Quantitative Asset Manager Analysis

Performance Measurement Forum

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- The "dirty" tricks in performance evaluation

Some of the graphs/pictures are not available online

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- **Introduction: is it worth to analyze active asset managers?**

- A short overview of common risk/return measures

- Case studies

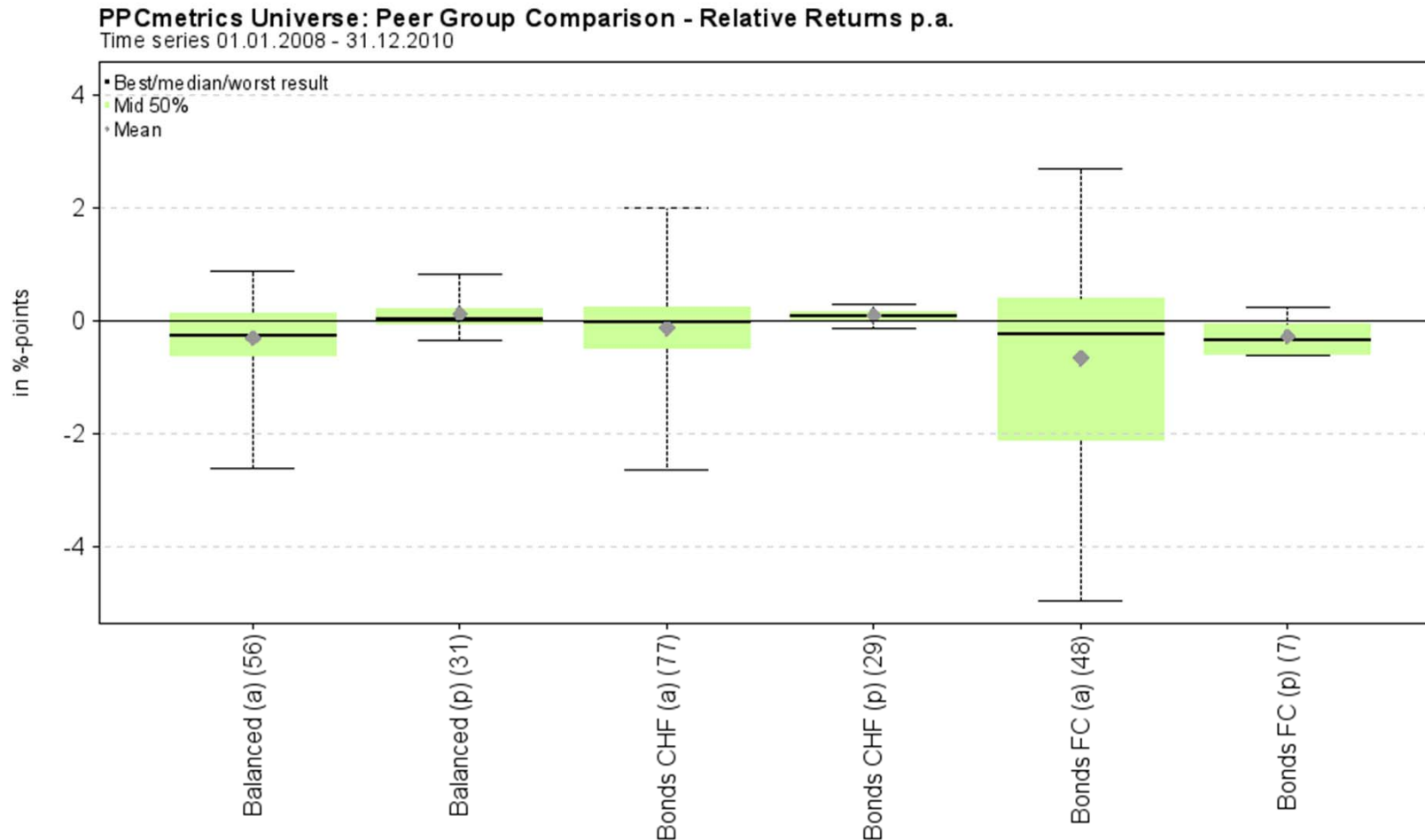- The "dirty" tricks in performance evaluation

Introduction

- Quantitative analysis of active asset managers takes time and resources. It is therefore fair to ask whether it is worth the hassle…

