Hedge Fund Return Sources

Partners Group
Passion for Alternative Investments

Alternative Beta Strategies:
A new paradigm to the hedge fund industry

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Partners Group

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"Passion for Alternative Investments"

The hedge fund return puzzle

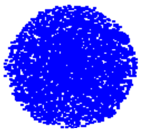
There is a widely held belief that hedge funds earn their returns through the identification of market "inefficiencies" and by superior investment selection, i.e. by producing **"alpha".**

However … since hedge funds generally trade in the most efficient markets:

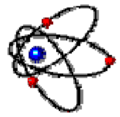
- Is it really plausible that remaining inefficiencies in these markets can provide a steady stream of alpha to the USD 1,500+ billion hedge fund industry?
- Are hedge fund managers really so much smarter than traditional managers?

There must be another, hidden source of returns driving a significant part of the performance of many hedge fund strategies

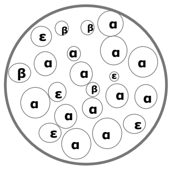
Discovering the "atomic structure" of hedge fund returns



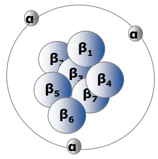
The model of an atom in 1895



The model of an atom according to modern quantum physics



The model of returns in a hedge fund portfolio until today



The emerging model of hedge fund return sources

Understanding Hedge Fund Returns: A Simple Model

Traditional mutual fund

"Alpha"

Market risk premium

Hedge

Proclaimed alpha

Leverage

Leveraged proclaimed alpha

Hedge fund

Superior:
- Security selection
- Market Timing

α

Currency Risk Premium
Event Risk Premium
Convergence Risk Premium
Commodity Risk Premium
Complexity Risk Premium
Short Vega Risk Premium
Liquidity Risk Premium
Term Curve Risk Premium
Small Cap Risk Premium
Value Stocks Risk Premium

Alt-β

Credit Risk Premium
EmMa Risk Premium
Equity Risk Premium

Market-β

One of many investors' most frequent mistakes is not looking deeper into a hedge fund's proclaimed alpha.

Traditional Beta vs. Hedge Fund Beta (Alternative Beta)

Traditional Beta

Exposure to:
- Broad equity market
- Interest rates (duration)
- Credit risk
- Emerging markets

Hedge Fund Beta (Alternative Beta)

Exposure to:
- Style factors, such as small cap vs. large cap, value vs. growth, momentum (Long/Short Equity, Equity Market Neutral)
- Event risk (Merger Arbitrage)
- Volatility (Convertible Arbitrage, Volatility Arbitrage)
- Risks of commercial hedgers in futures markets (Managed Futures)
- Liquidity risk (Distressed Securities, Fixed Income Arbitrage, Reg D)
- Spread risk, e.g. carry trades (Global Macro)

Exposure to Hedge Fund Beta requires special investment techniques including short selling, leverage, and the use of derivatives. Thus, hedge funds have exclusive access to these Alternative Betas.

Some words of caution : Distinguish between alpha and beta

Distinguish „alphas" and „betas" in hedge funds

- Alpha and beta do not come separately.
- Often hedge funds come with "phantom alphas" (i.e. beta is sold as alpha)
- Phantom alphas are not persistent
- Phantom alphas can even be related to unwanted and uncontrolled systematic risks
- Unwanted and uncontrolled systematic risks often lead to DI-WORSE-IFICATION

History and common sense tells us:

The real risk from hedge funds comes from:

- *unwanted and unknown leveraged systematic* risk
- *uncontrolled manager related* risk (style drifts, faulty operations, fraud, etc.)

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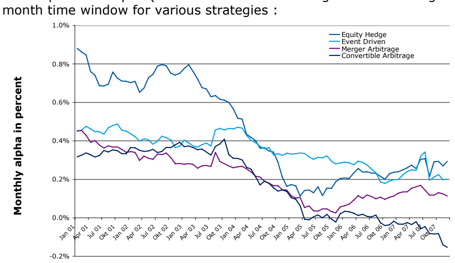
Hedge Fund Alpha Is Diminishing ...

