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Hedge Funds in Asset & Liability Management

How to Implement Hedge Funds in a Pension Fund Portfolio

**GUEST LECTURE
Seminar Applied Portfolio Theory
University of Zurich**

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- ALM for Pension Funds – Methods and Objectives
- Should Hedge Funds be included in the Strategic Asset Allocation – some criteria would help!
- Do Hedge Funds meet these criteria?
- Alternative ways to implement Hedge Funds in a Pension Fund Portfolio
- Summary

ALM for Swiss Pension Funds (1)

- Legal requirements
 - „The Pension Plan has to carefully select, manage and monitor its investments...“

Additional aspects are:

- Security
- Financial Status
- Structure and changes of liabilities

with a clear emphasis on meeting liabilities.

ALM for Swiss Pension Funds (2)

Art. 50, Abs. 1 und 2 BVV 2 : « Sicherheit und Risikoverteilung »

- 1 « Die Vorsorgeeinrichtung muss ihre Vermögensanlagen sorgfältig auswählen, bewirtschaften und überwachen. »

- 2 « Sie muss bei der Anlage des Vermögens in erster Linie darauf achten, dass die Sicherheit der Erfüllung der Vorsorgezwecke gewährleistet ist. Die Beurteilung der Sicherheit erfolgt insbesondere in Würdigung der gesamten Aktiven und Passiven nach Massgabe der tatsächlichen finanziellen Lage sowie der Struktur und der zu erwartenden Entwicklung des Versichertenbestandes. »

Challenges

- As an investor you have to decide if „new“ strategies will help you to achieve these goals.
- Implementing Hedge Funds and other strategies without considering the facts can be costly.
- Giving up possible positive contributions from such strategies can be costly as well.

ALM Methods

Actuarial vs. Market View

Actuarial View (classical ALM)

- The present value of future liabilities is derived by applying a constant technical interest rate.

→ Actuarial Value of Liabilities

- Liabilities have no interest rate risk.

→ Benchmark: “Absolute Return”

Market View (Market-based ALM)

- The present value of future liabilities is derived by applying the current interest rate structure.

→ Market Value of Liabilities

- Interest rate risk corresponds to a long-term bond portfolio.

→ Benchmark: “Liability”

⇒ By rule of thumb both values differ by approx. 10%

ALM Methods

Consequences for the Optimal Investment Strategy

Actuarial View

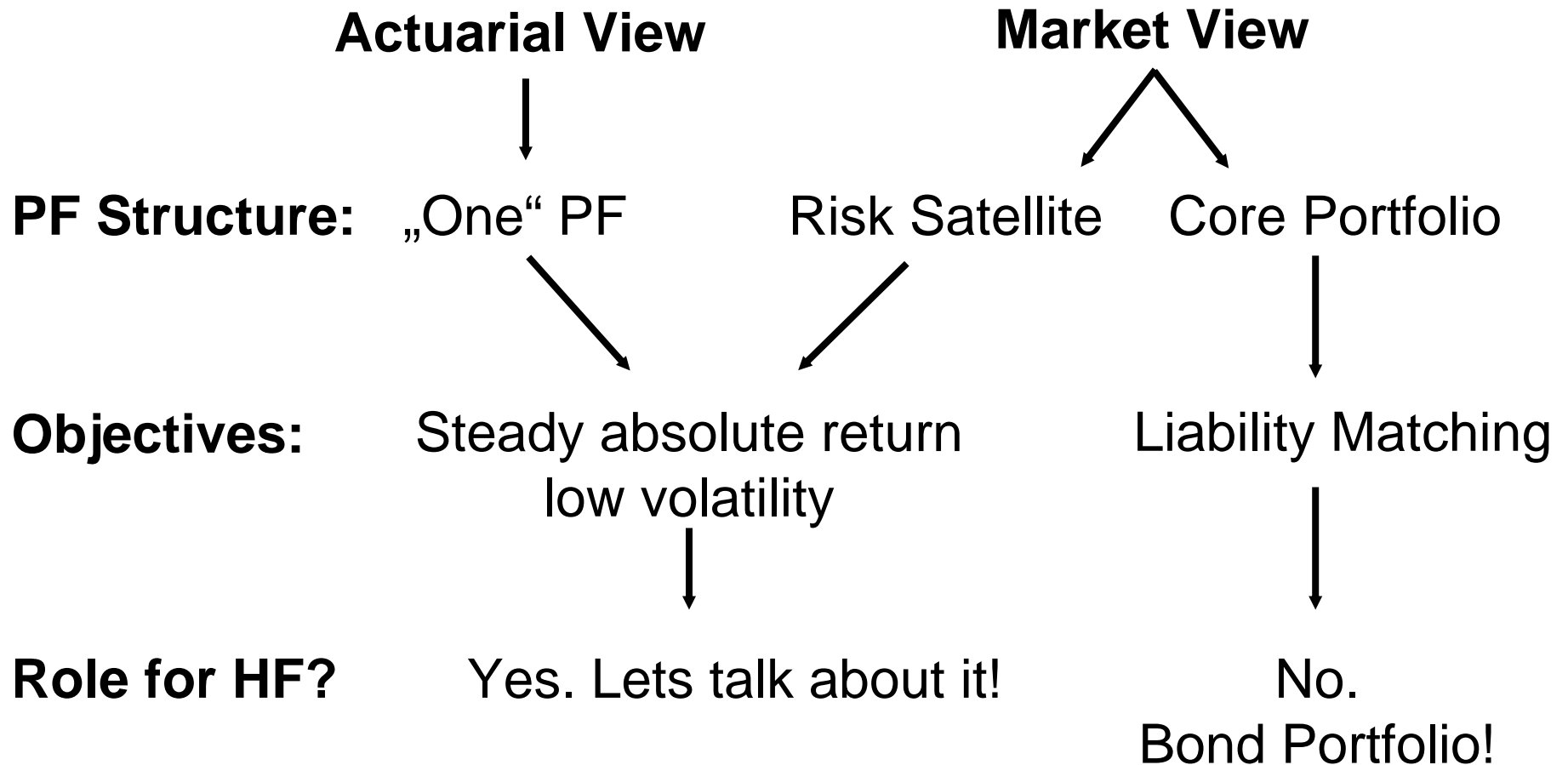
- The optimal strategy achieves a return that is equal to or higher than the required actuarial rate of return and has a low absolute volatility.