- On the following slides a comparison of the performance and costs of active and indexed asset manager mandates are shown.
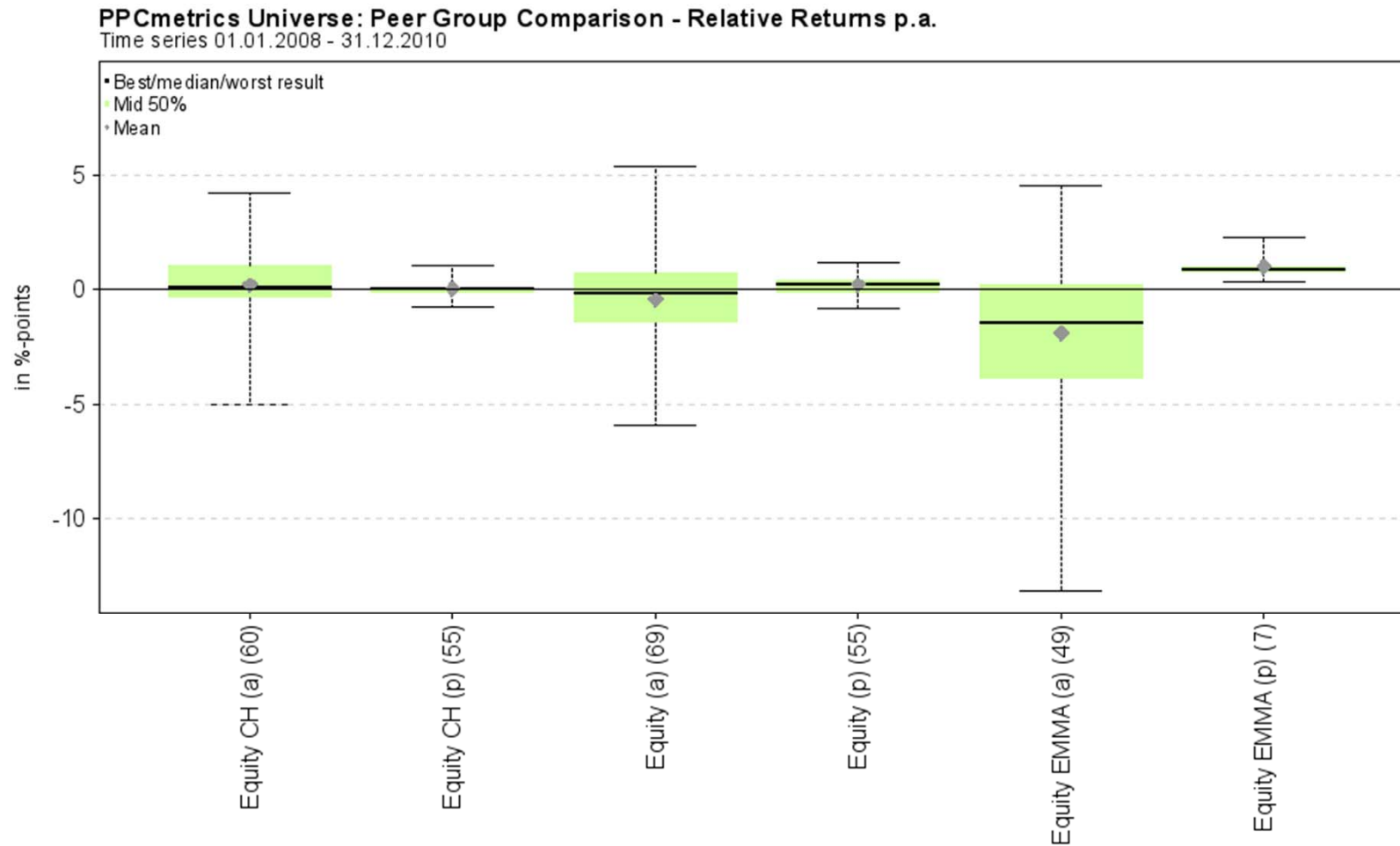
Introduction: Active vs. indexed management
PPCmetrics Peer Group (1) - 3 Years (01.01.08 - 31.12.10)

PPCmetrics Universe: Peer Group Comparison - Relative Returns p.a.
Time series 01.01.2008 - 31.12.2010

Legend:
- Best/median/worst result
- Mid 50%
- Mean

Y-axis: in %-points

X-axis categories:
- Balanced (a) (56)
- Balanced (p) (31)
- Bonds CHF (a) (77)
- Bonds CHF (p) (29)
- Bonds FC (a) (48)
- Bonds FC (p) (7)

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Introduction: Active vs. indexed management
PPCmetrics Peer Group (2) - 3 Years (01.01.08 - 31.12.10)

PPCmetrics Universe: Peer Group Comparison - Relative Returns p.a.
Time series 01.01.2008 - 31.12.2010

