Morgan Stanley
INVESTMENT MANAGEMENT

Systematic Liquid Alternatives

A new perspective on alpha

June 2024

Please see important disclosures at the end of this document.

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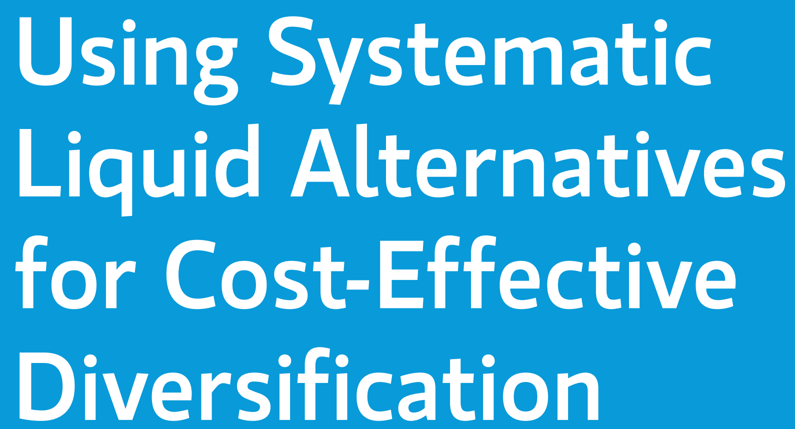
Key Takeaways

- The failure of traditional sources of diversification in recent years has underscored the need for additional tools to diversify portfolios. We believe that liquid alternatives may serve a key role in addressing this diversification dilemma.
- Our understanding of alpha has evolved alongside the evolution of the alternative investment landscape. We believe that alternative risk premia (ARP) — market factors once lumped in with alpha — are a compelling option for use in liquid alternative funds given their liquidity, low or negative correlation with equity and fixed income, and low-cost implementation.
- We believe including a portfolio of ARP in a 60% equity / 40% bond portfolio may have improved risk-adjusted return over the past eight years.
- Portfolios of alternative risk premia can serve other portfolio purposes, such as complementing traditional multi-asset positions and addressing gaps in hedge fund strategies.


Using Systematic
Liquid Alternatives
for Cost-Effective
Diversification

The painful failures of traditional sources of diversification in recent years have crystallized the need to incorporate truly uncorrelated, complementary sources of return into traditional portfolios, beyond the classic 60% equity / 40% bond mix. Equity and fixed income indexes ended 2023 near their highest correlation on record, as these two assets comprising the universal standard 'balanced portfolio' moved in relative lockstep for most of the preceding 24 months. *Display 1* shows that this stretch was no fluke: the two asset classes have historically gone through long stretches of significant positive correlation.

