Morgan Stanley

INVESTMENT MANAGEMENT

An Introduction to Alternative Risk Premia

SOLUTIONS & MULTI-ASSET | AIP HEDGE FUND TEAM | INVESTMENT INSIGHT | 2019

Alternatives investors have always been focused on the possibility of achieving a measure of downside protection, accessing differentiated exposures and identifying truly uncorrelated, complementary sources of return. In addition to conventional ways to modify multi-asset portfolios through incorporation of liquid alternatives, such as hedge funds and commodity trading advisors ("CTAs"), there has been an increase in the number of investors seeking newer ways to improve their portfolios.

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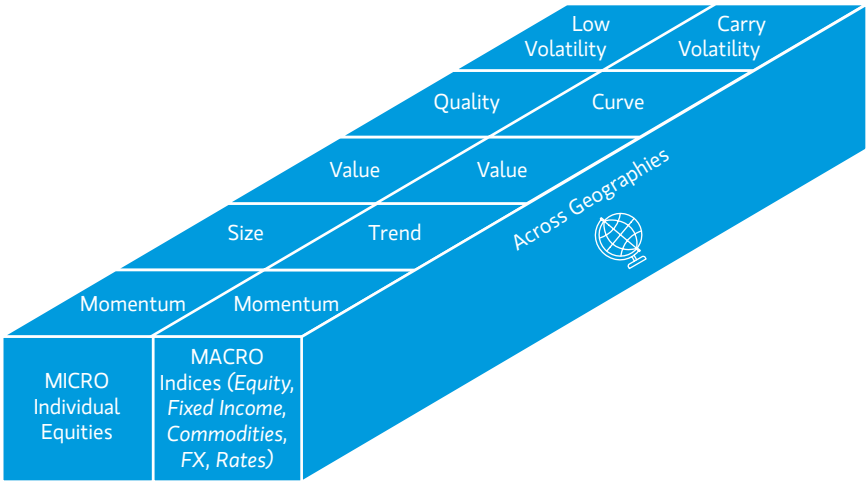
In much the same way that long-only investors have considered "passive" investing as a way to adjust their exposures efficiently and to reduce cost, alternatives investors have begun to explore systematic and index-based solutions—such as "alternative risk premia"—as a way to achieve those same objectives. In this paper, we seek to introduce the concept of alternative risk premia, explain how investors can access them, and present the potential benefits and drawbacks associated with them.

Overview

The concept underlying alternative risk premia is the potential reward to an investor for taking on some form of risk. As the name suggests, this risk is "alternative" to traditional market risk or traditional beta in the sense that it is non-correlating and tends to be structured in the form of a long/short investment. Alternative risk premia tend to exhibit heterogeneous statistical

DISPLAY 1
Commonly Used Risk Premia



Source: Morgan Stanley Investment Management. For illustrative purposes only. Not an exhaustive list.

properties, making them potentially diversifying building blocks to a broader multi-asset portfolio.

Display 1 highlights commonly used alternative risk premia, which often result from market behaviors or structural conditions. For example, herding behavior and instances in which investors "chase winners and sell losers" create ***momentum***. Mean reversion of asset prices to fair-value anchors often leads to opportunities classified as ***value***. Investor mispricing of asset yields may lead to ***carry*** opportunities. In commodities markets, for example, carry is defined as the price differential between futures contracts of different maturities. This figure may be positive or negative because of supply and demand dynamics and other factors. The large derivatives market often provides opportunities to design novel alternative risk premia, both behavioral and structural, related to asset volatility. For example, during market crises, investors seek safer assets, and ***low volatility*** stocks tend to outperform.

While the term "alternative risk premia" is fairly new, investors have had exposure to these sorts of returns through hedge fund strategies like quantitative equity, macro and managed futures for many years. The key differences today are the ways investors access and implement them.

While having an understanding of alternative risk premia is important, what is attractive and compelling to investors is to think about their utility. In our view, these premia can be thought of as an extension of factor-based investing and can serve as building blocks for portfolio construction.

Original factor-based investing started with the Capital Asset Pricing Model ("CAPM"), which sought to explain investment performance using a risk-free rate and a single market risk factor or premium.[1] Over the years, it became increasingly apparent, through the groundbreaking research of Eugene Fama, Kenneth French and Mark Carhart, among others, that a single market risk premium was not the only driver of asset returns and that investors could exploit additional factors within or across asset classes.[2] More recent research suggests that investors can harvest "alternative" risk premia that persist because of human behavior and the structure of certain investment markets. Alternative risk premia are of interest to investors because, unlike stocks and bonds, they are generally unrelated to broader macro fundamentals. Therefore, they can provide diversification benefits when included in portfolios alongside traditional investments.[3]

Points of Distinction

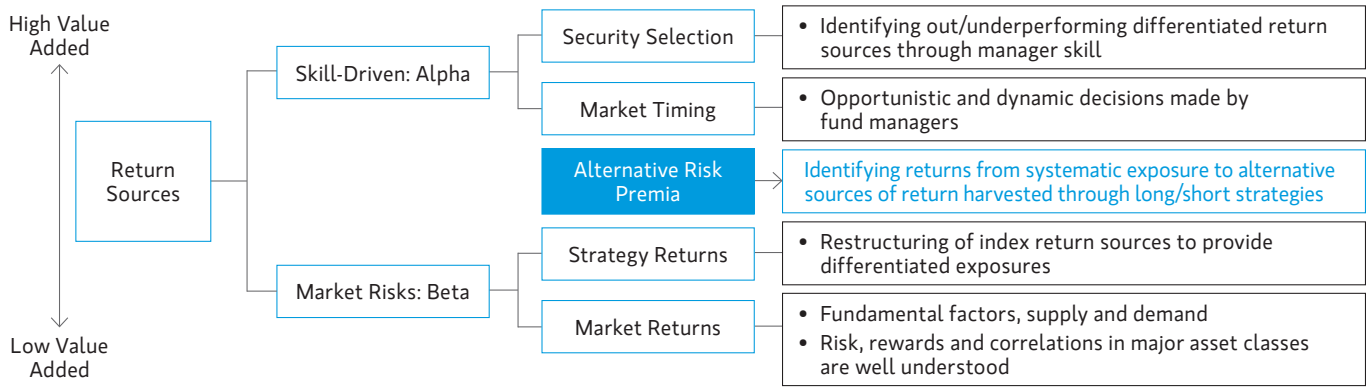
The terms "alternative risk premia" and "smart beta" are often lumped together. However, in our view, there are important distinctions between the two: smart beta is generally derived from long-only investment strategies, whereas alternative risk premia are generally derived from long/short strategies with a number of them attempting to be market-neutral.