- Best/median/worst result
- Mid 50%
- Mean

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Introduction: Active vs. indexed management
PPCmetrics Peer Group (3) - 5 Years (01.01.06 - 31.12.10)
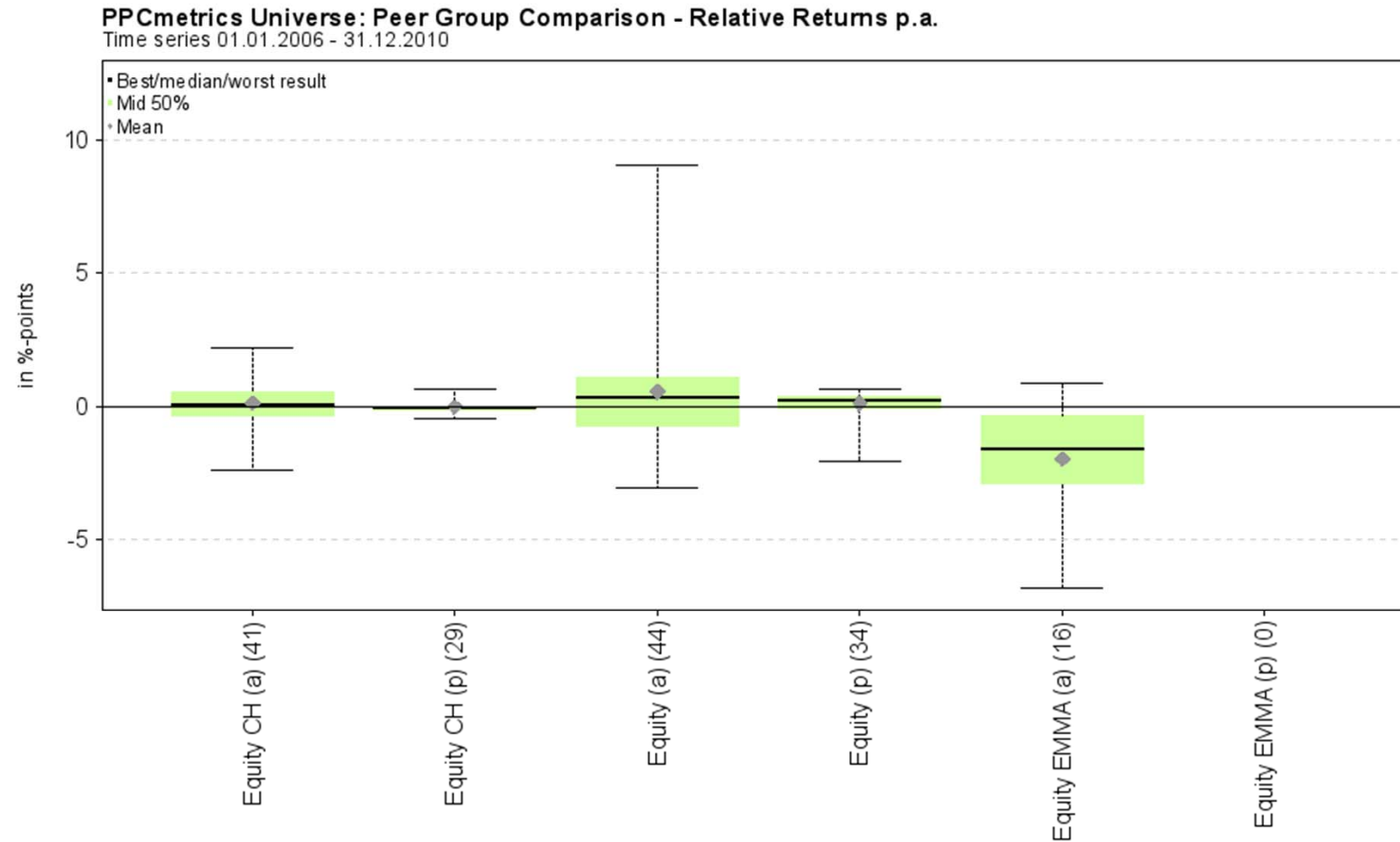
PPCmetrics Universe: Peer Group Comparison - Relative Returns p.a.
Time series 01.01.2006 - 31.12.2010
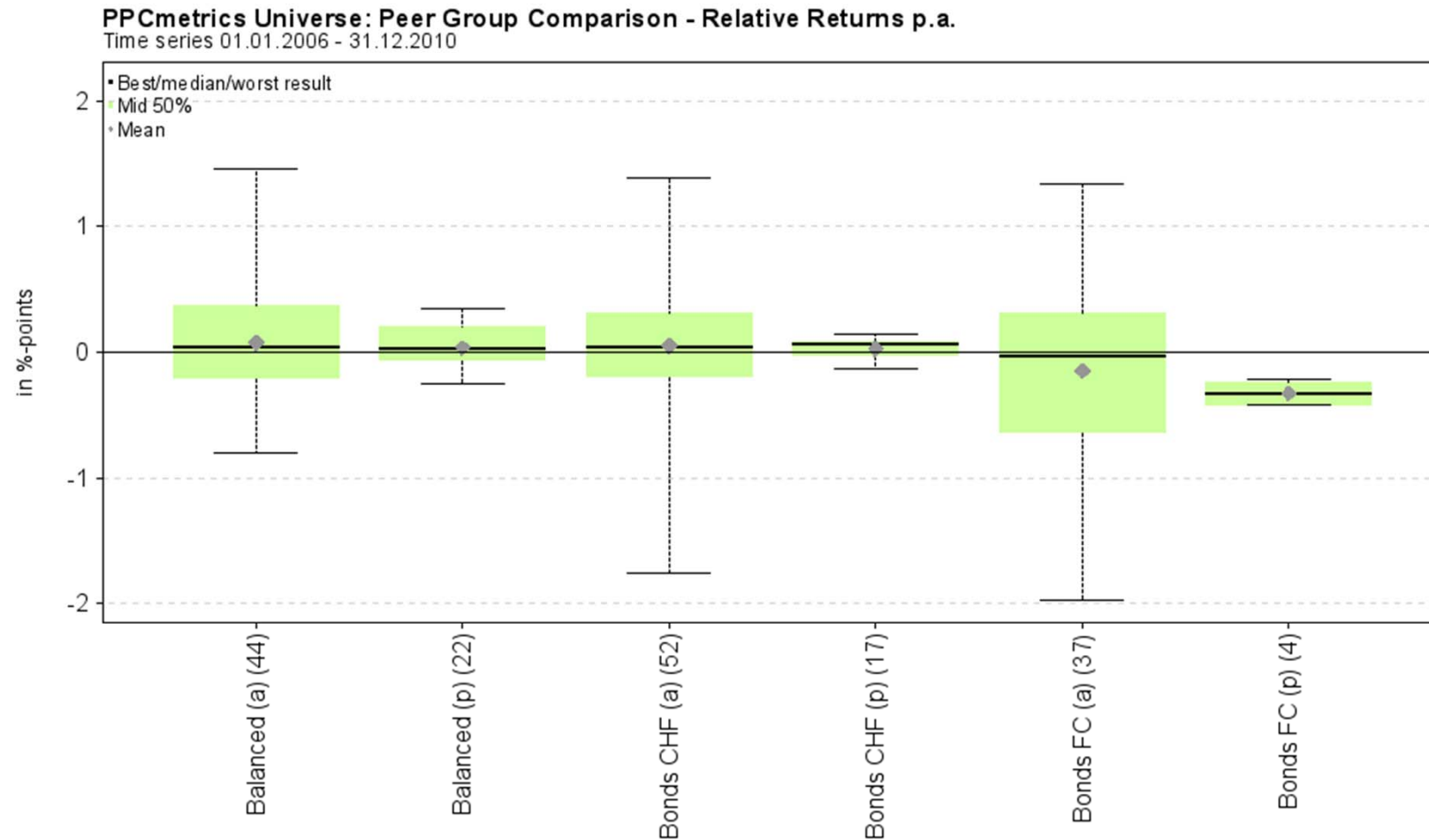
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Introduction: Active vs. indexed management
PPCmetrics Peer Group (4) - 5 Years (01.01.06 - 31.12.10)

PPCmetrics Universe: Peer Group Comparison - Relative Returns p.a.
Time series 01.01.2006 - 31.12.2010

Introduction: Active vs. indexed management
Summary regarding performance

- The experience of PPCmetrics shows that **only a few asset managers succeed to exceed the benchmark after costs in the long run.**

- The findings of **international studies** also show:
  - On average, most asset categories managed actively and after deduction of costs, achieve only a little or no surplus at all.

