Hedge fund value

Fund of hedge funds have failed to deliver value, and market events have demonstrated how dangerous redemption risks can be, say Drago Indjic and Serge Billieux

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EXECUTIVE SUMMARY

- The fund of hedge funds industry was a bubble. It is now expected to shrink to a third or a fourth of its peak size.
- The breakdown of the alpha/beta bundled multi-management model is paving the way for the introduction of multi asset class products utilising passive exchange traded products as well as active managers.
- In order to avoid this crisis in future it may be necessary to introduce requirements for redemption risk stress testing.

The catastrophic behaviour of funds of hedge funds (FoHFs) at the end of 2008 provided the final proof that a novel multi-management business model is necessary for delivering liquid alpha and beta exposure at lowest possible costs, in particular to retail investors.

FoHF managers have run large liquidity mismatches in their portfolios and have not paid attention to warnings by academics and rare practitioners over the last few years.

Traditionally, the primary 'risk' drivers of FoHFs have been narrowly defined by (quantitative) risk factors and (qualitative) business risks of underlying managers. Enjoying the relaxed regulatory regimes allowing easy distribution in many jurisdictions, the size of assets directly managed by the FoHF market kept doubling each year since the NASDAQ bubble burst, reaching 40% of all hedge fund assets. A new form of bubble was created.

References to FoHF liquidity mismatch risk started appearing only in 2007. For example, Fenal (2007) has indicated that a typical FoHF can exhibit a dangerous mismatch and that certain conditions such as the existence of investments in hedge fund 'side pockets', can bring down FoHFs facing large redemption request.

Similar anecdotal results have been generalised to virtually all known redemption conditions observed in practice in large-scale simulation studies by Billieux (2006), using novel modelling tools and presented in collaboration with Indjic (2008). It has been shown that significant unfunded asset/liability mismatches can exist in virtually all FoHFs, or general funds of alternative funds, hidden by poor data representation of FoHF underlyings.

EXPLODING TIME BOMB

The 'time bomb' stopped ticking in late 2008 with disastrous effects for the FoHF industry that had peaked at $1 trillion in assets under management just a few quarters ago. It is expected to shrink down to one third or a quarter of its size, with devastating effects to the asset management industry in major wealth management centres. Research tools offering the opportunity to accurately stress test FoHF redemption risk sensitivity were considered unnecessary in the positive net flows environment and were not in place to prevent the fallout of many FoHFs.

PRE-EMPTIVE REDEMPTIONS

Investor optimism, abundant liquidity, diminishing volatility and cheap leverage after the dot.com bubble are just a few of many similarities between bundling hedge funds in portfolios and Alt-A assets before the sub-prime crisis.

The assets under management 'grab' led to intense competition between several hundred management firms offering over 1,000 products sharing up to $20 billion in annual management fees. The industry was fairly concentrated and the assets of the top 50 FoHF firms represented in total over $450 billion. So 10% of managers controlled over 40% of all FoHF assets.

The common belief – regrettably shared by regulators – was that diversified FoHF portfolios were a safe source of alternative 'absolute returns' and hence declared safe for retail distribution.

Figure 1 represents a typical FoHF that offers multiple share classes to cater for varying client segments (retail, institutional funds and institutional tailor-made) and invests in a large pool of underlying single managers.

However, what was missing was asset/liability analysis. The investor's equity, as well as debt owed to leverage providers

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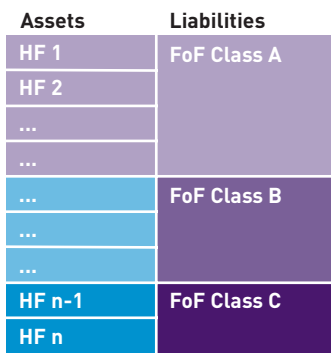
FIGURE 1: TYPICAL FUND OF HEDGE FUNDS ASSET AND LIABILITY STRUCTURE



(large investment banks) should be viewed as predominantly short-term liabilities and their FoHF investments as their only assets. The portfolio cash was often a very thin layer, usually less than 10%, sufficient to cushion only 'normal' redemptions.

The disaster ('Doomsday') scenario was relatively simple and can be represented in a few steps in *figure 2*. The duration of assets grew much faster than duration of liabilities and the balance has dramatically shifted in the second half of 2008.

The scenario started unrolling during the second half of 2008 when hedge fund performance started deteriorating as shown in *figure 3*, disappointing investors seeking 'absolute returns'. New capital inflows decreased and then started reversing.