[1] William Sharpe, "A Theory of Market Equilibrium under Conditions of Risk," *The Journal of Finance*, Volume 19, Issue 3 (1964).

[2] Eugene F. Fama, Kenneth R. French, "Common Risk Factors in the Returns on Stocks and Bonds," *Journal of Financial Economics*, Volume 33, Issue 1 (1993). Mark M. Carhart, "On Persistence in Mutual Fund Performance," *The Journal of Finance*, Volume 52, Issue 1 (1997).

[3] Clifford S. Asness, Tobias J. Moskowitz, Lasse Heje Pedersen, "Value and Momentum Everywhere," *The Journal of Finance*, Volume 68, Issue 3 (2013).

DISPLAY 2
Drivers of Investment Returns



Source: Morgan Stanley Investment Management. For illustrative purposes only.

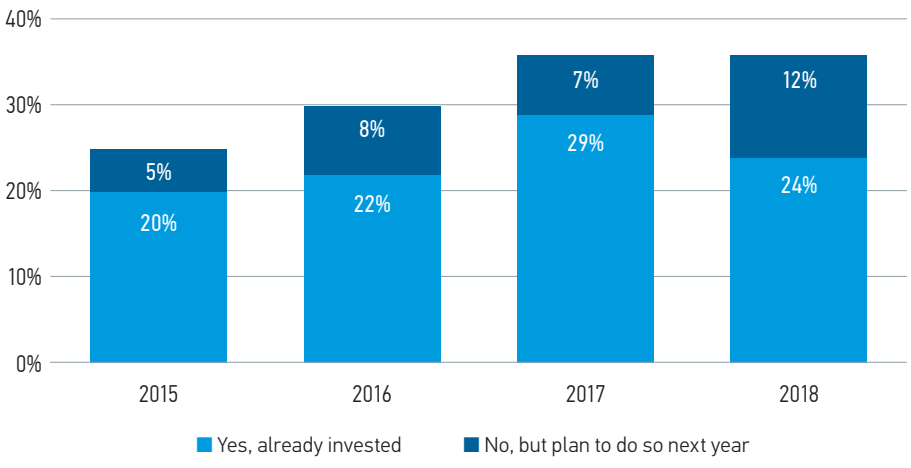
It is also important to note that alternative risk premia should not be confused with "alpha," which reflects an idiosyncratic component of return believed to be derived from a manager's security selection and market-timing skill. *Display 2* illustrates this distinction, as we see it, and provides a useful framework for considering the return sources that may comprise an absolute return portfolio solution.

Who Invests in Alternative Risk Premia?

Some of the earliest adopters of alternative risk premia strategies included sophisticated institutions, such as the Nordic and Scandinavian pension funds. Over time, the level of interest in these types of strategies—particularly among institutional investors—has grown. Today, investors are broadly diversified by geography and type: insurance companies, large institutions, endowments, risk premia-specific asset managers and hedge fund allocators.

We expect growth to continue, and recent survey data seems to bear this out. Of the 250 global institutional investors who responded to J.P. Morgan Capital Advisory Group's "2019 Institutional Investor Survey," 36% reported investing in or planning to invest in alternative risk premia. As illustrated in *Display 3*, this reflects the continuation of a multi-year trend.[4] Echoing similar expectations for continued growth, a report from bFinance suggested that after a huge "wave of activity" in 2016-2017, demand for alternative risk premia continues and seems to have settled at a "more gentle pace."[5] J.P. Morgan's most recent survey seems to illustrate this point.

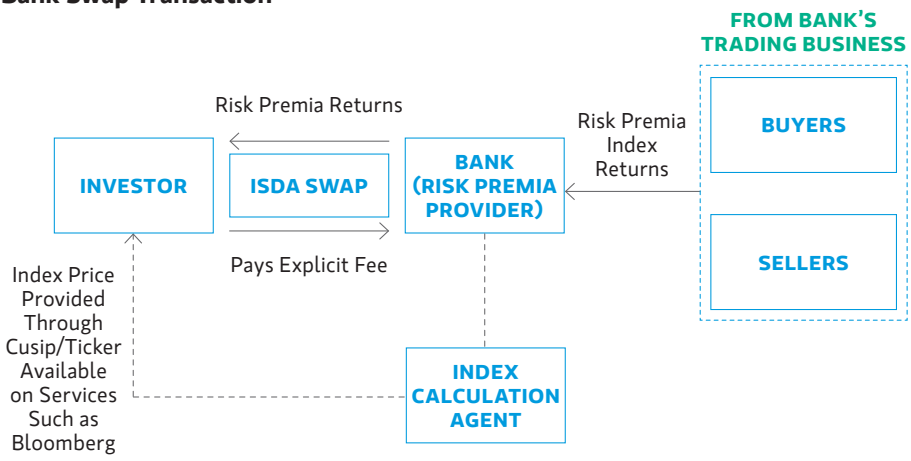
DISPLAY 3
Continued Interest in Alternative Risk Premia



Source: J.P. Morgan Capital Advisory Group. February 2019.

[4] "2019 Institutional Investor Survey," J.P. Morgan Capital Advisory Group (2019).
[5] "Manager Intelligence and Market Trends," bFinance (August 2018).

DISPLAY 4
Bank Swap Transaction



Source: Morgan Stanley Investment Management. For illustrative purposes only.

As investor interest in alternative risk premia has grown, so has recognition about the many ways these strategies can be used in portfolios. Once mainly considered vehicles for constructing specific hedges, they are now regarded as a valuable asset allocation tool. In fact, respondents to J.P. Morgan's survey indicated that common reasons for investing in risk premia strategies include isolating risk premia exposures, low costs and liquidity.[6]

Implementing Alternative Risk Premia

Investors tend to implement alternative risk premia in three different ways:[7]

1. Purchasing them individually or in packages from banks in the form of bank swaps linked to bank-designed alternative risk premia indices.

2. Investing in a manager who designs its own risk premia and runs them within a typical hedge fund or mutual fund construct.