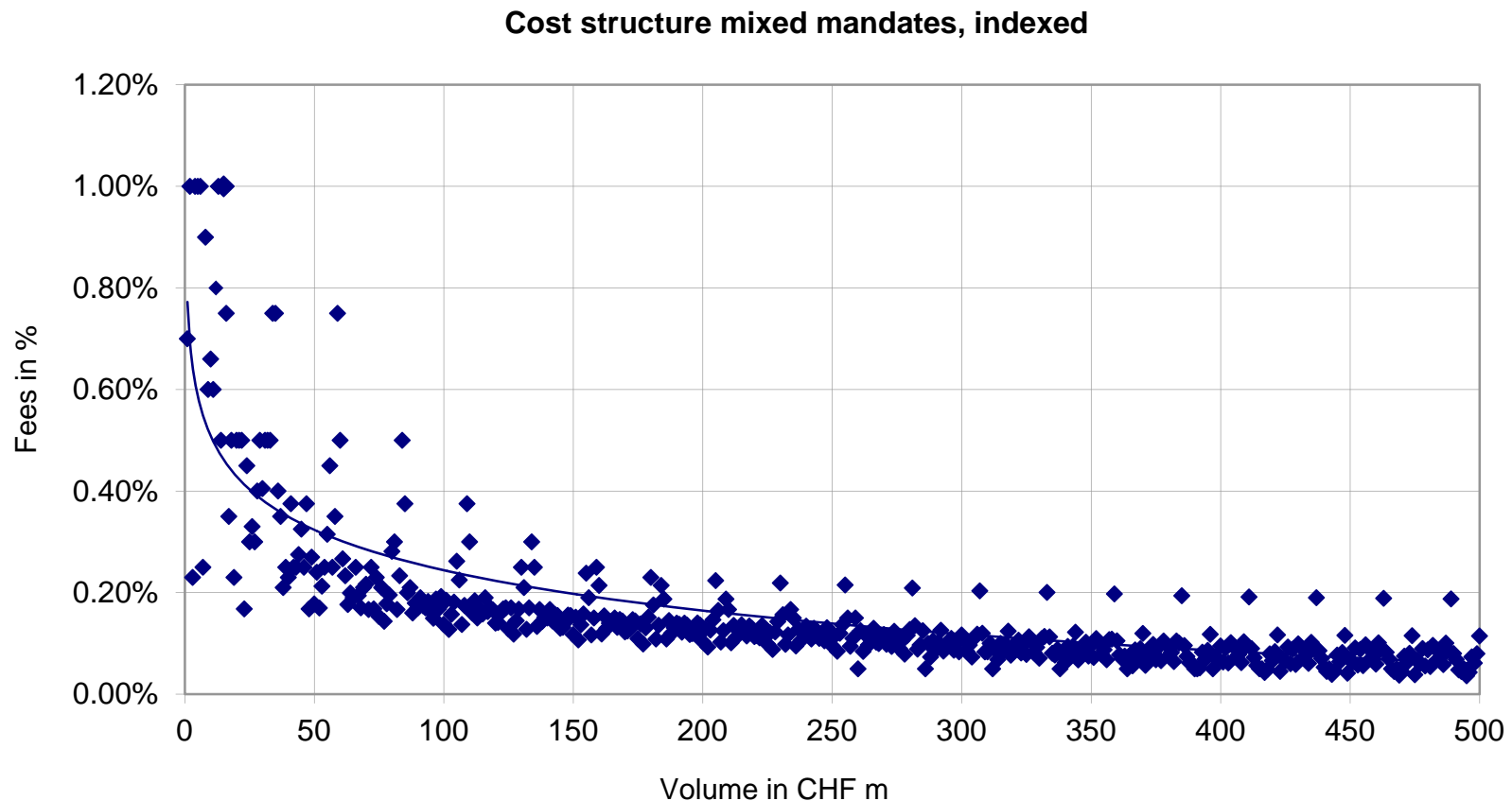▸ **"Alpha" is a "zero-sum-game": for each positive alpha in the world there must be a negative alpha as well.**

