Financial Services Authority

Assessing the possible sources of systemic risk from hedge funds

A report on the findings of the Hedge Fund Survey and Hedge Fund as Counterparty Survey

July 2011

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Introduction

This paper sets out the results of the Financial Services Authority's (FSA) latest Hedge Fund Survey (HFS) conducted in March 2011 and the Hedge Fund as Counterparty Survey (HFACS) conducted in April 2011. The surveys are conducted every six months and form an important part of our work on assessing risks to financial stability from outside the boundary of prudential regulation.[1] This in turn forms a key component of our efforts to protect and enhance the stability of the UK financial system, which is one of our statutory objectives. In the future the Financial Policy Committee of the Bank of England will have a mandate for enhancing the stability of the UK financial system; it is expected that this work will provide invaluable information.

It is important to recognise both surveys' limitations when examining the results. The HFS is completed by hedge funds on a voluntary basis and provides only a snapshot of hedge fund exposures and a partial view of the hedge fund industry. Similarily the HFACS provides only a partial view of a sample of FSA-authorised banks' exposure to hedge funds. Nevertheless, both surveys are important tools in providing us with a view of the hedge fund industry. The analysis presented in this paper covers the broad systemic conclusions and does not identify or discuss individual firms or funds.

In general, risks to financial stability from hedge funds could crystallise through two potential channels: market dislocations that disrupt liquidity and pricing (the market channel); and/or, losses in hedge funds leading to losses by banking and other counterparties (the credit channel).

The latest results suggest that the leverage of surveyed hedge funds remains largely unchanged and that their footprint remains modest within most markets, so that current risks to financial stability through the market channel seem limited at the time of the latest surveys. In addition, counterparties have increased margining

1 For the purpose of this paper, 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 and rapid disruption to the effective operation of a core function of the financial system (and so leading to a wider economic impact).

requirements and tightened other conditions on their exposures to hedge funds since the financial crisis, increasing their resilience to hedge fund defaults. However, risks may change rapidly according to market conditions. Some potential risks to hedge funds remain, particularly if they are unable to manage a sudden withdrawal of liabilities during a stressed market environment, potentially resulting in forced asset sales. If this occurs across a number of funds or in one large highly leveraged fund then it may exacerbate pressure on market liquidity and efficient pricing.

A discussion on the outcomes of previous surveys is available on our website.[2]

The Hedge Fund Survey (HFS) and the Hedge Fund as Counterparty Survey (HFACS)

The HFS is a voluntary survey first completed in October 2009 and is now in its fourth iteration. The HFS asks selected FSA-authorised investment managers[3] about the hedge fund assets they manage and the Qualifying Funds[4] for which they undertake management activities. It contains data used to assess potential threats through both the market and credit channels. The March 2011 survey captured around 50 investment managers with over 100 Qualifying Funds. Together these firms reported approximately US$390 billion of hedge fund assets under management. Qualifying Funds captured in the survey cover a broad spectrum of investment strategies and have a wide range of geographical exposures. Most Qualifying Funds are domiciled in offshore centres, such as the Cayman Islands. We estimate that the HFS captures around 20% of global hedge fund industry net assets under management and consequently the results should not necessarily be assumed to reflect those for the broader hedge fund industry.

The HFACS has been running since 2005. This survey is voluntary and covers 14 large FSA-authorised banks which have significant dealings with hedge funds either through prime brokerage and/or through businesses generating counterparty credit exposures. The HFACS asks about the size, channel and nature of the larger credit counterparty risks that individual banks have to hedge funds, both individually and collectively. The HFACS provides only a partial view of the exposures and nature of bank lending to hedge funds as just the largest exposures are captured (e.g. top 20 exposures), not all of the data collected covers global exposures to the hedge fund industry, and not all counterparties to hedge funds are surveyed. Nevertheless, the data in the HFACS is invaluable for analysing the credit channel for systemic risk.

2 www.fsa.gov.uk/pubs/other/hf_survey.pdf

3 This includes FSA-authorised firms acting as sub-advisers in other jurisdictions.

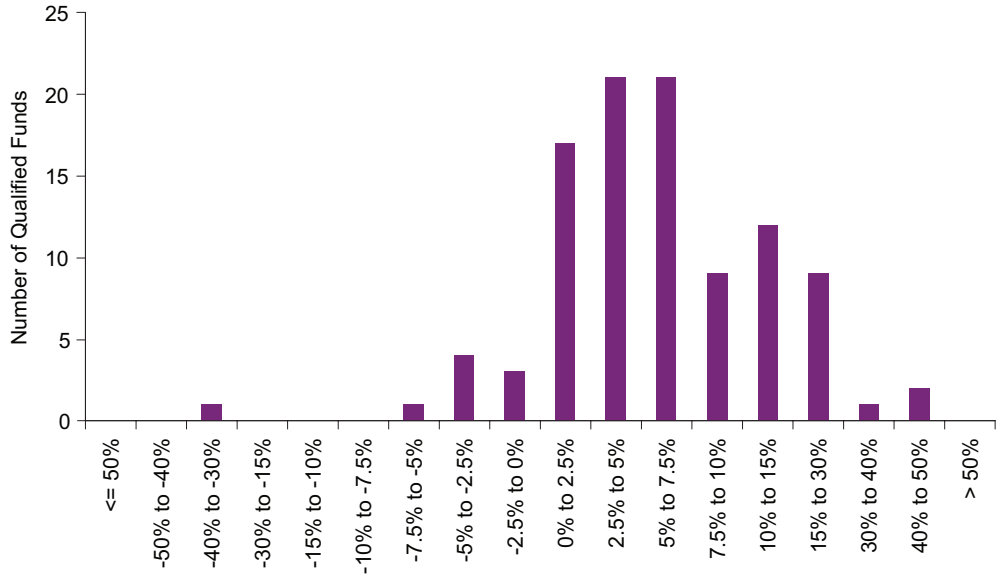
4 Qualifying Funds for the purposes of the HFS are hedge funds with a Net Asset Value equal to or greater than US$500 million.