The development of alpha (excess return over a rolling linear factor regression) over a 60 month time window for various strategies :



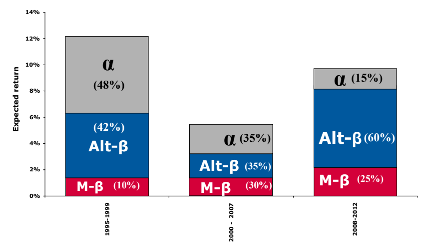
HFRI Index	*Replicating Factors*				
EH	*S&P 500*	*Russell 2000*	*BXM Buywrite Index*	*AR(1)*	
ED	*S&P 500*	*Russell 2000*	*CS High Yield Index*	*AR(1)*	
MA	*SMB*	*Russell 3000*	*MERFX*	*BXM Buywrite Index*	*AR(1)*
CA	*S&P 500*	*Citigroup Convertible Index*	*CS High Yield Index*	*AR(1)*	

AR (1) = Autoregressive factor for tracking of stale pricing
MERFX = Merger fund index
SMB = Small minus Big (Small Cap Factor)

Data source: HFR, Bloomberg. Calculation: Partners Group

Hedge fund returns: Yesterday, today and tomorrow

Average Hedge Fund Return Components over Time

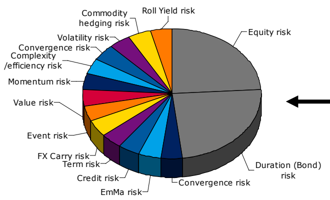


βeta = is a risk premia and a compensation for a risk taken

αlpha = is the result of a zero-sum game (one's profit is another's loss)

Hedge funds in a global portfolio

The traditional "Balanced Portfolio" does not include other risk premia that have favorable diversification qualities and generate attractive alternative returns.



Traditional investors benefit only from a few risk premia (blue) available in the market and miss multiple other sources of return!

Investors can access other uncorrelated alternative "risk premia" and thus return sources through hedge funds.

The real benefits from hedge funds do not necessarily come from accessing today's star trader, but from the persistent benefits of alternative risk premia

The Issue of Hedge Fund Fees

Hedge fund fees

- **Pay a lot** (and even more in the future) for **true alpha** skill unavailable anywhere else
- **Pay less** for systematic exposure to **alternative betas**, but more than regular stock market beta as extra skills are required
- **Don't pay** hedge fund fees for **traditional beta exposure** (even when a few short positions are thrown in for credibility)


'Cloning' strategies get widespread attention


INVESTMENT BRIEFING: REPLICATING STRATEGIES

Opening up to atomic theory

Hedge fund fee structure does not discriminate between skill based performance (alpha) and risk factor compensation (beta)

Fees I: How about saving the manager fee layer?

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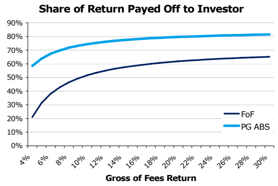
	FoF	PG ABS
Hedge Fund Return Gross of Fees	**9% - 18%**	**9% - 18%**
Management Fee HF (2%) / PG ABS (1.25%)	2.0%	1.25%
Performance Fee HF (20%) / PG ABS (15%)	1.4% – 3.2%	1.2% - 2.5%
Hedge Fund Return Net of Fees	**5.6% - 12.8%**	**6.6% - 14.2%**
Management Fee FoF (1%)	1.0%	
Performance Fee FoF (10% above US LIBOR)	0.2% - 0.9%	
FoF Return Net of Fees	**4.4% - 10.9%**	**6.6% - 14.2%**



Total fee savings potential: 220 bps – 330 bps p.a.

Fees II: Do you really need to pay asymmetric performance fee in fund of funds?

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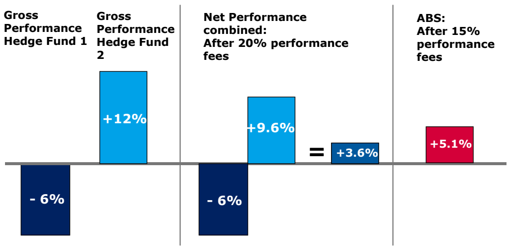
The ABS performance fee is only paid on the netted performance. In contrast, for a portfolio of hedge funds the performance is not netted.



