



Strategic Attribution

Methodology for multi-portfolio structures

Roger Buehler
20.4.2010 – Performance Roundtable, Zürich

Outline



- Introduction
- The Brinson Attribution model applied at strategic level
- How we deal with missing benchmark weights at mandate level
- Attribution integrating various decision layers → multiple benchmarks
- Specific case: Mandate structure with overlay accounts
- How we handle the trade off between data quality and tight production deadlines
- Conclusion





The Brinson attribution model applied at strategic level



Strategic Attribution - définition



- The Strategic Performance Attribution analyses the relative contribution of the individual mandates and sub consolidations by asset class with respect to the investment strategy.
- The **allocation effect** reflects the allocation decisions (eg. Tactical decisions made by the investment committee)...
- ... while the **selection effect** measures the under or over performance due to the active management of the various mandates.

- First strategic attribution model applied in Pictet Star Reporting was position based

- Potentially huge distortions in case of re-allocation process

- The new strategic attribution model takes into account the cash flows
- It is « Time Weighted Return » based if daily data (Portfolio AND Benchmark) is available OR if it is accepted that monthly BM have a zero performance within the month.
- It is « Modified Dietz » based with monthly calculation
- Up to now there was no appropriate solution to take into account the fact that often clients do not define benchmark weights to the lowest (mandate) level

- A new methodology has been implemented to solve this issue...

Example: Strategic Performance Attribution in Star Report



Strategic performance attribution

PORTFOLIO	ALLOCATION		PERFORMANCE		ATTRIBUTION			PERFORMANCE		ATTRIBUTION		
	31.12.2009		Year to date		TOTAL	ALLOC	SELECT	1 Year rolling				
	PF	BM	PF	BM				PF	BM	TOTAL	ALLOC	SELECT
	%	%	%	%	%	%	%	%	%	%	%	
TOTAL CONSOLIDATION	100.0	100.0	10.3	8.5	1.6	-1.8	3.5	10.3	8.5	1.6	-1.8	3.5
BOND CONSOLIDATION	53.8	55.0	1.9	1.9	-0.2	-0.5	0.3	1.9	1.9	-0.2	-0.5	0.3
Manager 1 - US bonds	45.2	40.0	0.2	0.8	-0.9	-0.6	-0.2	0.2	0.8	-0.9	-0.6	-0.2
Manager 2 - Global bonds hedg.	8.6	15.0	11.0	5.1	0.7	0.2	0.5	11.0	5.1	0.7	0.2	0.5
EQUITY CONSOLIDATION	28.1	30.0	32.0	30.0	-0.7	-1.0	0.3	32.0	30.0	-0.7	-1.0	0.3
Manager 3 - Equities World	6.0	7.0	22.7	30.0	-0.6	-0.3	-0.4	22.7	30.0	-0.6	-0.3	-0.4
Manager 4 - Equities World	10.1	11.0	31.0	30.0	-0.3	-0.4	0.1	31.0	30.0	-0.3	-0.4	0.1
Manager 5 - Equities World	11.9	12.0	36.5	30.0	0.2	-0.3	0.6	36.5	30.0	0.2	-0.3	0.6
HEDGE FUNDS CONSOLIDATION	18.1	15.0	6.4	-8.8	2.5	-0.4	2.9	6.4	-8.8	2.5	-0.4	2.9
Manager 6 - Hedge Funds	18.1	15.0	6.4	-8.8	2.5	-0.4	2.9	6.4	-8.8	2.5	-0.4	2.9
Interaction					0.1					0.1		

The Strategic Performance Attribution analyses the relative contribution of the individual mandates and sub consolidations by asset class with respect to the investment strategy.

The allocation effect reflects the allocation decisions (eg. Tactical decisions made by the investment committee) while the selection effect measures the under or over performance due to the active management of the various mandates.

