

3 Alternative Risk Premia: What Do We Know?

THIERRY RONCALLI, *Quantitative Research*

In a challenging low yield environment, rethinking asset allocation is a common challenge for investors and asset owners in order to diversify their portfolio and capture new sources of returns. The concept of Alternative Risk Premia (ARP) is an extension of the factor investing approach found in equities and both concepts participate in a better understanding of what portfolio diversification means. In this paper we provide a short summary of the key findings developed more extensively in Amundi's last Working Paper "Alternative Risk Premia: What Do We Know?".

What is the definition of Alternative Risk Premia?

A risk premium compensates investors for taking risk that cannot be hedged or diversified. Traditionally, we consider that there are two main risk premia: a long exposure to equities and a long exposure to bonds¹. This result is at the core of the multi-asset management industry and the strategic asset allocation of institutional investors. However, since the 90's, academics have shown that there are other sources of risk premia, grouped under the generic name of "alternative risk premia". For instance, cat bonds must incorporate a risk premium, because the investor takes a large risk that cannot be hedged.

We distinguish between two families of alternative risk premia: *alternative risk premia on real assets* and *alternative risk premia on traditional financial assets*. The former concerns alternative investments such as real estate, private equities, infrastructure and private loans. The latter category concerns long/short risk factors in equities, rates, credit, currencies and commodities. In this study, we focus on alternative risk premia on traditional financial assets. In this case, the concept of alternative risk premia is an extension of the factor investing approach found in equities. For example, the equity momentum risk factor can also be applied to rates, commodities or currencies.

What is the difference between factor investing and alternative risk premia?

Factor investing consists in building long-only equity portfolios, which are directly exposed to common (or systematic) risk factors like size, value or momentum. By construction, these portfolios include a directional risk or a beta component. These risk factors explain a large portion of alpha of a diversified stock portfolio. In other words, pure alpha is not compatible with diversification and the portfolio must be concentrated in a limited number of bets in order to exhibit this pure alpha.

Alternative risk premia describe non-traditional risk premia on equities, rates, credit, currencies or commodities. They correspond to long/short portfolios and are assumed to be independent from traditional risk premia. A famous example of alternative risk premia is the cross-section momentum equity risk premium. It consists in being long on past best performing stocks and short on past worst performing stocks. Another example is the carry currency risk premium. It consists in being long on currencies with high interest rates and short on currencies with low interest rates. A third example is the carry volatility risk premium which consists in capturing the risk premium between the implied volatility of an asset and its realized volatility. In fact, these alternative risk premia have long been established and have been used extensively by the hedge fund industry for a very long time.

Why alternative risk premia are so important for investors nowadays?

Investors need to better structure their portfolios across lowly correlated factors and diversification is the primary objective of institutional investors in order to manage the risk but also the performance of their portfolio. In a low-rate

The essential

As opposed to traditional risk premia, i.e. a long exposure to equities and a long exposure to bonds, alternative risk premia can be found in all asset classes (equities, rates, credit, currencies and commodities) and correspond to long/short portfolios. It can be viewed as an extension of the factor investing approach found in equities. More precisely, ARP include two types of risk premium strategies: skewness risk premia, which reward for taking systematic risk in bad times (e.g. carry and value risk premia) and market anomalies (e.g. the momentum risk premium).

The returns of alternative risk premia show heterogeneous patterns in terms of statistical properties, option profile and drawdown. In this context, investors need to go beyond volatility diversification, which is a tactical asset allocation decision, and the right answer for implementing a strategic asset allocation is to consider a stress budgeting approach based on the skewness risk. Another challenge concerns the convexity properties of ARP and how these new patterns change the construction of performance portfolios in presence of liabilities. Just like factor investing in equities, ARP is a key area of development for the asset management industry as it highlights the growing convergence between traditional active management and alternative investment.



Diversification is the primary objective of institutional investors in order to manage the risk but also the performance of their portfolio



¹ Including the duration, credit quality and liquidity risk premia.

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environment, the expected bond risk premium cannot be comparable to the realized bond risk premium of the last 20 years. Moreover, there is the issue around the stock-bond correlation, which must be positive in the long-run. The deflation regime, the 2008 Global Financial Crisis and the past trends in monetary policy are some of the factors explaining the negative correlation observed since the 90's. However, there is uncertainty around its future level. Will the stock-bond correlation continue to be negative or return to a positive level? The answer highly depends on the economic growth regime and monetary policy.

While (sovereign) bonds were perceived as a performance asset in the last decade, many investors now consider them as a hedging asset, strengthening their fly-to-quality characteristics. Investors have partially switched from diversified stock-bond portfolios to deleveraged equity portfolios, where the deleveraging results from the use of sovereign bonds as a hedging asset class and corporate bonds being a low beta asset class². This way of thinking about bond investing is particularly relevant for very large institutional investors such as sovereign wealth funds.