Market View

The optimal strategy consists two parts:

- „Core“ Portfolio: Matches liabilities with least risk
⇒ Bond portfolio with “long” benchmark
- „Risk“ Satellite: Achieves risk premiums over bonds (equities, real estate, hedge funds?)

ALM Methods and the Role for Hedge Funds?



Hedge Funds and Strategic Asset Allocation

- Should Hedge Funds be included in the Strategic Asset Allocation (SAA)?
 - What categories are in the SAA?
 - What categories are not in the SAA?
 - What are the criteria for inclusion/exclusion of a category?
 - Why is Alpha not there today?

What are the criteria for inclusion/exclusion?

1. Systematic Risk based on an independent asset category
 - Independent means, that it adds an investment dimension in an Arrow-Debreu-World: an asset that cannot be constructed from the other asset categories.
 - Systematic means, that you cannot eliminate the risk through diversification.

AND

2. Investors are compensated for bearing the risk.

AND

3. It should be repeatable.

What categories are in/not in the SAA?

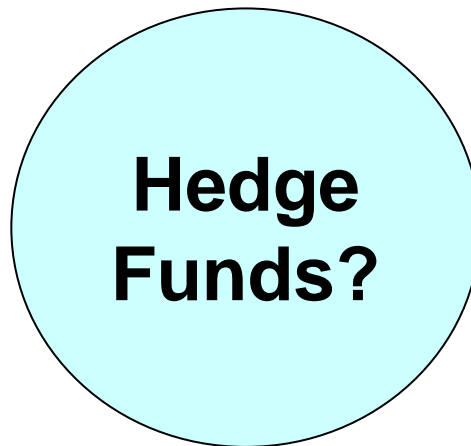
Asset Categories

In:

- Bonds
- Equities
- Property/Real Estate
- (Commodities)

Out:

- ~~Forex~~ No risk premium in the long run
- ~~Derivatives~~
- ~~Convertibles~~ Replicable



Do Hedge Funds meet the stated criteria?

- Are there *additional systematic* risk categories that enhance the existing investable universe?
 - If there are new risk categories:
 - Are we compensated for bearing the risk?
 - Will the risk premium remain?
 - And can there be a reliable structural or skill-based Alpha?
- Answering these questions will tell us a lot about how we have to deal with Hedge Fund Investments!