Allocation Effect: Definition



- *Définition of asset class attribution within a mandate:* The performance impact of over- or under-weighting different asset classes relative to a benchmark.
- *Définition in the model applied on strategic level:* impact of allocation decisions on mandates

$$AE = \sum \left[(PW_j - BW_j) * \left(\frac{1 + BR_j}{1 + B} - 1 \right) \right]$$

Selection Effect: Definition



- *Définition of asset class attribution within a mandate:* The performance impact of investing in securities which out- or under-perform the securities in the corresponding asset class of a performance benchmark.
- *Définition in the model applied on strategic level:* contribution of the asset manager to the overall excess return

$$SE = \sum \left[(PW_j) * \left(\frac{PR_j - BR_j}{1 + B_s} \right) \right]$$

To analyse the individual asset managers

... the classical asset class level attribution



Performance Attribution | 30.09.2009

Manager 6 - Equities World



Performance Attribution by Category

PORTFOLIO	BENCHMARK	ALLOCATION			PERFORMANCE			ATTRIBUTION			PERFORMANCE			ATTRIBUTION			PERFORMANCE			ATTRIBUTION		
		PF %	BM %	DIFF %	PF %	BM %	DIFF %	ALLOC 0%	SELECT 1%	2%	PF %	BM %	DIFF %	ALLOC 0%	SELECT 2.5%	5%	PF %	BM %	DIFF %	ALLOC 0%	SELECT 2.5%	5%
Total Portfolio Return (TWR)					20.3	17.4	2.4				29.6	24.9	3.8				5.7	1.3	4.4			
Total Portfolio																						
Cash & Equivalent	Composite Benchmark	100.0	100.0		20.3	17.4	2.4				29.6	24.9	3.7				9.0	3.9	4.9			
Cash & Equivalent	Citigroup USD 3M Eurodeposit	1.1	0.0	-0.3	0.1	-0.4					-0.3	0.9	-1.1				4.2	3.7	0.5			
Equities	MSCI World by Sectors ndr	98.9	100.0	20.6	17.4	2.7					29.7	24.9	3.8				9.3	3.9	5.3			
Consumer Discretionary	Consumer Discretionary	2.5	9.3	39.1	17.5	18.3					37.2	32.1	3.9				20.0	1.0	18.8			
Consumer Staples	Consumer Staples	8.5	10.0	12.7	13.4	-0.6					7.0	14.4	-6.5				-1.3	7.5	-8.2			
Energy	Energy	14.5	10.8	16.4	12.0	3.9					46.2	19.3	22.6				24.4	10.2	12.9			
Financials	Financials	25.9	21.6	25.9	26.4	-0.5					34.2	36.0	-1.4				4.8	-1.4	6.3			
Health Care	Health Care	9.7	10.1	6.8	12.4	-4.9					5.0	10.7	-5.2				8.3	3.1	5.1			
Industrials	Industrials	10.8	10.5	24.5	20.2	3.6					21.6	22.6	-0.8				0.5	4.0	-3.4			
Information Technology	Information Technology	13.7	11.5	23.2	16.0	6.2					52.7	41.0	8.3				8.6	3.0	5.5			
Materials	Materials	4.5	7.0	28.3	19.9	7.0					51.2	45.2	4.1				-8.9	11.8	-18.5			
Telecommunication Services	Telecommunications Services	4.5	4.5	21.9	13.8	7.1					17.6	9.4	7.4				16.0	4.7	10.8			
Utilities	Utilities	4.3	4.7	17.0	11.1	5.3					14.2	3.9	10.0				19.4	10.0	8.5			
Unclassified	Unclassified	0.0	0.0	0.0	17.4	-14.8					0.0	24.9	-19.9				0.0	3.9	-3.7			
Miscellaneous	Miscellaneous	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0				12.6	0.0	12.6			

The "STAR Performance Attribution" module can be used to analyse the performance of a manager or consolidation, over a number of periods (e.g. by sector, region or country).

