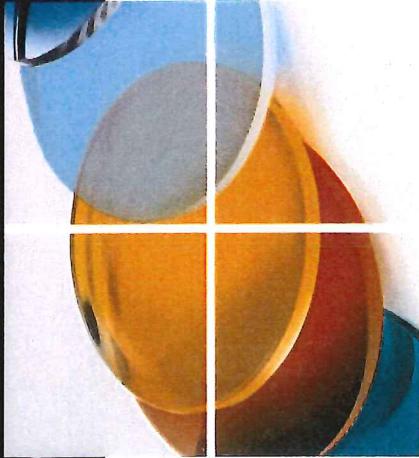


Goldman
Sachs

Alpha Strategies Portfolio Proposal For MassPRIM

February 2014



CONFIDENTIAL INFORMATION-EXEMPT FROM PUBLIC DISCLOSURE

The information contained herein is non-public and proprietary in nature and may constitute trade secrets under Massachusetts law, the disclosure of which could have adverse effects on Goldman Sachs or the Strategies described herein and its investments. This information includes a detailed account of investment strategy based on proprietary methods and techniques of financial analysis and valuation, which is used in Goldman Sachs' business and which provides Goldman Sachs an advantage over those who do not know of or use such methods and techniques. The following confidential information was prepared by Goldman Sachs solely in connection with a proposed investment in the Strategies described herein by MassPRIM and may not be disclosed, reproduced or used for any other purposes. The following confidential information may be exempted from public disclosure under Massachusetts law, including pursuant to Chapter 4, Section 7(twenty sixth) of the Massachusetts General Laws. Any information provided in connection with the Strategies must be returned upon request of Goldman Sachs. Please advise Goldman Sachs if MassPRIM is subject to any additional entity-specific (including, but not limited to, pursuant to internal policies) Freedom of Information Act or similar open records disclosure requirements before any disclosure pursuant to such requirements is made.

PURSUANT TO AN EXEMPTION FROM THE COMMODITY FUTURES TRADING COMMISSION IN CONNECTION WITH ACCOUNTS OF QUALIFIED ELIGIBLE PERSONS, THIS BROCHURE OR ACCOUNT DOCUMENT IS NOT REQUIRED TO BE, AND HAS NOT BEEN, FILED WITH THE COMMISSION. THE COMMODITY FUTURES TRADING COMMISSION DOES NOT PASS UPON THE MERITS OF PARTICIPATING IN A TRADING PROGRAM OR UPON THE ADEQUACY OR ACCURACY OF COMMODITY TRADING ADVISOR DISCLOSURE. CONSEQUENTLY, THE COMMODITY FUTURES TRADING COMMISSION HAS NOT REVIEWED OR APPROVED THIS TRADING PROGRAM OR THIS BROCHURE OR ACCOUNT DOCUMENT.

For MassPRIM Use Only - Not for further distribution

Advanced Investment Strategies (AIS) operates within Goldman Sachs International. It should be noted that Goldman Sachs International employs personnel operating within the Goldman Sachs Investment Management Division and personnel operating within the Goldman Sachs Securities Division, each of which may owe different legal duties to its clients and customers.

Please note that certain areas of Goldman Sachs Investment Management Division, including Goldman Sachs Asset Management, claim compliance with the Global Investment Performance Standards (GIPS®), while AIS does not.

These materials are intended to form the basis for a preliminary discussion around Alternative Beta strategies, which can be implemented through a variety of investment products and services. Before making any investment, details about those specific products and services, including their fees, expenses and past performance, must be provided to you.

Throughout this presentation, the start dates for the simulated data coincide with the start dates for the relevant hedge fund comparable indices, because the calculations for the simulations depend on the availability of the comparable indices data. For the GS-AB Trend UCITS Strategy the start date is 2 months after the start date of the comparable indices, as the algorithm needs a few months to initialize.

The algorithms used to create the strategies in this book may be adjusted from time to time, resulting in a modification to the approach of replicating the various strategies.

Each of HFR/HFRX Indices are a trademark of Hedge Fund Research, Inc. ("HFR"). HFR has not participated in the preparation of this document. HFR does not endorse or approve this document or any Goldman Sachs or GSAM product or fund.

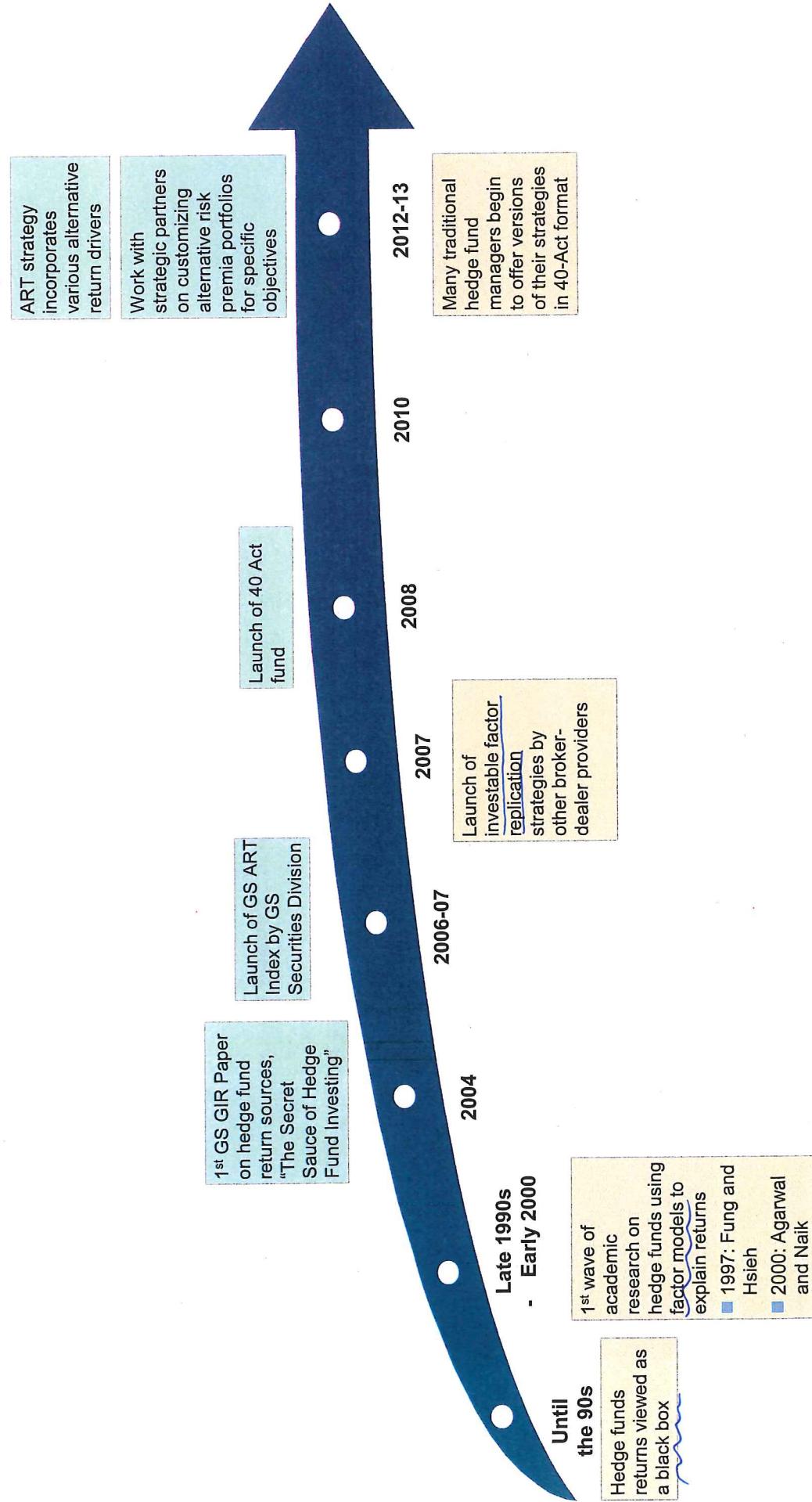
Table of Contents

- I. MassPRIM Objective and Overview of the Alpha Strategies
- II. List of Alpha Strategies
- III. Background of Alpha Strategies

Appendix

- I. Overview of Advanced Investment Strategies
- II. Important Information

Hedge Fund Replication History



Background

Search for Attractive Stable Long Term Risk Adjusted Returns – Traditional Approach

Methodology

- The Portfolio Construction **Methodology** combines a diverse set of Alpha Strategies
- **Alpha Strategies** have been constructed to be economically intuitive as well as non-directional in nature
- The Portfolio Construction allocates to each Strategy based on **Equal Risk Framework**
- Portfolio is constructed by design with the goal of providing **Improved Liquidity, Enhanced Transparency, and Cost-effectiveness**

Portfolio Management

- The AJS Portfolio Management team has conducted extensive research on **Hedge Fund Strategies** and leverages the resources of **Goldman Sachs** to construct models.
- Models have been constructed with the aim of reacting to changing market environments, however, there is a **Formal Process** to enhance models in the case of unforeseen market developments.

System Strategists

- **Research Assistant** has been developed in house to provide a flexible and efficient research platform
 - Built to leverage the firm wide technology infrastructure
 - Allows for an efficient transition from research to production
 - Cost effectiveness is possible due to economies of scale

