April 13, 2011

Investment Performance
Round Table

Derivatives & Overlay Strategies

ORTEC FINANCE

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Company profile

Ortec Finance is an independent innovative company that focuses on solutions for measuring, managing and controlling both long- and short-term risk/return trade-offs for institutional investors and private wealth managers.

Origin: The company was founded in 1981 in Rotterdam (Erasmus University)

Offices:

- Rotterdam
- Amsterdam
- London
- Pfäffikon (Zürich, Switzerland)

160 employees:

- Quantitative academic background with ability to combine analytics and technology
- Econometricians, investment professionals, mathematicians and actuaries with practical experience
- Market facing personnel with insight to clients' needs

Business model

Solutions to measure, manage and control both long and short term financial risk-return trade offs both Ex-Post and Ex-Ante

Markets:

- Pension Funds, Insurers, Asset Managers, Banks, Private Wealth Managers

Solutions:

- Wealth planning, Pension planning
- Asset Liability Management, Risk Management, Portfolio Construction
- Investment Consulting
- Performance Evaluation & Attribution

Products:

- User licenses, software implementation
- Consulting services
- Training

In London and Zurich we host every year several seminars and breakfast meetings to share thoughts and common practices.

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Introduction to derivatives

Why are derivatives a challenge?

- There are many (new) derivatives and each seems to require its own approach
- Derivatives might be included in portfolios for different reasons:
  - Pure leverage to enhance returns
  - To increase exposures in a cost-efficient way
  - To hedge against a certain risk
- Derivatives are often part of a dedicated investment strategy or an overlay program
- They often have a market value close around zero
  - This makes it difficult to calculate returns when Return = Gain/MV

General Framework

To handle any derivative instrument we recommend the following:

- Not to use the performance system but external info for valuations.
  - Avoids multiple and contradicting valuations
  - Enables the organization to deal a with new instruments without upgrading the performance attribution system

- Introduce ‘complex’ securities
  - Some instruments can be regarded as a composition of several ‘elementary’ components
  - Information on properties (currency, country, sector, etc) and measures (market value, exposure, income, etc) can be stored separately for each component
  - Performance analytics can be based on individual components or on combinations of components
  - Examples: FX forward, swap, index future

General Framework

Use the correct performance base to calculate returns:

- Market value
  - To measure full leverage effect
  - Focus on P&L or contribution to total portfolio result

- Cash backing principle
  - Applicable when derivatives are used to generate exposure to market
  - Full economic (delta) exposure of derivative should be taken into account when calculating performance
  - This full exposure should be off-set in another (cash) position such that the total market value of the portfolio is not affected
  - Return = Gain / Market exposure

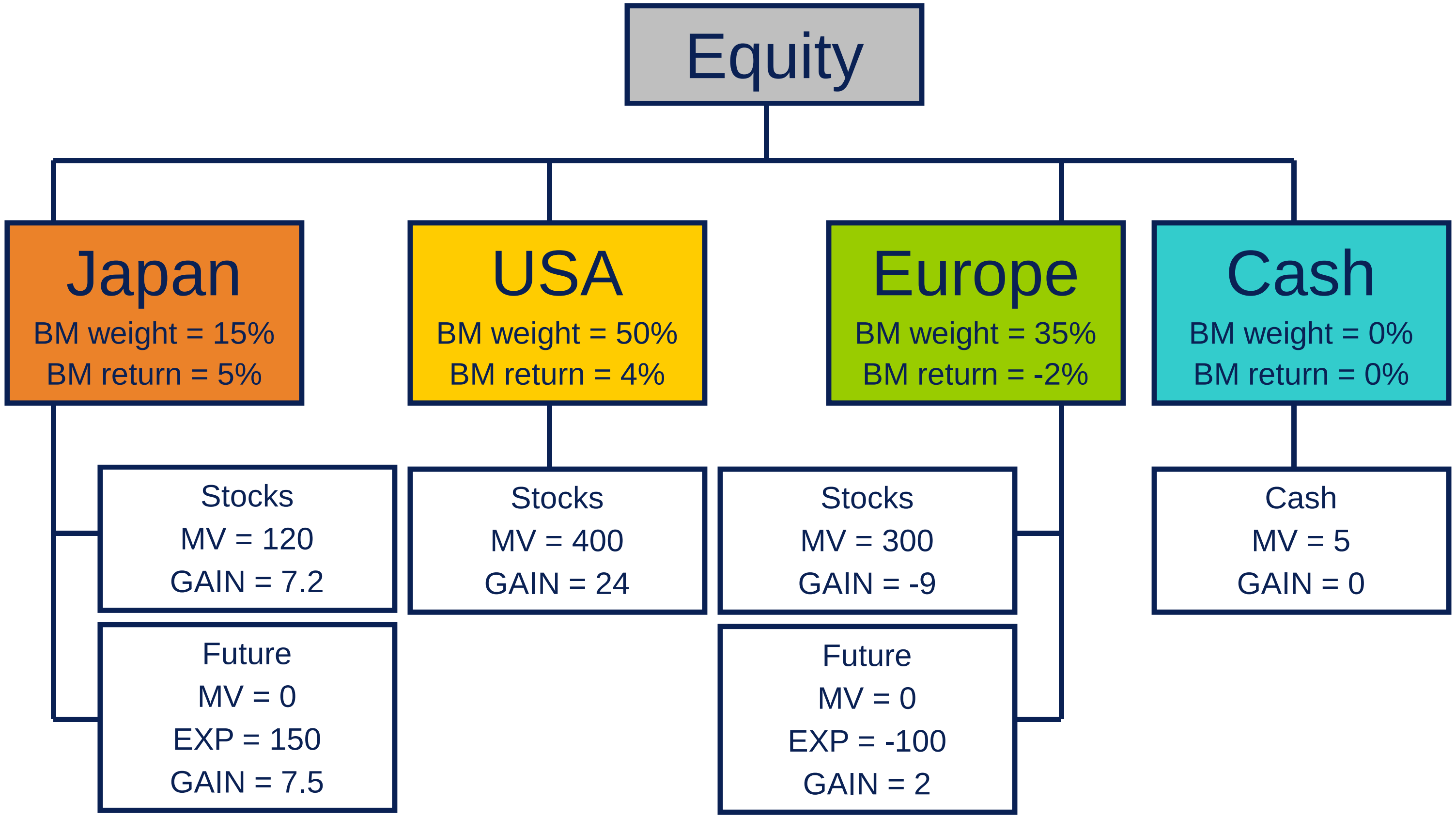
General Framework

- ‘Virtual Accounting’
  - Cash backing is a special case of ‘virtual accounting’
  - Instead of market exposure use of ‘virtual’ market value that should be off-set within another account
  - Examples include: using bonds as a collateral for IRF
  - This approach is also used when a budgeting system is in place
  - Return = Gain / Virtual exposure

- Notional base
  - Typically used in case of overlay strategies, investment strategies based on committed capital or long/short portfolios
  - The notional base can be a fixed amount or it can be a percentage of the performance base of another portfolio
  - Notional base is used to calculate returns. The gain is not affected, only the performance base: Return = Gain / Notional Base

Cash Backing - Example

- Without cash backing:



Cash Backing - Example

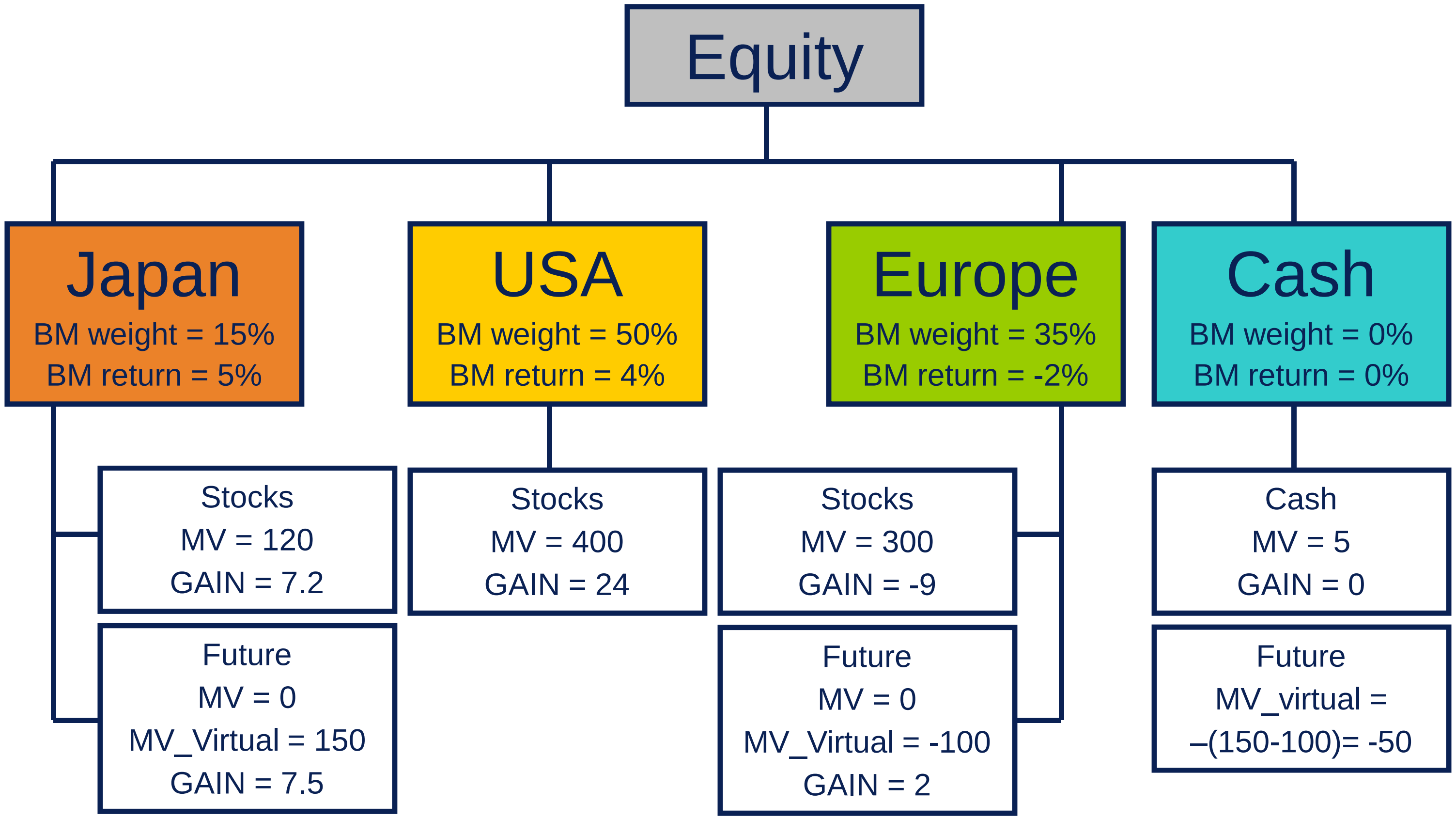
- Without cash backing

	Portfolio		Portfolio		Benchmark		Attribution	
	MV	Gain	Weight	Return	Weight	Return	Alloc	Selec
Japan	120.0	14.7	14.5%	12.25%	15.0%	5.00%	-0.01%	1.05%
USA	400.0	24.0	48.5%	6.00%	50.0%	4.00%	-0.03%	0.97%
Europe	300.0	7.0-	36.4%	-2.33%	35.0%	-2.00%	-0.06%	-0.12%
Cash	5.0	-	0.6%	0.00%	0.0%	0.00%	-0.01%	0.00%
Total	**825.0**	**31.7**	**100.0%**	**3.84%**	**100.0%**	**2.05%**	**-0.11%**	**1.90%**

- The actual weights are based on market values
- This results in a negative allocation result

Cash Backing - Example

- With cash backing



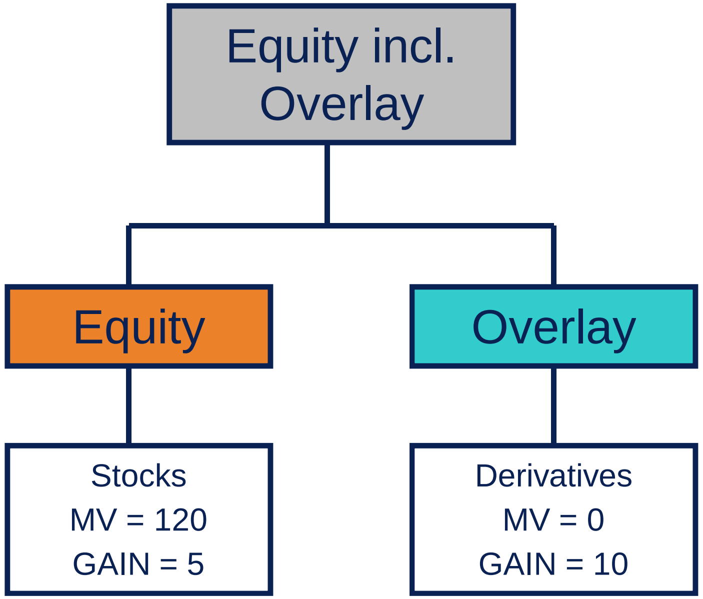
Cash Backing - Example

- With cash backing

	Portfolio		Portfolio		Benchmark		Attribution	
	MV	Gain	Weight	Return	Weight	Return	alloc	selec
Japan	270.0	14.7	32.7%	5.44%	15.0%	5.00%	0.52%	0.15%
USA	400.0	24.0	48.5%	6.00%	50.0%	4.00%	-0.03%	0.97%
Europe	200.0	7.0-	24.2%	-3.50%	35.0%	-2.00%	0.44%	-0.36%
Cash	45.0-	-	-5.5%	0.00%	0.0%	0.00%	0.11%	0.00%
Total	**825.0**	**31.7**	**100.0%**	**3.84%**	**100.0%**	**2.05%**	**1.04%**	**0.75%**

- The actual weights are based on market exposures
- The exposures are 'off-set' in the cash position
- This results in a positive allocation result

Notional Base - Example



- Without Notional Base:

	MV	Gain	Return
Equity	120.0	6.0	5.00%
Overlay	-	10.0	??
Equity incl. Overlay	**120.0**	**16.0**	**13.33%**

- Notional Base (portfolio):

	MV	NB	Gain	Return
Equity	120.0	120.0	6.0	5.00%
Overlay	-	120.0	10.0	8.33%
Equity incl. Overlay	**120.0**	**120.0**	**16.0**	**13.33%**

- Notional Base (fixed):

	MV	NB	Gain	Return
Equity	120.0	120.0	6.0	5.00%
Overlay	-	100.0	10.0	10.00%
Equity incl. Overlay	**120.0**	**120.0**	**16.0**	**13.33%**

Overlay Structures

- In case overlay structures are part of the investment strategy they should be modelled and measured accordingly

- Common overlay structures include:
  - Currency Overlay
  - Duration Overlay
  - Global TAA

- Specific attention in modelling overlay programs for attribution should be given to:
  - One consistent framework for both market and overlay
  - Meaningful benchmark for the overlay
  - Correct performance base for the selection effect
  - Interaction effect between market and overlay

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Example – Currency overlay

- Pension fund, base currency is Euro
- IDP: Region Allocation & Security Selection
- Benchmark hedge policy: USD: 50%, JPY: 100%, GBP: 0%
- The fund is mandated to deviate from benchmark hedge policy

Total benchmark return:	9.40%
Total actual return:	9.51%
Total added value:	0.11%

Example: Classic Attribution

Market	BM Weight	Actual Weight	BM Return	Actual Return	Allocation contribution
Eurozone	40%	50%	9.50%	9.50%	*0.01%*
Japan	10%	20%	7.50%	7.50%	*-0.19%*
UK	10%	5%	8.00%	8.00%	*0.07%*
US	40%	25%	10.00%	10.00%	*-0.10%*
Total	**100%**	**100%**	**9.35%**	**9.15%**	***-0.20%***

