

Alternative Risk Premia strategies: what have we learned so far? Part 2 - Good practices in the evaluation of Alternative Risk Premia solutions

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Key takeaways

- The performance dispersion across Alternative Risk Premia (ARP) solutions shows that they are not created equal.
- ARP solutions differ in three main dimensions: premia selection, design of individual premia and combination of individual premia portfolios
- The selection of ARP providers does significantly matter and a well-defined due diligence process is crucial.
- Investors should put less emphasis on backtested or even live returns but spend much more time on understanding the process and rationale of ARP solutions
- The selection of alternative premia and their consistency with academic research should be scrutinised in priority.
- Investors should also focus on:
 - the way the constituents of an individual premium portfolio are selected and weighted
 - the strategy's objective: capturing premia vs actively managing exposure to premia
 - how individual alternative premia are combined to build the strategic allocation
 - whether ARP providers resort to factor timing

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In an earlier paper*, we studied the behaviour of Alternative Risk Premia (ARP) strategies in light of four key expectations: deliver positive long-term returns, show weak correlations to traditional betas, offer high liquidity while being transparent.

We also showed that performance dispersion across ARP solutions has been large over the last 5 years or so, and over shorter horizons as well.

In this paper, we focus on the structural differences across ARP solutions, which can explain such a disparity of returns. We also share our insights - largely fed from academic research - on what, from our point of view, constitutes an effective due diligence for ARP strategies. In particular, we suggest good practices in ARP strategies evaluation.

Introduction: Sources of structural performance dispersion

In our view, there are three main sources of performance dispersion:

① Alternative Premia selection

Alternative premia are diverse and can have very different characteristics. What they have at least in common is that they are alternative to traditional beta in the sense that they are weakly correlated, should deliver positive returns over the long run and tend to be implemented through long-short, dynamic and largely rules-based strategies. However, the definition of alternative premia is broad enough to cover a wide range of premia going from the well-established academic premia (e.g. value, carry, momentum) to more niche premia (e.g. merger arbitrage, liquidity provision). ARP products combine several alternative premia hence can differ depending on their selection of premia. Besides, even if ARP products focus on the same premia, they can differ in their investment universe. In this regard, there are several dimensions to consider: asset class (equities, bonds, currencies, credit and commodities), region (global, US, Europe, emerging markets) and macro (index) / micro (single security) level.

② Design and implementation of individual premia portfolios

Once ARP providers have decided on the type of premia they want to take exposure to, there are a number of choices that can be made in actually building each individual premium portfolio. First, ARP providers need to define some metrics related to individual premia. While they might agree on the concepts of alternative premia, there is not always a consensus on how to define them. Secondly, ARP providers have to make choices about individual premia portfolios construction. Choices are mainly about how to select and weight securities in each individual premium portfolio. Thirdly, a more subtle difference lies in the fact that there can be two distinct objectives: capturing alternative premia or managing the exposure to alternative premia. The former approach offers systematic access to alternative premia while the latter aims to maximise returns (i.e. generate alpha) by optimising alternative premia exposures through position sizing, de-risking and even short premia positions.

③ Combination of individual premia portfolios

ARP solutions usually combine several alternative premia. Their common objective is to build a well-diversified strategic exposure to alternative premia. However, several choices can be made about the portfolio construction approach: risk measure, methodology... Another important decision is the possibility - or not - to time alternative premia exposures; in other words introducing a tactical premia allocation.

* Bertrand and Guillemet (2018), "Alternative Risk Premia strategies: what have we learned so far ? Part 1: Diversifying and diverse"

Source: HSBC Asset Management. 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.

Good practices in the evaluation of Alternative Risk Premia solutions

Having highlighted the main sources of performance dispersion, we now review them in more details. We believe that because ARP products can deliver very different outcomes, investors should conduct a comprehensive due diligence like for hedge fund strategies. We suggest good practices, largely based on academic research, in evaluating ARP strategies.



Good practice: carefully select alternative premia as they are not created equal

Alternative premia cover a wide range of strategies. They can be classified as detailed in Exhibit 1 below.

Exhibit 1: Taxonomy of Alternative premia

Premia	Asset classes / Micro or Macro	Comments
Academic Alternative Premia		
Value	All asset classes Micro and Macro	Backed by academic research
Carry		
Momentum		
Low Risk / Defensive	Mainly Equity Micro	Less recognised for other asset classes
Quality	Equity Micro	
Volatility	All Asset Classes Macro	Potential correlation to equity
Size	Equity Micro	
Alternative strategies		
Merger arbitrage	Equity Micro	Backed by empirical experience of practitioners
Convertible arbitrage	Bond Micro	
CDS basis	Bond Micro	
Dividend Relative Value	Equity Micro and Macro	

Source: HSBC Asset Management. For illustrative purposes only.