Overview of Alpha Strategies

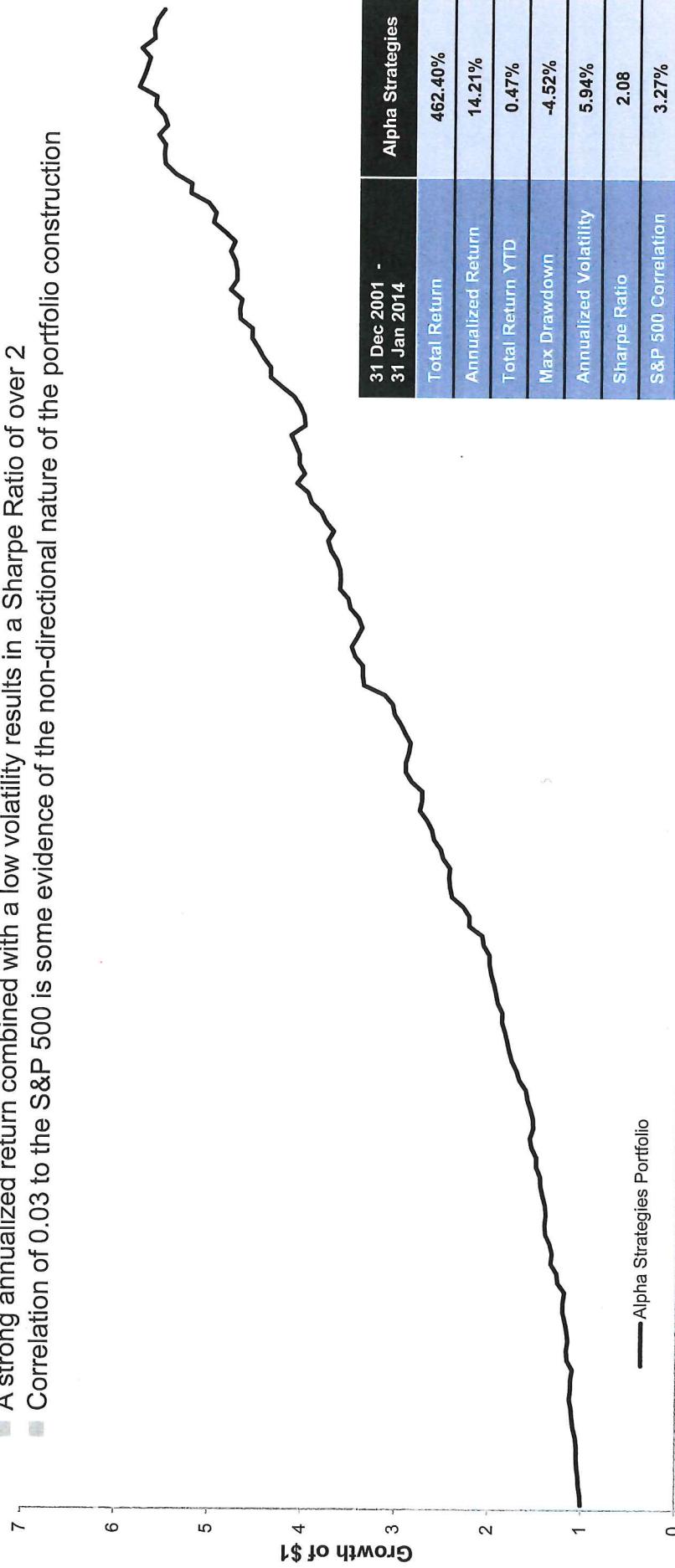
Alpha Strategy	Hedge Fund Strategy Classification	S&P 500 R Values	Summary Description
Credit Curve	Relative Value	0.51	Seeks to capture the risk premium in credit spreads across the curve in CDS markets
Cross Market Carry	Relative Value	-0.21	Seeks to capture the carry and roll down opportunities across government bond markets
Credit HY vs. IG	Relative Value	0.31	Seeks to capture the risk premium in high yield credit vs. investment grade credit <i>CDX, Duration, features</i>
Bond Curve Trading	Relative Value/ Macro	-0.23	Seeks to capture the bond term premium with a monetary policy overlay
Bond Calendar	Macro	0.25	Seeks to capture systematic flow patterns in fixed income markets
Commodity Carry	Macro	0.25	Aims to exploit different decay speeds in various parts of the commodity curve <i>More people are in the field, naive well client</i>
Commodity Momentum	Macro	0.12	The strategy is an algorithm based strategy that seeks to benefit from cross sectional trends in commodities <i>Ways as well as Volatility adjusted.</i>
FX Carry	Macro	0.47	Takes long positions in high yielding currencies and short positions in low yielding currencies using a Carry Score mechanism <i>Volatility adjusted.</i>
FX Value	Macro	-0.34	Aims to capture the risk premium in emerging market equities vs. developed market equities
Trend Commodities	Macro	-0.18	The strategy is an algorithm based strategy that seeks to benefit from trends in commodities
Trend Rates	Macro	-0.34	The strategy is an algorithm based strategy that seeks to benefit from trends in rates
Low Beta Equities*	Equity Long/ Short	0.05	Aims to benefit the better risk-return trade-off from low risk stock universe vs. high risk stock universe on a beta neutral basis
VIP vs. SPX*	Equity Long/ Short	0.34	Seeks to capture the risk premium in Hedge Fund favorite stocks vs. the broader market
Equity GDP*	Equity Long/ Short	0.24	Aims to capture the risk premium in emerging market equities vs. developed market equities
Small-Big*	Equity Long/ Short	0.46	Strategy seeks to capture the risk premium in small cap stocks versus large cap stocks
Value Growth*	Equity Long/ Short	0.19	Seeks to capture the risk premium in value stocks versus growth stocks
Merger Arb*	Event Driven	0.86	Aims to capture the spread compression as deals near completion
Put Writing*	Event Driven	0.89	Seeks to capture the risk premium in equities for providing insurance against drawdowns

*Indicates that the alpha strategy is not included in the Alpha Strategy Portfolio discussed later in the presentation. Source: AIS as of 12/31/13. AIS leverages the resources of Goldman Sachs International subject to legal, internal and regulatory restrictions. R based on monthly values from Dec 2007 to Dec 2013. An R value is used here as a measure of the linear correlation between the Alpha Strategy and Hedge Fund Strategy Classification where R ranges from -1 to 1. Further, an R value of -1 indicates a total negative correlation, 0 is no correlation, and +1 is total positive correlation. There is no guarantee that these objectives will be met.

Simulated Portfolio of GS Alpha Strategies Equally Weighted By Risk

The Alpha Strategy Portfolio is scaled to 6% Target Volatility and contains all Alpha Strategies listed on slide 6 that are not marked by an asterisk (*) - Illustrative Performance

- A strong annualized return combined with a low volatility results in a Sharpe Ratio of over 2
- Correlation of 0.03 to the S&P 500 is some evidence of the non-directional nature of the portfolio construction



Data Source: MassPRIM, AIS, Bloomberg as of 1/31/14
Time Period: January 2001 – January 31, 2014. Performance is net of fees. Time frame selected to demonstrate performance of portfolio during important market events.

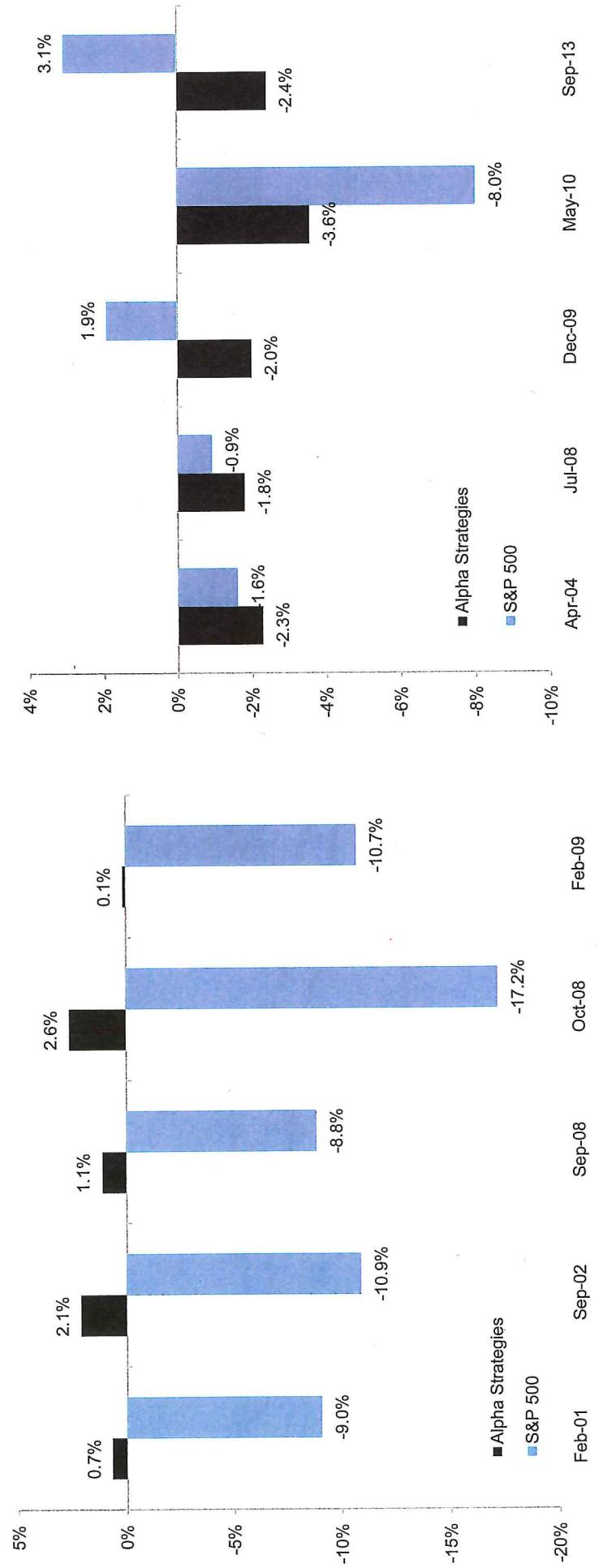
Fast performance does not guarantee future results, which may vary. Past correlations are not indicative of future correlations, which may vary. Simulated performance does not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. Please see additional disclosures. GROWTH OF \$1: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$1 over the given time period. The example provided does not reflect the deduction of investment advisory fees which would reduce an investor's return. Please be advised that since this example is calculated gross of fees the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$1, if calculated on a net basis, would be significantly lower than shown in this example. These examples are for illustrative purposes only and are not actual results. If any assumptions used do not prove to be true, results may vary substantially. The sample is shown for illustrative purposes only and is representative of the underlying strategies. It does not purport to show the holdings or sector weightings of an actual account. Our investment advisory fees are described in Part 2 of our Form ADV. The Alpha Strategies portfolio referred to in this presentation is a representative portfolio that is equal risk weighted across all strategies listed on page 6 without an asterisk (*). More specifically, capital in the Alpha Strategies portfolio is allocated such that each strategy (including all those listed on page 6 without an asterisk (*)) targets equal predicted risk, where risk is defined as volatility. The Alpha Strategies portfolio presented in this material targets an overall volatility of 6%.

Simulated Portfolio of GS Alpha Strategies Equally Weighted By Risk

The Alpha Strategy Portfolio is scaled to 6% Target Volatility and contains all Alpha Strategies listed on slide 6 that are not marked by an asterisk (*) – Illustrative Performance

- The Alpha Strategies Portfolio simulation indicates positive illustrative returns in each of the 5 worst months for the S&P 500
- These results illustrate the non-directional nature of the Alpha Strategies Portfolio

Lowest S&P 500 Monthly Performance



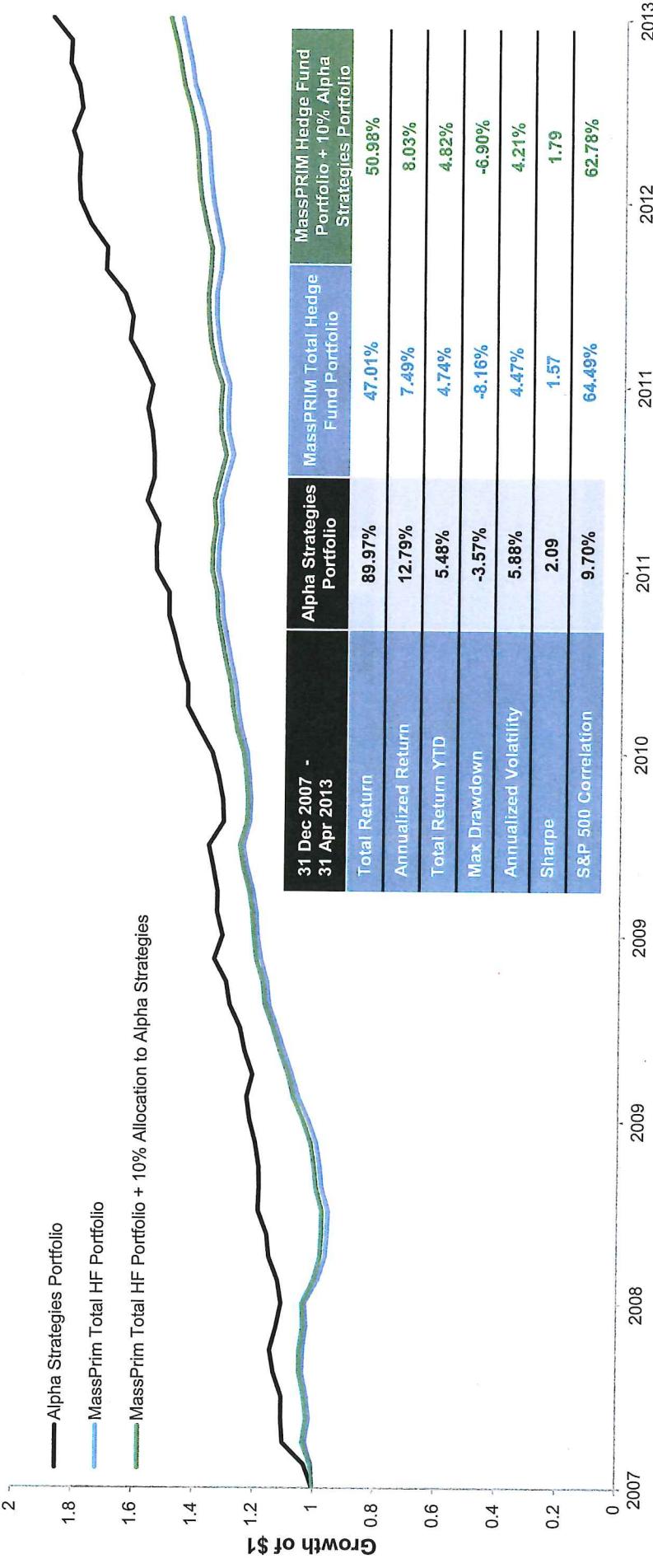
Time Period Examined: January 2001 – January 31, 2014. Performance is net of fees. Time frame selected to demonstrate performance of portfolio during important market events.