Alternative Ways to Implement Hedge Funds in a Pension Fund Portfolio

1. Hedge Funds as an asset class
 - Traditional multi-strategy / multi-manager FoHF

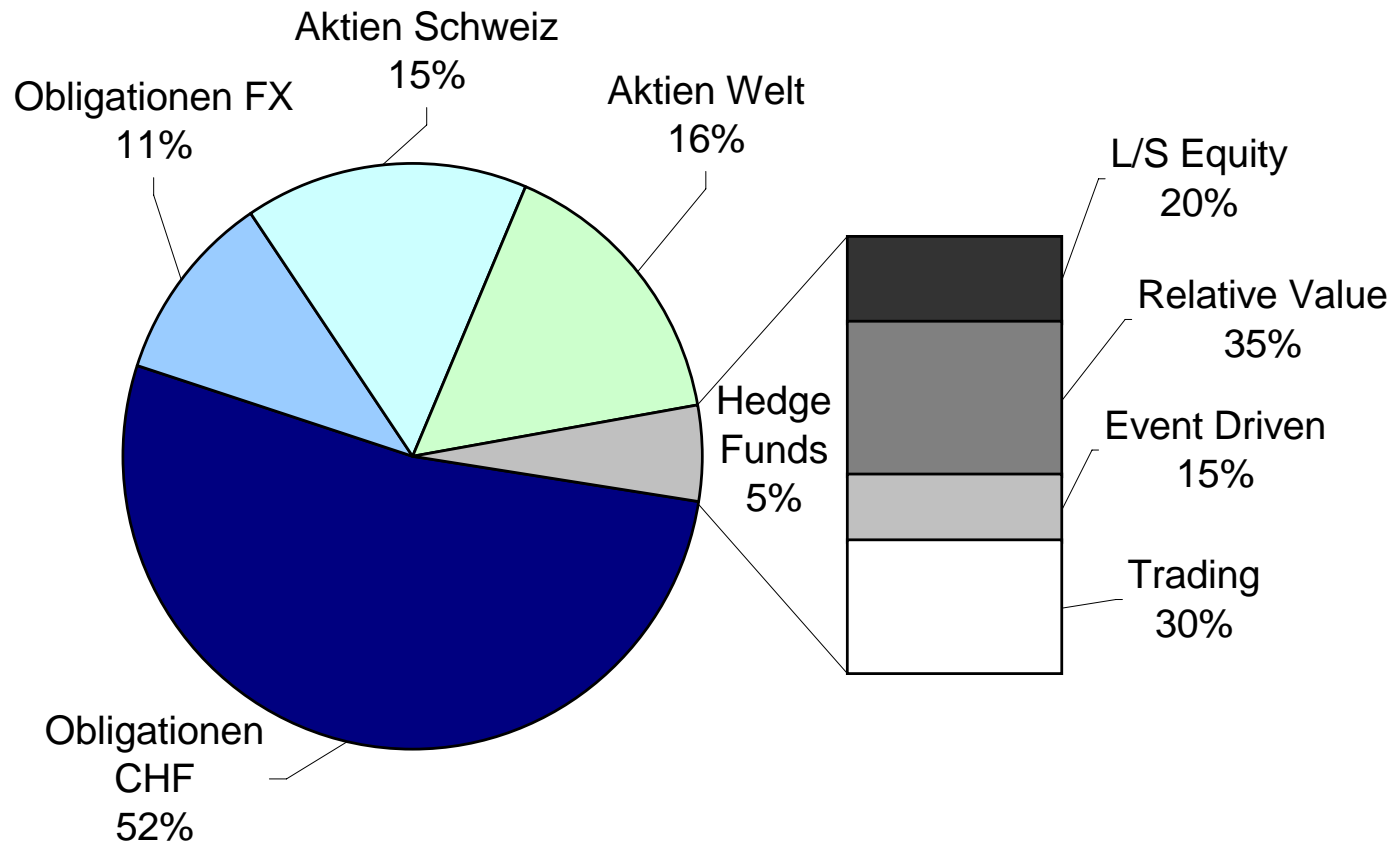
2. Hedge Funds as an integral part of the asset allocation and portfolio structure
 - Hedge Funds as a complement to the traditional investment universe (“alternative beta”)
 - Hedge Funds as a substitute for traditional active investment management (“portable alpha”, core-satellite +)

Hedge Funds as an Asset Class (1)

Example of Mandate Specification FoHF Investment		
Reference Currency	CHF	
Investment Capital	CHF 25 Mio.	
Investment Target:		
- Expected Return (Netto)	CHF Libor 3M p.a. + 5%	
- Achieved Volatility	< 7%	
- Max. Draw Down	< - 10%	
- Strategic Leverage	none	
- Number of Managers	min. 15	max. 45
- Position pro Manager	min. 2%	max. 10%
Asset Allocation	min.	max.
- L/S Equity	10%	40%
- Relative Value	30%	60%
- Event Driven	10%	20%
- Trading	0%	30%
Liquidity	quarterly, 95 days announcement	
Lock Up	max. 3 months	

Hedge Funds as an Asset Class (2)

Beispiel: FoHF als Anlagekategorie



Hedge Funds as an Asset Class (3)

-
- Advantages
 - Typical first step investment
 - Simple implementation
 - Selection of product, independent to the current asset allocation
 - Comparability with other products (peer group)

 - Disadvantages
 - Includes traditional Beta
 - Potentially increases your strategy risk
 - Is overpaid as there are more efficient ways to access trad. Beta
 - Cannot be optimized with respect to your asset allocation / objectives
 - Potential of industry is not exploited

