



## B GROWTH OF THE HEDGE FUND INDUSTRY: FINANCIAL STABILITY ISSUES

### INTRODUCTION

After the near-collapse of LTCM in September 1998, recently hedge funds have again started to capture the attention of financial stability watchers. However, this time the renewed interest is motivated by their impressive growth and increasing proliferation as a mainstream alternative investment vehicle.

The term “hedge fund” has a historical background, as the first institutions of this kind were engaged in the buying and short-selling of equities with the aim of eliminating (hedging) the risk of market-wide fluctuations. Since then hedge funds have started to use a wide variety of other investment strategies that do not necessarily involve hedging. In contrast to other pooled investment vehicles, hedge funds do not have any restrictions on the type of instruments or strategies they can use, owing to their unregulated or lightly regulated nature. A hedge fund can be defined as a fund whose managers receive performance-related fees and can freely use, and do use, various active investment strategies to achieve positive absolute returns, involving any combination of financial leverage, long and short positions in securities, derivatives or any other assets in a wide range of markets. A summary of some key hedge fund characteristics is presented in Table B.1, which demonstrates that hedge funds represent a flexible business model rather than an alternative asset class.

### HEDGE FUND STRATEGIES

A hedge fund’s investment style is more important to its risk-return profile than asset class selection or sector/geographic orientation (see Table B.2). *Directional* hedge funds generally offer high returns commensurate to the high risks and leverage involved. Macro hedge funds are the most prominent example of this investment style. Such funds follow a “top-down” approach and try to profit from

Table B.1 Hedge fund characteristics

#### Return objective

Positive absolute returns under all market conditions, without regard to a particular benchmark. Usually managers also commit their own money; therefore, the preservation of capital is very important.

#### Investment strategies

Position-taking in a wide range of markets. Free to choose various investment techniques, including short-selling, financial leverage and derivatives.

#### Incentive structure

1-2% management fee and 15-25% performance fee. Quite often high watermarks apply (i.e. performance fees are paid only if cumulative performance recovers any past shortfalls) and/or a certain hurdle rate must be exceeded before managers may receive any incentive allocation.

#### Subscription/Withdrawal

Predefined schedule with quarterly or monthly subscription and redemption. Lock-up periods for up to 1 year until first redemption. Some hedge funds retain the right to suspend redemptions under exceptional circumstances.

#### Domicile

Offshore financial centres with low tax and regulatory regimes, and some other onshore financial centres.

#### Legal structure

Private investment partnership that provides pass-through tax treatment or offshore investment corporation. Master-feeder structure may be used for investors with different tax status, where investors choose appropriate onshore or offshore feeder funds pooled into a master fund.

#### Managers

May or may not be registered or regulated by financial supervisors.

Managers serve as general partners in private partnership agreements.

#### Investor base

High net worth individuals and institutional investors. High minimum investment levels. Not widely available to the public. Securities issued take the form of private placements.

#### Regulation

Generally minimal or no regulatory oversight due to their offshore residence or “light touch” approach by onshore regulators; exempt from many investor protection and disclosure requirements.

#### Disclosure

Voluntary or very limited disclosure requirements in comparison with registered investment funds.

major economic trends or events. Emerging markets and other directional hedge funds with a regional focus, by contrast, favour a “bottom-up” approach, i.e. they tend to be asset pickers in certain markets and look for inefficiencies in developing markets.

In contrast to directional funds, *market neutral* hedge funds search for relative value or arbitrage opportunities to exploit various price discrepancies, and try to avoid exposure

**Table B.2 Hedge fund strategies**

<b>Directional</b>
Long/short equity hedge, dedicated short bias, global macro, emerging markets, managed futures.
<b>Event driven</b>
Merger arbitrage, distressed/high-yield securities, regulation D.
<b>Market neutral</b>
Fixed income arbitrage, convertible arbitrage, equity market neutral.
<b>Multi-strategy</b>
<b>Fund of funds</b>

Source: CSFB/Tremont Index.

to market-wide movements. Such strategies are attractive owing to their lower volatility, but they require medium to high leverage in order to benefit from small pricing distortions, particularly in fixed income markets.

