

Challenges of Performance Attribution in the Brazilian Markets

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

Attribution is Opportunity Cost

	Portfolio			Benchmark			Relative Contribution	Total Effect
	Weight	Return	Contribution	Weight	Return	Contribution		
Equity	45%	10%	4.5%	50%	8%	4.00%	.50%	.85%
Debt	45%	5%	2.25%	50%	6%	3.00%	-.75%	-.40%
Cash	10%	1%	.10%	0%	-	0%	.10%	-0.60%
		6.85%	6.85%		7%	7%	-0.15%	-0.15%

Evolution:

Relative \$ contribution

Relative % contribution

Performance Attribution

Why are Custom Groups Essential

- + Correctly represent the true opportunity costs
- + Clearly illustrate how uniqueness of investment process translates into performance
- + Clarify short-term performance drivers

Equity Scenario

Problem Inherent when Benchmark Providers Classify Sector/Industry

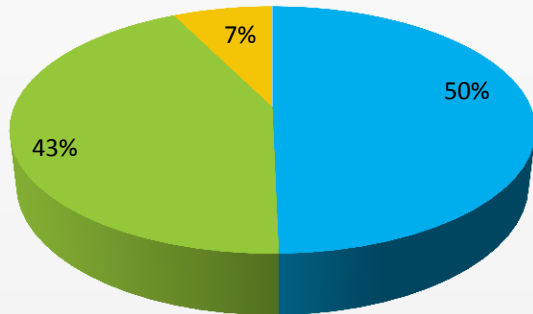
- + Classifications based on primary revenue source
- + What drives performance – revenue or earnings?
- + Are there companies where this is problematic?
 - + Can the primary source of earnings not be the primary source of revenues?

An Example: Klabin SA (KLBN4-BR)

- + Constituent of IBrX 50
- + Market Cap approximately 12.1 billion Reais
- + GICS Industry is Containers & Packaging

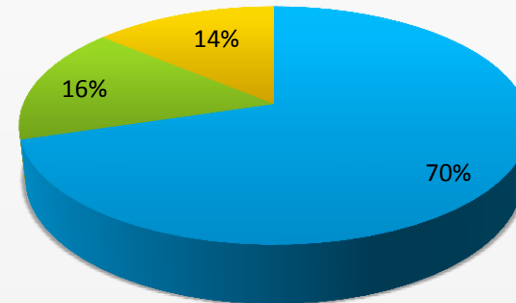
Revenue

■ Paper ■ Translation ■ Forest



Operating Income

■ Paper ■ Translation ■ Forest



Source: FactSet Fundamentals as of December 2013

- + Does your firm view Klabin as a Paper & Forest Product Company?

Achieve Meaningful Classification

- + Take time to understand how PMs & Analysts perceive all companies in portfolio and largest benchmark names
- + Don't be afraid to alter definitions for internal audience
- + Overlay custom definitions on a 3rd party definition of sector/industry to maximize coverage
- + Aggressively classify unassigned companies
- + Seek feedback from PMs on meaningfulness of results

Demonstrate How Investment Process Generates Excess Return

- + **Question:** Can you consistently outperform the benchmark in the long-term on a risk-adjusted basis?
- + **Quick answer:** Impossible for all managers to achieve
- + **Next Question:** What makes your firm unique?
 - + Quantify contribution of key personnel
 - + Tie results of investment process to performance

Exceptional Analyst Research

Analyst	FactSet Sample Portfolio		Benchmark		Attribution Analysis		
	Average Weight	Total Return	Average Weight	Total Return	Allocation Effect	Stock Selection	Total Effect
TM	15.50	4.00	15.25	3.50	0.00	0.08	0.08
MDF	20.50	6.00	20.75	5.25	-0.01	0.15	0.14
[Cash]	2.00	1.00	0.00	-	-0.03	0.00	-0.03
CRE	0.00	-	2.00	-16.00	0.37	0.00	0.37
JD	13.25	-9.50	13.00	-10.00	-0.03	0.07	0.04
LP	21.00	12.05	21.25	10.40	-0.02	0.35	0.33
CB	5.75	7.00	5.00	4.00	0.01	0.17	0.18
JZ	10.00	-2.00	12.00	-4.50	0.14	0.25	0.39
SG	12.00	5.50	10.75	3.50	0.02	0.24	0.26
Total	100.00	4.00	100.00	2.25	0.43	1.32	1.75