Latest results

Performance and current conditions

In general, hedge funds surveyed in the HFS reported favourable conditions for the period captured in the latest survey. Returns for Qualifying Funds averaged 7% for the six-month period from October 2010 to end March 2011 (Chart 1). This was below the 14% return of the MSCI World equity index (net USD total return) over the same period, but better than the average survey return of 2% reported in the six months to previous September 2010 survey. Since the HFS began, returns have been largely consistent with those reported by external hedge fund databases, providing a degree of confidence that the survey is capturing a similar set of hedge fund investment strategies and risk factors that occur in these larger samples.[5] Approximately 90% of funds reported positive returns in the March 2011 HFS, in contrast with 75% of funds that reported positive returns in the period covered by the previous survey.

Chart 1: Fund Investment Returns – Histogram of total returns for the 6 months to end March 2011



Source: FSA HFS

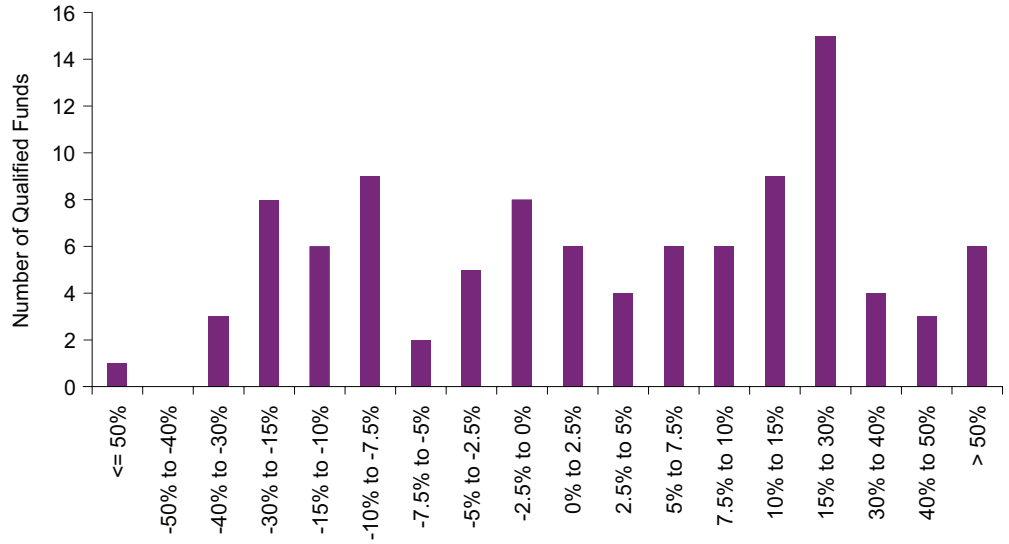
Assets below their highwater mark (HWM) have declined considerably and remain low. According to funds surveyed in the HFS they have declined from 43% of aggregate net assets under management (NAV) in the October 2009 survey and are now less than 5%. This suggests that an increasing number of hedge funds will be charging performance fees on their flagship funds as they have managed to claw back the negative performance they suffered during the financial crisis. While assets below their HWM have declined, assets under special arranagements due to their

5 For example, average returns of funds in the HFS in the six months to March 2011are in-line the HFRI index return of 7.1% and the BarclayHedge index of 7.5%. In addition, since April 2010 when monthly returns have been collected, correlations between the HFS and external databases have been between 95% and 98% (although this represents a small period of time and only 12 monthly observations).

illiquid nature, such as in side pockets[6], have remained largely unchanged and are just over 10% of aggregate NAV.

Aggregate assets under management increased in the survey period (Chart 2), predominately due to positive returns but also helped by generally positive net subscriptions.[7] Approximately 56% of funds in the survey reported positive net subscriptions for the six months to March 2011, with an equally weighted average across all funds in the survey of 3.9%. However, a minority of funds still reported large negative net subscriptions in absolute terms, indicating that for some funds redemption pressures have not eased.

Chart 2: Change in Net Asset Value (NAV) – Histogram of change in NAV for the 6 months to March 2011



Source: FSA HFS

Market footprint

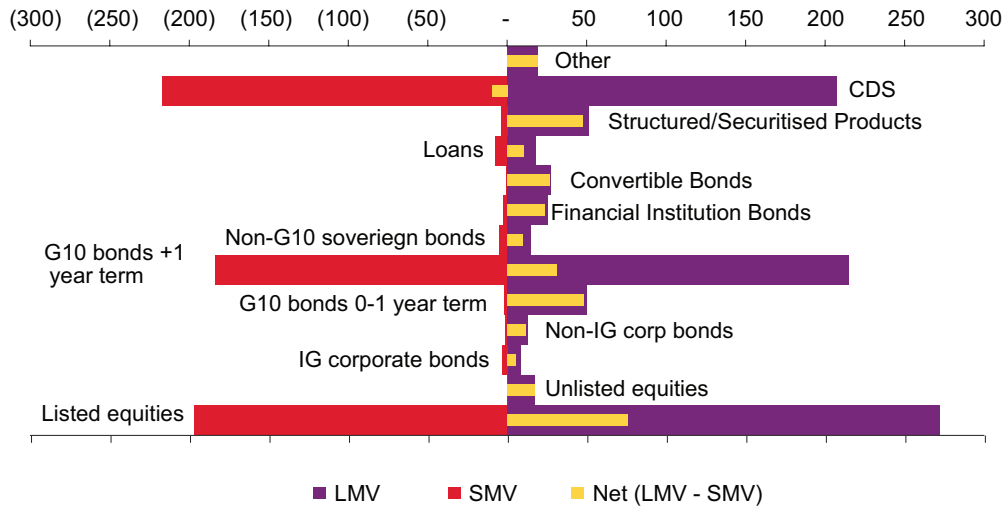
The potential for any stress within the hedge fund sector to be transmitted through the 'market impact channel' will be directly affected by the extent of hedge funds' presence within those markets. We start this analysis by examining the asset classes in which hedge funds invest, looking at both long and short positions. There are various ways to measure exposures, particularly for derivatives. A summary of aggregate exposures in Chart 3, which uses market values for securities and notional values for derivatives, indicates that aggregate long and short positions of surveyed hedge funds is the largest in listed equities and long-dated G10 fixed income securities, as well as credit default swaps (CDS) (measured by notional values). In addition, the net exposure, which is equal to long exposures less short

6 Side pockets are separate funds typically created to house illiquid assets. Investors receive a pro-rata share of the illiquid assets removed from the main fund and placed in the side pocket. Side pockets are used to manage illiquid assets that cannot be sold at the same pace as other assets in the main fund without incurring significant price discounts. Side pockets generally wind down over a much longer time period relative to the main share classes of funds.