Introduction: Active vs. indexed management
Costs: example for active mandates

Cost structure mixed mandates, active
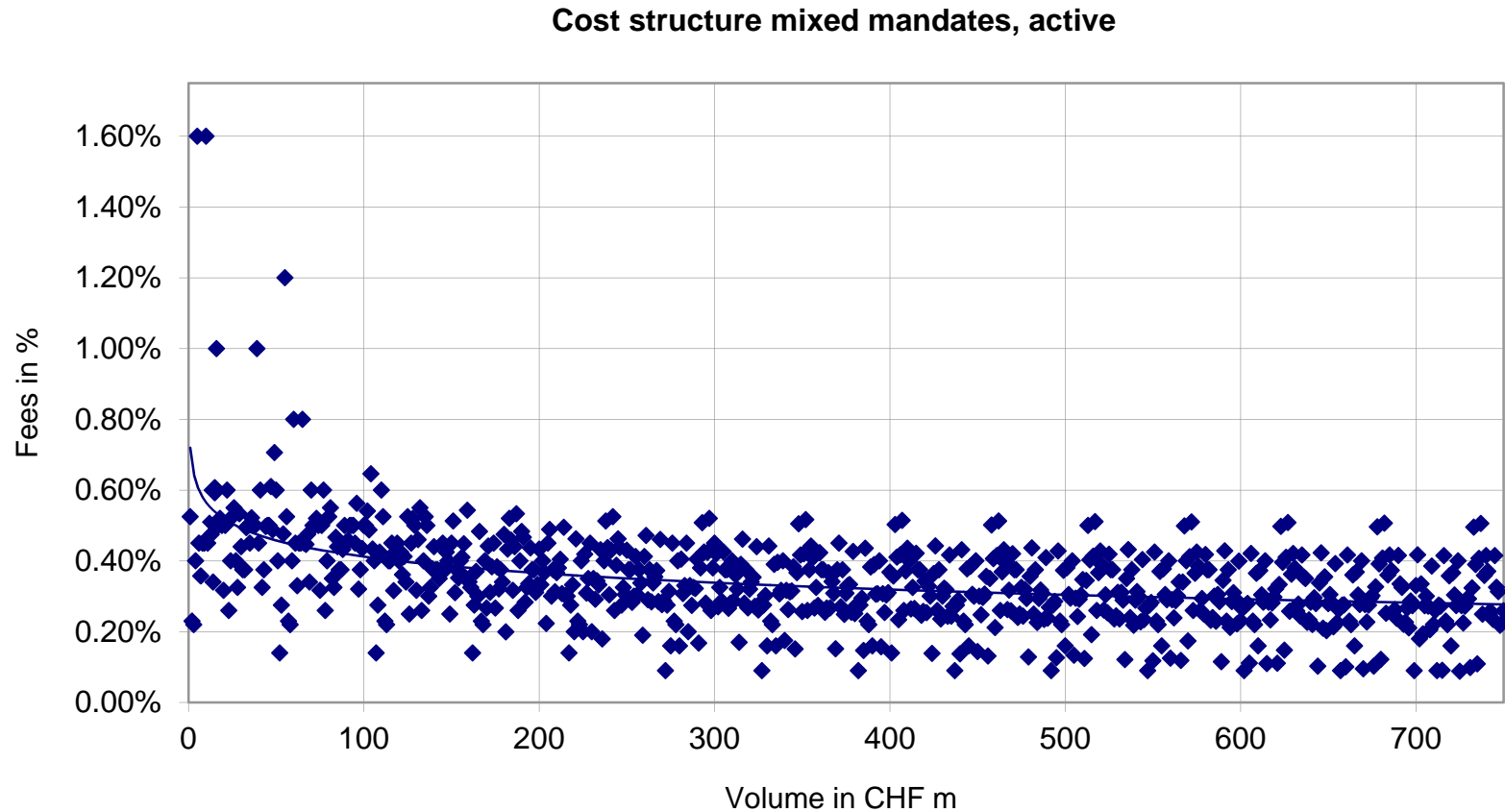
Introduction: Active vs. indexed management
Costs: example for indexed mandates

Cost structure mixed mandates, indexed

- As shown in the previous slides, passive asset manage-ment has a considerable cost benefits.

- Often, it is very difficult to generate enough "alpha" to cover the cost disadvantages of active management.

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- On average, active asset management is a "zero-sum-game" (**before costs**).

- **After costs**, the majority of active asset managers will not beat the market.

▶ **Quantitative asset manager analysis can be a helpful tool to try to identify good active asset managers. However, one has to be aware that the probability to find "outperforming" managers is still very small.**

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- A short overview of common risk/return measures

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Common risk/return measures
Key questions of performance evaluation

1. Has the manager historically outperformed the market?

2. What additional risk (compared to a market portfolio) has been taken to achieve this outperformance?

3. Are risk and return in a good proportion?

Common risk/return measures
Has the manager outperformed the market? (1)

- First of all, we need an adequate benchmark!

- Without a fair benchmark it is nearly impossible to judge whether an active asset manager really has forecasting powers.

- The benchmark defines the **allowed investment** universe.
  - It should be replicable.
  - It should be transparent and broadly accepted.

Common risk/return measures
Has the manager outperformed the market? (2)

Measuring the outperformance (relative performance)

Portfolio performance - Benchmark performance

- Problem: no risk consideration!
  - An outperformance could be generated by simply taking more market risks; e.g., leveraging the index.

- Possible solution:
  - Take risk into consideration.

- A simple portfolio risk measure is **portfolio volatility.**

- Problem:

  – The main part of the portfolio volatility is market volatility.

  – It is difficult to distinguish between market risk and manager risk.

- Possible solution:

  – Calculation of (hopefully) meaningful risk and return measures.

Common risk/return measures
Are outperformance and additional risk in proportion?

- **Common risk/return measures:**

$$\text{Sharpe ratio} = \frac{\text{Portfolio return - risk free rate}}{\text{Portfolio volatility}}$$

$$\text{Treynor ratio} = \frac{\text{Portfolio return - risk free rate}}{\text{Portfolio Beta}}$$

$$\text{Information ratio} = \frac{\text{Portfolio return - benchmark return}}{\text{Tracking Error}}$$

Common risk/return measures
Shortfalls of risk/return ratios (1)

- The Sharpe ratio indicates the excess return (over a risk free asset) in relation to the total risk taken (portfolio volatility).

  ▸ **It is hard to judge whether the excess return is due to management skills or due to the investment in a riskier asset class.**

  ▸ **In many mandates the portfolio manager does not have the possibility to invest large parts of the portfolio in cash ("risk free").**

- The Treynor ratio uses the portfolio Beta (systematic risk, market risk) as a divisor instead of portfolio volatility (total risk). Therefore, it measures the excess return (over a risk free asset) per "unit" exposure to market risk.

  ▸ **The estimation of "Beta" is depending on a model. If the CAPM is used, the same problem as with the Sharpe ratio exists (the managers normally are not allowed to invest heavily in cash).**

Common risk/return measures
Shortfalls of risk/return ratios (2)

- The Information ratio represents the excess performance in relation to the tracking error.

