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# Beta-Adjusted Performance Attribution in POINT

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#### Introducing Beta in Performance Attribution...

What we have talked about so far:

- Beta is a measure of risk
- Beta has a different meaning to different portfolio mix/investment styles
- Performance attribution's primary objective is to reflect investment decisions

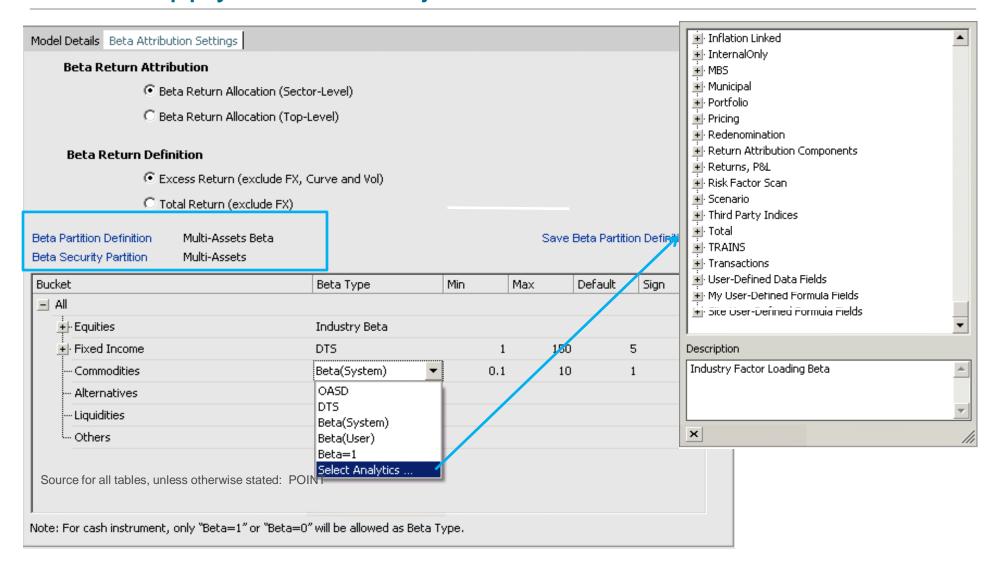
Question: How can we reflect this in attribution?

**Answer**: User flexibility catering to an array of betas

Source for all tables, unless otherwise stated: POINT



#### How to Apply the Beta Adjustment





# Beta-Adjusted Performance Attribution Methodology

#### **Top-Level**

#### **Sector-Level**

$$ER^{P} - ER^{B} = (\beta^{P} - \beta^{B}) \cdot \frac{ER^{B}}{\beta^{B}}$$

$$+ \beta^{P} \sum_{s} \left( \frac{w_{s}^{P} \beta_{s}^{P}}{\beta^{P}} - \frac{w_{s}^{B} \beta_{s}^{B}}{\beta^{B}} \right) \cdot \left( \frac{ER_{s}^{B}}{\beta_{s}^{B}} - H \right)$$

$$+\sum_{s} w_{s}^{P} \beta_{s}^{P} \cdot \left( \frac{ER_{s}^{P}}{\beta_{s}^{P}} - \frac{ER_{s}^{B}}{\beta_{s}^{B}} \right)$$

Leverage/Top-level Exposure

$$\sum_{s} \left( w_{s}^{P} \beta_{s}^{P} - w_{s}^{B} \beta_{s}^{B} \right) \cdot \left( \frac{ER_{s}^{B}}{\beta_{s}^{B}} - H \right)$$

$$+\sum_{s} w_{s}^{P} \beta_{s}^{P} \cdot \left( \frac{ER_{s}^{P}}{\beta_{s}^{P}} - \frac{ER_{s}^{B}}{\beta_{s}^{B}} \right)$$

## Case Study 1: Multi-Asset September 2014

	Market Value [%]			Beta		
	Portfolio	Benchmark	Portfolio	Benchmark	Beta Type	
Total	100.0	100.0	1.98	2.15		
Treasuries	23.9	25.0	4.77	5.28	OASD	
Corporates	25.0	25.6	1.40	0.99	Enhanced Credit Beta	
Equities	25.8	24.4	0.85	0.96	Market Beta	
Commodities	25.4	25.0	0.90	0.98	RFS Beta	
Cash	0.0					

#### Construction:

- Optimized portfolio with equal weight between four asset classes
- Long Beta (ECB) in Corporates
- Short Beta (Regressed betas) in Equities/Commodities



## Case Study 1: Multi-Asset September 2014

	Market V	alue [%]	Beta			
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Total	100.0	100.0	1.98	2.15		
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Commodities	25.4	25.0	0.90	0.98	RFS Beta	
Cash	0.0					

- Negative total returns in all sectors
- Treasuries best/Commodities worst sectors

Total Return (Benchmark)		
Total	-2.20	
Treasuries	-0.55	
Corporates	-1.52	
Equities	-1.32	
Commodities	-5.43	



