FACTSET

Fixed Income Performance Attribution Tailored to Your Investment Process

Chris Ellis, CFA
Director of Analytics
FactSet Research Systems, Inc.

The Progression of Analyzing Performance

- **Step 1: Absolute Return Analysis**
  - Contribution to Return
  - Return Attribution
- **Step 2: Relative Return Analysis**
  - Relative Contribution to Return
  - Performance Attribution
- **Step 3: Customized Attribution**

Why Performance Attribution

+ Dissect relative performance in the language of opportunity costs

+ Report groupings frame results so as to be reflective on the investment process

+ In fixed income, attribution effects also key to making the results reflect the investment process

+ Reach effectual conclusions on historical performance in hopes of improving future performance – Why? What? How?

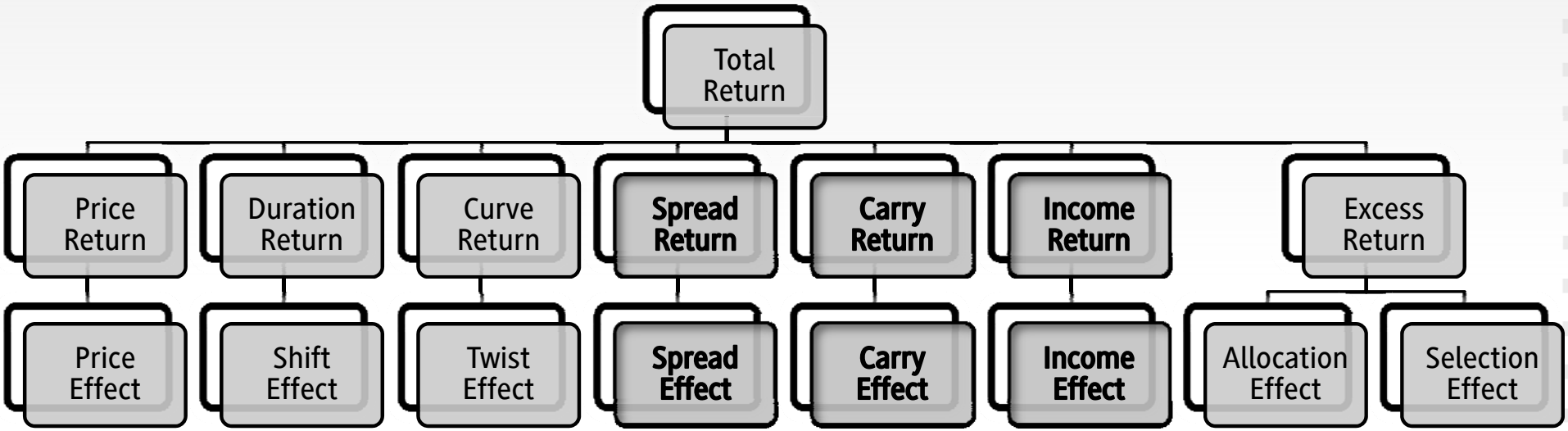
Benefits to your own firm going forward vs. Client communication

Equity vs. Fixed Income Performance Attribution

+ Consensus on a model

- Equity has general agreement on Brinson-Fachler or its closely related alternatives (BHB or K&S)
  - No similar consensus on fixed income
- Commonplace and reasonable for different groups within the same firm to use different fixed income attribution models
- Risk-based performance attribution seen more as a complement than alternative in both equity and fixed income
- Should duration effect be attributed separately for high yield strategies?

Single Currency Performance Attribution



Inclusion of each effect impacts allocation & selection

Timothy J. Lord, "The Attribution of Portfolio and Index Returns in Fixed Income",Journal of Performance Measurement, Fall 1997, pp. 45-57 reprinted Spring 2006, pp 81-93

If This Isn't Clear, Customize It

Performance Attribution

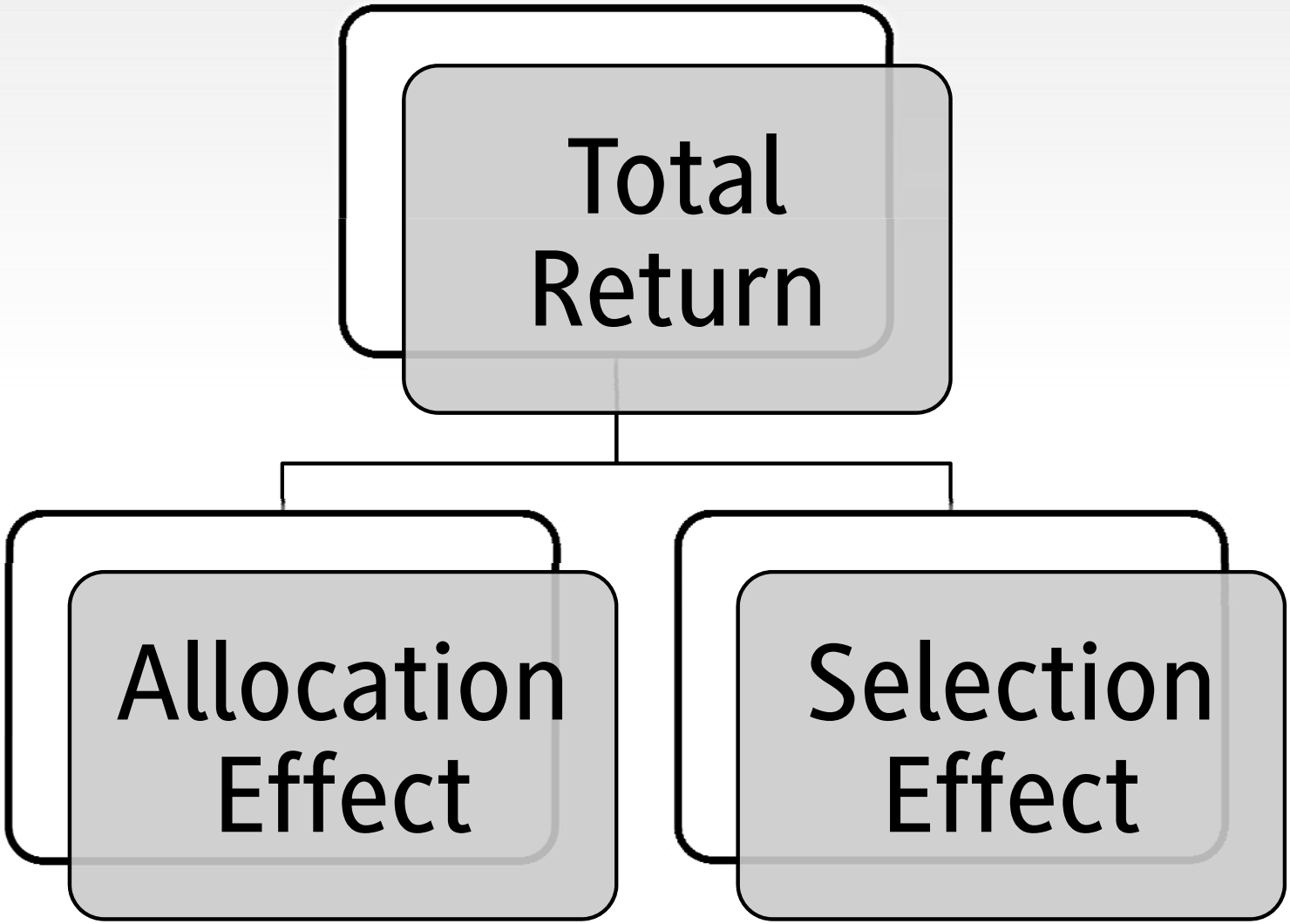
Corporate Government Portfolio vs. Barclays Capital US Aggregate Government & Credit