Secondly, almost simultaneously, increasingly risk-averse leverage providers to FoHF requested larger margins and rapid deleveraging in response to the credit, funding and solvency crisis that started in the summer of 2007. Almost simultaneously, in particular from the perspective of European managers offering products in non-USD currencies, USD strengthening required meeting unexpected margin calls.

Thirdly, and perhaps most importantly, the management of collapsing balance sheets of FoHFs was made far more difficult by increasingly complex contractual redemption terms of hedge funds that appeared 'dormant' during previous market phases. The true nature and 'evaporation' of contractual liquidity is our focus. It is instructive to start from basic data to understand the origin and extent of the crisis.

THE HOLY GRAIL OF RECONCILING PUBLIC AND PRIVATE DATA

The main problem in hedge fund research is still data. Over the last 10 years the authors have gathered significant experience in managing and analysing hedge fund data. Our most famous research result is the Venn diagram in *figure 4*, (overleaf) copied and referenced in many papers as the 'Rosetta stone' of unique hedge funds identified by cross-referencing several well known databases.

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FIGURE 2. LIQUIDITY RISK SCENARIO FOR FUNDS OF ALTERNATIVE FUNDS

If

Net Capital Flows <0 ***while*** Duration(Assets) > Duration(Liabilities)

Shock such as large redemption, margin call etc.

Then

Liquidity crisis

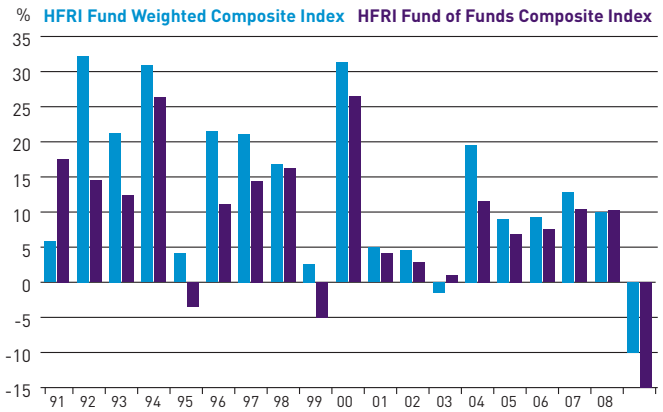
Insolvency

Bankruptcy

Receivership

Forced liquidation....

FIGURE 3: ANNUAL SINGLE AND MULTI MANAGER HEDGE FUND PERFORMANCE



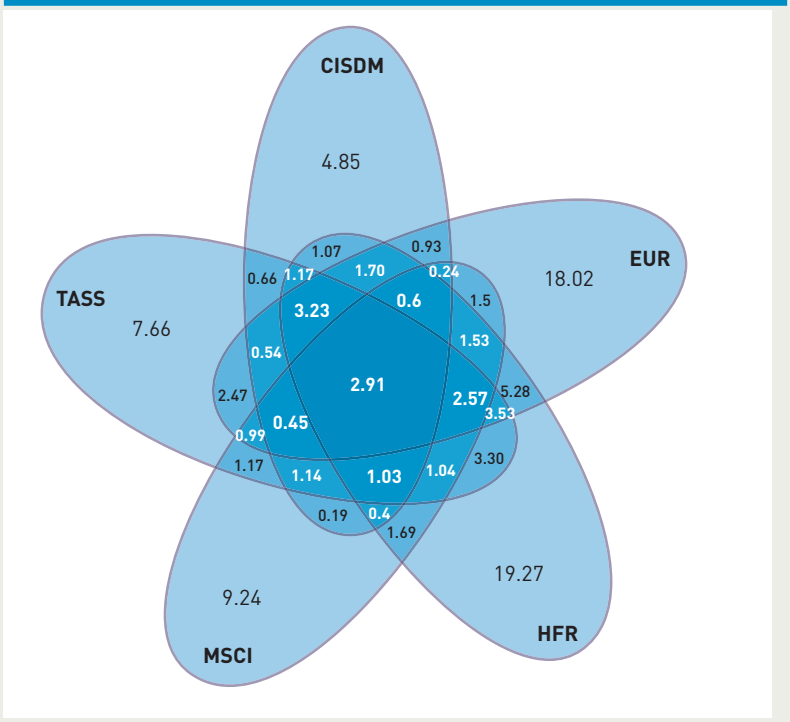
Source: HFR

"FoHF managers have run large liquidity mismatches in their portfolios and have not paid attention to warnings by academics and rare practitioners over the last few years"

It is an aggregated, non-redundant multi-source database report produced in 2005 using a very early customised version of FDM software by Soft Finance at London Business School. Similar queries are today regularly performed at Imperial College London and London Business School using significantly improved technology and multi-GB sized databases.