*Event driven* strategies lie somewhere in the middle of the volatility spectrum, with corresponding medium volatility and low to medium leverage. Profit opportunities arise from special situations in a company's life, such as mergers and acquisitions, reorganisations or bankruptcies. Merger arbitrage involves buying the shares of a target company and selling the shares of the acquiring company. Hedge funds investing in distressed securities try to exploit the fact that it is difficult to value such securities, and that institutional investors are prohibited from investing in them.

Finally, *funds of hedge funds* (FOHFs) should have lower volatility and attractive risk-adjusted returns due to diversification benefits.

### THE HEDGE FUND INDUSTRY

For a long time, hedge funds were predominantly *domiciled* offshore, as managers were looking for minimum regulatory intervention and favourable tax treatment. However, owing to investor demand and a "light touch" approach by some onshore regulators, new hedge funds have started to consider onshore jurisdictions to govern their operations. In contrast to hedge funds, their *managers* generally reside in major financial centres and may or may not be registered with local regulatory authorities.

Sometimes they are required to register because they also manage regulated funds or they do so to enhance their credibility in the eyes of investors.

*Prime brokers* are banks or securities firms offering brokerage and other professional services to hedge funds and other large institutional clients.<sup>1</sup> For new hedge funds, capital introduction services, whereby prime brokers introduce managers to potential investors, may be particularly vital.

Until this decade, high net worth individuals were the dominant source of funds for hedge funds (see Chart B.1) and this fact, notwithstanding the LTCM debacle, diluted concerns about the systemic importance of hedge funds. However, the growing level of knowledge about hedge fund products and their risk-adjusted diversification properties has also prompted demand from institutional investors. The recent low interest rate environment and the associated hunt for yield have also contributed to this evolution. Furthermore, pension funds seem to be showing more interest than insurance companies, at least in Europe.

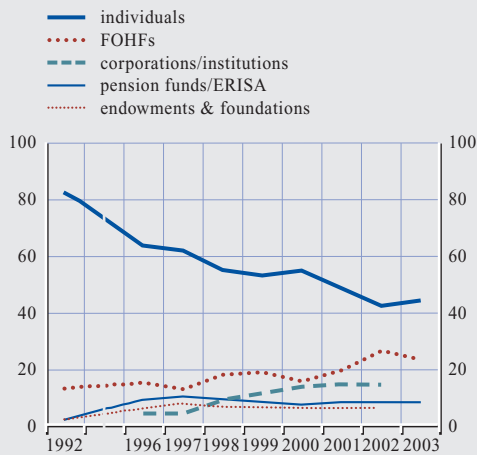
Most hedge funds are relatively small: the great majority have less than USD 100 million of capital under management, while more than one-third have even less than USD 25 million. There is no conclusive evidence on whether size matters for hedge fund returns, although there are indications that smaller hedge funds seem to outperform larger ones, while mid-sized funds lag both other groups. This suggests the phenomenon of a "mid-life crisis" affecting hedge fund managers which is related to the growth of their capital under management.<sup>2</sup> The link, of course, may vary depending on the hedge fund strategy, and macro hedge funds do seem to be an exception.

1 Prime brokerage services involve the clearing and settlement of trades, custodial services, record-keeping, financing, access to research and consulting services, risk management and operational support facilities.

2 See Hedges, J.R. (2004), "Size vs. Performance in the Hedge Fund Industry", Journal of Financial Transformation, Vol. 10, Capco Institute, April.

**Chart B.1 Hedge fund investors**

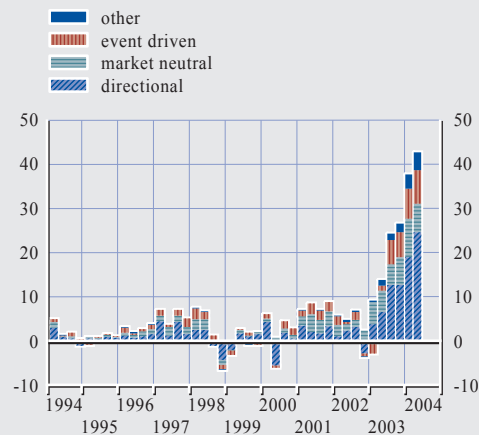
(% of capital under management)



Sources: Hennessee Group (2003, 2004) and International Financial Services (2004).

