THE GLOBAL SEARCH FOR YIELD AND FUNDING LIQUIDITY RISKS FOR HEDGE FUNDS

In the three years prior to the end of 2005, net inflows into the hedge fund sector were particularly strong, averaging USD 20 billion per quarter. However, net outflows in the last quarter of 2005 warned many hedge fund managers of the possibility of higher withdrawals in the future. This also raised questions about the factors that drive money flows into the hedge fund industry. It has frequently been suggested that the main drivers of inflows were the global search for yield, against a background of persistently low interest rates globally, coupled with high risk appetite among investors. This Box tests this hypothesis by discussing the funding liquidity risks faced by hedge fund managers and by analysing the determinants of aggregate money flows into single-manager hedge funds.

Hedge funds face two types of funding liquidity risk: asset/liability mismatches related to short-term financing provided by banks, and investor redemption risk. Most financing is usually obtained in the (re)repo market, where overnight, term, callable, open and other forms of repo contracts exist both for long and short positions in securities. Strains in this market, rollover difficulties, short squeezes on borrowed for short-selling securities or banks' unwillingness to accept lower-grade collateral could lead managers to resort to asset sales in possibly already frail markets. To protect against such a scenario, a careful selection of financial instruments is needed for a particular economic exposure. For example, a short position in either corporate bonds or CDS would have different implications for current liquidity buffers due to different margin requirements, underlying instrument liquidity and other factors. Generally, the build-up of leverage via derivatives provides current liquidity (cash) savings relative to other arrangements. However, then the management of margin calls on losing leveraged positions comes into play. Moreover, creditors' stances can change dramatically under stressed conditions. This explains why some hedge fund managers try to negotiate margin lock-ups,[1] fixed haircuts and other arrangements aimed at safeguarding their funding flexibility.

Unexpected investor redemptions or even runs constitute another major funding liquidity risk. Strong absolute performance, of course, is the best defence against investor outflows, although investor withdrawal risk, at least to some extent, can also be mitigated by a combination of arrangements including initial lock-ups, penalties for early redemptions, redemption frequency, redemption notice and payout periods that properly reflect the liquidity of the underlying investment portfolio.

Owing to a lack of data, information about the sensitivity of money flows to various relevant factors by investor type is missing. Thus, it is not clear whether, on average, FOHFs or institutional investors are more sensitive than high-net worth individuals (HNWIs). According to some market observers, HNWIs can have more short-term attitudes and can be more susceptible to the "headline" risk related to the negative coverage of selected funds or the whole hedge fund industry in various media channels. On the other hand, it could also be argued that FOHFs probably tend to rebalance their allocations among hedge fund strategies depending on market conditions more frequently than HNWIs. For these reasons, some funds deliberately

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1 These are term margin commitments involving fixed margin terms for a specified period of time (e.g. holding correlations fixed in the case of portfolio level margining).

attempt to diversify their investor structure in order to avoid the risk that related or too-similar investor groups might behave in the same fashion, or appear to be exposed to similar constraints, making them withdraw their money at the same time. Furthermore, the emergence of secondary markets for locked-up hedge fund investments is a welcome development for both hedge funds and investors. For investors, these markets provide additional early exit possibilities, whereas hedge funds can obtain some indication on the build-up of redemption pressures through the analysis of existing supply and demand.[2]

In academic studies, the relation of flows to past performance of individual hedge funds was found to be convex at annual horizons, i.e. investors display higher sensitivity to good performance and lower sensitivity to poor performance.[3] However, at quarterly horizons the flow-performance relationship can be more or less linear, owing to redemption restrictions that limit investors from actively shifting their capital in search of superior return, and the fact that divestment and investment decisions may be driven by different evaluation horizons.[4] Costly and time-consuming manager due diligence processes may lead to lower responsiveness on the part of investors to recent positive performance, particularly as more weight is attached to the historical track record. At the same time, an active monitoring that characterises post-investment behaviour may result in higher sensitivity to recent poor return performance.

At the hedge fund level, in addition to performance relative to peers, there are a myriad of other hedge fund-specific factors that can affect investor money flows, such as size, age, lagged flows, volatility of returns, redemption restrictions and the option-like compensation structure of hedge fund managers. However, most of these factors are unlikely to have an impact on aggregate flows into the hedge fund sector as a whole and, therefore, hedge fund managers may underestimate redemption risk by not taking into account the influence of the general macro-financial environment.

Some of the macro factors that could affect money flows into hedge funds include monetary conditions and the degree of risk aversion among investors. To test this idea, aggregate quarterly net flows into single-manager hedge funds from 1994 to 2005, as reported by Tremont Capital Management, were analysed with a linear regression that included aggregate flows as a dependent variable and four explanatory variables (see Table B17.1 for details). The selection of US short-term interest rates as a proxy for global short-term interest rates can be justified by the fact that US managers still account for about two-thirds of total hedge fund capital under management globally, as well as the dominant role played by the US financial markets in the global financial system.

Regression results (see Table B17.1 and Chart B17.1) show that, in addition to lagged aggregate net flows and returns, contemporaneous changes in global risk appetite and US short-term interest rates appear to be statistically significant determinants of aggregate net flows. The persistence of net flows indicates the presence of inertia among investors, whereas the significance of lagged performance implies a high degree of sensitivity to recent poor returns and a chasing after recent good performance.

2 See Economist (2005), "Online matchmaking", 4 August.
3 See, for example, V. Agarwal, N. Daniel and N. Naik (2004), "Flows, performance, and managerial incentives in hedge funds", *Georgia State University Working Paper*, July.
4 See G. Baquero and M. Verbeek (2005), "A portrait of hedge fund investors: Flows, performance and smart money", *ERIM Report Series Research in Management,* August.