Data Source: AIS, Bloomberg as of 1/31/14

Past performance does not guarantee future results, which may vary. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. Please see additional disclosures. These examples are for illustrative purposes only and are not actual results. If any assumptions used do not prove to be true, results may vary substantially. The sample is shown for illustrative purposes only and is representative of the underlying strategies. It does not purport to show the holdings or sector weightings of an actual account.

MassPRIM Total HF Allocation + Simulated Alpha Strategy Portfolio at 6% Volatility – Illustrative Performance We allocate 10% of the MassPRIM Total Hedge Fund Allocation to the Alpha Strategy Portfolio

The addition of a 10% allocation to the illustrative Alpha Strategies Portfolio improves the metrics indicated in the table below



Time Period: January 2008 – April 2013 (constrained by availability of MassPRIM data) Performance is net of fees.
 Data Source: MassPRIM, Goldman Sachs, Bloomberg. As of 1/31/14.

Past performance does not guarantee future results, which may vary. Past correlations are not indicative of future correlations, which may vary. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. Please see additional disclosures. GROWTH OF \$1: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$1 over the given time period. The example provided does not reflect the deduction of investment advisory fees which would reduce an investor's return. Please be advised that since this example is calculated gross of fees the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$1, if calculated on a net basis, would be significantly lower than shown in this example. The sample is shown for illustrative purposes only and is representative of the underlying strategies. It does not purport to show the holdings or sector weightings of an actual account. Our investment advisory fees are described in Part 2 of our Form ADV.

Hedge Funds in the MassPRIM Portfolio By S&P 500 Correlation

Hedge Fund	Type	Correlation to S&P 500	Hedge Fund	Type	Correlation to S&P 500			
TOTAL Hedge Fund Allocation		0.62	TOTAL Hedge Fund Allocation					0.62
Highfields Capital	Event Driven	0.82	Ascend Capital Partners II	Equity L/S	0.46			
York Multi-Strategy Fund	Event Driven	0.74	Elliott Management Corp	Event Driven	0.44			
Glenview Capital	Equity L/S	0.73	Arrowgrass Master Fund	Multi-strat	0.38			
Pershing Square	Event Driven	0.72	King Street Capital	Credit	0.31			
Indus Emerging Markets Fund	Equity L/S	0.66	BlueCrest Capital International	Macro	0.18			
Davidson Kempner Funds	Event Driven	0.65	Cantab Capital	Macro	-0.12			
Och-Ziff Master Fund	Multi-strat	0.64	Capula Management	Market Neutral	-0.17			
Taconic Opportunity Fund	Event Driven	0.54	Claren Road Capital	Credit	-0.20			
Anchorage Capital	Credit	0.52	Winton Futures Fund	Macro	-0.21			
Brigade Capital	Credit	0.50	Steadfast Capital	Equity L/S	-0.24			
Samlyn Capital	Equity L/S	0.47	Brevan Howard	Macro	-0.32			

Time Period: January 2008 – April 2013. Time frame selected given data provided by MassPRIM

Data Source: MassPRIM, AIS, Bloomberg
Past correlations are not indicative of future correlations, which may vary.

MassPRIM Hedge Fund Portfolio Market Factor Analysis

	December 31 2007 - April 2013	Strategy	Correlation	Beta	t-stat
SPX 500 Future		64.28%	0.15	6.61	
EuroSTOXX 50 Future		58.15%	0.12	5.63	
FTSE Future		65.23%	0.17	6.78	
TOPIX Future		55.24%	0.11	5.22	
Emerging Markets ETF		69.99%	0.11	7.72	
Russell 2000 Future		57.70%	0.11	5.56	
GSCI		64.15%	0.11	6.58	
US T-Note 10Y Future		-30.34%	-0.2	-2.51	
Euro Bund 10Y Future		-40.40%	-0.29	-3.48	
ART Credit 5y CDXHY		44.89%	0.18	3.96	

Summary

- Statistics indicate significant exposures to traditional market betas
- Statistically significant positive loading to equities, commodities, and credit
- Statistically significant negative loading to fixed income

Time Period: January 2008 – April 2013. Time period selected given data provided by MassPRIM.

Data Source: MassPRIM, AIS, Bloomberg.

Past performance does not guarantee future results, which may vary. Past correlations are not indicative of future correlations, which may vary.

Table of Contents

- I. MassPRIM Objective and Overview of the Alpha Strategies
- II. List of Alpha Strategies
- III. Background of Alpha Strategies

Appendix

- I. Overview of Advanced Investment Strategies
- II. Important Information

GS-AS Credit Curve Exposure Strategy

Strategy Description

Relative Value Strategy. [不同期限 \Rightarrow credit premium decay 不一样, 10yr > 5yr]
Credit curve \rightarrow credit premium \rightarrow CDS trading . 10yr > 5yr

- The Goldman Sachs Alpha Strategy GS-AS Credit Curve Exposure Strategy (GS-AS Credit Curve Exposure Strategy) is a systematic strategy that aims to capture the credit curve premium between the front end (5Y) and the back end (10Y) of the Investment Grade credit curves.

Source of Return: Credit Curve Premium

Risk Control 1: Stop Loss

Risk Control 2: Carry Signal Overlay

Methodology

- Different speeds of decay for the front end vs. the back end of the credit curve *drawdown and convexity of curve.*
- A signal is used to de-allocate from 5Y vs. 10Y spread positions when the trend is negative. This overlay aims to provide drawdown protection in time of stress *5yr > 10yr 之间的差异稳定性加强 分散风险*.
- The objective with the Carry Signal is to switch the Strategy exposure to cash if the carry return from the 5Y vs. 10Y position is negative *正负*.
- The strategy sells protection on the 5y point and buys protection on the 10y point in equal weight for Markit CDX IG and Markit iTraxx IG credit curves *卖低保护. 买高保护. 保值. Diversified.*

- GS-AS Credit Curve Exposure Strategy** is part of a broader family of **GS-AS** and **GS-AB** strategies which are developed and maintained by the Goldman Sachs Advanced Investment Strategies (AIS) team. GS-AIS has been running systematic strategies since the end of 2006
- Whilst the **GS-AS Credit Curve Exposure Strategy** is a newly developed strategy, it benefits from being developed and maintained on an ongoing basis by the same team that has been working on the GS-Alternative Beta family

- Jump to default risk as DV01 neutral position leads to a higher exposure to the front end vs. back end of the curve
- Extreme risk aversion leading to credit curve inversion
- Potential basis risk upon default along different tenors of the curve, where different tenors will have different recovery rates in the case of restructuring events

GS-AS Credit Curve Exposure Strategy

Strategy Position Implementation Overview

Investment Universe

- 5Y and 10Y Markit CDX IG and Markit iTraxx IG indices

Credit Curve Premium

- The traded spread is selected as 5Y vs. 10Y spread as these are among the most liquid points on the corresponding credit curves. The traded spread is duration hedged on each trading day
- The strategy has an equal weight between the US and Europe market

Stop loss

- For each market, a signal is used to enact a stop loss. This signal is overlaid on top of the strategy in order to dynamically reduce the exposure when losses are encountered.

Carry Signal Overlay

- If the carry return of the 5Y vs. 10Y is negative, the exposure of the Strategy is switched to cash



GS Credit Curve Exposure Strategy Backtested Performance Statistics

Strategy Overview

- The strategy seeks to capture the credit curve carry premium offered by selling protection on the front end (5Y) and buying protection on the back end (10Y) of the Investment Grade credit curve

- The strategy trades a duration hedged 5Y vs. 10Y spread position. The 5Y and 10Y points on the curve are selected as these are among the most liquid points on the credit curve
- The strategy has an equal weight between the US and Europe markets

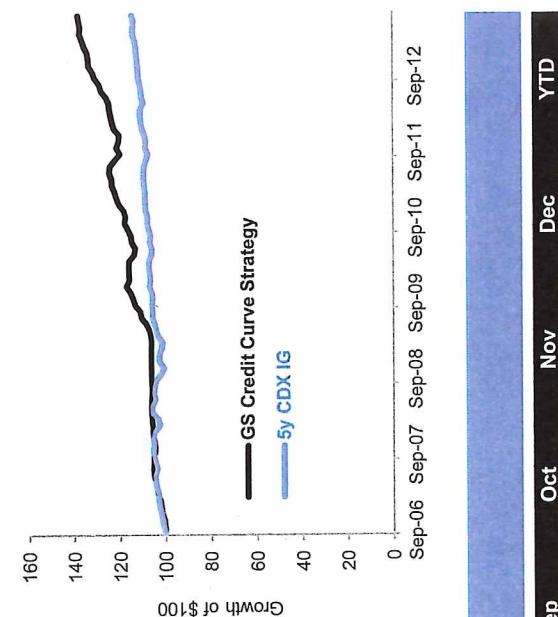
- For each market (US and Europe), a trend signal is observed. This signal is overlaid on top of the strategy in order to dynamically reduce the exposure to the 5Y-10Y spread position when the trend is negative

Inception Date: Aug 2013

Overview of Key Statistics

30-Sep-06 – 31-Jul-13	GS Credit Curve	5y CDX IG
Annualized Return	4.8%	2.0%
Annualized Volatility	2.6%	2.7%
Sharpe Ratio	1.3	0.2
Sortino Ratio	3.3	1.0
Maximum Drawdown	-3.9%	-5.1%

Illustrative Performance



Monthly Return

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2006													1.5%
2007	0.5%	0.4%	0.6%	0.5%	1.0%	0.2%	-0.2%	-0.1%	-0.4%	0.1%	0.3%	0.8%	3.6%
2008	0.3%	0.2%	0.2%	0.1%	-0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	1.0%
2009	0.0%	0.0%	0.0%	0.2%	0.6%	1.3%	1.9%	0.5%	2.1%	0.7%	1.0%	1.5%	10.1%
2010	-1.0%	0.1%	0.0%	-1.9%	-0.5%	1.3%	0.4%	1.1%	1.2%	-0.4%	0.7%	1.0%	1.0%
2011	1.8%	1.0%	0.6%	0.1%	0.8%	-0.3%	-1.6%	-2.0%	1.4%	-0.9%	-0.1%	1.7%	1.7%
2012	1.9%	0.7%	0.4%	0.2%	0.9%	1.7%	0.7%	1.5%	0.7%	1.3%	0.1%	11.2%	11.2%
2013	0.3%	1.0%	0.6%	0.9%	-0.2%	0.3%	0.4%					3.4%	3.4%

Source: Bloomberg and AIS as of 12/31/13. Time frame selected given backtest data availability. Simulated performance does not reflect actual trading and has inherent limitations. No representation is made that a client will achieve results similar to those shown. These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any AIS product and are being shown for informational purposes only. Please see additional disclosures, GROWTH OF \$100: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$100 over the given time period. The example provided does not reflect the deduction of investment advisory fees and expenses which would reduce an investor's return. Please be advised that since this example is calculated gross of fees and expenses the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$100 if calculated on a net basis, would be significantly lower than shown in this example. Past performance does not guarantee future results, which may vary. Our investment advisory fees are described in Part 2 of our Form ADV.