+

Classic currency overlay	BM Hedge	Actual Hedge	BM Hedge Return	Actual Hedge Return	Hedge allocation	Hedge selection	Total contri-bution
Euro	30%	40%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
JPY	-10%	-20%	2.50%	2.60%	*0.25%*	*0.02%*	*0.27%*
GBP	0%	0%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
USD	-20%	-20%	-1.00%	-0.80%	*0.00%*	*0.04%*	*0.04%*
Total	**0%**	**0%**	**0.05%**	**0.36%**	***0.25%***	***0.06%***	***0.31%***

+/+

Total added value: ***0.11%***

Comparing Hedged and Unhedged Return

$$r_{base,unhedged} = r + e = r - c + c + e$$

$$r_{base,hedged} = r + \left[c^{dom} - c\right]$$

r	= foreign market return
e	= exchange rate return
c	= foreign cash return
c^{dom}	= domestic cash return

Decomposition of Return

As proposed by Karnosky & Singer:

$$r_{base,unhedged} = [r - c] + [c + e]$$

Local Risk

Premium

+

return on

Foreign cash

return on

Domestic cash

$$r_{base,hedged} = [r - c] + [c^{dom}]$$

Decomposition of Return

As proposed by Karnosky & Singer

	r - c	+	*c + e*	=	*r + e*
Market	**local risk premium**	**+**	**euro cash return**	**=**	**euro total return**
Eurozone	6.00%	+	3.50%	=	*9.50%*
Japan	6.50%	+	1.00%	=	*7.50%*
UK	4.50%	+	3.50%	=	*8.00%*
US	5.50%	+	4.50%	=	*10.00%*
Total Actual	**5.90%**	**+**	**3.25%**	**=**	***9.15%***
Total BM	**5.70%**	**+**	**3.65%**	**=**	***9.35%***

Example: Karnosky & Singer Attribution

Market	BM Weight	Actual Weight	BM Risk premium	Actual Risk premium	Allocation contribution
Eurozone	40%	50%	6.00%	6.00%	*0.03%*
Japan	10%	20%	6.50%	6.50%	*0.08%*
UK	10%	5%	4.50%	4.50%	*0.06%*
US	40%	25%	5.50%	5.50%	*0.03%*
Total	**100%**	**100%**	**5.70%**	**5.90%**	***0.20%***

+

K&S Cur-rency	BM Weight	Actual Weight	BM euro cash return	Actual euro Cash Return	Currency allocation	Hedge selection	Total contri-bution
Euro	70%	90%	3.50%	3.50%	*-0.04%*	*0.00%*	*-0.04%*
JPY	0%	0%	1.00%	**???**	*0.00%*	*0.02%*	*0.02%*
GBP	10%	5%	3.50%	3.50%	*0.01%*	*0.00%*	*0.01%*
USD	20%	5%	4.50%	5.30%	*-0.12%*	*0.04%*	*-0.08%*
Total	**100%**	**100%**	**3.70%**	**3.61%**	***-0.15%***	***0.06%***	***-0.09%***

+/+

Total added value: ***0.11%***

Problems with the K&S Decomposition

- Not suitable for currency overlay attribution
  - No meaningful benchmark for currency overlay
  - Lacks performance base for the hedge selection effect

- Risk premiums used as market return

- Interaction effect between market and currency not addressed

What about…

The benchmark for currency overlay

- Should tell the currency overlay manager *how much* to hedge:

BM: **Virtual hedging of actual market exposure** + **Strategic foreign currency exposure**

Currency overlay benchmark composition	Hedging of actual market exposure	BM market weight unhedged	ccyovl hedgeratio	strategic foreign currency exposure	BM currency overlay
	c	*d*	*e*	*f=d*(e-1)*	*c-f*
EUR	50.00%	40.00%	-	-30.00%	*20.00%*
JPY	-20.00%	10.00%	100.00%	0.00%	*-20.00%*
GBP	-5.00%	10.00%	0.00%	10.00%	*5.00%*
USD	-25.00%	40.00%	50.00%	20.00%	*-5.00%*
Total	**0.00%**	**100.00%**		**0.00%**	***0.00%***

What about…

The hedge selection effect:

K&S Currency	BM Weight	Actual Weight	BM euro cash return	Actual euro Cash Return	Currency allocation	Hedge selection	Total contri-bution
Euro	70%	90%	3.50%	3.50%	*-0.04%*	*0.00%*	*-0.04%*
JPY	0%	0%	1.00%	**???**	*0.00%*	*0.02%*	*0.02%*
GBP	10%	5%	3.50%	3.50%	*0.01%*	*0.00%*	*0.01%*
USD	20%	5%	4.50%	5.30%	*-0.12%*	*0.04%*	*-0.08%*
Total	**100%**	**100%**	**3.70%**	**3.61%**	***-0.15%***	***0.06%***	***-0.09%***

Classic currency overlay	BM Hedge	Actual Hedge	BM Hedge Return	Actual Hedge Return	Hedge allocation	Hedge selection	Total contri-bution
Euro	30%	40%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
JPY	-10%	-20%	2.50%	2.60%	*0.25%*	*0.02%*	*0.27%*
GBP	0%	0%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
USD	-20%	-20%	-1.00%	-0.80%	*0.00%*	*0.04%*	*0.04%*
Total	**0%**	**0%**	**0.05%**	**0.36%**	***0.25%***	***0.06%***	***0.31%***

Currency Overlay Attribution

Improved currency overlay	**BM Hedge**	**Actual Hedge**	**BM Hedge Return**	**Actual Hedge Return**	**Hedge allocation**	**Hedge selection**	**Total contri-bution**
Euro	20%	40%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
JPY	-20%	-20%	2.50%	2.60%	*0.00%*	*0.02%*	*0.02%*
GBP	5%	0%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
USD	-5%	-20%	-1.00%	-0.80%	*-0.15%*	*0.04%*	*-0.11%*
Total	**0%**	**0%**	**0.45%**	**0.36%**	***-0.15%***	***0.06%***	***-0.09%***

- Meaningful benchmark for currency overlay
- Includes hedge selection effect
- The added value of this currency overlay attribution equals the added value of the K&S currency attribution

Currency Overlay Attribution: Details

Market	BM Weight	Actual Weight	BM Risk premium	Actual Risk premium	Allocation contribution
Eurozone	40%	50%	6.00%	6.00%	*0.03%*
Japan	10%	20%	6.50%	6.50%	*0.08%*
UK	10%	5%	4.50%	4.50%	*0.06%*
US	40%	25%	5.50%	5.50%	*0.03%*
Total	**100%**	**100%**	**5.70%**	**5.90%**	***0.20%***

+

Currency overlay	BM Hedge	Actual Hedge	BM Hedge Return	Actual Hedge Return	Hedge allocation	Hedge selection	Total contri-bution
Euro	20%	40%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
JPY	-20%	-20%	2.50%	2.60%	*0.00%*	*0.02%*	*0.02%*
GBP	5%	0%	0.00%	0.00%	*0.00%*	*0.00%*	*0.00%*
USD	-5%	-20%	-1.00%	-0.80%	*-0.15%*	*0.04%*	*-0.11%*
Total	**0%**	**0%**	**0.45%**	**0.36%**	***-0.15%***	***0.06%***	***-0.09%***

+/+

Total added value: ***0.11%***

Currency Overlay Attribution: Summary

	market		currency	total
Returns summary	*(r-c)* *risk premium*	*(c+e)* *cash return*	*(cd-c)* *ccy overlay*	r+e+(cd-c)
Benchmark	5.70%	3.25%	0.45%	*9.40%*
Portfolio	5.90%	3.25%	0.36%	*9.51%*
Added value	**0.20%**	**0.00%**	**-0.09%**	***0.11%***

- Add up the cash return to get total returns.