Hedge Funds as an Integral Part of the Asset Allocation and the Portfolio Structure

Strategy Level

Traditional risk premium

- Bonds
- Equities
- Real estate

Alternative risk premium (must **not** be Hedge Funds)

- ILS
- Structured Finance
- Credit markets
- Energy markets

Implementation Level

- Active vs. passive?
- Hedge Funds as Alpha provider in combination with passive core investments
→ substitute (satellite +)

- Hedge Funds as “Door Opener” and/or risk carrier!
- Alpha & Beta component
→ complement

Hedge Funds as a Complement to the Strategic Asset Allocation

- Access to new markets and new, alternative risk premiums
- Examples:
 - Agro financing
 - Alternative risk transfer (cat risks, weather)
 - Natural resources (energy, CO2 certificates, commodities)
 - Specific credit markets (CDO, MBO, ABS, ABL)
 - Structured finance

Hedge Funds as a Substitute for Traditional Active Investment Management (1)

- **Idea:** Separation of Alpha an Beta

Beispiel: Trennung von Alpha und Beta in einem traditionellen Mandat			
	Manager A Aktien Portfolio	Benchmark Gewichtung	Manager A Aktive Positinierung (PF - BM)
Aktie A	20%	18%	2%
Aktie B	35%	38%	-3%
Aktie C	10%	13%	-3%
Aktie D	5%	4%	1%
Aktie E	30%	27%	3%

Focus of hedge fund



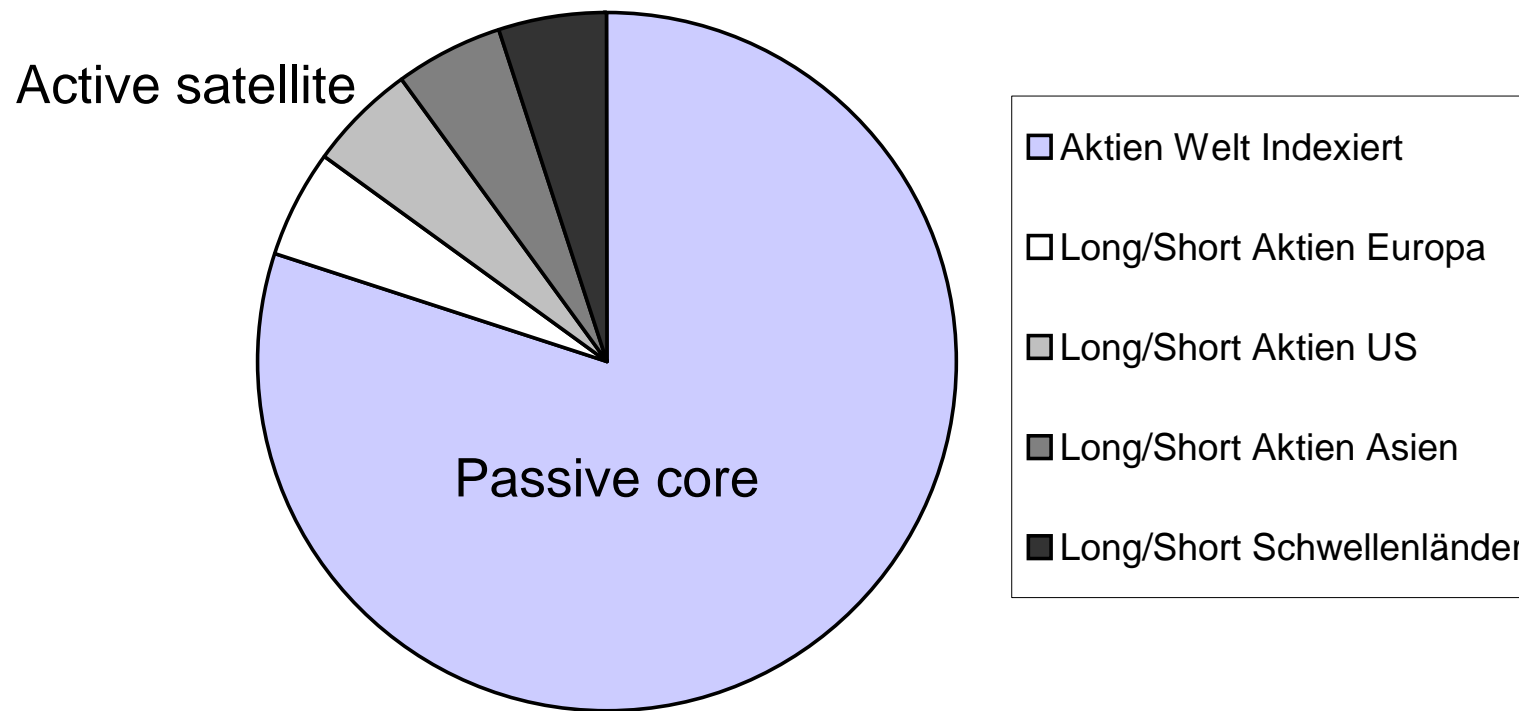
Portfolio implementation (core - satellite+):