Until only a few years ago, hedge funds used to offer a simple form for redemptions. Traditionally, documentation specified the redemption

FIGURE 4: HEDGE FUND DATABASE COVERAGE VENN DIAGRAM (%)



"Research tools offering the opportunity to accurately stress test FoHF redemption risk sensitivity were considered unnecessary in the positive net flows environment and were not in place to prevent the fallout of many FoHF"

frequency (e.g. the end of calendar month or quarter), notice period for redemptions (e.g. 45 days) and possibly a 'lock-up' when no redemptions are possible (e.g. six months).

Two typical recent articles addressing the analysis of hedge fund liquidity are Fenal (2007) who used a small set of private data and Themar and Hombert (2008) using a single commercial database.

Both approaches cannot be generalised due to obvious limits of data coverage. In most hedge fund databases and IT systems, redemption conditions for single and multi manager funds are not modelled but left untouched. The unstructured, free text strings are used in database fields to describe relevant calendar time periods, entered (typed and probably re-typed) by analysts. The risk of errors is high.

The certain 'triplets' of redemption conditions are very common for historical reasons. However, the evolution of the redemption condition has not been captured. For example, for illustration purposes only we will mention only two very popular additional concepts:

A 'gate' allows the manager to limit redemptions on each redemption date when the total amount of requested redemptions reaches a given percentage of the fund ('fund level gate') or invested amount ('investor level gate').

'Penalties', are the variable amount of payments in case of requests for early redemption, also known as the cost of breaking of 'soft lock up' periods

These two are just the simplest complications. Usually all the above features are combined and expanded, by including, for example, 'anniversary' redemptions (possible only on the date of the initial investment), complex payment schedules (the last 10% of redemption amount is payable only after fund accounts have been audited), multiple offerings (choose between early redemption with penalty or later at lower or no penalty) and much more.

INACCURATE MAPPING

Understandably, investors have focused only on characteristics of current 'live' portfolios. The back office has been capturing quality data only for a small subset of funds. Moreover, the internal data have been rarely reconciled with external data sources. In many instances observed in the authors' practice, fund documentation has not been accurately mapped to internal IT system data models.

No public or regulatory entity was held responsible for supplying reference data. Each fund administrator, counterparty (such as structurers in investment banks) and of course FoHFs

were unnecessarily duplicating the efforts of everybody else.

The end result is that our view of the complex, heterogeneous hedge fund universe was distorted, fragmented, delayed and left open to multiple interpretations. No organisation attempted to synthesise an aggregated perspective using data provided by many independent vendors.

In relation to liquidity data, our most recent anecdotal analysis of typical commercial databases have shown that on average over 10% of funds have one or more blank fields. Perhaps more disturbingly, we have regularly observed serious data discrepancies.

Several examples are given in *Tables 1A-1C*.

WHAT HAPPENED – WHO DID IT?

The struggle to secure distribution rights for the 'best' hedge fund managers created a mismatch between supply and demand.

In order to accept new subscriptions, FoHF had to create 'inventories' of investment capacity in 'quality' managers. Therefore, FoHF managers emphasised access to 'guaranteed' capacity beyond initial investments.

In order to secure 'sticky' assets, hedge fund managers have started demanding tougher liquidity terms. The highly visible direct fees remained at the standard '2%/20%' or similar. However, FoHFs have maintained the original redemption terms, typically monthly and quarterly.

The original assumption of a simple 'bullet' – bond like cash flows after redemption requests – was destroyed. Traditional heuristics for managing cash and rebalancing FoHF portfolios did not apply.

Depending on the size of the 'gate' and the propensity to pay penalties for redeeming early, the redemption proceeds could have a multiplicity of durations.

As shown on *figure 5* for a single manager, 'gate' and 'penalties' became the parameters of duration of the assets.

The equivalent picture of FoHF

TABLE 1A: MOST DATA VENDORS DO NOT REPRESENT 'SOFT LOCK UP' CONDITIONS

Source	Redemption frequency	Length of Lockup period	Other conditions described in offering memorandum
Public	Monthly	?	?
Private	Monthly	12 months	Soft lock penalty up to 4%

TABLE 1B: VERY OFTEN THE DATE OF OFFERING MEMORANDUM IS NOT PUBLISHED, YET THEY MAY BE UPDATED IN SOME CASES ANNUALLY.