- The information ratio is very much in line with the expectation of institutional investors:

    – **Risk is measured as deviation from a benchmark.**

    – **The goal is to outperform the benchmark with low "active management risk" (tracking error)**

    – **The information ratio is a good measure to distinguish "skill" from "luck"**

- **However, also the information ratio has shortfalls (asymmetric risks, difficult interpretation if the Information ratio is negative, etc.).**

Common risk/return measures
Summary

▸ **Most of the common risk/return measures are not very suitable for institutional investors who use specialized mandates with clear benchmarks and a defined investment universe.**

▸ **If one ratio has to be used the information ratio is mostly in line with the needs of institutional investors, and it can help to distinguish between "skill" and "luck".**

▸ **It is not advisable to use the information ratio alone (without) qualitative judgment to choose an asset manager.**

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- **Case studies**

- The "dirty" tricks in performance evaluation

Portfolio Statistics

Time series 01.04.2008 – 31.03.2011	Portfolio	Benchmark*	Difference
Cumulative return	28.80%	23.51%	5.29%
Annualized return	8.80%	7.29%	1.51%
Risk (volatility) annualized	10.65%	11.04%	-0.39%
Tracking error annualized	2.19%		
R-Squared	95.96%		
Percentage of months with outperformance	67%		
Risk/return ratio	0.79	0.64	0.15
Sharpe ratio	0.73	0.58	0.15
Treynor ratio	0.08	0.06	0.02
Information ratio	0.64		
Jensen Regression			
Jensen's alpha annualized	1.73%	t-value: 1.38	H0: Alpha = 0
Beta	0.95	t-value: -1.59	H0: Beta = 1

* Barclays Global Aggregate
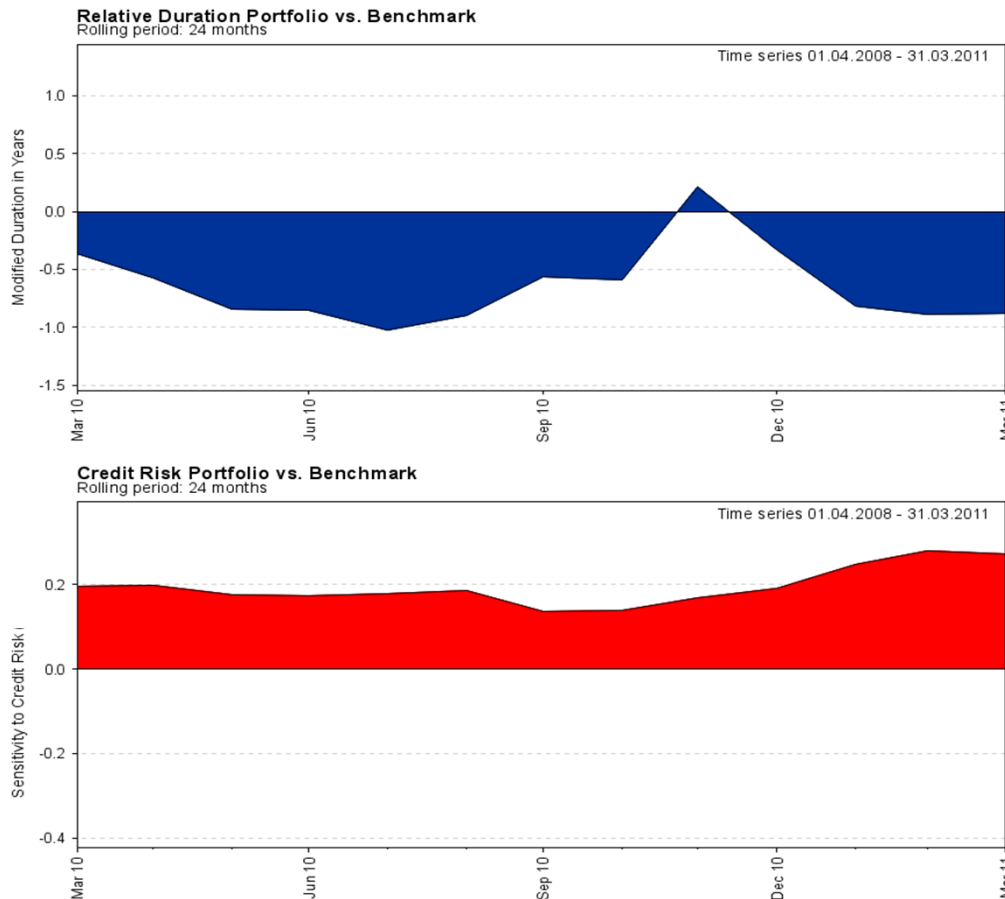
- Very good historical performance

Case Study I
Active global bond manager: Morningstar

- Morningstar Style Box:

- According to Morningstar the rating quality and the duration risks are "average"

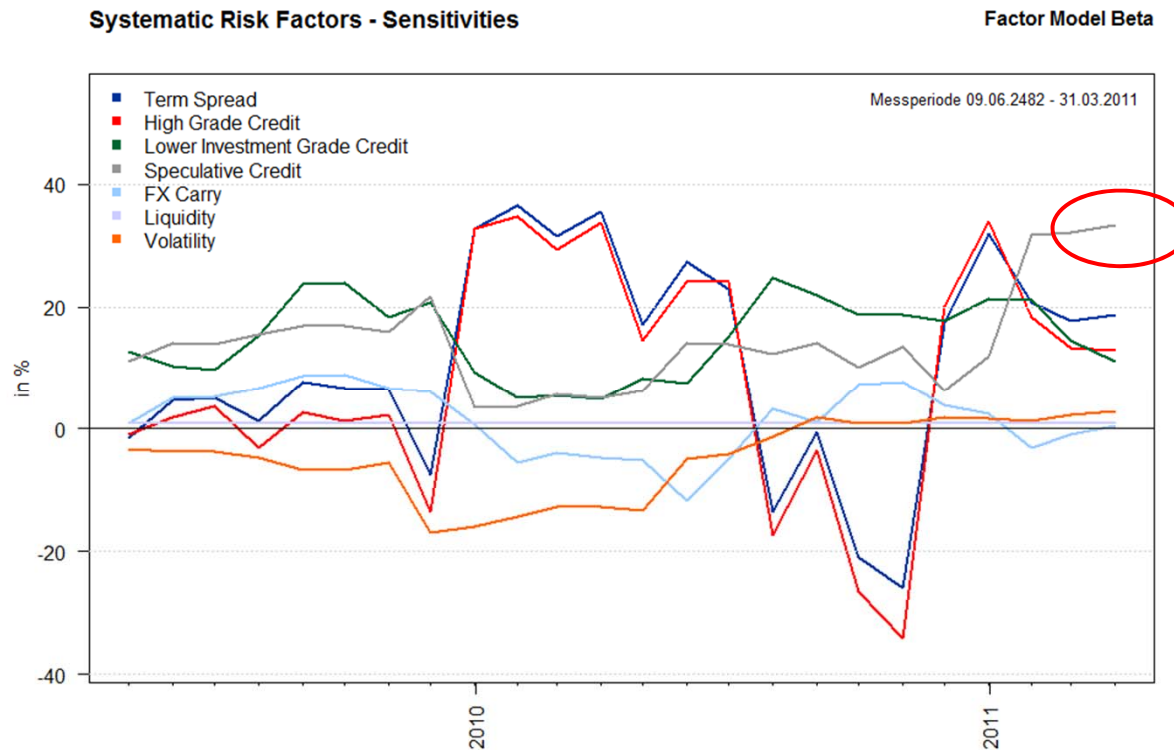- **A "Nonsense-Analysis": Swiss Bond Market:**