Total fee savings potential: 40 bps – 80 bps p.a.

Fees III: How can you avoid to pay prime brokers excess leverage financing fees

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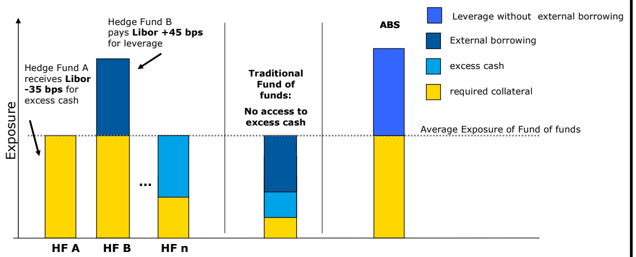
ABS typically employ instruments like futures and options that allow exposure to the desired market with only a fractional size of the underlying cash. Therefore cash can be employed several times.



Total fee savings potential: 40 bps – 80 bps p.a.

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"Passion for Alternative Investments"

Modeling Alternative Beta: Two Different Approaches

A. Top down: Linear Regression Approach (RFS)

Identify Factors — Replication through generic (linear) risk exposure (Replicating Factor Strategies - RFS) → **Invest** — Direct exposure to explaining factors

B. Bottom up: Non-linear rule-based Approach (AltBeta Strategies)

Identify Risk Premia — Identify various Hedge Fund Risk Premia by analyzing the industry → **Well known ideas** — Identified Risk Premia backed by academic research → **Invest** — With rule-based approach like Hedge Funds do

1. The Top Down Approach - Linear regressions

Hedge Fund

Superior:
-Security selection
-Market Timing

α

Currency Risk Premium
Event Risk Premium
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Short Vega Risk Premium
Liquidity Risk Premium
Small Cap Risk Premium
Value Stocks Risk Premium
Term Curve Risk Premium
Credit Risk Premium
EmMa Risk Premium
Equity Risk Premium

β

We compare the performance of the factor model to the performance of the hedge fund strategy indices (HFRI, HFRX, S&P, where available).

$$Re = \alpha + \Sigma\,(\beta_i * F_i)$$

The "**replicating factor strategy**" (in the following referred to as "**RFS**") returns are simply calculated based on the factor returns times the factor weights. The latter were obtained based on a rolling regression analysis of a five year window, i.e. no in-sample optimization.

Replicating Factor Strategies applied

Results of the regression using the HFR event driven index as a dependent variable:

Factor	Beta/Alpha	t-stat	Adj. R-squared
S&P 500	21.3%	9.84	82.6%
Russell Spread (Small - Large)	20.0%	9.36	
CS High Yield	27.0%	5.52	
AR (1)	20.7%	4.83	
Constant (=Alpha)	0.4%	4.62	

Comparison of the replicated strategy (factors above) with the HFR event driven

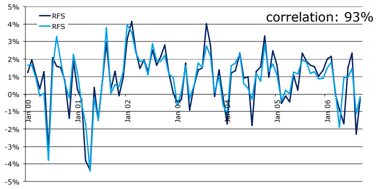


Table 2: Percentage of returns explained by chosen market factors for specific hedge fund styles (period: 1994-2004)

Equity Hedge (long/short)	[illegible]
Equity market neutral	35.3%
Short selling	61.2%
Event driven	[illegible]
Distressed securities	68.4%
Merger arbitrage	[illegible]
Fixed income arbitrage	40.5%
Convertible arbitrage	54.0%
Global macro	49.7%
Managed futures	34.3%

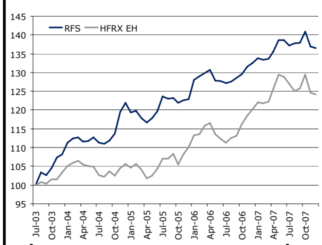
Source: Jaeger / Wagner (2005)

Data: HFR, Bloomberg. Calculation: Partners Group

Good news:
Fairly simple to calculate and invest!