Source	Redemption frequency	Length of Lockup period	Other conditions described in offering memorandum
Public	Monthly	?	?
Private (original)	Monthly	No	7% Gate
Private (later)	Anniversary	1 year	7% Gate
Private (latest)	Anniversary	No	Anniversary at no cost or monthly redemption with 5% penalty

TABLE 1C: THE MOST COMPLEX CONDITIONS ARE OFTEN LEFT BLANK IN PUBLIC DATABASES

Source	Redemption frequency	Length of Lockup period	Other conditions described in offering memorandum
Public A	Annually	6 months	?
Public B	Annually	?	?
Private	Quarterly	6 months	10% Gate, semi-annual hard lockup, followed by semi-annual soft lockup subject to 15% penalty and afterwards quarterly redemption period subject to 25% gate of the initial position.

FIGURE 5: REDEMPTION CASH-FLOWS PARAMETRISED BY PENALTIES AND GATE

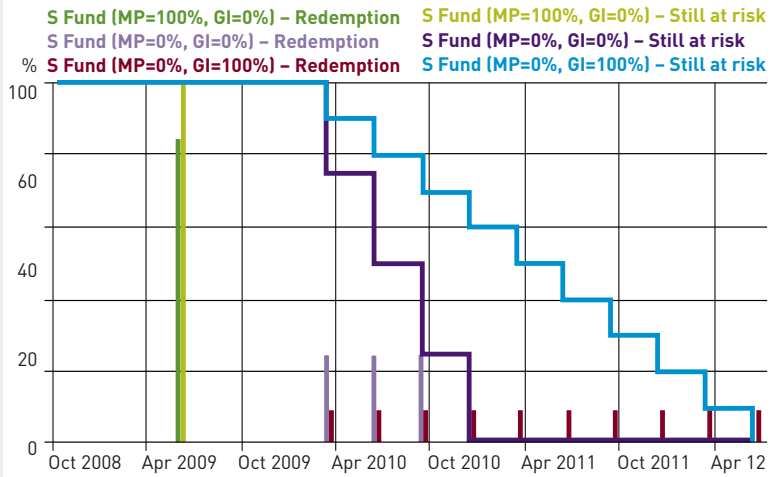


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TABLE 2: MEDIAN SIMPLE 'DURATION' OF HEDGE FUND STRATEGIES

	TASS Strategy	Days
Long/Short Equity	30	75
Event Driven	16	135
Multi-strategy	17	90
Macro	9	60
Emerging Markets	7	104
Fixed Income Arb	5	60
Market Neutral	4	43
CTA	9	37
Convertible Arb	2	90
Market		**83**

cashflows is far more complex. The effects of evolving redemption conditions were made very clear in the last few weeks of 2008.

In an act of massive panic, FoHF managers expecting large end investor redemptions have put 'pre-emptive' redemption notices across the board and tried to raise extra liquidity from quality but liquid managers.

In many cases, they were redeemed for no other reason but the FoHF liquidity crisis. The 'co-investor' risk became critical and within several weeks (a lag given by notice periods), hedge fund managers that were facing huge amounts of 'pre-emptive' redemptions (in many cases over 50% and up to 80% of their assets) reacted.

The independent directors of hedge funds have sought refuge in the rarely used protective clauses of offering memorandums and applied various measures to protect other (non-redeeming) investors.

The protection measures included not just triggering 'gates', but also suspending redemptions or NAV calculation and in extreme cases starting voting procedures to decide on fund restructurings, liquidating accounts, in-kind redemptions etc.

In this unchartered territory normal 'best practice' principles did not apply. The regulators provided only general guidance designed for ordinary market conditions.

For example, IOSCO in 2007 stated in relation to FoHFs that 'there (should) be a real consistency between a fund of hedge funds' liquidity and that of its underlying hedge funds' and 'It is noteworthy that in the opinion of a few experts, the funds of hedge funds' liquidity is not always an issue and may be a means to protect retail investors' interests'.

Note the striking difference between banking and FoHF regulation. It is unclear how to apply current regulation designed for hedge funds and their investors. For example, in 'fund runs' that are similar to 'bank runs', whose interests should be protected: retail investors, systemic risk or FoHF managers?

Our preliminary research results presented in Indjic and Billieux (2008) have shown that concerns about systemic risk were not founded. Hedge funds were more stable to navigate through crisis, unlike a large number of FoHFs that were decimated.

DATABASES

Note that unlike their on-shore mutual fund counterparts, FoHF 'databases' carry no information on actual FoHF holdings or strategy allocation data.

The median duration of a large sample of FoHF analysed in Indjic and Billieux (2008) is estimated to be 97 days (a bit longer than a sum of 'monthly', 30 days redemption frequency and '60 days' notice period).

We have provided estimated median values of durations in *table 2* in order to illustrate difference between strategies.

