49.48% (95 out of 192 months) of the average large fund's returns have fallen within the 0% to 2% range, while this value for the average small fund is only 37.50% (72 out of 192 months).

Annualized Performance and Volatility Statistics by Size

An aggregation and analysis of the average small, mid-size, and large funds' returns will provide a more complete picture of their annualized volatilities. Figure 6 below presents some annualized performance and volatility measures for funds based on their AUM size since 1996.

Figure 6: Annualized Performance and Volatility Measures by Fund Size from January 1996 to December 2011

Annualized Statistics	Small	Mid-Size	Large
Compound ROR	12.50%	9.95%	9.16%
Standard Deviation	6.92%	5.94%	5.95%
Semi Deviation	7.39%	6.05%	5.96%
Gain Deviation	4.52%	4.07%	4.18%
Loss Deviation	4.75%	4.07%	4.00%
Down Deviation (10%)	4.75%	4.28%	4.35%
Down Deviation (5%)	4.12%	3.63%	3.67%
Down Deviation (0%)	3.55%	3.04%	3.07%
Sharpe (5%)	1.04	0.81	0.69
Sortino (10%)	0.48	-0.01	-0.18
Sortino (5%)	1.69	1.28	1.07
Sortino (0%)	3.34	3.13	2.86

Source: PerTrac 2012

The Compound ROR is the monthly return required for each period so that, when accumulated, it will match the figure for the final compounded performance return at the end of all periods. In the figure above, Compound ROR is annualized along with the risk statistics, and a 5% risk-free rate is used in keeping with previous version of the study.

Statistically:

- Standard Deviation measures the volatility of returns from its mean;
- Semi Deviation measures the volatility of returns below the mean;
- Gain Deviation measures the volatility of returns from its mean only during periods of a gain, and Loss Deviation is the inverse;
- Downside Deviation measures the potential loss that may arise from risk as measured against a Minimum Acceptable Return (MAR), which is offered here at 10%, 5%, and 0%;
- The Sharpe Ratio measures the risk-adjusted return in order to determine reward per unit of risk. The higher the Sharpe Ratio the better is the historical risk-adjusted performance;
- The Sortino Ratio is an adjustment on the Sharpe Ratio that measures downside volatility as expressed by subtracting the risk-free rate of return or the MAR from the mean annual return of the portfolio, and then dividing by the downside deviation.

The data in Figure 6 shows that, from 1996 to 2011, the average small fund has provided the greatest Compound ROR, at 12.50%, versus the average mid-size fund's 9.95%, and the average large fund's 9.16%. The average small fund also generated the most return per unit of risk based on its Sharpe ratio of 1.04 and Sortino ratio of 1.69 (both at 5% risk-free rates). In comparison to last year's annualized performance measures, which looked at historical data only from 1996 to 2010, the inclusion of the 2011 data decreased the Compound ROR, Sharpe ratio, and Sortino ratio values for the average small, mid-size, and large funds.

The data in Figure 6 displays that the average mid-size fund and average large fund have exhibited relatively similar volatility characteristics since 1996:

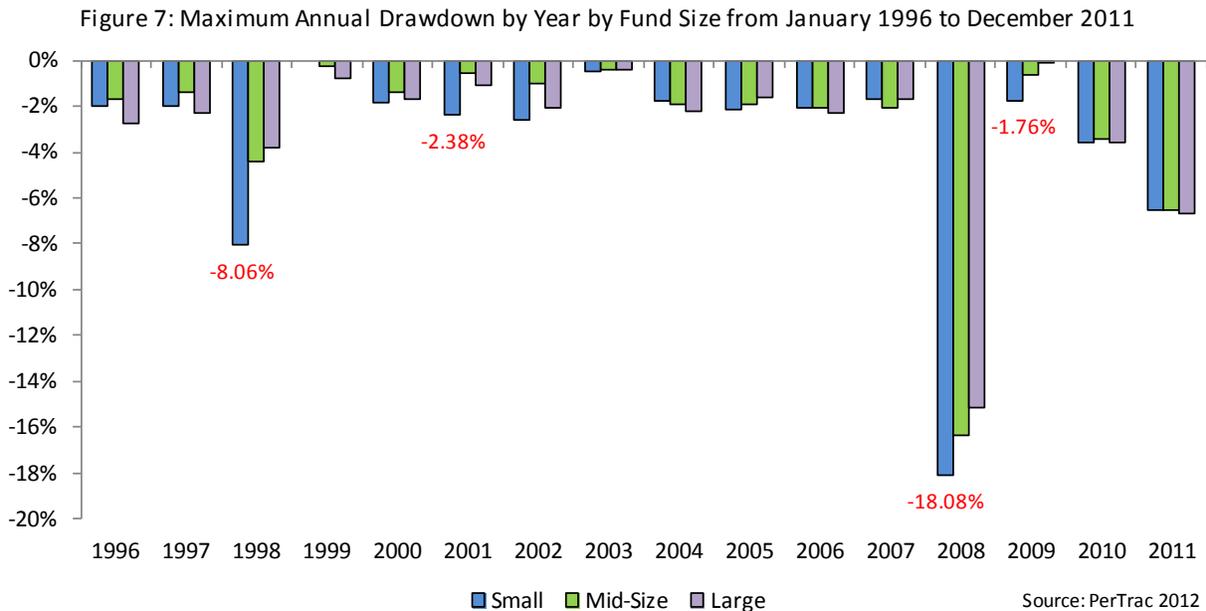
- The average mid-size fund has had a lower gain deviation, at 4.07% compared to 4.18% for a large fund, and a slightly lower standard deviation, at 5.94% compared to 5.95% for a large fund;
- The average large fund has had a lower semi deviation, at 5.96% versus 6.05% for a mid-size fund, and loss deviation, 4.00% versus 4.07% for a mid-size fund.

To state which fund size category has been more volatile than the other will depend on how investors place values on these various statistics.

One assertion that can be made, based on the volatility figures in Figure 6, is that the average small fund has shown the highest variability in its average monthly returns compared to an average mid-size and average large fund.

Annual Drawdowns by Size

Figure 7 below shows the maximum annual drawdowns which all three fund size categories have experienced within each year since 1996, illustrating that there have been years in which the average small fund has had a notably worse annual drawdown in comparison to its mid-size and large peers.



In 1998, for example, the worst maximum annual drawdown for the average large fund was 3.78% and for the average mid-size fund it was 4.29%; the average small fund, however, dropped 8.06%. In 2009, the average small fund experienced a drawdown in which it declined by 1.76% and—although not a significant figure in absolute terms—when expressed relative to its peers, it was nearly three times larger than the 0.62% decline of the average mid-size fund and around twenty-five times larger than the 0.07% decline of the average large fund. In 2011, the average large fund had the worst drawdown, at 6.67%, which was slightly more than the 6.56% decline of the average small fund and the 6.51% decline of the average mid-size fund.

One potential take-away from the juxtaposition of returns, volatility, and drawdowns of the funds might be that, since the average small fund has been subject to greater volatility and larger drawdowns, investing with a small fund should not be a short-term endeavor because, in the long-run, the average small fund has generally outperformed the average mid-size fund and average large fund. But an investment with a small fund might turn into an investment with a mid-size or large fund, provided that the small fund garners enough attention and raises enough capital as a result of its performance. The bottom line for investors is that they should continually re-evaluate their holdings and perform the proper due diligence on their investments.

Simulation Analysis by Size

Pro forma analysis was performed by using Monte Carlo methods to simulate statistics for each fund size category. The criteria for the simulations were:

- Historical average monthly data for each size category from January 1996 to December 2011;
- Five year forward time range;
- S&P 500 Total Return set as the market benchmark;
- Risk-free rate of return of 5%;
- Minimum Acceptable Return (MAR) of 5%;
- Bootstrap Method;
- 10,000 simulations with quarterly re-balancing.

