Prime Services
Capital Solutions
Special Report

Evolution of the Hedge Fund Financing Model

BARCLAYS

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Contents

I. Study overview

Hedge Fund (HF) managers have long relied on Prime Brokers (PBs) for a broad suite of services ranging from financing of positions, global execution, clearing, asset servicing and custody, to market intelligence and bespoke consulting. The recent financial crisis, however, highlighted potential systemic risks in this partnership model, specifically related to mechanisms by which PBs sourced and managed liquidity to provide financing to HFs. Actions by global regulators following the crisis were aimed at eliminating root causes of these systemic liquidity risks. These actions have already had a profound impact on the PB financing landscape, with more changes anticipated in the near future.

In this Special report, we take a close look at developments in the PB financing landscape since the crisis and present our point of view on their implications for HFs and HF investors going forward.

The discussion is focussed on four main topics. First, we step back and analyse how the PB / HF financing model has worked historically. We describe how HFs financed their positions through their PBs, and how PBs sourced and managed liquidity. We focus, in particular, on what inherent risks existed in this model, and what drove these risks. Second, we turn to the recent crisis and discuss how liquidity risks crystallised, and what lessons were learnt. We also take an in-depth look at recent efforts of global regulators to make changes to the HF financing model, including guiding principles as well as current and proposed regulations. Third, we analyse the impact of the new regulations on PBs' ability to provide financing to HFs. We show how emerging regulatory prescriptions have affected the sources, capacity and cost of liquidity in the PB system, and how they have already reshaped PB liquidity management practices. Finally, we describe likely implications of this new liquidity landscape for HF managers and investors.

Methodology

For this study, we relied on the following sources of information:

- In-depth discussions with Barclays and external PB experts.
- Recent publications from and dialogue with global regulatory bodies, including the US Federal Reserve, the SEC, UK Financial Services Authority (FSA), Financial Stability Board (FSB), and UK Independent Commission on Banking (ICB).
- PB and HF data from Hedge Fund Research, Inc., FSA Hedge Fund Survey (2010 – 2012) and ICMA repo survey (2011 – 2012).

II. Executive summary

Historical financing model

- HF managers have long been relying on financing provided by their PBs to leverage their returns. The leverage was obtained mainly by borrowing through repo and margin loan mechanisms, as well as through the use of synthetics.
- To get access to liquidity, PBs funded themselves through five primary mechanisms – internal funding efficiencies, repo financing, securities lending, unsecured debt and use of brokered deposits.
- Through this model, PBs effectively provided liquidity intermediation to HFs (borrowing for shorter durations and lending for longer durations), which exposed PBs to potential liquidity risk in the event of market stress.

Recent efforts by global regulators

- The recent crisis illustrated how quickly and severely these liquidity risks could crystallise and how some participants in the financial industry may have been ill-prepared to withstand severe liquidity stresses. Since the crisis, global regulators have undertaken a concerted effort to address the vulnerability of short-term funding markets as well as the PB financing model.
- While many rules are still under development, we are already seeing specific regulatory actions focussed on more stringent liquidity and capital requirements for banks and broker-dealers, which have already had or will have a near-term impact on PBs' ability to provide financing to their clients.

Implications for Prime Brokers

- Recent regulatory actions suggest changes in PB liquidity practices and restrictions on the use of all five traditional funding sources are a 'fact of life'.
  - There is a push for PBs to better match duration of their assets and liabilities, and we are already seeing the impact of this in the marketplace.
  - PBs are being forced to seek secured financing for longer terms. However, the longer-term funding markets are currently neither deep nor well developed and will likely result in substantially higher borrowing rates for PBs (with less liquid asset-based borrowing to be impacted the most).
  - Additionally, PBs are being asked to incur incremental costs (e.g., liquidity buffer charges and costs to pre-fund intraday tri-party trades) to continue offering financing to their HF clients.
- We believe that, in the end state, all PBs are likely to be impacted by these changes in the same way, implying that costs of doing PB business will go up across the industry.
- So far, PBs have absorbed most of the liquidity cost increases but likely cannot continue to do so going forward. They will have to compete for new sources of liquidity and will be forced to set an explicit term structure of offered financing.

Implications for HF managers and investors

- To stay competitive, HFs will need to take this changing liquidity paradigm into consideration. They will likely need to rationalise their borrowing practices (i.e., borrow for the term they really need or pay extra for an 'insurance policy' that was virtually free thus far), revisit appetite for leverage, reset Return On Equity (ROE) expectations (their own and investors'), and work with the right PB partners who understand HF liquidity needs and provide the right financing structures.
- Potential increases in financing costs will likely have a differential 'compression' effect on HF returns depending on HF size, strategy, liquidity and leverage. Highly levered,

less-liquid strategies rely on less-liquid financing most and, as such, are more likely to be materially impacted.

- Investors will need to ensure they fully understand the consequences of the changing liquidity landscape as they go through their due diligence process and prioritise certain firms for allocation over others.

III. Historical financing model

HFs' sources of leverage

Historically, HF managers relied heavily on leveraging their positions, which allowed them to gain market exposures greater than those funded only by investing their clients' capital in cash instruments. Figure 1 shows recent trends in aggregate HF leverage levels. Not surprisingly, leverage declined significantly (about 30%) following the recent crisis, but has been largely stable since 2009. According to a recent FSA survey, aggregate HF leverage was about 2.4x of total net asset value (NAV) in 2011, which means that HFs, on average, got incremental market exposure accounting for about 1.4x their client assets. Use of leverage varies among different HF strategies with Fixed Income Arbitrage using the highest average leverage of ~13x of NAV.

HFs achieve this leverage by two primary mechanisms – borrowing additional liquidity (primarily through repo financing and margin loans mechanisms facilitated through their PBs) and getting increased exposure to underlying assets via synthetic leverage using derivatives – see Figure 2.

Repo financing is currently the predominant source of HF borrowing, and currently accounts for about 47% of total borrowing. Repo, which is short for a repurchase agreement, is the agreement to sell securities combined with an agreement to repurchase those securities at a pre-arranged price on a future date. In other words, a repo functions much like a collateralised loan (which could be open or have an agreed-upon term), with the securities being the collateral. Most often, HFs facilitate repo transactions through their PBs. Typically, these loans are given for amounts less than the market value of the collateral. The difference is referred to as a 'haircut', and varies with the amount borrowed, creditworthiness of a borrower, as well as the value of and perceived risk associated with assets held as collateral. In normal market conditions, at the end of the term, HFs often elect to roll the repo, rather than repay the loan.