3. Working with an asset manager who serves as a "fiduciary", providing structuring, risk management and selection techniques on a customized basis.

Investors must weigh the relative merits of each implementation method.

BANK SWAP

When investors access alternative risk premia through a bank swap, they generally receive the return of an alternative risk premia index. For example, if the index return is positive then the investor receives the index return less a set index fee. The bank swap is typically short maturity (e.g., one year) and it can roll, so the investor often has the option to increase or decrease the time horizon or the notional value of the swap. With an excess return index, the corresponding excess return swap requires no upfront cash funding from the investor. Depending on the International Swaps and Derivatives Association ("ISDA") agreement, the investor may post collateral to the swap counterparty, the bank, between coupon payments as the swap's mark-to-market value varies. The main benefits of this implementation include liquidity, transparency and not having to fully fund the position. The drawbacks relate to the need to focus heavily on provider selection, premia selection, portfolio oversight (which cannot be done by the bank as its role is counterparty, not portfolio manager), potential cost dispersion, and the operational inconvenience of implementation. Setting up an ISDA and monitoring risk takes time and resources. *Display 4* illustrates a typical bank swap transaction.

FUND

If an investor chooses to invest in a dedicated alternative risk premia fund, all investment selection and risk management decisions are outsourced to a fund manager. In this case, the investor commits 100% of the cash upfront and is subject to the same fund terms as other investors. The main advantage here is ease of implementation; the drawbacks include the requirement to be fully funded, fund fees and the lack of ability to customize or have transparency.

FIDUCIARY

Outsourcing to a fiduciary or asset manager seems to be a popular model among institutional investors. The fiduciary is often able to use its buying power to implement the bank swaps, potentially eliminating the requirement for an investor to fully fund, to obtain optimal pricing and to create a customized format. However, the fiduciary is required to provide the operational and oversight benefits of a fund manager.

[6] "2019 Institutional Investor Survey," J.P. Morgan Capital Advisory Group (2019).

[7] In limited circumstances, investors may determine to build alternative risk premia themselves. This requires extensive trading and investment capabilities.

What Are the Potential Benefits of Investing in Alternative Risk Premia?

RETURN DIVERSIFICATION

The most obvious benefit is the potential return an investor could receive in exchange for taking on a specific exposure; from a portfolio perspective, there would be the potentially attractive risk/return properties. Many alternative risk premia exhibit low correlations to traditional portfolio investments. If incorporated into a portfolio appropriately, these strategies could complement traditional exposures in much the same way investments in hedge funds and CTAs purport to do.

LIQUIDITY

When provided in the form of bank swaps, alternative risk premia are generally created using conventional instruments that have daily pricing. Prices are usually published daily in the form of indices whose tickers are available for review online through services, such as Bloomberg. Depending on the terms of the swap, the premia can usually be exited quickly, thus providing potentially greater liquidity than more conventional fund structures. However, it should be noted that dedicated alternative risk premia funds can offer attractive liquidity terms as well.

TRANSPARENCY

If using bank swaps, the banks are required to document the universe of investments and metrics around how the index is constructed and trades (e.g., frequency, time of day, amount, universe of securities). These are available in published "rule books" and provide a good degree of transparency for those willing to conduct thorough due diligence.

EFFICIENCY

Alternative risk premia can be cost efficient and potentially capital efficient:

1. Bank swap products and some of the newer risk premia funds typically do not have performance fees and may be cheaper than other sources of alternative exposure, such as hedge funds and CTAs. Of course, an investor would need to conduct full due diligence on each premium and compare that to options in order to fully evaluate cost. As discussed later, cost is not consistent across providers. We believe thorough due diligence and knowledge of peer pricing can lead to significant benefits and a difference in results.
2. For many institutional investors, the daily pricing and liquidity of these investments could be beneficial from the perspective of regulatory reporting requirements. For example, alternative risk premia may not be classified in the same category as other alternatives. They may be categorized on balance sheets as more liquid investments, which could offer the significant benefit of freeing up capital for investors with capital constraints.
3. When implemented in the form of bank swaps, they require less capital commitment for leverage purposes. Swap investors do not commit all capital upfront, as is required for investments in funds.

SYSTEMATIC EXPOSURE

Finally, as alternative risk premia are systematic and rules-based, once designed they are not subject to human intervention—either prudent judgment or imprudent emotional overreaction. Thus, these strategies could help prevent style drift and the potentially negative consequences of exposure to a manager's unintended market timing.

How Can Investors Use Alternative Risk Premia?

We believe there are multiple ways in which alternative risk premia could be used:

1. **DIRECT HEDGE FUND/CTA REPLACEMENT:** With the potential for comparatively lower cost, greater liquidity and greater transparency than traditional hedge fund and CTA structures, alternative risk premia could be an attractive option for an investor seeking to replace a portion of his hedge fund allocation. However, we believe this option does not fully address an investor's needs in the absolute return space. There is the risk that this approach would remove all alpha opportunities, something we see as a key component of a successful absolute return portfolio solution.
2. **HEDGE FUND PORTFOLIO COMPLETION:** By addressing gaps and concentrations in existing factors, inclusion of alternative risk premia in a hedge fund portfolio could make that portfolio more balanced, better diversified, more cost effective and better able to adapt to market regime changes.
3. **HEDGE FUND PORTFOLIO EFFICIENCY:** Dedicated alternatives portfolios are often subject to cash drag because they need to hold high levels of cash to manage redemptions from, and commitments to, less liquid investments. An allocation to risk premia, if designed appropriately, could provide the opportunity for "cash-plus" returns, an improvement over idle cash.

4. **COMPLEMENT TO A MULTI-ASSET PORTFOLIO:** Introducing alternative risk premia to a broader portfolio of traditional market betas may provide greater diversification and drawdown protection during periods in which traditional asset classes exhibit high correlations.

5. **ALPHA/BETA/FACTOR SEPARATION:** Having efficient and liquid exposure to alternative systematic premia or beta at low cost could allow the manager selection process to focus more specifically on identifying true alpha, which in turn could facilitate replacement of non-alpha generating strategies.

6. **PERFORMANCE MEASUREMENT:** Sophisticated investors can use alternative risk premia as "benchmarks" or factors for evaluating the composition of individual hedge funds or portfolios, potentially gaining greater insight into their investment exposures. For example, if a manager is not generating alpha but is actually making most of its returns from alternative risk premia and market beta, then it may find it difficult to justify performance fees. Further, being able to monitor one's exposure in a more refined manner could help prevent unintended overexposure to a certain factor or premium.