For instance, the manager, in this example, demonstrates some skill in both timing (i.e. over or underweighting at the right time) and selection (i.e. picking the best performing stocks within the allocation) in the financial sector

The calculation engine: Prime-RCR



- Our solution is integrated in the central performance engine.
- Most important for strategic attribution is the capability of managing the portfolio structure over time (releases, historical data, multiple series and sources, etc)...
- ... and the same for the benchmark
- An important challenge was also to integrate the various source systems and to define rules to mix data frequency
- The system allows to define portfolio specific « freeze » rules



Top down organisation of the portfolios



Example: Pictet Connect – Portfolio view → hierarchical consolidation

[Settings](#) | [Help](#) | [Logout](#)



PICTET CONNECT

Roger2 Buehler

- Dashboard
- Portfolios**
- Reporting
- Files & archives
- Financial research
- Market information
- Products
- Secure email

Portfolio views

Portfolio number

Select a view

Portfolios overview

Consolidated hierarchical view | Portfolios list

Performance type: Capital & income net of withho
 As of: 01-Feb-2010

As of 01-Feb-2010

Mandates overview

	Market value	Cash flow	Gain loss	Market value	Alloc.	Performance			
	BoY CHFm	YTD CHFm	YTD CHFm	EoP CHFm		MTD %	QTD %	YTD %	SI %
<input type="checkbox"/> TOTAL CONSOLIDATION	4,199.2	63.4	-31.8	4,230.9	100.00%	0.58%	-0.72%	-0.72%	-0.66%
<input type="checkbox"/> BONDS CONSOLIDATION	696.5	9.9	6.2	712.5	16.84%	0.07%	0.88%	0.88%	2.36%
<input type="checkbox"/> M1 - Swiss bonds	696.5	9.9	6.2	712.5	16.84%	0.07%	0.88%	0.88%	2.36%
<input type="checkbox"/> EQUITIES CONSOLIDATION	3,502.8	53.6	-38.0	3,518.4	83.16%	0.68%	-1.05%	-1.05%	-1.68%
<input type="checkbox"/> SWISS EQUITIES CONSOLIDATION	2,336.9	51.8	-6.1	2,382.6	56.31%	0.77%	-0.23%	-0.23%	-0.67%
<input type="checkbox"/> M2 - Swiss equities	1,270.7	21.7	-3.0	1,289.4	30.48%	0.78%	-0.23%	-0.23%	-0.68%
<input type="checkbox"/> M3 - Swiss equities	1,066.2	30.0	-3.1	1,093.2	25.84%	0.77%	-0.23%	-0.23%	-0.64%
<input type="checkbox"/> FOREIGN EQUITIES CONSOLIDATION	1,165.9	1.8	-31.9	1,135.8	26.84%	0.50%	-2.73%	-2.73%	-12.76%
<input type="checkbox"/> M4 - World equities ex CH	645.6	1.7	-11.5	635.8	15.03%	0.50%	-1.77%	-1.77%	-12.25%
<input type="checkbox"/> M5 - Europe equities ex CH	494.6	-0.1	-19.3	475.2	11.23%	0.49%	-3.89%	-3.89%	-13.13%
<input type="checkbox"/> M6 - Pacific equities ex Japan	25.7	0.3	-1.2	24.8	0.59%	0.52%	-4.43%	-4.43%	-9.66%

Abbreviations

Top down organisation of the portfolios



Example: eStar: strategic asset reporting

Allocation and Limits | 30.06.2009

Mandate & Consolidation

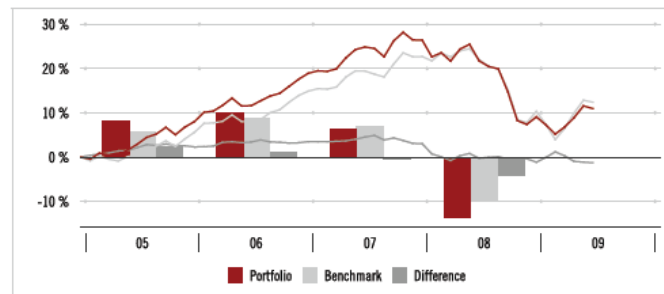
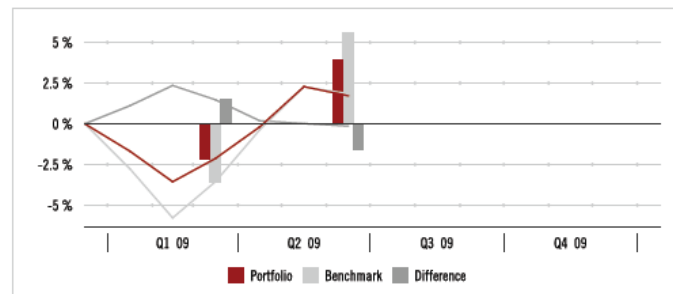


