

**Understanding the
latest advances in
structured products
and the implications
of change in global
volatility**



**Equity Derivatives
House of the Year**

GAIM USA – Funds of Funds
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SG Americas Securities, LLC
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 **SOCIETE GENERALE**
Corporate & Investment Banking



Agenda

- **Hedge Fund linked structured products**

- **Exotic Payoffs**

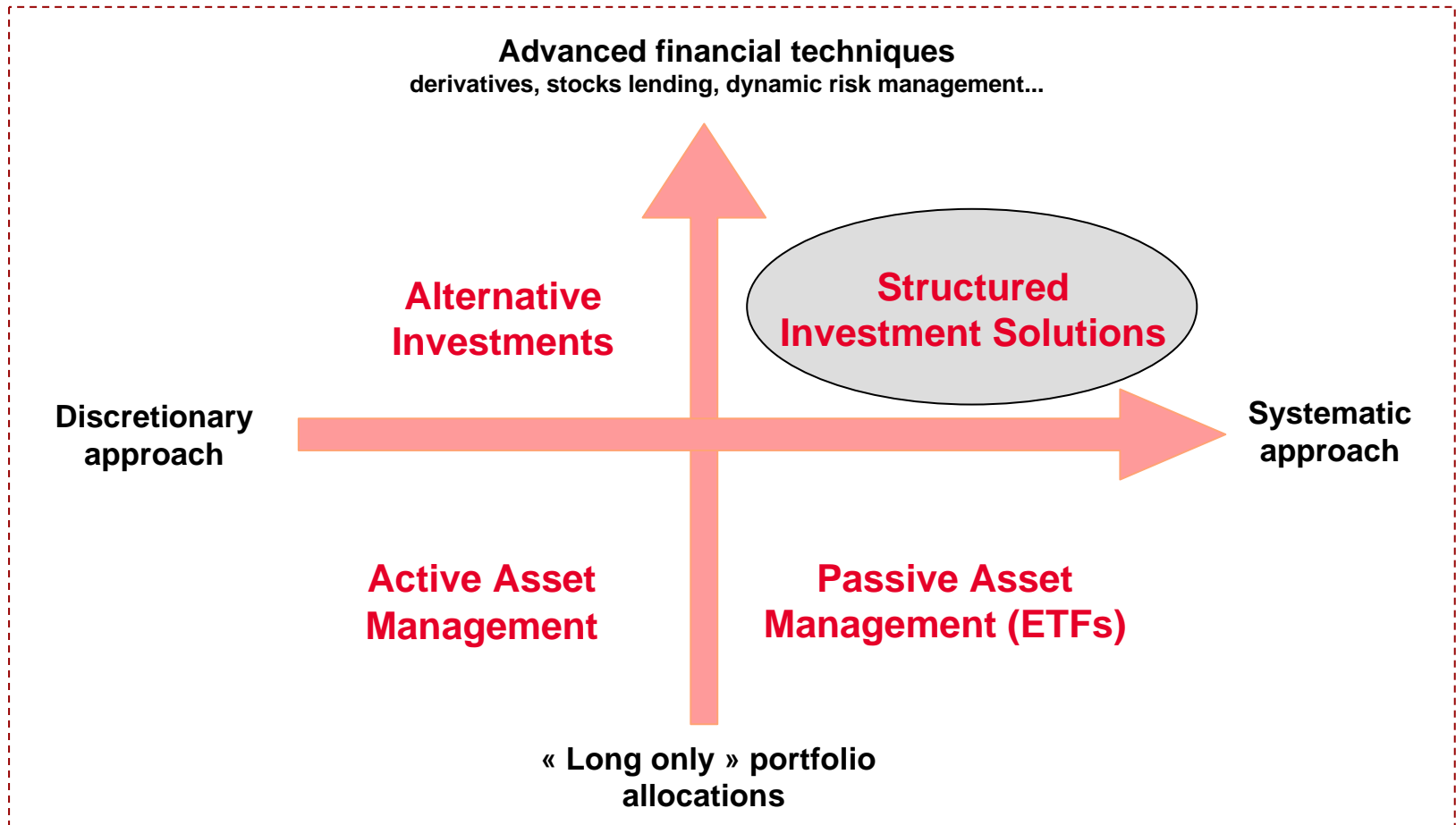


Hedge Fund linked structured products



Structured Investment Solutions are efficient tools to meet investors' objectives