12/31/2009 to 4/30/2010

U.S. Dollar

	Corporate Government Portfolio			Barclays Capital US Aggregate Government & Credit			Attribution Analysis								
Sector Sub-Group	Port. Average Effective Duration	Port. Average Weight	Port. Total Return	Bench. Average Effective Duration	Bench. Average Weight	Bench. Total Return	Price Effect	Shift Effect	Twist Effect	Spread Effect	Carry Effect	Income Effect	Allocation Effect	Selection Effect	Total Effect
Agency	1.31	9.68	.86	3.21	12.48	1.77	-.02	-.02	-.02	.14	.21	-.09	.04	-.33	-.09
Foreign Sovereign	1.52	.21	.12	6.47	1.80	3.07	-.01	-.03	.00	.01	.02	-.03	-.00	-.00	-.04
Telecommunications	9.58	1.05	5.20	6.86	2.39	3.34	-.01	-.03	.00	.02	.02	-.03	-.01	.00	-.03
Government Guaranteed	1.94	1.70	1.60	2.87	3.53	1.65	.02	-.00	-.00	-.01	.02	-.01	.01	-.01	.01
Consumer Non-Cyclical	12.21	.53	2.80	6.31	1.96	4.07	-.01	-.01	-.00	-.01	.02	-.03	-.00	.00	-.04
Local-Authority	1.11	.11	.34	8.29	1.43	5.95	-.00	-.03	.01	-.04	.02	-.02	-.00	.00	-.07
Supranational	2.21	.12	1.18	3.52	1.85	2.05	-.00	-.01	-.00	-.00	.02	-.02	.00	.00	-.01
Media	7.46	.62	3.53	7.06	1.52	4.43	.00	-.02	.01	-.01	.01	-.03	-.00	.01	-.03
Consumer Cyclical	6.69	.44	5.16	7.08	1.23	4.11	.00	-.00	.00	-.01	.01	-.01	-.00	-.01	-.01
Healthcare	9.64	1.23	.25	7.20	1.97	4.17	-.01	-.04	.01	-.02	.01	-.01	-.00	.01	-.06
Financial Services	4.18	.94	3.76	5.12	1.75	4.89	-.03	-.00	-.00	-.01	.01	-.01	-.00	-.01	-.06
Utility	10.32	1.93	2.78	7.81	2.40	4.10	-.02	.02	-.00	-.04	.01	-.01	-.00	.01	-.03
Capital Goods	10.66	1.10	5.79	6.34	1.27	4.02	-.00	-.01	.00	.01	.00	-.01	.00	.01	.01
[Unassigned]	--	--	--	3.88	.31	3.14	--	-.00	.00	-.00	.00	-.00	.00	--	-.01
Revenue - Industrial Development Reve	--	--	--	2.41	.01	2.54	--	-.00	-.00	-.00	-.00	-.00	-.00	--	-.00
Automotive	1.37	.23	1.17	4.08	.16	4.05	-.01	.01	-.00	.01	-.00	.00	-.00	-.00	.01
Technology & Electronics	7.07	1.70	4.76	6.08	1.27	4.35	-.02	-.02	.00	.04	-.00	.01	.00	.01	.02
Real Estate	4.89	1.05	7.36	5.08	.46	7.87	.01	.00	.00	.02	-.00	.01	.00	.00	.05
Insurance	7.76	1.89	7.32	6.38	1.36	6.69	-.02	-.01	.01	.02	-.01	.01	.00	.01	.02
Services	8.01	1.39	6.82	7.00	.88	4.44	.02	-.01	.01	.02	-.01	.01	.00	.01	.05
Banking	7.08	11.27	2.61	5.29	7.41	3.42	.08	-.02	.02	-.14	-.01	.03	.02	.03	.02
Energy	8.95	4.82	4.33	7.35	3.47	4.34	-.02	-.06	.02	.05	-.01	.01	.00	.03	.03
Basic Industry	10.14	2.50	7.74	6.17	1.59	4.38	.00	-.00	.00	.09	-.01	.02	.00	.01	.12
Sovereign	7.67	55.49	1.76	5.12	47.50	2.18	.01	-.50	.29	.00	-.02	.18	.01	-.21	-.25
Total	**7.24**	**100.00**	**2.38**	**5.23**	**100.00**	**2.79**	**-.03**	**-.79**	**.35**	**.14**	**.32**	**-.04**	**.06**	**-.42**	**-.40**

