Financial Services Authority

Assessing possible sources of systemic risk from hedge funds

A report on the findings of the hedge fund as counterparty survey and hedge fund survey

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This paper reports on the findings of the hedge fund as counterparty survey and hedge fund survey.

This is not a consultation document, but should you have any comments please address them to:

Hedge Fund Survey Team
Financial Services Authority
25 The North Colonnade
Canary Wharf
London E14 5HS

E-mail: hedgefundsurvey@fsa.gov.uk

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Introduction

We have an important role to play in assessing and mitigating systemic risk as we carry out our supervisory and regulatory functions.[1] It has been suggested that hedge funds[2] could pose a source of systemic risk to the financial system and this paper describes some of the survey work we have carried out to address the issue.

We believe that, in the case of hedge funds, systemic risk could arise through two main channels:

1. **The credit channel**

   If hedge funds suffer losses on their investments, then once investors' capital has been eroded, losses would be borne by creditors. Where the failing fund is large, or there are a number of funds involved, then this could destabilise creditors, who might be systemically important in their own right.

2. **The market channel**

   In a number of asset classes, hedge funds may be significant investors and/or providers of liquidity. As a result, it is possible for their collective impact to be one of the drivers of unsustainable asset price upswings in certain markets. And, in particular, in moments of financial crisis, forced selling by hedge funds may cause downward price adjustments to overshoot.

1 For the purposes of this work, a systemic risk is a risk which, if it crystallised without any form of intervention by the authorities, would mean a high likelihood of major, rapid disruption to the effective operation of a core function of the financial system (and so leading to a wider economic impact).

2 We note that no formal definition of 'hedge fund' currently exists although it is generally accepted that such funds share a number of similar characteristics. For a discussion of hedge funds and systemic risk, please see: www.banque-france.fr/gb/publications/telechar/rsf/2007/etud5_0407.pdf.

We conduct two different surveys every six months that attempt to examine and identify these risks, as well as inform us in our supervisory work. This paper sets out some of the key findings from the surveys in October 2009.

The Hedge Funds as Counterparties Survey (HFACS) and the Hedge Fund Survey (HFS)

The HFACS has been running semi-annually for five years. It surveys some of the largest FSA-authorised banks with exposures to hedge funds about their associated credit counterparty risks. We ask about the size, channel and nature of the larger credit counterparty risks that individual banks have to hedge funds, both individually and all together. The HFACS mainly focuses on the credit channel for systemic risk.

The HFS was introduced in October 2009 to complement the HFACS. It asks 50 of the largest FSA-authorised investment managers[3] about the hedge fund assets they manage and about the larger individual hedge funds for which they undertake management activities. The October 2009 HFS covered FSA-authorised managers, 'touching' over $300bn of hedge fund assets under management[4] representing approximately 20% of the global industry. These assets were distributed between a number of strategy types with Multi-strategy, Global Macro, Managed Futures and Equity Long/Short accounting for 83% of the total. 85% of surveyed assets were domiciled in 'traditional' offshore centres.[5]

The main objectives of the HFS are to help us better understand:

- managers' and larger funds' use of leverage, whether through borrowing or derivatives;
- managers' and larger funds' 'footprints' in various asset classes, including concentration and liquidity issues;
- the scale of any larger funds' asset/liability mismatch; and
- the credit counterparty risks of larger funds.

This means that the HFS mainly focuses on the market channel for the potential systemic risks posed by hedge funds.

3 This includes FSA-authorised firms that might be acting as sub-advisor for larger US hedge fund managers. We surveyed 50 firms in October 2009, but may increase the number of participants in future surveys though we are mindful of maintaining a proportionate approach to assessing systemic risk.

4 We use the expression 'touched' deliberately because in some circumstances this can be the global assets under management (AUM) for managers where the FSA-authorised London office is part of a larger global group.

5 Such as the Cayman Islands, Bermuda, Bahamas and the British Virgin Islands (B.V.I).

October 2009 HFS and HFACS results

Both surveys gathered a very large amount of data. Here we provide analysis and conclusions on key subjects, such as leverage (assessing funds' overall footprint and cash borrowings), asset/liability mismatch, credit counterparty risk, fund performance and other supervisory issues.