There are several dimensions to consider for classifying alternative premia: premium or style (carry, value, defensive, liquidity...), investment universe (asset class, geography, micro vs macro...), economic rationale (behavioural vs risk-based explanations). Exhibit 1 identifies two main families:

- 1) Academic alternative premia: they are supported by academic research and tend to be consistent across asset classes. In particular, academics provide economic explanations of why these premia exist.
- 2) Practitioners' alternative premia: they are supported by empirical experience of hedge funds and proprietary trading desks. They are defined as rule-based strategies. They can be flexible and cover niche strategies but lack the theoretical background of academic alternative premia.

It is worth noting that the selection of alternative premia in ARP products tends to reflect the background of ARP providers. With the development of ARP products, and simplifying a bit, we have seen the emergence of three main types of ARP providers.

- 1) Quantitative equity managers have extended their long-only smart-beta strategies in a long-short format and into non-equity asset classes. However, they tend to retain a significant allocation to equity strategies.

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- 2) Prop trading teams have leveraged their expertise in niche markets. They tend to give less weight to academic premia and their strategies are closer to arbitrage strategies offered by hedge funds.
- 3) Finally, Macro managers have turned their investment process into more “rule-based”. They tend to rely more on academic alternative premia and be more balanced across asset classes.

Each individual alternative premium has its pros and cons and having the possibility to select diverse alternative premia should be considered as positive for ARP products. However, investors should understand that all alternative premia are not equal and that they can deliver very different outcomes in specific market environments. For instance, we believe that the performance of ARP products in February 2018 can largely be explained by alternative premia selection as mentioned in one of our papers (“Alternative premia during the February 2018 fast crash: Were alternative betas that alternative?”). In particular, some alternative premia exposures may translate into time-varying exposures to traditional betas. For instance, the standard volatility premium strategy which captures the difference between implied and realised volatilities tends to correlate to the equity market at the worst time i.e. during market corrections. Trend-following or Time-series momentum strategies are often believed to offer good hedging properties. This is rather true, but only during slow crashes as they need time in order to detect the emergence of a new trend. Another important feature to consider is the fact that practitioners’ alternative premia tend to bear some liquidity risk. Hence, investors should be careful about the potential impact on their ARP solutions during the next liquidity crisis.



Good practice: Avoid non-standard academic definitions of alternative premia

In a recent study (“Alternative risk premia: is the selection process important?”), Naya and Tuchschnid have shown that there is significant heterogeneity in performance at the individual alternative premium level. They have used more than 200 ARP indices currently offered by major investment banks to compute and analyse cross-correlations and maximum drawdowns within each of the alternative premia categories.

On an ex-ante basis, one would expect a high degree of homogeneity as ARP providers are supposed to capture the same premia. The results in exhibit 2 rather show the contrary. However, they also illustrate that the degree of heterogeneity varies across the strategies. Some categories such as FX carry show significant commonality while others such as equity low volatility are highly heterogeneous. Besides, alternative premia implemented at the single security level tend to have less commonality than others.

Exhibit 2: Cross-correlations for Alternative Premia

		FX Carry	Commodity Trend	Equity Size	Equity Trend	Equity Value	Equity Low Vol.
Cross-correlations	Average	0.77	0.65	0.51	0.76	0.46	0.18
	Min	0.58	0.37	0.33	0.64	0.37	0.02
	Max	0.96	0.82	0.67	0.86	0.52	0.34

Source: Naya and Tuchschnid “Alternative Risk Premia: is the selection process important?”. For illustrative purposes only.

In Naya and Tuchschnid’s view, there are two main reasons why there can be disparity in returns:

- ◆ the premium is not well-defined
- ◆ each provider has developed its own rule-based approach that differs enough from the others

Typically, ARP strategies are built based on one or several metrics, each reflecting a measure of the premium. Academics generally select one key intuitive metric. For example, they use short-term rates for FX carry. However, there is less academic consensus for other premia such as defensive or quality. Even if there are some standard academic definitions, some choices can be made and practitioners may vary the inputs that they use. For instance, the standard metrics for equity value strategies are measures of fundamental value relative to price such as book

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value relative to price or earnings relative to price. This looks straightforward but there are several issues to deal with: how to treat unusual and one-time items? Should intangible assets be included? What about sectorial biases (financial, REITS)?... As a consequence, accumulation of small differences in the way strategies are defined can lead to significantly different results, which can be amplified by the use of leverage and the combination of long and short positions. As always, the devil is in the details!