Investment Considerations

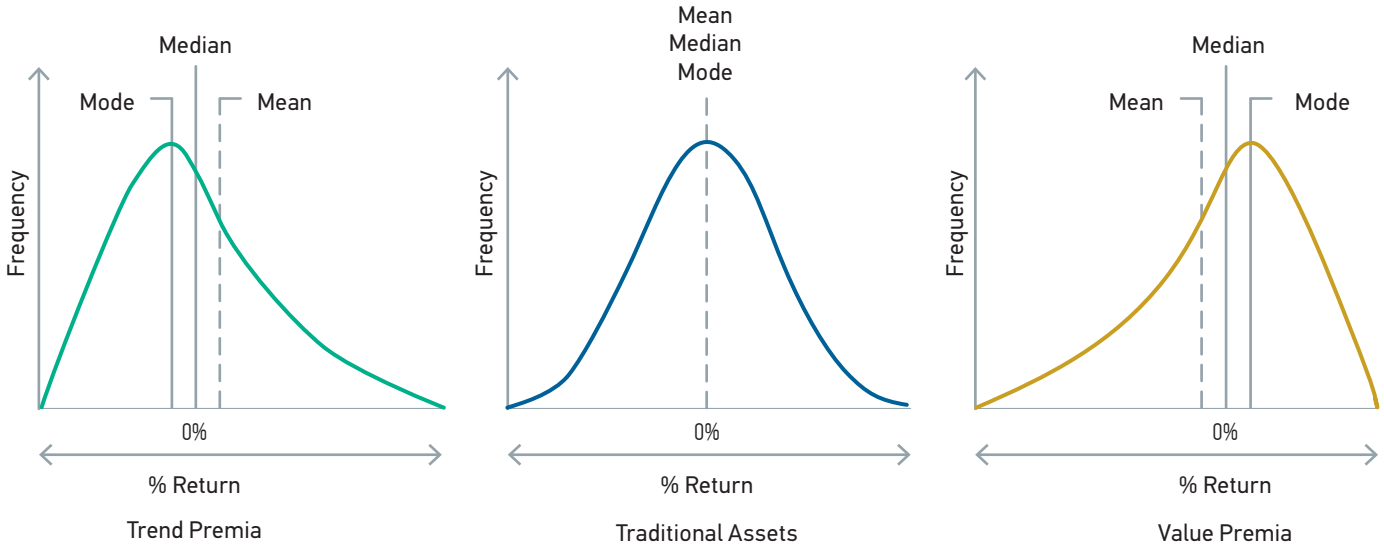
As is the case with all investments, alternative risk premia come with inherent risks. In our view, these risks include, but are not limited to, the following:

1. **RETURNS ARE NOT NORMALLY DISTRIBUTED AND CORRELATIONS MAY CHANGE OVER TIME.** While this behavior may be viewed as an attractive quality of alternative risk premia, it does make it more difficult to apply conventional asset allocation methods. Basic optimization techniques may not adequately identify risk or correlations, which would make it more challenging to identify the risk of tail events during periods of highly correlated returns.

Display 5 shows the distribution of two examples of alternative risk premia and highlights their "non-normal" distribution patterns. Alongside these, the diagram presents traditional investments, which tend to exhibit a "normal," bell-curved distribution pattern. The difference in distribution of alternative risk premia returns is important because it means they can potentially provide differing and complementary returns to those of the traditional markets, thus providing hedging and diversification benefits.

DISPLAY 5

Distribution of Returns for Two Alternative Risk Premia Strategies vs. Traditional Assets



Source: Morgan Stanley Investment Management. For illustrative purposes only. The illustration above does not represent a specific investment. Actual performance may vary significantly.

DISPLAY 6

Correlations Between Alternative Risk Premia

	Trad'l-Equity	Trad'l-Bond	Trad'l-Curncy	Trad'l-Comdty	Carry-Equity	Carry-Bond	Carry-Curncy	Carry-Comdty	MoM-Equity	MoM-Bond	MoM-Curncy	MoM-Comdty	Value-Equity	Value-Bond	Value-Curncy	Value-Comdty	Vol-Equity	Vol-Bond	Vol-Curncy	Vol-Comdty
Trad'l-Equity		33	18	18	-5	16	54	9	14	26	-18	-22	-8	-14	-23	7	52	7	31	33
Trad'l-Bond	13		28	-24	-5	-6	-4	-5	7	48	12	-1	-7	-15	0	-1	14	-56	-48	29
Trad'l-Curncy	12	17		19	6	11	39	-10	-7	-6	8	6	1	-16	-20	-15	35	-31	2	22
Trad'l-Comdty	10	-18	20		3	10	41	26	1	-11	-22	35	18	-8	-33	-24	31	4	48	-17
Carry-Equity	-14	1	11	2		9	10	-4	-7	-3	3	1	8	10	-10	-10	9	-3	-1	-21
Carry-Bond	-6	-15	-7	0	3		28	-3	-6	-20	-2	-7	-5	13	-10	-2	10	12	12	19
Carry-Curncy	22	-14	8	23	0	11		13	20	-1	-12	1	14	-4	-56	0	38	28	33	28
Carry-Comdty	-3	-5	2	16	-2	-1	2		13	-13	-7	18	14	-11	-14	-50	30	-11	17	-18
MoM-Equity	-12	3	1	8	4	-2	5	12		24	3	9	-6	-33	-10	14	5	23	12	-17
MoM-Bond	8	12	-9	1	0	16	-1	-2	0		18	15	10	-26	-14	15	-14	-7	-51	8
MoM-Curncy	0	1	5	-4	-7	9	-4	1	12	8		5	-7	-27	-30	-11	-35	-26	-48	-12
MoM-Comdty	-2	6	3	16	2	-1	2	27	9	7	5		-6	-15	-12	-46	-19	1	-19	-12
Value-Equity	-29	3	-3	2	1	6	2	-2	-7	3	0	0		4	-4	-9	-5	32	23	6
Value-Bond	-9	-7	3	0	1	19	1	-10	-10	-23	-11	-5	7		0	5	-10	9	29	-30
Value-Curncy	1	-9	-20	-9	-8	5	-2	2	-5	9	-32	-10	-7	2		11	-19	21	-13	-6
Value-Comdty	6	-9	-7	-23	1	4	5	-34	-8	2	-6	-58	-5	2	8		-16	37	15	20
Vol-Equity	28	-10	4	23	-4	5	21	9	-5	4	-8	-7	5	-2	8	-7		-14	55	14
Vol-Bond	12	-35	-13	6	-5	-9	8	8	1	-1	-6	3	12	4	7	4	5		30	17
Vol-Curncy	18	-34	3	30	-12	12	29	4	-2	-16	-4	0	15	10	-14	-2	23	25		-2
Vol-Comdty	17	3	7	-1	-7	10	25	-11	-12	1	-11	-9	8	-8	-6	8	12	3	9	
Full Sample Ave	4	-5	2	5	-2	3	7	1	0	1	-3	-1	1	-2	-4	-6	6	1	5	2
Crisis Average	12	0	5	6	-1	4	14	0	3	0	-11	-3	4	-8	-13	-3	9	4	6	3
Ave During GFC	19	-6	15	16	5	12	22	6	2	-7	-14	-2	6	-12	-19	-8	13	5	4	5