High Yield Performance Attribution



Performance Attribution for High Yield

Performance Attribution

High Yield Portfolio vs. Merrill US High Yield Master II Index

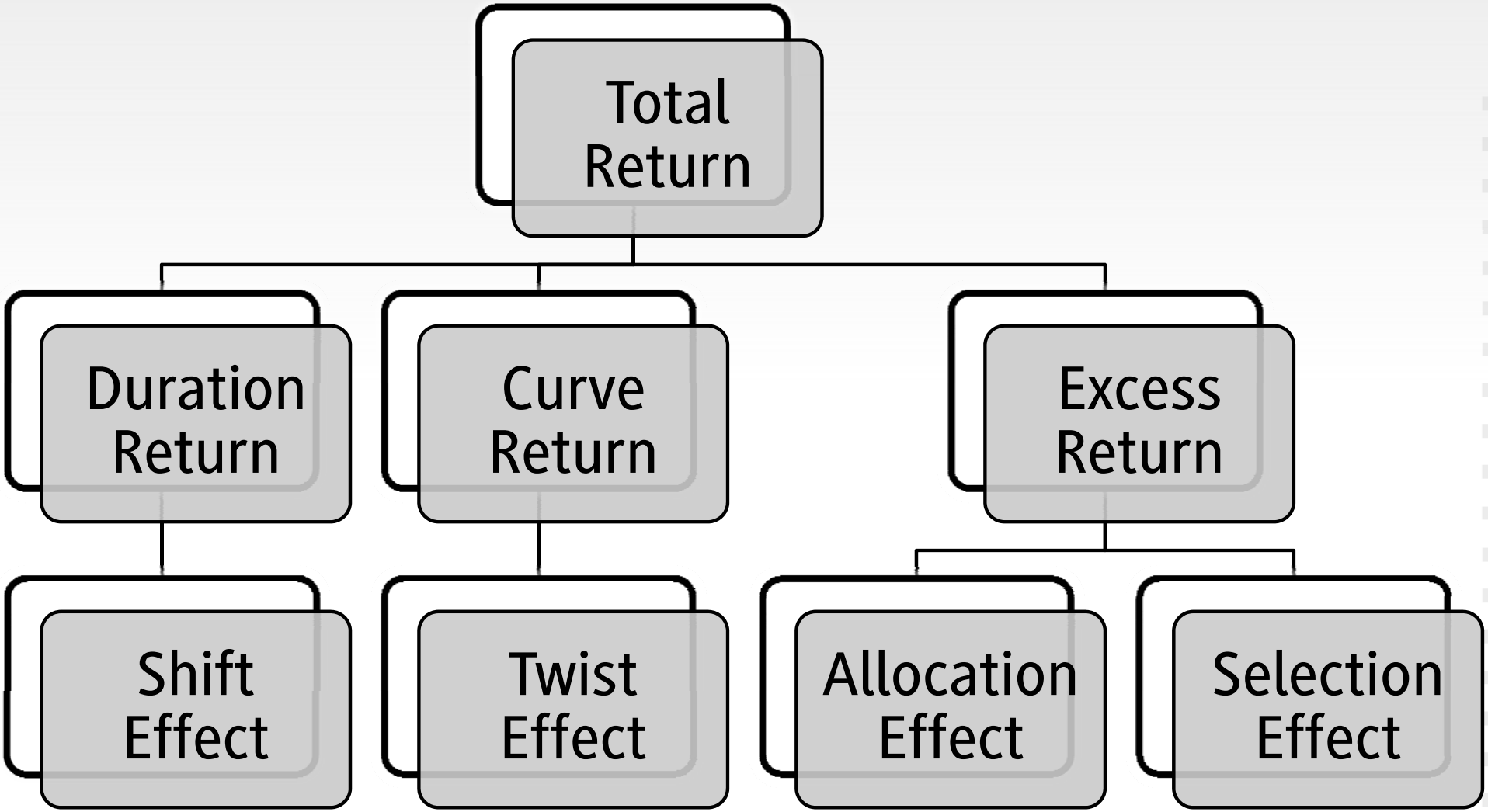
12/31/2009 to 4/30/2010

U.S. Dollar

	High Yield Portfolio		Merrill US High Yield Master II Index		Attribution Analysis		
Sector Sub-Group	Average Weight	Total Return	Average Weight	Total Return	Allocation Effect	Selection + Interaction	Total Effect
Automotive	8.03	5.28	4.14	6.77	-.01	-.12	-.13
Banking	6.08	7.45	5.56	12.33	.03	-.28	-.25
Basic Industry	14.02	5.83	12.04	6.94	-.01	-.15	-.15
Capital Goods	1.30	5.53	4.73	5.84	.04	-.01	.04
Consumer Cyclical	3.45	5.29	6.35	6.11	.03	-.03	.00
Consumer Non-Cyclical	2.15	5.32	2.94	5.47	.01	-.01	.00
Energy	5.02	5.70	10.79	6.10	.06	-.02	.04
Financial Services	2.26	19.17	3.25	17.48	-.06	.03	-.03
Healthcare	8.61	4.21	7.06	4.55	-.04	-.03	-.07
Insurance	2.37	23.60	1.93	24.55	.06	-.02	.04
Media	7.89	4.58	7.86	5.87	-.00	-.10	-.10
Real Estate	.70	8.94	1.60	15.81	-.07	-.05	-.12
Services	6.08	5.79	12.69	7.77	-.04	-.12	-.16
Technology & Electronics	5.77	4.30	4.11	6.12	-.02	-.10	-.12
Telecommunications	16.04	4.57	9.11	5.62	-.10	-.17	-.27
Utility	8.76	1.23	5.78	2.94	-.12	-.15	-.27
[Unassigned]	1.46	--	.03	-.04	-.11	-.00	-.11
Total	**100.00**	**5.48**	**100.00**	**7.16**	**-.36**	**-1.32**	**-1.68**

Similar to equity attribution
Groupings are key to analysis

Adding Duration to Attribution Analysis



Benchmark Relative Returns First Attributed to Shift & Twist

Performance Attribution

Corporate Government Portfolio vs. Citigroup BIG (Broad Investment Grade Index)

12/31/2009 to 4/30/2010

U.S. Dollar

	Portfolio			Benchmark			Fixed Income Performance Attribution				
Class2	Port. Average Effective Duration	Port. Average Weight	Port. Total Return	Bench. Average Effective Duration	Bench. Average Weight	Bench. Total Return	Shift Effect	Twist Effect	Allocation Effect	Selection Effect	Total Effect
ABS	--	--	--	3.53	.24	2.76	-.00	-.00	-.00	--	-.00
Agency	2.27	12.61	1.64	3.48	9.32	1.87	.02	-.01	-.03	.04	.03
Financial Institutions	7.09	15.55	3.03	5.39	7.04	4.18	.04	.04	.12	-.12	.08
Industrial	8.89	13.04	5.68	6.67	10.91	4.05	-.05	.03	.03	.24	.25
Local Authority	1.11	.11	.51	5.05	.39	3.57	-.00	-.00	-.00	-.00	-.01
Sovereign	1.53	.21	.77	6.45	1.26	3.03	-.02	.00	-.01	.01	-.01
Supranational	2.22	.12	1.29	3.39	1.14	2.13	-.00	-.00	.00	-.00	-.00
Treasury	7.64	55.38	1.75	5.08	30.73	2.14	-.26	.28	-.12	-.05	-.15
Utility	10.41	2.77	4.14	7.60	2.32	4.73	.02	-.01	.01	-.02	.00
[Unassigned]	--	.21	2.41	3.40	36.64	2.14	-.27	-.13	.08	.02	-.30
Total	**7.23**	**100.00**	**2.41**	**4.56**	**100.00**	**2.54**	**-.52**	**.20**	**.08**	**.12**	**-.13**

Textbook Definitions of Shift & Twist Effects

+ Shift Effect –bps gain or loss as result of overall duration bet
  - Assumes all points on curve shifted in parallel manner
  - Average effective duration is relevant metric
  - Idea is to be long duration when rates decline and short duration when rates rise

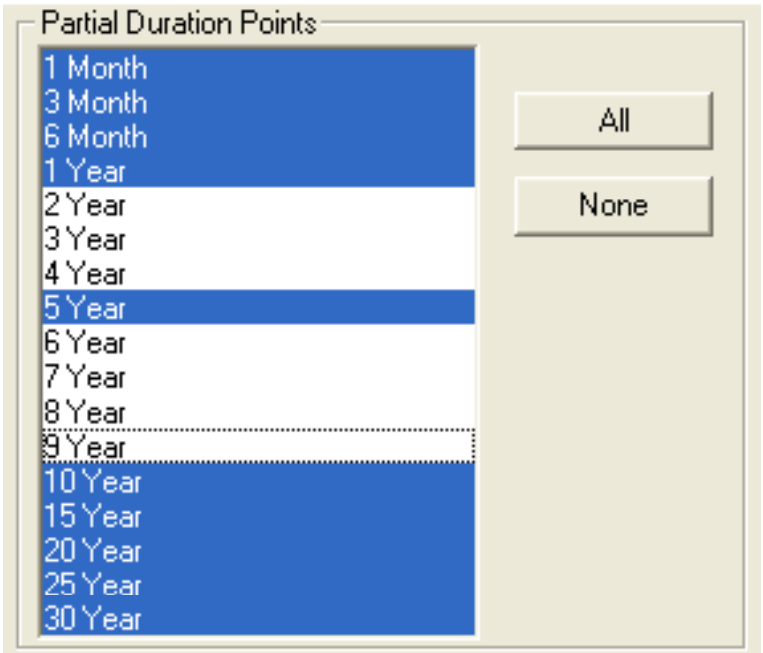
+ Most users show the portfolio's and benchmark's average effective duration in the attribution report to help support this key effect