What about…

The use of risk premiums?
Risk premium versus fully hedged returns:

Fully hedged return: $= \left[r - c \right] + \left[c^{dom} \right]$

K&S risk premium: $= \left[r - c \right]$ **-/-**

Difference $= \left[c^{dom} \right]$

- This difference is the same for any investment in any currency
  → *relative results are the same!*

- The choice is yours…

What about…

The interaction between market and currency

- Decomposition including

Interaction result

$$r_{base} = \left[r - c + (r - c)\cdot e\right] + \left[c + e + c\cdot e\right]$$

$$r_{base,hedged} = \left[r - c + (r - c)\cdot e\right] + \left[c^{dom}\right]$$

- Interaction result cannot be hedged
  → Include interaction result with market result

Summary – Currency Overlay

- If currencies are not managed explicitly in a portfolio; use standard attribution approach
- If currencies are managed, separate out the currency results form the other investment decisions.

Investment Performance evaluation in the presence of a Currency Overlay Program:

- Apply Karnosky & Singer decomposition
- Choose between Risk Premiums *or* Fully Hedged Returns
- Include interaction between market and currency
- **Perform appropriate currency overlay attribution!**
  - what is the benchmark for currency overlay?
  - correct Performance Base for the hedge selection effect!

Contents

Conclusion

How to ensure appropriate handling of derivatives:

- Set up a general framework, such that ‘one size fits all’
- Use ‘virtual accounting’ when derivatives are used for any other purpose than pure leverage
- Clearly define your investment strategy and the role derivatives have in this. Measure the added value of overlay programs separately to avoid spurious results
- Use a notional base to calculate returns when the market value is close to zero.

Contents

ORTEC FINANCE

Introduction PEARL

With the PEARL model Ortec Finance offers:

- Performance Measurement
- Performance Contribution & Attribution
- Ex-post Risk Management

PEARL incorporates almost 20 years of experience in risk and return measurement and monitoring:

- Ortec Finance IDP Model can be combined with proprietary attribution models but also more broadly used models like Brinson-Fachler (Equity), Van Breukelen (Fixed Income) and Karnosky-Singer (Currency)
- Very fast data processing enables almost continuous monitoring
- Unique combination of macro and micro (bottom-up) attribution for all asset classes.

PEARL Clients

Some of our PEARL Clients:

- AP3
- AP4
- Allianz IDS
- APG
- Robeco
- SEB
- Swedbank

PEARL Reporting

The PEARL Web Portal is a user-friendly reporting tool

Demo PEARL Web Portal

PEARL WEBPORTAL

Configuration | Report Designer | Report Viewer

Request settings **Edit**

Hierarchy | Attribution | Other | Summary

Current Holdings Report

- Pension Scheme
  - Invested TAA budget
    - Alternatives
    - Cash
    - Equity
    - Fixed Interest
    - Interest Linked Fixed Income
    - Property
  - Open TAA budget

How do you want to explore 'Pension Scheme'?

Full screen

Current Holdings Report

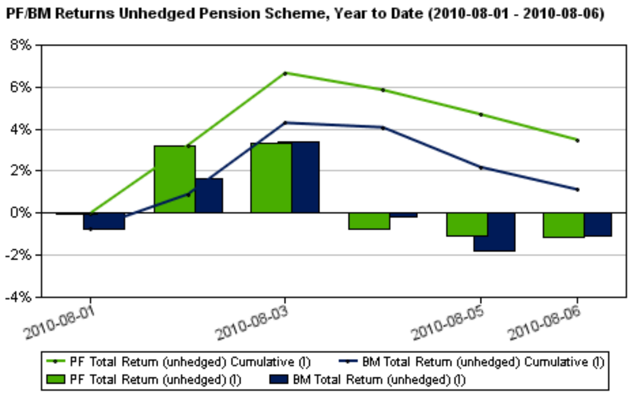
IDP Pension Scheme (Base currency, amounts * 1,000,000)

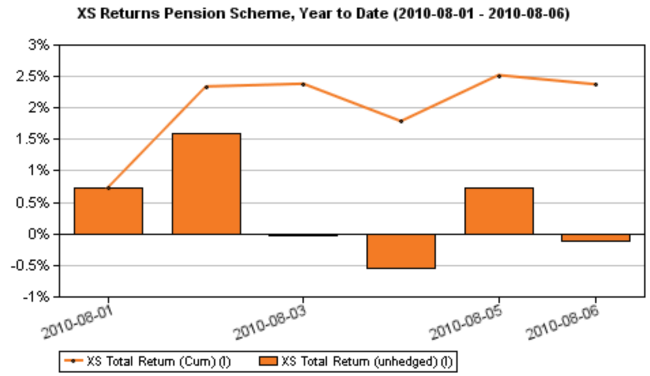
Report table

Expand / Collapse

Description	TS	Benchmark Name	Ccy	PF Market Value (EOP) YTD	PF Return MTD	BM Return MTD	XS Return MTD	PF Market Value (BOP) MTD	PF Return YTD	BM Return YTD	XS Return YTD
Pension Scheme	TS	Composite SAA	GBP	33,825.01	-1.17%	-1.05%	-0.12%	34,407.69	3.46%	1.10%	2.37%
Invested TAA budget	TS	Composite Invested TAA budget	GBP	33,825.01	-1.17%	-0.91%	-0.26%	34,407.69	3.46%	0.81%	2.66%
Alternatives	TS	Composite Alternatives	GBP	5,946.48	-1.86%	-0.16%	-1.70%	6,011.35	5.89%	1.22%	4.66%
Cash	TS	GBP LIBOR 1 Month	GBP	740.76	-3.38%	0.05%	-3.43%	938.42	-7.55%	0.27%	-7.82%
Equity	TS	Composite Equity	GBP	10,193.42	-4.43%	-4.55%	0.13%	10,535.84	-2.33%	-6.06%	3.73%
Fixed Interest	TS	Composite Fixed Income	GBP	7,359.85	0.62%	1.30%	-0.68%	7,349.64	5.20%	4.77%	0.44%
Interest Linked Fixed Income	TS	Composite Interest Linked Fixed Income	GBP	5,701.81	1.31%	1.17%	0.15%	5,788.39	5.09%	3.64%	1.45%
Property	TS	Composite Property	GBP	3,882.69	2.54%	1.04%	1.50%	3,784.05	8.83%	9.59%	-0.76%
Open TAA budget	TS	Absolute Return	GBP	-0.00	0.00%	0.00%	0.00%	0.00	0.00%	0.00%	0.00%

Graphs





Summary report

ORTEC FINANCE

Report table

Description	Ccy	TRR From start date 1	TRR From start date 2	TRR From start date 3
Benchmark (strat. hedging)	GBP	1.03%	0.24%	-0.05%
Portfolio	GBP	3.50%	3.53%	2.96%
Excess	GBP	2.47%	3.28%	3.01%
Added value market	GBP	1.62%	2.37%	2.91%
Added value currency	GBP	0.85%	0.92%	0.12%
Allocation	GBP	0.96%	0.91%	0.61%
Proxy Allocation	GBP	0.00%	0.00%	0.00%
Timing	GBP	0.00%	0.00%	0.00%
Manager's Allocation	GBP	0.96%	0.91%	0.61%
Selection	GBP	-0.11%	0.01%	-0.48%
Residual	GBP	0.00%	0.00%	-0.02%

Broad level split in sources of added value: Market, Currency (and Residual)

More detailed analysis of currency component

Cross tables

Excess Returns

Pension Scheme

Description	PF Return	BM Return	XS Return	XS Gain
Year to Date	3.46%	1.10%	2.37%	778.11
Month to Date	-1.17%	-1.05%	-0.12%	-39.68

Decision report

Decision Report

IDP Pension Scheme (Base currency, amounts * 1,000,000)