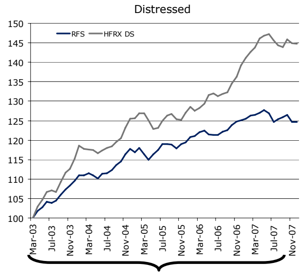
Trading RFS: Two Examples

Good replication
Long/Short Equity



RFS works

Less good replication
Distressed



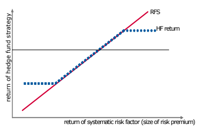
RFS does not work as well

Reference: L. Jaeger et al., "Modeling and Benchmarking of Hedge Funds: Can passive hedge fund strategies deliver?", Journal of Alternative Investment, Winter 2005

Why Do RFS Not Always Work?

Limitations of RFS

1. No nonlinearity

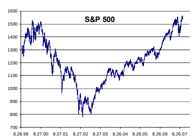


- **RFS are linear approximations of hedge fund returns**. They do not consider non-linear payout profiles inherent in hedge fund strategies!

2. Backward looking

- **RFS is backward looking:** In contrast to hedge fund managers who base their decisions on current data, RFS adjusts exposures with a significant time lag. This can be problematic in a fast changing environment!

3. Mostly equity exposure



- **RFS models and incorporates mostly the equity exposure of hedge funds,** i.e. specifically that part that is least attractive to investors.

Bad news:
RFS is not suitable to describe hedge fund returns in all market environments.
It mostly captures the part of hedge fund returns that investors find least attractive

The two essential approaches

B. Bottom up rule-based approach: the PG AltBeta model

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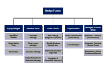
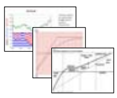
Observable hedge fund strategies + **Supporting academic research** + **Hedge fund investment techniques**





Alternative Beta Strategies (AltBeta)

PG AltBeta marries in-depth industry experience, academic risk premia research and hedge fund investment technique

G:\Products\Hedge Funds\PG Alternative Beta Strategies\Presentations\2008\04 2008 – Partners Group Alternative Beta Strategies

The two essential approaches

2. The risk premium based approach – Bottom up

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- Instead of replicating of hedge fund *indices* gain direct exposure to individual hedge fund risk premia, i.e. alternative betas
- Various risk premia in the global capital markets (alternative Betas) are the "atoms" of hedge fund returns. Note: Returns in single hedge fund strategy sectors are often already a composition of various risk premia
- Modeling and investing in hedge fund risk premiums (i.e. alternative betas) requires alternative investment techniques (see before). Simple asset class exposures cannot do the job of extracting alternative betas.
- Therefore, extracting alternative betas requires the definition and implementation of **rule based trading strategies**. We refer to these as "**Alternative Beta Strategies**". Examples include trend following, spread trading and option strategies
- The definition and extraction of alternative beta strategies is not a pure job of mathematical optimization. It also requires sound understanding of hedge funds themselves. Note: A fund of funds perspective can be extremely helpful here.

The two essential approaches

Bottom up - Rule-based Approach: Example I

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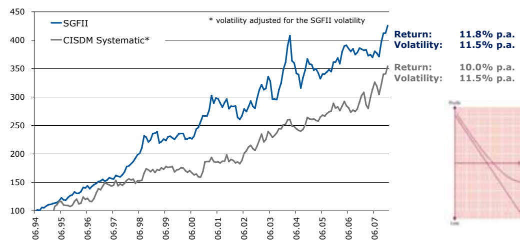
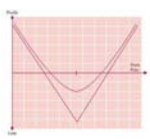
Earning the "commodity hedging demand premium": Involves taking the opposite position of commercial hedgers transferring their natural price risks.





Rule-based strategy:
Trend following on 25 most liquid US futures markets. Positive momentum leads to long positio
negative momentum leads to short position.

Source: Bloomberg (SGFII <Index>, CISDM)
See also L. Jaeger et al in "The sGFI – A case study", Journal of Alternative Investments, Summer 2002.