GS Credit Curve Exposure Strategy

Realized Performance Statistics

Strategy Overview

- The strategy seeks to capture the credit curve carry premium offered by selling protection on the front end (5Y) and buying protection on the back end (10Y) of the Investment Grade credit curve

- The strategy trades a duration hedged 5Y vs. 10Y spread position. The 5Y and 10Y points on the curve are selected as these are among the most liquid points on the credit curve
- The strategy has an equal weight between the US and Europe markets

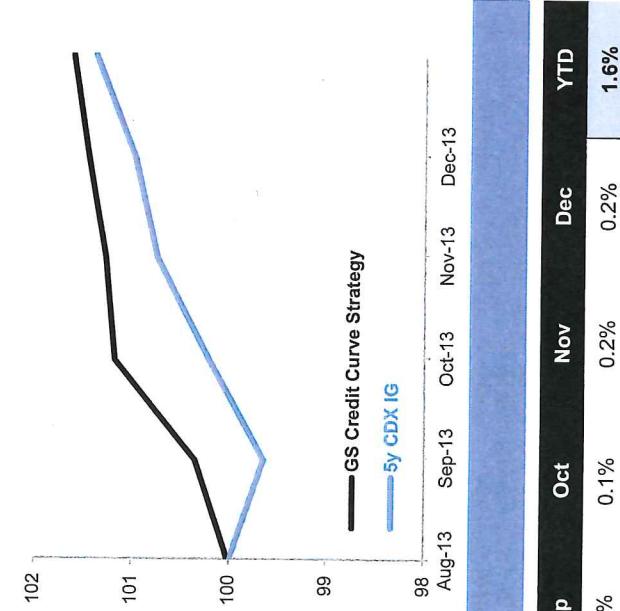
For each market (US and Europe), a trend signal is observed. This signal is overlaid on top of the strategy in order to dynamically reduce the exposure to the 5Y-10Y spread position when the trend is negative

Inception Date: Aug 2013

Overview of Key Statistics

31-Jul-13-	GS Credit Curve	5y CDX IG
Cumulative Return	1.6%	1.4%

Performance



Monthly Return

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2013													1.6%

Source: Bloomberg and GSAM as of 12/31/13. GROWTH OF \$100: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$100 over the given time period. The example provided does not reflect the deduction of investment advisory fees and expenses which would reduce an investor's return. Please be advised that since this example is calculated gross of fees and expenses the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$100 if calculated on a net basis, would be significantly lower than shown in this example. Past performance does not guarantee future results, which may vary. Our investment advisory fees are described in Part 2 of our Form ADV.

Bond Calendar Strategy

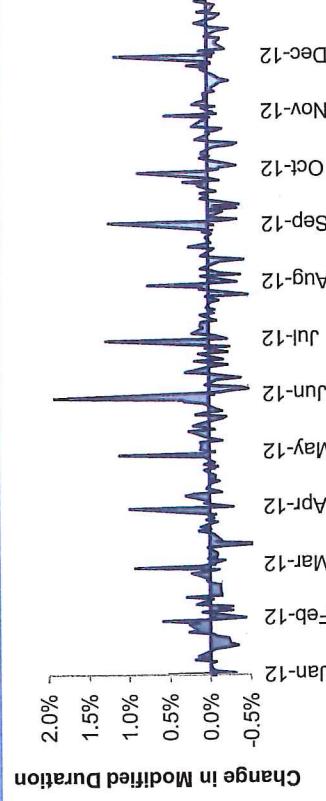
Introduction

Bond Calendar Strategy

- The Bond Calendar Strategy harnesses two effects in the fixed income markets, **End of the Month (EOM)** and **Bond Auctions**.
- BCS Strategy is a sum of two sub strategies: End of the Month system and Auctions system.

End of the Month Rationale

- Some major fixed income indices rebalance their constituents on a monthly basis, mainly on calendar month end dates **定期更新固收组合**
 - The process usually results in the exclusion of maturing securities and inclusion of newly issued securities **卖出剩余、买入新债**.
 - This has the effect of systematically extending the duration of the indices on the rebalancing dates (as illustrated in the graphic) **duration ↑**
 - Significant AUM in fixed income portfolios are benchmarked to these indices, essentially forced buyers of bonds around month end
 - Real money such as pensions and retirement accounts allocate often at the end of the month which coincides with pay check cycles.
- 长期持有 long price ↑**
拍卖增加供给增加 duration neutral ↑ short (供给增加 ↑ price)



Daily Change in Duration (2012)	Last Day of the Month	Other Days of the Month
Average	1.0%	0.0%
Minimum	0.5%	-0.7%
Maximum	1.9%	0.3%

Bond Auction Rationale

- Primary dealers have an incentive to participate.
- Since dealers are taking on duration risk when purchasing these bonds, they need to reduce or hedge their risk by selling duration. Often in the futures market as a part of balance sheet/inventory management.
- The increase in supply of government bonds creates a temporary effect of decreasing the price of bonds.

Auction: 短期duration ↓ 长期future market duration 卖出
 Source: Bloomberg, Goldman Sachs Securities Division as of Oct-13. AIS leverages the resources of Goldman Sachs International subject to legal, internal and regulatory restrictions. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. Please see additional disclosures. Past performance does not guarantee future results, which may vary. Does not represent a complete description of the Bond Calendar Strategy construction methodology. No representation is made that a client will achieve results similar to those shown. Bloomberg, Government Bond Index Modified Duration: JPM Government Bond Index (Global) – Modified Duration. For Illustrative Purposes Only. Traded markets described in this material may change in the future under AIS's governance of the strategy.

Bond Calendar Strategy

Strategy Overview

Strategy Highlights

Objective

The Bond Calendar Strategy (“BCS”) methodology seeks to profit from the pattern of flows in fixed income markets

The strategy seeks to optimise the following variables:

- Markets to invest
- Weights of the different markets
- The buying and selling dates
 - The risk allocation (i.e. overall exposure is rescaled based on the duration of the investment portfolio)
- The Bond Calendar Strategy aims to have a long position around month end and short positions ahead of government bond auctions
- Changes in re-investment patterns and in positioning behavior

Methodology

Key Risks

Investment Process Overview

Not systematic: The current implementation is as follows:

1 Select the Trading Instruments:

- ✓ 4 different markets (USD, EUR, GBP, JPY)
- ✓ Exchange EUR, GBP and JPY returns into USD returns at the spot exchange rate 远期和即期美元
- ✓ UST 10Y note
- ✓ Euro-Bund 10Y future
- ✓ Long Gilt 10Y future
- ✓ 10Y JGB future
- Note: The weights across the traded markets are fixed

2 Allocate Positions within Each Trading Instrument:

- ✓ Long position if calendar date is within the Buying and Selling Dates around month end
- ✓ Short position if calendar date is within the Selling and Buying Dates around auction or announcement dates
- ✓ No position otherwise

3 Identify System Signals:

- ✓ Volatility 波动率调整
- ✓ The exposure is set such that the Overall strategy level moves by approximately 20bp if all traded instruments move by 1bp

4 Scale Risk Allocation:

Source: Goldman Sachs Securities Division as of Oct-13. For Illustrative Purposes Only. Does not represent a complete description of the Bond Calendar Strategy construction methodology. Traded markets described in this material may change in the future under AIs's governance of the strategy. The example strategy shown above is for illustrative purposes only; terms can be customized by an individual investor. There is no guarantee that these objectives will be met. AIs leverages the resources of Goldman Sachs International subject to legal, internal and regulatory restrictions.

GS Bond Calendar Strategy Illustrative Performance Statistics (Backfilled and Realized Data)

Strategy Overview

- The Bond Calendar Strategy ("BCS") methodology seeks to profit from the pattern of flows in fixed income markets
- The Bond Calendar Strategy aims to have a long position around month end and short positions ahead of government bond auctions
- The strategy will utilize a range of instruments including: US Treasuries (UST), Euro Bunds, Gilts and Japanese Government Bond (JGB) futures

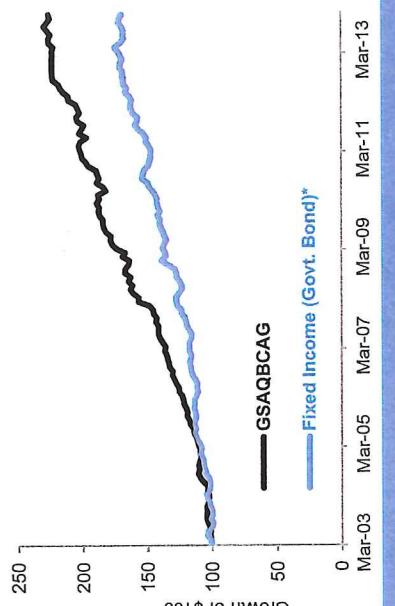
Inception date: Oct 2013

Daily Returns : GSAQBCAG <Index>

Overview of Key Statistics

	31-Mar-03 – 31-Dec-13	Bond Calendar Strategy (TR) (GSAQBCAG)	Fixed Income (Govt. Bond)*
Annualized Return	7.89%	5.01%	
Annualized Volatility	4.42%	4.31%	
Sharpe Ratio	1.40	0.77	
Sorino Ratio	3.97	1.96	
Maximum Drawdown	-3.70%	-4.36%	

Illustrative Performance



Monthly Return (GSAQBCAG)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2003				0.2%	1.4%	-0.5%	0.2%	1.6%	1.0%	0.0%	-0.5%	0.3%	3.9%
2004	-1.3%	-0.1%	0.3%	0.5%	-0.2%	3.3%	2.3%	1.5%	-0.8%	0.5%	-0.7%	-1.4%	3.7%
2005	1.0%	0.0%	1.3%	0.4%	1.1%	1.6%	0.6%	2.3%	0.3%	1.7%	-0.1%	0.9%	11.4%
2006	1.4%	0.4%	0.8%	1.9%	0.1%	1.6%	1.1%	1.3%	-0.1%	1.8%	0.4%	0.7%	11.9%
2007	0.6%	1.1%	-0.5%	1.6%	1.4%	0.9%	-0.1%	0.0%	1.4%	-0.5%	1.6%	0.4%	8.4%
2008	1.8%	5.7%	0.0%	2.8%	1.3%	-1.1%	2.0%	-1.0%	2.6%	-0.1%	-1.4%	-0.5%	12.6%
2009	3.2%	-1.1%	3.9%	1.9%	0.9%	-0.4%	2.2%	0.9%	0.3%	0.1%	1.3%	0.4%	14.5%
2010	-0.3%	1.1%	-1.0%	0.5%	-3.2%	1.2%	2.6%	-0.8%	0.6%	0.6%	3.0%	1.1%	5.2%
2011	1.5%	0.3%	0.8%	0.4%	-0.7%	-2.5%	3.2%	-1.2%	-0.8%	2.6%	0.4%	-1.3%	2.4%
2012	0.8%	0.7%	2.7%	0.2%	1.8%	1.0%	0.7%	1.9%	0.2%	0.1%	0.1%	0.0%	10.5%
2013	0.0%	-0.1%	0.2%	-0.5%	1.5%	0.1%	-0.7%	1.1%	1.2%	-0.9%	0.5%	1.5%	

Source: Bloomberg, AIS as of 12/31/13. Calculation source: AIS. Time frame selected to maintain consistency. *Fixed income (Gov't Bond) is leveraged 1.4x to match GS Bond Calendar Strategy's volatility across the full period in order to make them comparable. Fixed income (Govt. Bond): JHDCBGIG <Index>. Simulated performance results do not reflect actual trading and have inherent limitations. No representation is made that a client will achieve results similar to those shown. Please note the simulated performance is gross of management fees but net of admin and execution costs. Investing in the strategy may incur fees including management fees. AIS provides no assurance or guarantee that the Product will operate or would have operated in the past in a manner consistent with the simulated analysis. GROWTH OF \$100: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$100 over the given time period. The example provided does not reflect the deduction of investment advisory fees and expenses which would reduce an investor's return. Please be advised that since this example is calculated gross of fees and expenses the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$100 if calculated on a net basis, would be significantly lower than shown in this example. Past performance does not guarantee future results, which may vary. These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any AIS product and are being shown for informational purposes only. Please see additional disclosures. The inception date of the GS Bond Calendar Strategy Index was Oct/2013. All information presented prior to the index inception date is backfilled. The backfilled calculations are based on the same methodology that was in effect when the index was officially launched. Complete index methodology details are available by accessing GSAQBCAG <Index> on Bloomberg. Please see additional disclosures.