Synthetic borrowing via total return swaps (TRS) and contracts for difference (CFD) account for 31% of total leverage financing. By using TRS, HFs receive the return of an asset without having to put out the cash to buy the asset. They usually post a smaller amount of collateral up front, thus obtaining leverage. A CFD is a contract between two parties, stipulating that the seller will pay to the buyer the difference between the current value of an asset and its value at contract time. The margin requirements on CFDs are lower than the value of the underlying asset, allowing buyers of these contracts to amplify their returns on investments.

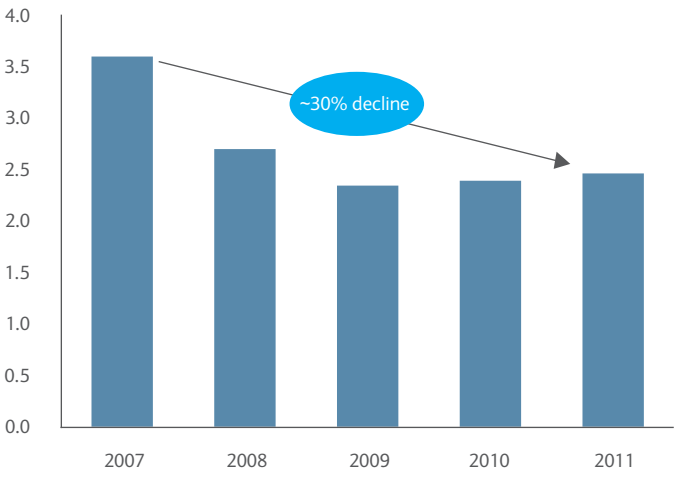
Margin loans account for 20% of the current borrowing by HFs. They are cash loans obtained from PBs to finance the purchase of HF long positions and are secured by collateral (margin). The collateral requirements may fluctuate according to the amount borrowed, the value of the assets borrowed, the value of the assets held as collateral and the creditworthiness of the counterparty. Conceptually, margin loans and repo financing mechanisms are similar in the sense that they both represent collateralised (or secured) borrowing. The difference is that margin loans are provided on a portfolio basis (not on a security-by-security basis as is the case with repo transactions).

Unsecured borrowing has not been the borrowing method of choice among HFs and accounts for only 2% of total borrowing.

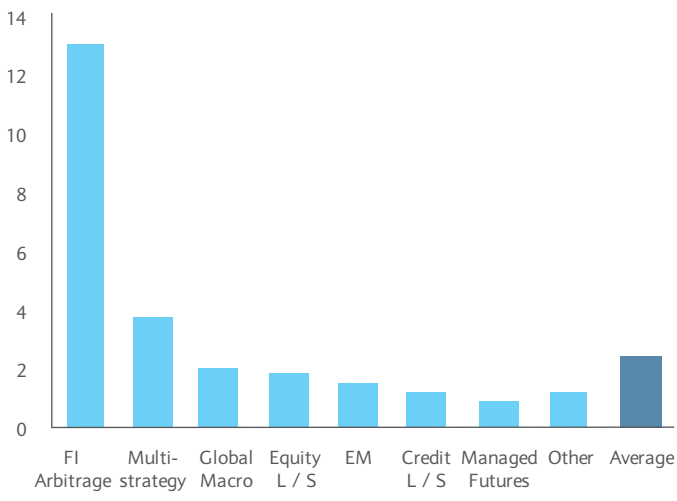
Given that the primary objective of this study is to analyse dynamics of HF financing by PBs, we will focus the remainder of the discussion on repo financing and margin loans mechanisms.

FIGURE 1: Hedge Fund leverage

HF aggregate leverage[1] trends in 2007 – 2011



Breakdown of HF aggregate leverage[1] by strategy in 2011



1. Defined as borrowing + NAV as a multiple of NAV
Source: NBER; OECD; FSA Hedge Funds Survey, 2009 – 2011 data; Strategic Consulting analysis

As Figure 2 shows, the choice of HF financing between repo and margin loans depends on the underlying asset class. Repo is primarily used for Fixed Income financing, and margin loans are preferred for Equity and Convertible Bonds financing. Typical average borrowing terms (as judged by weighted average maturity numbers or WAM) are between 90 – 120 days, with shorter duration for Treasuries / Agencies and Corporate Bonds financing, and longer durations for Equities and Convertible Bonds financing.

PB funding

Providing financing for HF clients (and charging financing fees) has long been an attractive revenue-generating business for PBs. Needless to say, sustainable success of this business is dependent on PBs' ability to get continuous access to market pools of liquidity. To get access to required funding, all major PB players 'fish in the same pond' – the five funding mechanisms shown in Figure 3, by and large, define their currently available funding universe.

Internal efficiency is the funding mechanism in which PBs use their client / firm long positions and net client credits to cover other clients' positions. It has been one of the main sources of funding for established PBs, and currently contributes 30 – 60% of the total funding.

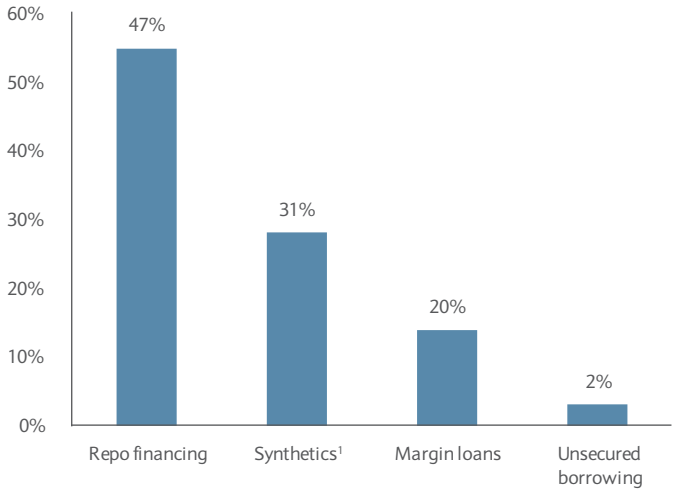
Repo financing (25 – 50% of total funding) comprises repo transactions by PBs to borrow cash from 'cash-rich' lenders such as money market funds (MMFs), central banks, commercial banks, securities lenders, credit unions, asset managers and, increasingly, non-financial corporations. PBs typically borrow via repo for short terms (e.g., less than three months). The supply of liquidity in repo markets has primarily been driven by lenders' desire to hold collateralised, 'cash-like' short-term investments. Often, repo clearing and settlement services are outsourced to tri-party agents that take custody of securities used as collateral, value the securities, make sure that the specified haircut is applied, and settle the transaction through their books. The size of the US tri-party repo market peaked in 2008 at approximately $2.8 trillion, and is currently at about $1.7 trillion (or ~65 – 80% of the total US repo market). A large portion of the tri-party repo transactions (75 – 80% in the US) is driven by liquid asset-based borrowing (against government and agency securities).