→ Beta: Core passive Portfolio („cheap“ beta) → ETF

→ Alpha: Active satellite (portable „real“ alpha) → Single Hedge Funds strategy

Hedge Funds as a Substitute for Traditional Active Investment Management (2)

Beispiel Core/Satellit durch Hedge Funds im Bereich Aktien



Hedge Funds as a Substitute for Traditional Active Investment Management (3a): Equity

Example 2: Equity Portfolio + single Hedge Fund style (Equity Hedged) as an active Satellite.

The optimal Hedge Fund weight, subject to a maximal Tracking Error of 2% p.a., is 10%!

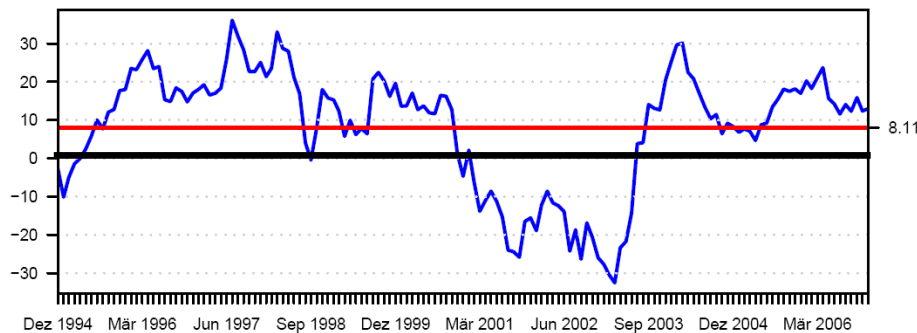
<i>Konsolidierung Aktien Equity Hedge Januar 1994 - Dezember 2006</i>	Aktien	Stilfokussierte HF Beimischung (Aktien 90% & 10% HF)	Differenz HF - Aktien
Rendite kumuliert	175.0%	187.0%	12.0%
Rendite p.a.	8.1%	8.5%	0.4%
Volatilität	13.4%	12.6%	-0.8%
Skewness	-1.0	-1.0	0.0
Kurtosis	4.1	4.1	0.0
Max. Drawdown (gegenüber 0%) Periode Drawdown	-62.0% Aug 00 - Mrz 03	-56.9% Aug 00 - Mrz 03	5.2%
Alpha		0.83%* p.a	
Beta		0.94*	
Tracking Error p.a.		1.09%	

*Ho: Alpha = 0; Beta = 1; * Signifikant 5%*

Hedge Funds as a Substitute for Traditional Active Investment Management (3b): Equity

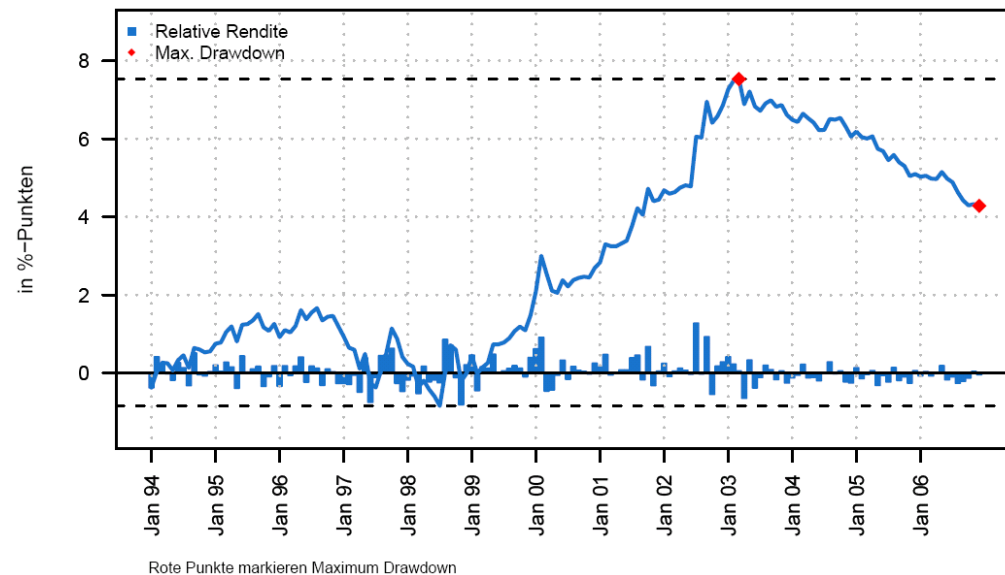
Example 2: Equity Portfolio + single Hedge Fund style (Equity Hedged) as an active Satellite.