**Chart B.2 Hedge fund inflows**

(USD billions)



Source: TASS Research. Note: Excluding FOHFs.

In an environment of low interest rates and low returns in financial markets, investors have been searching for alternative investments to improve risk-adjusted returns, which makes hedge funds a natural candidate. All data sources confirm strong growth in the number of hedge funds and capital under management (see Chart B.2). The latest estimates of the total capital under management are close to USD 1 trillion.

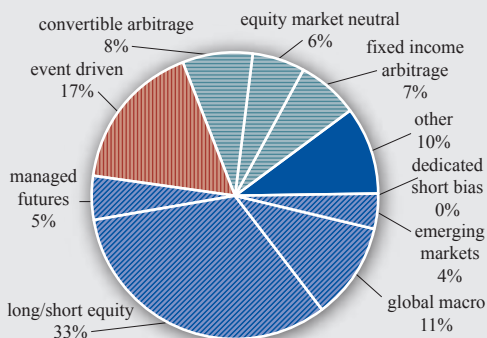
From 1993 onwards, hedge fund capital under management has been growing at an annualised compound growth rate of 26%. The LTCM episode seriously shook the industry, but proved to be only a temporary setback to an accelerating long-term trend.

Investors bring in new funds mainly on the assumption that past returns will continue to be realised. The more recent, relatively mediocre performance of hedge funds raises the question whether they will be able to maintain their impressive historical track record as the number of new hedge funds increases, especially as many of them may end up trying to exploit the same market opportunities.

The role of FOHFs is increasing and they should provide investors with an additional layer of due diligence. However, there is little evidence as to how effectively they perform this task and how well they are diversified. FOHFs are the

**Chart B.3 Hedge fund capital structure by strategy**

(June 2004, % of capital under management)



Source: TASS Research. Note: Excluding FOHFs.

main vehicle for the “retailisation” of hedge fund industry, and in some European countries only FOHFs are allowed for public offering. There are some concerns that retail investors fail to realise or are not informed properly that FOHF fees are levied on top of the fees charged by underlying hedge funds, which can have a significant impact on final FOHF returns.

The current trend is that smaller hedge funds with less than USD 100 million under management usually obtain funds from FOHFs, while the larger ones with USD 1 billion take money directly from institutional investors.<sup>3</sup>

The hedge fund industry is also becoming increasingly institutionalised. Banks are setting up hedge funds under their own brand names in order to offer investors the full spectrum of available traditional and alternative investments. They are also seeking to participate in what might prove to be a structural change in the asset management industry. Lured by high performance fees, many talented bankers and traditional fund managers are leaving for hedge funds. Investment banks have reacted to this “brain drain” by setting up in-house hedge funds and by offering more attractive compensation schemes to their staff. The size of assets managed by traditional financial institutions continues to be higher than those of hedge funds by a very large margin. It is therefore important that this evolution does not hamper the stability and the financial intermediation of the traditional fund management business.

## FINANCIAL STABILITY IMPLICATIONS

### *Possible positive effects*

The overall size of hedge funds is still relatively limited, but their active role in markets makes them much more important than their size alone. The input of hedge funds is very significant, as they often take alternative market views, can leverage their positions, and change their portfolio composition much more frequently than traditional funds. They thrive on perceived inefficiencies by arbitraging away price differences for the same risk across markets. In

this way, hedge funds contribute to the price discovery process.

Hedge funds also tend to be risk-takers in a number of markets. This is especially the case in fledgling and sophisticated markets, where risks are more difficult to quantify and hedge fund managers have a competitive edge because of their superior models. The credit derivatives market is just one example of such a market.<sup>4</sup> More regulated financial institutions are usually reluctant to be exposed to such risks and prefer to earn fees or other types of income with lower risks. The presence of hedge funds as active market participants contributes to the development and liquidity of new specialised OTC markets, leads to the development of better risk management tools, and enhances the spreading of risks among market participants.

