

Asset allocation analysis prepared for
London Borough of Hammersmith and Fulham
A view from the perspective of macro-economic regimes

Executive summary

In this note, we have reviewed the current strategic allocation of the London Borough of Hammersmith and Fulham fund. The analysis completed by Unigestion focuses on the current risk allocation of the overall portfolio to key macro risk factors.

In summary we can conclude that from a macro point of view, the portfolio is largely dominated by growth risk. We would highlight from previous similar exercises we have completed for LGPS clients, this is not uncommon although it is at the higher end of the range of LGPS clients we have looked at. Another key finding is that the portfolio also has a significant exposure to idiosyncratic risk, this means that while the portfolio could suffer large losses in case of any adverse event (e.g. a recession, an inflationary shock or a market stress), this type of risk does provide elements of diversification.

In relation to the Fund's targeted return expectation of the investment strategy, analysis has shown that this is at a comparable level to funds with similar arrangements. A key driver of this is the higher relative exposure to equities, infrastructure, and property.

Taking into account that above points, our conclusion is that we believe that the portfolio's risk-return profile, and its behaviour during market extremes, could be improved through consideration of a different approach.

Proposal:-

First, we would consider shifting part of the equities allocation to an Alternative Risk Premia strategy, which presents higher return characteristics with a low correlation to equity markets, thus introducing more idiosyncratic risk into the portfolio i.e. increasing benefits of diversification. This strategy also provides the portfolio with more protection in Recession regimes. Further, we look at replacing part of the existing equity allocation with Private Equity, which should provide some additional inflation protection without compromising on expected return assumptions.

While our proposals do not completely change the portfolio's exposure to risk factors, they would offer diversification away from Steady Growth risk, deliver better risk-adjusted expected returns and lower drawdowns, while offering comparable expected returns.

Introduction

The purpose of this note is to perform a macro factor analysis of the strategic allocation for London Borough of Hammersmith and Fulham.

The analysis completed by Unigestion has focused on macro risk factor analysis because such an analysis provide outcomes that has better economical interpretation when compared to traditional market risk factors or statistical factors analysis.

Following completion of our analysis on your fund's exposure, we would propose specific and targeted modifications of the portfolio that aim to provide improvements to the risk/return profile of the portfolio.

The document is organized as follows:

Section 1 outlines the strategic portfolio.

Section 2 provides with the macro analysis methodology and results.

Section 3 suggests some alternative portfolios with the purpose of seeking to improve the risk-return profile of the portfolio.

Section 1 – Strategic portfolio

The strategic allocation of London Borough of Hammersmith and Fulham has been taken from the annual report and discussed with your advisor Deloitte to ensure that our analysis is aligned with the asset class exposures that you hold. This is displayed in Table 1. You will note that for each asset class we have analysed the actual fund holding or appropriate index. We have used the “Total Return” version of the indices or returns where possible. Further, we have also removed foreign currency effects where possible to isolate pure asset class exposure.

Table 1: Strategic allocation

Asset Class	Percentage	Index
UK Equities	22.5%	FTSE All Share Index
Global Equities	22.5%	FTSE All World Index
Dynamic Allocation – Absolute return	10%	Ruffer Absolute Return
Dynamic Allocation – Bonds	10%	Insight Bonds Plus
Credit	15%	Credit Suisse Leveraged Loans Index
Direct infrastructure	5%	MSCI World Infrastructure Index
Inflation	10%	50% FTSE UK Gilts Indexed + 50% MSCI World Infra.
Long Lease Property	5%	UK IPD Total Return All Property Index