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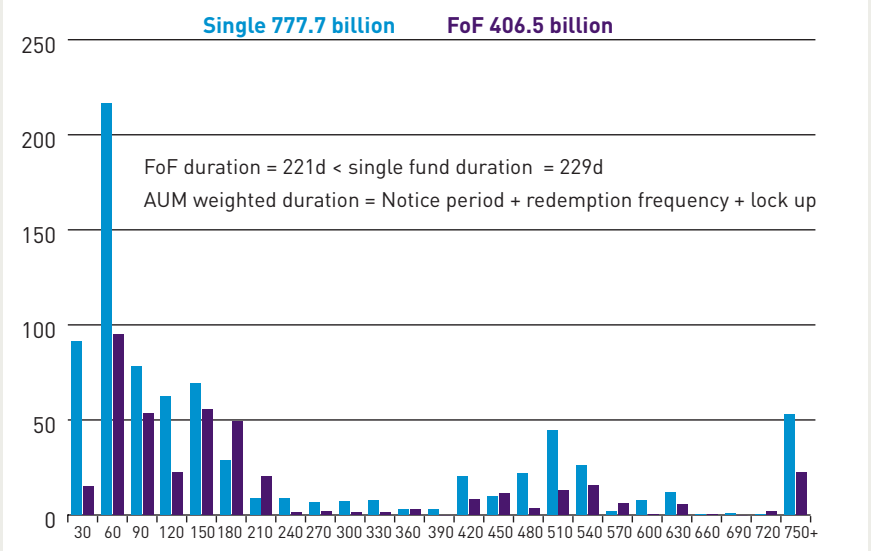
FIGURE 6: ASSET-WEIGHTED DURATION FOR SINGLE FUNDS AND FUNDS OF FUNDS IN CISDM DATABASE



Strategy weighting is taken from TASS strategy weightings from Q3 2008. Naturally, this is just an indication due to many difference in hedge fund data base coverage, quality and definitions

Using TASS strategy weightings as proxy for hedge fund 'universe' weightings, the weighted duration of the hedge fund universe is 83 days.

Therefore, a hypothetical 'typical' FoHF has got 14 days longer duration than the 'universe'. In order to improve approximation, we have considered additional information on lock-ups and the size of AUM.

Figure 6 represents a very conservative estimate of asset-weighted contractual duration for funds in the CISDM database. The difference is eight days in favour of single hedge funds.

This very crude approximation provides evidence that there is a certain degree of market-wide mismatch between liquidity terms, even before any 'long tail' redemption data is taken into account.

CONCLUSION

The rapid rise in size of the assets of FoHFs resulted from relaxed regulation that promoted retail distribution. In addition, large FoHFs created in a bygone age of easy credit are not agile for tactical strategy allocation. They are easily overrun by alternative products that can provide more liquid, large capacity exposure to the same alternative and traditional beta exposures.

The breakdown of the alpha/beta bundled multi-management model is paving the way for the introduction of multi asset class products utilising passive exchange traded products as well as active managers. Novel products will be jointly optimising risk, liquidity and cost characteristics.

From a regulatory viewpoint, in order to avoid this crisis in future it may be necessary to introduce a requirement for redemption risk stress testing. For example, regular reporting and disclosure of stress tests of FoHF's cash proceeds, 'duration', and time and risk (beta) profile as redemption requests vary between 1%-100% received by the end of the next business day, week, month or quarter. The disclosed set of charts can be easily audited against FoHF holdings by fund administrators, counterparties or even investment consultants.

A full version of this article can be accessed at www.london.edu//hedgefunds.html and www.soft-finance.ch/

PROFILE – FACT BOX

Drago Indjic

Career highlights:

Drago Indjic has more than 15 years experience in the hedge fund industry, including over 10 years at London Business School. He is also an investment manager at Bluewhite Alternative Investments. During his career he was affiliated with many start-up quantitative hedge funds (Amplitude, Oxquant, First Quadrant, Econostat) as well as a very large fund of funds (Fauchier Partners). His research interests include data quality and liquidity management in hedge funds and low latency trading systems. Indjic has PhD in Energy Engineering from Imperial College London and Dipl. Ing. from the University of Belgrade.

Serge Billieux

Career highlights:

After three years as a bond analyst with UBP and Pictet, Serge Billieux became a fund of hedge funds manager at SGS-Mestral Capital. He managed funds for three years, and then became intrigued by the lack of technology offerings for the alternative investment industry. In 1999 he created his first software company. Today, through his company Soft Finance, he is dedicated to leveraging his experience by managing a portfolio of businesses in the industry. He has an engineering and financial background.