It has been argued that hedge funds’ activity may lead to lower market volatility because they are less likely to engage in “momentum trading” (i.e. buying into a rising market and selling into a falling one) and impose longer redemption horizons on their investors. Another element that may support this argument is that they are willing to put their capital at risk in volatile market conditions so that market shocks can be absorbed. By taking contrarian approaches and demonstrating their ability to engage in short-selling, they may also act as a counterbalance to market herding. In addition, hedge funds seem to provide attractive diversification benefits. Correlations of monthly returns between major stock market indices and dedicated short bias or managed futures strategies can even be negative.

The case for the inclusion of hedge funds in an investor’s portfolio becomes even more compelling when historical risk-adjusted returns are taken into account. Thus, new

3 Barclays Capital (2003), “*Observations on the Rapid Growth of the Hedge Fund Industry*”, December.

4 According to the British Bankers’ Association, hedge funds’ share as sellers in the credit derivatives market has surged from 5% in 2001 to 15% in 2003, while their share as buyer has risen from 12% to 16%.

combinations in the risk-return space can be achieved with hedge funds, thereby increasing the completeness of financial markets. This should ultimately also result in a higher degree of social welfare. However, the evidence that hedge funds outperform the market is not yet conclusive, as there are many reservations with respect to the accuracy of hedge fund indices and the sensitivity of comparisons to the choice of the sample period. Moreover, reported returns could be smoother than true economic returns, owing to possible higher illiquid exposures and the less frequent pricing of these exposures.<sup>5</sup>

#### *Leverage and liquidity risks of hedge funds*

The near-collapse of LTCM underscores how hedge fund activities can harm financial institutions and markets. A sequence of negative events can start with losses on leveraged market positions. Liquidity shortages then come into play, which are further exacerbated by asset illiquidity in stressed markets. Thus, leveraged market risk can, if not supported by adequate liquidity reserves or borrowing capacity, force a fund to default on its obligations to prime brokers and other financial institutions. The spillover effect on markets depends on the fund's size and the relative importance of its positions in certain markets. A sequence of negative events can also be triggered by mass exits from markets where hedge funds and proprietary trading desks of large banks have taken relatively similar positions. The concentrations, linkages and spillover effects can ultimately lead to a systemic crisis.

Hedge funds obtain leverage in a number of ways, but they typically prefer derivatives and other arrangements, where positions are established by posting margins rather than the full face value of a position. Repurchase agreements and short sales are also quite popular techniques. Direct credit in the form of loans is rather uncommon, but credit lines for liquidity purposes are widely used.

Accounting-based balance sheet measures of leverage fail to reflect the risk of the assets. Risk-based measures alleviate this shortcoming

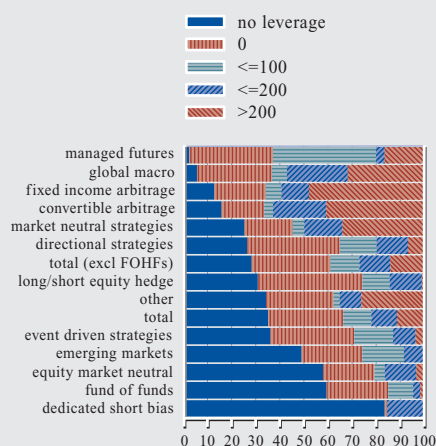
by relating market risk to the capacity to absorb it. However, risk-based leverage measures, even adjusted for potential asset illiquidity, do not capture the funding liquidity risks arising from margin calls, redemptions or financing mismatches. The LTCM episode has clearly underscored the role of funding liquidity in escalating the effects of otherwise acceptable losses on market positions. Hence, leveraged market risk should be evaluated in conjunction with the liquidity risk stemming from asset illiquidity and funding risks.