Leverage

One important aim of the HFS was to understand the use of leverage by hedge funds. The concept of 'leverage' is difficult to define in a consistent way across hedge funds, particularly because of the range of trading strategies and products used.[6] In our view, the term 'leverage' is often incorrectly used for hedge funds as a synonym for risk. So, we did not ask hedge fund managers directly about their funds' 'leverage', instead we have gathered the basic building blocks that might make up any assessment of risk. This allowed us to reassemble the data we gathered in different ways across strategies, funds or groups of funds to assess leverage in a number of ways.

Footprint

One concept of 'leverage' we examined was a hedge fund's total gross 'footprint'[7] across asset classes compared with the equity they have raised from investors. A fund's gross footprint is the total value of all long and short securities positions held, regardless of how they are held (physically or through derivatives) and ignoring the fact that many of the risks may be offsetting. This gives us an idea of the scale of a fund's presence in the market.

Chart 1 shows, by fund strategy, the size of this overall footprint as a multiple of net equity, as at 31 October 2009.[8] As we would expect, the results demonstrate that with 'spread-based' strategies (such as those used by fixed-income arbitrage funds) there is a greater ratio of gross footprint to net equity than for fundamental strategies (like equity long-short).[9] We also note that the two strategies with the highest ratio of gross footprint to net equity together accounted for less than 10% of surveyed assets under management.

6 There is a vast amount of literature on this topic and the European Central Bank cited this issue and put forward some measures of leverage in its occasional paper Hedge Funds and their implications for financial stability (available at: www.ecb.int/pub/pdf/scpops/ecbocp34.pdf)

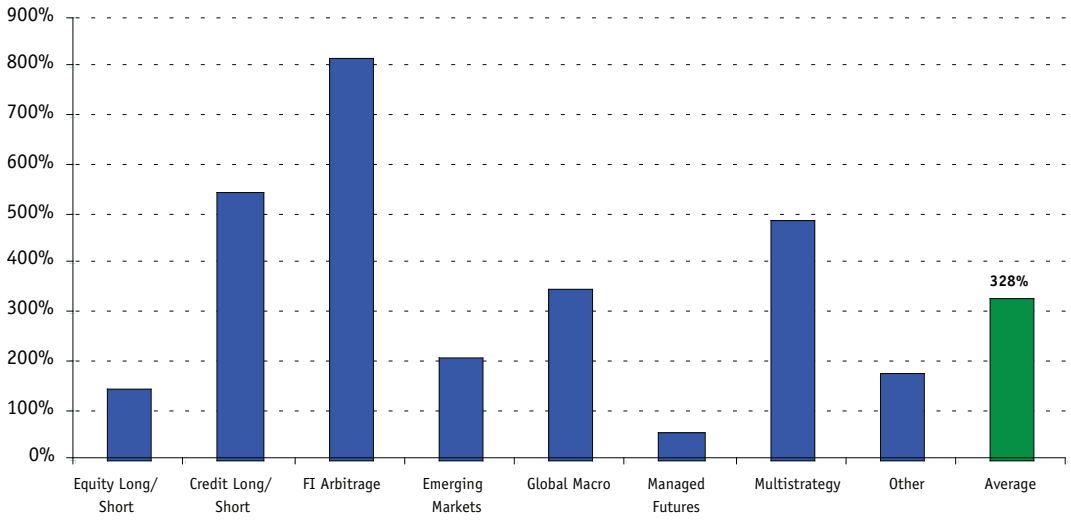
7 Footprint is defined here as the long and short positions held in equities, corporate bonds, convertible bonds, sovereign bonds, loans, CDS and structured credit (for securities whether they are held physically, synthetically or via derivatives – in which case delta adjusted notional value of options and total notional value of futures). It does not include FX, commodity or interest rate derivatives.

8 In defining leverage, it will be important to watch the consultation process of the Basel Committee on Banking Supervision in their efforts to agree a definition of leverage ratios for banks to see whether and how their methodology might in the future be applied to hedge funds: BCBS Strength and resilience of the banking sector www.bis.org/publ/bcbs164.pdf page 60-66.

9 A larger footprint does not necessarily equate to a larger risk as this metric takes no account of netting long and short positions or the volatility of the assets that make up the footprint. Indeed risk measures such as VAR suggest that funds with a larger footprint relative to their net equity often have a VAR close to the sample mean.