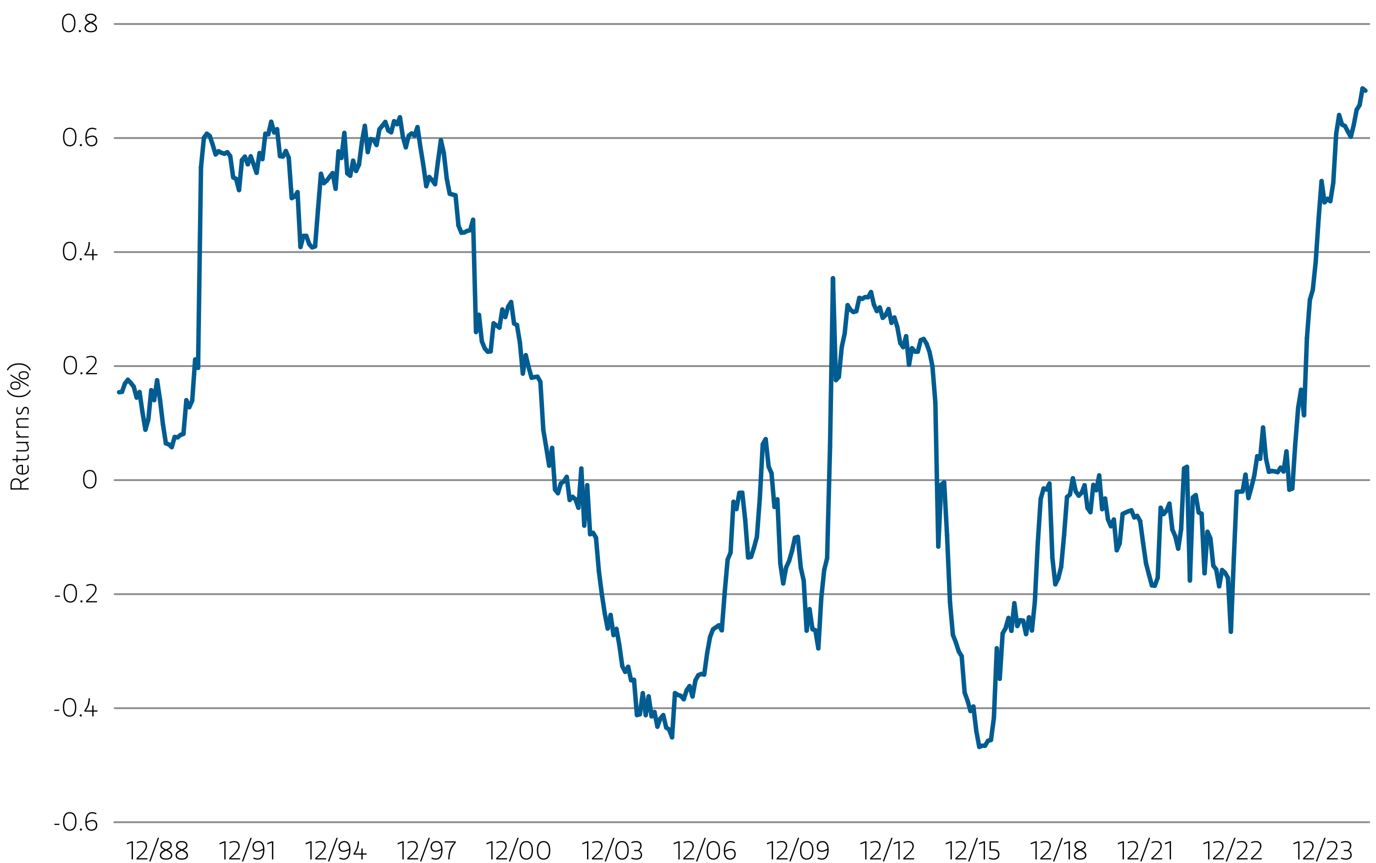
Investors have responded with increasing interest in alternative investments, to pursue greater downside mitigation and gain differentiated market exposures. Over the past several decades, the universe of alternatives experienced substantial growth, and evolved to encompass myriad asset classes, structures, and strategies.

Hedge funds, in particular, have long been a popular vehicle for accessing these differentiated exposures. Hedge fund returns are often generated with very little reliance on the overall market, meaning the alpha generated is typically diversifying to traditional stock and bond investments. As the universe of hedge funds and other alternative assets has grown and evolved, so too has our understanding of the drivers of their returns. **As a result, we now have a more granular picture of alpha as a combination of three elements: skill, the liquidity premium, and alternative risk premia (ARP).** We believe this insight into alpha has important positive implications for investors seeking new tools for diversification through liquid alternative funds.

DISPLAY 1

The value of bonds as diversifiers has fallen as their correlation with stocks has grown

Correlation of Global Equities and Bonds



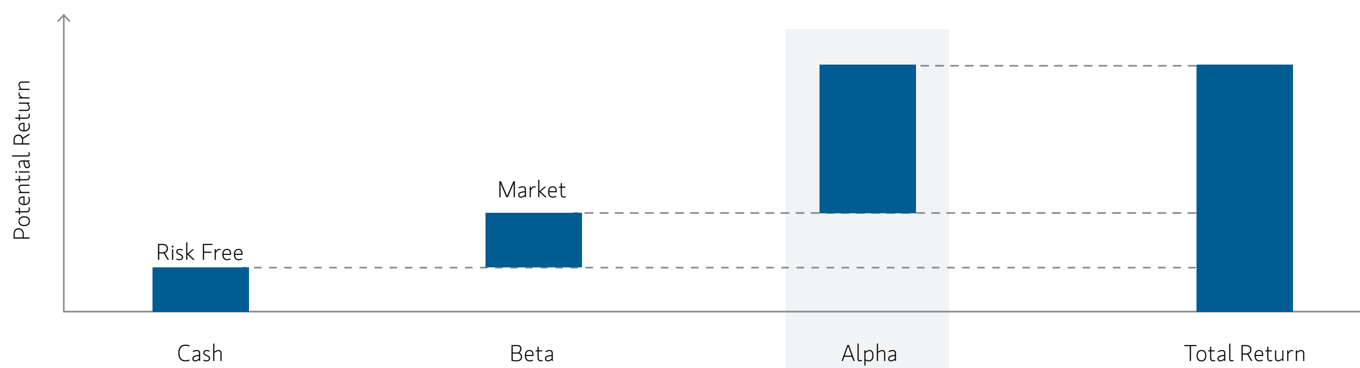
Source: Bloomberg U.S. Aggregate and S&P 500 from July 31, 1985 - December 31, 2023.