Allocation

PORTFOLIO	MKT VALUE EoP USDm	ALLOCATION			LIMIT		0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
		PF %	BM %	DIFF %	MIN %	MAX %											
TOTAL CONSOLIDATION	790.9	100.0	100.0	0.0	100.0	100.0											
Bond Consolidation	484.7	61.3	55.0	6.3	30.0	60.0											
Manager 1 - US bonds	374.8	47.4	25.0	22.4													
Manager 2 - Global bonds hedg.	48.3	6.1	15.0	-8.9													
Manager 3 - Global bonds hedg.	61.6	7.8	15.0	-7.2													
Equity Consolidation	173.5	21.9	30.0	-8.1	25.0	50.0											
Manager 4 - Equities World	38.7	4.9	7.0	-2.1													
Manager 5 - Equities World	62.9	8.0	11.0	-3.0													
Manager 6 - Equities World	71.9	9.1	12.0	-2.9													
Hedge Funds Consolidation	132.6	16.8	15.0	1.8	10.0	20.0											
Manager 7 - Hedge Funds	132.6	16.8	15.0	1.8													

Strategic Performance Contribution Mandate & Consolidation

Performance Evolution Year to Date



Strategic Performance Contribution

PORTFOLIO	ALLOCATION		PERFORMANCE			CONTRIBUTION			PERFORMANCE			CONTRIBUTION			PERFORMANCE			CONTRIBUTION			
	PF %	BM %	PF %	BM %	DIFF %	PF %	BM %	DIFF %	PF %	BM %	DIFF %	PF %	BM %	DIFF %	PF %	BM %	DIFF %	PF %	BM %	DIFF %	
TOTAL CONSOLIDATION	100.0	100.0	3.9	5.6	-1.6	1.7	1.9	-0.1	10.9	12.4	-1.3										
Bond Consolidation	61.3	55.0	0.6	0.8	-0.2	0.4	0.8	-0.4	15.8	21.5	-4.7										
Equity Consolidation	21.9	30.0	20.0	20.7	-0.6	6.3	6.4	-0.1	3.5	-9.6	14.5										
Hedge Funds Consolidation	16.8	15.0	-2.3	-5.4	3.2	-0.4	-6.0	5.9	2.9	15.5	-10.9										



