MASF Insight

Alternative Risk Premia strategies: what have we learned so far?
Part 1 – Diversifying but diverse

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Key takeaways

- Alternative Risk Premia strategies are usually expected to deliver positive long-term returns, show weak correlations to traditional betas, offer high liquidity while being transparent.

- Based on an ARP composite strategy built since November 2013, we can assess ARP strategies behaviour in light of these four key expectations:

  - Since November 2013, the ARP composite strategy has met its return objective, delivering a robust Sharpe Ratio of 1
  - The diversification picture is more mixed: the composite strategy shows a moderate correlation to equity markets and moderate to high correlations to hedge-fund indices
  - On paper, ARP strategies are UCIT-compliant hence liquid. However, the actual liquidity of some strategies is probably either lower or conditional on that offered by investment banks.
  - Most ARP strategies are systematic and rule-based, hence transparent. So far, however, largely similar processes have generated highly diverse outcomes, making ARP strategies performances difficult to comprehend.

- Such a large performance dispersion across ARP strategies may challenge the fact that alternative beta is truly beta.

- Based on a statistical analysis, ARP strategies are still positively correlated and two main types of ARP strategies – showing higher correlations - can be identified. Interestingly, both identified « clusters » are intuitive, reflecting differences in selected premia set, investment universes, risk budgeting and implementation.

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Alternative risk premia: what are they?

In fact, numerous academic papers have highlighted that they can actually be split in two types:

1) "true" risk premia, rewarding non-diversifiable risk exposures
2) market anomalies, that are usually justified by behavioural or structural considerations.

Different by nature, the two types of premia have significantly different return/risk profiles.

Risk premia, on the one hand, tend to generate streams of significant positive returns, on average, while experiencing large though seldom drawdowns. This materializes into fat left-tailed return distributions, with negative skewness and high kurtosis. Value, carry or size are examples of such alternative "true" risk premia.

Market anomalies, on the other hand, tend to generate lower returns than risk premia, on average, but are less subject to large drawdowns. Trend-following, quality or low-beta are examples of such market anomalies[1].

While we acknowledge that "alternative risk premia" has become the market standard terminology for all strategies capturing non-traditional premia in a systematic way, we'd rather refer to **"alternative premia"** to avoid confusion with the typology of premia previously mentioned.

Alternative premia can be harvested thanks to systematic **alternative beta** exposures which are implemented through long-short, dynamic and largely rules-based **alternative risk premia (ARP) strategies**.

Alternative risk premia: what should they not be?

ARP strategies definition is broad enough to potentially overlap with that of active trading strategies familiar to hedge fund managers or prop traders. Although such strategies might be related to the ARP concept, the underlying "premia" are, at best, less academic and, in fact, more similar to a reward for a skill i.e. alpha. Hence, it seems to us that, in theory, the alternative premia universe should neither include highly-skilled "hedge-fund like" strategies nor actively managed exposures to non-traditional premia. In practice however, most investors tend to consider these as ARP strategies, so do we in this article.

ARP strategies can be assessed in light of 4 key expectations

Multi-asset ARP strategies gained popularity because of their investment philosophy, specifications and "unique selling points" versus other investment solutions, of course, but they also benefited from the recent market environment. They are indeed perceived as one possible answer to the current dilemma asset allocators have been facing since interest-rates are hammered down by central banks worldwide - and so the prospective returns of most fixed-income assets. Reconciling "reasonably" attractive returns on the one hand and diversification on the other hand has indeed become ever more challenging as interest rates kept falling, while most risk assets stayed at best "fairly-priced".