Section 2 – Macroeconomic factors analysis

Methodology

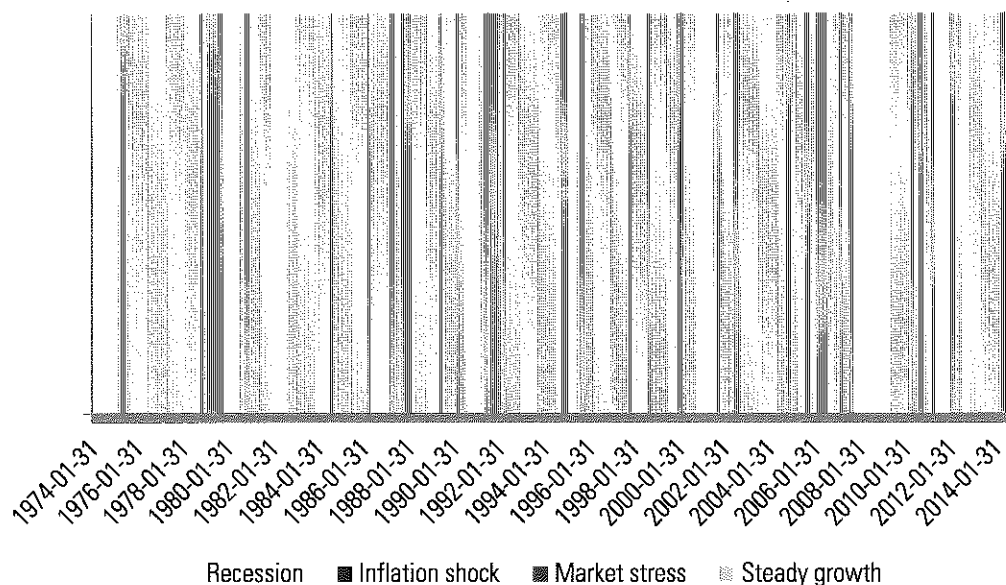
1 - Identification of macroeconomic regimes

Macro risk factors are the macroeconomic fundamentals that affect asset class prices. We identify three major macro risk factors: economic activity (recession), inflation shocks and market stress. It is important to note that if we do not believe any one of the macro risk factors noted materialise or are dominant then we would say that we are in a period of steady growth.

We therefore consider that the economic and financial environment consists of four regimes:

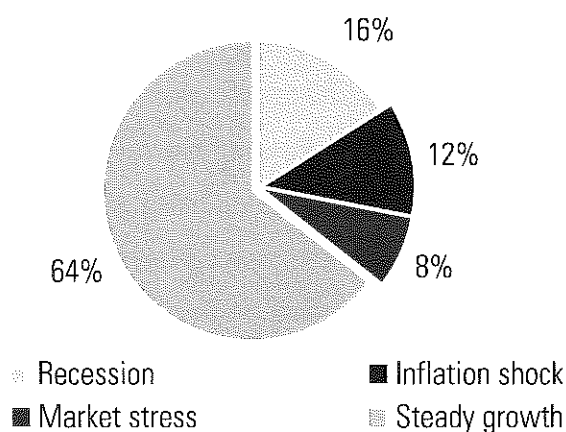
- Recession regime: in this configuration, economic growth sustains a severe shock and falls below its potential. Excess production capacity generates a rise in unemployment and a significant decrease in consumption. Investments are reduced and the risk of default rises significantly.
- Inflation shock regime: in this configuration, inflationary pressures are no longer controlled by the central banks. Inflation exceeds the expectations of economic agents. This shock results from excess demand in relation to supply. This excess can come from the labour market (demand shock) or the commodity market (supply shock). In order to identify periods of inflation shock, we analyse the dynamics of actual inflation and compare it with the inflation expectations provided by surveys. When actual inflation accelerates and exceeds expectations, we consider the economy to be in a regime of inflation shock.
- Market stress regime: in this configuration, macroeconomic fundamentals have not changed, contrary to previous regimes. The sharp rise in risk aversion typical of this regime can occur following a period of exuberance in one or several markets and/or a specific event of limited duration. In order to identify this regime, we use econometric modelling techniques to analyse changes in regimes (Markov switching model) based on actual and implied volatility of equity markets (S&P 500 index).
- Steady growth regime: in this regime, economic growth is close to or above potential, the unemployment rate falls, lending to the private sector expands, economic agents' sentiment is positive. Inflationary pressures are reined in by a restrictive monetary policy.

At Unigestion we have completed research to assess the frequency and duration of each economic regime. We have research going back to the early 70's and across different geographical areas. Based on a global view are findings are shown in Chart 2.

Chart 2: Periods of economic regimes occurrences (1974-2015)

Source: Unigestion, Bloomberg, OECD, MSCI.

Chart 3 shows the related probabilities of each regime reoccurring. Recession periods observed since 1974 represent roughly 16%. Around 12% of inflation shocks have occurred outside recession periods. The frequency of market stress regimes, outside recession regimes and inflation shocks, is about 8%. By past standards, the steady growth regime represents slightly more than 64% of occurrences.