The use of such a measure would have helped to pick up anomalies such as Long-Term Capital Management (LTCM). Using data from an official 1999 report on LTCM[10] we can estimate that the gross footprint of the LTCM fund would have been many multiples greater than the numbers in Chart 1.

Chart 1: 'Footprint' as a multiple of net equity



The data on hedge funds' overall footprint also allowed us to assess their dominance in a number of asset classes (both in terms of size and contribution to daily volume).

On 31 October 2009, there were few asset classes where our samples' aggregate footprint was greater than 3% of any total market size. In European equities, for example, our sample had gross positions[11] equal to 0.9% of the value of European equity markets.[12] Similarly, in the data we captured on funds' derivative exposure, our sample's gross footprint in many derivative products was small compared with the Bank of International Settlements (BIS) estimates[13] of the market size. An exception was convertible bonds, where hedge funds seem to comprise a more significant proportion of ownership. Our sample of funds had positions in convertible bonds equating to approximately 10% of the size of the global convertible bond market.[14] This was not unexpected, as convertible bond arbitrage is a popular strategy and it is widely recognised that hedge funds are significant participants in the convertible bond market.

10 'Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management', Report of the Presidents Working Group on Financial Markets, April 1999: www.treas.gov/press/releases/reports/hedgfund.pdf.

11 Longs and shorts plus exposure through derivatives (delta adjusted for options and gross notional for futures).

12 www.world-exchanges.org/statistics/ytd-monthly

13 See www.bis.org/statistics/index.htm

14 Based upon information on the size of the convertible bond market from the BoA/ ML All Convertibles Index (US, Europe, Japan, Asia ex-Japan & Other) as at 31 October 2009.

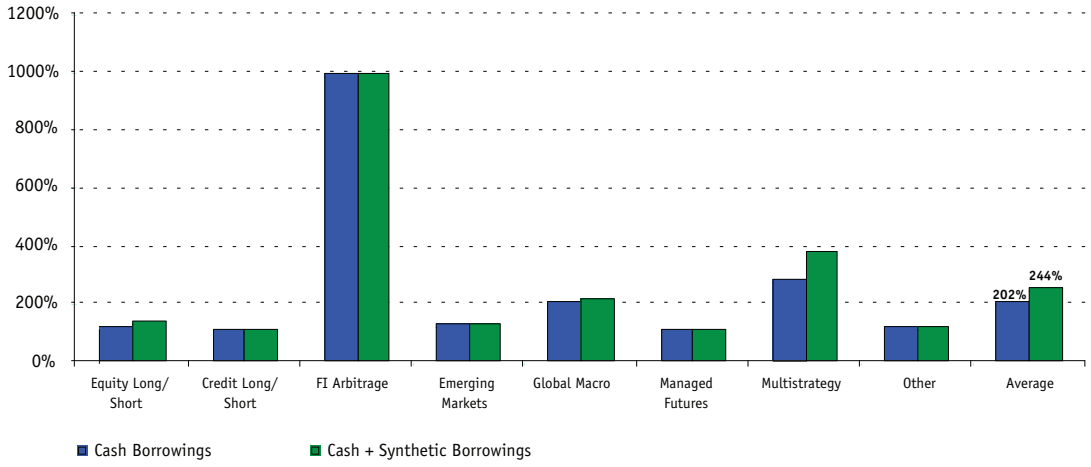
Borrowing

Most concepts of hedge fund leverage involve borrowed money or increasing exposure to an underlying asset via derivatives. The latter is particularly hard to assess given the complex nature of options. However, assessing the cash borrowing of hedge funds is more straightforward.

There are a number of channels through which hedge funds can borrow money. These include collateralised borrowing under prime brokerage agreements, sale and repurchase (repo) agreements, or synthetically using instruments like swaps and contracts for difference. Chart 2 shows hedge funds' cash borrowing as a multiple of net equity, firstly through prime brokerage and repo, and secondly with synthetic lending also included.

It can be seen that average cash borrowing for surveyed hedge funds is 202% of net equity.[15] There were few surprises in these results, with fixed income arbitrage funds borrowing the most (through repo) and equity long short funds among the least (137% when synthetic borrowing is also included). We will be able to monitor with future surveys how these borrowing metrics change over time.