While operationally simpler than the bi-lateral repo process, up until recently the tri-party clearing process in the US had a potential intrinsic risk: the way in which the clearing process took place gave rise to a daily time window during which the clearing banks owned the collateral and effectively provided intraday credit to borrowers (including PBs). Under the settlement process, each evening the collateral was funded with cash provided by the lenders. The next morning, almost all trades, regardless of whether they were maturing or had remaining tenor, were 'unwound', with cash being returned to the accounts held by lenders at the clearing banks. The clearing banks, protected by a lien on the collateral, traditionally provided funding for the collateral during this part of the day thus permitting borrowers to have uninterrupted access to their securities' inventory, while ensuring that the lenders held either cash or collateral in their accounts at the clearing bank at all times. The 'unwind' was reversed at the end of each trading day with a 'rewind'. Further, these extensions of intraday credit by the clearing banks were not contractually committed, but rather wholly discretionary. In other words, a clearing bank could decide at any time to stop providing intraday credit to a borrower. Given the small number of clearing banks in the US repo market (Bank of New York Mellon and JPMorgan Chase are the only clearing agents), their intraday credit exposure, under this model, was substantial, and, if not managed well, could have potentially led to systemic failures. The structure of the tri-party clearing process in Europe is set up differently and does not carry any significant intraday risk.

Securities lending (10 – 20% of total funding), as the name implies, consists of lending of securities against cash or securities as collateral. According to industry estimates, the total value of securities on loan globally, as of April 2012, is estimated to be about US$1.8 trillion. In general, borrowers may borrow specific

FIGURE 2: Sources of Hedge Fund leverage financing

Breakdown of HF leverage financing by source



HF typical financing terms by asset class

Asset class	Main sources of financing	Typical terms
Treasuries / Agencies	Repo	0 – 30 days
Equities	Margin loans, synthetics	0 – 180 days
Corporate Bonds	Repo, margin loans	0 – 45 days
Convertible Bonds	Margin loans, synthetics	30 – 180 days
ABS / MBS / RMBS	Repo	30 – 60 days

1. Includes TRS and CFD
Source: FSA Hedge Funds Survey, Aug 2012; Strategic Consulting analysis

securities for covering short positions in their own activities – for example, arising from market-making activities – or those of their customers; or for use as collateral in repo financing and other transactions.

Unsecured borrowing contributes 10 – 20% of total PB funding. Often, unsecured debt is raised by banks or broker-dealers (e.g., via issuance of commercial paper, structured notes or long-term bonds) and these funds are passed through to their PB businesses at internal pricing transfer rates. The cost of raising unsecured debt is generally higher than that of secured debt (e.g., 150 bps+ vs. less than 50 – 70 bps, respectively) and depends on the creditworthiness of the bank (or PB), and as such varies across the major players. Some PBs still use 'primitive' price transfer models, in which PB businesses benefit from lower internal pass-through rates. However, this practice is becoming less common and is currently under review by global regulators.

Deposits represent the last of the five major mechanisms of PB funding (accounting for less than 10% of the total). These deposits come to PBs primarily from the banks' wealth management businesses as regulations constrain the use of retail bank deposits by PBs.

Inherent liquidity risks in the PB / HF financing model

In the course of providing financing for HF clients, PBs historically took on substantial liquidity risk. This risk stemmed from the inherent mismatch between maturity profiles of PB liabilities (borrowing) and assets (lending to HFs). As Figure 4 shows, PBs historically funded themselves for relatively shorter average terms (1 – 2 months WAM) than their lending (3 – 4 months WAM). This mismatch exposed PBs to refinancing risk, i.e., potential inability to roll their short-term maturing debt in the event of liquidity supply shortages.

Before the recent financial crisis, there were virtually no explicit regulations to address the root causes of the liquidity risk described above – each PB defined its own liquidity management model based on its internal risk tolerance. The crisis, however, demonstrated the potential systemic nature of these risks and the need for explicit oversight by global regulators.

IV. Recent efforts by global regulators

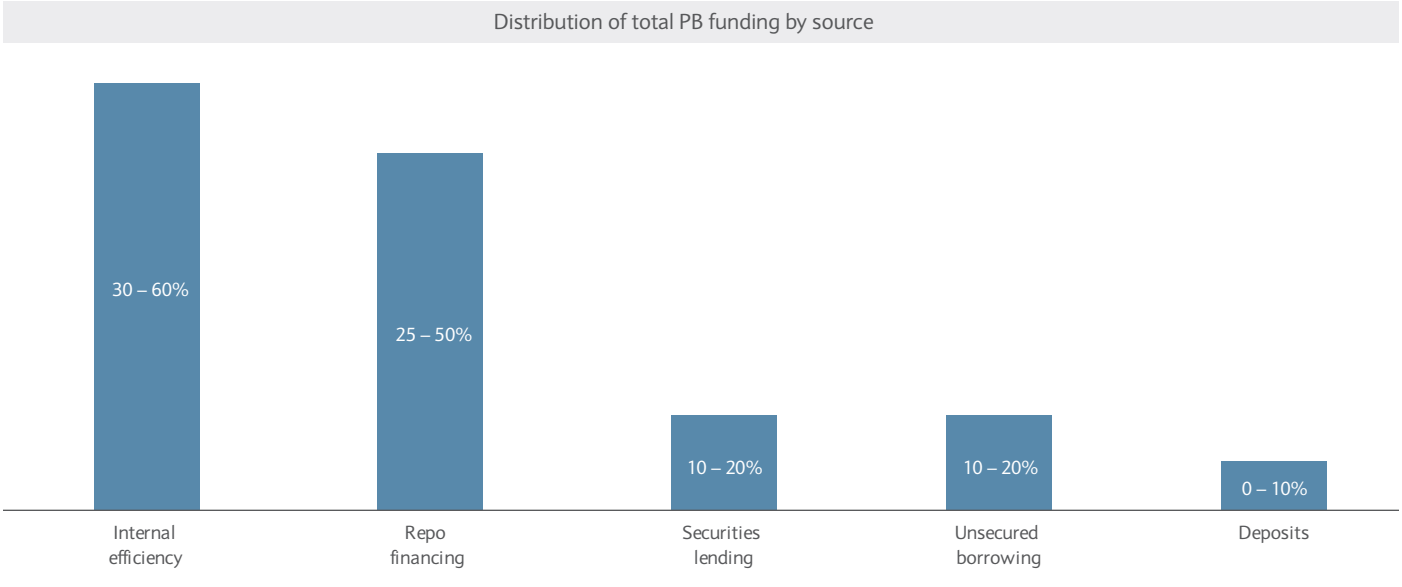
Lessons from the crisis

The recent crisis illustrated how quickly and severely liquidity risks could crystallise and how the industry may have been ill-prepared to withstand severe liquidity stress. Before we describe remedial actions taken by global regulators, let us review the underlying liquidity issues that came into focus during the crisis.