ARP strategies can be selected for various reasons, reflecting potentially different investment needs (e.g. diversification solution, performance enhancement,…) and could therefore be assessed based on various indicators, leading to potentially different outcomes. Based on the many meetings we've had with investors, we have retained four key expectations that we see as fairly summarizing the diversity of ARP investors' needs:

◆ **Positive performance** over a full market cycle
◆ **Compelling diversification properties**, materializing in structurally weak correlations to traditional betas
◆ **High liquidity**
◆ **Transparency**, that is the strategy should mainly consist in a collection of systematic alternative beta exposures and performance - including performance attribution - should be easily readable

## Building an ARP composite strategy

Stating the obvious, there is no such thing as an ARP benchmark. Hence we have no choice but to consider alternative premia strategies individually and combine them to build a composite strategy, supposedly reflecting the average behaviour of ARP strategies universe. Unlike equity factor long-only strategies, **multi-asset alternative premia strategies with track-records longer than 3 years are scarce.**

At the best of our knowledge, making use of public information retrieved from Bloomberg as at the end of May 2018, only 3 providers have track-records longer than 5 years, 8 longer than 3 years.

Our composite strategy starts at the end of October 2013 with 3 constituents. ARP strategies are then added to the composite universe as they go live. The composite performance is weekly calculated as the average performance of all live funds. Fund performances are considered in excess of cash and adjusted for a flat management fees level of 0.9%[2] annualised. As at the end of May 2018, the composite universe is made of 19 ARP strategies.

Behaviour of the composite strategy
(Weekly data from 01/11/2013 to 01/06/2018)

- AUMs in EUR bn (RHS)
- Composite strategy excess return, (Mngt Fees=0.9%)
- Number of constituents (RHS)
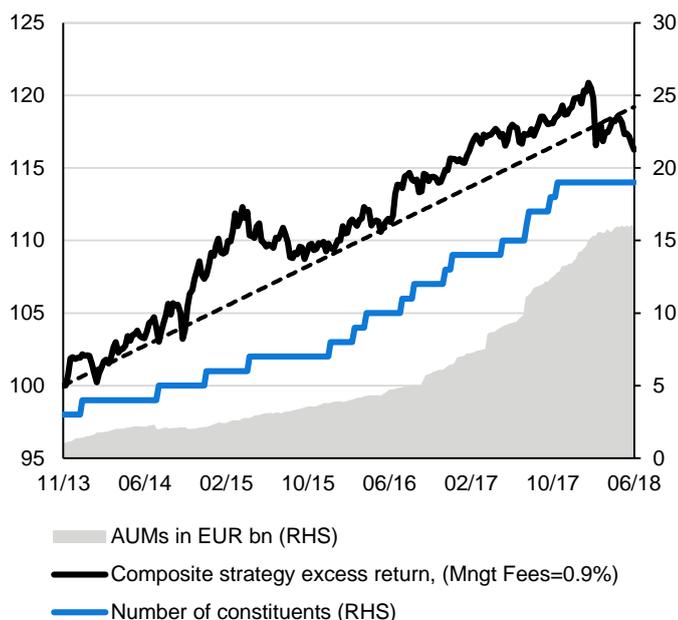
Did alternative risk premia strategies meet their key investment objectives?

Positive performance over a full market cycle?

Composite strategy key statistics
(Weekly data from 01/11/2013 to 01/06/2018)

Ann. excess return	3.8%
Volatility	3.6%
Sharpe ratio	1.0
MDD/volatility	1.0
Skewness	-1.0
Excess kurtosis	4.0

Based on the performance of the composite strategy, ARP strategies delivered a strong performance, with a Sharpe ratio exceeding 1. While we can't say that the last 5 years represent a "full market cycle", the performance of the composite strategy is nonetheless positive. It is worth noting that the Sharpe ratio is statistically significant at the 95% confidence level and is still significant when adjusted for skewness and excess kurtosis effects[3].

Source: HSBC Asset Management. The ARP « peer » group (composite strategy) has been selected by HSBC Asset Management and may not reflect the market in its entirety. The details of the sample and the names of the strategies displayed are available in appendix.