+ Twist Effect –bps gained or lost as result of yield curve positioning bet(s)
  - Acknowledges that all points on curve did not shift in parallel manner
  - Average partial durations are relevant metric
  - Idea is to be long duration at the points on the curve which fell and short duration at the points on the curve where rates rose

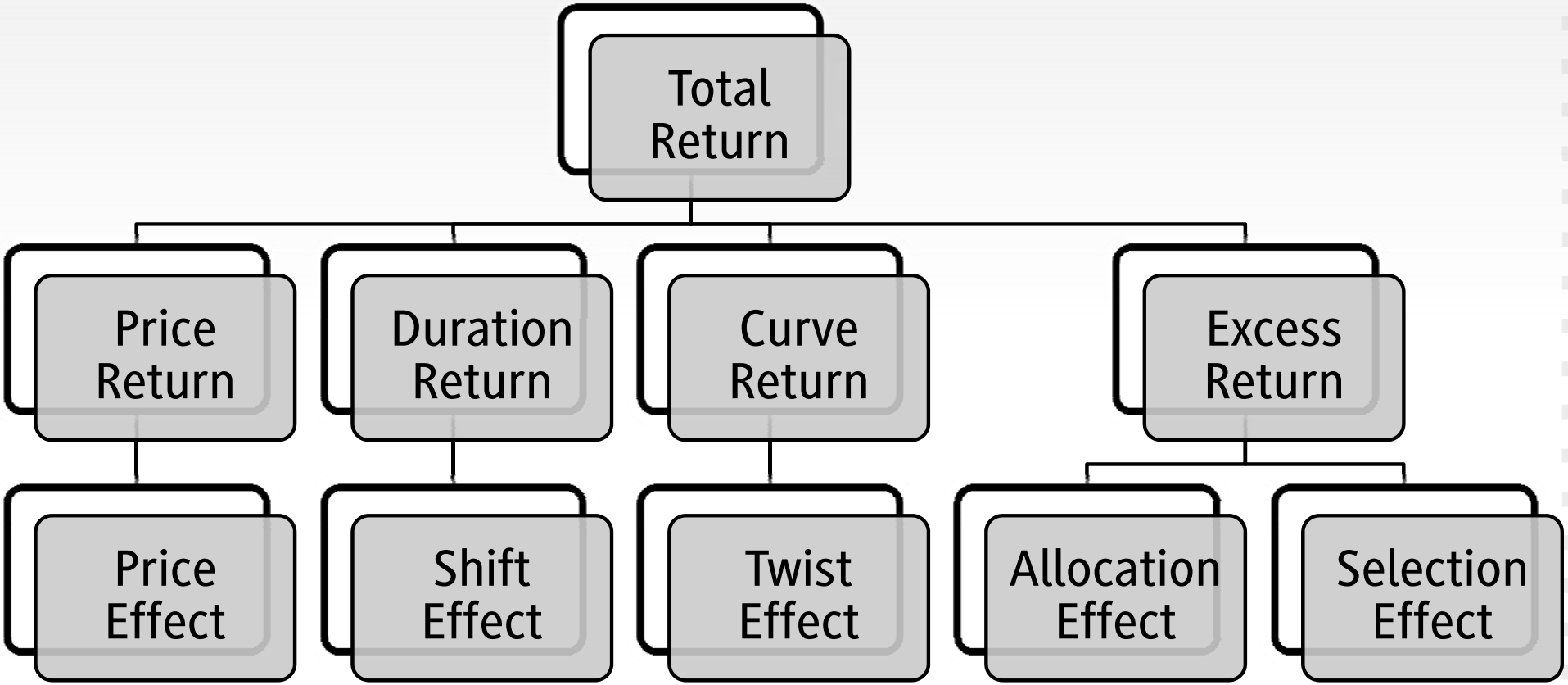
Data Requirements of Duration Effects

+ Shift Effect requires an effective duration and effective convexity for every portfolio ***AND*** benchmark security

+ Twist Effect properly calculated with partial durations (aka. KRDs)
  - User should select KRD points based on investment process of portfolio
  - Again, must be available for every security in portfolio and benchmark



Adding Price Effect to Attribution



Adding Price Effect Changes Allocation & Selection

Performance Attribution

Corporate Government Portfolio vs. Citigroup BIG (Broad Investment Grade Index)

12/31/2009 to 4/30/2010

U.S. Dollar

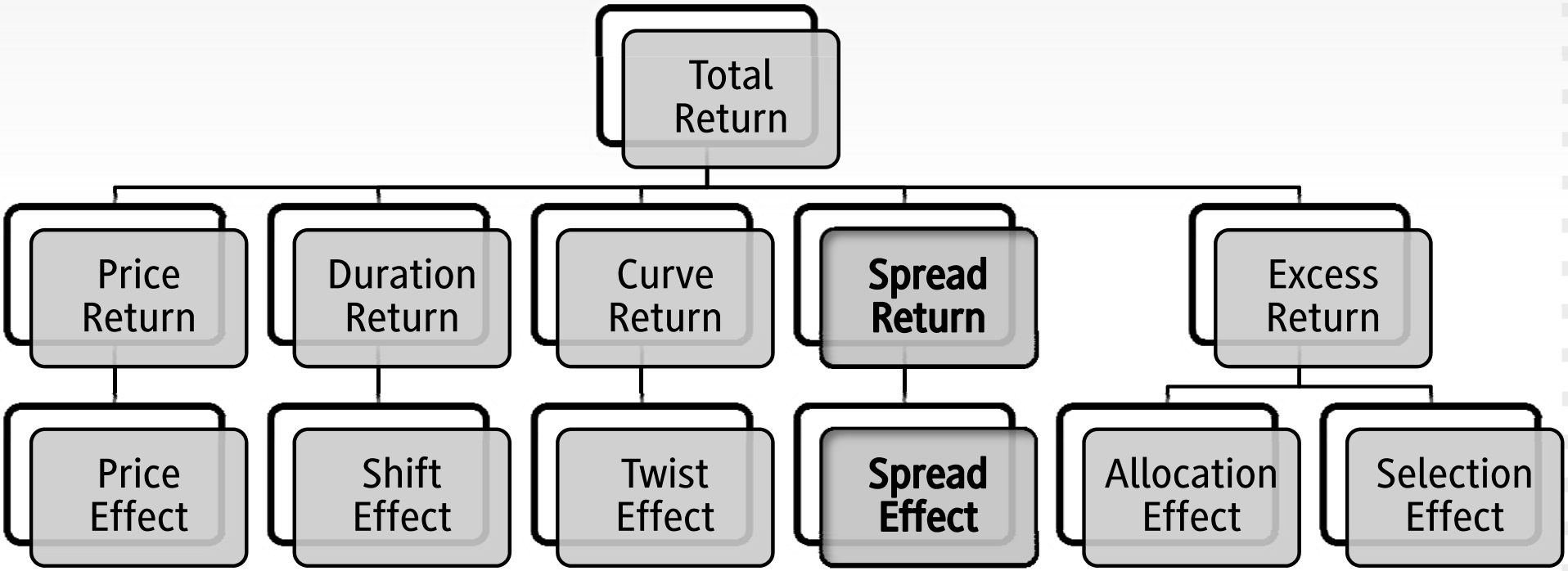
	Portfolio			Benchmark			Fixed Income Performance Attribution					
Class2	Port. Average Effective Duration	Port. Average Weight	Port. Total Return	Bench. Average Effective Duration	Bench. Average Weight	Bench. Total Return	Price Effect	Shift Effect	Twist Effect	Allocation Effect	Selection Effect	Total Effect
ABS	--	--	--	3.53	.24	2.76	--	-.00	-.00	-.00	--	-.00
Agency	2.27	12.61	1.64	3.48	9.32	1.87	.03	.02	-.01	-.03	.02	.03
Financial Institutions	7.09	15.55	3.03	5.39	7.04	4.18	.05	.03	.04	.12	-.16	.08
Industrial	8.89	13.04	5.68	6.67	10.91	4.05	.02	-.05	.03	.03	.22	.25
Local Authority	1.11	.11	.51	5.05	.39	3.57	-.00	-.00	-.00	-.00	-.00	-.01
Sovereign	1.53	.21	.77	6.45	1.26	3.03	.00	-.02	.00	-.01	.01	-.01
Supranational	2.22	.12	1.29	3.39	1.14	2.13	-.00	-.00	-.00	.00	.00	-.00
Treasury	7.64	55.38	1.75	5.08	30.73	2.14	-.04	-.26	.29	-.12	-.01	-.16
Utility	10.41	2.77	4.14	7.60	2.32	4.73	-.02	.02	-.00	.01	-.01	.00
[Unassigned]	--	.21	2.41	3.40	36.64	2.14	-.00	-.27	-.13	.08	.02	-.30
Total	**7.23**	**100.00**	**2.41**	**4.56**	**100.00**	**2.54**	**.04**	**-.53**	**.20**	**.07**	**.08**	**-.13**