Less Than -30% | -30% to -10% | -10% to +10% | +10% to +30% | Greater than +30%

Source: Marko Kolanovic and Zhen Wei, "Systematic Strategies Across Asset Classes: Risk Factor Approach to Investing and Portfolio Management," J.P. Morgan Quantitative and Derivatives Strategy Group, p. 50 (December 2013).

Display 6 presents a correlation matrix of alternative risk premia, which shows that these strategies shift over time and that this variance is significant. Of particular note is the highly correlated behavior of the premia during market downturns. This might suggest there is a risk that these strategies won't work as expected and could move in tandem when you least want them to. It is therefore crucial to be able to evaluate and understand them in order to attempt to address these risks. A further point of consideration with regard to time is that alternative risk premia returns can be persistent, episodic or structural. For example, our research has shown that value premia tend to be persistent; commodity carry and equity index skew are more episodic; and equity dividend premia are structural, characterized by the risk of decay over time.

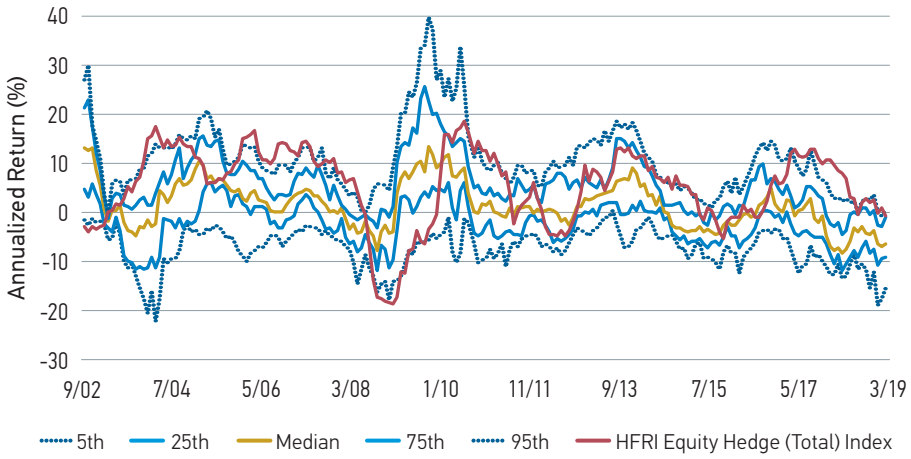
2. **HISTORICAL PERFORMANCE IS SUBJECT TO BACKTEST BIAS.** Investors must bear in mind that alternative risk premia trading strategies are vulnerable to overfitting of backtest data and lack of robustness during "live" periods. In fact, our proprietary analysis of over 2,600 alternative risk premia strategies has identified a number of instances and patterns of potential for deterioration between backtested and live data.

   However, on a more positive note, time is providing an increasingly robust set of live data from which to evaluate these strategies.

3. **NO SET RULES GOVERNING HOW ALTERNATIVE RISK PREMIA ARE DESIGNED.** Bank providers and risk premia providers may operate differently in the design process. This leads to a situation in which risk premia with similar names have been designed differently and may have dramatically varying return profiles.

DISPLAY 7

Variance in Return of "U.S. Equity Value" Risk Premia Strategies Across Bank Providers



Source: Bloomberg and Morgan Stanley Investment Management as of July 30, 2019.

DISPLAY 8

Comparison of Execution Costs for Swaps Among Providers

All costs in basis points

CRITERIA	EXPLICIT COST*	IMPLICIT COST	TOTAL COST
Description	• Swap maintenance fee • Index maintenance fee • Management fee * In certain cases, a dealer's explicit costs will include implicit costs as well	• Rebalancing on long/short legs • Financing costs on long leg • Borrow costs on short leg • Trade commissions • Bid/Offer spreads	• Explicit + Implicit
Vendor 1	1.00	0.00	1.00
Vendor 2	0.20	1.33	1.53
Vendor 3	0.25	1.45	1.70

CRITERIA	POSITIONS	NOTIONAL LONG/SHORT	MONTHLY TURNOVER	COST ASSUMPTIONS
Vendor 1	470	115% long/ 110% short	264%	No implicit cost
Vendor 2	270	108% long/ 108% short	130%	Bid/Offer: 3bps/3bps. Financing cost on long is 45bps; borrow cost on short is 35bps.
Vendor 3	300	100% long/ 88% short	183%	Rebalancing cost: 4bps. Financing cost on long is 35bps; borrow cost on short is 25bps.

Total Cost Calculation: Swap Fee + Implicit fees (Turnover Cost, Financing Cost)
Turnover cost = Monthly turnover x 12 x bid / offer
Financing / borrow = (Long notional x financing) + (Short notional x borrow)

Vendor 1 Total Cost: 100 bps + 0 bps = 100 bps
Vendor 2 Total Cost: 20 bps + (1.30 x 12 x 3 bps) + (1.08 x 45 bps) + (1.08 x 35 bps) = 153 bps
Vendor 3 Total Cost: 25 bps + (1.83 x 12 x 4 bps) + (1.00 x 35 bps) + (0.88 x 25 bps) = 170 bps

We must also consider our portfolio construction approach. Entry/exit fees can build up with frequent rebalancing.