How we deal with missing benchmark weights at mandate level

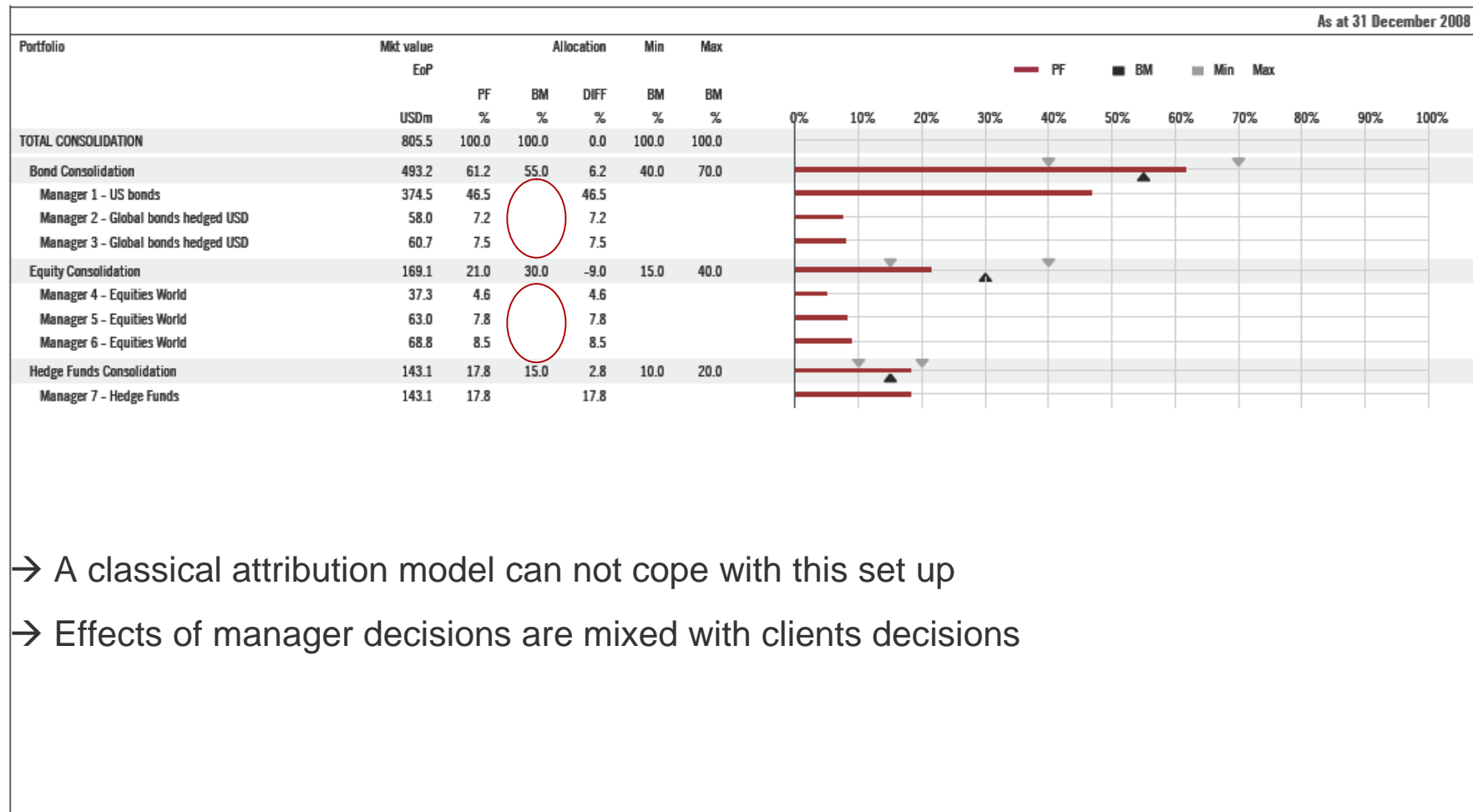


Often clients specify weights only at consolidation level



Allocation

Overview by consolidation & mandate



- A classical attribution model can not cope with this set up
- Effects of manager decisions are mixed with clients decisions