The rationale for including these criteria were: (1) the S&P 500 Total Return Index is a proxy for the broader U.S. market performance; (2) the bootstrap method, by forecasting beyond one period via reliance on the forecasting data for that period itself, is a straightforward technique of assigning measures of accuracy to sample estimates; and (3) a 5% risk-free rate was used with a 5% MAR so that results can be compared to previous studies. The Monte Carlo simulation results for the small, mid-size, and large fund size categories are in Figures 8 and 9 below.

Figure 8: Annualized Return Simulation Statistics by Fund Size from January 1996 to December 2011

Annualized Statistics	Small	Mid-Size	Large
Number of Simulations	10,000	10,000	10,000
Mean	12.55%	9.99%	9.20%
Median	12.58%	10.02%	9.16%
Standard Deviation	3.40%	2.87%	2.84%
95th Percentile	18.08%	14.62%	13.89%
5th Percentile	7.00%	5.29%	4.56%

Source: PerTrac 2012

Figure 9: Maximum Drawdown Simulation Statistics by Fund Size from January 1996 to December 2011

Statistics	Small	Mid-Size	Large
Number of Simulations	10,000	10,000	10,000
Mean	-6.46%	-5.60%	-5.72%
Median	-6.27%	-5.47%	-5.29%
Standard Deviation	-2.76%	-2.37%	-2.34%
95th Percentile	-11.43%	-9.95%	-10.07%
5th Percentile	-2.66%	-2.48%	-2.71%

Source: PerTrac 2012

The Monte Carlo simulation results within Figures 8 and 9 show that the average small fund carries the potential for the greatest volatility based its annualized standard deviation results of 3.40%, compared to 2.87% for the average mid-size funds and 2.84% for the average large fund.

The average small fund also has the potential for the greatest decline based on its simulated maximum mean drawdown result of 6.46%, versus the 5.60% for the average mid-size fund and the 5.72% for the average large fund. The statistics at the 95th percentile indicate that the average small fund has a 5% chance of declining 11.43% or more, which is highest potential decline amount among the three size categories.

The average small fund has a better potential to outperform the average mid-size fund and average large fund during the next five years. The simulated annualized mean return of the average small fund is 12.55%, while that of the average mid-size fund is 9.99% and average large fund is 9.20%. The statistics at the 5th percentile indicate that the average small fund has a 95% chance of returning 7% or more, which is the highest potential return amount among the three size categories.

In comparison to last year's Monte Carlo simulation tests, which utilized average monthly returns data only from 1996 to 2010, the inclusion of the 2011 monthly data impacted the simulation results in the following ways:

- Volatility (standard deviation) potential decreased across all three size categories;
 - Small: 3.53% in 2010 to 3.40% in 2011
 - Mid-size: 2.95% in 2010 to 2.87% in 2011
 - Large: 2.94% in 2010 to 2.84% in 2011
- Maximum mean drawdown potential increased across all three size categories;
 - Small: 6.37% in 2010 to 6.46% in 2011
 - Mid-size: 5.45% in 2010 to 5.60% in 2011
 - Large: 5.55% in 2010 to 5.72% in 2011
- Annualized mean return potential decreased across all three size categories;
 - Small: 13.64% in 2010 to 12.55% in 2011
 - Mid-size: 10.89% in 2010 to 9.99% in 2011
 - Large: 10.01% in 2010 to 9.20% in 2011

Conclusions on the Impact of Size on Hedge Fund Performance

In 2011, the annual returns of all three hedge fund size categories were negative. Prior to 2008, the average small fund beat the average mid-size and large fund on a consistent basis. In 2008, the average small fund declined the most, at 17.03%; in 2009, the average small fund came in second behind the average mid-size fund in performance; and in 2010, the average small fund once again outperformed both the mid-size and large funds. In 2011, the average small fund finished second behind the average large fund.

The post-2007 annual performance results seem to suggest that the average small fund is having more difficulty outperforming its average mid-size and average large fund peers in market environments that have become increasingly notorious for their elevated levels of volatility.