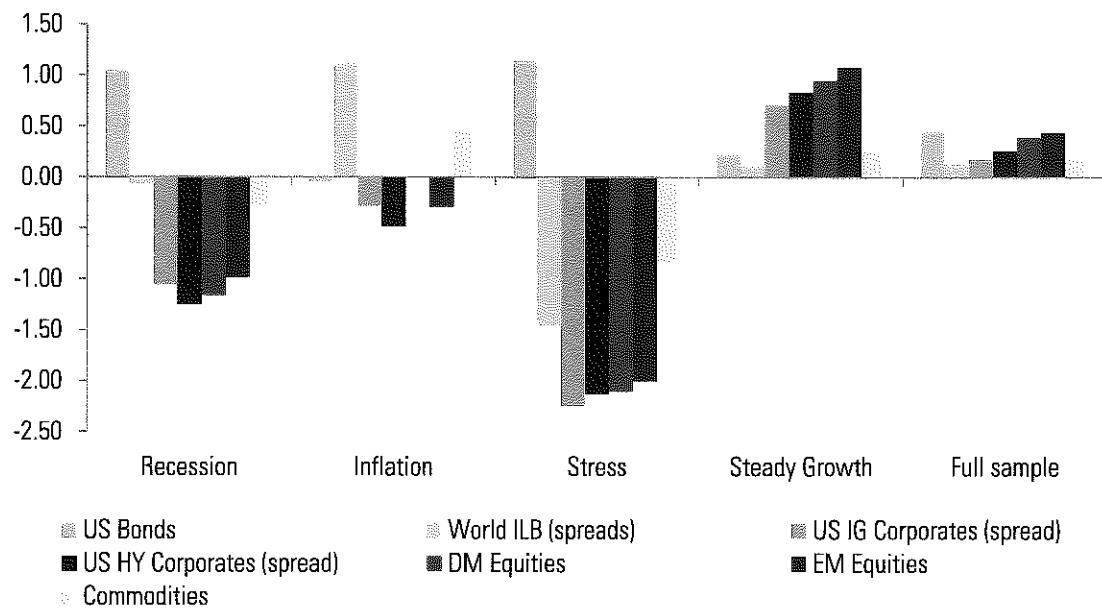
Chart 3: Distribution of economic regimes (1974-2014)

Source: Unigestion, Bloomberg, OECD, MSCI.

Implication for the behaviour of asset classes

The interest of breaking down the cycle in this way is that it shows a strong link between economic regimes and asset class performances. Chart 4 thus illustrates the fact that the risk-adjusted performance of the main asset classes varies strongly depending on the regime.

Chart 4: Sharpe ratios of main asset classes across economic regimes (1974-2014)



Notes: US bonds: 1973-2014, World ILB: 1997-2014, US IG Corporates: 1973-2014, US HY Corporates: 1983-2014, DM Equities: 1970-2014, EM Equities: 1987-2014 and Commodities: 1970-2014.
Sources: Unigestion, Bloomberg.

Government bonds tend to outperform other assets during periods of recession and stress. Developed equities and credit prefer growth periods without accentuated inflation. Conversely, commodities show superior performance during inflation shocks. Lastly, emerging equities offer an attractive compromise in inflationary growth periods.

This makes this analytical framework particularly well suited to assessing a portfolio's risk, making it possible to study the effects of various economic scenarios on its performance. It is also extremely attractive in terms of portfolio construction, making it possible to define a robust strategic allocation over time as well as directly transposing macroeconomic views in terms of implementation.

However, the data corresponding to these risk factors are not always available with sufficient frequency (for example, GDP data are quarterly and revised subsequently) to carry out a reliable risk exposure analysis.

Market-proxies for macroeconomic factors

For this purpose, we construct baskets of risk premiums linked to risky assets whose trends are closely linked to that of the above-mentioned factors. These correlations have been established on the basis of historical analyses taking into account several decades of observations and various geographical regions.

"Proxy" risk factors are constructed as follows:

Growth: risk-weighted equities (MSCI World) and credit spreads (CDX NA HY)