- **Tailor-made approach based on an analysis of the investor's specific requirements to define the appropriate Underlying portfolio, Payoff and Legal Wrapper**





Misconception: Investor and Bank are at odds

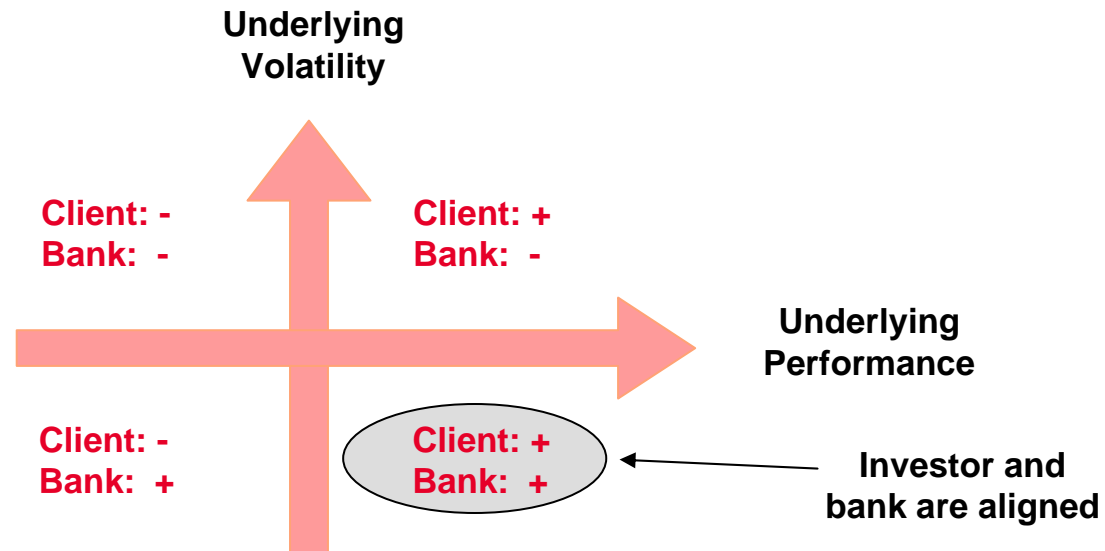
■ Client:

- ▶ Specific view on underlying performance and risk pattern
- ▶ Need for specific cash-flow schedule

■ Bank:

- ▶ Provides market and dynamically hedges risks
- ▶ Limit residual exposure to remaining risks parameters

■ Example: Client purchases Call Option from Bank





Hedge fund portfolios: a good underlying for Structured Products

- **Hedge fund portfolios are managed to provide customized risk profiles**

- ▶ Monitored volatility levels
- ▶ Regular performance
- ▶ Low correlation to other markets
 - **Greater control over returns, easier to structure an appropriate product**



- **Lyxor Managed Accounts platform helps improve the portfolio characteristics**

- ▶ Control over the assets
- ▶ Weekly or Monthly liquidity
- ▶ Independent risk monitoring and valuation
 - **Enhances SG's ability to hedge and therefore its flexibility to offer exotic, customized products**



Exotic Payoffs



Exotic pay-offs

■ Integration of exotic options

- ▶ Can provide innovative investment opportunities in terms of pricing, indexation, and pay-off
- ▶ Examples: the use of low probability trigger events, worst month (s), averages, etc.
- ▶ Benefits
 - May provide asymmetric pay-offs that cannot be replicated through investment strategies
 - Enable investors to take advantage of the risk/return profile of hedge fund portfolios:
 - Limited draw downs
 - Low volatility
 - Diversification potential
 - May help reduce the cost of leverage