Price Effect in Performance Attribution

Total Return from 12/31/2009-4/30/2010	Official Index Return	Bottom-up Return ML First	Bottom-up Return Barclays First	Bottom-up Return Citi First
Merrill US Corporate Master	4.55	4.55	4.38	4.42
Barclays US Agg Credit-Corporate-Inv Grade	4.16	4.32	4.16	4.21
Citigroup BIG Corporate	4.17	4.27	4.12	4.17

- **Less liquid instruments exhibit greater discrepancies**
- **Desire for attribution to tie out to official performance and published benchmark return creates an inconsistency**
- **Nothing to do with PM skill or investment process**

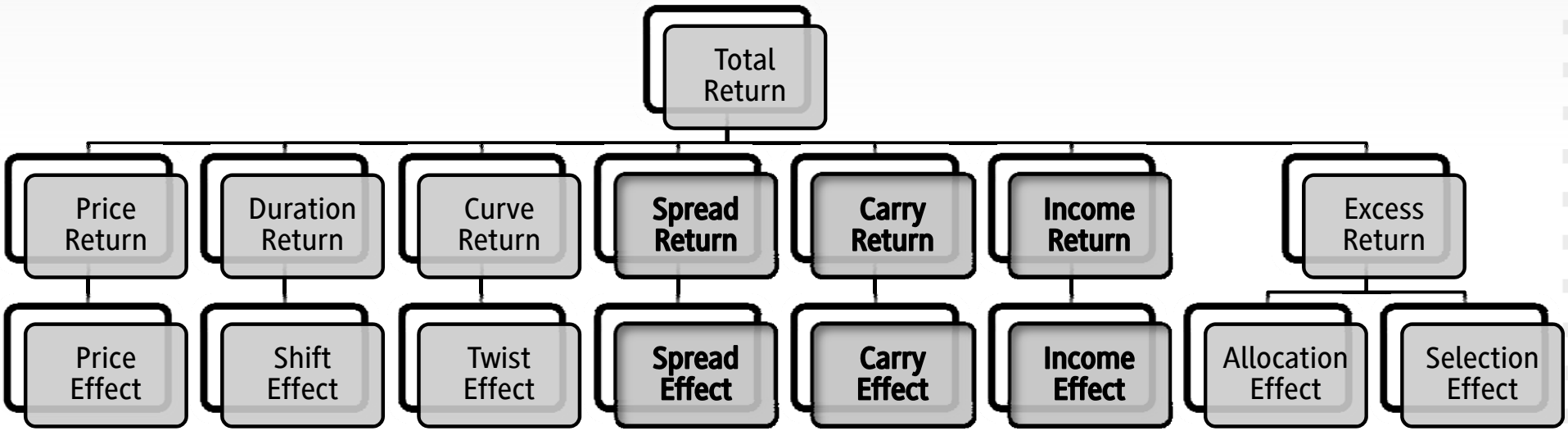
Attribution with Spread Effect



Option-Adjusted Spread (OAS) & Spread duration now required for every portfolio and benchmark security

Does investment process manage spread tilt in same way that it prioritizes duration bias?

Separating Income & Carry Effects



Carry and Income Effects calculated separately, but often displayed as one effect

Does this Align with Your Investment Process?

Performance Attribution

Corporate Government Portfolio vs. Barclays Capital US Aggregate Government & Credit

12/31/2009 to 4/30/2010

U.S. Dollar

	Corporate Government Portfolio			Barclays Capital US Aggregate Government & Credit			Attribution Analysis								
Sector Sub-Group	Port. Average Effective Duration	Port. Average Weight	Port. Total Return	Bench. Average Effective Duration	Bench. Average Weight	Bench. Total Return	Price Effect	Shift Effect	Twist Effect	Spread Effect	Carry Effect	Income Effect	Allocation Effect	Selection Effect	Total Effect
Agency	1.31	9.68	.86	3.21	12.48	1.77	-.02	-.02	-.02	.14	.21	-.09	.04	-.33	-.09
Foreign Sovereign	1.52	.21	.12	6.47	1.80	3.07	-.01	-.03	.00	.01	.02	-.03	-.00	-.00	-.04
Telecommunications	9.58	1.05	5.20	6.86	2.39	3.34	-.01	-.03	.00	.02	.02	-.03	-.01	.00	-.03
Government Guaranteed	1.94	1.70	1.60	2.87	3.53	1.65	.02	-.00	-.00	-.01	.02	-.01	.01	-.01	.01
Consumer Non-Cyclical	12.21	.53	2.80	6.31	1.96	4.07	-.01	-.01	-.00	-.01	.02	-.03	-.00	.00	-.04
Local-Authority	1.11	.11	.34	8.29	1.43	5.95	-.00	-.03	.01	-.04	.02	-.02	-.00	.00	-.07
Supranational	2.21	.12	1.18	3.52	1.85	2.05	-.00	-.01	-.00	-.00	.02	-.02	.00	.00	-.01
Media	7.46	.62	3.53	7.06	1.52	4.43	.00	-.02	.01	-.01	.01	-.03	-.00	.01	-.03
Consumer Cyclical	6.69	.44	5.16	7.08	1.23	4.11	.00	-.00	.00	-.01	.01	-.01	-.00	-.01	-.01
Healthcare	9.64	1.23	.25	7.20	1.97	4.17	-.01	-.04	.01	-.02	.01	-.01	-.00	.01	-.06
Financial Services	4.18	.94	3.76	5.12	1.75	4.89	-.03	-.00	-.00	-.01	.01	-.01	-.00	-.01	-.06
Utility	10.32	1.93	2.78	7.81	2.40	4.10	-.02	.02	-.00	-.04	.01	-.01	-.00	.01	-.03
Capital Goods	10.66	1.10	5.79	6.34	1.27	4.02	-.00	-.01	.00	.01	.00	-.01	.00	.01	.01
[Unassigned]	--	--	--	3.88	.31	3.14	--	-.00	.00	-.00	.00	-.00	.00	--	-.01
Revenue - Industrial Development Reve	--	--	--	2.41	.01	2.54	--	-.00	-.00	-.00	-.00	-.00	-.00	--	-.00
Automotive	1.37	.23	1.17	4.08	.16	4.05	-.01	.01	-.00	.01	-.00	.00	-.00	-.00	.01
Technology & Electronics	7.07	1.70	4.76	6.08	1.27	4.35	-.02	-.02	.00	.04	-.00	.01	.00	.01	.02
Real Estate	4.89	1.05	7.36	5.08	.46	7.87	.01	.00	.00	.02	-.00	.01	.00	.00	.05
Insurance	7.76	1.89	7.32	6.38	1.36	6.69	-.02	-.01	.01	.02	-.01	.01	.00	.01	.02
Services	8.01	1.39	6.82	7.00	.88	4.44	.02	-.01	.01	.02	-.01	.01	.00	.01	.05
Banking	7.08	11.27	2.61	5.29	7.41	3.42	.08	-.02	.02	-.14	-.01	.03	.02	.03	.02
Energy	8.95	4.82	4.33	7.35	3.47	4.34	-.02	-.06	.02	.05	-.01	.01	.00	.03	.03
Basic Industry	10.14	2.50	7.74	6.17	1.59	4.38	.00	-.00	.00	.09	-.01	.02	.00	.01	.12
Sovereign	7.67	55.49	1.76	5.12	47.50	2.18	.01	-.50	.29	.00	-.02	.18	.01	-.21	-.25
Total	**7.24**	**100.00**	**2.38**	**5.23**	**100.00**	**2.79**	**-.03**	**-.79**	**.35**	**.14**	**.32**	**-.04**	**.06**	**-.42**	**-.40**