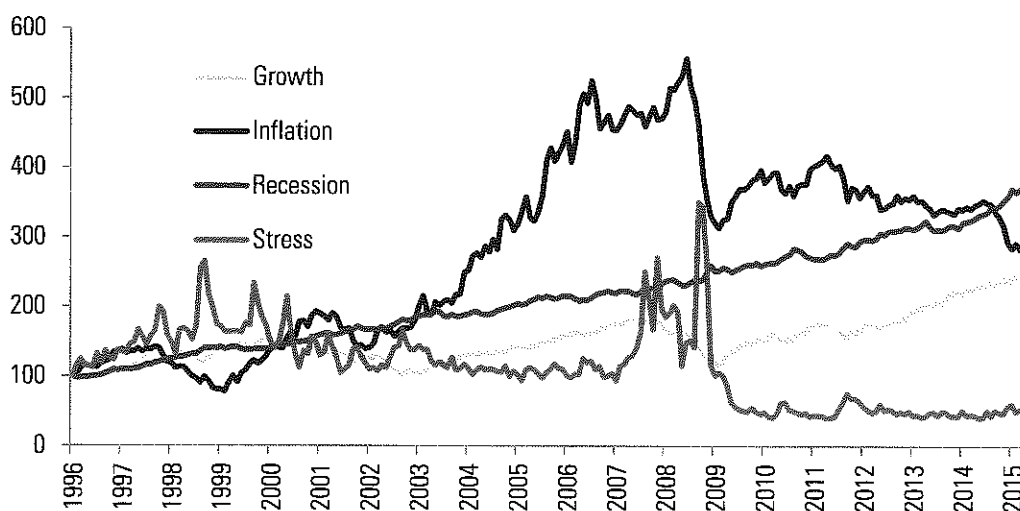
Recession: UK government bonds (Citigroup UK GBI)

Inflation: basket of commodities and inflation swaps (25% Bloomberg Energy, 25% Bloomberg Industrial Metals, 50% Deutsche Bank US Inflation Swaps 5Y)

Stress: implied volatility of US equities (VIX Index) and TED spread (3m USD LIBOR - 3m US government rate)

Chart 5 illustrates the change over time of these risk factors proxies.

Chart 5: Performance of macroeconomic risk factors proxies (1996-2015)



Source: Unigestion.

2 - Static analysis (Jun 2006 – September 2016)

Table 6 shows asset classes' sensitivity to macroeconomic risk factors. Sensitivities highlighted in bold are those that are statistically significant at the 95% confidence level. We have used the local currency version of the indices to isolate the macro factor exposure of the asset class from that of foreign currency returns.

Table 6: Sensitivities of asset classes across macroeconomic regimes

	<i>Betas</i>	Steady Growth	Recession	Inflation	Stress	R2
Equity	FTSE All Share Index	1.08	0.24	-0.02	-0.01	74%
	FTSE All World Index	1.19	0.08	-0.06	-0.02	87%
Dynamic Allocation	Ruffer Absolute Return	0.28	0.24	-0.01	-0.10	27%
	Insight Bonds Plus	0.10	0.04	0.00	-0.02	20%
Secure Income	CS Leverage Loan Index	0.62	0.08	0.06	0.00	79%
	Infrastructure Index	0.96	0.30	0.08	0.07	60%
Inflation protection	50% ILG / 50% Infrastructure	0.55	0.51	0.12	0.00	71%
	IPD Index	0.48	-0.01	-0.10	0.23	33%

Source: Unigestion, Bloomberg

We notice that most asset classes are significantly exposed to one or more risk factors, and in particular to the risk of economic growth. As expected, the mixed allocation to Inflation-Linked Gilts and Infrastructure exhibits a significant, positive sensitivity to inflation and risk, Dynamic Asset Allocation funds are less exposed to growth than other investments with Ruffer Absolute Return even showing some positive sensitivity to Recession risk. Interestingly, Infrastructure also offers some degree of sensitivity to Recession, due to the yield sensitivity of the asset class.

Table 7 aggregates these results for the full portfolio, using the weights given in Table 1. In particular, it shows aggregated beta (which measures correlation with macro risk factors) for the portfolio as well as the breakdown of explained total risk (risk contributions) and unexplained risk (idiosyncratic risk).

Before we look in detail at the results it is important to understand the methodology we use to 'measure risk'

The risk measure applied is the 95% **Expected Shortfall** (ES) over a one-year horizon. In other words, the expected loss in the forthcoming year within the 5% worst scenarios is estimated to be this amount. Expected Shortfall is measured through a proprietary model encompassing various dimensions including:

- Volatility: measures the dispersion of returns for a given security or market index
- Skewness: assets whose distribution is negatively skewed are penalised. This is particularly relevant in the current context of low bond yields, as bond prices have much more downside potential than upside.
- Kurtosis: assets which have fat tails are penalised. For example, global high yield bonds tend to have more extreme returns relative to what would be expected in a normal distribution.
- Liquidity: less liquid assets are penalised as their volatility are normally understated due to stale pricing, for example, in the case of direction property investments.
- Carry: carry is the expected return of an asset should pricing remain unchanged. For two assets with the same volatility, the one with a higher carry can be considered less risky when estimating downside risk.