Equity Put Writing Strategy Compensation for Insuring Against Risk Events

Rationale	Our Approach to Put Writing: Selection of Parameters is Key
<ul style="list-style-type: none"> Selling tail risk insurance on equity indices warrants long-run compensation 	<p>Asymmetric aversion to downside risk</p> <p>Inherent negative skewness</p> <p>Long term positive market trend</p> <p>对冲 downside. 售卖看跌保护.</p> <p>而且 overvalue risk. (行为金融). 售卖多头头寸导致 price 被低估. overpay</p> <p>⇒ Selling 这种 protection ⇒ See put Puts</p> <p>Realised volatility < Implied volatility by up to 2% to 4%</p>
<ul style="list-style-type: none"> Volatility selling has been a successful way of capturing this premium.... 	<p>Writing puts on an equity index and holding them until maturity can potentially generate this risk premium</p> <p>...and may be implemented using a Put Writing strategy</p>
	<p>Portfolio Weighting</p> <p>Premium Traded</p>
	<p>The puts are written on the S&P500 and weighted inversely to the strikes</p> <p>strike ↑. 收入可以更广泛的来自于 风险越大. 不宜写过多</p> <p>Total monthly traded premium is determined as a fixed percentage of the strategy AUM</p>
	<p>Risk Management</p> <p>The delta of the strategy is capped which avoids potential downside risks, preventing the strategy from becoming too exposed to equity performance</p>

Data Source: AIS, Bloomberg. As of 12/31/13. This example is shown for illustrative purposes only and is representative of the Equity Put Writing Strategy. It does not purport to show the holdings or sector weightings of an actual account.

GS Put Writing Strategy Backtested Performance Statistics

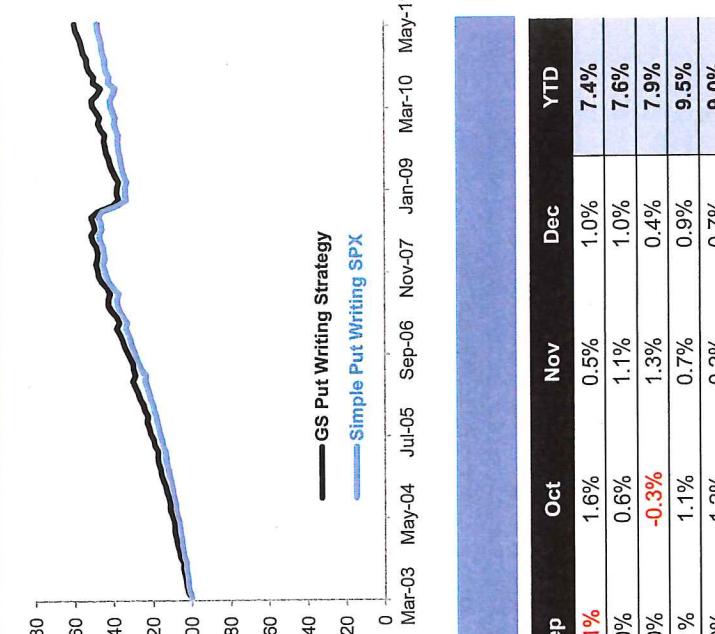
Strategy Overview

- GS Put Writing (Put Writing SPX) is a strategy that seeks to generate positive risk premia by selling protection on the S&P 500 equity index
- 3 month options are written on a monthly basis and held till maturity
- Robust risk management tools are in place to minimise downside risk.
- By capping the delta of the strategy, the strategy is prevented from being over exposed to negative equity performance
- Inception Date: Jun 2011

Overview of Key Statistics

	31-Mar-03 – 31-May-11	GS Put Writing SPX	Simple Put Writing SPX*
Annualized Return		5.91%	4.89%
Annualized Volatility		3.50%	3.22%
Sharpe Ratio		1.05	0.83
Sortino Ratio		2.32	1.95
Maximum Drawdown		-9.29%	-9.97%

Illustrative Performance



Monthly Return

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2003					1.6%	0.9%	0.2%	0.8%	0.7%	-0.1%	1.6%	0.5%	1.0%
2004	0.3%	0.9%	0.1%	0.1%	0.9%	1.0%	0.1%	0.4%	1.0%	0.6%	1.1%	1.0%	7.6%
2005	0.3%	1.0%	0.2%	-0.1%	1.5%	0.5%	1.3%	0.5%	1.0%	-0.3%	1.3%	0.4%	7.9%
2006	1.3%	0.8%	1.1%	0.9%	-0.9%	0.7%	0.2%	1.2%	1.1%	1.1%	0.7%	0.9%	9.5%
2007	1.4%	-1.0%	0.9%	1.8%	1.2%	-0.1%	-0.5%	0.9%	2.0%	1.2%	0.2%	0.7%	9.0%
2008	-0.6%	-0.1%	0.5%	1.3%	0.5%	-1.2%	0.6%	0.8%	-2.3%	-5.1%	-2.2%	0.7%	-7.1%
2009	-0.1%	-0.6%	1.2%	1.1%	0.8%	0.5%	0.9%	0.3%	0.5%	-0.3%	1.5%	1.0%	6.8%
2010	-0.6%	1.2%	1.4%	0.3%	-2.0%	-1.2%	2.7%	-0.2%	1.6%	0.7%	0.1%	1.1%	5.2%
2011	0.5%	0.5%	0.7%	1.0%	0.3%								2.9%

Source: Bloomberg and AIS as of 12/31/13. *Simple Put Writing total returns are scaled 0.59x to match GS Put Writing SPX's volatility across the full period in order to make them comparable. Strategy scaled on a monthly basis in order to match the volatility of GS Put Writing over the full period. This is done in order to compare the returns of strategies on a volatility neutral basis. Time frame selected to maintain consistency. Simulated performance does not reflect actual trading and has inherent limitations. No representation is made that a client will achieve results similar to those shown. AIS provides no assurance or guarantee that the strategy will operate or would have operated in the past in a manner consistent with the simulated analysis. These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any AIS product and are being shown for informational purposes only. Please see additional disclosures. GROWTH OF \$100: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$100 over the given time period. The example provided does not reflect the deduction of investment advisory fees and expenses which would reduce an investor's return. Please be advised that since this example is calculated gross of fees and expenses the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$100 if calculated on a net basis, would be significantly lower than shown in this example. Past performance does not guarantee future results, which may vary. Our investment advisory fees are described in Part 2 of our Form ADV. Please see additional disclosures.

GS Put Writing Strategy Realized Performance Statistics

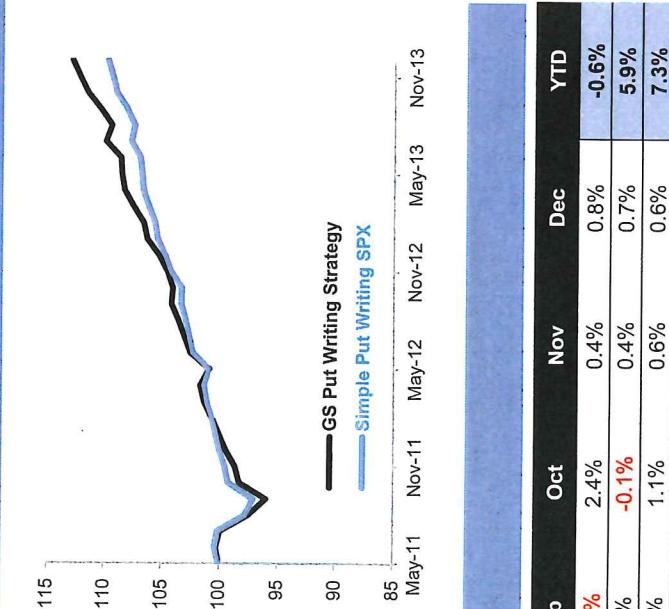
Strategy Overview

- GS Put Writing (Put Writing SPX) is a strategy that seeks to generate positive risk premia by selling protection on the S&P 500 equity index
- 3 month options are written on a monthly basis and held till maturity
- Robust risk management tools are in place to minimise downside risk.
- By capping the delta of the strategy, the strategy is prevented from being over exposed to negative equity performance
- Inception Date: Jun 2011

Overview of Key Statistics

	31-May-11 – 31-Dec-13	GS Put Writing SPX	Simple Put Writing SPX*
Annualized Return	4.83%	3.67%	
Annualized Volatility	3.06%	2.48%	
Sharpe Ratio	1.54	1.43	
Sortino Ratio	2.52	2.33	
Maximum Drawdown	-4.31%	-3.28%	

Performance



Monthly Return

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2011													
2012	0.6%	0.6%	0.7%	0.3%	-0.8%	1.7%	0.5%	0.5%	-2.4%	-1.6%	2.4%	0.4%	0.8%
2013	1.0%	0.3%	0.8%	0.7%	0.2%	0.1%	1.2%	-0.5%	0.9%	-0.1%	0.4%	0.7%	5.9%

*Simple Put Writing total returns are scaled 0.59x to match GS Put Writing SPX's volatility across the full period in order to make them comparable. Strategy scaled on a monthly basis in order to match the volatility of GS Put Writing over the full period. This is done in order to compare the returns of strategies on a volatility neutral basis. Source: Bloomberg and AIS as of 12/31/13. AIS provides no assurance or guarantee that the strategy will operate or would have operated in the past in a manner consistent with the analysis. GROWTH OF \$100: A graphical measurement of a portfolio's gross return that simulates the performance of an initial investment of \$100 over the given time period. The example provided does not reflect the deduction of investment advisory fees and expenses which would reduce an investor's return. Please be advised that since this example is calculated gross of fees and expenses the compounding effect of an investment manager's fees are not taken into consideration and the deduction of such fees would have a significant impact on the returns the greater the time period and as such the value of the \$100 if calculated on a net basis, would be significantly lower than shown in this example. Our investment advisory fees are described in Part 2 of our Form ADV.

Table of Contents

- I. MassPRIM Objective and Overview of the Alpha Strategies
- II. List of Alpha Strategies
- III. Background of Alpha Strategies

Appendix

- I. Overview of Advanced Investment Strategies
- II. Important Information

alternative life process: 广泛存在:
alpha decay (快速)
HF = 半衰期: alpha decay (保有才能).
mostet entropy

Building Non Traditional Risk Premia - Introducing Alpha Strategies

Directional

Directional Strategies take positions on the expected market direction

Event Risk

Event Risk Strategies take advantage of discrepancies in risk events

Relative Value

Relative Value Strategies take advantage of a valuation discrepancy between related financial instruments

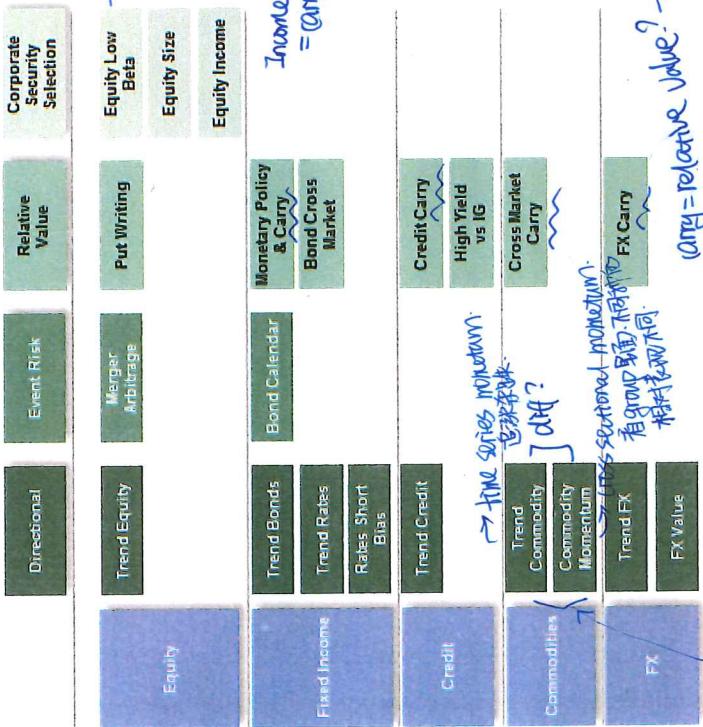
Corporate Security

Corporate Security Selection Strategies seek to isolate return potential / drivers by selecting individual stocks or credits

Identifying & Evaluating Alpha Strategies

- Trading strategies used by Hedge Funds have not been generally available in an isolated, stand-alone and non-discretionary format
 - Assessing these non traditional Alpha Strategies requires an in depth process of identification, research, testing and implementation. The skills required in these processes are relatively rare outside of hedge funds themselves
 - Using our market knowledge and understanding of risks embedded in hedge funds, we identify possible tradable Alpha Strategies, which have potentially favorable risk and return characteristics. E.g. Trend systems may be present in CTA ("Commodity Trading Advisor") / Managed Futures HF managers

Map of Alpha Strategies



There is no guarantee that these objectives will be met.