IMPACT OF AGE ON HEDGE FUND PERFORMANCE

Constructing the Age Universes

For the *Impact of Age on Hedge Fund Performance* section, the key statistics examined were the monthly returns and share-class start dates. We once again used manual exception reporting of the data to reduce the possibility of inflating or deflating average performance returns figures arising from multiple instances of share-class returns, since funds report the performance of multiple share-classes to third-party data providers.

To identify and remove share-classes from the same fund with near-identical returns data, we began by removing all share-classes without reported performance returns in a given month. Next we utilized correlation analysis of performance returns to refine our choice for the master, fund-level investment. For the master, our choice was the oldest share-class, since it provided the most accurate age of a fund.

This entire process was repeated for each individual month in 2011, and it explains why the total number of funds by age fluctuated throughout the year.

The remaining fund-level investments were then classified and re-classified on a monthly basis based on their then-current age into one of the three following categories:

Young: *Start date less than two years old*

Mid-Age: *Start date between two and four years old*

Tenured: *Start date greater than four years old*

This re-classification system explains why the monthly number of funds by size fluctuated. For the *Impact of Age on Hedge Fund Performance* section, all monthly averages were calculated on an equal-weighted basis.

Number of Funds by Age

Figure 10 below presents the number of funds in each age category along with the average of their monthly totals. Values fluctuated because, (1) funds were re-categorized each month based on their then-current age, (2) funds may have closed or ceased reporting data, and/or (3) new funds may have begun reporting.

Figure 10: Number of Funds by Age in 2011

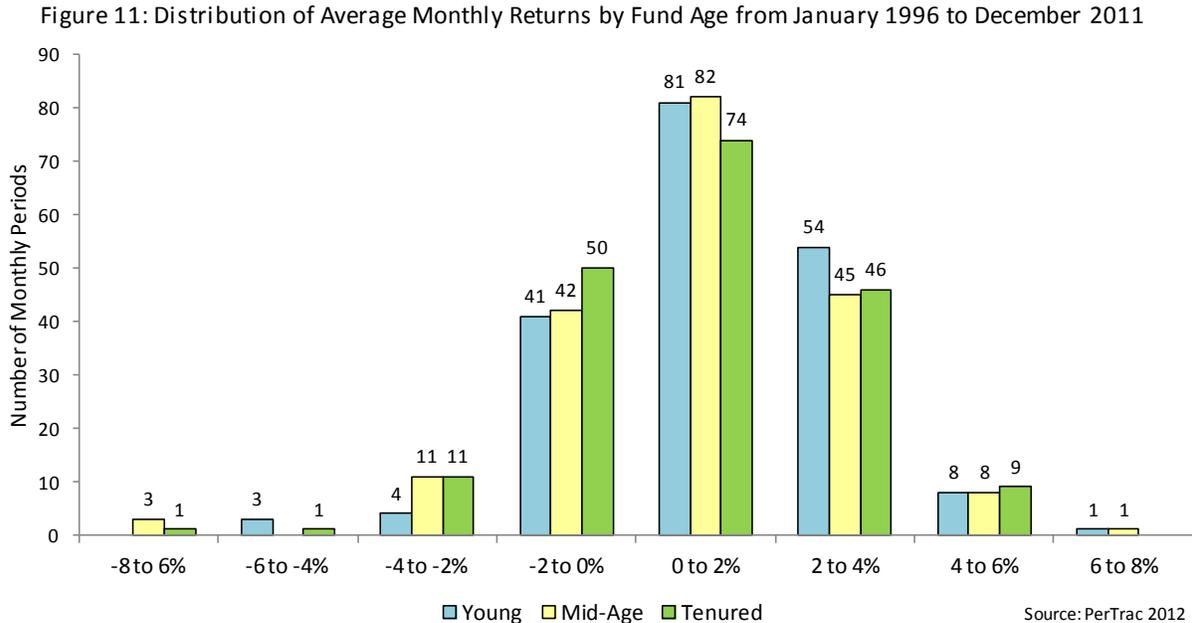
Month	Young	Mid-Age	Tenured	TOTAL
January	3,558	2,553	4,754	10,865
February	3,508	2,550	4,834	10,892
March	3,585	2,532	4,850	10,967
April	3,537	2,535	4,870	10,942
May	3,498	2,564	4,891	10,953
June	3,466	2,579	4,889	10,934
July	3,384	2,588	4,911	10,883
August	3,313	2,584	4,960	10,857
September	3,233	2,582	4,981	10,796
October	3,146	2,600	4,970	10,716
November	3,013	2,580	4,999	10,592
December	2,990	2,540	5,064	10,594
Average	3,353	2,566	4,914	10,833