New smoothing method



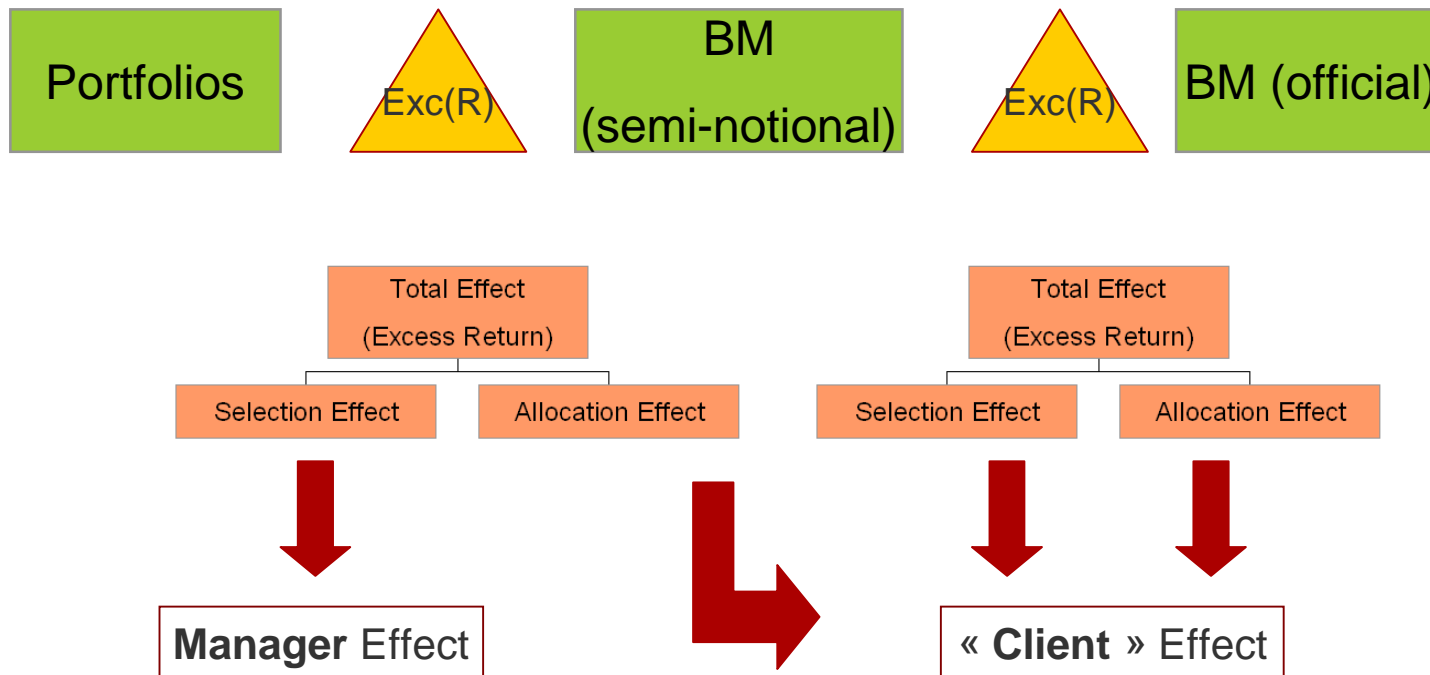
- Postulate

- Even if the client has not specified a BM weight at mandate level, he had to decide on allocation when he gave the mandates
 - Not deciding to rebalance the portfolios is also an allocation decision
- it is legitimate to consider the portfolio weights as being representative for the benchmark
- The question is: what rebalancement periodicity is appropriate?

New strategic attribution method



- In order to reflect the « passive » allocation decisions, we insert à semi-notional benchmark $(pf(w) \times bm(r))$
- Various rebalancement periodicities can be defined





Attribution integrating various decision layers → multiple benchmarks



Attribution with multiple benchmarks



- A challenge is to differentiate between the various strategic decisions in order to measure the impact of every decision layer

- Examples:
 - Tactical BM change (MSCI Japan small cap index instead of MSCI Japan)
 - Currency hedging strategy
 - Overall BM is a fixed return

- Benchmarks have to be sorted from the most tactical one (the one given to the asset managers) to the most strategic one



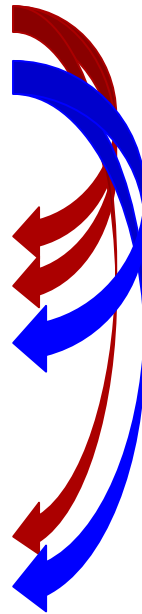
Specific case: Mandate structure with overlay accounts



Strategic attribution with currency overlay



- Total Consolidation
 - USD Overlay
 - EUR Overlay
 - Consolidation without overlay
 - Total Equities
 - US Equities
 - US small cap equities
 - European Equities
 - Swiss Equities
 - Total Fixed Income
 - Bonds in CHF
 - Bonds in USD
 - Bonds in EUR
 - Alternative Assets