2. Our data availability focus has led us to select retail and 0-fees share classes alongside the more traditional institutional ones. For the sake of performance consistency, we've standardized the level of management fees applied, using 0.9% annualized, which is roughly the average level of management fees charged by the institutional share classes of our ARP strategies universe. We acknowledge the fact that this creates some slight inconsistency for strategies that charge performance fees, though clearly of second order.

3. Please refer to the Alternative Sharpe Ratio definition in Pezier, Risk & Risk Aversion in The Professional Risk Managers's Handbook (2004)

The commentary and analysis presented in this document reflect the opinion of HSBC Asset Management on the markets, according to the information available to date. They do not constitute any kind of commitment from HSBC Asset Management.

Compelling diversification properties, materializing in structurally weak correlations to traditional betas?

◆ **No correlation with commodity markets**
◆ **Weak correlations with bond and currency markets**
◆ **Moderate correlation with equity markets**

◆ **Moderate to high correlations with traditional alternative investments**

Correlation of the composite strategy with alternative investments representative indices[5]
(Weekly returns from 01/11/2013 to 01/06/2018)

Global Hedge Fund	Equity Market Neutral	CTA	Volatility
0.46	0.29	0.62	0.47

Based on the weekly returns – in excess of cash - of the four main asset classes, the alternative premia composite strategy shows positive correlations with equity, bond and currency markets - all statistically significant at the 99% confidence level - while it is not correlated with commodity markets.

Correlation of the composite strategy with traditional asset classes representative indices[4]
(Weekly returns from 01/11/2013 to 01/06/2018)

Equities	Bonds	Currencies	Commodities
0.47	0.28	0.20	-0.02

The highest correlation observed is with equity markets, almost 0.5, a level high enough to prevent us from saying that ARP strategies are weakly correlated with traditional betas. While this looks rather true for bond and currency markets, "moderate" would better reflect the actual correlation of ARP strategies with equity markets.

On top of the correlations with traditional betas, it may be of interest to consider the correlations with the "historical" alternative strategies such as hedge funds, CTA, etc. Indeed, investors looking to invest into ARP strategies may already have some exposures to such alternative investments. While a low correlation to the traditional asset classes is of paramount importance – since exposures to traditional betas usually represent most of investors' risk budget -, it seems also reasonable to **ensure that adding ARP strategies does not mean leveraging up existing alternative investments**.

Again, the alternative premia composite strategy shows positive correlations to Global Hedge Fund, Equity Market Neutral, CTA and Volatility indices, all statistically significant at the 99% confidence level. To describe, as previously, the level of correlation observed, ARP strategies show moderate to high correlations with traditional alternative investments.

It is worth highlighting here that, since the number of constituents of the alternative premia composite strategy is not constant over time, average correlations with both the traditional asset classes and the alternative indices are probably distorted. Indeed, the structure (set of selected premia, investment universe, risk budget, etc.) of the composite strategy is likely to be very different today from what is was in 2013 when made of only 3 funds. For instance, out of the 3 constituents of the composite strategy in 2013, only one was capturing the volatility premium while today, most of the 19 constituents have explicit volatility exposures. Hence, had February 2018 "volatility fast crash" happened in 2013 instead, it would probably not have had such a significant impact on the composite strategy's average correlation to the volatility reference index.

Some alternative premia exposures may not translate in constant exposures to asset classes and/or traditional alternative invesments. Conditional correlations (e.g. conditional on the direction of the equity market) may be useful to detect time-varying or asymmetric beta exposures.

High liquidity?

All of the constituents of our ARP composite strategy offer daily liquidity, without any "gating" mechanism. Besides, most of them are UCITS funds, ensuring strong governance as well as minimum liquidity requirements. For these very reasons, **ARP strategies are usually classified as liquid alternatives.**

However, looking deeper into the details, this picture is probably too rosy and, at least, several potential limitations should be highlighted:

◆ Stating the obvious, **ARP strategies did not go through any 2008-like liquidity stress**. While their current features address most of the hedge funds liquidity shortcomings identified during the 2008 crisis, no one knows what the next crisis will consist of hence how ARP strategies will navigate through it.