24 trend = momentum
不規則市況
alternative risk premia
or hedge fund

Alpha Strategies Understanding the Return Drivers

Understanding the Embedded Risk Premia

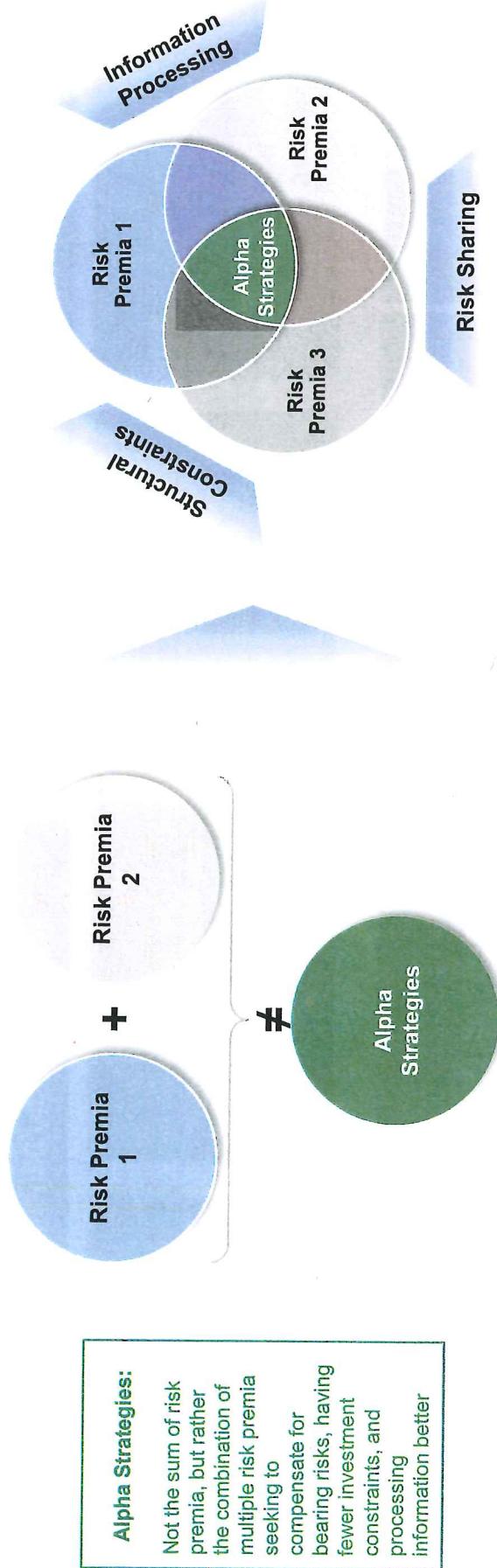
- A single Alpha Strategy may have multiple underlying risk premia driving the returns
E.g. GS Monetary Policy & Bond Carry has two primary key risk premia drivers:

Alpha Strategy:	Two primary risk premia drivers
------------------------	---------------------------------

GS Monetary Policy & Bond Carry

Central bank monetary policy actions impact the shape of the yield curve	Seek to take advantage of positive carry and roll down premium
--	--

- A detailed analysis focused on understanding the fundamental reasons behind the return drivers of each risk premia is performed.
- We aim to understand the rationale for their persistence and their return behavior in different market environments



Alpha Strategies Compensation of Return Drivers

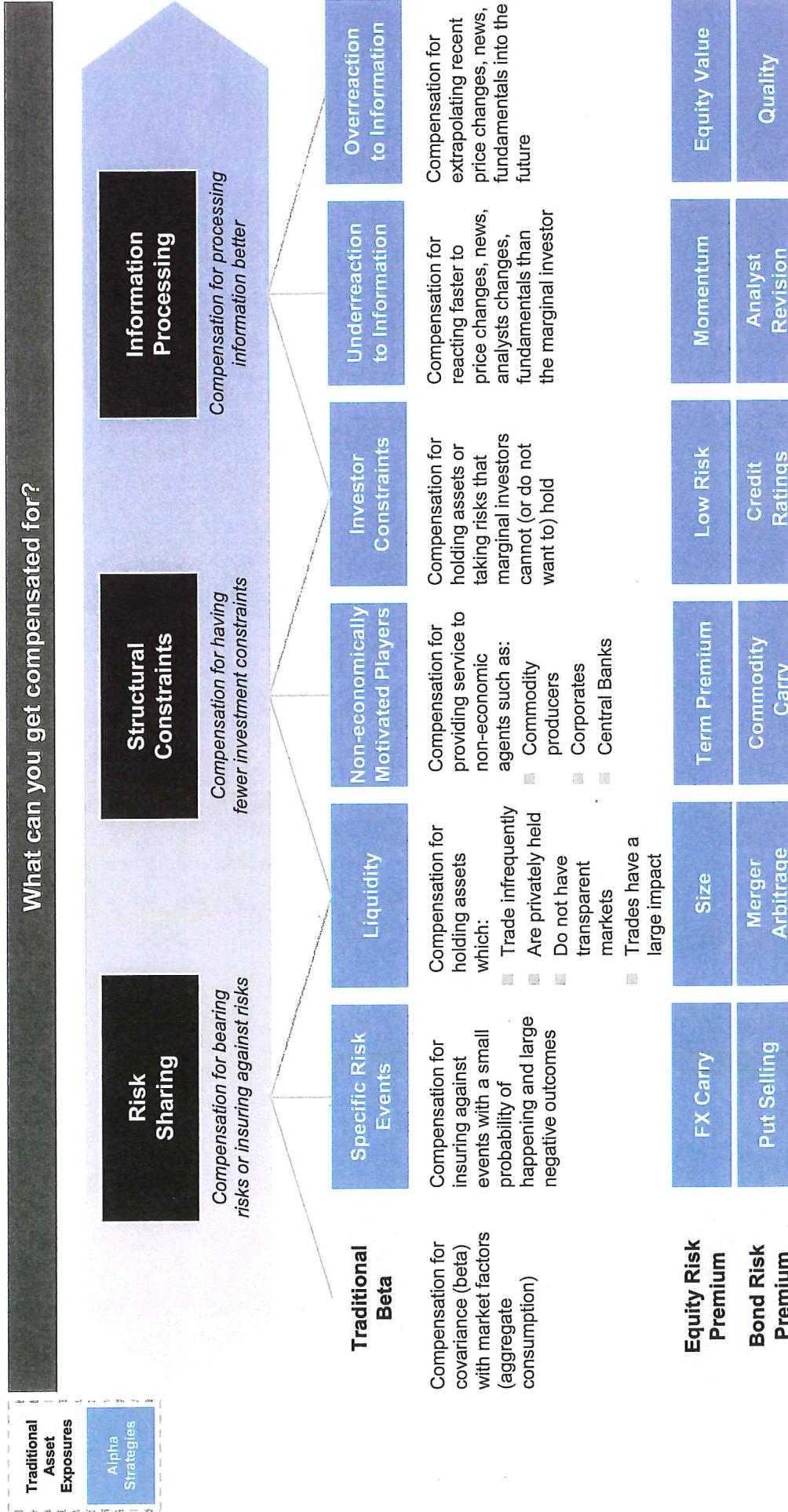


Table of Contents

- I. MassPRIM Objective and Overview of the Alpha Strategies
- II. List of Alpha Strategies
- III. Background of Alpha Strategies

Appendix

- I. Overview of Advanced Investment Strategies
- II. Important Information

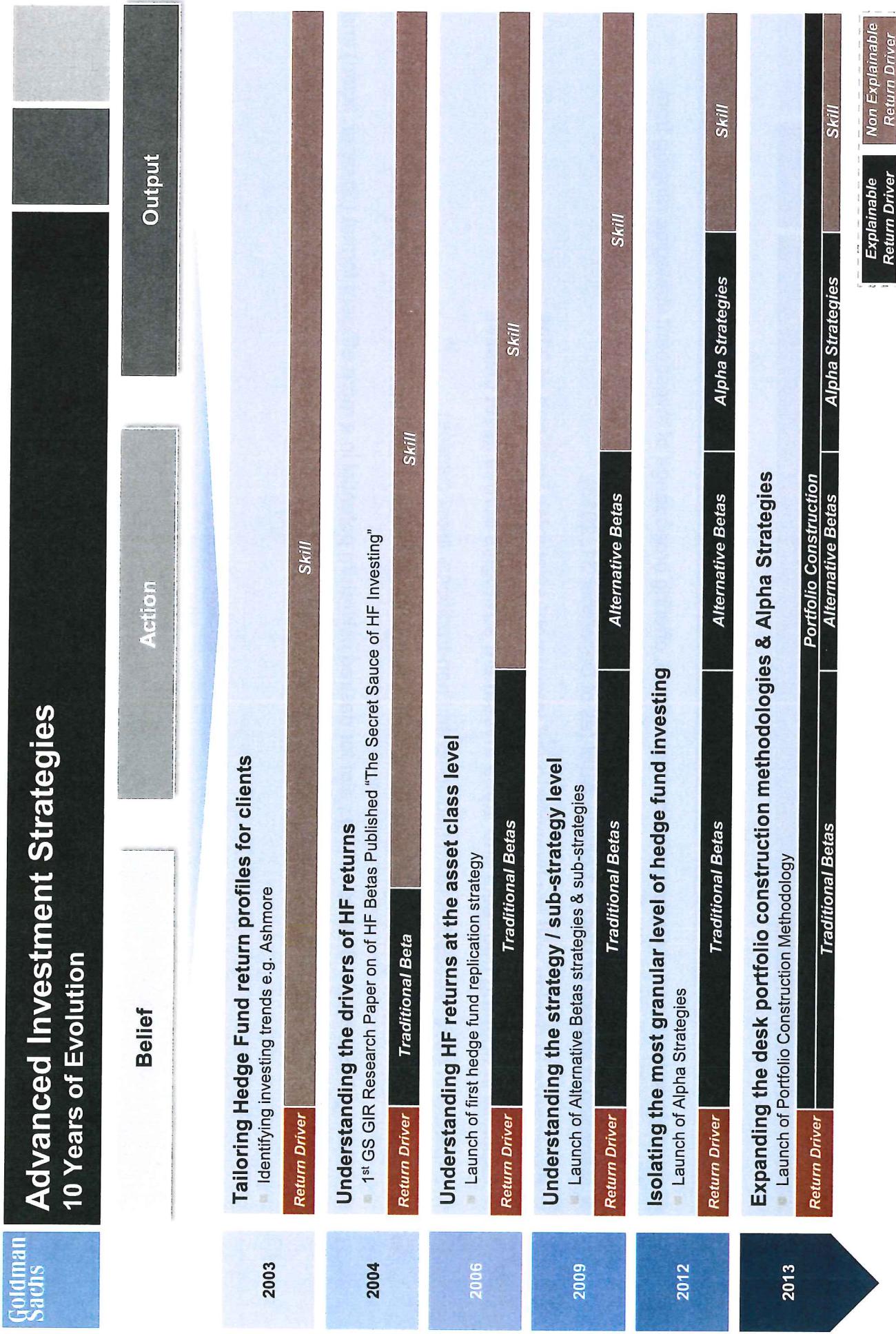
Advanced Investment Strategies

Who Are We and What is our Value Proposition?

Who Are We?