Carry & Income Effects: Separate or Combined?

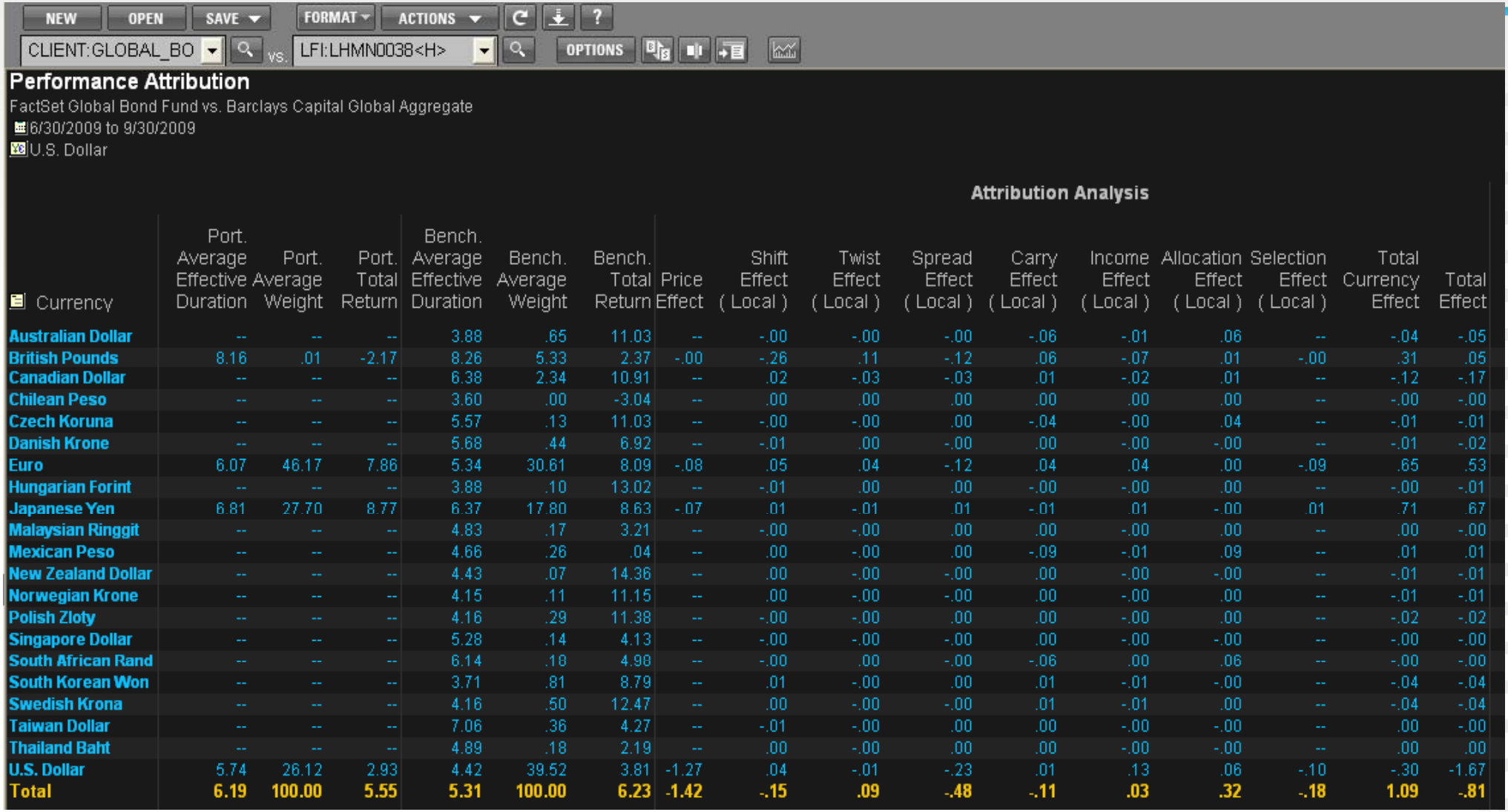
+ Carry Effect - excess return attributed to discount bonds whose price rises to par as bond approaches maturity
  - Example – zero coupon bonds(+) or premium bonds (-)
  - This is different than price return
  - Combination of accretion & rolldown
  - What happens merely as result of passage of time

+ Income Effect - excess return attributed to differences in coupon and accrued interest between the portfolio and the benchmark

