

# HEDGE FUND INVESTING: IS THERE ANY TRADEOFF BETWEEN LIQUIDITY, SIZE AND PERFORMANCE?

• March 2009 •

## Hedge Fund Investing: Is There Any Tradeoff Between Liquidity, Size and Performance ?

Corresponding author: Ivan Guidotti

ivanguidotti@olympiagroup.com

Tel: +33 (0)1 49 53 74 22

### Introduction

One of the major lessons of the current crisis is the unsustainability of any substantial mismatch between the liquidity terms of funds of hedge funds (FOHFs) and those of their underlying hedge funds.

As a consequence, any FOHF manager who wishes to improve the liquidity of his or her portfolios will need to examine the following issues: does investing in liquid hedge funds imply lower excess returns (e.g. lower alpha for the investor)? Is liquidity concentrated in young and small HFs?

In this research note, we address these questions and we try to investigate whether a trade-off between hedge funds' liquidity, maturity, size and performance exists. More precisely:

- Is there any illiquidity premium observed in the data? In other words, do liquid managers tend to deliver inferior alphas than illiquid managers?
- Does illiquidity have to be related to the hedge fund life cycle? Is illiquidity the privilege of well established funds with large assets under management (AUM)? If so, how could we reconcile this with the common view that "young" managers tend to outperform "old" managers?

### Hedge Fund Characteristics: Stylised Facts

As a preliminary step, we examine whether we can see any correlation between the HF characteristics that may

influence the ability of the managers to generate alpha. These are:

- the redemption notice (*REDNOT*),
- the redemption frequency (*REDFR*),
- the lockup period (*LOCKUP*),
- the age of the fund measured as the number of months since inception (*AGE*),
- the size of the fund measured by AUM<sup>1</sup> (*SIZE*).

Table 1 below presents the correlation matrix between these characteristics for a large sample of hedge funds taken from the HFR database as of July 2008<sup>2</sup>.

Table 1: Correlation matrix between hedge fund characteristics

|        | REDNOT | REDFR | LOCKUP | AGE   | SIZE |
|--------|--------|-------|--------|-------|------|
| REDNOT | -      |       |        |       |      |
| REDFR  | 34%**  | -     |        |       |      |
| LOCKUP | 32%**  | 36%** | -      |       |      |
| AGE    | -7%**  | 16%** | -1%    | -     |      |
| SIZE   | 13%**  | 10%** | -2%    | 18%** | -    |

Note: The table contains correlations between the characteristics of the funds. \*\* (\*) denotes correlations significantly different from zero at 99% (95%) confidence level.

Interestingly, nearly all the correlations are significant. Several elements have to be pointed out:

- The three variables related to liquidity - redemption notice, redemption frequency and lockup period - are positively and significantly correlated.

<sup>1</sup> We use AUM in logarithm.

<sup>2</sup> We used the HFR database as of end of July 2008. Performance data ranges from August 2003 to July 2008. In order to clean the database, we then used several filters: i) we retained USD funds with monthly reporting and with at least 24 months of track record; ii) we retained only the funds reporting AUMs, redemption notices, redemption frequencies, lockup periods and inception dates.

We voluntarily restricted the period of investigation in order to avoid the wave of liquidity events (lockup, redemption suspension...) observed at the end of 2008.

## Hedge Fund Investing: Is There Any Tradeoff Between Liquidity, Size and Performance ?

This fact suggests that funds which want to protect themselves from redemptions tend to exploit all possible ways to do so.

- Unsurprisingly, the correlation between age and size is significantly positive but it does not seem very high (~20%).
- No clear correlation emerges between the liquidity terms on the one hand, and size and age on the other hand. Age is negatively correlated to redemption notice, positively correlated to redemption frequency but not significantly correlated to lockup periods. Size is positively correlated to both redemption notice and redemption frequency but not significantly correlated to lockup periods.

Hence, our preliminary investigation indicates that the relationship between age, size and liquidity is not that simple<sup>3</sup>.

### Alpha and Fund Characteristics

We now investigate the relation between alpha and HF characteristics using a two-step procedure:

- Each year, as of the end of July, we estimate individual alphas for all the HFs using a factor-based model. We use seven factors that correspond to the key systematic risks for hedge funds<sup>4</sup>. The factor models are estimated using at least 24 months but at maximum 48

<sup>3</sup> Note that similar results are obtained by using the Spearman's rank correlations instead of the Pearson's correlations.