→ There are two ways to deal with this issue

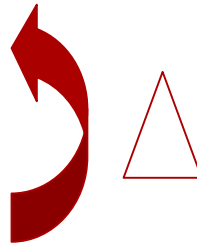
Currency overlay – 1st alternative



- Either we compare the return of the overall performance with the performance of the consolidation without the overlay accounts
→ but you miss the impact of the individual currency on every mandate

- Total Consolidation

- USD Overlay
- EUR Overlay
- **Consolidation without overlay**



- Total Equities
 - US Equities
 - US small cap equities
 - European Equities
 - Swiss Equities
- Total Fixed Income
 - Bonds in CHF
 - Bonds in USD
 - Bonds in EUR
- Alternative Assets

Currency overlay – 2nd alternative



- Or we set up two BM (one unhedged and one hedged) between which attribution is computed
 - however the results do not include the real impact of the overlay management (e.g. active currency overlay management)
- Total Consolidation
 - USD Overlay
 - EUR Overlay
 - Consolidation without overlay
 - Total Equities
 - US Equities
 - US small cap equities
 - EMU Equities
 - Swiss Equities
 - Total Fixed Income
 - Bonds in CHF
 - Bonds in USD
 - Bonds in EUR
 - Alternative Assets
 - Benchmark **unhedged**
 - Composite Equities
 - S&P 500
 - MSCI USA Small Caps
 - MSCI EMU
 - SPI
 - Total Fixed Income
 - SBI
 - Barclays Cap US Agg.
 - Barclays Cap EUR Agg.
 - Custom BM
 - Benchmark **hedged**
 - Composite Equities
 - S&P 500 Hedged CHF
 - MSCI USA Small Caps Hedg. CHF
 - MSCI EMU Hedged CHF
 - SPI
 - Total Fixed Income
 - SBI
 - Barclays Cap US Agg. Hedged CHF
 - Barclays Cap EUR Agg. Hedg. CHF
 - Custom BM



How we handle the trade off between data quality and tight production deadlines



Trade off production dead line vs data quality



- Trade off:
 - The more you can wait the more the data is likely to be accurate
 - Price updates, reversals, integration of ex-custody information, etc
 - ... but the information loses its value
 - Less possibility to react



Our solution to deal with clients expectations



- As of end of month +2 days the client can run the report online himself
→ +/-95% of the data is already available and accurate
- We continue to update the data constantly
- The client can run the report when ever he wants
- The client can choose between an “optimistic” set up (latest data but potentially timely inconsistent) or a “pessimistic” set up (based on last day of timely consistent data).
- The official production deadline is agreed with the client according to the type of assets held in his portfolios (e.g. hedge funds, ex-custody) and the benchmarks characteristics. Relevant is also the importance he is giving to data consistency (e.g valuation based on provisional or final NAVs).
- Quality control and production of the “official report” is done according to this deadline.
- Published results can be “frozen” to avoid updates after the official production deadline.

Online generated Star reports



Files & archives

Ordered reports and files | Archived reports | Archived advices | PPMS | All

Category: All | Date type: Publication date | Period: Latest files (max. 200)

Additional criteria

Reset

49 latest file(s)

Create consolidated PDF | Save as Zip file | Delete

<input type="checkbox"/>	Publ. date (CET)	Effect. date	File name	Format	Size
<input type="checkbox"/>	24 Nov 2009 14:45	31 Oct 2009	STAR Executive Summary - report	pdf	133.6K
<input type="checkbox"/>	23 Nov 2009 10:34	31 Oct 2009	STAR monthly report	pdf	3.2M
<input type="checkbox"/>	23 Nov 2009 10:29	31 Oct 2009	STAR new release - report	pdf	349.8K
<input type="checkbox"/>	23 Nov 2009 10:28	31 Oct 2009	STAR Executive Summary - report	pdf	133.6K
<input type="checkbox"/>	17 Nov 2009 17:38	31 Oct 2009	eStar - private EN	pdf	2.2M

Official (quality checked) monthly report

Online generated report



Questions?