◆ **Capacity and liquidity tend to walk hand in hand** and after several years of significant inflows in ARP strategies, a few funds have been soft-closed – or are going to be soon. Several parameters have to be considered to assess ARP strategies' capacity.

  • First, the liquidity of the instruments used to capture the selected premia. Strategies implemented at the individual stock level and/or in the commodity universe tend to have lower capacities.

  • Second, the selected premia potential crowdedness. While most academic alternative premia (e.g. value, carry,…) are little concerned, the more "hedge-fund like" or "prop-trading like" premia (event-driven, congestion, rollover, etc.) are more prone to suffer from a rise in assets chasing after them.

◆ ARP providers can be split in three categories:

  1) manufacturers, who capture alternative premia by implementing dynamic - though systematic – long/short portfolios
  2) allocators, who basically "purchase" alternative premia from investment banks thanks to Total-Return-Swaps (TRS)
  3) the third category that simply does both.

The actual liquidity of ARP strategies managed by the second and, to a lesser extent, third categories is therefore **conditional on that offered by their TRS counterparties, namely investment banks.** While this is expected to have little impact under normal market conditions, it nonetheless adds one layer of liquidity risk that tend to materialize when equity and credit markets suffer.

Transparency?

Should we aim to summarize the differences between hedge funds and ARP strategies in one word, we'd probably go for transparency. Indeed, while hedge funds tend to be all about active or tactical investment decisions, with little, if any, information on the performance drivers actually implemented, ARP strategies tend to be largely rules-based, taking mostly systematic exposures to well-identified sources of alternative returns. Still, some ARP strategies do have an active or tactical component in their investment process. However, it tends to represent only a small part of their overall risk budget. Besides, while some ARP strategies can be seen as "recycling" performance drivers that have been used by hedge funds for decades (e.g. CTA, volatility premium,…), the fact that they are explicit about it makes a key difference. **"Understanding what you buy" is clearly one key selling point of most ARP strategies.**

Going one step further and assuming all ARP providers are transparent about what premia they've selected, what investment universes they cover, what portfolio construction rules they've defined and what risk budget they've allocated to each individual strategy, ARP strategies performances should be easily readable. In other words, **"understanding what you buy" should translate in "understanding what you get"**. Indeed, seeing ARP strategies as a collection of structural alternative premia exposures (i.e. alternative betas), two strategies capturing roughly the same set of premia on roughly the same investment universe should generate roughly the same performance over time. The historical performance of the constituents of our ARP composite strategy rather show the opposite. Indeed, over the past 5 years or so, **ARP strategies performance has been pretty diverse, looking more driven by specific factors than by a common trend.**

Composite strategy performance vs individual ARP strategies performance
(Weekly returns from 01/11/2013 to 01/06/2018)

Performance dispersion can also be large over shorter horizons. Year-to-date, the dispersion within our composite universe – i.e. the difference between best and the worst performers - has been 4 times the average volatility of the composite strategy.
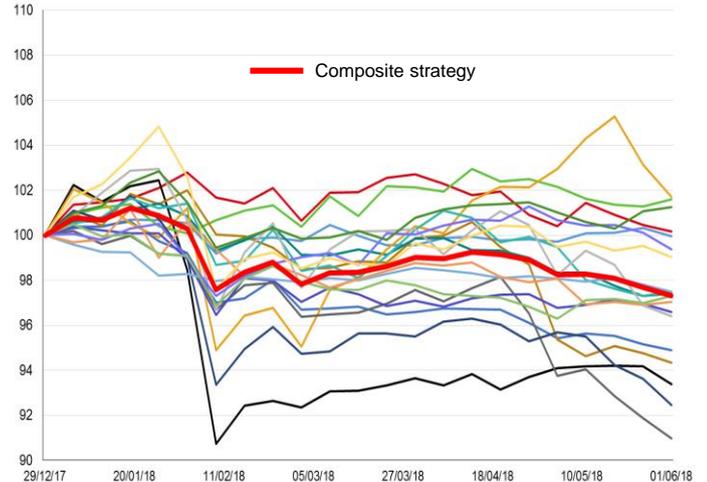
Hence, **performance differences cannot be seen as slow-building divergences from a common trend, but rather as the materialisation of structural differences.**

Composite strategy performance vs individual ARP strategies performance
(Weekly returns from 29/12/2017 to 01/06/2018)

Is alternative beta truly beta?