PerTrac 2012

As shown, the average monthly number of funds was the highest among tenured funds, at 4,914. The average monthly number of young funds was second highest, at 3,353, followed by the 2,566 average of the mid-age funds. In other words, tenured funds averaged 45.4% of the universe for a given month, young funds 30.9%, and mid-age funds 23.7%.

Distribution of Monthly Returns by Age

Figure 11 below displays the distribution of average monthly returns for funds according to their age from January 1996 to December 2011, showing that the average young fund has outpaced the average mid-age fund and average tenured fund in the quantity of months in which it has returned in excess of 2%.



The distribution chart above shows that the average young fund was able to generate positive returns of 2% to 4% in 54 months, which is 9 more periods than the average mid-age fund and 8 more periods than the average tenured fund accomplished. The average young fund was the only one of the age segments that did not fall below the -4% to -6% return range for a given month.

In 2011, the distribution of returns for the average mid-age fund and average large fund were equally split between six positive and six negative months. Compared to these age segments, the average young fund endured one additional month of negative performance but also one month less of returns that fell below -2%.

The higher number of positive average monthly returns, along with fewer extremely negative average monthly returns has, in general, meant that the average young fund has outperformed the average mid-age fund and average tenured fund in annualized figures.

Annual Performance Returns by Age

Figure 12 below displays the annual returns for funds based on their age, showing that the average young fund has outperformed its peers in 14 of the last 16 years. Each annual return is the cumulative total of the average monthly performance for each age category within that year.