In our view, the main reason of heterogeneity in performance of individual alternative premia is that each provider tends to develop its own set of systematic rules which can significantly differ from academic definitions. An Edhec-risk paper (Amenc, Ducoulombier, Golz and Ulahel (2016), "Ten misconceptions about smart beta") has discussed the same concept in the context of equity smart beta strategies. While academics generally rely on straightforward variables and make the choice of transparency and parsimony, smart beta or ARP providers tend to develop innovative and proprietary definitions by often using different sets of variables and complex combinations. The main motivation is to create enhanced alternative premia definitions that are intended to outperform standard definitions (at least in back-tests!) hence facilitate the marketing of strategies. Obviously, the risk is to develop ad-hoc premia definitions which have performed well over short-term back-tests. The flexibility that providers have in testing many variations of premia definitions clearly poses the risk of data-mining. This issue is extensively discussed in the academic literature as in "The deflated Sharpe ratio: correcting for selection bias, backtest overfitting and non-normality" (Bailey and Lopez de Prado, 2014) and "Backtesting" (Harvey and Liu, 2015). We believe that investors should be less reliant on back-tested returns and put more emphasis on the consistency of the methodology used to build individual alternative premia with their academic definitions.



Good practice: Beware of concentrated individual premia portfolios

Even for identical definitions of alternative premia, strategies can deliver heterogeneous results as individual premia portfolio construction can have a meaningful impact on the end-results. The way the constituents of an individual premium portfolio are selected and weighted can result in different exposure to the given premium and thus different performance.

A key decision is how to select constituents. A common approach is to focus on top and worst ranks/scores to produce "stronger" exposures to premia. Several choices for scaling positions are possible: constituents can be equally weighted, risk-based or incorporate the strength of a rank/score. In our view, investors should be careful about concentrated premia portfolios which only focus on top and worst opportunities. They aim to achieve stronger exposures to premia but often come with a large amount of idiosyncratic risk.

Our research has found that investing in a large number of components and incorporating the strength of the opportunity allows to get the best of both worlds: a well-diversified allocation and strong exposure to premia. This approach is particularly relevant for alternative premia implemented at the macro level for which the number of components is limited. With regard to the strength of opportunities, the use of ranks based on some metrics is simple and can help mitigate outliers. In our view, we have to be pragmatic in building individual premia portfolios. Thus, position scaling should be risk-based only if there is a strong heterogeneity of risk profiles among the constituents.



Good practice: Beware of active complex individual ARP strategies as the more complex it is, the less you may get

ARP strategies may also differ owing to their objectives: capturing alternative premia or managing exposure to alternative premia. The former approach offers systematic access to alternative premia while the latter aims to maximise returns (i.e. generate alpha) by optimising exposures to alternative premia through position sizing, de-risking and even short premia exposures. It is worth noting that investment-bank sponsored alternative premia strategies tend to favour the latter approach.

In a recent academic paper (“Quantifying backtest overfitting in alternative beta strategies”, 2017) focusing on investment-bank sponsored individual alternative premia strategies, Suhonen et al. show that there is a significant deterioration in Sharpe ratios between live data and backtested returns. Hence, the rule of thumb of applying a 50% haircut on the backtested Sharpe ratios of new strategies seems to be also relevant to ARP strategies. Interestingly, they also show that increasing strategy complexity leads to further decline in live performance. To do so, they build a complexity score based on the following criteria:

- 1) simple strategy with a maximum of one signal
- 2) one base signal plus one additional signal such as risk management overlay or trigger
- 3) three or more signals determining the direction of the position, position sizing or de-risking

The bottom of exhibit 3 shows the reduction in Sharpe ratios (haircuts=HC) depending on the level of complexity. Clearly, the more complex the strategy, the less you get!

Exhibit 3: Sharpe ratios haircuts

		Complexity			
		All	1	2	3
Median ER p.a.	Backtest	6.96%	6.70%	6.87%	7.06%
	Live	1.08%	1.26%	1.08%	0.30%
Median SD p.a.	Backtest	6.11%	5.99%	6.10%	6.85%
	Live	5.89%	5.37%	5.96%	5.88%
Median Sharpe p.a.	Backtest	1.17	1.08	1.23	1.13
	Live	0.34	0.53	0.29	0.25
Average SR HC		68.3%	44.6%	67.2%	78.0%
Median SR HC		70.0%	56.1%	76.4%	78.5%
n		147	38	75	34

Source: Suhonen, Lennkh and Perez “Quantifying backtest overfitting in Alternative Beta strategies”. For illustrative purposes only.