Report table

Description	TS	Ccy	XS Return MTD	XS Gain MTD	XS Return YTD	XS Gain YTD
Total Pension Scheme	TS	GBP	-0.12%	-39.68	2.37%	778.11
1. All Tactical decisions Pension Scheme	TS	GBP	0.20%	67.88	-0.09%	-28.01
1. Tactical Asset Allocation Pension Scheme	TS	GBP	0.14%	48.63	-0.29%	-98.22
2. Implementation of Asset Allocation Pension Scheme	TS	GBP	0.06%	19.24	0.21%	70.20
2. All Alternatives decisions Pension Scheme	TS	GBP	0.37%	22.08	-1.35%	-77.44
1. TAA implementation Pension Scheme	TS	GBP	-0.00%	-0.00	-0.00%	-0.00
2. Type allocation Pension Scheme	TS	GBP	0.22%	12.72	0.22%	12.72
3. Manager allocation Pension Scheme	TS	GBP	0.16%	9.36	-1.64%	-90.16
3. All Cash decisions Pension Scheme	TS	GBP	0.84%	8.21	10.10%	211.19
1. TAA implementation Pension Scheme	TS	GBP	-0.00%	-0.00	-0.00%	-0.00
2. Cash allocation Pension Scheme	TS	GBP	0.84%	8.21	10.10%	211.19
4. All Equity decisions Pension Scheme	TS	GBP	0.09%	9.90	0.86%	91.00
1. TAA implementation Pension Scheme	TS	GBP	0.00%	0.00	0.00%	0.00
2. Region allocation Pension Scheme	TS	GBP	-0.10%	-11.47	0.24%	32.74
3. Manager allocation Pension Scheme	TS	GBP	0.18%	21.37	0.50%	58.26
5. All Fixed Interest decisions Pension Scheme	TS	GBP	-0.25%	-18.62	0.65%	32.76
1. TAA implementation Pension Scheme	TS	GBP	-0.00%	-0.00	0.00%	0.00
2. Market allocation Pension Scheme	TS	GBP	-0.13%	-8.73	0.37%	19.74
3. Manager allocation Pension Scheme	TS	GBP	-0.15%	-9.89	0.23%	13.02

Created added value as a result of TAA.

Actual implementation of TAA differed from planned weights.

Region and Manager Allocation contributed positively to total pension fund return.

Currency Overlay Attribution

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Currency Overlay Attribution Report

IDP Pension Scheme (Base currency, amounts * 1,000,000)

Report table

Description	CCY	Portfolio weight (EOP)	Benchmark weight (EOP)	Portfolio currency weight (EOP)	Benchmark currency weight (EOP)	Active allocation	Selection	Total effect
		YTD	YTD	YTD	YTD	YTD	YTD	YTD
AUD (Australian Dollar)	GBP	0.36%	-2.50%	-0.34%	2.50%	0.10%	-0.00%	0.09%
BRL (Brazilian Real)	GBP	0.00%	-0.37%	0.28%	0.37%	-0.01%	0.00%	-0.01%
CAD (Canadian Dollar)	GBP	0.00%	-1.00%	0.09%	1.00%	-0.01%	-0.00%	-0.01%
CHF (Swiss Franc)	GBP	0.49%	0.00%	0.01%	0.00%	0.00%	-0.02%	-0.02%
CZK (Czech Koruna)	GBP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
DKK (Danish Krone)	GBP	0.00%	0.00%	0.05%	0.00%	0.00%	-0.00%	-0.00%
EGP (Egyptian Pound)	GBP	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%
EUR (Euro)	GBP	3.36%	2.67%	5.44%	5.00%	0.11%	-0.09%	0.03%
GBP (British Pound)	GBP	-9.49%	0.65%	67.43%	72.40%	0.00%	0.00%	0.00%
HKD (Hong Kong Dollar)	GBP	-0.19%	-0.37%	0.56%	0.37%	-0.00%	-0.00%	-0.01%
HUF (Hungarian Forint)	GBP	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%
IDR (Indonesian Rupiah)	GBP	0.00%	0.00%	0.07%	0.00%	0.00%	0.00%	0.00%
ILS (Israeli New Sheqel)	GBP	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%
INR (Indian Rupee)	GBP	0.00%	-0.37%	0.16%	0.37%	-0.00%	0.00%	-0.00%
JPY (Japanese Yen)	GBP	1.84%	-2.50%	1.87%	2.50%	-0.30%	0.13%	-0.17%
KRW (South Korean Won)	GBP	0.00%	-0.37%	0.88%	0.37%	0.02%	-0.00%	0.02%
MXN (Mexican Peso)	GBP	0.00%	0.00%	0.04%				
MYR (Malaysian Ringgit)	GBP	0.00%	0.00%					
NOK (Norwegian Krone)	GBP							
NZD (New Zealand Dollar)	GBP							
PHP (Philippine Peso)	GBP							
RUB (Russian Rouble)	GBP							
SEK (Swedish Krona)	GBP							
SGD (Singapore Dollar)	GBP				0.00%	-0.00%	0.00%	-0.00%
THB (Thai Baht)	GBP			0.11%	0.00%	0.00%	0.00%	0.00%

Show the relation between the contracts and the strategic hedging strategy.

Show the impact of the hedging on the currency exposures of the portfolio.

Insight whether results come from allocation or selection of instruments.

SAA versus TAA

Deviating the TAA from the long-term SAA is the first decision of the pension fund.

SAA versus TAA Attribution Report

IDP Pension Scheme (Base currency, amounts * 1,000,000)

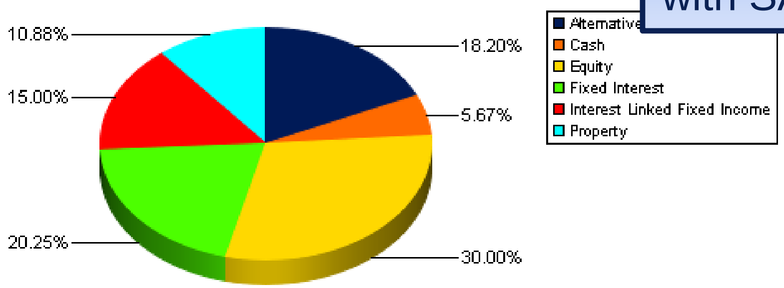
Report table

Expand / Collapse

Description	TS	Benchmark Name	Ccy	TAA Weight YTD	SAA Weight YTD	XS Weight YTD	PF Return YTD	BM Return YTD	XS Return YTD	Allocation YTD	Selection YTD	Total Effect YTD	XS Gain YTD
Pension Scheme	TS	Composite SAA	GBP	100.00%	100.00%	0.00%	3.46%	1.10%	2.37%	-0.32%	2.69%	2.37%	1,131.51
Alternatives	TS	Composite SAA	GBP	17.36%	21.00%	-3.64%	5.71%	2.66%	3.05%	-0.04%	0.52%	0.48%	335.14
Cash	TS	Composite SAA	GBP	5.20%	0.00%	5.20%	1.09%	0.27%	0.82%	-0.10%	0.18%	0.08%	62.59
Equity	TS	Composite SAA	GBP	31.50%	31.00%	0.50%	-1.78%	-6.99%	5.21%	-0.07%	1.68%	1.60%	-222.40
Fixed Interest	TS	Composite SAA	GBP	20.00%	22.00%	-2.00%	5.37%	5.52%	-0.16%	-0.[illegible]0%	-0.01%	-0.11%	364.35
Interest Linked Fixed Income	TS	Composite SAA	GBP	15.00%	15.00%	0.00%	5.62%	2.84%	2.77%	0.00%	0.41%	0.41%	280.61
Property	TS	Composite SAA	GBP	10.94%	11.00%	-0.06%	8.67%	9.59%	-0.92%	-0.01%	-0.09%	-0.10%	311.22

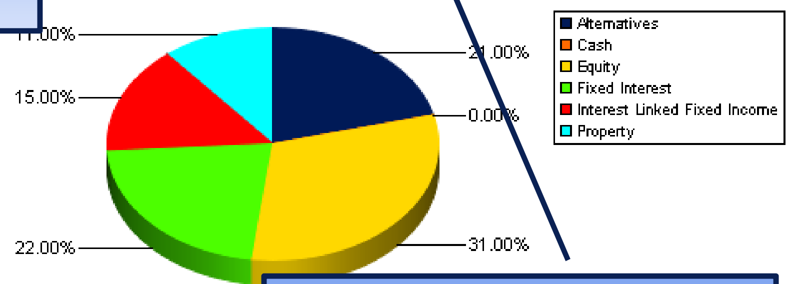
Graphs

PF Weights SAA versus TAA, Year to Date (2010-08-06)



Compare TAA with SAA …

BM Weights SAA versus TAA, Year to Date (2010-08-06)



… and see the impact of this allocation decision.