One of the key questions usually asked about ARP strategies is whether alternative beta is truly alternative i.e. different from the more traditional exposures such as equity beta. This relevant question was partially addressed in the previous section. On a separate note, it seems to us that the large performance dispersion observed across ARP strategies leads to another key question which is whether alternative beta is truly beta. Indeed, running a principal component analysis (PCA) on ARP strategies historical performances, less than 50% of ARP strategies historical risk is explained by the first factor, namely the "ARP market".

For the sake of comparison, the risk of an active equity fund that has an average tracking-error of 5% annualised and whose benchmark has a long-term average volatility of 15% annualised is 90% explained by the "beta" component, namely the equity market. In this respect, are ARP strategies performances largely random or can we still find some sort of commonality? Is our ARP composite universe homogeneous in its diversity?

From now on, we'll be considering the 14 ARP strategies of our composite universe that were launched before the end of 2016[6]. All correlation figures are calculated on weekly data from the end of December 2016 to June 1, 2018.

All pairwise correlations are either positive or statistically non-significant at the 90% confidence level, with an average level of 0.3. This, in a way, is reassuring: ARP strategies tend to move in the same direction, at least. Besides, **pairwise correlations are highly diverse, ranging from a statistically non-significant -0.1 to +0.8**. In other words, while ARP strategies are weakly correlated, on average, some strategies are highly correlated to some others.

Correlation between individual ARP strategies
(Weekly data from 29/12/2016 to 01/06/2018)
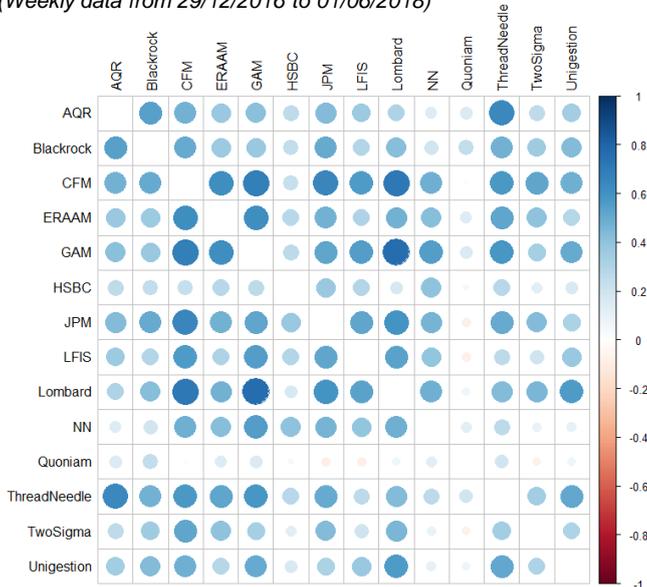
Reordering the correlation matrix so that highly correlated strategies are grouped together, we can see that **some strategies tend to share common properties**.