Table 7: Sensitivities of portfolio across regimes

	Steady Growth	Recession	Inflation	Stress	Idiosyncratic risk	Total
Betas	0.77	0.18	0.00	0.00	0.03	-
Risk contributions (1-year 95% ES)	14.1%	0.8%	0.0%	0.1%	2.3%	17.4%
Risk proportions	81%	5%	0%	1%	13%	100%

Source: Unigestion, Bloomberg

All in all, the Growth factor dominates the portfolio as it accounts for 81% of the portfolio's total risk. This is significantly higher than the 60% we would recommend for a "risk-balanced" exposure, in order to match the expected frequency of steady growth periods. As a result, the portfolio also seems to lack "hedging" assets for recessionary, inflationary or market stress regimes. However, it does have a significant contribution from idiosyncratic risk, which is likely a result of the portfolio's allocation to property, and "dynamic asset allocation" assets.

Table 8 summarises the average expected nominal returns and risk-adjusted return ratios for the current portfolio. Nominal expected carry is higher than we usually see in pension fund portfolios due to the high exposure to alternatives.

Table 8: Expected nominal return and risk-adjusted returns of the portfolios

Nominal expected carry	Expected ES	Nominal expected carry/ES	Nominal expected carry/Max Drawdown
7.3%	17.4%	0.42	0.24

Source: Unigestion, Bloomberg

Table 9 summarises the historical performances of the portfolio during periods of market stress

Table 9: Performances during periods of market stress

Great Financial Crisis	29-Aug-08	27-Feb-09	-23.5%
Summer 2011	31-May-11	30-Sep-11	-8.0%

Source: Unigestion, Bloomberg

The simulation of the Great Financial Crisis of 2008 shows a drop in the value of the assets that is comparatively lower than anticipated given the asset mix and the outcome for similarly structured portfolios.

Section 3 – Alternative portfolios

In this section, we consider alternatives to the current strategic portfolio.

1 - Description of the alternative proposed portfolios

While the portfolio is quite well diversified in as such that it has a significant exposure to both liquid and illiquid alternatives, the portfolio's existing equity allocation has a strong home bias. In light of the uncertainty for businesses post-Brexit and concentration risk in general, we would consider some alternative portfolios. To investigate whether risk-adjusted returns can be improved, we consider two alternative allocations which incorporate a broader universe of risk premia:

- Proposal 1 : Shifting 10% of equities allocation (UK and World) to Alternative Risk Premia
- Proposal 2 : Shifting 10% of equities allocation (UK and World) to Private Equity

A summary of the proposed portfolios is summarised in Table 10.

Table 10: Proposed allocations versus current allocation

	Current	Proposal 1 (ARP)	Proposal 2 (PE)
Inflation linked Gilts	0.0%	0.0%	0.0%
FTSE All Share Index	22.5%	17.5%	17.5%
FTSE All World Index	22.5%	17.5%	17.5%
Low-Vol World Equities	0.0%	0.0%	10.0%
Ruffer Absolute Return	10.0%	10.0%	10.0%
Insight Bonds Plus	10.0%	10.0%	10.0%
CS Leverage Loan Index	15.0%	15.0%	15.0%
Infrastructure Index	5.0%	5.0%	5.0%
50% ILG / 50% Infrastructure	10.0%	10.0%	10.0%
IPD Index	5.0%	5.0%	5.0%
Alternative Risk Premia	0.0%	10.0%	0.0%
Private Equity	0.0%	0.0%	10.0%

We have proxied Private Equity by the Cambridge US Private Equity index. The Alternative Risk Premia strategy targets 8% volatility and consists of various underlying strategies including equity factors, trend following, carry, value and convexity. Full details of these strategies are in the Appendix of this document.

2 – Full portfolio simulation

Table 11 shows the additional risk premia's sensitivities to macroeconomic risk factors. Sensitivities highlighted in bold are those that are statistically significant at the 95% confidence level.

Table 11: Additional risk premia's sensitivities to macro risk factors

Betas	Steady Growth	Recession	Inflation	Stress	R2
Alternative Risk Premia	0.09	0.21	-0.09	0.03	7%
Private Equity	0.84	0.01	0.13	-0.02	75%

Source: Unigestion, Bloomberg

Table 12 summarises the beta exposure to the various macroeconomic risk factors of the proposed portfolios. Table 13 summarises the 1-year 95% ES of the proposed portfolios, while Table 14 presents the risk contributions as percentages of total portfolio risk.