In Suhonen et al., view, the more complex strategies are more prone to backtest overfitting. The backtested returns of a strategy correspond to one set of parameters which reflects one sole trial out of many and it is essential to control for the number of trials as discussed in “The deflated Sharpe ratio: correcting for selection bias, backtest overfitting and non-normality” (Bailey and Lopez de Prado, 2014), and “Backtesting” (Harvey and Liu, 2015). The authors recommend more simplicity in the design of individual ARP strategies to provide efficient access to sources of premia rather than devising filters or rules that are liable to introduce biases in live performance.



Good practice: Combine individual alternative premia by using risk-based approaches and beware of details

The common objective of most ARP products is to combine individual alternative premia to build a well-diversified strategic allocation. The most popular approach is to build risk parity / equal risk contribution (ERC) portfolios which are extensions of the equally-weighted strategy to the risk dimension. This is popular as investors do not need to make assumptions about individual alternative premia expected returns, they only have to estimate a few risk parameters. Several choices can still be made about the risk measure or the way the methodology is applied.

The classical risk parity / ERC approach uses volatility as the risk measure and is fairly simple to implement. However, it neglects higher moments (skewness, kurtosis) and so the tails of the return distributions (expected shortfall for instance). Hence, it can exhibit significant risk disparity with respect to higher moments or expected shortfall and thus inferior performance in stressful market environments. The extension of risk parity to higher moments or the use of expected shortfall have some theoretical backing. However, they increase complexity as the number of parameters to be estimated drastically increases. Besides, they are susceptible to estimation errors due to the instability of parameters. A recent study by Baittinger, Dragosh and Topalova (2017) has empirically shown that complex risk-parity portfolios tend to outperform classical risk parity portfolios only when the underlying data are

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significantly non-normal and show a high level of co-dependency. Alternative premia return distributions tend to be non-normal; some more than others, depending on the considered premium (e.g. volatility) and asset class (e.g. individual equity). Hence, the use of complex risk-based approaches can be relevant but investors should take into account the accuracy of estimated parameters which is often too low for practical purposes.

The way the risk-based methodology is applied can also have a significant impact on the outcome. The main question is at which level the risk methodology should be applied. All individual alternative premia can be considered as single risk entities and given the same risk budget. However, the issue is that it can lead to high exposures to some underlying factors. Another alternative is to classify alternative premia into homogeneous clusters and balance exposures across clusters. Several dimensions can be considered to build clusters: styles, volatility, risk-based vs behavioral explanations... Performance is generally more robust in the cluster approach as risk is better diversified. In all cases, it is important to conduct scenario analysis to estimate the behavior in different market environments.



Good practice: Limit Alternative Premia timing

There is a natural tendency for investors to try to enhance the alternative premia strategic allocation through actively changing their risk allocation. They are tempted to time premia, that is to own more of a premium when its conditional expected return is higher and vice-versa. By timing alternative premia exposures, investors can introduce some active management in ARP products instead of passively harvesting alternative premia in a systematic way. Of course, the difficulty is to find the factors on which active allocation decisions are based. The academic literature about factor timing remains sparse. Many of the predictors for traditional beta have been tested by practitioners, the following indicators being the usual suspects:

- ◆ valuation indicators as value spread
- ◆ trend indicators as recent short-term and medium-term returns
- ◆ dispersion indicators as the spread between the score of the long portfolio and the same measure for the short portfolio
- ◆ macro and financial indicators as the business cycle and broad liquidity measures

As always, we should not overestimate our ability to time markets or strategies. Timing is notoriously difficult and not easier for alternative premia than for traditional beta. There is the problem of time-varying relationships between indicators and alternative premia and timing is highly susceptible to data mining. Besides, a high success rate is needed to overcome the hurdles of a good starting point - the well-diversified strategic allocation and potentially higher transaction costs. This is why, in the context of smart beta strategies, it has been argued by Bender, Sun, Thomas and Zdorovtsov (2018), and Asness (2016) that investors should be realistic about the limitations of factor timing and even resist its siren song. In a nutshell, we do not exclude the possibility of tilting the strategic allocation but we believe that aggressive timing is unlikely to be appropriate.

Conclusion

The performance dispersion across ARP solutions shows that they are not created equal. ARP solutions differ in three main dimensions:

- 1) premia selection
- 2) design of individual premia
- 3) combination of individual premia portfolios

The selection of ARP providers does significantly matter and a well-defined due diligence process is crucial.

Investors should put less emphasis on backtested or even live returns but spend much more time on understanding the process and rationale of ARP solutions. We believe that having neglected it explains why some investors may have been disappointed by the recent performance of some ARP solutions. In our view, the selection of alternative premia and their consistency with academic research should be scrutinised in priority.

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