Correlation between individual ARP strategies
(Weekly data from 29/12/2016 to 01/06/2018)
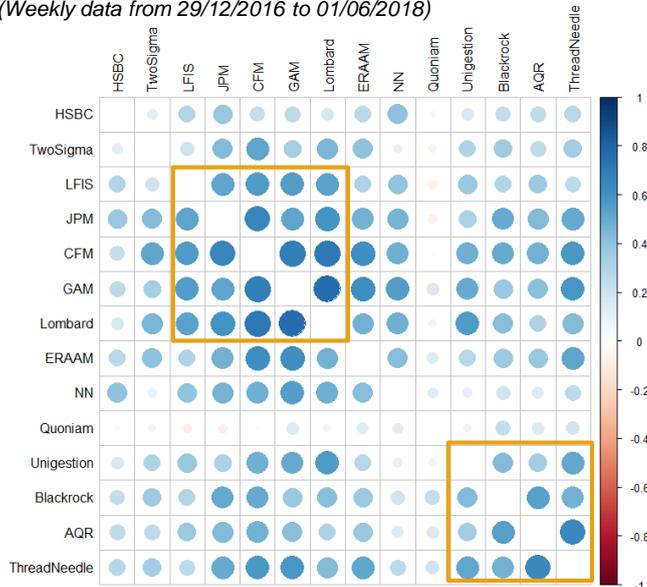
Cluster analysis can help us better understand the structure of our ARP composite universe. Indeed, this statistical procedure aims to create groups of strategies or "clusters" so that strategies in the same cluster are more "similar" to each other than to strategies that are in other clusters. While technical details are beyond the scope of this note, 2 key ideas can be nonetheless introduced:

◆ **The concept of "similarity" is quantified through the definition of a "distance"** that will be calculated between each pair of considered strategies. In our case, "similarity" is related to correlation hence quite intuitive: the higher the correlation between 2 strategies, the more "similar" they are hence the lower the "distance" between them.

◆ Then, strategies are grouped based on a clustering algorithm which is an agglomerative method that starts with all strategies in their own separate cluster and then repeatedly combine the 2 most similar clusters (with the lowest distance) until all strategies are grouped into one cluster

Distance

Methodology: distance=$\sqrt{2(1-\rho)}$, clustering method=Ward.D2

Making use of rather standard parameters[7], cluster analysis identifies 2 groups:

1) a first one composed of AQR, Blackrock, Threadneedle and Unigestion strategies

2) a second one composed of CFM, ERAAM, GAM, LFIS, Lombard, NN and JPMorgan strategies.

In light of the investment philosophy and process communicated by the various ARP providers, this outcome looks reasonably intuitive to us.

Indeed, starting with the **first group**, it is composed of strategies that tend to capture rather **academic premia**, with a **risk budget that tends to be biased towards equity premia captured at the individual stock level**.

Turning to the **second group**, it is composed of strategies that tend to capture **less academic premia**. Within this cluster, 3 sub-groups can be identified:

◆ CFM, GAM and Lombard, that tend to have higher exposures to **CTA strategies and/or the volatility premium**

◆ The 3 above strategies are then clustered with JPM and LFIS strategies, that both include strategies that look more similar to **"prop trading" strategies**

◆ ERAAM and NN are then added to the cluster, both having a significant allocation of **externally managed premia**

Out of the 14 ARP strategies considered in this cluster analysis, **3 strategies**, namely HSBC, Quoniam and TwoSigma, **look rather unique**. In other words, they are weakly correlated to the rest of the ARP universe.

Although intuitive, the composition of the clusters – and the interpretation we derive from it - should be considered with caution.

◆ First, the analysis is based on 76 weekly returns i.e. a limited dataset. Hence the very same analysis run in, say 2 months, might give a different outcome, with potentially different clusters.

◆ Second, as mentioned above, cluster analysis requires the choice of a distance - to quantify strategies (dis)similarities - and a clustering method -defining how clusters are built and merged. **Different distances and/or methods would probably give different outcomes.** Still, running the cluster analysis with another distance and another method leaves **the global picture globally unchanged: two groups of strategies are identified while 3 ARP providers look rather unique.**

Conclusion

Over the past 5 years, ARP strategies have delivered performances in line with expectations, showing moderate correlations to equity markets and moderate to high correlations to hedge-fund indices, on average. Beyond that, there does not seem to be many more clear-cut answers to investors' usual questioning about ARP strategies as an "asset class". Indeed, the large performance diversity makes any assessment about diversification, liquidity or transparency highly dependent on the strategy considered. Performance dispersion is so large that it may even challenge the fact that alternative beta is truly beta.