Table 12: Beta exposures of the various portfolios to the macroeconomic risk factors

Betas	Steady Growth	Recession	Inflation	Stress	Idiosyncratic risk
Current	0.77	0.18	0.00	0.00	0.03
Proposal 1	0.66	0.19	0.00	0.00	0.03
Proposal 2	0.73	0.15	0.02	0.00	0.03

Source: Unigestion, Bloomberg

Table 13: 1-year 95% ES of the various portfolios across regimes

95% 1 year ES	Steady Growth	Recession	Inflation	Stress	Idiosyncratic risk	Total (%)	Total (£)
Current	14.1%	0.8%	0.0%	0.1%	2.3%	17.4%	£149m
Proposal 1	11.9%	0.7%	0.0%	0.0%	2.3%	14.9%	£127m
Proposal 2	13.3%	0.7%	0.2%	0.1%	2.6%	17.0%	£145m

Source: Unigestion, Bloomberg

Table 14: Risk proportions of the various portfolios across regimes

Risk proportions	Steady Growth	Recession	Inflation	Stress	Idiosyncratic risk	Total
Current	81%	5%	0%	1%	13%	100%
Proposal 1	80%	5%	0%	0%	15%	100%
Proposal 2	78%	4%	1%	1%	15%	100%

Source: Unigestion, Bloomberg

Both proposals have in common an overall reduction in risk for the portfolio compared to the current Strategic Asset Allocation. As expected, idiosyncratic risk is increased in Proposal 1 where we introduced exposure to Alternative Risk Premia and sensitivity to inflation is slightly increased for Proposals 2 where we introduced exposure to Private Equity. However, in all cases the portfolio risk remains dominated by the "Growth" factor. Re-balancing toward more Recession or Inflation protection would require more drastic changes in the allocation.

Table 15 summarises the average expected nominal returns and risk-adjusted return ratios for the current and proposed portfolios. Expected nominal return/risk and expected carry/max drawdown ratios are improved in all proposals, with improvements in "Proposal 1" being more significant.

Table 15: Expected nominal return and risk-adjusted returns of the portfolios

	Nominal expected carry	Expected ES	Nominal expected carry/ES	Nominal expected carry/Max Drawdown
Current	7.3%	17.4%	0.42	0.24
Proposal 1	7.7%	14.9%	0.51	0.30
Proposal 2	7.4%	17.0%	0.44	0.27

Source: Unigestion, Bloomberg

Table 16 shows that during historical periods of market stress, drawdowns can also be reduced in the proposed portfolios.

Table 16: Performances during periods of market stress

			Current	Proposal 1	Proposal 2
Great Financial Crisis	29-Aug-08	27-Feb-09	-23.5%	-19.8%	-22.2%
Summer 2011	31-May-11	30-Sep-11	-8.0%	-6.5%	-6.5%

Source: Unigestion, Bloomberg

In summary, we believe a combined solution of the two proposals could be an interesting proposition for LBHF as both Alternative Risk Premia and Private Equity provides diversification away from Steady Growth risk, offering comparable returns, lower drawdowns and improved risk-adjusted returns.

Appendix – Proposed Strategies

Alternative Risk Premia, as at 30 September 2016

An innovative, actively managed alternative risk premia strategy, targeting returns of cash+7% p.a. gross of fees over a 3- to 5-year investment horizon. Designed with daily liquidity within a UCITS structure, the strategy also seeks to limit volatility to 8%, potentially providing smoother risk-adjusted returns for investors.

Meeting today's investment challenges through risk premia

We believe that a liquid portfolio of alternative risk premia offers investors an improved way of addressing equity investment.

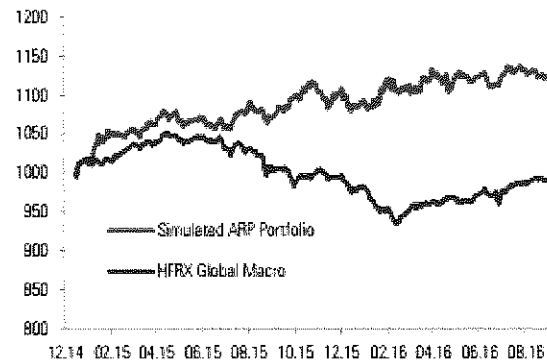
Our alternative risk premia approach rests on three distinctive pillars:

- 1. Unigestion's proprietary definition of risk premia, which seeks to improve on the standard definitions of momentum, valuation, size and quality. We also seek to harvest returns from strategies such as trend following, and carry in bonds, credit, volatility and FX.
- 2. Macro-based allocations that are dynamically blended to suit the prevailing economic environment.
- 3. Robust risk management, including the use of an expected shortfall model, which allows us to manage the high tail risk of alternative asset classes.