■ Example of 5 payoffs

- ▶ Nova
- ▶ Vol Cap
- ▶ Vol Target
- ▶ Smart Leverage
- ▶ Index Short

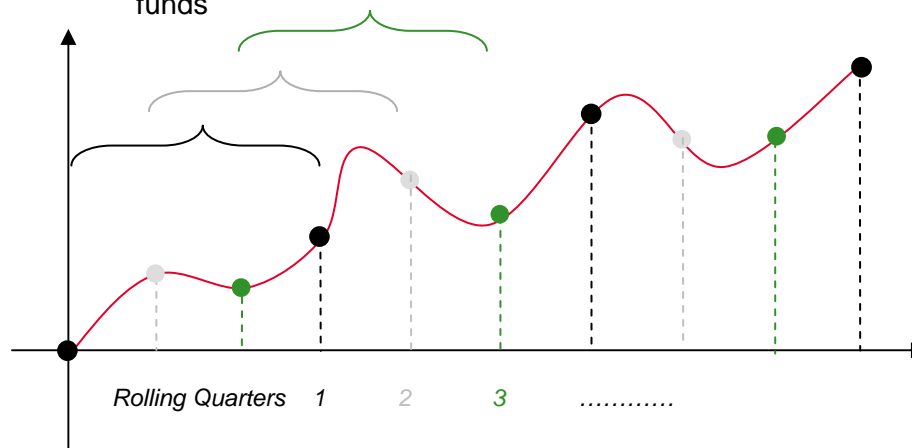
■ **Concept:** Reduce the level of fees and enhance the participation rate in exchange for bearing some downside risk based on the performance path of the underlying basket of hedge funds.

■ **Typical redemption formula:**

- ▶ 100% of the positive performance of the underlying basket of hedge funds
- ▶ Plus the sum of the Lowest Rolling Quarterly Performance recorded by the basket each year

■ **Advantages:**

- ▶ Low fees
- ▶ Offers High Participation
- ▶ High expected returns in most market conditions
- ▶ Nova is best adapted to underlyings with moderate volatility and few drawdowns, such as funds of hedge funds



In this illustrative chart the hedge fund portfolio rolling quarterly performances are all positive although some months are negative. Therefore the lowest rolling quarterly performances will add up to the final payout.



Example of a “Nova” payout

■ Nova Warrant

- ▶ Call option
- ▶ Strike : 70%
- ▶ Premium : 30%

	Rolling 1	Rolling 2	Rolling 3	Rolling 4	Rolling 5	Rolling 6	Rolling 7	Rolling 8	Rolling 9	Rolling 10	Lowest Rolling Quarterly Performances
Year 1	0.54%	1.23%	4.63%	-0.50%	0.87%	2.10%	1.35%	1.00%	-0.25%	-0.04%	-0.50%
Year 2	-1.24%	0.45%	1.56%	3.58%	5.64%	4.10%	1.10%	0.02%	-0.45%	1.40%	-1.24%
Year 3	0.40%	2.00%	3.40%	5.47%	4.81%	4.35%	2.82%	3.27%	1.14%	0.45%	0.40%
Year 4	0.63%	2.36%	2.38%	3.09%	2.82%	3.27%	3.61%	1.14%	1.75%	0.81%	0.63%
Year 5	-0.45%	-1.40%	-2.50%	0.40%	1.30%	1.50%	2.74%	2.41%	1.55%	2.79%	-2.50%
Sum of the Lowest Rolling Quarterly Performances											-3.21%

Let's assume the hedge fund portfolio has performed by +50% over the 5-year Warrant term

The hedge fund portfolio has initially invested 100%, its final level is therefore 150%

The Warrant redemption price will be based on the difference between:

- the sum of 150% and -3.21%, i.e. 146.79%
- the strike price of 70%

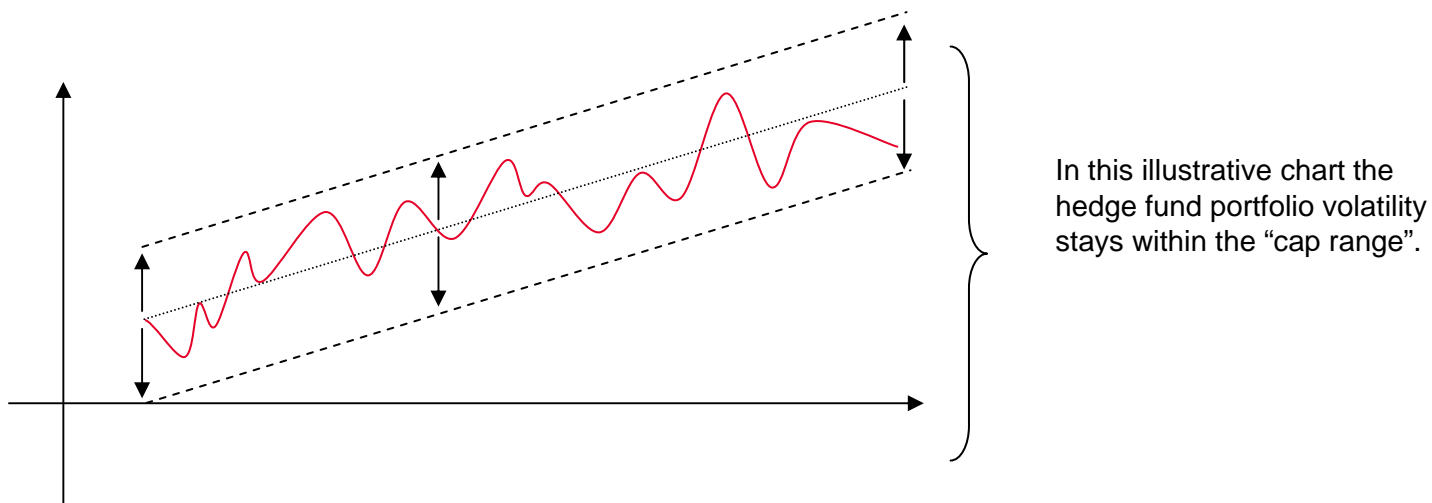
Warrant redemption price = 76.79%

Warrant Initial Price = 30%

Warrant Total Performance = $\frac{76.79\%}{30\%} - 1 = 155.97\%$ i.e. 9.30% p.a.

Vol Cap

- **Concept:** Capping the volatility of the HF portfolio
- **Features:**
 - ▶ Exposure to HF not affected until volatility reaches the “Vol Cap”
 - ▶ Exposure is temporarily adjusted to reduce the overall volatility of the underlying portfolio (including cash)
- **Advantages:**
 - ▶ Well-suited for investors who anticipate underlying portfolio’s volatility to remain below the “Vol Cap”
 - ▶ Improves pricing terms



Vol Target

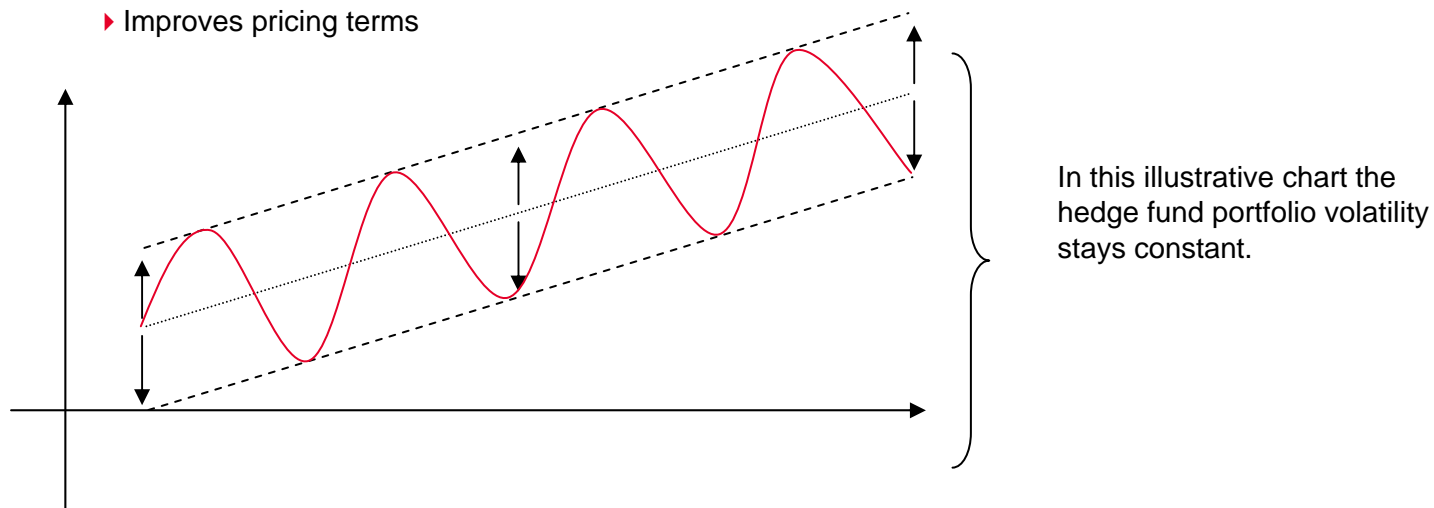
- **Concept:** Volatility-driven exposure