Chart 2: Borrowings as a multiple of net equity



Asset/liability mismatch

Another important focus of the HFS is to examine the scale of any asset/liability mismatch among hedge funds. *The Turner Review* says: 'one of the striking developments of the last several decades has been that a growing proportion of aggregate maturity transformation has been occurring not on the banking books of regulated banks with central bank access, but in other forms of *shadow banking*'.[16] The HFS helps us to understand the degree to

15 As per market convention this is measured as: (cash borrowed + net equity)/ net equity. These numbers are consistent with previous FSA assessments estimates of 'leverage' for example 'Hedge fund leverage is typically well below that of banks – about two to three on average' from Turner review, p74 www.fsa.gov.uk/pubs/other/turner_review.pdf

16 www.fsa.gov.uk/pubs/other/turner_review.pdf page 23. See also Paul Tucker's speech on Shadow Banking for background www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf.

which hedge funds may routinely engage in maturity transformation. Participants were asked to assess, in relation to the larger funds they managed, the liquidity of the investments being made compared with the liquidity of liabilities to investors and finance providers.[17] We realise that this data is often subjective – particularly regarding the liquidity of hedge fund's assets – and also not representative of likely liquidity in a distressed environment.

Chart 3: Liquidity of assets and liabilities

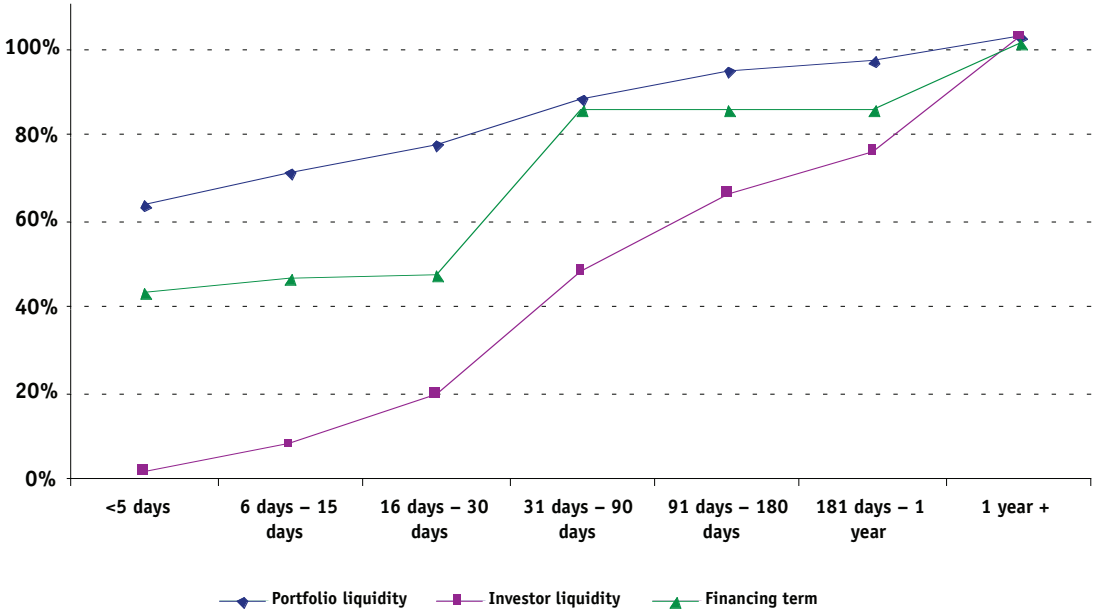


Chart 3 suggests that as at 31 October 2009, the assets of the surveyed hedge funds could be liquidated in a shorter timeframe than the period after which their liabilities (to investors and finance providers) would become due. However it is important to note that the assets held by hedge funds can be contractually long in maturity[18] and hedge funds are therefore performing a maturity transformation function. The risks involved in this transformation, for both individual hedge funds and the whole financial system, are only mitigated by market liquidity (the ability to sell contractually long assets in liquid markets) to the extent that markets can be assumed to stay liquid in stressed conditions.

On the subject of investor liquidity, data from the HFS showed that 8% of surveyed funds' assets under management were subject to special arrangements regarding redemptions and/or fees (such as so-called 'side pockets') as at 31 October 2009. Again, this is something we will monitor for significant changes over time.

17 Participants were asked to calculate Portfolio liquidity based upon average 90-day trading volumes and on the basis of trading a maximum of 25% of this amount in a single day. For less liquid positions, participants were asked to use best estimates for liquidity based on market conditions over the last six months and assuming no fire-sale discounting. Investor liquidity was calculated in a 'worst case'scenario, where gates were enforced, although funds not suspended.