Unigestion's approach

- 1. We choose the underlying alternative risk premia based on external academic research and our own experience.
- 2. We apply proprietary risk models that incorporate a broad range of risk dimensions.
- 3. Based on our understanding of the macroeconomy and the sensitivities of alternative risk premia to the business cycle, we define the most efficient capital allocation to create well-balanced exposure to macroeconomic regimes.

Unigestion's simulated ARP strategy



Sources: Bloomberg, HFR, Unigestion, as at 31.08.2016, net of fees (0.75% p.a.) in US dollar terms. Unigestion Alternative Risk Premia strategy aims to deliver cash + 7% over a full market cycle with a target volatility of 8%. It harvests the following risk premia: trend following, carry and equity factors. The strategy is composed of a risk-based allocation to six individual risk premia. Returns of the individual risk premia are simulations based on carve-outs from a Unigestion multi-asset fund. The equity factor premium has been implemented as a long-only solution in this multi-asset fund from 15.12.2014 to 10.05.2016. In order to replicate the long/short equity factor premium we use returns of the long-only premium, and subtract 70% of the performance from the MSCI World (in order to build a beta neutral portfolio). From 11.05.2016, we use the performance of our factors long/short fund. Please refer to Important Information at the end of this document. Past performance is not indicative of future performance. Risk statistics are based on daily data.

**1. Alternative risk
premia selection and
design**

**2. Advanced risk-
based portfolio
construction**

**3. Enhanced allocation
creates Uni-Global –
Alternative Risk
Premia**

Private Equity at Unigestion, as at 30 September 2016

Key facts about Unigestion

AUM:

USD 20.6bn; EUR 18.3bn

Investment solutions:

Alternatives
Private Equity
Equities
Multi Asset investments

Employees:

203

Ownership:

Largely owned by senior management.
Shareholder equity of over: USD 190m;
EUR 170m

Key facts about Private Equities at Unigestion

AUM:

USD 3.5bn; EUR 3.1bn

Investment solutions:

Customised mandates
Direct funds
Secondary funds

Investment team:

19 people globally supported by a
centralised service platform of 122
people

Unigestion is a boutique asset manager with the scale to deliver global tailor-made investment solutions for thoughtful investors.

Our core values – integrity, independence, excellence and guidance – are at the heart of everything we do. We are responsible for managing some US\$20bn in client assets across our four areas of expertise: equity, multi asset investing, private equity and alternatives.

We believe that risk management is an enduring driver of long-term investment performance, and we therefore apply a risk lens to all our strategies.

Extracting the best out of private equity

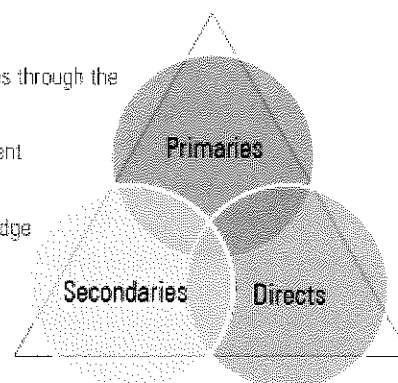
- ↳ Active investor since 1988
- ↳ Specialists in small & middle markets across direct, secondaries and primaries
- ↳ Direct investments since 1997, returns of 2.1x multiple of cost / 18% IRR
- ↳ Secondary investments since 2000, returns of 1.6x multiple of cost / 20% IRR across three secondary funds

Integrated approach to cover the full spectrum of investment types

Exploiting synergies of a one team approach

- ↳ Sourcing of direct, secondaries and primaries through the same long-standing relationships
- ↳ Accurate and efficient evaluation of investment opportunities thanks to a holistic view
- ↳ Portfolio monitoring through in-depth knowledge of companies and funds

One team with global coverage – located in Europe, the US and Asia



Focus on small and middle market investing since the 1990s

The benefits of small and middle market private equity

1. Breadth of opportunities – over **500,000** private companies around the globe
2. Attractive valuations – up to **50%** lower than in large buyouts
3. Lower leverage – historically **20%** lower than in large buyouts
4. Scope to improve operations – true **value improvement** and not financial engineering

Source: S&P Capital IQ

Current offering

Unigestion Direct Opportunities 2015

Global exposure to small and middle market companies

- ↳ Target fund size EUR 200 million (first closing in December 2015)
- ↳ 12 to 15 investments – first three investments completed
- ↳ Focus on small and middle buyouts as well as growth capital
- ↳ Portfolio diversified across sectors, regions and investment partners