The two essential approaches

Bottom up - Rule-based Approach: Example II

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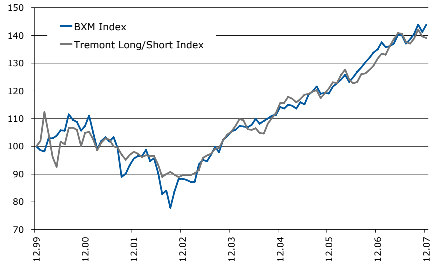
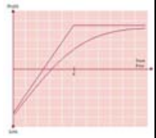
Involves selling down-side protection to equity investors



Return: 5.0% p.a.
Volatility: 9.8% p.a.

Return: 4.5% p.a.
Volatility: 9.2% p.a.



Rule-based strategy:
Involves buying stocks and selling simultaneously (covered) call options.

Source: Bloomberg

The two essential approaches

Bottom up - Rule-based Approach: Example III

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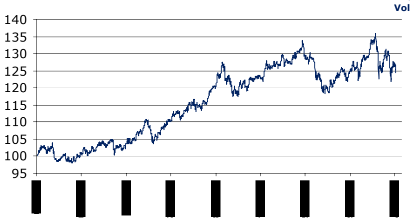
Performance of the Deutsche Bank Carry Index

Excess Return (over risk free): 2.7% p.a.
Volatility: 6.3% p.a.



Rule-based strategy:
Borrow from low yielding currencies, invest in high yielding currencies

Source: Bloomberg

The two essential approaches

Integration of alternative risk premia: a simple example

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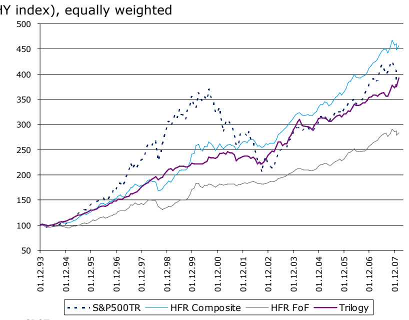
How alternative risk premium play together – a simple example

Combination of trend following (SGFII), "buy-write" (BXM), and credit strategy (CSFB HY index), equally weighted



Performance

Annualized Return: 9.7% p.a.

Annualized Volatility: 5.4% p.a.

Maximum Drawdown: -9.8%

Performance

Annualized Return: 7.7% p.a.

Annualized Volatility: 5.7% p.a.

Maximum Drawdown: -13.1%

Source: Bloomberg, CBOT

History of Alternative Beta Strategies

1997: Publication of "Empirical Characteristics of Dynamic Trading Strategies: The case of hedge Funds" by Fung Hsieh

2003:

- Introduction of the term "alternative beta" by Fung et al. in "The Risk in Hedge Fund Strategies: Alternative Alphas and Alternative Betas", in L. Jaeger (ed): "The new generation of Risk management for Private Equity and HF Investments".
- Partners Group (PG) research published; "Hedge Fund Return sources" topic on annual PG round tables
- Decision to launch replicating beta hedge fund strategies; Launch of ABS quant team

2004:

- Extensive research at PG of making risk premia models investable
- October: Inception of PGAS Green Vega Cell; starting point of ABS track record

2005:

- End of 2005: First institutional interest in hedge fund replication

2006:

- Tremendous institutional interest in hedge fund replication
- November: FT article triggers wave of discussion of hedge fund replication in the global financial industry
- Asset base of PG ABS program up to 580 Mio. USD
- Partners Group launches its first core-satellite products

2007:

- Asset base of PG ABS program exceeds 800 Mio. USD
- Strategy set expanded to 40 strategies

2008:

- Launch of "passive" fund of alternative betas

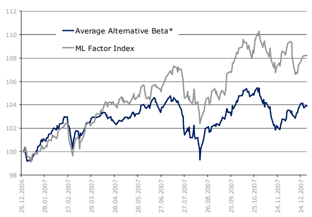
Alternative Beta: The real benefits of hedge funds

- Dilemma for many hedge fund replicators: There is a lot of *equity beta* in current hedge fund returns. But: Clients want absolute and uncorrelated returns.
- The large pack of currently available hedge fund replicators has chosen to follow a very simple path: Why not giving up on alternative beta and model hedge funds with traditional beta only?
- This actually proved reasonably successful in the last four years (which is exactly the period most providers chose to display when they show their back-tested performance to attract investors) but would have failed miserably in the bear market from March 2000 to March 2003 - a period when hedge funds as an aggregate made money despite heavy losses in the equity markets.
- More sophisticated investors would probably agree that this is not an acceptable concept to generate hedge fund exposure as it does not provide what investors want from hedge funds.
- Alternative beta (risk premia beyond traditional equity (and bond) beta) can serve as a great diversifier and is ultimately the strongest rational to invest in hedge funds.