Still, statistical analysis shows that individual performances are not random and exhibit some sort of commonality, although correlations are not uniform across strategies. Two groups -"clusters"- of ARP strategies, showing higher correlations, can be identified: one is composed of strategies that tend to capture academic premia, rather at the individual stock level; the second is made of strategies that look more similar to hedge funds or prop-trading strategies, capturing less academic premia. Besides, some strategies look rather unique.

The mechanics of ARP strategies performance dispersion and its impact on an alternative premia portfolio construction will be discussed in this article forthcoming second part.

7. We use the Mantegna distance, defined as $d_{ij} = \sqrt{2(1 - \rho_{ij})}$, and the Ward clustering method

Data sources

Traditional betas excess returns are based on the performance of the following reference indices:
- Equities: MSCI World TR Net Index USD hedged (WHANWHID)
- Bonds: JPMorgan GBI Broad Index USD Hedged (JHDCGBIB)
- Currencies: Dollar Index (DXY)
- Commodities: S&P GSCI TR Index USD (SPGSCITR)

Alternative strategies excess returns are based on the performance of the following reference indices:
- Global Hedge Fund: HFRX Global Hedge Fund Index (HFRXGL)
- Equity Market Neutral: HFRX Equity Market Neutral (HFRXEMN)
- CTA: HFRX Macro Systematic Diversified CTA Index (HFRXSDV)
- Volatility: SGI Vol Premium US Excess Return (SGIXVPUX)

Constituents of the Composite strategy

ARP provider	ARP strategy	Inclusion date	Bloomberg code	Notes
Abderdeen	Aberdeen Alternative Risk Premia Enhanced	27/07/2017	SPRP2XE LX Equity	
AQR	AQR Style Premia	30/10/2013	AQRSPBE LX Equity	before 15/10/2014: QSPIX US Equity
AXA	AXA Chorus Multi Premia	18/07/2017	CHMPIEH LX Equity	
Blackrock	Blackrock Style Advantage	29/02/2016	BSSAI2E LX Equity	
CFM	R CFM Diversified	23/12/2014	RCFMIE1 ID Equity	
ERAAM	ERAAM Premia	21/12/2015	ERPREMI FP Equity	
GAM	GAM Systematic Alternative Risk Premia	04/04/2012	GSBDMEA ID Equity	
HSBC	HSBC Multi Asset Style Factors	28/04/2015	HSBMAIC LX Equity	before 15/11/2016: HSBCMAS FP Equity
JPM	JPM Systematic Alpha	04/04/2011	JPMSACE LX Equity	
LFIS	LFIS Vision Premia	27/12/2013	LFVRPIS LX Equity	before 31/12/2014: LFAISEU LX Equity
Lombard	LO Alternative Risk Premia	06/08/2014	LORPEMA LX Equity	
MAN	Man Alternative Style Risk Premia	17/10/2017	GMASIHE ID Equity	
Neuberger	NB Multi Asset Risk Premia	10/05/2017	NBRPEIA ID Equity	
NN	NN Multi Asset Factor Opportunities	29/03/2016	NNMAZCE LX Equity	
Quoniam	Quoniam Alternative Risk Premia	02/03/2015	QFARPEI LX Equity	before 04/10/2016: UQGRPEI LX Equity
SwissLife	Swiss Life Multi Asset Risk Premia	29/09/2017	SLMARPI LX Equity	
ThreadNeedle	Threadneedle Diversified Alternative Risk Premia	19/07/2016	THDAIEH LX Equity	
TwoSIGMA	Schroder GAIA Two Sigma Diversified	24/08/2016	SCHTSCE LX Equity	
Unigestion	Uniglobal Alternative Risk Premia	12/12/2016	UGARPRE LX Equity	

Important information