7 NAV can change due to three factors: investment returns, subscriptions of new capital and redemptions of capital. 'Net subscriptions' is equal to subscriptions less redemptions.

exposures, is generally positive but low across most asset classes. This low 'net long' exposure is a common characteristic of hedge funds and differentiates them from other asset managers.

Chart 3: Aggregate Hedge Fund Exposures – $ billions, March 2011[8]

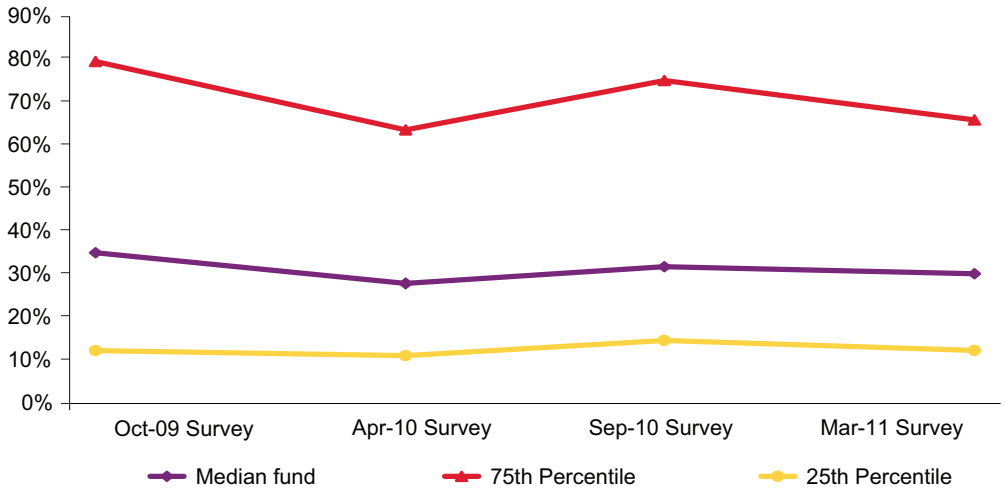


Source: FSA HFS

Net exposures provide an indication of the directionality of hedge funds: sharp changes can be used as a potential indication of a change in manager sentiment and/or the conditions they face. The median hedge fund captured in the HFS has a net long exposure of around 30% and this has been fairly constant across different surveys (Chart 4). However, funds that typically run with higher net long exposures (e.g. the 75th percentile), have been gradually decreasing their net long exposures across the surveys.

8 The current version of the HFS does not capture long, short and net exposures for commodity, FX and interest rate derivatives.

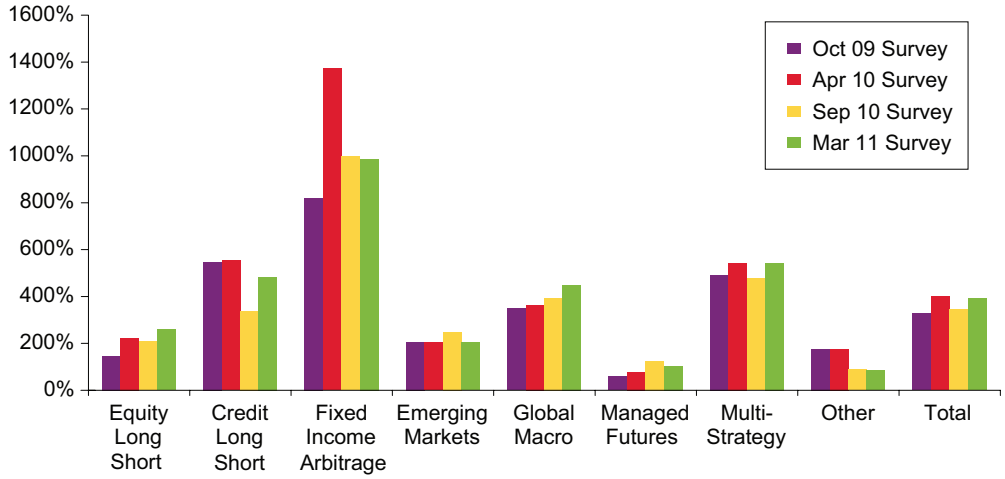
Chart 4: Net Exposure of Hedge Funds – Net exposure as a % of gross exposures



Source: FSA HFS

One method of assessing the size of hedge funds is to measure their gross exposures, calculated as the sum of their long and short exposures. Changes in gross exposures can be illustrated relative to the equity raised from investors (i.e. NAV); these measures have remained fairly stable over the different surveys in aggregate (Chart 5). There was a sizable increase in gross exposures to NAV for fixed income arbitrage strategies in the April 2010 survey, but that has since reduced and remained fairly stable. Funds with 'spread-based' strategies (such as fixed income arbitrage) can be expected to have a greater ratio of gross exposures to investor equity relative to those with 'fundamentals-based' strategies (such as equity long-short).

Chart 5: Aggregate gross exposure as a % of NAV – Selected strategies[9]



Source: FSA HFS

9 Gross exposure is measured as the sum of long market value (LMV) and short market value (SMV). The measure of gross exposure reported does not include interest rate, FX and commodity derivatives. Gross exposure to NAV has been illustrated to show changes over time, as it helps to control for changes in survey participants.