- Specialised team part of Goldman Sachs International, offering broad range of investment strategies ranging from Alternative Betas, Alpha Strategies across asset classes and dynamic multi asset portfolios
- Managing in **excess of USD 3.3 billion AUM** (as of December 31, 2013)
- **Experience in design and implementation of investment strategies from end of 2006**
- **Expertise in building both beta and alpha investment strategies across asset classes**
- **Expertise in asset allocation** (both traditional and non-traditional asset classes)
- **Expertise in analysing managed portfolios** (active hedge funds / equity / fixed income / commodity etc.)
- **Offering Customized Solutions** (e.g., aim for desired risk/return potential in a more efficient format (cheaper, liquid) and dynamic asset allocation)

Advanced Investment Strategies 10 Years of Evolution



Goldman Sachs

Advanced Investment Strategies

10 Years of Evolution

Tailoring Hedge Fund return profiles for clients



Understanding the drivers of HF returns



Isolating the most granular level of hedge fund investing



10 Years of Evolution

In a 2004 strategy paper, it was proposed that hedge funds, and particularly diversified portfolios of hedge funds, derive a large portion of their returns from varying exposures to common "Market Factors" such as being long or short different equity markets, fixed income, credit, commodities, and others.

Quantitative Insights
United States

Goldman Sachs

Equity Derivatives Strategy

November 2, 2004

The "secret sauce" of hedge fund investing – *Trading risk dynamically*.
Hedge funds use an investment process structured to allow more flexibility than long-only investment strategies. Hedge fund managers apply their skill to draw from multiple asset classes and investment vehicles. We show that hedge funds and funds of funds derive a large portion of their returns from varying exposures to common risk factors, like equity, fixed income, currency, commodities, and volatility.

- A risk factor beta, once implemented on a regular basis could temporarily serve as a lower risk alternative to equities while funds are available to absorb return managers or hedge funds. It could also be an alternative to fixed income exposure in an environment of rising interest rates. Event funds of funds, managers may find a basket of risk factor exposures preferable to holding cash as managers are forced or shifted.
- Fund of fund managers or directors of hedge fund programs or pensions and endowments may find this market-based performance methodology is in many ways cleaner and less subject to bias as a baseline to judge manager results.
- Fund of fund managers take a sensible way to evaluate past performance or no current holdings, performance metrics. Since hedge fund indices are based on manager performance, not current holdings, this market-based performance methodology is based on a greater focus on surplus risk, lower return structured risk funds take a sensible way to evaluate past performance or no current holdings, to judge manager results.

Why focus on the Three-A's: Alternatives, Absolute return and Alpha strategies?
Shift in pension and endowment investment policy have arisen from a greater focus on surplus risk, lower return and risk expectations, and a desire to switch to investment processes prioritized to capture a wider range of opportunities with low correlation to other asset classes. Hedge funds tend to deliver favorable returns when they are needed most – periods when stocks and/or bonds have underperformed.

Hedge funds exhibit changing sensitivities to most macro risk factors.
Figure and correlation matrix showed the highest correlations with hedge fund index returns. (We used CSFB/Tremont and IBB hedge fund indices for our analysis.) S&P 500 volatility or option strategy returns tended to be negatively correlated with hedge fund index returns, while for currency and fixed income risk factors, the signs are quite variable but the correlations are significant. Commodity returns are positively correlated with hedge fund index returns, consistent with correlations of environmental characteristics to hedge returns.

What about hedge fund index returns – How much is risk factor related?
We analyzed hedge fund indices and risk factor monthly returns using regressions over a rolling three-year window. The positive of return variability explained by the risk factor basket increased between 1989-1990 and 1997-2002, but returns were lower in part, due to improved beta in the hedge fund indices. Moving 12-month returns indicate very similar patterns in the dynamic risk factor basket as in the indices. The swing in the weight of the aggregate risk factors appear to be consistent with the shift in the opportunity set in the market.

Barbara Muller
barbara.muller@gs.com
New York, 1-212-852-6777
Vishnubhati Balasubramanian
vishnubhati.balasubramanian@goldman.com
New York, 1-212-852-0553

This material is prepared by Goldman, Sachs & Co., LLC ("GS") and is a product of GS Institutional Research, LLC, not a research report and should not be construed as such. Important disclaimers appear at the end of this material.

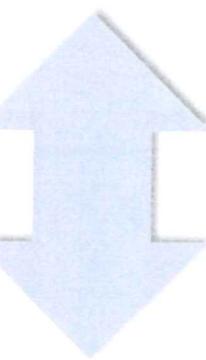
For illustrative purposes only. Source: Goldman Sachs Equity Derivatives Strategy group. More details on can be found:
<https://360.gs.com/gs/portal/?st=1&action=action.binary&d=2765498&fn=document.pdf>, as of 2 Nov 2004. AIS leverages the resources of Goldman, Sachs International subject to legal, internal and regulatory restrictions.

30

Assets Under Management

As of December 31, 2013

Strategy	AUM (\$MM)	Inception Date
ART UCITS	225	31-Dec-06
AB Composite UCITS	11	21-Jun-11
AB Equity Long/Short	208	07-Oct-10
AB Macro	166	20-Oct-10
AB Event Driven	199	20-May-11
AB Relative Value	124	31-May-11
AB Convert	12	18-Aug-10
AB Trend UCITS	51	27-Oct-10
Dynamic Tail Risk	9	30-May-12
Bond Monetary Policy Strategy	29	30-Sep-13
Bond Calendar Strategy	61	30-Sep-13
Cross Market Carry Strategy	8	30-Sep-13
Other Strategies	421	



Total AUM for Hedge Fund
Replication and Alternative
Risk Premia Strategies:
\$1.5bn

Table of Contents

- I. MassPRIM Objective and Overview of the Alpha Strategies
- II. List of Alpha Strategies
- III. Background of Alpha Strategies

Appendix

- I. Overview of Advanced Investment Strategies
- II. Important Information

Important Information Risk Factors

Risk Disclosure:

The below are not meant to be an exhaustive list of risk factors relating to investments in the Strategies or products linked to the Strategies. Investors shall consult their own legal, accounting or tax or financial advisers prior to any investments in the Strategies.

No Principal Protection: The strategy is not a capital protected strategy and investors could lose their entire investment.

Specific Strategy Rules: Any Strategy will invest in accordance with its particular rules, which may include some or no restraint on its allocation of investments, the ability to have cash returns, and requirements on limits to exposure to particular classes of assets.

Fees and Transaction Costs: Certain rebalancing, administrative and trading fees and costs are applicable to each Strategy for the maintenance and operation of the relevant Strategy. These fees and costs are factored into the valuation of the Strategy. This means that the value of the Strategy will be net of such fees and costs.

Trading Strategy: Each Strategy employs a complex trading programme and relies on analytical models to trade sophisticated financial instruments. Such analytical models may be fallible which could result in losses. The complex trading programme operated by each Strategy and the speed and volume of transactions may result in that Strategy being unable to bring an investment close to the target weights generated by the relevant Strategy on a day, resulting in a deviation from a Strategy. In addition, the Strategy may be subject to sudden, unexpected and substantial price movements. Consequently, the trading of such investments can lead to substantial losses as well as gains within a short period of time.

Counterparty risk: Some Strategies may enter into swap agreements or reverse repurchase agreements with various counterparties. Any portfolio related to the Strategies will be exposed to the creditworthiness of these counterparties.

Important Information Risk Factors

Forward Contracts: Each Strategy may invest into forward contracts. Forward contracts involve risks in addition to those found in futures contract markets because these contracts are not traded on exchanges and are not subject to oversight by regulatory authorities. Forward trading is substantially unregulated; there is no limitation on daily price movements and speculative position limits are not applicable. Therefore, a Strategy will not be able to benefit from exchange rules that are aimed at maintaining orderly and stable markets and protecting investors when it trades in these forward contracts. Unlike exchanges, forward markets have: no regulation, no limitations on daily price movements, no rules to regulate level of speculation, no daily valuation or settlement procedures, no minimum financial requirements for brokers, and no exchange or clearinghouse to require contract parties to fulfill their contractual obligations.

No Assurance of Positive Returns: The strategy measures a signal on a daily basis to determine which underlying strategy to invest into. There can be no assurance that this signal will accurately predict the performance of the components.

No Assurance of Accuracy of Tracking/Replication: A Strategy may not track the return of a strategy or strategies which share similar investment strategies; instead, it should be viewed as an independent system that attempts to display a pattern of returns over time that broadly resembles the pattern of returns of a strategy or strategies with similar investment strategies and it should be noted that there are no assurances that such attempts will be successful for various reasons, including but not limited to:

- 1) The Strategy algorithm's return mapping is based on historical data. Most strategies are dynamic and unpredictable, and the Strategy algorithm used to estimate asset allocation may not yield an accurate estimate of the then current allocation. Past and current data is not necessarily indicative of future returns; and
- 2) Some Strategies' calculation has a constraint on target weights and the leverage factor while strategies managed by investment managers with similar hedge fund strategies are typically not so constrained in their concentration of investments or leverage. Accordingly, an investment linked to the Strategy may be exposed more or less to any particular asset class and/or to more or less leverage than a strategy actively managed by an investment manager in general.

Information related to underlying strategies may not be complete: Any information about the performance of the underlying strategy provided by the Strategy Sponsor will be or has been furnished as a matter of information only. An investor in a product linked to a Strategy should not regard the information as indicative of the range of, or trends in, fluctuations in the levels or values that may occur in the future. Such information will likely differ from the actual values and levels used in the determination of any values in respect of a Strategy.

Signals of the Strategy are not directly linked to their underlying instruments: While relationships have been observed between the signals in the backtesting period, this may not be the case in the future. If the relationship weakens, for example, in times of reduced general availability of credit, the effect may be a loss on the strategy.

Important Information Risk Factors

Limited Track Record: Some of the Strategies are relatively new and no historical performance data exists with respect to these Strategies. The investment may involve greater risk than investments linked to a strategy with a proven track record. The limited track record with respect to a Strategy is particularly significant because the algorithm underlying each Strategy is based on historical data in returns to date that may or may not be repeated in the future.

Limitations of Simulated Returns: Certain presentations and backtesting or other statistical analysis materials that may have been provided to you in this presentation or otherwise use simulated analysis and hypothetical circumstances to estimate how that Strategy may have performed prior to its actual existence.

AlS provides no assurance or guarantee that any Strategy will operate or would have operated in the past in a manner consistent with those materials. As such, any historical returns projected in such material, or any hypothetical simulations based on this analysis, provided in relation to a Strategy may not reflect the performance of, and are no guarantee or assurance in respect of the performance or returns of, that Strategy

No Assurance of "Absolute" Returns: Alternative investments such as the assets or instruments underlying the Strategies may often be purchased on the basis of their potential to produce "absolute returns", or returns independent of the overall direction of equity and fixed income markets. However, there can be no assurance that either such assets or instruments in general, or a Strategy algorithm in particular, will actually be successful at producing consistently positive returns, nor does AlS make any representation or warranty, express or implied, that either any relevant asset class or a Strategy algorithm will do so in the future.

No Assurance of Target Volatility: A strategy may measure the recent historical volatility of GS strategies to determine the exposure to take on the respective strategy. There can be no assurance that Volatility Controlled version taking this exposure will meet their target volatilities.

Proprietary Methodology: Some details of each Strategy methodology are proprietary to Goldman Sachs or its affiliates, and will remain confidential even following any future investment linked to a Strategy.

Use of Third Party Information: Each Strategy methodology relies on information from historical data sources. AlS makes no warranty as to the correctness of that information and takes no responsibility for the accuracy of such data or the impact of any inaccuracy of such data on the performance of that Strategy as a result.

Market Volatility: Market volatility reflects the degree of instability and expected instability of the performance of a Strategy. The level of market volatility is not purely a measurement of the actual volatility, but is largely determined by the prices for instruments which offer investors protection against such market volatility. The prices of these instruments are determined by forces of supply and demand in the options and derivatives markets generally. These forces are, themselves, affected by factors such as actual market volatility, expected volatility, macroeconomic factors and speculation.

Credit Risk: An investment in a Strategy or a product linked to a Strategy may involve credit risk. Bonds or other debt securities involve credit risk to the issuer which may be evidenced by the issuer's credit rating. Securities which are subordinated and/or have a lower credit rating are generally considered to have a higher credit risk and a greater possibility of default than more highly rated securities. In the event that any issuer of bonds or other debt securities experiences financial or economic difficulties, this may affect the value of the relevant securities (which may be zero) and any amounts paid on such securities (which may be zero). This may in turn affect the value of such Strategy.