Short-term funding mechanisms (especially repo financing) proved to be highly vulnerable to market liquidity stresses. First, a majority of the short-term liquidity supply was coming from flight-prone investors (e.g., those invested in MMFs) who lacked the ability and commitment required to hold security collateral over a long enough horizon to facilitate its orderly liquidation. According to industry estimates, ~$400bn was withdrawn from MMFs by investors within two weeks of Lehman Brothers' collapse in 2008. Second, most of the US tri-party repo market clearing activity (and thus most of intraday credit risk) was concentrated in the hands of two tri-party repo clearing agents. Third, the secured funding system was shown to be inherently pro-cyclical and prone to propagating chain reactions as the observed declines in market value of securities held as collateral led to higher margin and haircut requirements, which in turn led to a shortage in available liquidity, which forced asset 'fire sales' and further decline in market prices. Finally, the loss of price transparency in certain assets (e.g., ABS, private label mortgages) virtually eliminated secondary markets for these assets.

The PB system revealed its 'Achilles Heel' during the crisis. Many observed weaknesses related to the high concentration of risk among a small set of major players, the exposure of PBs to rollover and duration risks due to the use of short-term

FIGURE 3: PB funding mechanisms



Source: PB's annual reports; Barclays Research publications; Strategic Consulting analysis

borrowing to fund longer-term loans, and the exposure of PBs to potential client runs (tremendous operational pressure was put on PBs because of sudden and chaotic withdrawals of assets by clients worried about potential losses).

Following the crisis, there has been a concerted global effort by regulatory bodies to address these systemic risks in the global financial system. The main focus so far has been on the following themes:

- Tight oversight of short-term funding markets including overall reduction of market participants' dependency on short-term funding sources, and on funding provided by flight-prone investors (e.g., MMF), operational overhaul of tri-party clearing process to better manage and potentially remove intraday credit requirements, and addressing root causes of pro-cyclical systemic runs.
- More explicit banks and PB regulation focussed on strengthening governance practices (e.g., board and senior management oversight), enforcing more stringent requirements for banks' liquidity management frameworks, reducing asset / liabilities mismatches, new liquidity coverage requirements to survive stress periods, setting counterparty concentration limits to mitigate the impact of a large counterparty's default and strengthening capital requirements.

Current and proposed regulatory actions

While many rules are still under development, regulators are already enforcing prescriptions related to liquidity, balance sheet and capital requirements at banks and PBs. Figures 5 and 6 describe actions taken or proposed by global regulators that have already had or will have near-term impact on PBs' ability to provide financing to their clients.

V. Implications for Prime Brokers

Impact on funding sources

As we discussed earlier, PBs rely on five main sources of funding. Regulatory actions that have been taking place either have had or may soon have direct impact on all of these sources, putting substantial pressure on the overall level and cost of liquidity available to PBs. Below, we summarise the specific impact on each of the main PB funding sources.

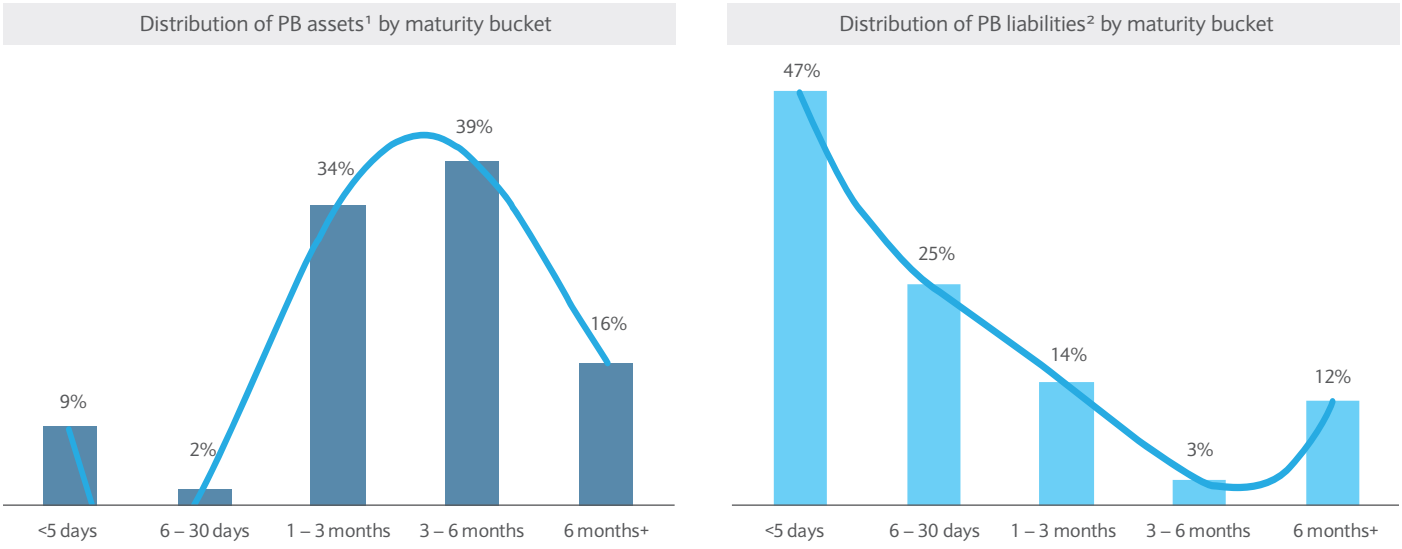
Repo financing as a source of funding has been affected the most. Overall capacity for PB repo funding will likely be limited going forward. In addition, PBs are being directed to reduce or even completely remove their dependence on short-term funding (e.g., less than three months) and funding from MMF sources. At the same time, MMFs are being forced to shorten the maturity profile of their lending. This forces PBs to extend the average term of their borrowing (currently for less liquid assets, but likely for all assets in the near future) and find ways to operate with different lenders and get funding at different cost terms. Additional pressure comes from the need to balance asset / liabilities duration – average duration of assets will likely need to come down as a result.

The extent of **internal efficiencies** will likely be limited going forward due to the expected forthcoming more stringent regulations governing use of client balances (including free credits) to fund other clients and the firm's positions.

The capacity to get funding through **securities lending** will also likely be limited going forward as chains of collateral re-pledges will be shortened and more stringent monitoring of re-hypothecation will be put in place.