This opens the way to considering alternative risk premia exposures in strategic asset allocations. The development of real assets since 2008 fits into this context. The recent emergence of alternative risk premia is also an answer to the diversification issue. They expand the universe of traditional assets and renew the standard stock-bond asset mix policy. Risk premia framework also provides investors with a disciplined and structured portfolio construction process. And it is no coincidence if the concept of alternative risk premia has emerged at the same time as those of smart beta, risk parity and factor investing. They all participate in a better understanding of what portfolio diversification means.

What are the main results of this study?

In this paper, we make a clear distinction between arbitrage factors and risk factors. In particular, we show that the traditional portfolio optimization mainly focus on arbitrage factors whereas the risk budgeting approach is more concerned by systematic risk factors. If we define a strategic asset allocation as a combination of a universe of risk premia and an allocation method, this implies that portfolio optimization is not the right model for building a long-term investment portfolio. Risk budgeting methods do much better, because they are more sensitive on common risk factors and less dependent on arbitrage factors.

We also show that the consumption-based model helps to better characterize the concept of risk premia. More precisely, a risk premium is a compensation for taking a systematic risk in bad times. Because this risk is not diversifiable and because the market needs investors to take this risk at the worst time, the market must reward these investors. The study of mean-reverting and trend-following strategies is of particular interest for understanding whether they exhibit a risk premium. We show that the probability distributions of returns of these two strategies are very different (see Figure 1). The trend-following strategy has a positive skewness risk, a bounded loss and a significant probability of infinite gain. On the contrary, the contrarian strategy has a negative skewness, a bounded gain and a significant probability of infinite loss. Moreover, the option profile of a contrarian strategy is generally concave, meaning that the loss of the contrarian strategy occurs in bad times³. On the contrary, the trend-following strategy exhibits a convex option profile. Therefore, a contrarian strategy can have a risk premium, but not the trend-following strategy.

In practice, alternative risk premia encompass two types of strategies:

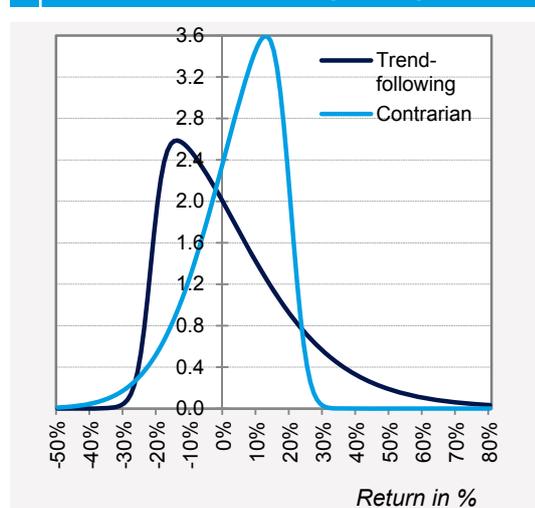
- 1. **Skewness risk premia (or pure risk premia).** They correspond to the previous definition. For example, the size and value risk factors are two skewness risk premia.
- 2. **Market anomalies.** They correspond to trading strategies that have delivered good performance in the past, but their performance cannot be explained

² This also explains the development of credit (investment grade and high yield) assets in the strategic asset allocation of institutional investors.

³ When the performance of traditional risk premia is very poor.

“ Risk premia framework also provides investors with a disciplined and structured portfolio construction process ”

1 Probability density function of contrarian and trend-following strategies



“ A risk premium is a compensation for taking a systematic risk in bad times ”



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by the existence of a systematic risk in bad times. Their performance can only be explained by behavioral theories. For example, the momentum, low beta and quality risk factors are three market anomalies.

In the previous context of contrarian and trend-following strategies, it is obvious that the market needs value (or contrarian) investors in order to exist and operate efficiently, but not momentum investors. Again, this explain why the market must especially reward value investors and not momentum investors. If the momentum risk factor has posted a good performance in the past, it can only be a market anomaly.

2. Mapping of alternative risk premia					
Strategy	Equities	Rates	Credit	Currencies	Commodities
Carry	Dividend Futures High Dividend Yield	Forward rate bias Term structure slope Cross-term-structure	Forward rate bias	Forward rate bias	Forward rate bias Term structure slope Cross-term-structure
Event	Buyback Merger arbitrage				
Growth	Growth				
Liquidity	Amihud liquidity	Turn-of-the-month	Turn-of-the-month		Turn-of-the-month
Low beta	Low beta Low volatility				
Momentum	Cross-section Time-series	Cross-section Time-series	Time-Series	Cross-section Time-series	Cross-section Time-series
Quality	Quality				
Reversal	Time-series Variance	Time-series		Time-series	Time-series
Size	Size				
Value	Value	Value	Value	PPP Economic model	Value
Volatility	Carry Term structure	Carry Term structure		Carry	Carry

Source: Amundi Research

Figure 2 presents a taxonomy of alternative risk premia by asset classes. The different categories of risk premia are the following: carry, event, growth, liquidity, low beta, momentum, quality, reversal, size, value and volatility. Note that some risk premia can be implemented in several ways and correspond to different risk premium strategies. For example, two strategies define the momentum risk premium: cross-section and time-series. The two risk premium strategies assume that the past trend is a predictor of the future trend. However, the cross-section momentum strategy consists in building a portfolio that is long on assets that have outperformed and short on assets that have underperformed, whereas, in the case of the time-series momentum strategy, the portfolio is long on assets with a positive past trend and short on assets with a negative past trend.