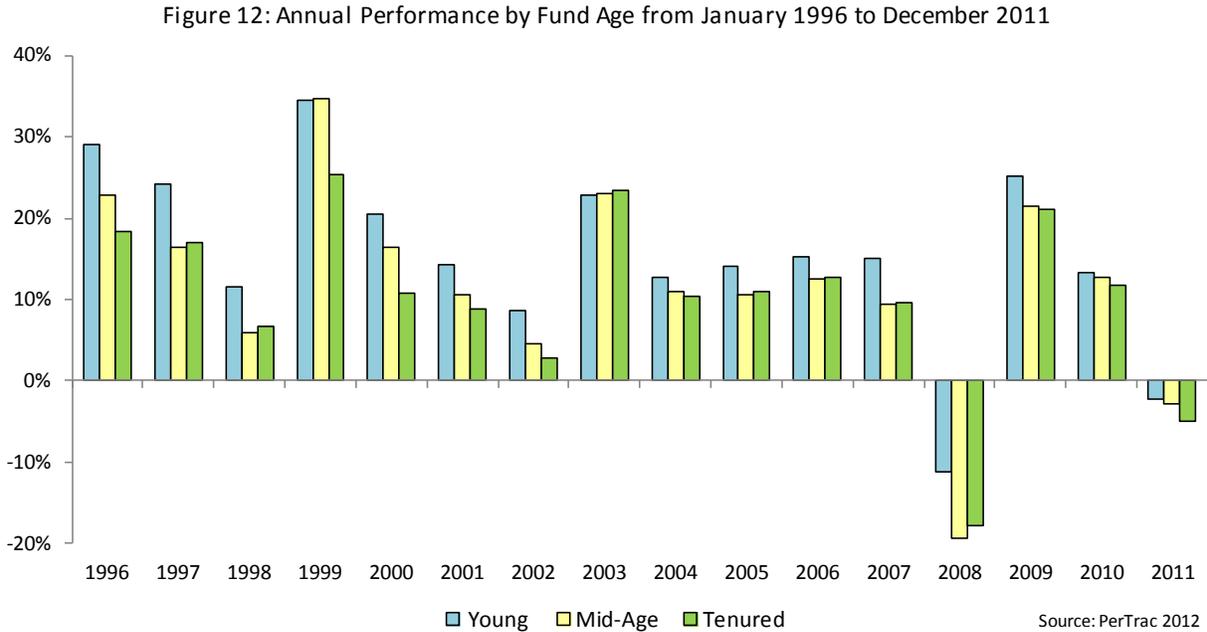


Figure 13 below provides the annual performance values of the above chart.

Figure 13: Annual Performance Returns by Fund Age from January 1996 to December 2011

Year	Young	Mid-Age	Tenured
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	25.19%	21.51%	21.01%
2010	13.25%	12.65%	11.77%
2011	-2.18%	-2.93%	-4.99%

Source: PerTrac 2012

In the negative annual performance years of 2008 and 2011, the average young fund outperformed the average mid-age fund and average tenured fund. The average young fund also outperformed during every year except for 1999 and 2003. Even in these years, the annual performances of the average young fund were very close to the top; in 1999, the average young fund was behind the average mid-age fund by only 0.13% and in 2003 it trailed the average tenured fund by 0.56%.

Annualized Performance and Volatility Statistics by Age

Since 1996, the average young fund has typically generated higher annualized returns with a lower annualized volatility when compared to the average mid-age fund and average tenured fund. Figure 14 below presents some annualized performance and volatility measures for funds based on their age since 1996.

Figure 14: Annualized Performance and Volatility Measures by Fund Size from January 1996 to December 2011

Annualized Statistics	Young	Mid-Age	Tenured
Compound ROR	14.93%	11.19%	9.85%
Standard Deviation	6.37%	6.99%	6.80%
Semi Deviation	6.59%	7.55%	7.13%
Gain Deviation	4.43%	4.56%	4.44%
Loss Deviation	3.96%	5.24%	4.42%
Down Deviation (10%)	3.95%	5.00%	4.95%
Down Deviation (5%)	3.35%	4.38%	4.26%
Down Deviation (0%)	2.80%	3.82%	3.63%
Sharpe (5%)	1.46	0.86	0.70
Sortino (10%)	1.12	0.22	-0.03
Sortino (5%)	2.72	1.32	1.07
Sortino (0%)	5.00	2.79	2.60

Source: PerTrac 2012

Consistent with previous *Impact of Size and Age on Hedge Fund Performance* studies, the average young fund continued to provide the highest annualized Compound ROR, at 14.93%, versus the average mid-age fund's 11.19% and the average tenured fund's 9.85%. The average young fund also generated the most return per unit of risk based on its Sharpe and Sortino ratios.

The average young fund has been able to accomplish higher returns with lower volatility. The annualized standard deviation of the average young fund is 6.37% since 1996, compared to 6.99% for the average mid-age fund and 6.80% for the average tenured fund. Across all other volatility categories presented in Figure 14, the average young fund has excelled.

In comparison to last year's annualized performance and volatility measures, which looked at historical data only from 1996 to 2010, the inclusion of the 2011 data decreased the Compound ROR, Sharpe ratio, and Sortino ratio values for the average young, mid-age, and tenured fund.

Simulation Analysis by Age

Using the same parameters that were laid out in the *Simulation Analysis by Size* section of the study, Monte Carlo simulations were performed on each of the three age categories. Figure 15 shows the simulated annualized return statistics for funds by age and Figure 16 displays their simulated maximum drawdowns.