When examining the potential systemic impact of hedge funds, it is particularly important to consider the size of hedge funds' footprints relative to the size of the global markets they trade in. When measured by the gross value of their exposures relative to the size of markets, the footprint of hedge funds captured in the HFS are generally low and have not changed significantly between the different surveys (Chart 6)[10], suggesting these hedge funds are not the biggest category of players in most markets. The convertible bond, interest rate and commodity derivative markets may be exceptions, where hedge funds captured in the HFS have a larger presence. We estimate surveyed hedge funds hold in aggregate roughly 7% of the outstanding value of the global convertible bond market and approximately 4% and 6% of the much larger and more systemically important interest rate and commodity derivative markets. The footprint of all hedge funds globally will be larger than reported in Chart 6 as the HFS captures only a proportion of the global industry, which we estimate to be approximately 20%.

Chart 6: Hedge Fund Footprint Within Selected Markets – Gross exposure as a % of market size

	Oct 09	Apr 10	Sep 10	Mar 11
Listed Equities	0.5%	0.6%	0.6%	0.7%
Corporate Bonds	0.3%	0.3%	0.3%	0.3%
G10 bonds with a 0-1 year duration	1.2%	0.6%	0.6%	0.7%
G10 bonds with a 1+ year duration	0.8%	1.0%	1.3%	1.6%
Non-G10 sovereign bonds	0.1%	0.2%	0.2%	0.2%
Financial institution bonds	0.2%	0.1%	0.0%	0.1%
Convertible bonds	10.1%	8.1%	8.3%	7.0%
Structured/securitised products	0.2%	0.3%	0.3%	0.4%
Credit derivatives	0.8%	1.0%	1.1%	1.4%
Additional Derivative Markets				
Foreign exchange	0.3%	2.4%	0.8%	1.3%
Interest rate derivatives	2.9%	4.7%	4.0%	3.5%
Commodity derivatives	2.5%	4.8%	3.7%	6.1%

Source: FSA HFS. BIS, BoA/ML, AFME, WFE

Market footprint should also be thought of in terms of the proportion of trade volumes, in addition to the value of gross exposures as above. However, turnover is much harder to measure on a consistent basis across multiple markets and we are not able to present aggregate statistics on this aspect. The latest HFS does contain some limited information suggesting that, individually, most surveyed hedge funds do not account for a significant proportion of trade volumes. While as a segment hedge funds are considered to be more significant in providing market liquidity in normal market conditions[11], further research is required to quantify this across all markets.

10 Market size is measured by the market capitalisation for securities markets and the notional value of derivative markets. Hedge funds gross exposures are measured on the same basis.

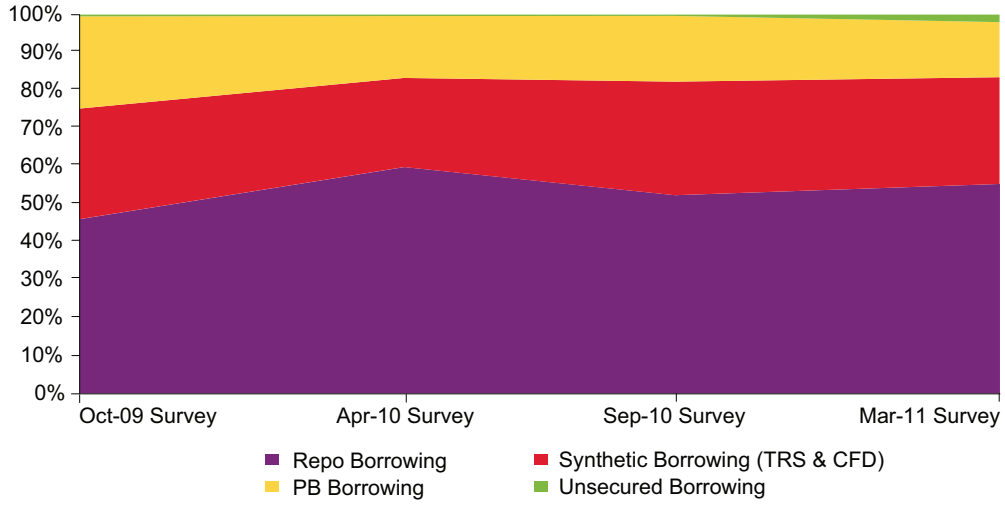
11 See, for example, An Update on the FSF Report on Highly Leveraged Institutions, FSF 2007.

The source of borrowings and extent of leverage

Because of the potential impact of hedge funds on financial stability through both market and credit channels, it is also important to consider the amount and sources of hedge fund borrowing. Most concepts of hedge fund leverage involve borrowed money or increased exposure to an underlying asset via derivatives.[12]

There are a number of channels through which hedge funds can borrow money. These include collateralised borrowing under prime brokerage agreements, repurchase agreements (repo), and using synthetic instruments such as total return swaps or contracts for difference. The latest HFS indicates that the most common form of borrowing is via repos; roughly 55% of aggregate borrowing comes from this source (Chart 7). Since the first survey in October 2009, collateralised borrowing via prime brokers has declined as a proportion of total borrowing, from 24% to 15%, driven mostly by increases in other forms of borrowing. Data from the April 2011 HFACS shows that over 73% of repo financing between surveyed banks and their hedge fund counterparties comprised G10 government bonds as collateral, which has remained relatively unchanged across recent surveys.[13]

Chart 7: Source of Hedge Fund Borrowings



Source: FSA HFS

When the provision of finance is withdrawn rapidly hedge funds may be forced to liquidate their portfolios quickly, resulting in a disorderly fire sale of assets. While hedge fund holdings are generally small in most markets, forced selling still has the potential to impact market liquidity and efficient pricing if it occurs during periods of heightened market stress or where hedge funds make up a significant proportion of market liquidity. Repo borrowing may be a particular risk as it has to be continually rolled, especially if it is short term. The rolling over of repo borrowing

