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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

Model Details **Beta Attribution Settings**

Beta Return Attribution

☒ Beta Return Allocation (Sector-Level)

☐ Beta Return Allocation (Top-Level)

Beta Return Definition

☒ Excess Return (exclude FX, Curve and Vol)

☐ Total Return (exclude FX)

Beta Partition Definition Multi-Assets Beta

Beta Security Partition Multi-Assets

Save Beta Partition Definition

Bucket	Beta Type	Min	Max	Default	Sign
- All					
+ Equities	Industry Beta				
+ Fixed Income	DTS	1	150	5	
... Commodities	Beta(System)	0.1	10	1	
... Alternatives					
... Liquidities					
... Others					

Source for all tables, unless otherwise stated: POINT

Note: For cash instrument, only "Beta=1" or "Beta=0" will be allowed as Beta Type.

Dropdown menu options: OASD, DTS, Beta(System), Beta(User), Beta=1, Select Analytics ...

Right Panel:

- Inflation Linked
- InternalOnly
- MBS
- Municipal
- Portfolio
- Pricing
- Redenomination
- Return Attribution Components
- Returns, P&L
- Risk Factor Scan
- Scenario
- Third Party Indices
- Total
- TRAINS
- Transactions
- User-Defined Data Fields
- My User-Defined Formula Fields
- Site User-Defined Formula Fields

Description: Industry Factor Loading Beta

Beta-Adjusted Performance Attribution Methodology

Top-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

Asset Allocation

Security Selection

Sector-Level

$$\sum_s \left(w_s^P \beta_s^P - w_s^B \beta_s^B \right) \cdot \left(\frac{ER_s^B}{\beta_s^B} - H \right)$$

$$+ \sum_s w_s^P \beta_s^P \cdot \left(\frac{ER_s^P}{\beta_s^P} - \frac{ER_s^B}{\beta_s^B} \right)$$

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 Value [%]		Beta		
	Portfolio	Benchmark	Portfolio	Benchmark	Beta Type
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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

Model Details | **Beta Attribution Settings**

Beta Return Attribution

- ☒ Beta Return Allocation (Sector-Level)
- ☐ Beta Return Allocation (Top-Level)

Beta Return Definition

- ☒ Excess Return (exclude FX, Curve and Vol)
- ☐ Total Return (exclude FX)

[Beta Partition Definition](#) [Save Beta Partition Definition](#)

[Beta Security Partition](#) MAC Sector

Bucket	Beta Type	Min	Max	Default	Sign
<input type="checkbox"/> All					
Treasures	OASD	0.1	100	5	
Corporates	Beta IG Index	0.1	10	1	
Equities	Market Beta	0.1	10	1	
Commodities	RFS Beta	0.1	10	1	
Cash	Beta=1				
Others	Beta=1				

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

Model Details

Beta Attribution Settings

Beta Return Attribution

☐ Beta Return Allocation (Sector-Level)
☒ Beta Return Allocation (Top-Level)

Beta Return Definition

☒ Excess Return (exclude FX, Curve and Vol)
☐ Total Return (exclude FX)

Beta Partition Definition

Default (System)

Save Beta Partition Definition

Beta Security Partition

One Bucket (System)

Bucket	Beta Type	Min	Max	Default	Sign
<div><div>-</div>All</div>	Enhanced Credit Beta				
<div><div>└</div>Total</div>	Enhanced Credit Beta	0.1	10		

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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