#### Multi-Asset Attribution: Standard

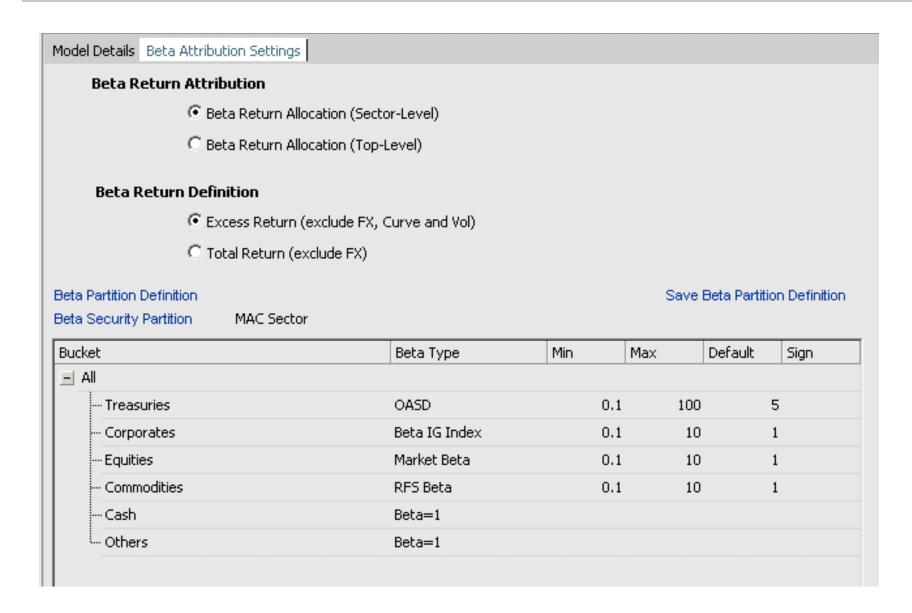
Outperformance (USD)	
Portfolio Return (bps)	-207.8
Benchmark Return (bps)	-228.8
Outperformance (bps)	21.0

Outperformance Details			
Yield Curve	2.4		
Asset Allocation	-2.7		
Security Selection	17.4		
Leverage	0.0		
Pricing Differences	3.8		

Outperformance Contribution by Partition Buckets						
Bucket name	Avg Weight (%)		Ret ex Common		Outperf	
	Port	Bench	Port	Bench	Alloc	Select
Total	100.0	100.0	-175.7	-190.3	-2.7	17.4
Equities	26.1	24.2	-58.9	-132.6	1.0	19.0
Commodities	24.7	24.5	-553.5	-561.5	0.1	1.0
Corporates	25.0	25.0	-82.7	-72.4	-0.1	-2.6
Treasuries	24.1	24.7	1.7	1.7	-1.2	0.0
Cash	0.2	1.6	0.0	0.0	-2.5	0.0



#### **Beta Attribution Settings**





# Multi-Asset Attribution: Beta-Adjusted

Outperformance (USD)	
Portfolio Return (bps)	-207.8
Benchmark Return (bps)	-228.8
Outperformance (bps)	21.0

Outperformance Details			
Yield Curve	2.4		
Implied Volatility	0.1		
Asset Allocation	8.1		
Security Selection	6.7		
Pricing Differences	3.8		
Residual	0.0		

Outperformance Contribution by Partition Buckets							
Bucket name	BETA Contrib. (*)		BETA Factor Change		Outperf		
	Port	Bench	Port	Bench	Alloc	Select	
Total	1.89	2.01	-93.8	-96.2	8.1	6.7	
Commodities	0.22	0.24	-628.1	-583.2	12.3	-11.3	
Equities	0.22	0.23	-65.9	-135.1	1.1	15.2	
Cash	0.00	0.02	0.0	0.0	0.0	0.0	
Treasuries	1.13	1.27	-0.4	-0.3	-0.1	0.0	
Corporates	0.32	0.25	-64.7	-73.5	-5.3	2.8	



# Case Study 2: High Yield September 2014

	Portfolio	US HY	Difference
OAD	4.06	4.06	0.00
Enhanced Credit Beta	0.60	0.99	-0.39
Yield to Worst	6.6	5.2	1.4