- **Features:**

- ▶ Exposure to the basket of hedge funds is a function of the ratio Target Vol / Realized Vol
- ▶ Requires favorable average weighted liquidity on HF basket (Lyxor managed accounts, etc)

- **Advantages:**

- ▶ Well-suited for investors who anticipate underlying portfolio's volatility to remain around its "target" volatility
- ▶ In case of a drawdown the exposure of the FOF will be reduced, portion of the assets will be invested into cash, mitigating the downside
- ▶ Improves pricing terms



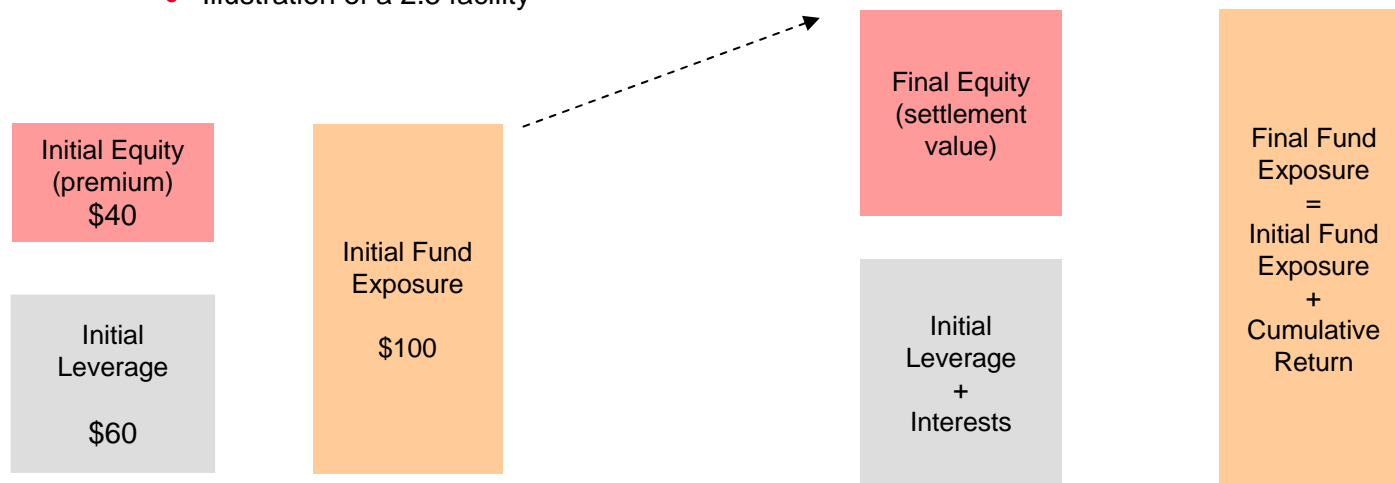


Smart Leverage

- **Concept:** Linking the cost of leverage to the performance of the FOF

- **Typical Features:**

- ▶ Fixed leverage amount
 - No de-leverage
 - No margin calls
- ▶ Financing rate fixed at inception
 - No interest rate risk
- ▶ Financing spread indexed to performance
 - Lower financing cost in low-return environment
- ▶ 2 to 4 times leveraged exposure to a fund of funds
 - Illustration of a 2.5 facility





Example of a “Smart Leverage” transaction

- 3-year structure with 2.5 times leverage

Maturity	3 years		
Fixed Interest Rate (3-year ZC rate)	5.00%	Spread / Excess Annualized Return	50%
Cap	1.80%	Leverage Amount	60
Floor	0.50%	Premium	40