Two market neutral strategies, fixed income arbitrage and convertible arbitrage, tend indeed to have the highest leverage (see Chart B.4), although the degree of leverage in the equity market neutral strategy is one of the lowest. Managed futures and global macro funds are also highly leveraged, as both strategies rely extensively on derivatives to acquire the desired exposures. As a rule, FOHFs do not seem to be highly leveraged, although some do use leverage

5 Getmansky, M., A. W. Lo and I. Makarov (2003), "Serial Correlation and Illiquidity in Hedge Fund Returns", April.

**Chart B.4 Hedge fund leverage by strategy**

(distribution of average leverage, % of capital under management)



Source: TASS database.  
Note: Only funds with reported (estimated) capital under management in June 2004 are included.

in excess of 200. FOHF products with capital protection are quite popular among risk-averse institutional investors, but the design of such products<sup>6</sup> also implies that the FOHF will have to employ leverage to achieve targeted returns.

Leverage seems to vary greatly by hedge fund size, and the largest hedge funds with more than USD 1 billion of capital under management tend to exhibit higher levels of leverage. In the latter group, the share of hedge fund capital with a leverage factor of more than 200 is 19% – the highest among all size groups (see Chart B.5).

Analysis of the average leverage among active funds with different vintage (inception) years might provide some insight into the evolution of leverage. Interestingly, older funds tend to be more leveraged than younger ones (see Chart B.6), providing some support to the view that leverage across the hedge fund industry has probably declined and is presently lower than at the time of the near-failure of LTCM. If this prevalent view is correct, then there seems to be lower potential for the forced liquidation of hedge fund positions in times of stress. However, analysis of a possible market impact should

also incorporate the leverage and positions of proprietary trading desks of regulated banks and securities firms, since they may adopt “hedge fund”-like strategies.

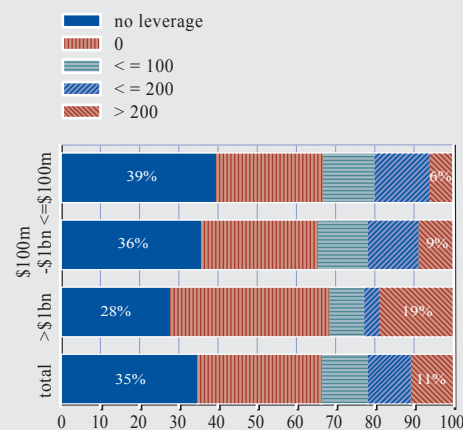
It remains unclear whether hedge funds with less liquid investments take appropriate prudent protective measures. These could, for example, include less frequent redemptions, lengthier lock-up periods, higher liquidity reserves or credit lines for unforeseen liquidity shortages.

Market risk, leverage and liquidity risks may interact among each other, so a vulnerability analysis should ideally seek to identify possible combinations and concentrations of high volatility, high leverage, higher funding risks and larger hedge fund size.

6 For example, 60% of attracted capital is invested in zero coupon bonds maturing after 10-12 years and the remaining 40% invested in underlying hedge funds. An investor is guaranteed to receive 100% of the initial investment, provided the investment is held until the maturity of the zero coupon bonds. However, 40% of the initial investment has to be invested in a way that could earn 8-12% on the 100% of initial investment; therefore, the use of leverage is inevitable.

**Chart B.5 Hedge fund leverage by size**

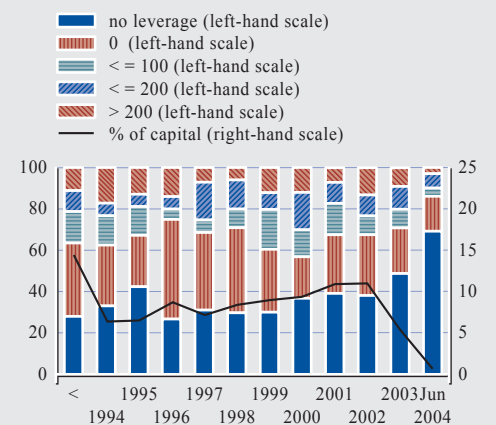
(distribution of average leverage, % of capital under management)



Source: TASS database.  
Note: Only funds with reported (estimated) capital under management in June 2004 are included.

**Chart B.6 Hedge fund leverage and capital by vintage year**

(distribution of average leverage, % of capital under management)



Source: TASS database.  
Note: Only funds with reported (estimated) capital under management in June 2004 are included.