Given emerging pressures on secured funding sources, exacerbated by the increased costs of running PB businesses (e.g., requirements to maintain liquidity buffers and to pre-fund

FIGURE 4: PB asset / liability maturity profiles



1. Based on HF borrowing data in Mar 2011; 2. Estimated typical PB Repo borrowing profile in Mar 2011
Source: FSA Hedge Funds Survey 2011; Strategic Consulting estimates

FIGURE 5: Summary of current and proposed regulatory actions pertaining to liquidity requirements

Source	Current and proposed regulatory actions	Impact on Prime Brokers
US Tri-party reform	Eliminate / reduce PBs' dependence on intraday credit provided by the clearing banks in the US, and make the credit transparent, capped and committed where available. Immediate focus is on eliminating intraday credit for maturing less liquid[1] trades, but there will likely be limits on all asset credits going forward	Creates the need to find alternative (likely more expensive) sources for intraday financing
US Fed / SEC / FINRA / FSA / FSB / ICB	Reduce funding received from short-term sources and from flight-prone investors (e.g., from MMFs). Current focus is on less liquid assets[1]	Pushes PBs to use longer-term funding and funding from alternative sources for less liquid[1] assets
	Implement more stringent liquidity models to reduce PBs' asset / liability duration mismatches	Forces PBs to lengthen their liabilities / shorten assets
	Set counterparty concentration limits in repo financing. Specifically, set gross notional limits and calibrate PBs' financing limits to market share, diversify PBs' funding counterparties, limit amount of funds received from SIFI[2] (Dodd-Frank, Section 165)	Limits amount of provided repo financing as well as limits share of large PBs, which could potentially give space for smaller players to grow
	(Likely) Limit use of client balances (long positions and net credit) to fund other clients' positions	Limits amount of internal efficiencies
	Address root causes of pro-cyclical systemic runs. Specifically, regulate the value of acceptable collateral securities, mandate minimum collateral haircuts, limit chains of collateral re-use / re-hypothecation of assets	Affects size of PBs' balance sheets, and thus ability to create leverage
	'Ring-fence' retail banking operations from investment banking	Eliminates / reduces potential use of retail deposits for PB funding
Basel III	Impose new liquidity requirements to survive stress periods. Specifically, mandate liquidity coverage ratio (LCR) – liquid assets must be greater than net cash outflows for 30 days, and net stable funding ratio (NSFR) – available stable funding must be greater than required amount of stable funding for one year	Raises a need to increase liquidity buffer, which comes at a material carry cost. Also limits the amount of leverage on PBs' balance sheets

1. Assets excluding treasuries, agencies, agency MBS; 2. Systematically Important Financial Institutions
Source: Regulators publications and discussions; Strategic Consulting analysis

FIGURE 6: Summary of current and proposed regulatory actions pertaining to balance sheet and capital requirements

Source	Current and proposed regulatory actions	Impact on Prime Brokers
Basel III	Increase capital requirements to maintain mandated capital ratios. Specifically, introduce new, stricter capital definitions to increase quality of the capital base and strengthen risk-weighted assets definition (higher risk weights for securitisations, higher capital requirements for trading book positions (stressed-VaR, incremental risk charge), higher capital requirements for counterparty risk exposures arising from derivatives, repo transactions, and securities financing activities)	Limits amount of PBs' balance sheet leverage
	Put limits on gross leverage exposure	Limits amount of PBs' balance sheet leverage
UK Treasury	Introduce bank levy – tax on UK banking groups with aggregate liabilities higher than a set threshold	Limits amount of PBs' balance sheet leverage

Source: Regulators publications and discussions; Strategic Consulting analysis

tri-party trades on an intraday basis), PBs will likely tap into **unsecured sources** more than before. However, this will come at a materially higher cost. As discussed earlier, unsecured funding rates are typically higher than those for secured financing, and there will be more pressure on rates and capacity for banks and broker-dealers with poorer credit health. In the short term, some PBs might be able to get cheap pass-through rates of unsecured funding from their banks' treasury, most likely due to 'primitive' internal pricing mechanisms. However, these mechanisms are unlikely to be sustainable, as they are already well within the scope of regulations from the FSA (Policy Statement 09 / 16), and will likely be regulated globally very soon.

Banks and broker-dealers will likely explore using more of their deposit base to fund their HF financing business. However, there is not much room to do this given that generally only wealth management deposits can be used by PBs.

Taking all these forces into account, we expect to see significant changes in how PBs fund themselves going forward. Specifically, there will likely be

- A continuous push for better matching of asset and liability durations
- A shift toward longer-term and more diversified secured financing sources
- Higher cost of running the core PB business due to the need to maintain liquidity buffers and self-finance intraday credit

In the following sections we discuss these changes and their implications in detail.

Better matching of asset and liability durations

Historical mismatches of PBs' asset / liabilities duration profiles have recently come under scrutiny by regulators, who have been trying to reduce or completely eliminate PB refinancing risk that could potentially lead to systemic failures. As Figure 7 shows, we have already started to see better duration matching of PB assets and liabilities as a result. The data from March 2011 and March 2012 shows that the mismatch between PB assets and liabilities has been reduced – liabilities' WAM lengthened by ~16 days, and the assets' WAM shortened by ~14 days. While it is hard to say with confidence that this is a clear and sustainable trend, these data points may be an early indication that PB liquidity management practices are starting to respond to regulatory pressures.