<sup>4</sup> We used the following factors: S&P 500, MSCI Emerging Markets, Small cap minus Big cap US, Value versus Growth stocks US, GS Commodity Index, FX Carry Trade Index, Credit High Yield spread (Merrill Lynch Master II). Models were estimated using OLS. See for instance Fung and Hsieh [2004] for details on factor-based models.

monthly observations, depending on the track record of each fund.

- In the second step, we investigate whether a relationship exists between alpha, liquidity terms, age and size, by regressing the estimated alphas on the characteristics of the funds.

Table 2 below displays the results for the entire sample and for each main HFR strategy.

Table 2: Alpha pooled regressions with fund characteristics

|           | All     | Equity Hedge | Event Driven | Relative Value | Macro  |
|-----------|---------|--------------|--------------|----------------|--------|
| Intercept | 5.65**  | 5.07**       | 6.46**       | 10.07**        | 5.17** |
| REDNOT    | 1.00**  | 0.36         | 1.33**       | 0.65           | 2.00** |
| REDFR     | -0.05   | -0.02        | -0.32**      | 0.11           | -0.17  |
| LOCKUP    | 0.06**  | 0.01         | 0.21**       | -0.06          | 0.17   |
| AGE       | -0.03** | -0.04**      | -0.02**      | -0.04**        | -0.02  |
| SIZE      | 0.23**  | 0.62**       | 0.16         | -0.41          | -0.39  |
| No Obs    | 7019    | 3578         | 931          | 1328           | 1182   |

Note: This table contains the coefficients obtained by estimating

$\alpha_i = \beta_0 + \beta_1 \cdot \text{REDNOT}_i + \beta_2 \cdot \text{REDFR}_i + \beta_3 \cdot \text{LOCKUP}_i + \beta_4 \cdot \text{AGE}_i + \beta_5 \cdot \text{SIZE}_i + \varepsilon_i$   
The regression is run on all the eligible funds and on each strategy separately. \*\* (\*) denotes coefficients significantly different from zero at 99% (95%) confidence level.

The results confirm the fact that young funds tend to generate more alpha than older ones, as the *AGE* coefficient is statistically negative. This age effect, which has already been well documented, prevails for all the strategies<sup>5</sup>.

The importance of size is more ambiguous. In the global sample, the *SIZE* variable has a positive influence on alphas. However, this is mainly due to Equity Hedge managers for whom the effect is substantial (this strategy

<sup>5</sup> See among others Boyson [2008], Füss and al. [2008]. As the data used in the present study are relatively recent, it is unlikely that this result is solely driven by incubation bias.

## Hedge Fund Investing: Is There Any Tradeoff Between Liquidity, Size and Performance ?

represents about one third of the industry). For Relative Value and Macro funds, on the contrary, small funds tend to generate more alpha, although the coefficients are not statistically significant at the 95% confidence level.

Among the liquidity factors, only the redemption notice period and the lockup period come out statistically significant in the global sample, with a positive effect on alphas. This could reflect two effects: i) the market power of successful managers (which results in their ability to impose harder liquidity terms), ii) the illiquidity premium for illiquid investments. Though we do not disentangle those two effects, our results suggest that illiquidity premium exists. Indeed, the positive relationship between liquidity factors and alpha is strong for Event Driven funds (which partly invest in less liquid assets) and weak for Equity Hedge (which is a liquid strategy). The effect of redemption frequency is insignificant for all the strategies but for Event Driven funds, with a puzzling negative coefficient<sup>6</sup>.

As a robustness test, we also run both Fama-McBeth regressions and ordered probit models (where the ranking of the alpha is the endogenous variable). The results remain globally unchanged. Overall, our results tend to confirm that young and less liquid funds generate higher alphas.

We finally run the same regression as in Table 2 by sorting the funds on their age.

Table 3 below presents the results and confirms the fact that both the age and liquidity effects are strong and significant. This is consistent with the fact that the redemption notice and the lockup allow managers to unwind positions in a more timely way. For HF managers, this ability is particularly appealing during periods characterized by high redemptions and low liquidity, as per the current environment.