Source: Morgan Stanley Investment Management. The above data is for illustrative purposes only and does not represent the performance of any specific investment. The above reflects the opinions and views of Morgan Stanley Investment Management as of the date hereof and not as of any future date and will not be updated or supplemented.

To illustrate this point, *Display 7* shows the variance among risk premia categorized as "U.S. Equity Value" by different bank providers evaluated by Morgan Stanley Investment Management in recent years. While the names of these premia are similar, the methods providers use to harvest the same risk premia are very different. As a consequence, we see wide dispersion in their results.

The variables that can meaningfully impact the returns of alternative risk premia include index construction—using different sets of investments (e.g., top 20 investments versus top 50), hedging approach (i.e., single stocks versus indices), re-balancing frequency (e.g., daily versus weekly), timeframe for look-back (e.g., momentum measured over different time periods)—and construction of execution costs. As mentioned previously, the cost efficiency of these can be highly advantageous.

However, *Display 8* shows how widely execution costs can vary by provider in the case of the bank swap products. You can see that the cost is made up of two core components: explicit and implicit costs. How the premia is designed and how the fees are applied can result in very different overall costs. In this case, while the explicit "sticker" price for Vendor 2 is the cheapest overall, that is not the case when all costs are evaluated.

4. **WITH INCREASING POPULARITY COMES THE RISK OF CROWDING.** In theoretical terms, if the risk premium is "pure" then it should always be there. However, there are capacity considerations for alternative risk premia strategies. As articulated by AQR's Cliff Asness, *"The price of risk (how much you're rewarded in extra expected return) can vary through time, and perhaps fall as the risk premium is more popularized."*[8] There have been cases in which this has occurred, and it is something of which investors must be mindful.

As we hope the above points make clear, it is essential for an investor to have a thorough and methodical due diligence process in place to evaluate alternative risk premia.

Conclusion

We see alternative risk premia as an interesting, evolving and dynamic space with a wide variety of applications.

[8] "How Can a Strategy Still Work if Everyone Knows About It?", AQR-Cliff's Perspective (October 2015) https://www.aqr.com/Insights/Research/Trade-Publication/How-Can-a-Strategy-Still-Work-If-Everyone-Knows-About-It

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Persons considering an alternative investment should refer to the specific fund's offering documentation, which will fully describe the specific risks and considerations associated with a specific alternative investment.

Alternative investments are speculative and include a high degree of risk. Investors could lose all, or a substantial amount of, their investment. Alternative investments are suitable only for long-term investors willing to forgo liquidity and put capital at risk for an indefinite period of time. Alternative investments are typically highly illiquid—there is no secondary market for private funds, and there may be restrictions on redemptions or the assignment or other transfer of investments in private funds. Alternative investments often engage in leverage and other speculative practices that may increase volatility and risk of loss. Alternative investments typically have higher fees and expenses than other investment vehicles, and such fees and expenses will lower returns achieved by investors.

This is a summary of various risks associated with investing in alternative risk premia. This summary is not, and is not intended to be, a complete enumeration or explanation of the risks involved. The recipient should consult with its own advisors before deciding whether to invest in these strategies. In addition, to the extent that the investment program of such a portfolio changes and develops over time, additional risk factors not described here may apply. Only a recipient who understands the nature of the investment, does not require more than limited liquidity in the investment, and has sufficient resources to sustain the loss of its entire investment should consider making the kind of investments described herein. MSIM, its affiliates and its and their respective directors, officers, members, partners, employees, agents, advisors, representatives, heirs, successors and assigns shall have no liability whatsoever in connection with any person's or entity's receipt or use of or access to any information contained herein.

General Risks of Derivatives. An alternative risk premia portfolio could use various derivatives and related investment strategies, as described below. Derivatives may be used for a variety of purposes including hedging, risk management, portfolio management or to earn income. Any or all of the investment techniques described herein may be used at any time and there is no particular strategy that dictates the use of one technique rather than another, as the use of any derivative by a portfolio is a function of numerous variables, including market conditions.

A derivative is a financial instrument the value of which depends upon (or derives from) the value of another asset, security, interest rate or index. Derivatives may relate to a wide variety of underlying instruments, including equity and debt securities, indices, interest rates, currencies and other assets. Certain derivative instruments which a portfolio may use and the risks of those instruments are described in further detail below. A portfolio may also utilize derivatives techniques, instruments and strategies that may be newly developed or permitted as a result of regulatory changes, to the extent such techniques, instruments and strategies are consistent with a portfolio's investment objective and policies. Such newly developed techniques, instruments and strategies may involve risks different than or in addition to those described herein. No assurance can be given that any derivatives strategy employed by a portfolio will be successful.

The risks associated with the use of derivatives are different from, and possibly greater than, the risks associated with investing directly in the instruments underlying such derivatives. Derivatives are highly specialized instruments that require investment techniques and risk analyses different from other portfolio investments. The use of derivative instruments requires an understanding not only of the underlying instrument but also of the derivative itself. Certain risk factors generally applicable to derivative transactions are described below.

Derivatives are subject to the risk that the market value of the derivative itself or the market value of underlying instruments will change in a way adverse to a portfolio's interests. A portfolio bears the risk that the adviser may incorrectly forecast future market trends and other financial or economic factors or the value of the underlying security, index, interest rate or currency when establishing a derivatives position for a portfolio.

Derivatives may be subject to pricing (or mispricing) risk. For example, a derivative may become extraordinarily expensive (or inexpensive) relative to historical prices or corresponding instruments. Under such market conditions, it may not be economically feasible to initiate a transaction or liquidate a position at an advantageous time or price.

Many derivatives are complex and may be valued subjectively. The pricing models used by a portfolio to value derivatives may not produce valuations that are consistent with the values a portfolio realizes when it closes or sells an over-the-counter ("OTC") derivative. Valuation risk is more pronounced when a portfolio enters into OTC derivatives with specialized terms because the market value of those derivatives in some cases is determined in part by reference to similar derivatives with more standardized terms. Improper valuations can

result in increased payment requirements to counterparties, over- and/or under-collateralization, and/or a loss of value to a portfolio.