Unigestion Secondary Opportunity Fund IV

Global exposure to non-auctioned secondary opportunities

- ↳ Target fund size EUR 300 million (first closing in August 2016)
- ↳ Transactions below EUR 30 million in size
- ↳ Focus on single, high quality buyout and growth capital fund interests
- ↳ Bottom-up pricing of each underlying company
- ↳ Focus on value upside, not discounts

Customised mandates

Unigestion has a long and successful history in managing customised private equity programmes. We work closely with our clients and use both our expertise as well as our unique tool – the Private Asset Allocator® – to match client specific requirements with the right opportunities. Fully exploiting our toolbox, we can structure private portfolios to maximise performance, reduce downside risk, increase the velocity of cash flows or complement an existing private equity portfolio.

To maximise the value of your customised mandate, at Unigestion we:

- ↳ Provide you with meaningful exposure to the best opportunities by building concentrated portfolios
- ↳ Create additional value through active and dynamic portfolio management across economic cycles
- ↳ Validate the robustness of our investment process through academic research
- ↳ Leverage the expertise of Unigestion's investment professionals
- ↳ Provide you with the long-term support of a solid, well capitalised and independent partner

Strategy	Investment universe	Process	Implementation
Equity factors	MSCI World	Long/short allocation to momentum, valuation, small, and quality equity factors. Long low volatility first quintile, short market cap last quintile. Beta neutral. Long assets with positive trend, short assets with negative trend. Trend = average of sign of 1y and 3m past performance.	Long individual stocks, short individual stocks through an equity swap. Short positions might be implemented with futures. Bonds futures: US, Canada, Germany, France, Italy, UK, Australia, Japan. CDS on indices: iTraxx Europe, iTraxx Crossover, CDX NA IG, CDX NA HY, CDX EM
Trend following	Long term rates, credit indices, equity indices, precious metals, FX	Risk weighted portfolio.	DM Equity indices: S&P 500, Russell 2000, Nasdaq, , TSX 60, EuroStoxx 50, DAX, CAC, IBEX, FTSE MIB, AEX, SMI, FTSE 100, Topix, ASX 200, VIX EM Equity indices: Hang Seng, Hang Seng China Enterprises, Kospi, Nifty, JSE Top 40, Bovespa, MSCI EM Precious Metals forwards: Gold, Silver, Palladium, Platinum G10 FX futures: CAD, EUR, CHF, GBP, SEK, NOK, JPY, NZD, AUD EM FX forwards and futures: BRL, MXN, PLN, RUB, TRY, ZAR, INR, KRW, SGD, CNH
Bonds carry	Long term rates	Long rates with above median carry, short rates with below median carry. Higher absolute weights for rates with largest difference from median. Duration neutral portfolio.	Bonds futures
Credit carry	CDS on Europe and North America indices	Long HY credit indices, short IG credit indices. Risk based HY vs. IG weightings. Long currencies with above median carry, short currencies with below median carry.	iTraxx Europe, iTraxx Crossover CDX NA IG, CDX NA HY
DM FX carry	G10 FX	Higher absolute weights for currencies with largest difference from median. Risk based portfolio. Long currencies with above median carry, short currencies with below median carry.	FX Futures and forwards on CAD, EUR, CHF, GBP, NOK, SEK, JPY, NZD, AUD
EM FX carry	EM FX	Higher absolute weights for currencies with largest difference from median. Risk based portfolio.	FX futures and forwards on BRL, MXN, PLN, RUB, TRY, ZAR, INR, KRW, TWD, SGD, and CNH
Dividends carry	EuroStoxx 50	Long a synthetic 1y constant maturity EuroStoxx 50 dividend future, short EuroStoxx 50 futures. Ratio of EuroStoxx 50 to Dividend futures based on 22-day beta	F0 and F1 EuroStoxx 50 Dividend futures EuroStoxx 50 futures
Volatility carry	S&P 500	Short (long) VIX futures and S&P 500 futures when VIX in contango (backwardation). Risk-based ratio of S&P 500 to VIX futures Valuation computed as the ratio between spot rates and OECD PPP rates.	VIX futures, S&P 500 futures
G10 FX value	G10 FX	Long most undervalued currencies, short most overvalued currencies on a cross-sectional basis (ie always long and short even if all currencies under or over-valued) Risk based portfolio.	FX Futures

Source: Unigestion

Important information

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