Figure 15: Annualized Return Simulation Statistics by Fund Age from January 1996 to December 2011

Annualized Statistics	Young	Mid-Age	Tenured
Number of Simulations	10,000	10,000	10,000
Mean	14.98%	11.24%	9.91%
Median	14.96%	11.26%	9.94%
Standard Deviation	3.19%	3.40%	3.27%
95th Percentile	20.21%	16.68%	15.23%
5th Percentile	9.82%	5.67%	4.55%

Source: PerTrac 2012

Figure 16: Maximum Drawdown Simulation Statistics by Fund Age from January 1996 to December 2011

Statistics	Young	Mid-Age	Tenured
Number of Simulations	10,000	10,000	10,000
Mean	-4.87%	-7.09%	-6.93%
Median	-4.67%	-7.00%	-6.73%
Standard Deviation	-2.01%	-3.12%	-2.89%
95th Percentile	-8.53%	-12.85%	-12.25%
5th Percentile	-2.05%	-2.86%	-3.15%

Source: PerTrac 2012

The Monte Carlo simulation tests show that the average young fund holds the potential for producing the highest annualized returns with the lowest volatility:

- The simulated annualized mean return for the average young fund is 14.98%, versus 11.24% for the average mid-age fund and 9.91% for the average tenured fund;
- The simulated annualized standard deviation for the average young fund is 3.19%, compared to 3.40% for the average mid-age fund and 3.27% for the average tenured fund;
- The simulated maximum mean drawdown for the average young fund is 4.87%, compared to the 7.09% for the average mid-age fund and the 6.93% for the average tenured fund.

In comparison to last year's Monte Carlo simulations, which utilized average monthly returns data only from 1996 to 2010, the inclusion of the 2011 monthly data impacted the simulation results in the following ways:

- Volatility (standard deviation) potential decreased across all three age categories;
 - Young: 3.30% in 2010 to 3.19% in 2011
 - Mid-age: 3.54% in 2010 to 3.40% in 2011
 - Tenured: 3.37% in 2010 to 3.27% in 2011

- Maximum mean drawdown potential increased across all three age categories;
 - Young: 4.78% in 2010 to 4.87% in 2011
 - Mid-age: 7.03% in 2010 to 7.09% in 2011
 - Tenured: 6.62% in 2010 to 6.93% in 2011

- Annualized mean return potential decreased across all three age categories;
 - Young: 16.21% in 2010 to 14.98% in 2011
 - Mid-age: 12.24% in 2010 to 11.24% in 2011
 - Tenured: 10.96% in 2010 to 9.91% in 2011

In continuity with the last three *Impact of Size and Age on Hedge Fund Performance* studies, the average mid-age fund still exhibited the highest simulated maximum drawdown potential.

Conclusions on the Impact of Age on Hedge Fund Performance

In 2011, the annual returns of all three hedge fund age categories were negative. The average young fund outperformed both the average mid-age and average tenured fund.

2011 marks the eighth year in a row in which the average young fund has outperformed the average mid-age and average tenured fund, and the fourteenth year out of the last sixteen.

The most impressive feature of this strong track record is that *the average young fund has generally outperformed its average mid-age and average tenured peers, while keeping a lower volatility profile*. The statistics from the Monte Carlo simulations anticipate this trend to continue in the short and intermediate terms.

CONCLUSION

The 2011 findings suggest that investors with a lower volatility tolerance and seeking to protect their wealth should examine funds with over \$500 million in AUM, since the average large fund has exhibited lower annualized deviation figures compared to the average small fund. The average large fund also fared best in the negative annual performance years of 2008 and 2011.

Investors with a higher volatility appetite and seeking to maximize their returns should examine funds with less than \$100 million in AUM, since the average small fund has outperformed the average mid-size fund and average large fund in 13 out of the last 16 years.

Investors who would prefer lower volatility with return maximization should examine young funds, at least according to historical data. Nevertheless, investors should match their liquidity needs and other allocation requirements along with administering the proper due diligence in their quest for investment funds, because—fundamentally—past performance is no indicator of future achievement.

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