Important Information Risk Factors

Liquidity Risk: Certain types of assets or securities may be difficult to buy or sell, particularly during adverse market conditions. This may affect the ability to obtain prices for the components of the underlying asset and may therefore affect the value of the underlying asset. This may in turn affect the value of a Strategy.

Currency Hedging and Interest and Exchange Rate Risks: Some Strategies will have exposure to foreign exchange and/or interest rate risks.

- Interest rates are determined by factors of supply and demand in the international money markets which are influenced by macro economic factors, speculation and central bank and government intervention. Fluctuations in short term and/or long term interest rates may affect the value of a Strategy. Fluctuations in interest rates of the currency in which investments of a Strategy are denominated may affect the value of that Strategy.
- Exchange rates between currencies are determined by factors of supply and demand in the international currency markets, which are influenced by macro economic factors (such as the economic development in the different currency areas, interest rates and international capital movements), speculation and central bank and government intervention (including the imposition of currency controls and restrictions). Such factors may impact the value of a Strategy.
- A Strategy may seek to mitigate these risks through hedging transactions. To the extent these hedging transactions are imperfect or are only placed over a portion of the target investment exposure, or if a Strategy incurs costs as a result of hedging its currency exposure, such factors may have an adverse impact on the value of such Strategy. Indeed, whilst hedging transactions reduce risks and losses in adverse market circumstances, they also reduce and may completely offset gains in market circumstances that would otherwise have been beneficial had the position not been hedged.

Political and Economic Factors: The value of a Strategy's underlying investments may be influenced by a number of circumstances, including but not limited to political events, general economic conditions, government intervention, changes in balances of payments and trade, domestic and international rates of inflation, international trade restrictions and currency devaluations. Any such circumstance (or a combination of them) may cause unexpected volatility or illiquidity in the relevant markets in which those investments are traded. A Strategy may fail to take account of such events and, as a result, investment losses may occur.

Each of HFRI & HFRX Equity Hedge Indices, HFRI & HFRX Macro Indices, HFRX Macro: Systematic Diversified CTA Index, HFRI & HFRX Event Driven Indices and HFRI & HFRX Relative Value Indices is a trademark of Hedge Fund Research, Inc. ("HFR"). HFR has not participated in the preparation of this document. HFR does not endorse or approve this document or any Goldman Sachs or GSAM product or fund.

Important Information Risk Factors

Futures Trading: Each Strategy may invest into futures contracts. Futures contract prices are highly volatile, with price movements being influenced by a multitude of factors, including: supply and demand of a particular commodity, government policies and programmes, political and economic events, interest rates and rates of inflation, currency devaluations and revaluations, and sentiment in the market place. Futures contract trading is also highly leveraged. A leveraged investment is one in which an investor can gain or lose an amount larger than the value of the margin deposited by the investor for that investment. Futures contract trading generally requires only a small margin deposit (typically between 2% - 15% of the value of the contract). Accordingly, a high degree in leverage in such trading and a relatively small movement in the price of an underlying asset can result in substantial losses for any Strategy exposed to such asset through its futures positions.

Important Information General Disclosures

This material is provided at your request for informational purposes only. It is not an offer or solicitation to buy or sell any securities.

THIS MATERIAL DOES NOT CONSTITUTE AN OFFER OR SOLICITATION IN ANY JURISDICTION WHERE OR TO ANY PERSON TO WHOM IT WOULD BE UNAUTHORIZED OR UNLAWFUL TO DO SO.

This material is provided for informational purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities. This material is not intended to be used as a general guide to investing, or as a source of any specific investment recommendations, and makes no implied or express recommendations concerning the manner in which any client's account should or would be handled, as appropriate investment strategies depend upon the client's investment objectives.

Conflicts of Interest

There may be conflicts of interest relating to the Alternative Investment and its service providers, including Goldman Sachs and its affiliates. These activities and interests include potential multiple advisory, transactional and other interests in securities and instruments that may be purchased or sold by the Alternative Investment. These are considerations of which investors should be aware and additional information relating to these conflicts is set forth in the offering materials for the Alternative Investment.

Views and opinions expressed are for informational purposes only and do not constitute a recommendation by AIS to buy, sell, or hold any security. Views and opinions are current as of the date of this presentation and may be subject to change, they should not be construed as investment advice.

Supplemental Risk Disclosure for All Potential Direct and Indirect Investors in Hedge Funds and other private investment funds (collectively, "Alternative Investments")

In connection with your consideration of an investment in any Alternative Investment, you should be aware of the following risks:

Alternative Investments are subject to less regulation than other types of pooled investment vehicles such as mutual funds. Alternative Investments may impose significant fees, including incentive fees that are based upon a percentage of the realized and unrealized gains, and such fees may offset all or a significant portion of such Alternative Investment's trading profits. An individual's net returns may differ significantly from actual returns. Alternative Investments are not required to provide periodic pricing or valuation information. Investors may have limited rights with respect to their investments, including limited voting rights and participation in the management of the Alternative Investment.

Alternative Investments often engage in leverage and other investment practices that are extremely speculative and involve a high degree of risk. Such practices may increase the volatility of performance and the risk of investment loss, including the **loss of the entire amount that is invested**.

Alternative Investments may purchase instruments that are traded on exchanges located outside the United States that are "principal markets" and are subject to the risk that the counterparty will not perform with respect to contracts. Past performance does not guarantee future results, which may vary. The value of investments and the income derived from investments will fluctuate and can go down as well as up. A loss of principal may occur.

Alternative Investments are offered in reliance upon an exemption from registration under the Securities Act of 1933, as amended, for offers and sales of securities that do not involve a public offering. No public or other market is available or will develop. Similarly, interests in an Alternative Investment are highly illiquid and generally are not transferable without the consent of the sponsor, and applicable securities and tax laws will limit transfers.

Alternative Investments may themselves invest in instruments that may be highly illiquid and extremely difficult to value. This also may limit your ability to redeem or transfer your investment or delay receipt of redemption or transfer proceeds.

Important Information General Disclosures

Alternative Investments are not required to provide their investors with periodic pricing or valuation information.

Alternative Investments may involve complex tax and legal structures and accordingly are only suitable for sophisticated investors. You are urged to consult with your own tax, accounting and legal advisers regarding any investment in any Alternative Investment.

Prospective investors should inform themselves as to any applicable legal requirements and taxation and exchange control regulations in the countries of their citizenship, residence or domicile which might be relevant.

References to indices, benchmarks or other measures of relative market performance over a specified period of time are provided for your information only and do not imply that the portfolio will achieve similar results. The index composition may not reflect the manner in which a portfolio is constructed. While an adviser seeks to design a portfolio which reflects appropriate risk and return features, portfolio characteristics may deviate from those of the benchmark.

Index Benchmarks

Indices are unmanaged. The figures for the index reflect the reinvestment of all income or dividends, as applicable, but do not reflect the deduction of any fees or expenses which would reduce returns. Investors cannot invest directly in indices. The indices referenced herein have been selected because they are well known, easily recognized by investors, and reflect those indices that the Investment Manager believes, in part based on industry practice, provide a suitable benchmark against which to evaluate the investment or broader market described herein. The exclusion of "failed" or closed hedge funds may mean that each index overstates the performance of hedge funds generally.

The S&P 500 Index is an unmanaged index of 500 stocks that is generally representative of the performance of larger companies in the U.S. Please note an investor cannot invest directly in an index.

This information discusses general market activity, industry or sector trends, or other broad-based economic, market or political conditions and should not be construed as research or investment advice. This material has been prepared by AIS and is not a product of Goldman Sachs Global Investment Research. The views and opinions expressed may differ from those of Goldman Sachs Global Investment Research or other departments or divisions of Goldman Sachs and its affiliates. Investors are urged to consult with their financial advisors before buying or selling any securities. This information may not be current and AIS has no obligation to provide any updates or changes.

These examples are for illustrative purposes only and are not actual results. If any assumptions used do not prove to be true, results may vary substantially.

The strategies may include the use of derivatives. Derivatives often involve a high degree of financial risk because a relatively small movement in the price of the underlying security or benchmark may result in a disproportionately large movement in the price of the derivative and are not suitable for all investors. No representation regarding the suitability of these instruments and strategies for a particular investor is made.

THESE MATERIALS ARE PROVIDED SOLELY ON THE BASIS THAT THEY WILL NOT CONSTITUTE INVESTMENT ADVICE AND WILL NOT FORM A PRIMARY BASIS FOR ANY PERSON'S OR PLAN'S INVESTMENT DECISIONS, AND GOLDMAN SACHS IS NOT A FIDUCIARY WITH RESPECT TO ANY PERSON OR PLAN BY REASON OF PROVIDING THE MATERIAL OR CONTENT HEREIN. PLAN FIDUCIARIES SHOULD CONSIDER THEIR OWN CIRCUMSTANCES IN ASSESSING ANY POTENTIAL INVESTMENT COURSE OF ACTION.

Important Information

General Disclosures

Effect of Fees:

The following table provides a simplified example of the effect of management fees on portfolio returns. Assume a portfolio has a steady investment return, gross of fees, of 0.5% per month and total management fees of 0.05% per month of the market value of the portfolio on the last day of the month. Management fees are deducted from the market value of the portfolio on that day. There are no cash flows during the period. The table shows that, assuming all other factors remain constant, the difference increases due to the compounding effect over time. Of course, the magnitude of the difference between gross-of-fee and net-of-fee returns will depend on a variety of factors, and this example is purposely simplified.

Period	Gross Return	Net Return	Differential
1 year	6.17%	5.54%	0.63%
2 years	12.72	11.38	1.34
10 years	81.94	71.39	10.55

Past performance does not guarantee future results, which may vary. The value of investments and the income derived from investments will fluctuate and can go down as well as up. A loss of principal may occur.

The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk.

Although certain information has been obtained from sources believed to be reliable, we do not guarantee its accuracy, completeness or fairness. We have relied upon and assumed without independent verification, the accuracy and completeness of all information available from public sources.

Emerging markets securities may be less liquid and more volatile and are subject to a number of additional risks, including but not limited to currency fluctuations and political instability. Foreign securities may be more volatile than investments in U.S. securities and will be subject to a number of additional risks, including but not limited to currency fluctuations and political developments.

The currency market affords investors a substantial degree of leverage. This leverage presents the potential for substantial profits but also entails a high degree of risk including the risk that losses may be similarly substantial. Such transactions are considered suitable only for investors who are experienced in transactions of that kind. Currency fluctuations will also affect the value of an investment.

Past performance does not guarantee future results, which may vary. The value of investments and the income derived from investments will fluctuate and can go down as well as up. A loss of principal may occur.

Simulated Performance

Simulated performance is hypothetical and may not take into account material economic and market factors, such as liquidity constraints, that would impact the adviser's actual decision-making. Simulated results are achieved by retroactively applying a model with the benefit of hindsight. The results reflect the reinvestment of dividends and other earnings, but do not reflect fees, transaction costs, and other expenses a client would have to pay, which would reduce returns. Actual results will vary.

Confidentiality

No part of this material may, without GSAM's prior written consent, be (i) copied, photocopied or duplicated in any form, by any means, or (ii) distributed to any person that is not an employee, officer, director, or authorized agent of the recipient.

Important Information General Disclosures

These performance results are backtested based on an analysis of past market data with the benefit of hindsight, do not reflect the performance of any GSAM product and are being shown for informational purposes only. Please see additional disclosures.

The sample portfolio provided herein has certain limitations. Such sample is hypothetical and does not represent actual trading, and thus may not reflect material economic and market factors, such as liquidity constraints, that may have had an impact on the Adviser's actual decision-making. This sample is shown for illustrative purposes only and is representative of the Alpha Strategies. It does not purport to show the holdings or sector weightings of an actual account. This information is shown for illustrative purposes only and does not constitute a recommendation of exposures for any client account. The exposures for the sample portfolio will differ from the exposures for a client account because of specific client guidelines, objectives and restrictions.

The website links provided are for your convenience only and are not an endorsement or recommendation by GSAM of any of these websites or the products or services offered. GSAM is not responsible for the accuracy and validity of the content of these websites.