18 Such as a corporate bond which matures in five year's time.

Credit counterparty risk

An important function of the two surveys is that they allowed us to examine the credit counterparty risks that exist between banks and hedge funds – helping us understand the possible transmission mechanisms for systemic risk through the 'credit channel'.

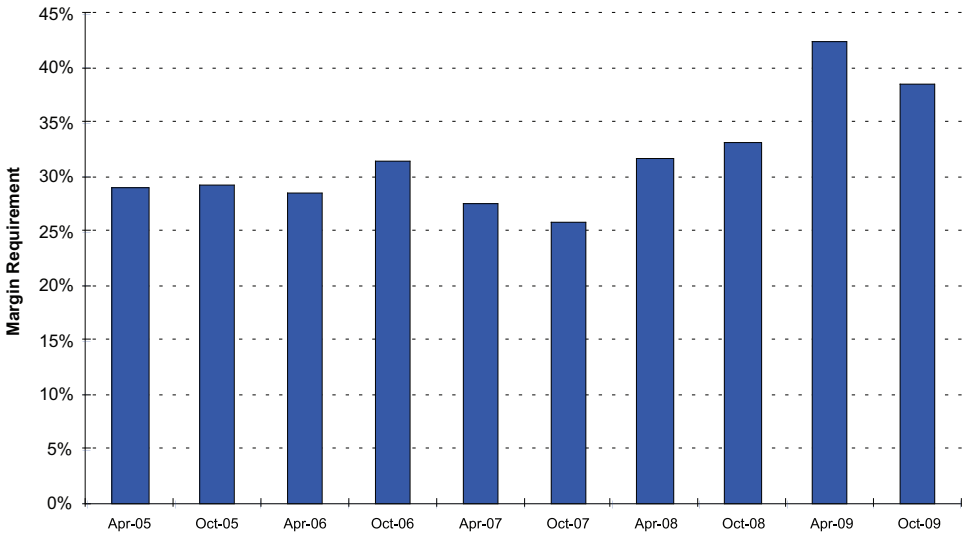
The HFACS identified those individual funds that posed the greatest counterparty credit risk across banks, and the HFS gave us information about those funds' activities.

Data from the HFACS suggested that the maximum potential credit exposure[19] any one bank in our survey had to any one hedge fund was less than $500m. The largest hedge fund in terms of aggregate credit exposure accounted for just over $1bn of credit exposure across a number of banks. While these are large numbers, they are manageable in the context of the overall credit risks and capital requirements of the surveyed banks.

Average margin requirement and excess collateral

Chart 4 shows the average margin requirement[20] of surveyed prime brokers has increased reasonably significantly[21] since October 2007 and in a pro-cyclical fashion. Firms and supervisors will need to make sure that margins do not fall to unsustainably low levels during benign market conditions in the future to avoid this strong pro-cyclical effect.

Chart 4: Average margin requirement



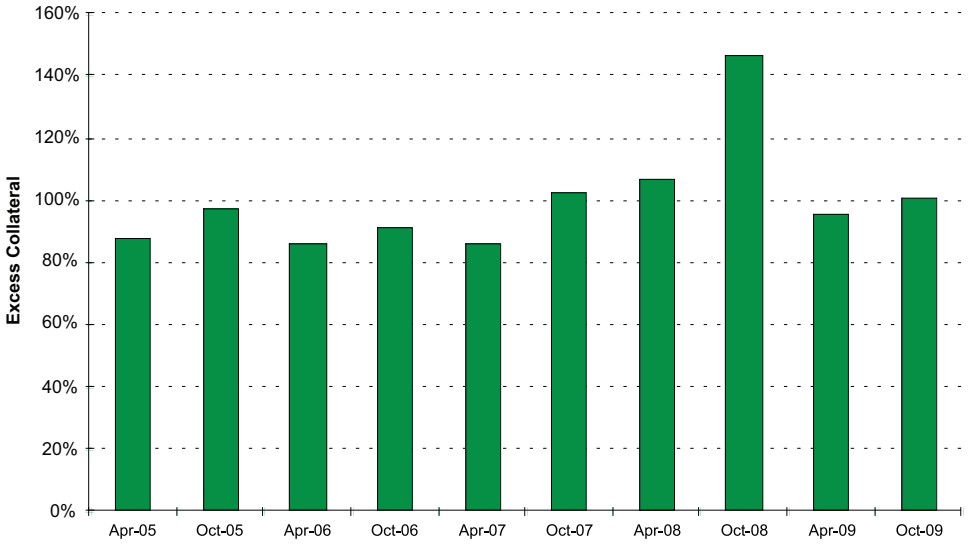
19 "Potential Exposure" is defined as potential exposure which is equal to an unsecured exposure plus a risk based element (typically VaR-based) standardised to a 99% confidence interval and 10-day holding period.