A New Perspective on Alpha

Our beliefs around alpha sources build on the concepts that were originated in the 1960s with the Capital Asset Pricing Model (CAPM, Jack Treynor, William Sharpe and others), which was later expanded into the Three-Factor Model in the 1990s (Fama and French). These practitioners determined that, broadly speaking, a fund's total return can be decomposed into three parts: cash, beta (or exposure to market premia), and alpha *(Display 2)*.

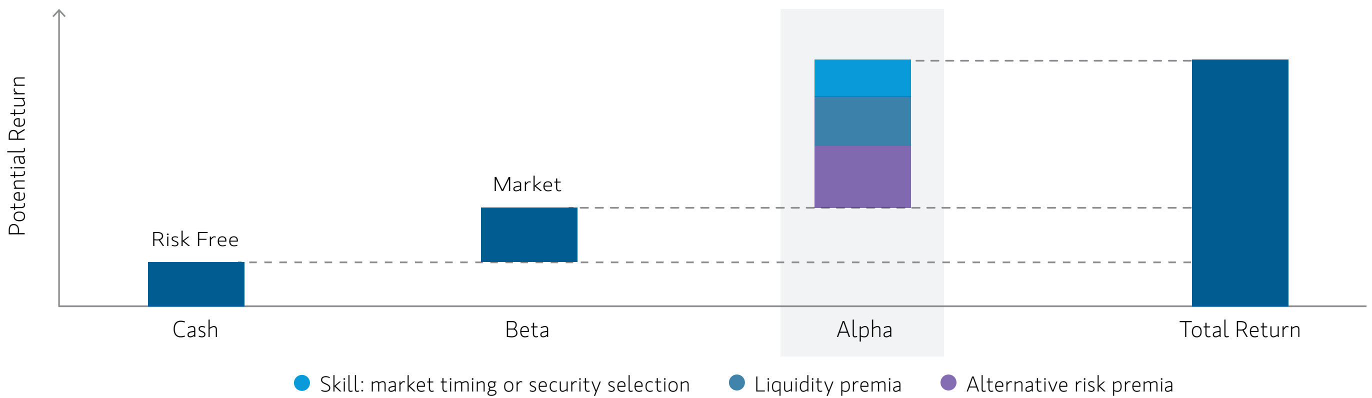
DISPLAY 2

Initially, all alpha was attributed to skill…



DISPLAY 3

...but skill is now viewed as one of three kinds of alpha



Source: MSIM Hedge Funds.

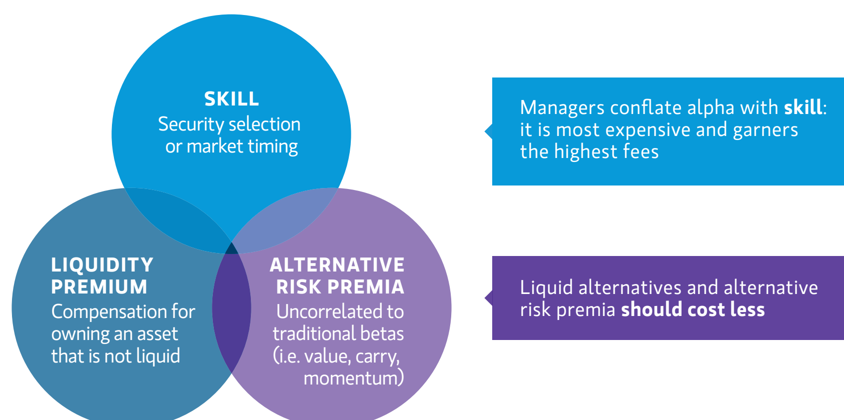
In early iterations, when these models were applied to alternative investments such as hedge funds, all alpha generation was attributed to manager skill. But the growth of strategies and asset classes commonly employed by hedge funds has refined our understanding of their return drivers: We have found that part of the return that had been attributed to skill, may actually have been the result of exposure to two other sources—various alternative risk premia (ARP) or the liquidity premium (*Display 3*).