+ Separate effects in that they function differently

+ Conceptually, they speak to the same idea

Multi-Currency Fixed Income Performance Attribution


NEW OPEN SAVE FORMAT ACTIONS ? CLIENT:GLOBAL_BO vs. LFI:LHMN0038<H> OPTIONS

Performance Attribution

FactSet Global Bond Fund vs. Barclays Capital Global Aggregate

6/30/2009 to 9/30/2009

U.S. Dollar

Currency	Port. Average Effective Duration	Port. Average Weight	Port. Total Return	Bench. Average Effective Duration	Bench. Average Weight	Bench. Total Return	Attribution Analysis: Price Effect	Shift Effect (Local)	Twist Effect (Local)	Spread Effect (Local)	Carry Effect (Local)	Income Effect (Local)	Allocation Effect (Local)	Selection Effect (Local)	Total Currency Effect	Total Effect
Australian Dollar	--	--	--	3.88	.65	11.03	--	-.00	-.00	-.00	-.06	-.01	.06	--	-.04	-.05
British Pounds	8.16	.01	-2.17	8.26	5.33	2.37	-.00	-.26	.11	-.12	.06	-.07	.01	-.00	.31	.05
Canadian Dollar	--	--	--	6.38	2.34	10.91	--	.02	-.03	-.03	.01	-.02	.01	--	-.12	-.17
Chilean Peso	--	--	--	3.60	.00	-3.04	--	.00	.00	.00	.00	.00	.00	--	-.00	-.00
Czech Koruna	--	--	--	5.57	.13	11.03	--	-.00	-.00	.00	-.04	-.00	.04	--	-.01	-.01
Danish Krone	--	--	--	5.68	.44	6.92	--	-.01	.00	-.00	.00	-.00	-.00	--	-.01	-.02
Euro	6.07	46.17	7.86	5.34	30.61	8.09	-.08	.05	.04	-.12	.04	.04	.00	-.09	.65	.53
Hungarian Forint	--	--	--	3.88	.10	13.02	--	-.01	.00	.00	-.00	-.00	.00	--	-.00	-.01
Japanese Yen	6.81	27.70	8.77	6.37	17.80	8.63	-.07	.01	-.01	.01	-.01	.01	-.00	.01	.71	.67
Malaysian Ringgit	--	--	--	4.83	.17	3.21	--	-.00	-.00	.00	.00	-.00	.00	--	.00	-.00
Mexican Peso	--	--	--	4.66	.26	.04	--	.00	-.00	.00	-.09	-.01	.09	--	.01	.01
New Zealand Dollar	--	--	--	4.43	.07	14.36	--	.00	-.00	-.00	.00	-.00	-.00	--	-.01	-.01
Norwegian Krone	--	--	--	4.15	.11	11.15	--	.00	-.00	-.00	.00	-.00	.00	--	-.01	-.01
Polish Zloty	--	--	--	4.16	.29	11.38	--	-.00	-.00	.00	.00	-.00	.00	--	-.02	-.02
Singapore Dollar	--	--	--	5.28	.14	4.13	--	-.00	-.00	-.00	.00	-.00	-.00	--	-.00	-.00
South African Rand	--	--	--	6.14	.18	4.98	--	-.00	.00	-.00	-.06	.00	.06	--	-.00	-.00
South Korean Won	--	--	--	3.71	.81	8.79	--	.01	-.00	.00	.01	-.01	-.00	--	-.04	-.04
Swedish Krona	--	--	--	4.16	.50	12.47	--	.00	-.00	-.00	.01	-.01	.00	--	-.04	-.04
Taiwan Dollar	--	--	--	7.06	.36	4.27	--	-.01	-.00	.00	.00	-.00	-.00	--	.00	-.00
Thailand Baht	--	--	--	4.89	.18	2.19	--	.00	-.00	.00	.00	-.00	-.00	--	.00	.00
U.S. Dollar	5.74	26.12	2.93	4.42	39.52	3.81	-1.27	.04	-.01	-.23	.01	.13	.06	-.10	-.30	-1.67
Total	**6.19**	**100.00**	**5.55**	**5.31**	**100.00**	**6.23**	**-1.42**	**-.15**	**.09**	**-.48**	**-.11**	**.03**	**.32**	**-.18**	**1.09**	**-.81**

Keys to Meaningful Attribution

+ Choosing the right attribution model can be hard, implementing the data and calculations driving the model can be even harder

+ You need the ability to:
  - Gain full coverage
  - Get fast robust analytics
  - Store all daily analytics
  - **Calculate all inputs required by the attribution model**
  - Dictate the source of critical data in any given report

FACTSET

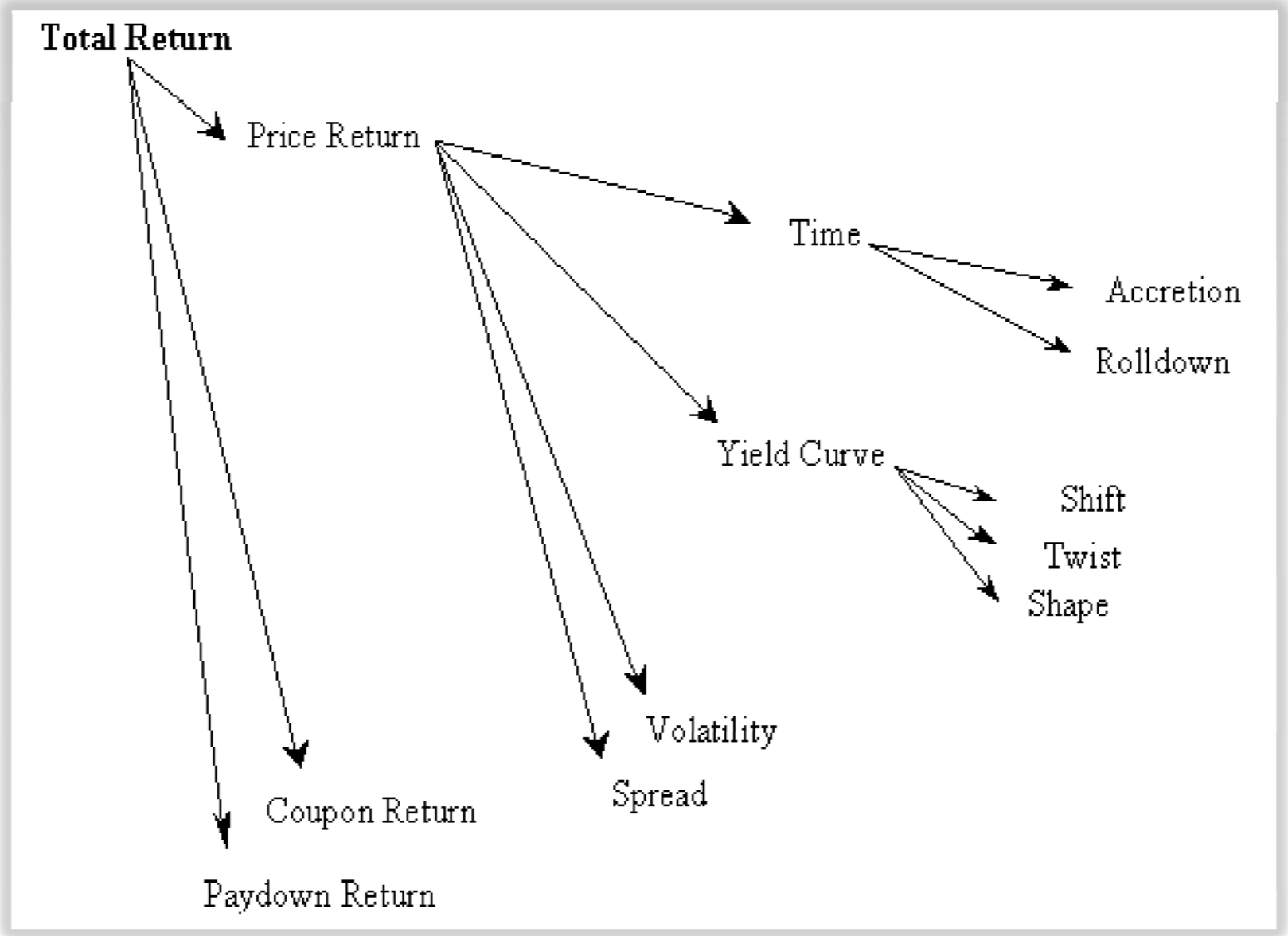
The Progression of Analyzing Performance