Excess Return to Expected Alpha

	FactSet Sample Composite		Benchmark		Attribution Analysis	
	Average Weight	Total Return	Average Weight	Total Return	Allocation Effect	Stock Selection
Expected Alpha						
Expected Alpha Quartile 1	45.00	12.00	28.00	14.00	1.36	-0.90
Expected Alpha Quartile 2	30.00	7.00	23.00	8.00	0.14	-0.30
Expected Alpha Quartile 3	18.00	3.00	21.00	5.20	0.02	-0.40
Expected Alpha Quartile 4	2.00	-4.00	23.00	-5.00	2.31	0.03
[Cash]	5.00	0.80	0.00	-	-0.26	0.00
[N/A]	0	-	5.00	6.00	0.00	0.00
Total	100.00	8.00	100.00	6.00	3.57	-1.57

Other Examples of Grouping on the Investment Process

- + Internal buy/sell/hold recommendations
- + EPS dispersion
 - + % chg between internal EPS estimates and consensus
- + Stock price upside potential
 - + % chg between internal price target and current price
- + Other quant measures
 - + Expected Return
 - + Fair Value Model / DDM

How does your firm communicate its opinion on a security?

Balancing Time Horizons

- + Investment Managers understand that short-term investment horizons hinder long-term performance
- + As clients grow more sophisticated, they require more accountability by asking better questions

When portfolio underperforms, critical to address short-term concerns without undermining long-term strategy

When portfolio outperforms, demonstrate how investment process capitalized on short-term performance drivers