TAA versus TAA Implementation

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Attribution Report
IDP Pension Scheme (Base currency, amounts * 1,000,000)

The actual implementation of the TAA in turn can deviate from the set weights.

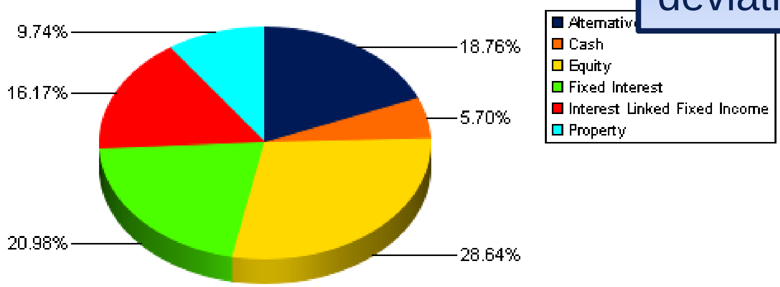
Report table

Expand / Collapse

Description	TS	Benchmark Name	Ccy	PF Weight YTD	BM Weight YTD	XS Weight YTD	PF Return YTD	BM Return YTD	XS Return YTD	Allocation YTD	Selection YTD	Total Effect YTD	XS Gain YTD
Invested TAA budget	TS	Composite Invested TAA budget	GBP	100.00%	100.00%	-0.00%	3.46%	0.81%	2.66%	0.21%	2.45%	2.66%	876.33
Alternatives	TS	Composite Alternatives	GBP	18.76%	18.20%	0.57%	5.89%	1.22%	4.66%	-0.02%	0.79%	0.77%	263.73
Cash	TS	GBP LIBOR 1 Month	GBP	5.70%	5.67%	0.03%	-7.55%	0.27%	-7.82%	-0.08%	0.20%	0.12%	64.71
Equity	TS	Composite Equity	GBP	28.64%	30.00%	-1.36%	-2.33%	-6.06%	3.73%	0.12%	1.15%	1.27%	443.52
Fixed Interest	TS	Composite Fixed Income	GBP	20.98%	20.25%	0.73%	5.20%	4.77%	0.44%	0.17%	0.16%	0.33%	41.78
Interest Linked Fixed Income	TS	Composite Interest Linked Fixed Income	GBP	16.17%	15.00%	1.17%	5.09%	3.64%	1.45%	0.03%	0.23%	0.26%	94.03
Property	TS	Composite Property	GBP	9.74%	10.88%	-1.14%	8.83%	9.59%	-0.76%	-0.01%	-0.08%	-0.09%	-31.43

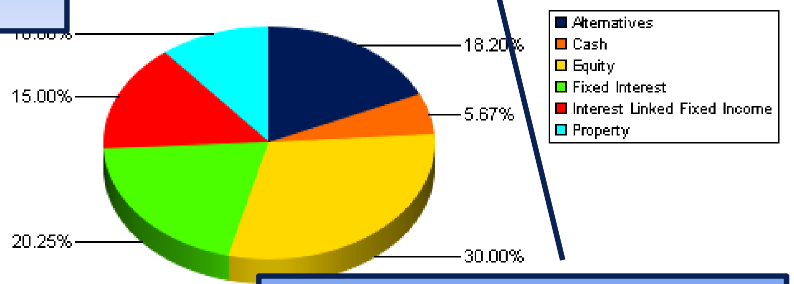
Graphs

PF Weights Invested TAA budget, Year to Date (2010-08-



We can see the deviations …

BM Weights Invested TAA budget, Year to Date (2010-08-06)



… and evaluate the effect of these deviations.

Equity Region Allocation

Attribution Report
IDP Pension Scheme (Base currency, amounts * 1,000,000)

We can zoom in on each decision to see the main source of added value.

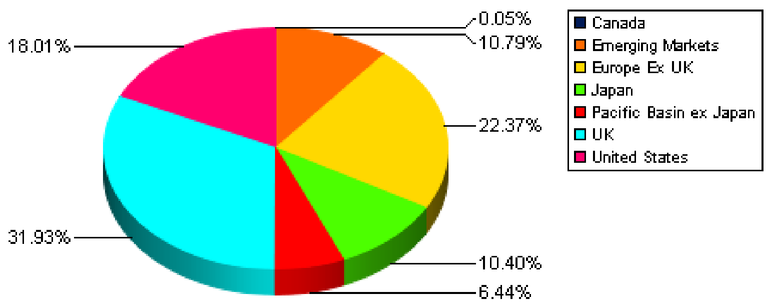
Report table

Expand / Collapse

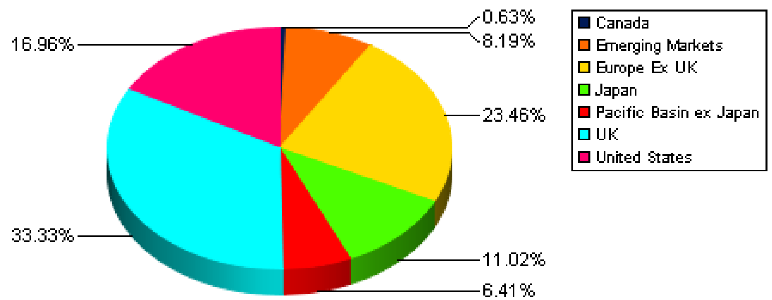
Description	TS	Benchmark Name	Ccy	PF Weight YTD	BM Weight YTD	XS Weight YTD	PF Return YTD	BM Return YTD	XS Return YTD	Allocation YTD	Selection YTD	Total Effect YTD	XS Gain YTD
Equity	TS	Composite Equity	GBP	100.00%	100.00%	0.00%	-3.58%	-6.06%	2.48%	0.24%	2.23%	2.48%	279.44
Canada	TS	FTSE AWD NORTH AMERICA	GBP	0.05%	0.63%	-0.58%	-18.96%	1.55%	-20.51%	-0.04%	-0.01%	-0.05%	-3.72
Emerging Markets	TS	MSCI EMERGING MARKETS	GBP	10.79%	8.19%	2.60%	-0.23%	1.42%	-1.65%	0.02%	-0.19%	-0.17%	12.61
Europe Ex UK	TS	FTSE AWD EUROPE EX UK	GBP	22.37%	23.46%	-1.09%	-9.87%	-13.38%	3.51%	0.07%	0.79%	0.86%	103.26
Japan	TS	TOPIX	GBP	10.40%	11.02%	-0.62%	6.72%	-7.29%	14.01%	-0.01%	1.39%	1.38%	164.27
Pacific Basin ex Japan	TS	FTSE AWD PACIFIC EX JAPAN	GBP	6.44%	6.41%	0.04%	-2.88%	-1.65%	-1.23%	-0.01%	-0.08%	-0.09%	-21.75
UK	TS	FTSE ALL SHARE	GBP	31.93%	33.33%	-1.40%	-6.08%	-7.87%	1.79%	0.04%	0.52%	0.56%	64.01
United States	TS	FTSE AWD NORTH AMERICA	GBP	18.01%	16.96%	1.05%	0.55%	1.55%	-1.00%	0.18%	-0.19%	-0.01%	-39.24

Graphs

PF Weights Equity, Year to Date (2010-08-06)