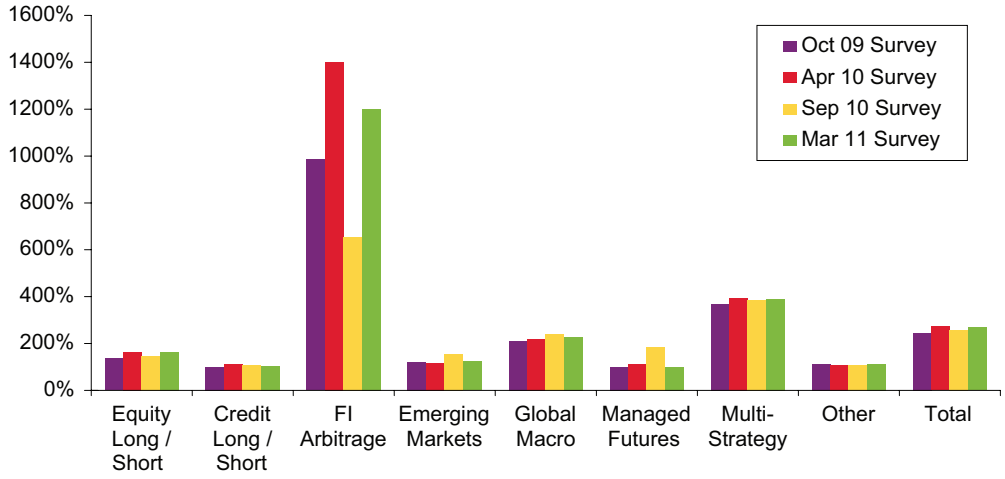
12 Measuring 'synthetic' or 'embedded' leverage that is derived through the use of derivatives can be difficult given the complex nature of derivatives.

13 The G10 is made up of 11 industrialised countries: Belgium; Canada; France; Germany; Italy; Japan; the Netherlands; Sweden; Switzerland; the United Kingdom; and the United States of America.

may be difficult to achieve in a stressed market environment. The source of hedge funds' borrowings continues to be an area of interest.

There are many methods to measure the extent of leverage. One method is to measure gross exposures as a ratio or percent of NAV: this was shown earlier when examining changes in gross exposures over time. But this method does not take into account all netting arrangements that may serve to reduce market exposures. An alternative, also used within the HFS, is to measure total borrowings expressed as a multiple of NAV. This measure paints a similar picture of leverage remaining fairly constant between the survey periods but illustrates slightly more variability in the leverage over time for some strategies (such as fixed income arbitrage) (Chart 8).

Chart 8: Aggregate Fund Leverage – Selected strategies; borrowing + NAV as a percent of NAV[14]



Source: FSA HFS

We also analyse leverage on a fund-by-fund basis, looking for outliers that may be of systemic importance individually. Leverage for the median fund has not changed significantly over different HFS.

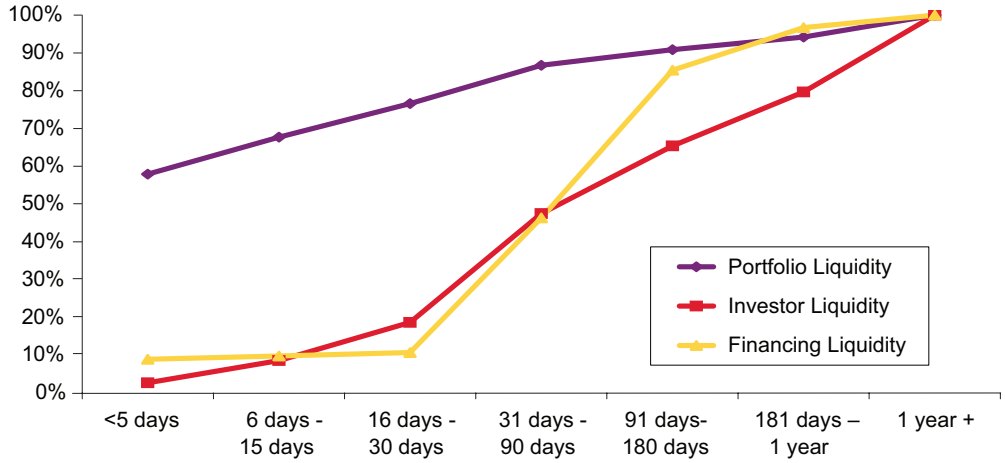
Maturity transformation

Hedge funds continue to report a high level of portfolio liquidity relative to financing terms and investor liabilities (Chart 9). For example, approximately 60% of aggregate portfiolios are estimated to be capable of being liquidated in less than five days, in contrast with 10% or less of investor or financing liabilities falling due over the same period. However, there are important caveats. The assessment of portfolio liquidity obtained from the HFS is in part a subjective assessment and will be biased by recent expectations and experience by hedge fund managers of market liquidity. In a stressed market environment, market liqudity may deteriorate significantly and rapidly relative to the current portfolio liquidity reported in the HFS. Further, the assessment of the term of any financing (borrowings) does not take

14 Following industry convention, leverage based on borrowings is calculated as (borrowing + NAV) / NAV. For example, a figure of 100% means no leverage has been used and a figure of 200% means borrowing is 1 x NAV.

into consideration break-clauses and other methods that finance providers could use to change their terms. It is also possible that conditions may be attached to term financing agreements that would be triggered in stressed environments resulting in a sudden withdrawal of funding.