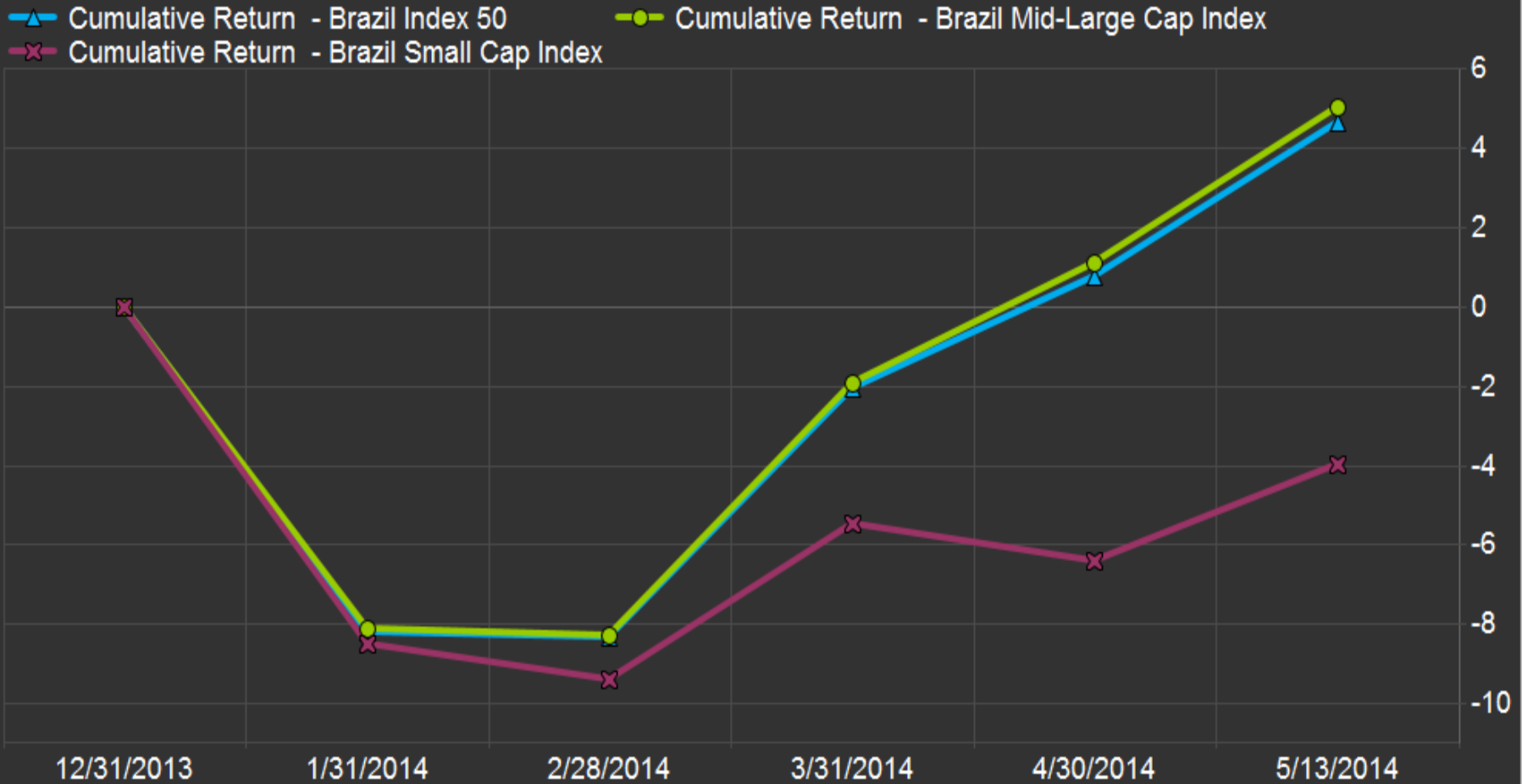
Key Questions to Address

- +Is this the beginning of a long-term trend or temporary market reaction/overreaction?
- +How does the investment process position the portfolio relative to this trend?
- +Will the investment process change in response to the short-term performance driver or hold the strategy?

Identify a Short-Term Driver: Size

Performance Over Time

12/31/2013 - 5/13/2014



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Impact on Portfolio Performance