BM Weights Equity, Year to Date (2010-08-06)



Attributions via multiple breakdowns (I)

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Attribution Report

IDP Pension Scheme (Base currency, amounts * 1,000,000)

Report table

Expand / Collapse

Description	TS	Benchmark Name	Ccy	PF Weight YTD	BM Weight YTD	XS Weight YTD	PF Return YTD	BM Return YTD	XS Return YTD	Allocation YTD	Selection YTD	Total Effect YTD	XS Gain YTD
Equity	TS	Composite Equity Benchmark	GBP	100.00%	100.00%	0.00%	-3.58%	-7.10%	3.51%	-0.15%	3.67%	3.51%	-378.49
Alternative Investment Market	TS	Composite Equity Benchmark	GBP	0.65%	0.67%	-0.03%	2.49%	1.77%	0.72%	-0.00%	-0.00%	-0.00%	1.85
Barings	TS	Composite Equity Benchmark	GBP	1.79%	1.78%	0.01%	-6.03%	-9.10%	3.07				
Emerging Asia	TS	Composite Equity Benchmark	GBP	0.52%	0.39%	0.13%	7.84%	-4.03%	11.88				
Emerging EMEA	TS	Composite Equity Benchmark	GBP	0.19%	0.14%	0.05%	-2.34%	-8.07%	5.73				
Emerging Markets	TS	Composite Equity Benchmark	GBP	8.15%	6.19%	1.96%	-0.30%	-6.90%	6.60				
Emerging Markets - Korea	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	-0.00%	2.24%	0.00%	2.24				
Emerging Markets ex Korea	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	-0.00%	-4.28%	-0.87%	-3.40				
Europe Ex-UK Mid Cap	TS	Composite Equity Benchmark	GBP	1.02%	1.07%	-0.05%	-6.78%	-3.59%	-3.20				
European Equities Large Cap	TS	Composite Equity Benchmark	GBP	10.91%	11.44%	-0.53%	-11.47%	-5.79%	-5.68				
European I Focus Fund	TS	Composite Equity Benchmark	GBP	0.96%	1.00%	-0.05%	-4.97%	-3.10%	-1.86				
European Small Companies	TS	Composite Equity Benchmark	GBP	2.52%	2.65%	-0.12%	-5.05%	-5.86%	0.81				
European Transition	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	-0.00%	-24.55%	0.00%	-24.55%	0.00%	-0.00%	-0.00%	-0.33
Global Emerging Markets Fund	TS	Composite Equity Benchmark	GBP	1.43%	1.08%	0.34%	-1.25%	-6.27%	5.02%	-0.01%	0.07%	0.06%	-2.23
Global Equity Selection Fund	TS	Composite Equity Benchmark	GBP	2.09%	2.44%	-0.35%	-4.76%	-1.89%	-2.87%	-0.01%	-0.06%	-0.07%	-12.42
Global Equity Selection Fund	TS	Composite Equity Benchmark	GBP	0.52%	0.61%	-0.09%	-4.47%	-1.89%	-2.58%	-0.00%	-0.01%	-0.02%	-2.91
Global Investments Europe	TS	Composite Equity Benchmark	GBP	3.79%	3.97%	-0.18%	-11.65%	-5.56%	-6.09%	0.00%	-0.23%	-0.23%	-52.81
Japan Equitites	TS	Composite Equity Benchmark	GBP	7.89%	8.37%	-0.47%	5.48%	-8.31%	13.79%	-0.02%	0.89%	0.87%	50.45
Japan Equity Fund	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	0.00%	6.60%	-18.54%	25.14%	0.00%	0.10%	0.10%	4.07
Japan Small and Mid Cap	TS	Composite Equity Benchmark	GBP	0.84%	0.89%	-0.05%	8.53%	-2.41%	10.95%	0.00%	0.09%	0.09%	9.01
Korea Segregated Portfolio	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	-0.00%	-5.06%	0.00%	-5.06%	0.00%	-0.01%	-0.01%	-1.40
Latin America	TS	Composite Equity Benchmark	GBP	0.21%	0.16%	0.05%	-6.90%	-10.69%	3.79%	-0.00%	0.01%	0.01%	-1.77
Mega Cap Index	TS	Composite Equity Benchmark	GBP	7.53%	7.59%	-0.06%	-3.50%	-7.48%	3.98%	-0.00%	0.49%	0.49%	-50.73
Merrill Lynch Investment Management	TS	Composite Equity Benchmark	GBP	5.81%	6.06%	-0.25%	-5.99%	-6.15%	0.16%	-0.00%	0.01%	0.01%	-37.09
North America Equities	TS	Composite Equity Benchmark	GBP	10.42%	9.81%	0.61%	-0.69%	-13.26%	12.56%	-0.05%	0.89%	0.84%	-5.70
Pacfic Equities	TS	Composite Equity Benchmark	GBP	4.64%	4.61%	0.03%	-1.58%	-9.10%	7.52%	-0.01%	0.34%	0.32%	-7.55

The pension fund can include multiple ways of evaluating the data. Directly from the broad equity into the final funds…

Attributions via multiple breakdowns (II)

Attribution Report
IDP Pension Scheme (Base currency, amounts * 1,000,000)

Report table

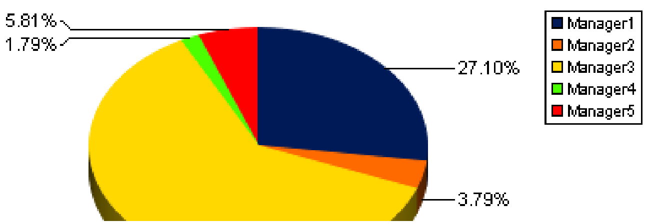
Expand / Collapse

Description	TS	Benchmark Name	Ccy	PF Weight YTD	BM Weight YTD	XS Weight YTD	PF Return YTD	BM Return YTD	XS Return YTD	Allocation YTD	Selection YTD	Total Effect YTD	XS Gain YTD
⊟ Equity	TS	Composite Equity Benchmark	GBP	100.00%	100.00%	-0.00%	-3.58%	-7.10%	3.51%	0.01%	3.51%	3.51%	-378.49
⊞ Manager1	TS	Composite Equity Benchmark	GBP	27.10%	25.36%	1.74%	-0.10%	-4.39%	4.29%	[illegible]	[illegible]	[illegible]	[illegible]
⊞ Manager2	TS	Composite Equity Benchmark	GBP	3.79%	3.97%	-0.18%	-11.65%	-5.56%	-6.09%	[illegible]	[illegible]	[illegible]	[illegible]
⊟ Manager3	TS	Composite Equity Benchmark	GBP	61.51%	62.82%	-1.31%	-4.53%	-8.56%	4.03%	[illegible]	[illegible]	[illegible]	[illegible]
European Equities Large Cap	TS	Composite Equity Benchmark	GBP	10.91%	11.44%	-0.53%	-11.47%	-5.79%	-5.68%	[illegible]	[illegible]	[illegible]	[illegible]
Japan Equitites	TS	Composite Equity Benchmark	GBP	7.89%	8.37%	-0.47%	5.48%	-8.31%	13.79%	[illegible]	[illegible]	[illegible]	[illegible]
Korea Segregated Portfolio	TS	Composite Equity Benchmark	GBP	0.00%	0.00%	-0.00%	-5.06%	0.00%	-5.06%	[illegible]	[illegible]	[illegible]	[illegible]
Mega Cap Index	TS	Composite Equity Benchmark	GBP	7.53%	7.59%	-0.06%	-3.50%	-7.48%	3.98%	-0.00%	0.49%	0.49%	-50.73
North America Equities	TS	Composite Equity Benchmark	GBP	10.42%	9.81%	0.61%	-0.69%	-13.26%	12.56%	-0.05%	0.89%	0.84%	-5.70
Pacfic Equities	TS	Composite Equity Benchmark	GBP	4.64%	4.61%	0.03%	-1.58%	-9.10%	7.52%	-0.01%	0.34%	0.32%	-7.55
UK FTSE 100 Equity Index	TS	Composite Equity Benchmark	GBP	20.12%	21.00%	-0.88%	-7.35%	-9.16%	1.81%	0.03%	0.31%	0.34%	-161.97
⊞ Manager4	TS	Composite Equity Benchmark	GBP	1.79%	1.78%	0.01%	-6.03%	-9.10%	3.07%	-0.00%	0.05%	0.05%	-11.66
⊞ Manager5	TS	Composite Equity Benchmark	GBP	5.81%	6.06%	-0.25%	-5.99%	-6.15%	0.16%	-0.00%	0.01%	0.01%	-37.09

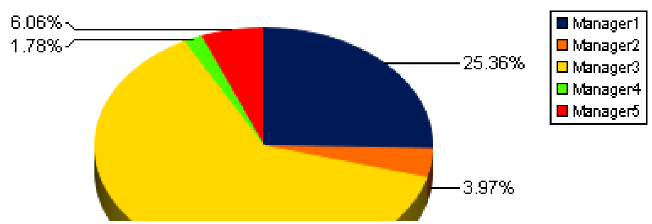
… or with an intermediate layer to organize by manager.