Hedge funds and other alternative investments typically offer some combination of these three alpha types—skill, ARP, and the liquidity premium. The recognition of three different alpha types opens a more transparent window for alternatives investors to know what they own.

This insight has key implications for investors when considering both the fees associated with investing in alternative assets and the structure used to access each alpha source. Skill commands the highest fees (correctly, in our view) for the value delivered in terms of investment selection and timing. Plus, managers often have investment theses which may take time to play out, or managers may seek to capture the liquidity premium in more thinly traded or less liquid securities. Thus, we believe many hedge fund strategies are not well suited for daily liquid fund structures. As a result, hedge funds are generally offered through limited partnerships offered to qualified purchasers, usually with limited liquidity. Alternative risk premia, however, are not reliant on unique skill and are implemented in a rules-based process. Thus, we believe that ARP can potentially be offered more inexpensively to investors compared with skill-based alpha, and are well suited in open-end funds with daily liquidity.

DISPLAY 4

Recognizing alpha as three components helps investors *know what they own*



Managers conflate alpha with **skill**: it is most expensive and garners the highest fees

Liquid alternatives and alternative risk premia **should cost less**

The statements above reflect the views and opinions of the MSIM Hedge Funds Team as of the date hereof and not as of any future date, and will not be updated or supplemented.

Looking Under the ARP Hood

In financial terminology, a risk premium is the extra potential reward investors expect to receive relative to an appropriate reference. For example, the equity risk premium compensates investors for assuming systematic market risk (or beta) which is the equity market's return over the risk-free rate.[1]

As the name suggests, the concept underlying alternative risk premia is the potential reward to an investor for taking on risk that is 'alternative' to traditional market risks or traditional beta. These risk premia often seek to exploit the fact that the performance of different groups of securities is linked by shared factors like size, value, growth, momentum, and carry. Alternative risk premia are structured in a long/short fashion, which enables managers to isolate the risk premium associated with each factor.

[1] More precisely, beta is the coefficient in the CAPM expected return formula that is used to describe the volatility of a stock or portfolio relative to the broad market. By definition, the beta of the broad market—say, the S&P 500—is 1. In the CAPM formula it would be expressed as 1 x the equity premium (the market return minus the risk-free return). Of course, the excess return implied by the equity premium—or any other risk premium—may never be realized over any given investment horizon; that is the nature of risk. But the price of equities must reflect a valuation that includes a risk premium that assumes anticipated performance is realized.

Consider this example. A manager who seeks to take advantage of the size premium, which refers to the tendency of small caps to outperform larger stocks over the long term, can simultaneously establish a long position in small-caps and a short position in large-caps. Any sentiment driving the market as a whole will affect both groups equally, but oppositely. The result is that the manager will capture the pure premium small-cap stocks may deliver over large-caps, independent of fluctuations in the broad market beta.