20 Margin Requirement is expressed as a percentage of aggregate Long Market Value.

21 We note that there may be other drivers of increased margins beyond heightened risk aversion, such as a change in the composition or volatility of assets within prime brokerage accounts.

Excess collateral is also a focus of the HFACS; defined as the buffer remaining in prime brokerage accounts above the base margin requirement. Chart 5 shows that prime brokers have excess collateral in these accounts, although we note there are other factors that could influence these numbers, such as the increasing use of custody accounts and other developments in hedge funds' cash management. Furthermore, this excess collateral may not provide the protection it suggests if it can be moved rapidly.

Chart 5: Average excess collateral[22]



Informing supervisory activities

The survey work also gives us information that is helpful in our supervision of FSA-authorised firms. For example, it informs us that as at 31 October 2009 approximately half of hedge funds' main share classes by assets were below their high water mark.[23]

We can also use information on hedge fund performance and change in net asset value (NAV) to identify those funds that had lower or higher than average performance and those that had significant changes in the level of their assets under management (see Charts 6 and 7). This can help our supervisors identify emerging risks to hedge fund managers' business models, a key focus of our supervisory process. For example, we can monitor 'leverage' trends and asset outflows for managers with poor performing funds that are trading below their high water mark and where there may be incentives to take greater risk.

22 Excess Collateral: the net equity held in a prime brokerage account, in excess of the margin requirement..

23 "Where a hedge fund applies a high water mark (HWM) to an investor's money, this means that the manager will only receive performance fees, on that particular pool of invested money, when its value is greater than its previous greatest value. Should the investment drop in value then (typically) the manager must bring it back above the previous greatest value before they can receive performance fees again." (Source: Eurekahedge) Note that a fund's main share class being below its HWM does not necessarily mean that performance fees are not being charged, because different investors may have different HWMs.