Rollender Mittelwert (annualisiert 12 Monate)



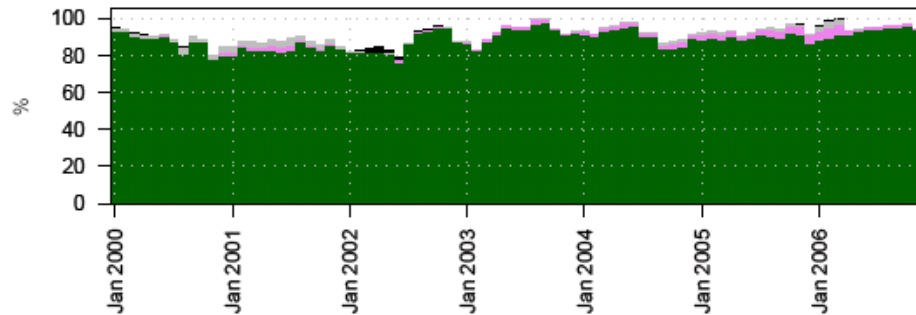
Absolute Return:
Equities 90% & HF 10%

Relative Return:
Equities 90% HF 10% - Equities 100%

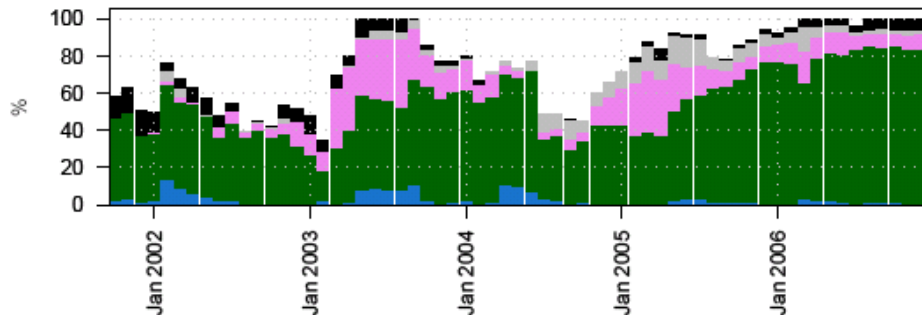


Hedge Funds as a Substitute for Traditional Active Investment Management (3c): Equity

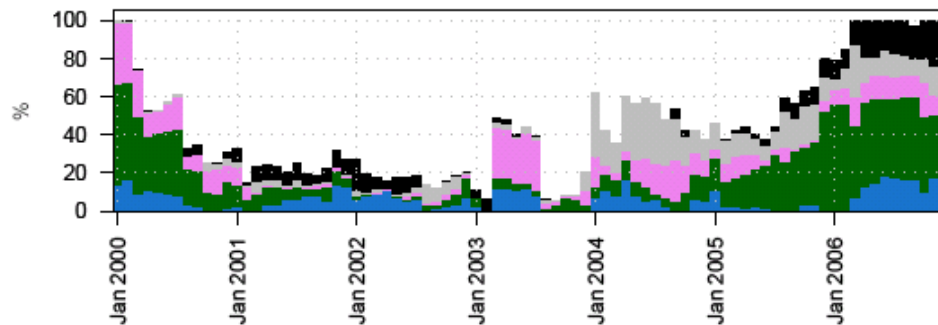
Risk Decomposition (rolling 36 months)



Equities



**Single Hedge Fund Style
Equity Hedged**



**Single Hedge Fund Style
Equity Market Neutral**

Legend



Hedge Funds as a Substitute for Traditional Active Investment Management (3d): Equity

Example 2: Some considerations (1)

- Strategy Equity 90% + single Hedge Fund style 10%
 - Outperformance with lower risk (Tracking Error: 1.1% p.a.)
 - Significant positive alpha
- But...
 - The major contribution of the style focused Hedge Funds are in the bear markets,
 - the observed relative returns are clearly negative compared to the bull markets.
 - The risk decompositions show that the Hedge Fund's underlying risks are not the same as the ones of your equity portfolio!

Hedge Funds as a Substitute for Traditional Active Investment Management (3e): Equity

Example 2: Some considerations (2)

- Is the outperformance a consequence of investing in other asset classes and therefore a compensation of other risk premiums?
- Can I interpret Equity Hedged Managers as an equity substitute just because they have partly the same name?
- The blind implementation of these kind of strategies can be expensive (e.g. August 2007 and the performance of the Market Neutral Managers!).

Hedge Funds as a Substitute for Traditional Active Investment Management (4a): Bonds

Example 1: Bond Portfolio + single Hedge Fund style (Relative Value & Event Driven) as an active Satellite.

The optimal Hedge Fund weight, subject to a maximal Tracking Error of 2% p.a., is 30%!