- Duration seems to be quite near to the benchmark.

- More credit risk compared to the benchmark.

Case Study I
Active global bond manager: Style Analysis II

- ## A more meaningful global style analysis:

- ## High exposure to speculative credit.

Case Study I
Active global bond manager: Portfolio composition

- The factsheet shows the regional as well as the sector composition. Both are quite near to the benchmark.

- We asked for the portfolio holdings, which revealed the following:

  – **Emerging Market Debt: 10% (Portfolio) versus 0% (Benchmark)**

  – **High Yield: 10% (Portfolio) versus 0% (Benchmark)**

  – **Weight BBB: 48% (Portfolio) versus 26% (Benchmark)**

▶ **The portfolios takes significantly more credit risk compared to the benchmark.**

▶ **Is this asset manager "alpha" or just "alternative beta"…?**

Portfolio Statistics

| Time series 01.04.2008 - 31.03.2011	Portfolio	Benchmark*	Difference
Cumulative return	9.78%	5.02%	4.76%
Annualized return	3.16%	1.65%	1.51%
Risk (volatility) annualized	33.05%	28.81%	4.24%
Tracking error annualized	7.31%		
R-Squared	96.24%		
Percentage of months with outperformance	58%		
Risk/return ratio	0.09	0.06	0.04
Sharpe ratio	0.07	0.03	0.04
Treynor ratio	0.02	0.01	0.01
Information ratio	0.20		
Jensen Regression			
Jensen's alpha annualized	1.36%	t-value: 0.37	H0: Alpha = 0
Beta	1.13	t-value: 3.34	H0: Beta = 1

* MSCI Emerging Markets TR Net
Riskfree rate: BBA Libor CHF 1 Month

- Very good historical performance

Case Study II
Active emerging markets: Style Analysis

- ## Style analysis:
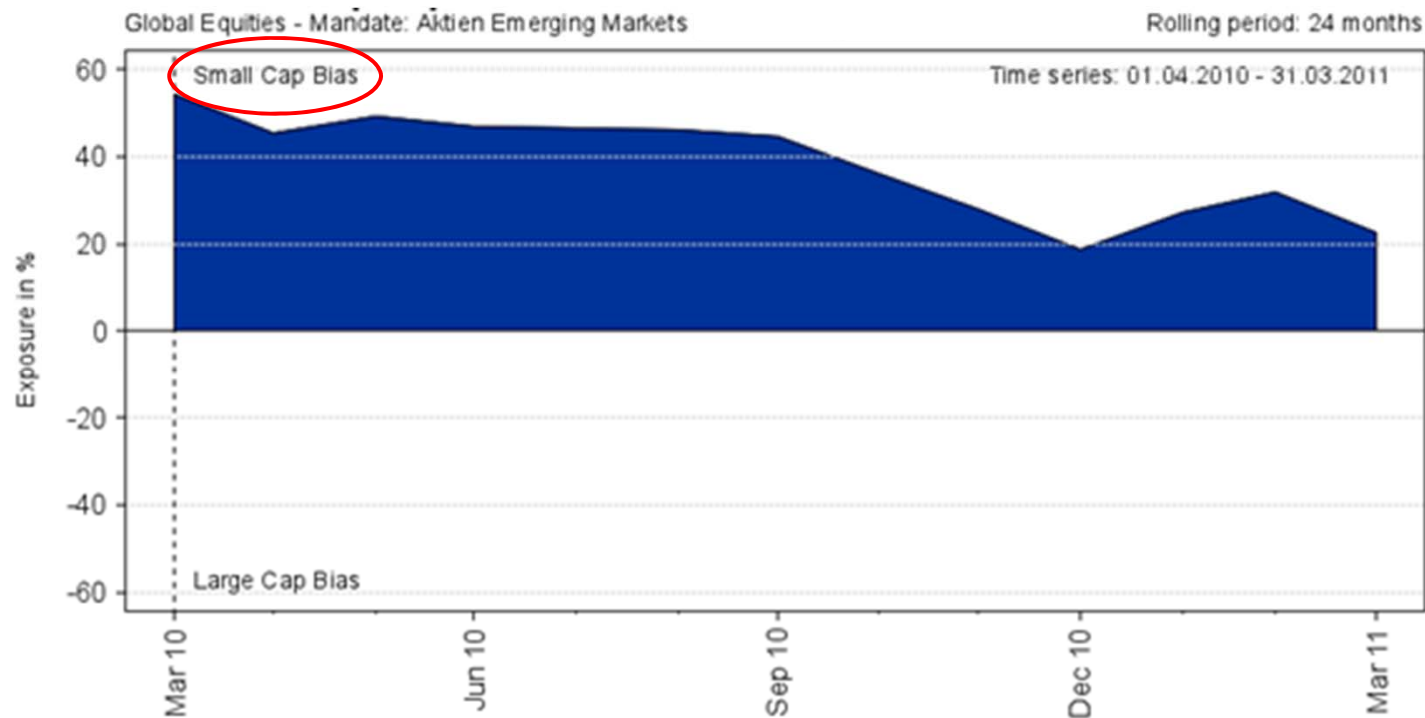
- ## Very high small cap exposure