- Neutral duration
- Short beta
- Higher yield



#### HY Attribution: Excess Return

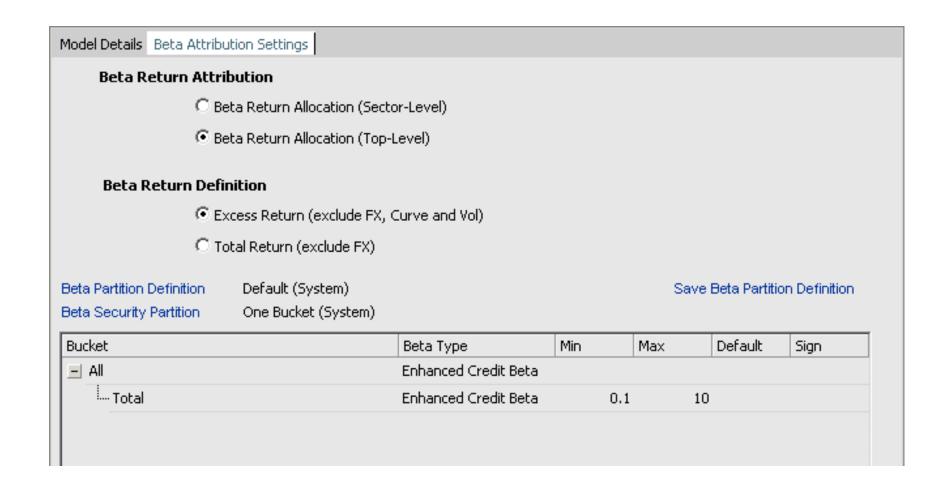
Outperformance (USD)	
Portfolio Return (bps)	-182.7
Benchmark Return (bps)	-209.4
Outperformance (bps)	26.7

Outperformance Details			
Yield Curve	-0.7		
Asset Allocation	2.7		
Security Selection	24.8		
Leverage	0.0		
Pricing Differences	-0.1		

Outperformance Contribution by Partition Buckets									
Bucket name	Avg Weight (%)		Ret ex Common		Outperf				
	Port	Bench	Port	Bench	Alloc	Select			
Total	100.0	100.0	-137.8	-165.3	2.7	24.8			
CASH	1.2	0.3	0.0	0.0	1.7	0.0			
Industrial Energy	14.2	15.5	-273.9	-244.8	1.0	-4.2			
Industrial Technology	8.4	6.1	-58.6	-131.7	0.8	6.1			
Industrial Consumer Non Cy	13.8	12.0	-117.8	-134.6	0.6	2.3			
Industrial Other	2.0	1.3	-21.1	-89.8	0.5	1.4			
Financial Inst. Finance Co	3.3	4.3	-86.5	-203.0	0.4	3.9			
Industrial Communications	17.8	18.1	-125.1	-142.1	-0.1	3.0			
Financial Inst. Banking	2.7	3.0	-146.6	-124.1	-0.1	-0.6			
Financial Inst. Brokerage	0.3	0.5	-111.6	-56.8	-0.2	-0.2			
Industrial Capital Goods	8.1	8.8	-96.8	-111.6	-0.4	1.2			
Industrial Consumer Cyc	10.1	13.9	-136.2	-152.5	-0.5	1.6			
Industrial Basic Industry	10.0	8.7	-208.8	-290.7	-1.6	8.2			



## **HY Beta Attribution Settings**





## HY Attribution: Beta Return

Outperformance (USD)				
Portfolio Return (bps)	-182.7			
Benchmark Return (bps)	-209.4			
Outperformance (bps)	26.7			

Outperformance Details				
Yield Curve	-0.7			
Implied Volatility	0.2			
Beta Mismatch	42.4			
Asset Allocation	1.8			
Security Selection	-16.9			
Pricing Differences	-0.1			
Residual	0.0			

Outperformance Contribution by Partition Buckets								
Bucket name	BETA Contrib. (%)		BETA Factor Change		Outperf			
	Port	Bench	Port	Bench	Alloc	Select		
Total	100.00	100.00	-189.3	-168.8	1.8	-16.9		
Financial Inst. Finance Co	2.48	4.42	-175.9	-199.7	0.6	0.4		
Industrial Consumer Non Cy	15.12	11.08	-147.9	-149.1	0.6	0.1		
Industrial Energy	14.75	15.44	-361.4	-249.4	0.4	-12.2		
Financial Inst. Insurance	1.21	0.88	-86.9	-29.9	0.3	-0.5		
Financial Inst. REITS	0.85	0.47	-52.9	-69.0	0.3	0.1		
Industrial Transportation	1.94	1.48	-66.2	-115.0	0.2	0.7		
Industrial Other	1.64	1.12	-33.3	-112.1	0.2	1.0		
Industrial Consumer Cyc	11.17	13.10	-168.0	-165.3	-0.1	-0.2		
Industrial Technology	5.64	5.95	-125.2	-138.6	-0.1	0.6		
Utility Electric	3.28	3.42	-76.5	-96.9	-0.1	0.5		
Industrial Communications	21.30	22.03	-144.2	-119.9	-0.2	-3.8		
Industrial Basic Industry	8.18	7.98	-344.8	-321.3	-0.3	-1.4		



#### Conclusion

- Beta attribution is powerful when it can help re-allocate the effect of systematic exposures
- Beta attribution can be easily used across asset types in a unified framework
- Provides a new method of risk-adjusted attribution for multi-asset class and single-asset class portfolios
- A new implementation showing POINT's commitment to thought leadership in Performance Attribution



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