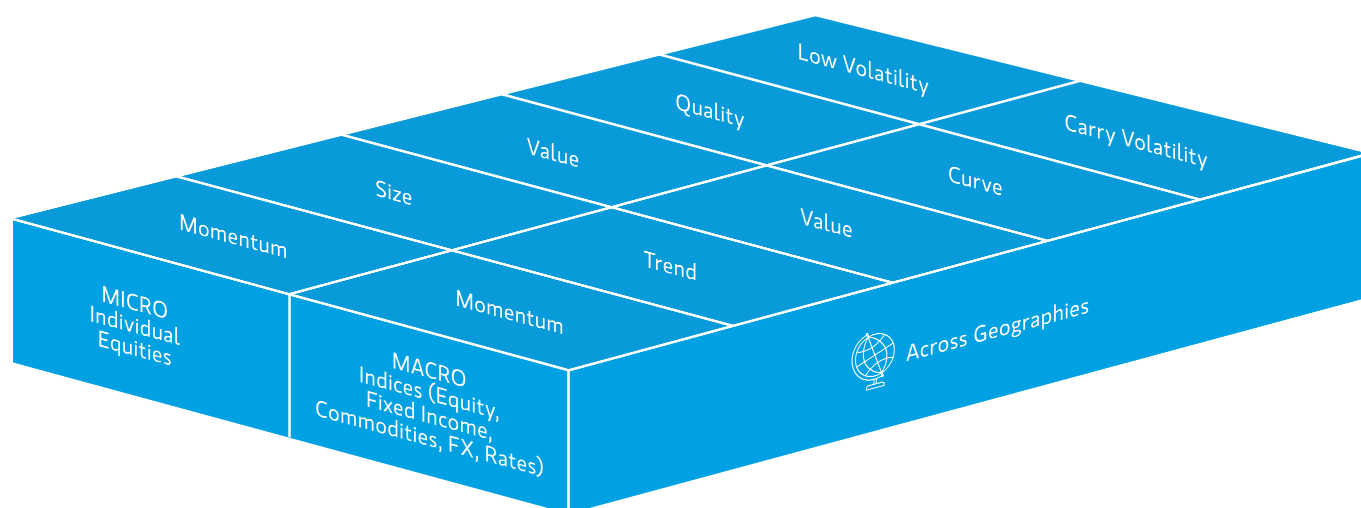
Size is just one of many risk premia, which span all geographies and, importantly, multiple asset classes, including equities, rates, commodities, currencies.

In addition to size, *Display 5* highlights commonly used ARP, which often result from recurring investor behavior patterns or structural conditions.

For example, **momentum** refers to the herding behavior of investors when they "chase winners and sell losers." When stocks trade at below fair value, they can be classified as **value** stocks, based on the expectation that their prices will increase as they revert to the mean. **Growth** stocks are ones with high valuations in anticipation of above-average earnings growth, and are often the counterpart to value in ARP strategies. Investor mispricing of asset yields may lead to **carry** opportunities where investments that offer higher yields tend to outperform.

DISPLAY 5

ARP span all geographies and asset classes, including equities, rates, commodities, and currencies



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

Potential Benefits of Investing in ARP

DIVERSIFICATION

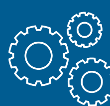
The most obvious benefit is the potential benefit an investor could receive in exchange for taking on a specific exposure. Many alternative risk premia exhibit low correlations to traditional portfolio investments potentially making them good portfolio diversifiers.

TRANSPARENCY

If accessed via bank swaps, the banks are required to document the universe of investments and metrics around how the index is constructed and trades. These are published and provide a good degree of transparency for those willing to conduct thorough due diligence.

LIQUIDITY

Alternative risk premia are often accessed in the form of bank swaps on indexes which implement the established ruleset. These indexes have daily pricing and, depending on the terms of the swap, the premia can usually be exited quickly, thus allowing them to be offered in a daily liquid fund structure.



EFFICIENCY

Alternative risk premia can be cost efficient and potentially capital efficient. Many risk premia funds do not have performance fees and can be cheaper than other sources of alternative exposures. When implemented through bank swaps, they require less capital commitment for leverage purposes. Thus any unencumbered cash can be invested in cash/cash equivalents, potentially generating prevailing market interest rates.

Please see important risk factors associated with investing in ARP at the end.

Using ARP as Building Blocks for Portfolio Diversification

While individual alternative risk premia typically access a rewarded factor, meaning a factor that has a positive expected return over the long term, on a stand-alone basis each individual factor is not necessarily expected to generate consistent, absolute returns. Factors may be in favor at different times depending on prevailing market or economic conditions, and there can be prolonged stretches of underperformance by individual risk premia, as investors with exposure to the equity value factor in the 2010s can attest. However, individual ARP have demonstrated little or no intra-strategy correlation with one another, and typically have low correlation to traditional markets, making them attractive portfolio "building blocks" *(Display 6)*. Thus, we believe that their highest utility comes from combining multiple ARP strategies into a single diversified portfolio.