Chart 9: Asset/liability mismatch – Cumulative liquidity profile of assets & liabilities, March 2011

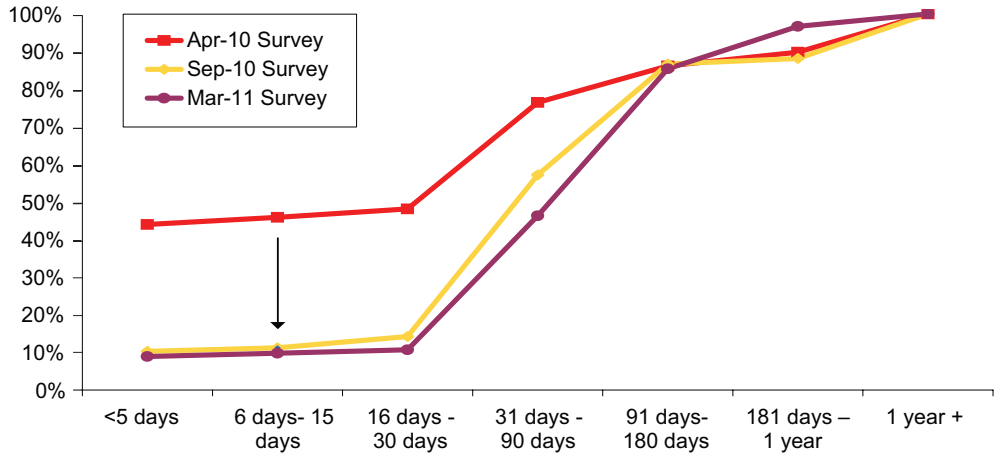


Source: FSA HFS

Portfolio and investor liquidity remains largely unchanged relative to the previous HFS. In contrast, the term of financing has been extended in aggregate since the April 2010 HFS, with a reduction in short-term financing of between 5 and 30 days and an increase in financing terms of 31 to 180 days (Chart 10).[15] Data from the HFACS, which collects information from the lender's perspective, shows that margin subject to margin locks has increased by 17% since October 2010, which is consistent with results from the HFS. To the extent that the term of financing received has increased, hedge funds will have potentially reduced the risk of a sudden withdrawal of funding from their leverage providers (usually prime brokers).

15 It is possible that the change in the term of financing could be due to seasonal effects, rather than a fundamental shift by hedge funds or finance providers. We cannot determine this until additional surveys are completed and a longer time series of responses is developed.

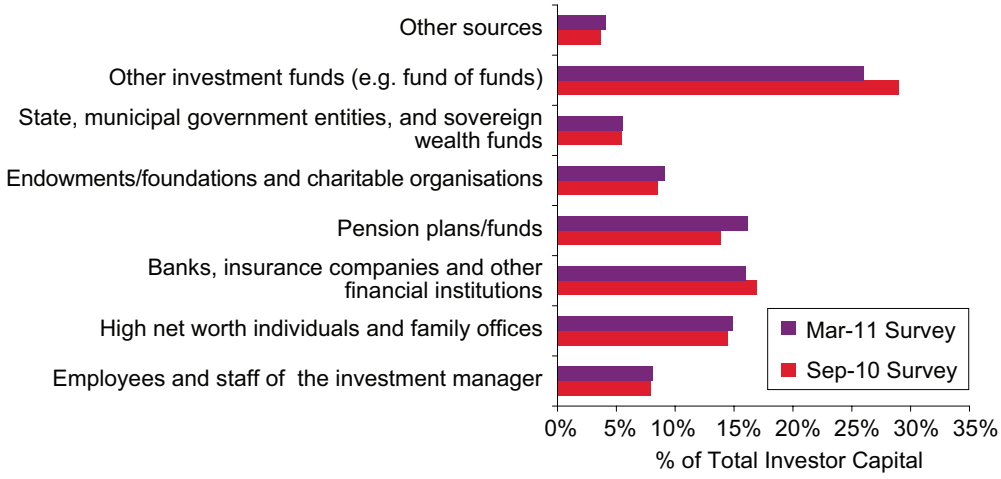
Chart 10: Financing Liquidity: Cumulative % of financing by days of its term



Source: FSA HFS

The HFS also suggested that investors in hedge funds comprise a diverse range of entity types, which may reduce the risk of a sudden withdrawal of an investor's capital (Chart 11). The proportion of aggregate investors comprising fund of funds has declined while that for direct allocations by pension funds has increased. Anecdotally, fund of fund investors are seen by some hedge fund managers as potentially more prone to flight relative to their perceptions of pension funds, which they see as more long-term investors. The shift in types of investors may in part reflect the hedge fund industry's desire since the financial crisis to diversify their investor base and include more (perceived at least) stable and long-term investors.

Chart 11: Aggregate Source of Investors



Source: FSA HFS

In addition to a diversified investor base, approximately 85% of funds surveyed have the ability to suspend investor redemptions or create side pockets, which provides a last option method for funds to manage assets whose liquidity profile

suddenly changes. Nevertheless, the potential for asset fire sales during stressed markets remains; restricting investor redemptions is likely to be seen as a last resort option by many managers and finance providers are likely to maintain the ability to withdraw finance during stressed markets (whether this is by not rolling repo borrowing or by changing financing terms).

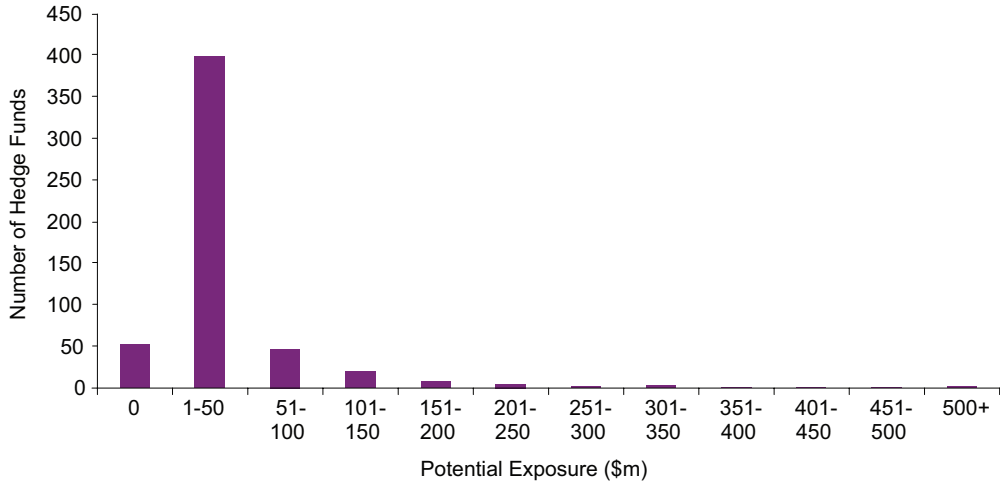
The type of investors also suggests potential channels through which distress in hedge funds can spread to other parts of the finance industry and to the real economy.