There are concerns that recent mediocre performance may encourage hedge fund managers to employ greater leverage or more aggressive strategies. After poor performance, capital might flow out so that hedge funds would be forced to liquidate positions. This could lead to a market-wide disinvestment spiral, potentially resulting in systemic risk.

A number of mitigating factors are however also at play. Institutional investors and FOHFs, which already account for half of the capital managed by hedge funds, should have a better understanding of hedge fund operations. Hence, they may be more patient when confronted with temporary underperformance. Moreover, lengthy lock-up periods and less frequent redemption schedules should provide more time for hedge funds to recoup past shortfalls and settle their liabilities.<sup>7</sup>

#### *Impact on credit institutions*

Direct credit exposures of credit institutions and securities firms (prime brokers) to hedge funds are the most obvious channel whereby hedge funds could affect the robustness of the financial system. Prime brokers provide leverage, issue credit lines and have trading exposures to hedge funds in OTC and other markets. Other types of direct exposures include income flow from prime brokerage services and direct market risk exposure, as banks invest their own money into hedge funds.

Little information on direct exposures is available to substantiate the impact of hedge funds to prime brokers. Publicly available information provided by prime brokers is very limited, although improved disclosure by financial institutions with regard to their dealings with hedge funds was one of the most important recommendations made after the LTCM crisis.<sup>8</sup> Better transparency was and still is seen as the main instrument to make market discipline effective and prevent future systemic disruptions.

A very rough indication of banks' direct exposures towards hedge funds can be obtained

by examining BIS data on consolidated international bank claims on private non-bank borrowers in offshore centres. These exposures have been growing approximately in line with the growth of the hedge fund industry.

Some of the largest prime brokers appear very dependent on the income stream from prime brokerage services to hedge funds. In some cases, such income is reported to make up 25-40% of trading and commission income.<sup>9</sup> Tight competition reportedly led in 2003 to a reduction in the market shares of the two largest prime brokers.<sup>10</sup> Some prime brokers are more concentrated in a few hedge fund strategies and may therefore be more vulnerable to certain types of disruptions in certain markets. Strong competition sometimes also results in a situation whereby prime brokers have to provide seed capital in order to establish a prime brokerage relationship. However, such investments can also improve the prime broker's own profitability via higher returns and lucrative hedge fund management fees. Furthermore, there are some signs that tight competition has an impact on the terms of bank credit to hedge funds. Credit has become more available and hedge funds can negotiate better access to credit, both for their regular business and for unexpected liquidity shortages. Established prime brokers have also indicated that there has been some erosion in credit standards by new entrants to the prime brokerage business.

However, risk management practices, particularly the management of counterparty risk, have

7 However, the proliferation of FOHFs, which generally provide the possibility of monthly redemption, could mean that more flexible redemption profiles may be demanded from the underlying hedge funds. Thus, the hedge fund industry may risk losing one of its defensive features.

8 US President's Working Group on Financial Markets (1999), *"Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management"*, April.

9 The prime brokerage business is highly concentrated. Two firms, Morgan Stanley and Goldman Sachs, control more than 40% of total client assets. Other prime brokers in the global top ten, which includes two EU15 and two Swiss banks, clearly lag behind the two leaders.

10 EuroHedge (2004), *"Chasing Pack Continue to Close Gap on the Big Two"*, March, pp. 19-21.

improved significantly since the near-collapse of LTCM. Most exposures to hedge funds are collateralised and the largest banks make extensive use of VaR measures and stress tests to quantify potential future credit exposures and to protect them from an LTCM-type scenario or other extreme events. The information flow from hedge funds to banks has also probably improved. Prime brokers seem to think that the combination of greater transparency and collateral enables them to manage hedge fund-related risks properly. Nevertheless, there are risks that in a highly competitive environment, risk management standards will be lowered to an inadequate level. Since the prime brokerage business is quite concentrated, it should be relatively easier for supervisors to monitor their activities and to detect any substantial erosion of risk management standards.

Hedge funds, particularly the larger ones, prefer to use more than one prime broker to diversify and protect their proprietary trading strategies. Rapidly evolving needs and incentives provided by prime brokers can nevertheless induce them to rely on the services of just one prime broker. However, credit providers mostly do not have full daily information on the positions and risks faced by hedge funds.