Chart 6: Fund performance (per share basis) in six months to 31 October 2009

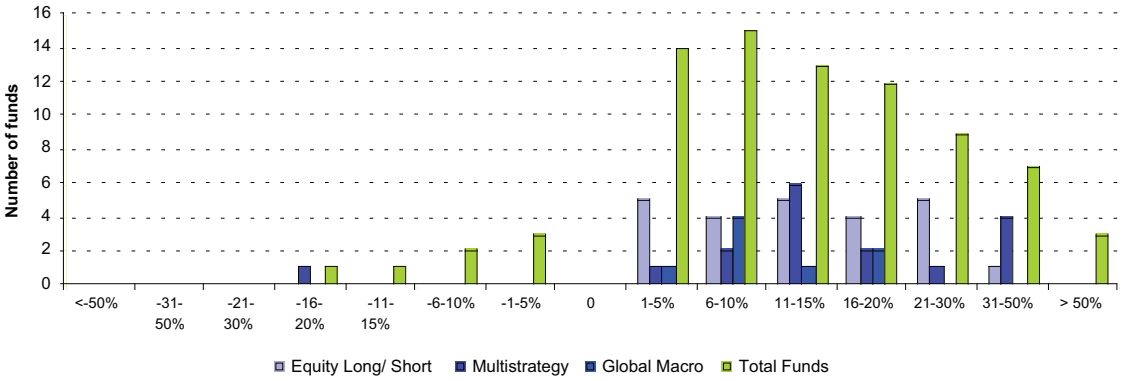
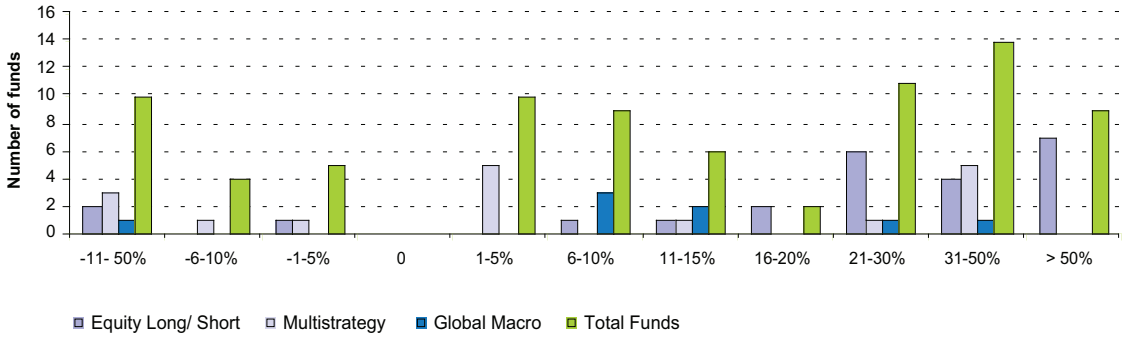
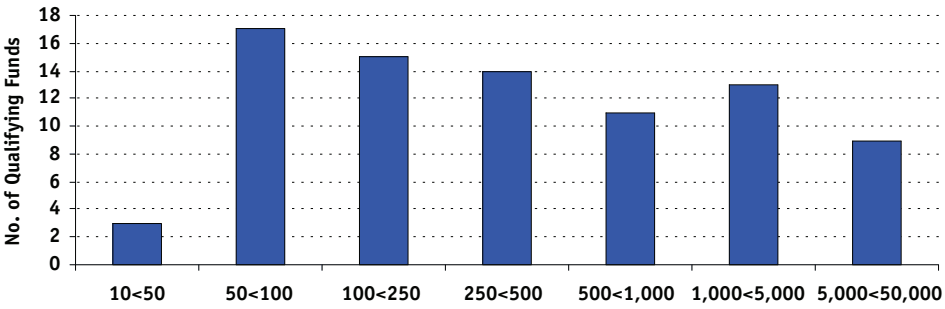


Chart 7: Change in Fund NAV in six months to 31 October 2009



Results from the HFS also showed that the number of open positions that a fund can have varies enormously (see Chart 8). This would have exposed LTCM as an outlier, as it is understood that, at the time the fund became distressed, it had approximately 60,000 open positions. Where funds have high numbers of positions this could suggest that operational risk is a greater concern and may require more attention from supervisors for some firms.

Chart 8: Fund total number of open positions



We also gather information about derivative clearing mechanisms and this shows that approximately 70% of surveyed funds cleared at least a proportion of their derivatives trades centrally, with 16% of funds using a central clearing counterparty exclusively. Most of the surveyed funds with a large number of open positions are clearing a large proportion of these trades centrally.

Conclusion

Surveying managers of hedge funds and some of their key bank counterparts helps to inform our supervisory work and improve our understanding of any systemic risks that might arise through the activities of hedge funds.

The results from this survey work were mostly in line with our expectations. The HFACS data suggests that on 31 October 2009 major hedge funds did not pose a potentially destabilising credit counterparty risk across the surveyed banks. HFS data shows a relatively low level of 'leverage' under our various measures and suggests a contained level of risk from hedge funds at that time. While our analysis revealed no clear evidence to suggest that, from the banks and hedge fund managers surveyed, any individual fund posed a significant systemic risk to the financial system at the time, this position could change and future surveys will be an important tool in identifying emerging risks.

It is also notable that the Alternative Investment Fund Managers Directive, which is currently under negotiation in Europe, may at some point in the future require national supervisory authorities such as the FSA to collect certain data from alternative investment fund management sectors, including hedge funds. We hope that our work in this area can contribute to the ongoing debate about the Directive.

Our intention is to repeat these surveys at six monthly intervals and build a time series of data that will help us monitor trends in hedge funds as they relate to systemic risk. Discussions are taking place within the Financial Stability Board and IOSCO to ensure consistency in the timing and content of systemic risk data collection for hedge funds and we hope our work will help inform that process. A consistent and proportionate global approach will help deliver G20 commitments of better coordination between regulators and, through improved data sharing, the clearer identification of global risks.

The Financial Services Authority
25 The North Colonnade Canary Wharf London E14 5HS
Telephone: +44 (0)20 7066 1000 Fax: +44 (0)20 7066 1099
Website: http://www.fsa.gov.uk