DISPLAY 6

Individual alternative risk premia may have low correlations to traditional markets

Correlation of Risk Premia

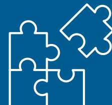
		Equity					Commodity		Rates		Currencies			
		ELV	EM	EQ	EV	MAT	CCC	CB	RCC	RC	FXV	FXC	MSCI	BBG
Equity	Low Volatility (ELV)	1.00	–	–	–	–	–	–	–	–	–	–	–	–
	Momentum (EM)	0.31	1.00	–	–	–	–	–	–	–	–	–	–	–
	Quality (EQ)	0.22	0.40	1.00	–	–	–	–	–	–	–	–	–	–
	Value (EV)	(0.25)	(0.75)	(0.63)	1.00	–	–	–	–	–	–	–	–	–
	Multi Asset Trend (MAT)	0.11	0.22	(0.02)	(0.12)	1.00	–	–	–	–	–	–	–	–
Commodity	Curve Carry (CCC)	0.01	(0.01)	(0.02)	(0.01)	(0.05)	1.00	–	–	–	–	–	–	–
	Backwardation (CB)	0.10	0.05	(0.09)	0.04	0.18	0.02	1.00	–	–	–	–	–	–
Rates	Curve Carry (RCC)	(0.06)	(0.05)	(0.08)	0.09	0.15	0.02	0.01	1.00	–	–	–	–	–
	Rates Carry (RC)	0.06	0.01	(0.08)	0.01	0.13	(0.06)	0.06	0.03	1.00	–	–	–	–
Currencies	FX Value (FXV)	0.05	(0.02)	0.05	(0.00)	(0.20)	0.12	(0.00)	(0.11)	(0.09)	1.00	–	–	–
	FX Carry (FXC)	0.02	(0.01)	(0.15)	0.10	0.20	0.09	0.05	0.08	0.16	0.06	1.00	–	–
	MSCI World Gross (LCL) (MSCI)	(0.12)	(0.16)	(0.18)	0.16	0.18	(0.03)	0.16	0.12	0.27	(0.14)	0.12	1.00	–
	Bloomberg US Treasury (BBG)	0.29	0.23	0.28	(0.43)	(0.05)	0.06	(0.05)	(0.11)	0.01	0.08	(0.15)	(0.19)	1.00

Source: MSIM Hedge Funds, Bloomberg. MSCI World Gross and Bloomberg U.S. Treasury. Correlation of weekly returns measured from January 7, 2011 - May 10, 2024.

How Allocations to Liquid Alternatives Can Enhance Portfolios

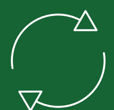
AS A COMPLEMENT TO TRADITIONAL MULTI-ASSET POSITIONS

Introducing ARP to a broader portfolio of traditional asset classes may provide greater diversification and drawdown protection during periods when they all exhibit high correlations. ARP can also supplement or replace the fixed-income allocation as a diversifier to equities, without adding duration exposure.



FOR HEDGE FUND PORTFOLIO COMPLETION

By addressing gaps and concentrations in existing factors, inclusion of an ARP allocation in a hedge fund portfolio could add diversification, balance and cost effectiveness, in a structure better able to adapt to market regime changes.



AS A SUBSTITUTE FOR HEDGE FUND POSITIONS

We believe traditional hedge funds and commodity trading adviser (CTA) structures offer valuable alpha opportunities—specifically those derived from either skill or liquidity premium—that ARP funds are not designed to provide. But when investing in hedge funds or CTAs is structurally difficult, for liquidity, transparency, or governance reasons, ARP is a strong alternative.

AS THE "LIQUID END" OF A BROADLY DIVERSIFIED PORTFOLIO OF ALTERNATIVE INVESTMENTS

Dedicated alternatives portfolios are often less liquid, especially those with high allocations to private equity or credit. As such, they hold high levels of cash to manage redemptions and meet capital commitments, which can create a cash drag. Allocation to an ARP portfolio provides opportunity for "cash-plus" returns—an improvement over idle cash.

A New Alpha Allocation for the 21st Century

Evolution in the alternative investment space has allowed us to evaluate and extrapolate different sources of alpha more effectively. We believe alternative risk premia — one of these alpha sources — can offer the diversification that traditional assets have struggled to provide, complement traditional multi-asset positions, and address gaps in hedge fund strategies all in a liquid, low-cost, and transparent format.