**Table 3: Alpha Pooled regressions with fund characteristics sorted by age**

|           | Q1<br>Youngest | Q2     | Q3     | Q4     | Q5<br>Oldest |
|-----------|----------------|--------|--------|--------|--------------|
| Intercept | 4.84**         | 5.39** | 3.55** | 1.47*  | -0.02        |
| REDNOT    | 1.30**         | 1.43** | 0.93** | 0.27   | 1.46**       |
| REDFR     | -0.23          | -0.35  | 0.09   | 0.08   | -0.01        |
| LOCKUP    | 0.20**         | 0.06   | -0.11  | 0.02   | 0.04         |
| SIZE      | 0.22           | 0.00   | 0.19   | 0.45** | 0.25         |

Note: The table contains the coefficients obtained by estimating

$\alpha_i = \beta_0 + \beta_1 \cdot \text{REDNOT}_i + \beta_2 \cdot \text{REDFR}_i + \beta_3 \cdot \text{LOCKUP}_i + \beta_4 \cdot \text{SIZE}_i + \varepsilon_i$   
for quintiles sorted according to age of the fund.  
\*\* (\*) denotes correlations significantly different from zero at 99% (95%) confidence level.

## Conclusion

The main findings of the study are the followings:

- Young funds outperform old funds, regardless of the strategy.
- No significant relationship exists between lockups and alphas (except for Event Driven funds).
- Redemption notice is positively related to alpha, especially for less liquid strategies such as Event Driven. This effect is also observed among the young best performing funds.

<sup>6</sup> Since age and size are positively correlated, we also introduced an interaction variable (AGE\*SIZE) in order to control the robustness of our results. Adding this interaction variable into the regressions did not alter the results.

## Hedge Fund Investing: Is There Any Tradeoff Between Liquidity, Size and Performance ?

---

- We were unable to detect a clear size effect: for some strategies it is positive, while for other it is negative<sup>7</sup>.

*These results show that investing in young funds should not be considered as a panacea for FOHF managers looking for skilled and liquid managers. Even though our study confirms that young fund tends to outperform older ones, the best young funds remain also the most illiquid ones. All in all, investors might have to pay the price of reduced alpha in order to achieve higher liquidity, especially in strategies employing illiquid financial instruments.*

### References

Boyson N. [2008], “Hedge Fund Performance Persistence: A New Approach”, *Financial Analysts Journal*, Vol. 64, No. 6:27-44.

Fung W. and D.A. Hsieh [2004], “Hedge Fund Benchmarks: A Risk-Based Approach”, *Financial Analysts Journal*, Vol. 60, No. 5:65-80.

Füss, R., D.G. Kaiser and A. Strittmatter [2004], “The Performance of Funds of Hedge Funds: Do Experience and Size Matter?”, *Working Paper*.

Xiong J., T. Idzorek, P. Chen and R. Ibbotson [2009], “Impact of Size and Flows on Performance for Funds of Hedge Funds”, *Journal of Portfolio Management*, Winter.

---

<sup>7</sup> This contrasts with recent empirical findings that suggest a concave relationship between HF size and performance, cf. Xiong J., T. Idzorek, P. Chen and R. Ibbotson [2009]. This may be due to the fact that we adopted a strict linear approach.

## Hedge Fund Investing: Is There Any Tradeoff Between Liquidity, Size and Performance ?

---

### Appendix 1: Filtered HFR data sample

| Strategy       | 2004 | 2005 | 2006 | 2007 | 2008 |
|----------------|------|------|------|------|------|
| Equity Hedge   | 526  | 624  | 746  | 906  | 776  |
| Event Driven   | 148  | 163  | 197  | 234  | 189  |
| Macro          | 158  | 196  | 248  | 295  | 285  |
| Relative Value | 178  | 224  | 286  | 349  | 291  |
| All            | 1010 | 1207 | 1477 | 1784 | 1541 |

### Appendix 2: Descriptive statistics of the filtered HFR sample (as of July 2008)

|               | Median | Mean  | St Dev |
|---------------|--------|-------|--------|
| REDNOT        | 1      | 1.27  | 0.94   |
| REDFR         | 1      | 2.53  | 3.17   |
| LOCKUP        | 0      | 4.18  | 6.47   |
| AGE           | 71     | 86.73 | 54.22  |
| AUM (mio USD) | 53.53  | 51.97 | 5.99   |

This documentation does not constitute any solicitation to invest in any vehicle, but is intended for the sole destined addressee's personal information. Olympia Capital Management shall not accept any responsibility on the accuracy of this information or on any consequence deriving from a situation where this information would be used outside of its intended, purely informative purpose.  
Past performance is no guarantee of future results.

Olympia Capital Management  
21-25 rue Balzac  
75008 Paris  
France

Tél. : +33 (0)1 49 53 90 38

Fax : +33 (0)1 42 56 70 09

[www.olympiacapitalmanagement.com](http://www.olympiacapitalmanagement.com)