Graphs

PF Weights EQ PF's per Manager vs. secgrp, Year to Date (2010-08-06)



BM Weights EQ PF's per Manager vs. secgrp, Year to Date (2010-08-06)



Risk Analysis

Risk

IDP Pension Scheme (Base currency, amounts * 1,000,000)

Report table

Expand / Collapse

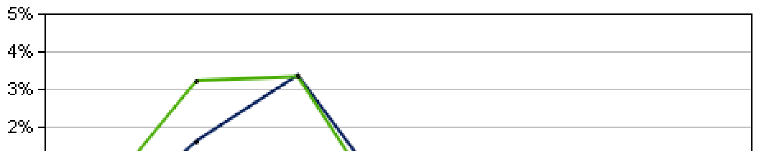
Description	TS	Portfolio return YTD	Portfolio SD YTD	Benchmark return YTD	Benchmark SD YTD	Excess return YTD	TE YTD	Limit TE YTD	IR YTD	Risk Free Return YTD	Treynor Ratio YTD	Sharpe ratio YTD
⊟ Pension Scheme	TS	3.46%	2.13%	1.10%	1.94%	2.37%	0.77%	-	0.51	0.27%	0.02	0.10
⊟ Invested TAA budget	TS	3.46%	2.57%	0.81%	1.66%	2.66%	1.59%	-	0.21	[illegible]	[illegible]	[illegible]
⊞ Alternatives	TS	5.89%	2.74%	1.22%	1.23%	4.66%	1.77%	-	0.43	[illegible]	[illegible]	[illegible]
⊞ Cash	TS	-7.55%	7.99%	0.27%	0.00%	-7.82%	7.99%	-	-0.13	[illegible]	[illegible]	[illegible]
⊟ Equity	TS	-2.33%	4.15%	-6.06%	5.39%	3.73%	2.22%	-	0.30	[illegible]	[illegible]	[illegible]
⊟ Equity	TS	-3.58%	4.14%	-6.06%	5.39%	2.48%	2.28%	-	0.20	[illegible]	[illegible]	[illegible]
⊞ Canada	TS	-18.96%	14.06%	1.55%	6.09%	-20.51%	8.91%	-	-0.38	[illegible]	[illegible]	[illegible]
⊞ Emerging Markets	TS	-0.23%	5.26%	1.42%	5.55%	-1.65%	0.76%	-	-0.36	[illegible]	[illegible]	[illegible]
⊞ Europe Ex UK	TS	-9.87%	5.25%	-13.38%	6.01%	3.51%	1.76%	-	0.38	[illegible]	[illegible]	[illegible]
⊞ Japan	TS	6.72%	4.15%	-7.29%	6.65%	14.01%	9.22%	-	0.29	0.12%	0.65	-0.28
⊞ Pacific Basin ex Japan	TS	-2.88%	6.94%	-1.65%	6.83%	-1.23%	0.25%	-	-0.82	0.19%	-0.20	-0.24
⊞ UK	TS	-6.08%	3.08%	-7.87%	4.95%	1.79%	3.37%	-	0.11	[illegible]	[illegible]	[illegible]
⊞ United States	TS	0.55%	5.77%	1.55%	6.09%	-1.00%	1.82%	-	-0.08	[illegible]	[illegible]	[illegible]
Equity TAA	TS	-10.39%	4.29%	-6.06%	5.39%	-4.33%	2.76%	-	-0.27	[illegible]	[illegible]	[illegible]
⊞ Fixed Interest	TS	5.20%	1.90%	4.77%	0.89%	0.44%	1.99%	-	0.04	[illegible]	[illegible]	[illegible]
⊞ Interest Linked Fixed Income	TS	5.09%	0.90%	3.64%	1.29%	1.45%	0.70%	-	0.33	[illegible]	[illegible]	[illegible]
⊞ Property	TS	8.83%	2.14%	9.59%	0.44%	-0.76%	1.90%	-	-0.05	[illegible]	[illegible]	[illegible]
Open TAA budget	TS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-	-	[illegible]	[illegible]	[illegible]

Results do not only focus on performance numbers but also on risk numbers and risk-adjusted numbers.

All measures are available on all levels of the decision hierarchy, ranging from broad pension fund level to portfolio level.

Graphs

Return development Pension Scheme, Year-to-date (2010-01-01 - 2010-07-31)



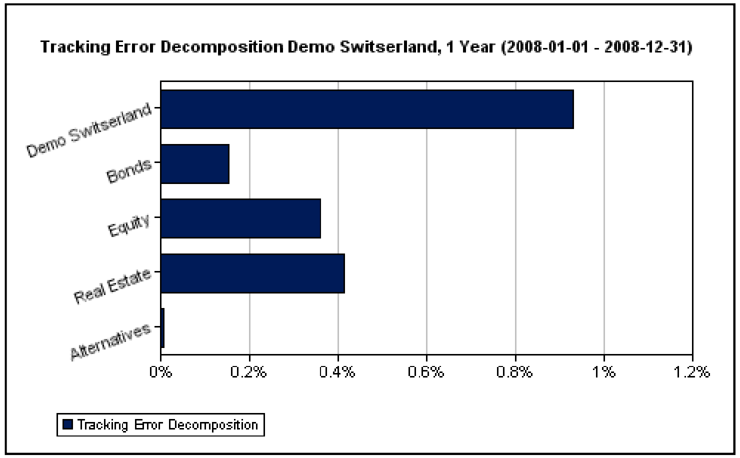
Risk Decomposition

- Decomposition of the risk in additive components gives detailed information on the source of the risk as correlations are accounted for

<u>Example</u>

Total portfolio XYZ has a total ex-post tracking error of 0.93%. A decomposition of risk in line with the IDP can provide valuable information.

Description	TS	Portfolio return, MB 12 Months rolling period	Benchmark return, MB 12 Months rolling period	TE Decomposition 1 Year
⊟ Demo Switserland	TS	-19.54%	-19.46%	0.93%
⊟ Bonds	TS	-2.05%	3.16%	0.15%
Domestic	TS	0.32%	4.53%	0.07%
Foreign	TS	-5.63%	1.10%	0.08%
⊟ Equity	TS	-39.89%	-43.04%	0.36%
Switzerland	TS	-36.08%	-34.77%	0.02%
Europe	TS	-44.49%	-49.61%	0.03%
United States	TS	-39.29%	-41.31%	0.04%
Pacific	TS	-28.93%	-33.45%	0.24%
Emerging Markets	TS	-54.74%	-55.98%	0.02%
⊟ Real Estate	TS	-3.14%	-10.92%	0.41%
⊞ Direct Real Estate	TS	5.33%	5.53%	0.04%
⊞ Indirect Real Estate	TS	-20.08%	-19.14%	0.37%
⊞ Alternatives	TS	-33.37%	-33.39%	0.01%



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