Using derivatives as a hedge against a portfolio investment subjects a portfolio to the risk that the derivative will have imperfect correlation with the portfolio investment, which could result in a portfolio incurring substantial losses. This correlation risk may be greater in the case of derivatives based on an index or other basket of securities, as the portfolio securities being hedged may not duplicate the components of the underlying index or the basket may not be of exactly the same type of obligation as those underlying the derivative. The use of derivatives for "cross hedging" purposes (using a derivative based on one instrument as a hedge on a different instrument) may also involve greater correlation risks.

While using derivatives for hedging purposes can reduce a portfolio's risk of loss, it may also limit a portfolio's opportunity for gains or result in losses by offsetting or limiting a portfolio's ability to participate in favorable price movements in portfolio investments.

Use of derivatives for non-hedging purposes may result in losses which would not be offset by increases in the value of portfolio securities or declines in the cost of securities to be acquired. In the event that a portfolio enters into a derivatives transaction as an alternative to purchasing or selling the underlying instrument or in order to obtain desired exposure to an index or market, a portfolio will be exposed to the same risks as are incurred in purchasing or selling the underlying instruments directly as well as additional risks associated with derivatives transactions, such as counterparty credit risk.

The use of certain derivatives transactions, including OTC derivatives, involves the risk of loss resulting from the insolvency or bankruptcy of the counterparty to the contract or the failure by the counterparty to make required payments or otherwise comply with the terms of the contract. In the event of default by a counterparty, a portfolio may have contractual remedies pursuant to the agreements related to the transaction, but there is no guarantee that the Portfolio will be able to enforce such contractual remedies in a timely manner, or at all.

While some derivatives are cleared through a regulated central clearinghouse, many derivatives transactions are not entered into or traded on exchanges or in markets regulated by the CFTC or the SEC. Instead, such bi-lateral OTC derivatives are entered into directly by a portfolio and a counterparty. OTC derivatives transactions can only be entered into with a willing counterparty that is approved by the adviser. Where no such counterparty is available, a portfolio will be unable to enter into a desired OTC transaction.

A portfolio may be required to make physical delivery of portfolio securities underlying a derivative in order to close out a derivatives position or to sell portfolio securities at a time or price at which it may be disadvantageous to do so in order to obtain cash to close out or to maintain a derivatives position.

As a result of the structure of certain derivatives, adverse changes in, among other things, interest rates, volatility or the value of the underlying instrument can result in losses substantially greater than the amount invested in the derivative itself. Certain derivatives have the potential for unlimited loss, regardless of the size of the initial investment.

Certain derivatives may be considered illiquid and therefore subject to a portfolio's limitation on investments in illiquid securities.

Derivatives transactions conducted outside the United States may not be conducted in the same manner as those entered into on U.S. exchanges, and may be subject to different margin, exercise, settlement or expiration procedures. Brokerage commissions, clearing costs and other transaction costs may be higher on foreign exchanges. Many of the risks of OTC derivatives transactions are also applicable to derivatives transactions conducted outside the United States. Derivatives transactions conducted outside the United States are subject to the risk of governmental action affecting the trading in, or the prices of, foreign securities, currencies and other instruments. The value of such positions could be adversely affected by foreign political and economic factors; lesser availability of data on which to make trading decisions; delays in a portfolio's ability to act upon economic events occurring in foreign markets; and less liquidity than U.S. markets.

Currency derivatives are subject to additional risks. Currency derivatives transactions may be negatively affected by government exchange controls, blockages, and manipulations. Currency exchange rates may be influenced by factors extrinsic to a country's economy. There is no systematic reporting of last sale information with respect to foreign currencies. As a result, the available information on which trading in currency derivatives will be based may not be as complete as comparable data for other transactions. Events could occur in the foreign currency market which will not be reflected in currency derivatives until the following day, making it more difficult for a portfolio to respond to such events in a timely manner.

OTC Options. Unlike exchange-traded options, which are standardized with respect to the underlying instrument, expiration date, contract size and strike price, the terms of OTC options generally are established through negotiation between the parties to the options contract. Unless the counterparties provide for it, there is no central clearing or guaranty function for an OTC option. Therefore, OTC options are subject to the risk of default or non-performance by the counterparty to a greater extent than exchange-traded options.

Additional Risks of Options Transactions. The risks associated with options transactions are different from, and possibly greater than, the risks associated with investing directly in the underlying instruments. Options are highly specialized instruments that require investment techniques and risk analyses different from those associated with other portfolio investments. Options may be subject to the risk factors generally applicable to derivatives transactions described herein, and may also be subject to certain additional risk factors, including:

- The exercise of options written or purchased by a portfolio could cause a portfolio to sell portfolio securities, thus increasing a portfolio's portfolio turnover.
- A portfolio pays brokerage commissions each time it writes or purchases an option or buys or sells an underlying security in connection with the exercise of an option. Such brokerage commissions could be higher relative to the commissions for direct purchases of sales of the underlying securities.
- A portfolio's options transactions may be limited by limitations on options positions established by the SEC, the CFTC or the exchanges on which such options are traded.
- The hours of trading for exchange listed options may not coincide with the hours during which the underlying securities are traded. To the extent that the options markets close before the markets for the underlying securities, significant price and rate movements can take place in the underlying securities that cannot be reflected in the options markets.
- Index options based upon a narrower index of securities or other assets may present greater risks than options based on broad market indexes, as narrower indices are more susceptible to rapid and extreme fluctuations as a result of changes in the values of a small number of securities or other assets.
- A portfolio is subject to the risk of market movements between the time that an option is exercised and the time of performance

thereunder, which could increase the extent of any losses suffered by a portfolio in connection with options transactions.

Foreign Currency Forward Exchange Contracts and Currency Futures. A portfolio may enter into foreign currency forward exchange contracts. Unanticipated changes in currency prices may result in losses to a portfolio and poorer overall performance for a portfolio than if it had not entered into foreign currency forward exchange contracts. At times, a portfolio may also enter into "cross-currency" hedging transactions involving currencies other than those in which securities are held or proposed to be purchased are denominated. Forward contracts may limit gains on portfolio securities that could otherwise be realized had they not been utilized and could result in losses. The contracts also may increase a portfolio's volatility and may involve a significant amount of risk relative to the investment of cash. While a portfolio seeks to hedge against its currency exposures, there may be occasions where it is not viable or possible to ensure that the hedge will be sufficient to cover a portfolio's total exposure.