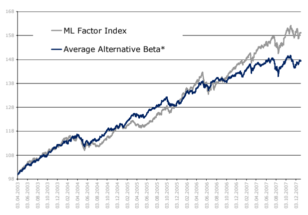
Alternative Beta kept up with equity beta in the bull market 2003-2007

Performance of a risk weighted average of simplified alternative beta returns compared to the Merrill Lynch factor model as a good proxy for the "equity component" in hedge fund return.

YTD



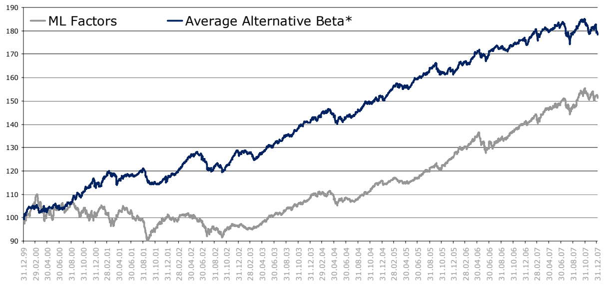
2003-2007



Alternative Beta factors: Deutsche Bank Carry Index, CDX High Yield Index, CRB Commodity Index, Value versus Growth Spread, Small cap versus large cap spread, BXM covered call writing (BXM Index- 0.5*SPX Index), the Merger Arbitrage Fund (MERFX Index), and the spread between emerging market equity returns and developed equity markets (MSCI Emerging Markets – MSCI World)

Source for ML factor model: Bloomberg, PG calculation prior to 2003

The real benefits of Alternative Beta over the full investment cycle

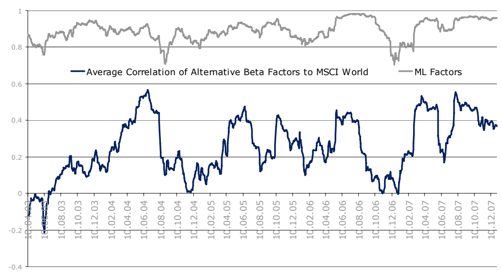


Alternative Beta factors: Deutsche Bank Carry Index, CDX High Yield Index, CRB Commodity Index, Value versus Growth Spread, Small cap versus large cap spread, BXM covered call writing (BXM Index- 0.5*SPX Index), the Merger Arbitrage Fund (MERFX Index), and the spread between emerging market equity returns and developed equity markets (MSCI Emerging Markets – MSCI World)

Source for ML factor model: Bloomberg, PG calculation prior to 2003

Alternative beta correlation are far more beneficial

Rolling correlation (60 days) of the risk weighted average of alternative beta returns to the MSCI World Equity Index are much lower than the 90-100% correlation regression based models display.



Two portfolios of alternative betas: Performance target parameters

AltBeta - Green Vega (goal: approximate global hedge fund industry)

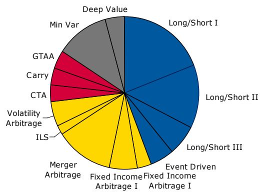
- Fee schedule: 1.25% management fee, 15% performance fee
- Net performance Target: Libor plus 400-600,
- Volatility Target: 6-8%
- Long term sensitivity to equity markets: Beta of 0.5

AltBeta - Black Vega (passive allocation: equally balanced across alternative risk premia)

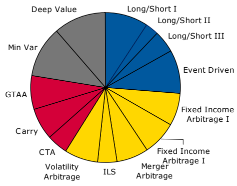
- Fee schedule: 1.25% management fee flat
- Net performance Target Libor plus 200-400
- Volatility Target: 4-6%
- Long term sensitivity to equity markets: Beta of 0.2