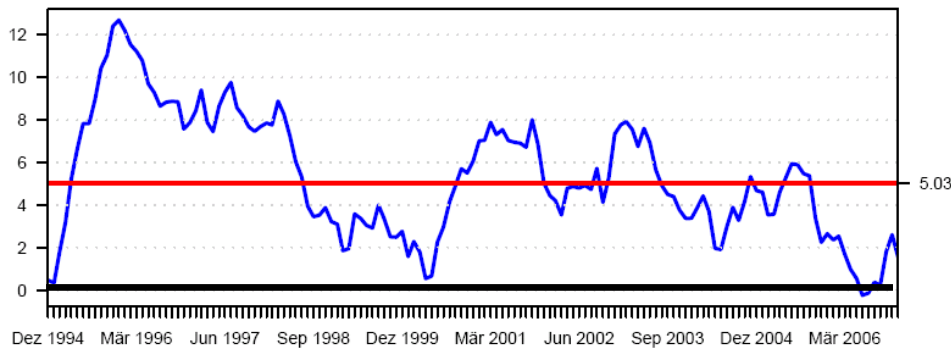
<i>Konsolidierung Obligationen Relative Value & Event Driven Januar 1994 - Dezember 2006</i>	Obligationen	Stilfokussierte HF Beimischung (Obli 70% & 30% HF)	Differenz HF - Obli
Rendite kumuliert	67.9%	92.3%	24.4%
Rendite p.a.	4.1%	5.2%	1.1%
Volatilität	2.5%	2.0%	-0.5%
Skewness	-0.2	-0.3	-0.1
Kurtosis	-0.6	-0.1	0.5
Max. Drawdown (gegenüber 0%)	-4.2%	-2.2%	2.0%
Periode Drawdown	Apr 99 - Mai 00	Jan 94 - Jun 94	
Alpha		2.35%* p.a.	
Beta		0.68*	
Tracking Error p.a.		1.38% p.a.	

*Ho: Alpha = 0; Beta = 1; * Signifikant 5%*

Hedge Funds as a Substitute for Traditional Active Investment Management (4b): Bonds

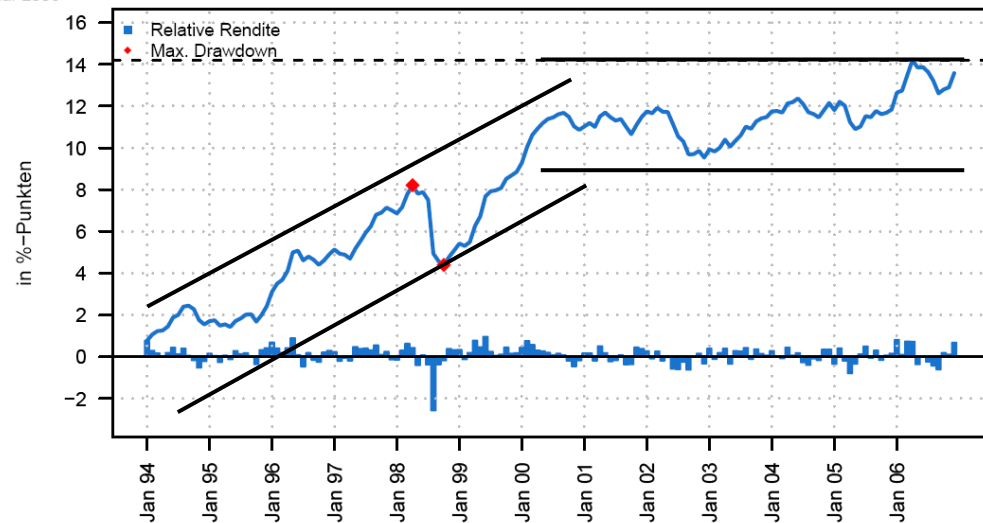
Example 1: Bond Portfolio + single Hedge Fund style (Relative Value & Event Driven) as an active Satellite.

Rollender Mittelwert (annualisiert 12 Monate)



Absolute Return:
Bonds 70% HF 30%

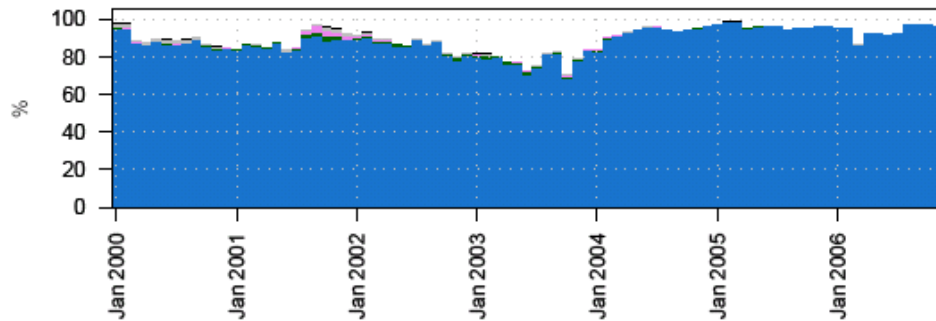
Relative Return:
Bonds 70% HF 30% – Bonds 100%