Counterparty exposures

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

Anecdotally, the range of counterparties used by hedge funds since the financial crisis is said to have broadened, such as in the use of multiple prime brokers. Despite some widening, however, the HFS still suggests that counterparty exposures of surveyed hedge funds remain fairly concentrated, with just five banks accounting for 60% of aggregate net credit counterparty exposure for hedge funds. For banks, the size of exposures are generally small relative to their capital. The HFACS suggests that the average potential exposure of any one bank in this survey to any one hedge fund captured in the HFACS is less than US$50 million (Chart 12).[16] Data in the HFACS is also examined on a firm-by-firm basis, to look for outlier lenders and/or funds captured in that survey. There are two hedge funds for which the potential exposure by banks is greater than $500 million.

Chart 12: Potential Exposure of Banks to Hedge Funds

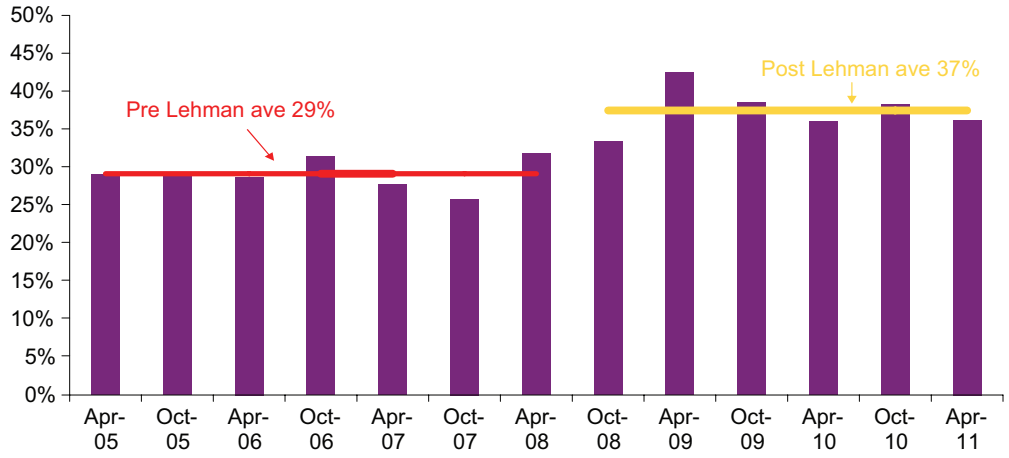


Source: FSA HFACS

16 It is important to remember key differences between the HFS and HFACS. The HFS captures large hedge funds managed from the UK. The HFACS surveys investment banks and prime brokers with operations in the UK, and covers only their largest exposures to hedge funds globally (e.g. top 20 hedge fund exposures); some of these hedge funds are not managed from the UK and do not appear in the HFS. Nevertheless the two surveys provide complementary data useful for examining general trends.

The average margin requirement of surveyed prime brokers in the HFACS has increased since the financial crisis (Chart 13), providing banks with a degree of protection from a hedge fund default. To avoid a strong pro-cyclical effect, banking counterparties and supervisors will need to make sure that margins do not fall to unsustainably low levels if exuberant market conditions return in the future.

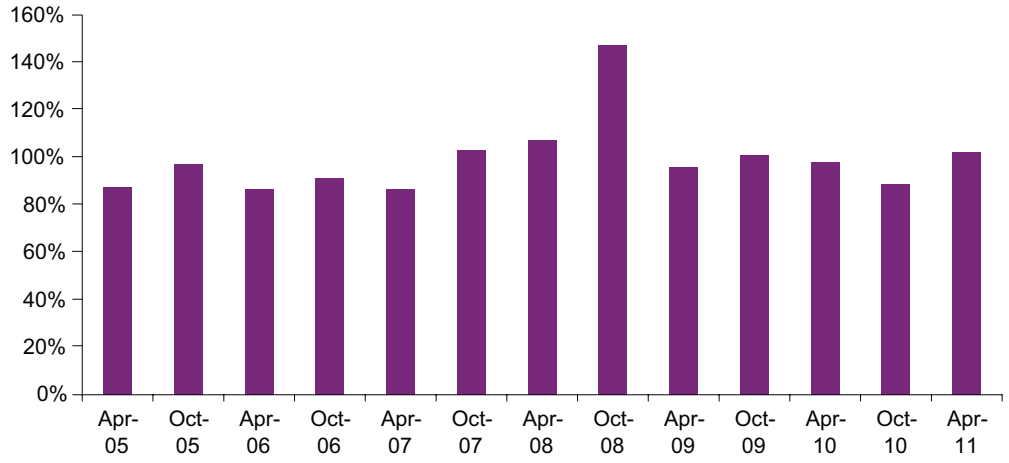
Chart 13: Average Prime Brokerage Margin Requirements – Margin requirement/LMV



Source: FSA HFACS

In addition to the required margin requirements hedge funds also typically post excess collateral, which is a further factor that may mitigate potential systemic risks from hedge funds. The HFACS suggests that the average excess collateral is currently around 100% of the base margin required (Chart 14). Excess collateral peaked in October 2008 but has since returned to the pre-crisis average. Given that the base margin requirements have increased on average (see Chart 13), the stable ratio of excess collateral to base margin requirements means that the dollar amount of excess collateral posted will also have increased post-crisis. However, there are potentially other factors that could influence these numbers, including developments in hedge funds' cash management, such as an increased use of custody accounts for excess collateral. In addition, if this excess collateral can be moved rapidly it may not provide the counterparty with the level of protection it suggests.