Two portfolios of alternative betas: Asset Allocation

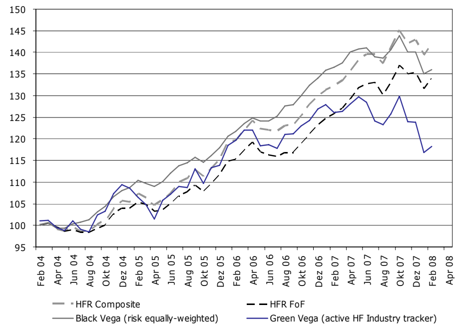
Green Vega (active HF industry proxy)



Black Vega (equally weighted risk budgets)



Two portfolios of alternative betas: Net performance



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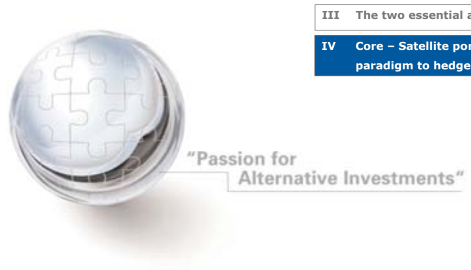


The Core - Satellite Investment Approach

Limitations of the replicating approach

- Some hedge fund strategies (such as Distressed Securities, Activist Event Driven) do not lend themselves as much to successful replication because they rely, by their very nature, more on skill/know-how or special market access rather than systematic exposure (e.g. variable bias, highly opportunistic or highly selective).
- There are managers in any strategy that have demonstrated an ability to generate alpha over time also after taking into account the systematic risk exposure biases of their strategy.

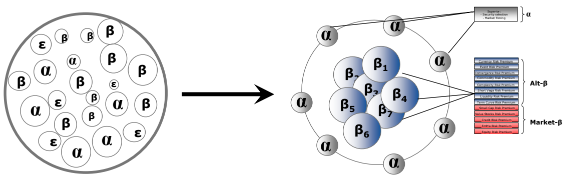
Such hedge fund strategies can offer significant diversification benefits to ABS, thereby improving the overall risk/return properties of a combined portfolio.

So what does that mean for multi-strategy multi-manager portfolios?

Similar to the long only investment industry, employ a Core–Satellite approach for hedge fund investing!

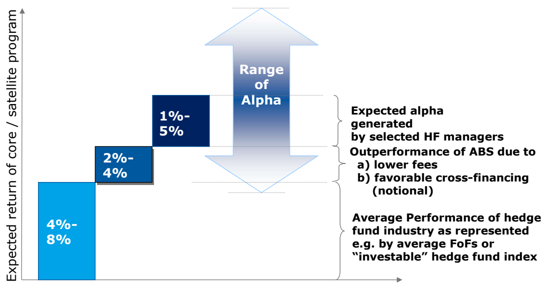
The model of returns in a hedge fund portfolio until yesterday

The emerging model of hedge fund return sources



Separate inexpensive Alternative Beta and skill-based Hedge Funds

Complement PG ABS with Alpha Producing Managers



A core/satellite approach combines the generic exposure to hedge fund returns with significant alpha returns by satellite managers

Summary and Conclusion

1. **Hedge funds generate returns primarily through risk premia, and in addition also by exploiting inefficiencies in imperfect markets.**
2. **The concept of Alternative Beta Strategies goes further than factor based replication techniques in that it explicitly accounts for the non-linear dependency structure of hedge fund returns. It thus offers a valid, theoretically more sound, and cheaper alternative to the currently offered hedge fund index products.**
3. **Alternative Beta Strategies are based on a proven theoretical framework and have a proven track record more than three years.**
4. **Alpha and Beta do not come separate but in an uncontrolled and perhaps undesired (and cost-inefficient) combination. As in traditional investing a "core - satellite" approach solves this.**
5. **A core - satellite approach to hedge fund investing emerges naturally:**
   - **cost efficient exposure to hedge fund ("alternative") Betas with ABS as the core.**
   - **select Alpha generating managers as satellites.**

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