Apart from direct risks, banks and securities firms face a number of indirect risks stemming from hedge fund activities. Indirect credit risk may arise because of credit risk from counterparties with large exposures to hedge funds. Moreover, the value of market positions in prime broker portfolios may be adversely affected by hedge fund actions in financial markets, as discussed in the next sub-section. Finally, prime brokers may lose income from their own asset management business if hedge funds continue to expand. However, banks seem to be taking the threat of hedge funds seriously and are ready to adjust their business strategies accordingly.

#### *Impact on financial markets*

Hedge funds employ active, opportunistic and sometimes leveraged trading strategies. They

turn their portfolios over far more frequently than traditional funds, so their short-term influence on markets can be larger than the capital under management would indicate. Hedge funds generally prefer liquid and “anonymous” markets, i.e. ones that can be entered and exited swiftly at low cost. Their actions tend to be sporadic and, in contrast to traditional funds, they do not need to be fully invested all the time.

Efforts to estimate the impact of hedge funds on financial markets are hampered by the lack of good data. Past episodes where hedge funds were reportedly involved are numerous, most of which relate to macro hedge funds trying to exploit doubts about the sustainability of unsound macroeconomic policies or probing shaky currency pegs.

Under normal conditions, hedge funds contribute to the liquidity and efficient functioning of financial markets, but in certain cases, especially in small or medium-sized markets, their actions can be destabilising. Concentration information on OTC derivatives and other less transparent markets can provide an early warning signal on the build-up of concentrated positions in certain markets and can alert market participants to the risks involved.

Another question that often arises is whether hedge funds – through their daily activity – stabilise or destabilise financial markets. In this context, two forms of trading can be distinguished: positive and negative feedback trading. The former refers to the buying of financial instruments after price increases, and selling them after price decreases. Such practice can amplify price swings and lead to overshooting or bubbles. Positive feedback or momentum trading can be generated by dynamic hedging, stop-loss orders, similar position-taking by other market participants, forced liquidations related to margin calls or just by simple trend-following strategies. By contrast, negative feedback or contrarian trading can have a stabilising influence on markets.



Intuitively, hedge funds should be more contrarian, as only trading against the crowd can be expected to generate persistent excess profits. However, markets are not completely efficient and trend following can, at times, be lucrative. Managed futures hedge funds (5% of total single hedge fund capital under management, see Chart B.3) are reportedly cited as utilising trend-following approaches, and this is probably the main factor explaining the negative year-to-date performance in rather range-bounded markets. Other directional strategies – global macro (11%), emerging markets (4%), long/short equity (33%) – can be on both sides of the spectrum, while dedicated short sellers (less than 1%) are probably more contrarians. Event driven (17%), market neutral (relative value and arbitrage) (20%) strategies probably also involve the taking of more contrarian views. Hence, it is very difficult to determine whether hedge funds, on average, are momentum traders or contrarians.

Furthermore, there are concerns that as the number of new hedge funds increases, they may be increasingly attempting to exploit the same market opportunities, possibly relying on similar models. The so-called crowding of positions in this way is another form of momentum trading and could have a destabilising impact on both rising and, especially, falling markets. There are indications that certain strategies, such as convertible arbitrage, have reached capacity limits related to market size. Only funds with new ideas or dealing in fledgling sophisticated markets can continue to deliver alpha.<sup>11</sup> According to market reports, the capacity limits of certain strategies or markets makes essentially limitless foreign exchange markets attractive to hedge funds once again.

There are indications, however, that the prevailing concentration in the hedge fund industry is not very high, with currently no hedge fund in the market comparable to the size of LTCM in its heyday. This, together with the fact that there are a larger number of active hedge funds, could also mean that the probability and risks of large crowded trades are lower.