A shift toward longer-term and more diversified secured financing sources

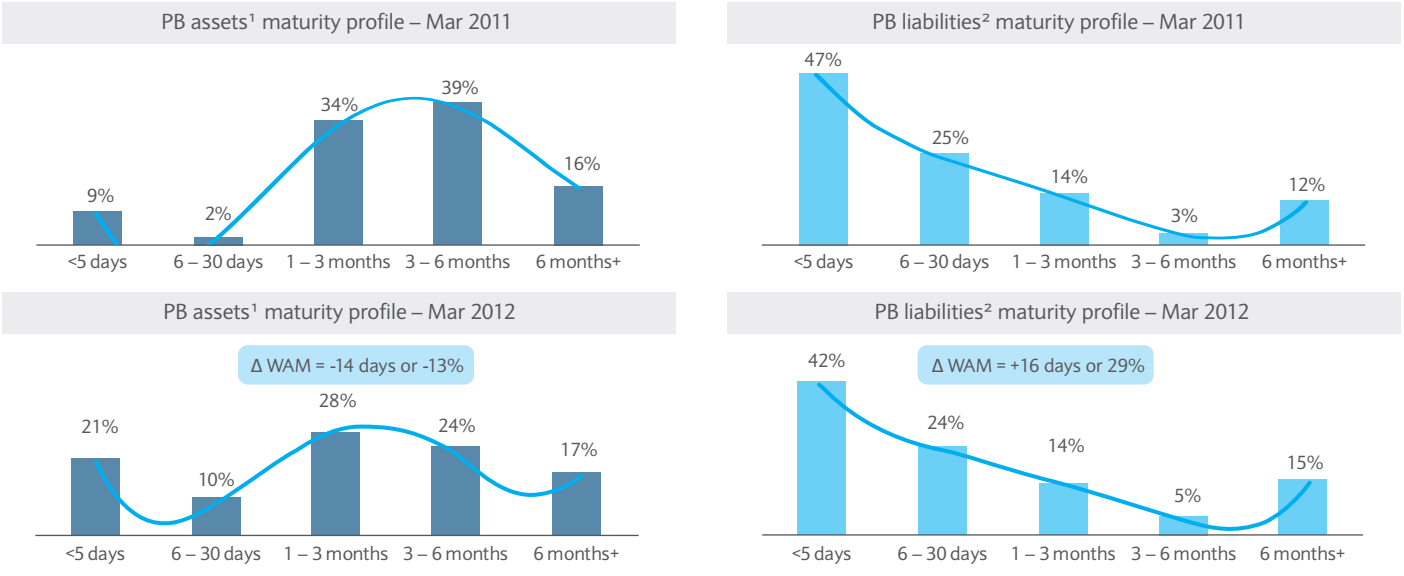
Historically, PBs obtained most of their repo funding from the short part of the curve, e.g., for terms less than three months. This has long been a 'sweet spot' for PBs – they had access to a well-established group of lenders who were motivated to provide an ample supply of liquidity at attractively low rates. As we highlighted earlier, regulatory pressures have been squeezing PBs out of this short-term 'sweet spot' (currently, for less liquid assets), forcing them to explore borrowing opportunities for terms greater than three months.

However, the repo market for longer-term borrowing is challenging for PBs to access. As Figure 8 shows, the current repo market does not appear very deep at the longer end of the curve in relation to the amount of squeezed short-term volume. The volumes in the 'squeezed zone' account for about 63% of the total, and it is unlikely they can be immediately replaced by funding for higher terms, i.e., in the 3 – 12 months range where there is a sharp decline in repo volumes and funding levels are only at 3 – 5% of the total.

As we pointed out earlier, regulatory pressures have affected all five major funding sources of PBs, and currently there are no other funding alternatives available where offered rates will be more competitive than those in securitised repo markets. So PBs will likely have to stay in repo markets and continue to work hard to find new lenders active on the longer end of the curve.

Players who may be willing to lend to PBs for longer terms include commercial banks, insurance companies, pension funds, corporates and securities lenders. Their participation will be

FIGURE 7: Shift in PB asset / liability maturity profiles



1. Based on HF borrowing data; 2. Estimated typical PB Repo borrowing profile
Source: FSA Hedge Funds Survey 2011 – 2012; Strategic Consulting estimates

driven by the need to diversify their cash investments, especially in the current low interest-rate environment. What would be the likely repo financing rates for 3+ month terms? Of course, it is hard to estimate this with a high degree of confidence given that these markets are not yet fully developed. However, it is safe to assume that, for these markets to be attractive to new lenders, the offered rates of return should be comparable to those of currently available alternatives, e.g., investments into asset-backed securities (ABS). Figure 8 shows comparable rates offered in some high-grade ABS markets (i.e., credit cards, auto and student loans). Based on these benchmarks, the future 1 – 3 years term repo rates will likely be at least 50 – 80 bps higher than the current repo rates available to PBs. However, these rates would still be more attractive to PBs than currently available unsecured financing rates.

Higher cost of running core PB business

In addition to facing increasing funding costs, PBs are also being asked to incur incremental costs in order to continue offering financing to their HF clients, especially for less-liquid asset collateral. These additional costs are due to two primary directives.

First, as described earlier, per Basel III prescriptions, banks are required to maintain liquidity buffers large enough to survive liquidity stress scenarios. PBs will have to incur a portion of the cost of maintaining these buffers, in line with their share of short-term, less liquid liabilities.

Second, PBs will need to incur financing costs to pre-fund intraday, tri-party repo trades. Per recent US regulation of tri-party clearing banks, PBs will no longer have virtually free access to intraday credit for less liquid assets. To continue transacting tri-party repo trades, PBs will need to pre-fund maturing trades on an intraday basis (likely through incremental unsecured borrowing), better manage collateral substitutions, and operate under committed capped intraday credit facilities from the clearing banks.

As Figure 9 shows, these can potentially amount to additional average annual costs of $600mn+ for the major PBs, which is substantial given that average revenues for major PBs were about $1.7bn according to the 2011 Coalition report.

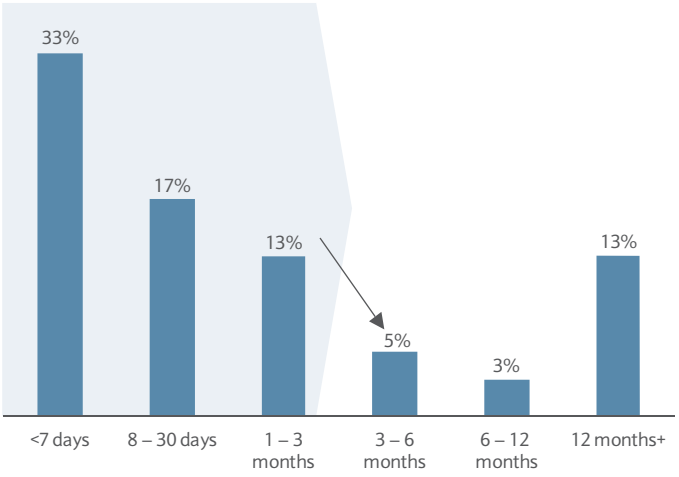
Impact on different PB entities

Will the regulatory impact be the same for all PBs? In other words, will there be any opportunity for 'regulatory arbitrage' that PB clients can benefit from? We summarise below our view on how the recent regulatory actions may affect different PBs.