- ***Step 1: Absolute Return Analysis***
  - ***Contribution to Return***
  - ***Return Attribution***

- Step 2: Relative Return Analysis
  - Relative Contribution to Return
  - Performance Attribution

- Step 3: Customized Attribution

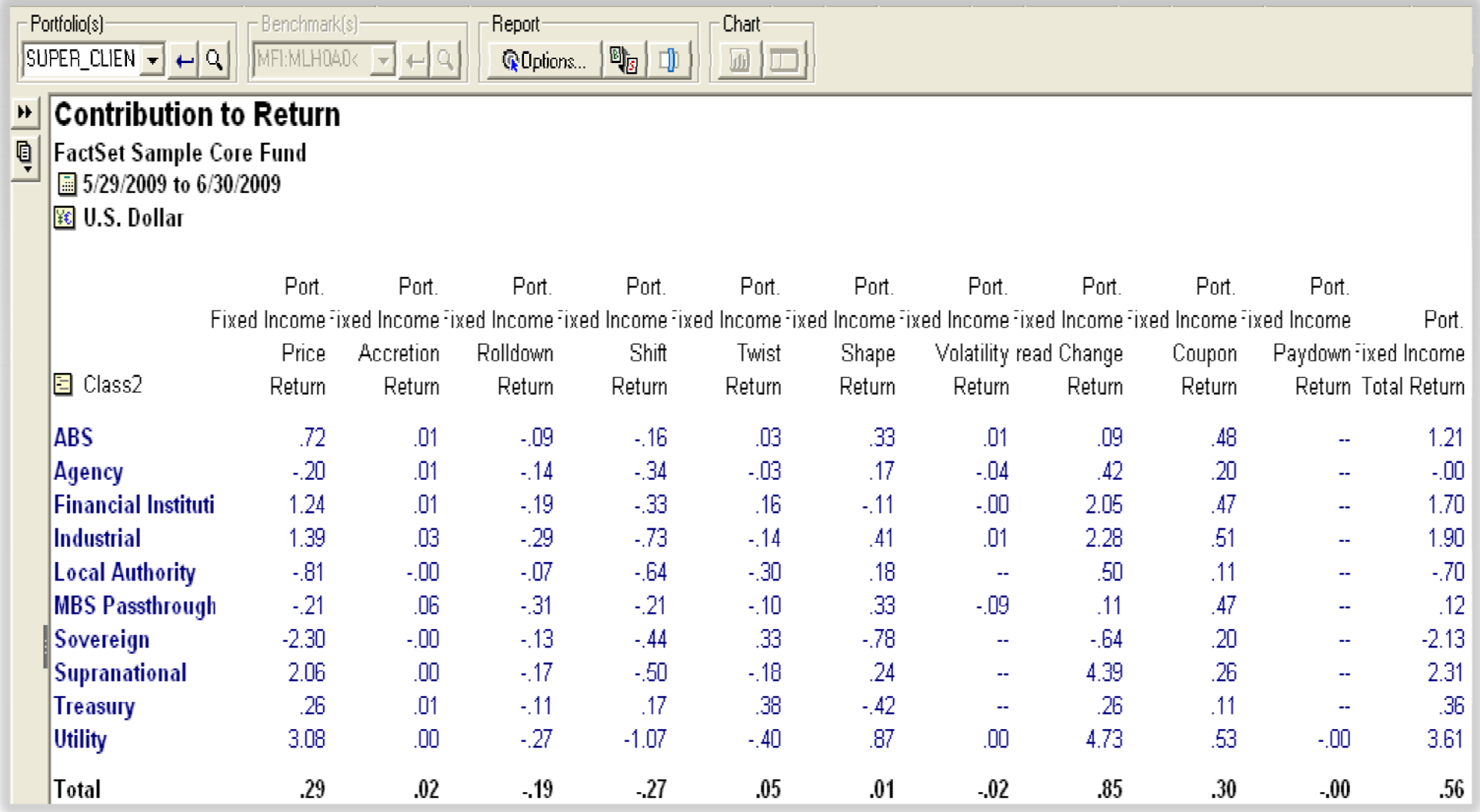
Return Attribution



Contribution to Return

Contribution to Return Class2	Port. Beginning Weight	Port. Fixed Income Price Return	Port. Fixed Income Coupon Return	Port. Fixed Income Paydown Return	Port. Total Return	Port. Contribution To Return
Agency	19.70	-.09	.02	--	-.08	-.01
Financial Institutions	15.49	-.19	.01	-.00	-.18	-.03
Industrial	16.49	-.25	.02	--	-.24	-.04
Local Authority	1.18	-.18	.01	--	-.16	-.00
Sovereign	1.41	-.24	.02	--	-.23	-.00
Supranational	1.69	-.22	.01	--	-.21	-.00
Treasury	40.56	-.11	.01	--	-.10	-.04
Utility	3.47	-.21	.02	--	-.20	-.01
Total	**100.00**	**-.15**	**.01**	**-.00**	**-.14**	**-.14**

Fixed Income Return Attribution



Contribution to Return

FactSet Sample Core Fund

5/29/2009 to 6/30/2009

U.S. Dollar

Class2	Port. Fixed Income Price Return	Port. Fixed Income Accretion Return	Port. Fixed Income Rolldown Return	Port. Fixed Income Shift Return	Port. Fixed Income Twist Return	Port. Fixed Income Shape Return	Port. Fixed Income Volatility read Change Return	Port. Fixed Income Coupon Return	Port. Fixed Income Paydown Return	Port. Fixed Income Total Return
ABS	.72	.01	-.09	-.16	.03	.33	.01	.09	.48	--	1.21
Agency	-.20	.01	-.14	-.34	-.03	.17	-.04	.42	.20	--	-.00
Financial Instituti	1.24	.01	-.19	-.33	.16	-.11	-.00	2.05	.47	--	1.70
Industrial	1.39	.03	-.29	-.73	-.14	.41	.01	2.28	.51	--	1.90
Local Authority	-.81	-.00	-.07	-.64	-.30	.18	--	.50	.11	--	-.70
MBS Passthrough	-.21	.06	-.31	-.21	-.10	.33	-.09	.11	.47	--	.12
Sovereign	-2.30	-.00	-.13	-.44	.33	-.78	--	-.64	.20	--	-2.13
Supranational	2.06	.00	-.17	-.50	-.18	.24	--	4.39	.26	--	2.31
Treasury	.26	.01	-.11	.17	.38	-.42	--	.26	.11	--	.36
Utility	3.08	.00	-.27	-1.07	-.40	.87	.00	4.73	.53	-.00	3.61
Total	**.29**	**.02**	**-.19**	**-.27**	**.05**	**.01**	**-.02**	**.85**	**.30**	**-.00**	**.56**

Customize Analysis to Maximize Its Meaning

+ Starting with a complete model, remove effects not relevant to your investment process
+ Starting with equity model, add effects key to your investment process

+ Ensure you have all necessary data for each effect
  - Customize data points to reflect process
  - Calculate single bond analytics consistently

+ Don’t hesitate to use different models for different teams in your firm

+ You may use this for client reporting or as complementary to something more generalized