Performance Attribution

Brazil Small Cap Index vs. Brazil: Sao Paulo Stk Exch Bovespa

12/31/2013 to 5/13/2014

Brazilian Real

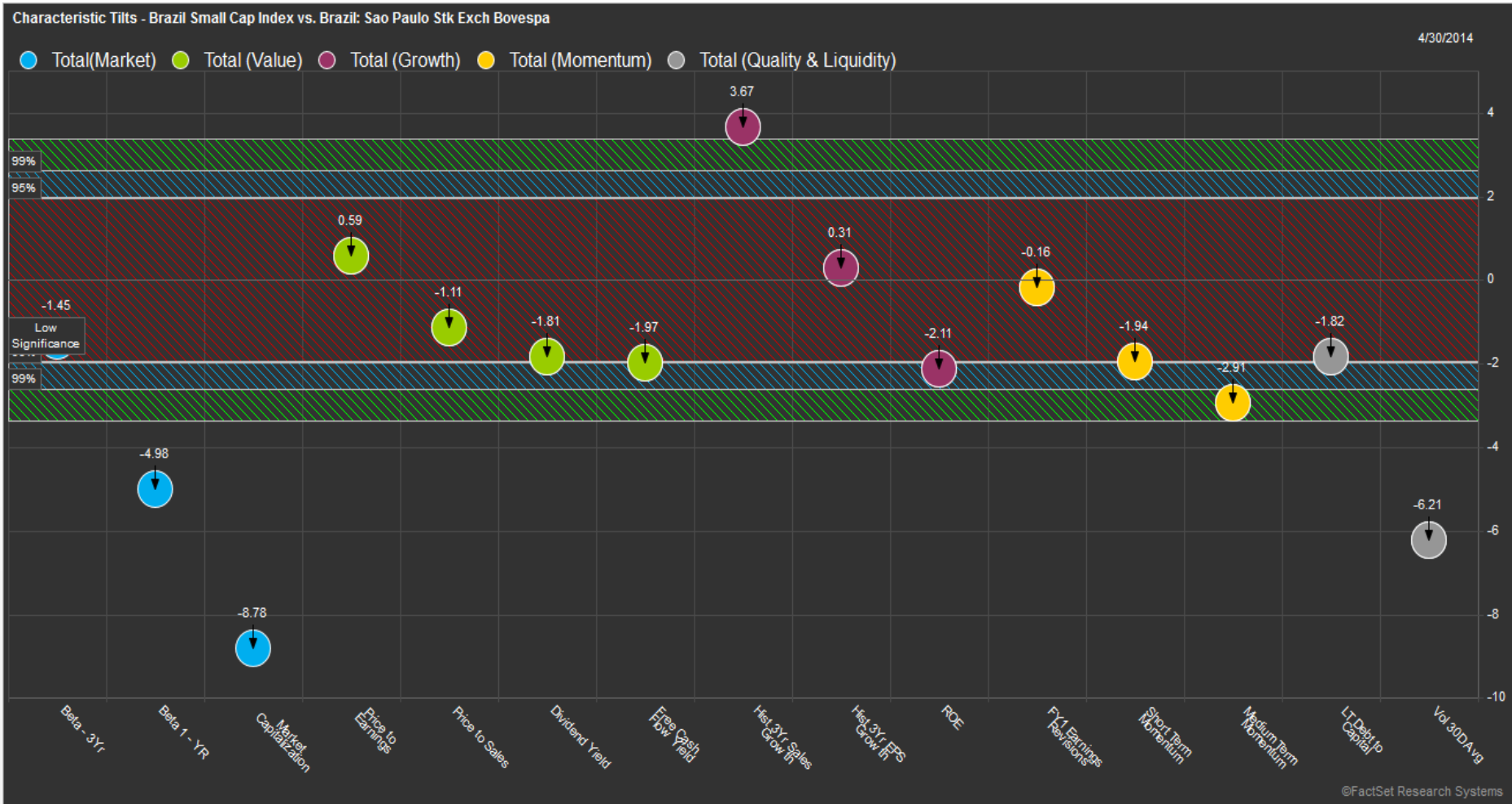
Market Cap	Brazil Small Cap Index			Brazil: Sao Paulo Stk Exch Bovespa			Attribution Analysis		
	Average Weight	Total Return	Contribution To Return	Average Weight	Total Return	Contribution To Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.00	-3.98	-3.98	100.00	4.66	4.66	-0.81	-7.82	-8.64
Market Cap > 75 Billion	--	--	--	41.63	5.82	2.87	-0.74	--	-0.74
Market Cap 25 - 75 Billion	--	--	--	23.94	5.86	1.55	-0.16	--	-0.16
Market Cap 10 - 25 Billion	--	--	--	16.56	-2.48	-0.62	1.26	--	1.26
Market Cap 5 - 10 Billion	23.36	-5.62	-1.35	11.39	5.58	0.65	0.42	-3.03	-2.61
Market Cap < 5 Billion	75.56	-3.39	-2.84	6.20	2.73	0.17	-1.60	-5.07	-6.67

Short-Term Performance Drivers

- + Size Trends – Market Cap, Enterprise Value
- + Value Trends – Earnings Yield, PEG, Price/Book
- + Growth Trends – Growth Rates, ROE
- + Momentum – Price Change, Trading Volume
- + Quality Trends – Debt to Capital, Dividend Yield

Absolute Rule: Rebalance groups to capture a company shifting within the report period

Characteristic Tilts



Reach Effectual Conclusions

- + Simple Questions & Complex Answers
- + Best answers usually focus on securities

Why did the portfolio or group outperform/underperform?

What groups or securities had the greatest impact?

How did relative performance trend over the time period?