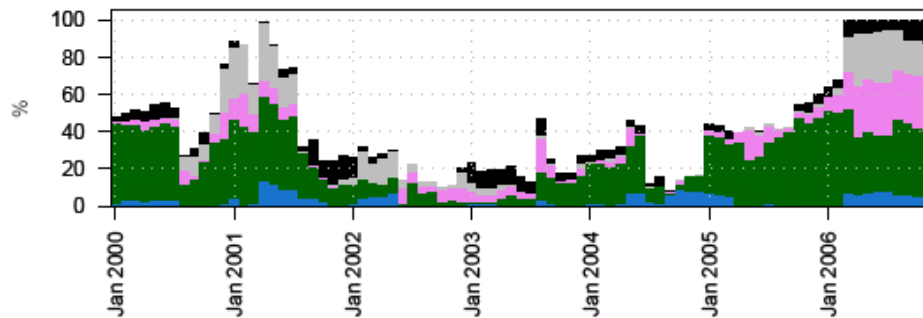
Rote Punkte markieren Maximum Drawdown

Hedge Funds as a Substitute for Traditional Active Investment Management (4c): Bonds

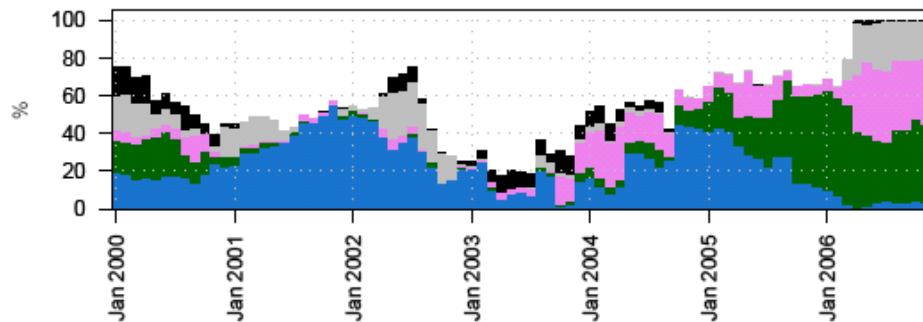
Risk Decomposition (rolling 36 months)



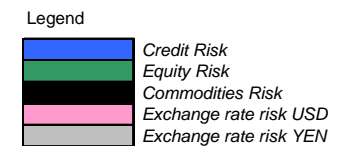
Bonds



**Single Hedge Fund Style
Relative Value & Event Driven**



**Single Hedge Fund Style
Fixed Income**



Hedge Funds as a Substitute for Traditional Active Investment Management (4d): Bonds

Example 1: Some considerations (1)

- Strategy Bond 70% + single Hedge Fund style 30%
 - Outperformance with lower risk (Tracking Error: 1.4% p.a.)
 - Constant absolute returns over a rolling period of 12 months
 - Significant positive alpha
- But...
 - Since 2000 the “outperformance trend” is not so evident!
 - 1994 – 2000: Index Bias?
 - The risk decomposition shows that the Hedge Fund’s underlying risks are not the same as the ones of your bond portfolio!

Hedge Funds as a Substitute for Traditional Active Investment Management (4e): Bonds

Example 1: Some considerations (2)

- Is the outperformance a consequence of investing in other asset classes and therefore a compensation of other risk premiums?
- How big was the influence of the Index Bias in the past?
- Can I really interpret Relative Value & Event Driven style Hedge Funds as a bond substitute just because they have a similar risk-return profile?

Hedge Funds as a Substitute for Traditional Active Investment Management (5)

Final considerations

- ⇒ It must be ensured that the board of the pension fund knows and understands that it is a special asset class and on top of it, that non-traditional risks are connected to Hedge Fund investments.
- ⇒ The client must clearly understand what underlying risks of style focused Hedge Fund strategies are.
- ⇒ The name of a Hedge Fund product and its systematic risks are usually not the same!

How to Implement Hedge Funds in a Pension Fund Portfolio: Summary

- HF as part of the liability matching portfolio No!
- HF as part of the risk satellite Yes!
- Ways to implement Hedge Funds
 - On the strategy level => complement to the actual asset allocation
 - On the implementation level => substitute for traditional investment management mandates
- Typical Hedge Fund products sometimes capture several elements (traditional and alternative Beta, Alpha):
 - ⇒ Know your products and understand their economic rationale!

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