Additional Risk of Futures Transactions. The risks associated with futures contract transactions are different from, and possibly greater than, the risks associated with investing directly in the underlying instruments. Futures are highly specialized instruments that require investment techniques and risk analyses different from those associated with other portfolio investments. Futures may be subject to the risk factors generally applicable to derivatives transactions described herein, and may also be subject to certain additional risk factors, including:

The risk of loss in buying and selling futures contracts can be substantial. Small price movements in the commodity underlying a futures position may result in immediate and substantial loss (or gain) to a portfolio.

Buying and selling futures contracts may result in losses in excess of the amount invested in the position in the form of initial margin. In the event of adverse price movements in the underlying commodity, security, index, currency or instrument, a portfolio would be required to make daily cash payments to maintain its required margin. A portfolio may be required to sell portfolio securities, or make or take delivery of the underlying securities in order to meet daily margin requirements at a time when it may be disadvantageous to do so. A portfolio could lose margin payments deposited with a futures commodities merchant if the futures commodities merchant breaches its agreement with a portfolio, becomes insolvent or declares bankruptcy.

Most exchanges limit the amount of fluctuation permitted in futures contract prices during any single trading day. Once the daily limit has been reached in a particular futures contract, no trades may be made on that day at prices beyond that limit. If futures contract prices were to move to the daily limit for several trading days with little or no trading, a portfolio could be prevented from prompt liquidation of a futures position and subject to substantial losses. The daily limit governs only price movements during a single trading day and therefore does not limit a portfolio's potential losses.

Index futures based upon a narrower index of securities may present greater risks than futures based on broad market indexes, as narrower indexes are more susceptible to rapid and extreme fluctuations as a result of changes in value of a small number of securities.

Warrants. Warrants are equity securities in the form of options issued by a corporation which give the holder the right, but not the obligation, to purchase stock, usually at a price that is higher than the market price at the time the warrant is issued. A purchaser takes the risk that the warrant may expire worthless because the market price of the common stock fails to rise above the price set by the warrant.

Rights. A portfolio may purchase rights for equity securities. If a portfolio purchases a right, it takes the risk that the right might expire worthless because the market value of the common stock falls below the price fixed by the right.

General Risks of Swaps. A portfolio may enter into swaps directly or indirectly (including through Risk Premia Investments). The risks associated with swap transactions are different from, and possibly greater than, the risks associated with investing directly in the underlying instruments. Swaps are highly specialized instruments that require investment techniques and risk analyses different from those associated with other portfolio investments. The use of swaps requires an understanding not only of the underlying instrument but also of the swap contract itself. Swap transactions may be subject to the risk factors generally applicable to derivatives transactions described above, and may also be subject to certain additional risk factors. In addition to the risk of default by the counterparty, if the creditworthiness of a counterparty to a swap agreement declines, the value of the swap agreement would be likely to decline, potentially resulting in losses.

In addition, the U.S. government has enacted legislation that provides for new regulation of the derivatives market, including clearing, margin, reporting, and registration requirements, which could restrict a portfolio's ability to engage in derivatives transactions or increase the cost or uncertainty involved in such transactions. The European Union (and some other countries) are implementing similar requirements, which will affect a portfolio when it enters into a derivatives transaction with a counterparty organized in that country or otherwise subject to that country's derivatives regulations.

For example, the U.S. government and the European Union have adopted mandatory minimum margin requirements for OTC derivatives. The AIP Hedge Fund team expects that a portfolio's transactions will become subject to variation margin requirements under such rules in 2017 and initial margin requirements under such rules in 2020. Such requirements could increase the amount of margin a portfolio needs to provide in connection with its derivatives transactions and, therefore, make derivatives transactions more expensive.

These and other new rules and regulations could, among other things, further restrict a portfolio's ability to engage in, or increase the cost to a portfolio of, derivatives transactions, for example, by making some types of derivatives no longer available to a portfolio or otherwise limiting liquidity. A portfolio may be unable to execute its investment strategy as a result. The costs of derivatives transactions are expected to increase as clearing members raise their fees to cover the costs of additional capital requirements and other regulatory changes applicable to the clearing members become effective. These rules and regulations are new and evolving, so their potential impact on a portfolio and the financial system are not yet known. While the new rules and regulations and central clearing of some derivatives transactions are designed to reduce systemic risk (i.e., the risk that the interdependence of large derivatives dealers could cause them to suffer liquidity, solvency or other challenges simultaneously), there is no assurance that they will achieve that result, and in the meantime, as noted above, central clearing and related requirements expose a portfolio to new kinds of costs and risks.

Interest Rate Swaps, Caps, Floors and Collars. A portfolio may enter into interest rate swaps, which do not involve the delivery of securities, other underlying assets, or principal. Accordingly, the risk of loss with respect to interest rate and total rate of return swaps includes the net amount of interest payments that a portfolio is contractually obligated to make. A portfolio may also buy or sell interest rate caps, floors and collars, which may be less liquid than other types of swaps.

Currency Swaps. Currency swap agreements may be entered into on a net basis or may involve the delivery of the entire principal value of one designated currency in exchange for the entire principal value of another designated currency. In such cases, the entire principal value of a currency swap is subject to the risk that the counterparty will default on its contractual delivery obligations.

Credit Default Swaps. A portfolio may be either the buyer or seller in a credit default swap. As the buyer in a credit default swap, a portfolio would pay to the counterparty the periodic stream of payments. If no default occurs, a portfolio would receive no benefit from the contract. As the seller in a credit default swap, a portfolio would receive the stream of payments but would be subject to exposure on the notional amount of the swap, which it would be required to pay in the event of default. The use of credit default swaps could result in losses to a portfolio if the Adviser fails to correctly evaluate the creditworthiness of the issuer of the referenced debt obligation.

Combined Transactions. Combined transactions involve entering into multiple derivatives transactions instead of a single derivatives transaction in order to customize the risk and return characteristics of the overall position. Combined transactions typically contain elements of risk that are present in each of the component transactions. Because combined transactions involve multiple transactions, they may result in higher transaction costs and may be more difficult to close out.

Other Instruments and Future Developments. A portfolio may take advantage of opportunities in the area of swaps, options on various underlying instruments and swaptions and certain other customized "synthetic" or derivative investments in the future. In addition, a portfolio may take advantage of opportunities with respect to certain other "synthetic" or derivative instruments which are not presently available, but which may be developed to the extent such opportunities are both consistent with a portfolio's investment objective and legally permissible for a portfolio.

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