INDEX & DEFINITIONS:

Alpha: the excess return of an asset not explained by systematic (market) risk

Beta: the sensitivity of the return of an investment to the returns in a market as a whole

Bloomberg U.S. Aggregate: A broad-based flagship benchmark that measures the investment grade, US dollar denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, fixed rate agency MBS, ABS and CMBS (agency and non-agency).

Bloomberg U.S. Treasury: Measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint but are part of a separate Short Treasury Index. STRIPS are excluded from the index because their inclusion would result in double-counting.

MSCI World: A free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets.

S&P 500: Widely regarded as the standard for measuring large-cap U.S. stock market performance, this popular index includes a representative sample of 500 leading companies in leading industries.

Volatility: A statistical measure of the tendency of a market or security to rise or fall sharply withing a period of time - usually measured by standard deviation.

IMPORTANT DISCLOSURES:

Diversification does not eliminate the risk of loss. Alternative investment funds are often unregulated, are not subject to the same regulatory requirements as mutual funds, and are not required to provide periodic pricing or valuation information to investors. The investment strategies described in the preceding pages may not be suitable for your specific circumstances; accordingly, you should consult your own tax, legal or other advisors, at both the outset of any transaction and on an ongoing basis, to determine such suitability.

The views and opinions and/or analysis expressed are those of the author or the investment team as of the date of preparation of this material and are subject to change at any time without notice due to market or economic conditions and may not necessarily come to pass. Furthermore, the views will not be updated or otherwise revised to reflect information that subsequently becomes available or circumstances existing, or changes occurring, after the date of publication. The views expressed do not reflect the opinions of all investment personnel at Morgan Stanley Investment Management (MSIM) and its subsidiaries and affiliates (collectively "the Firm"), and may not be reflected in all the strategies and products that the Firm offers.

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SUMMARY OF RISK FACTORS

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 in this Presentation.

Projections. The portfolio may make investments relying upon projections developed by the Investment Adviser or other third party source concerning such company's future performance and cash flow, or the structure and persistence of a risk premia opportunity. Projections are inherently subject to uncertainty and factors beyond the control of the Investment Adviser, the issuer or such other sources. The inaccuracy of certain assumptions, the failure to satisfy certain financial requirements and the occurrence of other unforeseen events could impair the ability of an issuer in which the portfolio invests (or to which it obtains exposure through a swap or other derivative) to realize projected values.

Availability of Investment Opportunities for the portfolio. The business of identifying and structuring investments in, or related to, the types contemplated by the portfolio is competitive and involves a high degree of uncertainty. Furthermore, the availability of investment opportunities generally is subject to market conditions and competition from other investors as well as the prevailing regulatory or political climate. The portfolio may incur significant expenses investigating potential investments which are ultimately not consummated, including expenses relating to due diligence, transportation, legal expenses, and the fees of other third-party advisors. Even if attractive investment opportunities are identified by the portfolio management team, there is no certainty that the portfolio will be permitted to invest in such opportunity (or invest in such opportunity to the fullest extent desired). Accordingly, there can be no assurance that the Investment Adviser will be able to identify and complete attractive investments in the future or that it will be possible to invest fully Investors' subscriptions to the portfolio, as the case may be. In addition, the Investment Adviser may not be able to obtain as favorable terms as it would otherwise in a less competitive investment environment.

Expedited Transactions. Investment analyses and decisions by the Investment Adviser may frequently be required to be undertaken on an expedited basis to take advantage of investment opportunities. In such cases, the information available to the Adviser at the time of an investment decision may be limited and the Investment Adviser may not have access to detailed information regarding the investment opportunity, in each case, to an extent that may not otherwise be the case had the Investment Adviser been afforded more time to evaluate the investment opportunity. Therefore, no assurance can be given that the Investment Adviser will have knowledge of all circumstances that may adversely affect an investment.

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 Adviser 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 is limited to 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.

Global Pandemics. Portfolios are subject to market risk, which is the possibility that the market values of securities owned by the portfolio will decline and that the value of portfolio shares may therefore be less than what you paid for them. Market values can change daily due to economic and other events (such as natural disasters, epidemics and pandemics, terrorism, conflicts and social unrest) that affect markets generally, as well as those that affect particular regions, countries, industries, companies or governments. It is difficult to predict when events may occur, the effects they may have (e.g. adversely affect the liquidity of the portfolio), and the duration of those effects.

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