Case Study II
Active emerging markets: Portfolio composition

- In a discussion with the portfolio manager the following is revealed:

  - **The asset manager follows a "semi-indexed" approach.**

  - **All of the securities in a given market are bought (e.g., only illiquid securities are left out).**

  - **A systematic small cap- and value tilt is applied in the portfolio.**

  - **Other components are not steered actively.**

Case Study III
Hedge Fund Multistrategy: Historical Performance

Portfolio Statistics

Time series 01.03.2007 – 28.02.2011	Portfolio	Benchmark*	Difference
Cumulative return	−2.91%	−2.79%	−0.11%
Annualized return	−0.73%	−0.71%	−0.03%
Risk (volatility) annualized	6.16%	6.98%	−0.82%
Tracking error annualized	2.46%		
R−Squared	88.11%		
Percentage of months with outperformance	44%		
Risk/return ratio	−0.12	−0.10	−0.02
Sharpe ratio	−0.31	−0.27	−0.04
Treynor ratio	−0.02	−0.02	−0.00
Information ratio	−0.01		

Jensen Regression

Jensen's alpha annualized	−0.35%	t−value: −0.33	H0: Alpha = 0
Beta	0.83	t−value: −3.95	H0: Beta = 1

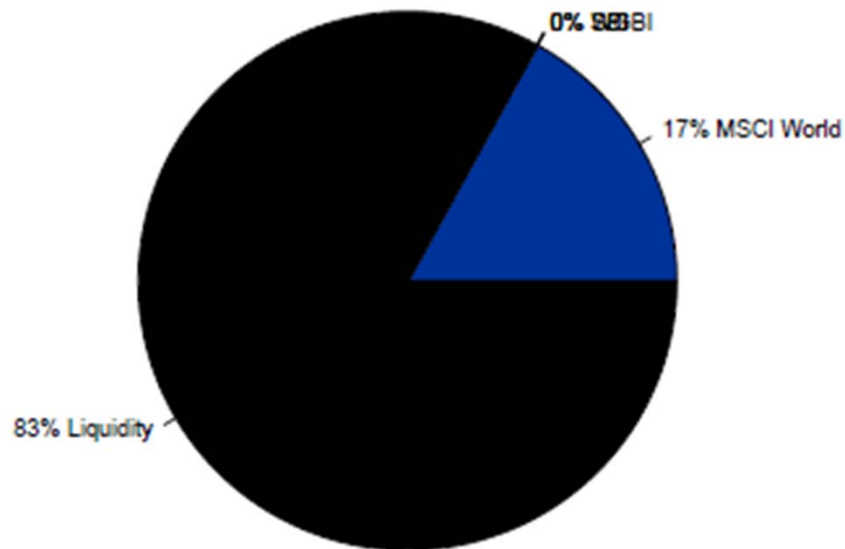* HFRI Div. FoF hedged
Riskfree rate: BBA Libor CHF 1 Month

- ## Small underperformance, benchmark is a peer group.

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- **Replication Portfolio:**

Composition of Replication Portfolio
Time series: 01.03.2007 – 28.02.2011

0% SBBI

17% MSCI World

83% Liquidity

- The replicating portfolio consists of 83% Liquidity and 17% Global Equity.

- In a discussion with the portfolio manager the following is revealed:

  - **The multistrategy hedge funds had invested in single funds which showed high losses after the financial crisis.**

  - **At the moment, the multistrategy hedge fund is invested quite defensive which leads to lower returns.**

  - **Due to the different fee layers the net return for the investors is quite low and comparable to money market.**

  - **The long term value added of the construct is questionable.**

Case Studies
Lessons learned…

▶ **Simple quantitative analyses can have problems with the following "bets":**

- Out-of-Benchmark-Bets

- Credit risk or market risk during periods of rising markets

- Factor Exposure (e.g., small caps or emerging markets)

- Asymmetric risks (option premiums etc.)

▶ **Possible solutions:**

- Use more sophisticated quantitative tools.

- Talk to the portfolio manager and try to understand the value drivers.

- Have a look into the portfolio holdings.

▶ **Quantitative analysis is very useful to "ask the right questions"!**

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"Dirty" Tricks
What you want is not what you get… (1)

- Data in good quality is crucial for a meaningful quantitative analysis. In practice, very often we have to handle the following data problems:
  - **Wrong currency:**
    - **E.g., returns in USD instead of EUR**
    - **Translated instead of hedged**
  - **Wrong benchmark:**
    - **Price index instead of total return index**
    - **"Net" instead of "gross" benchmarks (show reclaims of withholding taxes as "alpha")**
  - **Simulated returns**
  - **Returns "of a representative account"**
  - **Plain wrong numbers or wrong composites**

- Continued:

  - **Use a wide range of products:**

    - **Step I: Invent a wide range of different products (global core, global value, global growth, global fundamental, global quantitative, global behavioural, …) and show the ones which have recently outperformed.**

    - **Step II: If a product has underperformed over 3 years, close it and invent a new one with a new name. Then continue with step I.**

▸ **The data quality has improved significantly with the GIPS standards, but there is still room for improvement.**

▶ **Active asset management is a "zero-sum-game". The probability to find "outperforming" asset managers is very small if transparent benchmarks and a clear investment universe is used.**

▶ **Many common risk and return measures are not suitable for institutional investors with specialized mandates.**

▶ **The Information ratio is often used to distinguish between skill an look.**

▶ **Quantitative analysis is very helpful to ask the right questions. However, it is not recommendable to select a manager only based on quantitative analysis.**

▶ **Unfortunately the data quality is often not in accordance with the needs and expectations.**

▶ **It is crucial to complement the quantitative analysis with qualitative aspects:**

- **Portfolio composition / holdings**

- **Risk factors**

- **Discussions with the portfolio manager**

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