Conventional wisdom suggests that hedge funds thrive in volatile financial markets. This is frequently put forward as a reason for the diminishing returns that have been observed recently in the rather low volatility environment. There is no conclusive evidence on this issue and calculations indicate that over the past ten years, hedge funds have tended on average to perform better when stock markets were less volatile. The correlation coefficients between the annualised S&P 500, Dow Jones EURO STOXX historical monthly volatility and the CSFB/Tremont Hedge Fund Index monthly returns are negative (see Charts B.7 and B.8). The results are similar across almost all hedge fund strategies. Only dedicated short sellers and managed futures funds, which together account for only around 5% of total capital under management, tend to perform better in volatile markets. Thus, although short sellers are more likely to be contrarians, their returns tend to be higher in volatile markets, as volatility is usually higher in falling rather than rising markets.

## CONCLUSIONS

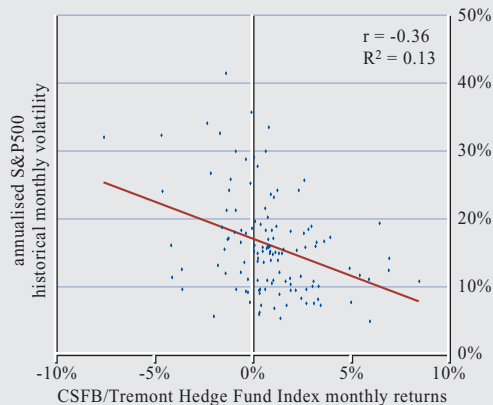
The increasing proliferation of hedge funds as an alternative investment for both institutional and retail investors raises questions about the wider financial stability implications of this form of financial intermediation. Although hedge funds are very much associated with the negative events of the LTCM period, they also have a positive effect on the financial system: they contribute to market liquidity, play an important role in the price discovery process, contribute to the elimination of market inefficiencies, and offer diversification benefits to investors.

The potential threat of hedge funds to credit institutions is mainly the result of their role as prime broker. In this capacity, they provide leverage, issue credit lines and incur trading exposures. Data seem to point to a strong concentration of the prime brokerage

<sup>11</sup> Return associated with active asset management. This is also referred to as non-systematic risk or specific risk, as opposed to systemic or overall market risk.

**Chart B.7 Hedge fund returns and S&P 500 volatility**

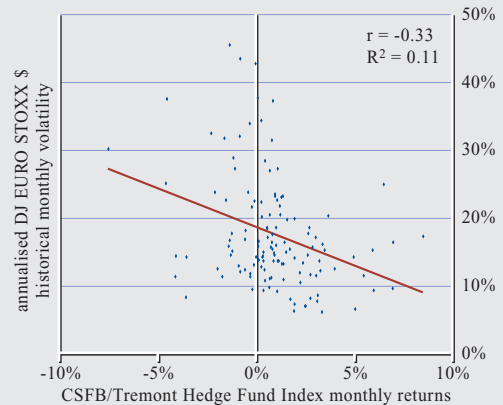
(Jan. 1994 – Oct. 2004)



Source: Bloomberg.

**Chart B.8 Hedge fund returns and DJ EURO STOXX volatility**

(Jan. 1994 – Oct. 2004; both in USD terms)



Source: Bloomberg.

business with a limited set of important and global market players. It also seems that this business has become increasingly competitive over time, with a number of second-tier players aggressively trying to gain market share. Considerable progress has been made in the further development of risk management standards that address some of the concerns related to exposures to hedge funds. Market data, such as VaR figures, show that a number of large credit institutions (including European ones) are taking on more market risk and engaging in “hedge fund”-like strategies. Under these conditions, negative market events may not only have an impact on the direct relationship between credit institutions and hedge funds (for example, through credit exposures or commission income), but may simultaneously affect the proprietary market positions of credit institutions.

No conclusive evidence on the impact of hedge funds on financial markets exists, but the available information points to a situation which is much less worrisome than at the time of the LTCM crisis. First, as more players have entered the market, positions are much less concentrated in one or a few funds. Second, in general it seems that the leverage levels taken on by funds are now lower. There is a risk, however, that as

more money flows into hedge funds and profit opportunities diminish commensurately, some players might take on more risk or leverage to achieve targeted returns. In addition, there is the possibility that hedge funds could engage in “crowded trades”, i.e. take similar positions which might lead to market disturbance in case of simultaneous exits.