Annualized Fund Performance		0.00%	2.00%	4.00%	6.00%	8.00%	10.00%
Fund Final NAV at maturity		100.00	106.10	112.50	119.10	126.00	133.10
Excess Performance over Fixed Interest Rate		-5.00%	-3.00%	-1.00%	1.00%	3.00%	5.00%
Final Financing Spread		0.50%	0.50%	0.50%	0.50%	1.50%	1.80%
Interest Rate + Spread		5.50%	5.50%	5.50%	5.50%	6.50%	6.80%
Leverage Amount + Accrued Interests		70.45	70.45	70.45	70.45	72.48	73.09
Settlement Value		29.55	35.65	42.05	48.65	53.52	60.01
Total Return on initial equity		-26.14%	-10.89%	5.11%	21.61%	33.81%	50.02%
Annualized Return		-9.61%	-3.77%	1.68%	6.74%	10.19%	14.48%

$$= 60 \times (1+5.50\%)^3$$

Floored at 0.50%

$$= 50\% \times 3.00\%$$

Capped at 1.80%



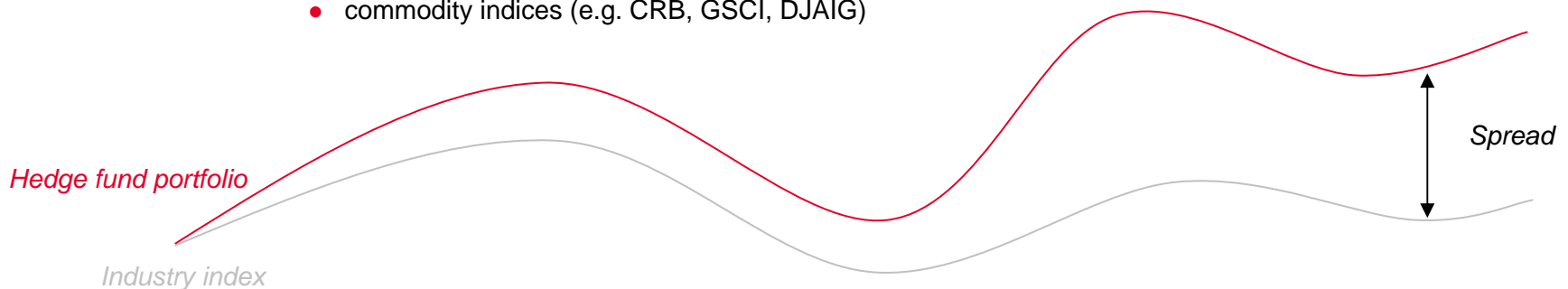
Playing performance over an industry benchmark

■ **Concept:** offering an alternative to traditional Libor as the funding benchmark

- ▶ Traditionally, a leveraged investor pays interest on borrowed funds which is linked to a benchmark such as LIBOR. Consequently, the investor is exposed to fluctuations in interest rates. The investor is long exposure to Hedge Funds and short exposure to interest rates.
- ▶ Playing the performance spread over a benchmark eliminates interest rate exposure by funding the leveraged hedge fund position with the short index position. There is no incremental borrowing cost for leverage. This is especially attractive in an increasing interest rate environment where the investor believes that borrowing costs may exceed the return of the index.

■ **Typical Payoff:**

- ▶ Based on the spread of performance between a chosen basket of hedge funds and:
 - hedge fund indices (e.g. the MSCI Hedge Invest IndexSM)
 - equity indices (e.g. S&P, Nadsaq, Nikkei)
 - commodity indices (e.g. CRB, GSCI, DJAIG)





Example of a “Short MSCI Hedge Invest Index” structure

■ 5-year Warrant

- ▶ Call option
- ▶ 25% premium
- ▶ 75% strike

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Hedge Fund Portfolio Performance	50%	20%	0%	-20%
HF Index Performance	30%	40%	0%	-35%
Spread of Performance	20%	-20%	0%	15%
Payout (= 1 + Spread)	120%	80%	100%	115%
Warrant Redemption Price	45%	5%	25%	40%
Warrant's Total Return	80.00%	-80.00%	0.00%	60.00%
Annualized Return	12.47%	-27.52%	0.00%	9.86%



The Winning Alternative

Equities Hedge Funds Mutual Funds
Commodities Multi-Asset Classes



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