- **US vs. international PBs** – Given that major PBs have a global presence and have to adhere to regulations in all jurisdictions they operate in, they will all, by and large, be under the same regulatory pressures.
- **Depository vs. non-depository institutions** – Regulations limit use of retail customer deposits for PBs' funding. PBs with significant wealth management businesses could potentially use their brokered deposit base to fund their HF financing business. However, it is unlikely that the growth in wealth management deposits will be substantial enough to plug the gap in availability of secured financing in the medium term.
- **Extent of reliance on internal efficiencies** – Regulators will likely limit usage of internal efficiencies going forward. Given that 30 – 60% of PB funding is currently obtained from internal efficiencies, the impact of the potential new regulations is likely to be material. PBs with higher dependence on internal efficiencies would be affected the most.
- **Sophistication of internal pricing transfer** – Some banks may be subsidising PB financing from other business lines, most likely due to 'primitive' internal pricing mechanisms – however, this is already regulated in the UK (FSA Policy Statement 09 / 16) and will likely be regulated in the US in the near future.
- **Difference in credit health** – Differences in Credit Default Swap (CDS) levels and credit ratings affect both PBs' available

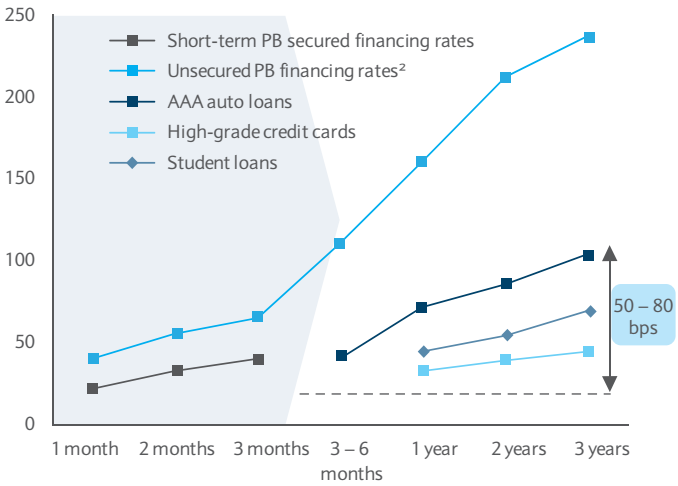
FIGURE 8: Capacity and cost of repo funding at different terms

Distribution of total repo market volume by maturity bucket[1]



1. Excludes open terms and forward starts, hence total does not equal to 100%
Source: ICMA 2012 repo survey; Strategic Consulting analysis

Current and potential benchmark rates for PBs' repo borrowing



2. Estimated typical PB unsecured debt issuance rates
Source: Barclays Trading team; Strategic Consulting analysis

financing capacity as well as rates at which unsecured borrowing is available to them. While secured financing rates will likely not be affected to the same extent, PBs with lower credit ratings will have higher haircuts for secured borrowing, and may lose access to more credit-sensitive lenders (e.g., MMFs).

Looking at these considerations, we believe that regardless of differences in operational models and legal domicile, the funding options of all PBs will be affected in the end state, by and large, in the same way. This means that funding rates available to PBs and the cost of running their business will likely go up fairly uniformly across the board.

VI. Implications for HF managers and investors

Big picture

We expect to see a growing supply-demand gap in the HF financing landscape in the medium term. As described earlier, supply of PB-provided financing is getting scarcer and more expensive as PBs are getting squeezed out of traditional liquidity sources (and it is not clear if and how fast alternative new sources will develop), as other PB funding-related and operational costs are also rising. At the same time, the demand for financing by HFs is only likely to grow. We expect this growth to come primarily from an increase in client assets. According to our earlier 'Money Trail' Hedge Fund Intelligence report, ~56% of investors plan to increase allocations to HFs in 2012 (with only 8% planning to decrease them). Another recent 2012 survey showed that leverage levels will likely be stable over the next 12 – 18 months, but they could potentially rise thereafter.

Given that we are still in the early days, it is hard to predict with any reasonable degree of confidence what the likely 'glide path' toward the end state for PBs and HFs will be. So far, PBs have absorbed most of the liquidity cost increases without passing them through to HFs. Going forward, PBs will likely be forced to change this status quo due to growing ROE pressures, Return On Assets (ROA) considerations and balance sheet capacity constraints, and will be forced to put in place an explicit term structure for any financing offered. However, some incumbent PBs may choose to keep offering liquidity at current terms to protect market share if competition in the industry continues to intensify.

If faced with increasing financing rates from their PBs, HFs can potentially explore sourcing liquidity from alternative providers. According to a recent Strategic Consulting study, a small number of surveyed HFs (<20%) do source a share of their repo financing from non-PB counterparties such as commercial banks, insurance companies, and MMFs. This share can potentially grow if the rates offered by these alternative sources start to become more competitive with rates offered by PBs. However, this alternative financing will likely be available only to large and well established HFs and will be offered only against highly liquid collateral. Another potential option for large and well established HFs could be to expand their issuance of unsecured debt, which historically, however, has not been a preferred choice for HFs (~2% have done so, as we showed earlier).

What follows below is our point of view on how things may evolve in the likely scenario where PBs are forced to charge HFs higher financing rates, and HFs continue to source most of their liquidity from PBs.

Impact on HFs with different characteristics

We believe HFs will be impacted somewhat differently, depending on their size, strategy, liquidity and leverage levels.

- **Size** – Given limited supply of liquidity, larger funds will likely get better access because of their stronger ability to negotiate.
- **Single- vs. multi-strategy HFs** – Multi-strategy HFs will be less vulnerable to increases in rates due to their ability to cross-finance assets.
- **Liquid vs. illiquid strategies** – Financing costs will become more unattractive and borrowing capacity more limited for less liquid assets (and hence for less liquid HF strategies).

FIGURE 9: Higher cost of running core PB business

PB-incurred capital costs of liquidity buffers

Prime Broker	Disclosed size of liquidity buffers, $bn	Expected burn rate[1]	Expected PB charge
JPM	432	0.25 – 1.25%	$20 – 270mn (assuming PBs get ~5% of liquidity buffer charge allocated to them)
BOA	406		
Citi	421		
DB	260		
Barclays	277		
CS	157		
GS	170		
MS	178		

Cost of pre-funding intraday tri-party trades

Size of less liquid US tri-party repo book	PB trades maturing within 1 day	Amount of PB intraday exposure that needs to be pre-funded	Expected burn rate[1]	Expected annual charge
Typical PB – $20 – 60bn	20 – 50%	$5 – 30bn	0.25 – 1.25%	$10 – 370mn

1. Rate differential between raising funding (based on blended rate from unsecured, secured and deposit financing) and re-investing into liquid assets
Source: Federal Reserve Bank of New York; Prime Brokers' financial statements as of Mar 2012; Strategic Consulting analysis

- **Degree of leverage** – Highly levered, less-liquid strategies rely on less-liquid financing most and as such, are most likely to be materially impacted. For illustrative purposes, we developed some estimates of what the potential impact on HF returns could be if financing rates offered by PBs increase by 25 – 50 bps for less-liquid strategies (see Figure 10).
  - On average, we estimate a 10 – 20 bps reduction in returns across HF strategies.
  - FI Arbitrage strategy returns will likely be affected the most (likely to be down 40 – 80 bps). It is interesting to note that the effect of high leverage typically used in this strategy (13x as shown in Figure 1) is partially compensated for by the higher liquidity of their assets (i.e., 80% of assets used are liquid sovereign debt securities).