Note as well that some categories of risk premia are not present in all asset classes. For instance, there is little evidence that low beta, size and quality are alternative credit risk premia, likely because these risk premium strategies can be viewed as a repackaging of the duration, liquidity and credit quality traditional risk premia.

Another result is that carry and momentum are the most relevant alternative risk premia. We find them in four asset classes, even if implemented differently. Conversely, the value risk premium plays a less important role, except in the equity asset class. This is due to the mean-reverting property of the fixed-income, foreign exchange and commodity markets, whose frequency is longer than for the equity market.

The main result of the study deals with the portfolio management of alternative risk premia. We show that skewness diversification is different from volatility diversification. In particular, contrary to the volatility risk measure, skewness is not a convex risk measure, implying that there is a floor to skewness diversification.

“Carry and momentum are the most relevant alternative risk premia”

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Moreover, while it is relatively easy to hedge volatility risk, skewness hedging is a difficult task, if not impossible. Therefore, by accumulating alternative risk premia in a strategic asset allocation, we highly increase the volatility diversification, but the relative skewness risk may remain at a high level. This explains that the Sharpe ratio is not valid for measuring the risk/return ratio of an ARP portfolio⁴. Another implication is that we must mix skewness risk premia and market anomalies, or in other words, concave and convex risk premia strategies, for instance carry and momentum. Therefore, the right answer for implementing a strategic asset allocation is to consider a skewness risk budgeting approach and certainly not a portfolio optimization approach.

What does the development of alternative risk premia imply for the investment industry?

Beyond the construction of strategic asset allocation, alternative risk premia impacts two sectors of asset management: multi-asset management and hedge funds.

Since alternative risk premia and diversification are highly related, alternative risk premia is a new way of thinking about diversification between asset classes. Indeed, alternative risk premia expand the universe of traditional risk premia and are becoming the building blocks of multi-asset management. This implies that multi-asset allocation cannot be reduced to stock-bond and country allocation. Moreover, the development of alternative risk premia accelerates the ongoing process started with the emergence of risk parity funds⁵ and participates in the convergence between multi-asset and multi-strategy management. In this framework, diversification has two dimensions: asset classes and risk premium strategies.

By incorporating risk premia strategies into diversified portfolios, we introduce convexity in the performance and behavior of such portfolios. This reopens the issue of portfolio construction in asset-liability management. Investors endowed with long-term liabilities might take account of these convexity properties for designing optimal performance portfolios. This is why risk premia framework calls the articulation between liability hedging portfolios and well-diversified performance portfolios into question. Beyond the liability-driven investment paradigm, it is all the multi-asset management under liability constraints that is impacted, including target date funds and life-cycle investment.

Alternative risk premia also participate in the debate between alpha and beta. And it is no coincidence if alternative risk premia are called alternative betas in the hedge fund industry, in the sense that a part of the traditional alpha is explained by alternative betas. For a long time, the success of alternative investments was mainly due to two promises: the promise of diversification and the promise of alpha. The financial crisis of 2008 has shown the limit of this framework. First, the hedge fund industry has confused volatility and skewness diversifications. Second, it has not put forth the concept of bad times, implying that alpha may also be negative. If a significant part of hedge fund returns is due to alternative risk premia, then diversification and alpha are closely linked. This is especially true because it can be shown that carry is the most important alternative beta for understanding the returns of hedge fund strategies⁶.

While smart beta and factor investing challenge actively managed equity funds, alternative risk premia challenge alternative investment funds. This explains that some hedge fund managers have developed some ARP solutions and have segmented their offering into alternative beta and pure alpha strategies. Again, it participates in the convergence of traditional and alternative investments.

“ The Sharpe ratio is not valid for measuring the risk/return ratio of an ARP portfolio ”

“ Alternative risk premia is a new way of thinking about diversification between asset classes ”

“ Alternative risk premia also participate in the debate between alpha and beta ”

“ Alternative risk premia challenge alternative investment funds ”

⁴ A better measure is comparing the expected return and the expected drawdown.

⁵ We remind readers that the original term was risk premia parity, and not risk parity. Indeed, risk parity has its roots in the original theory of traditional risk premia formulated by William Sharpe. At the optimum, the risk premium of an asset is proportional to its marginal risk.

⁶ For instance, relative value and event-driven hedge fund strategies are highly sensitive to carry risk premia.



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Contributors

Editor

– PHILIPPE ITHURBIDE
Head of Research, Strategy and Analysis – Paris

Deputy-Editors

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MO JI – *Hong Kong*, STÉPHANE TAILLEPIED – *Paris*

Support

– PIA BERGER
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