Chart 14: Average Excess Collateral Held by Prime Brokers – Collateral as a % of base margin[17]

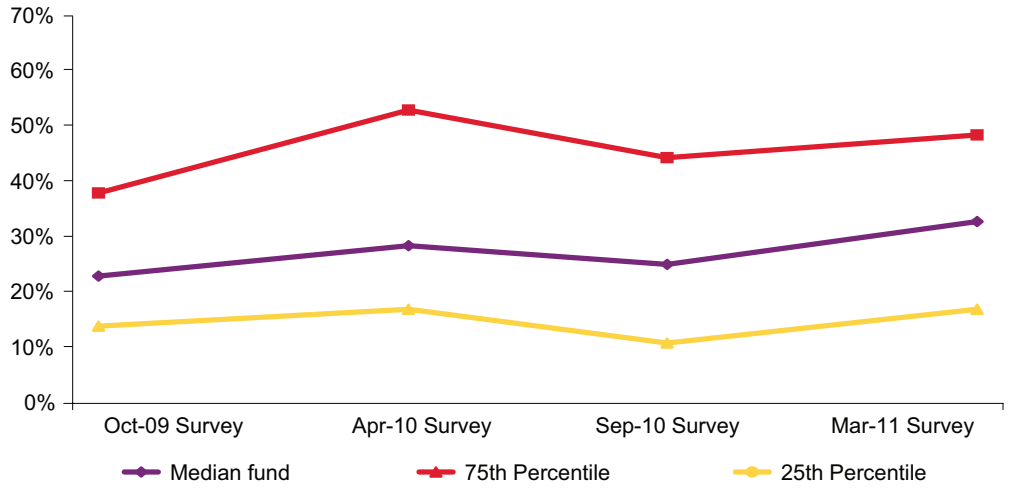


Source: FSA HFACS

Portfolio concentration

As part of our analysis we also look at operational and portfolio measures, in particular, looking for outliers and changes over time. Portfolio concentration – measured as funds' the top ten positions as a percentage of their total Gross Market Value (GMV) – has increased slightly for the median Qualifying Fund relative to the previous surveys. The top 75th percentile of funds (by portfolio concentration) report that the largest ten positions account for approximately 50% of GMV (Chart 15).

Chart 15: Top 10 Positions as a percent of GMV

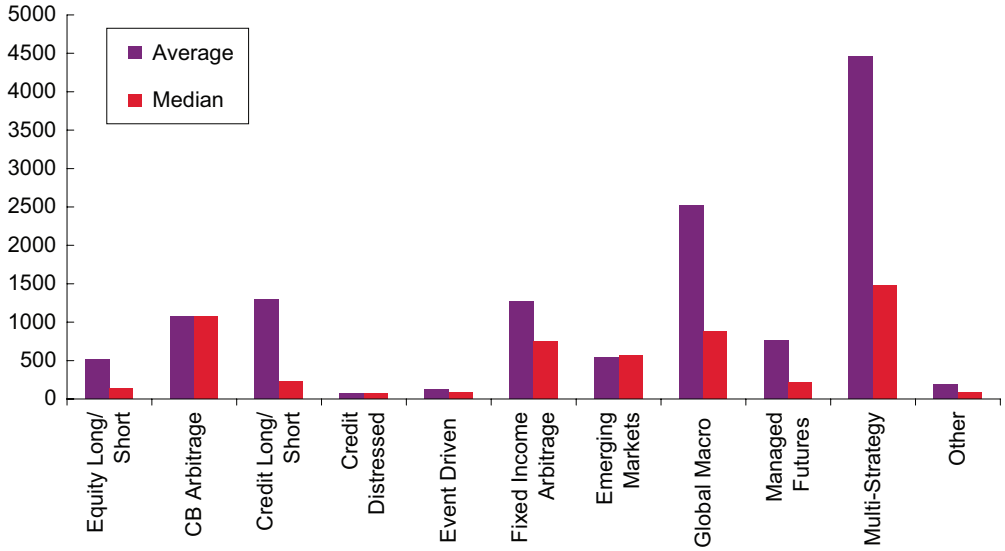


Source: FSA HFS

The number of open positions can also vary considerably by fund. 'Multi-strategy' and 'global macro' type funds have the highest number of open positions on average, while 'credit distressed' and 'event driven' have the lowest (Chart 16).

17 'Excess collateral' is defined as the net equity held in a prime brokerage account, in excess of the margin requirement.

Chart 16: Number of Open positions by Strategy – Average and median by qualifying fund, March 2011



Source: FSA HFS

Concluding remarks

To summarise, the key findings of the latest HFS & HFACS were:

- Nearly all surveyed hedge funds had positive returns for the survey period. Aggregate assets below their high-water mark have declined and remain low, enhancing the sustainability of the sector.
- The footprint of surveyed hedge funds within markets is generally small when measured by the value of their holdings, suggesting that, in aggregate, the hedge funds surveyed do not have a major presence in most markets. However, convertible bonds, interest rate and commodity derivatives are potential exceptions. The HFS captures only a small proportion of global hedge fund assets and so globally hedge funds will have a bigger footprint.
- Leverage has not changed significantly in aggregate relative to previous surveys. Leverage varies by strategy and fund. Understanding the source of borrowings and the nature of leverage is one of the keys to accessing systemic risk.
- Hedge funds appear to have extended the term of their financing recently. Nevertheless, the risk of a sudden withdrawal of liabilities during stressed markets (particularly a withdrawal of financing) is likely to remain, with an associated risk of fire sales of assets. This can potentially occur for all forms of liabilities.
- Counterparty credit exposures to hedge funds remain concentrated amongst a small number of banks. Aside from the apparent extension of average maturities, banks appear to have tightened financing terms for hedge funds post-crisis, increasing their resilience to hedge fund defaults.

Our intention is to repeat the HFS in September 2011 and the HFACS in October 2011. For the HFS we will also continue to work closely with the International Organisation of Securities Commissions (IOSCO) and other national regulators to ensure that a clearer identification of global risks can be achieved through a consistent and proportionate international approach to systemic risk data collection from hedge funds. Running comparable international surveys is important for assessing potential risks from hedge funds through the market channel, such as by determining the global footprint of hedge funds in markets, and also to analyse key finance and service providers to the industry.

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