Considerations for HF managers

We expect that in the initial 'pre-equilibrium' period, during which PBs complete implementation of their new liquidity management practices, HFs may find opportunistic, cheap funding opportunities at some PBs. However, once harmonisation occurs, HFs will have to adjust their borrowing practices to be in line with the new liquidity paradigm. We have summarised below some considerations for HF managers:

- **Rationalise borrowing practices** – We observed that until recently, HFs borrowed for longer terms than they really needed, based on the assets they held in their portfolios and their average holding periods. Wide utilisation of this 'insurance policy' by HFs historically was not surprising given virtually flat pricing of liquidity provided by the PBs. The new structure of term pricing will force HFs to better match borrowing terms with portfolio holding periods, or incur higher financing costs.
- **Revisit appetite for leverage** – HF managers may revisit their investment strategies, e.g., focus on the ones with higher intrinsic ROA and with more liquid assets.
- **Reset ROE expectations** – Their own and investors' so that they explicitly account for rising financing costs.
- **Work with the appropriate PB partners** – For instance, PBs with better credit health will have better ability to access liquidity. Moreover, experienced PBs can better understand HFs' liquidity needs and provide the right financing structures.

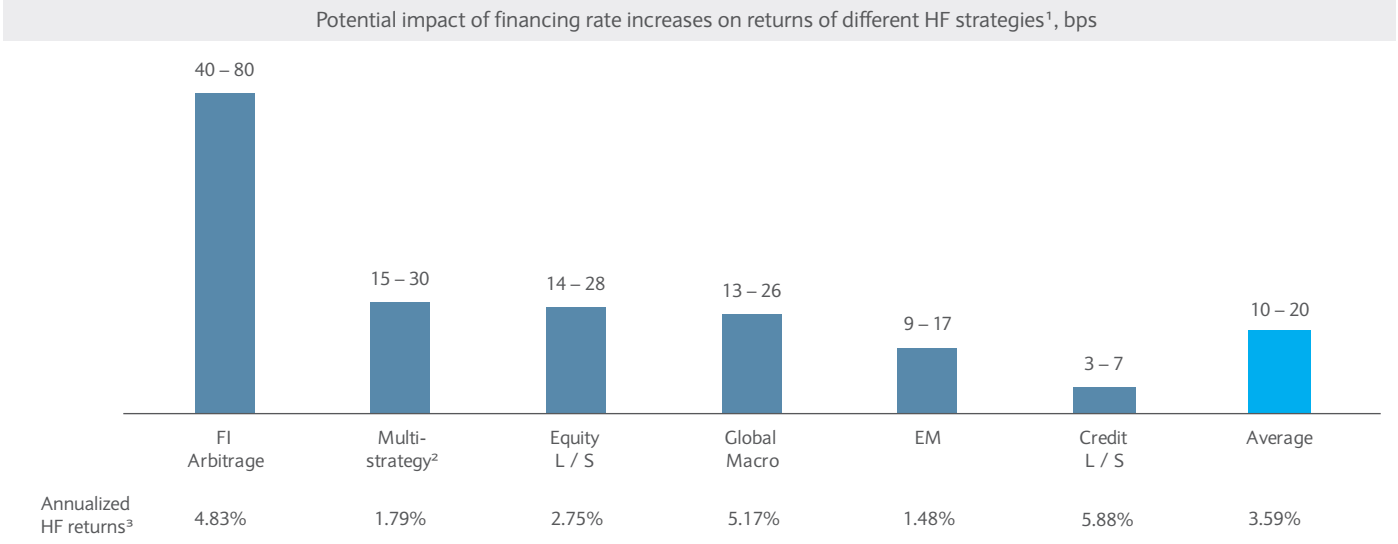
If, in response to higher financing rates, HF managers decide to de-lever their portfolios, we will likely see some asset sales. However, we do not expect to see massive sell-offs, given that harmonisation will likely happen at a relatively manageable pace (and some of it may have already taken place in anticipation of changes). We expect that less liquid assets (e.g., Equities, Convertible Bonds, Corporate Bonds, non-agency ABS / MBS) used in highly levered strategies may see some price pressure.

Considerations for HF investors

Investors may need to take the changing liquidity landscape into consideration as they go through their due diligence process and prioritise certain firms for allocation over others.

- **Return expectations** – Investors will likely need to adjust HF return expectations and / or tolerance of higher fees depending on strategy, liquidity and leverage used. Returns from strategies that require higher financing may need to be discounted to account for higher liquidity risk.
- **Allocation strategy** – Investors will likely be more open to allocating to larger, more liquid, less levered, multi-strategy HF managers. Managers that have managed to set up term financing with quality PBs may appear more stable / attractive to investors concerned about financing risk.
- **Due diligence process** – Investors will need to better understand financing terms and providers so as to determine financing risk that the HF could potentially be exposed to. This is more than just counterparty diversification, which is what most investors are currently focussed on.
- **Liquidity terms** – Sophisticated investors will understand changing liquidity dynamics, and will continue to demand better liquidity terms or significant fee discounts / higher returns for longer-lock products. Pressure on liquidity may add to fee compression at HFs.

FIGURE 10: Potential impact of funding rate increases on HF returns



1. Assuming 25 – 50 bps increase in PB financing rates for less liquid assets; 2. Impact will likely be smaller because multi-strategy funds get benefits of cross-subsidization;
3. Based on 5-year (2Q2007 – 1Q2012) average HF returns
Source: HedgeFund.net; Hedge Fund Research; Greenwich Alternative Investments; Strategic Consulting analysis

VII. Capital Solutions group

The Capital Solutions group within Prime Services offers a unique blend of industry insight and tailored client solutions for a broad range of issues.

Capital Introductions

- Maintenance of ongoing investor dialogue to provide valuable feedback to HF managers
- Introducing HF managers to a select number of interested investors
- Hosting events that provide a forum for knowledge transfer and discussion / debate on industry issues that helps educate and inform both clients and investors

Strategic Consulting

- Development of industry-leading content, driven by primary analysis, on the HF industry and its participants (e.g., HF and FoHF managers, institutional investors, investment consultants)
- Provision of management consulting services to HFs and asset managers on business topics such as the launch of a new strategy, marketing effectiveness, product development and organisational efficiency
- Acting as an HF competence center internally for Barclays

Our partners in Asset Management Banking provide the following additional services:

- Advice on control and minority stake M&A transactions
- Raising strategic LP capital and providing advice on fund restructurings
- Underwriting and placement of debt financings and equity offerings

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