Table B17.1 Deteerminants of net aggregate flows into the hedge fund sector

(Q1 1994 - Q4 2005)

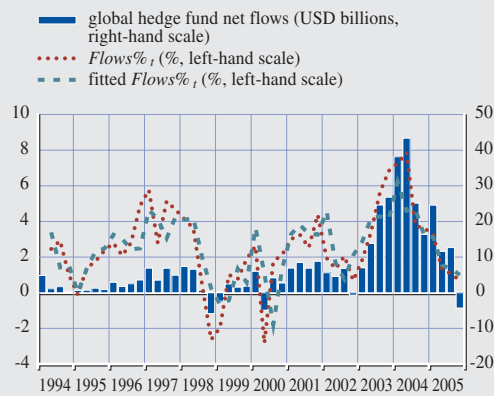| variable	sign	significance[1]	description	calculation
Dependent variable				
Flows %$_t$			Quarterly aggregate net flows as a percentage of the sum of CUM[2] at the end of the previous quarter and aggregate return in the current quarter. An assumption has been made that net flows take place at the end of each quarter.[3] Time series seasonally adjusted.	$Flows\%_t = \dfrac{Flows_t}{CUM_{t-1} + Return_t}$
Explanatory variables				
Constant	+	no	Constant or intercept.	
Flows %$_{t-1}$	+	yes (99%)	Lagged quarterly aggregate net flows.	
Return %$_{t-1}$	+	yes (99%)	Lagged quarterly aggregate return as a percentage of CUM at the end of the previous quarter. The estimated aggregate return to investors is the difference between the change in CUM and net flows during the respective quarter.	$Return\%_t = \dfrac{Return_t}{CUM_{t-1}}$, where $Return_t = (CUM_t - CUM_{t-1}) - Flows_t$
Δ Risk aversion$_t$	-	yes (97%)	Change in quarterly average of Merrill Lynch global risk aversion indicator.[4]	
Δ Short-term interest rates$_t$	-	yes (98%)	Change in quarterly average of US short-term interest rates, defined as the average of the Fed Funds target rate and US Treasury two-year nominal yield (front-end of the yield curve) during the respective quarter.	
Adjusted R^2		52%		

Sources: Tremont Capital Management, Merrill Lynch, Thomson Financial Datastream and ECB calculations.
Note: 1) Confidence levels are provided in parentheses. 2) CUM – capital under management, data start from 1993 Q4. 3) A contrary assumption that net flows take place at the beginning of each quarter does not change results, but complicates the interpretation of contemporaneous interaction with some explanatory variables. 4) For a description of the indicator, see Box 9 in this Review and Merrill Lynch (2006), "Updating the Merrill Lynch macro indicators", 18 January.

The dynamics of contributions of individual factors to resulting money flows are depicted in Chart B17.2. The chart shows that the contribution of increasing risk appetite was particularly strong in 2003, when the global search for yield reportedly got underway. However, later on, risk appetite had little impact. At the same time, as the level of short-term interest rates in the US rose, it was associated with lower hedge fund inflows. Nevertheless, it seems that the most important factor driving hedge fund inflows in 2004 and 2005 was persistence in investor behaviour. This would not, therefore, exclude the idea that investor behaviour became herded.
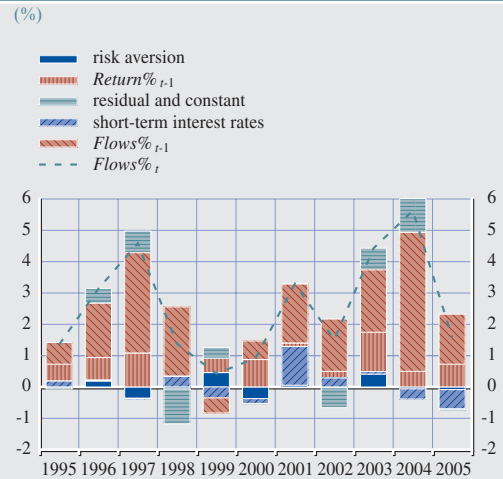
All in all, the findings provide some support for the view that the hedge fund industry has benefited from the recent global search for yield, as aggregate net flows appear to be sensitive to investor risk appetite and to the level of short-term interest rates. This also raises the risk that hedge fund managers may have underestimated investor redemption risk arising from global financial conditions that is not so apparent at the level of individual hedge funds. An

Chart B17.1 Regression results

global hedge fund net flows (USD billions, right-hand scale)
•••• *Flows%* $_t$ (%, left-hand scale)
– – – fitted *Flows%* $_t$ (%, left-hand scale)

Sources: Tremont Capital Management, Merrill Lynch, Thomson Financial Datastream and ECB calculations.
Note: See Table B17.1 for a description of the dependent variable. Global hedge fund net flows exclude FOHFs.

Chart B17.2 Annual averages of quarterly aggregate net flow rates and factor contributions

(%)

risk aversion
Return% $_{t-1}$
residual and constant
short-term interest rates
Flows% $_{t-1}$
– – *Flows%* $_t$

Sources: Tremont Capital Management, Merrill Lynch, Thomson Financial Datastream and ECB calculations.
Note: See Table B17.1 for a description of the variables. A positive contribution of risk aversion indicates a decline in risk aversion.

unexpected end of the recent global search for yield could cause investors to withdraw their money abruptly, thereby exerting funding liquidity pressures on individual hedge funds. This could trigger substantial sell-offs and challenge perceptions regarding the degree of liquidity prevailing in affected markets. Moreover, hedge funds could flood their prime brokers with large and simultaneous credit demands at a time when brokers themselves could be suffering from corrections in over-extended markets.