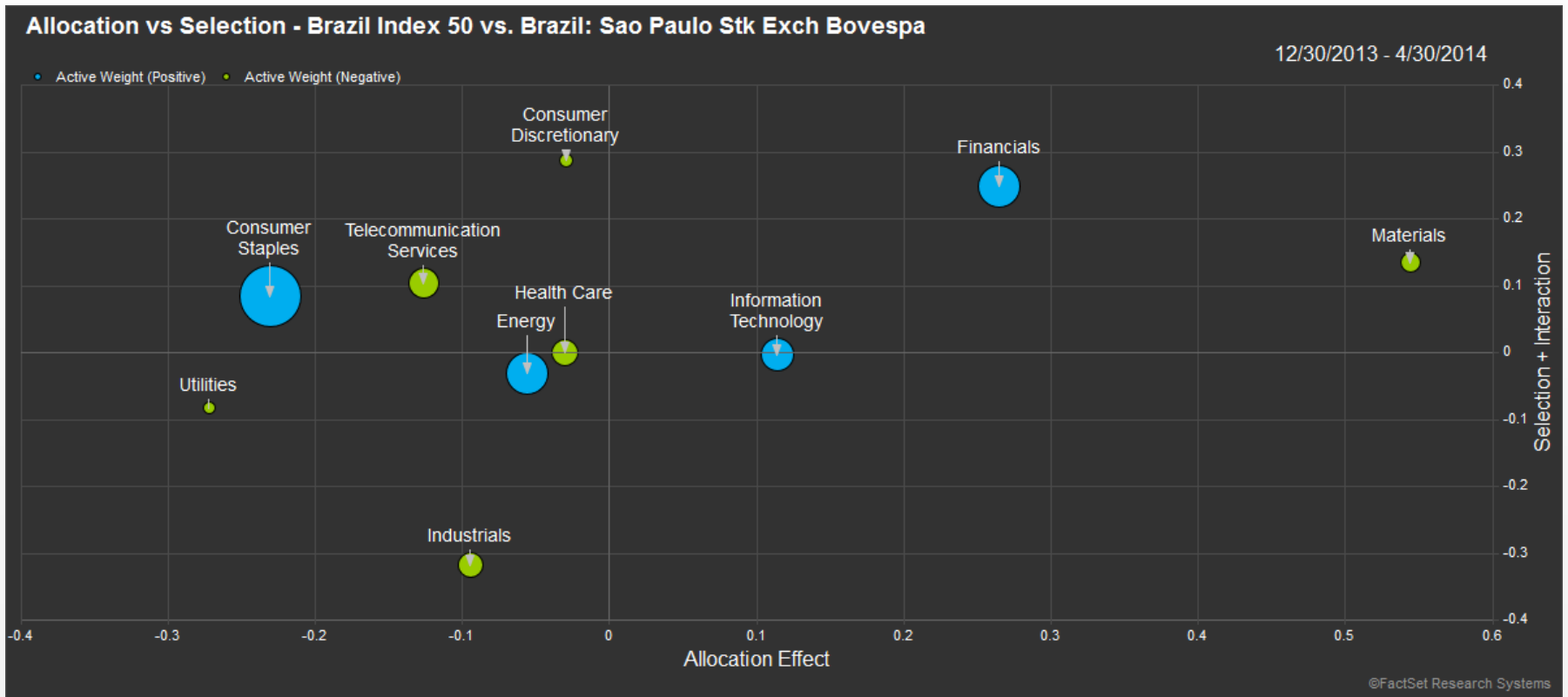
General Rule: Move from tables of numbers to charts as quickly as possible to more effectively communicate results

The “What” & “Why” Questions

Economic Sector	Brazil Index 50			Brazil: Sao Paulo Stk Exch Bovespa			Attribution Analysis		
	Average Weight	Total Return	Contribution To Return	Average Weight	Total Return	Contribution To Return	Allocation Effect	Selection + Interaction	Total Effect
Total	100.0	.75	.75	100.0	.24	.24	.08	.43	.51
Consumer Discretionary	5.5	3.95	.28	9.0	-.71	-.05	-.03	.29	.26
Consumer Staples	18.4	-2.32	-.43	12.0	-2.73	-.26	-.23	.08	-.15
Energy	16.1	2.09	.18	13.7	2.21	.33	-.06	-.03	-.09
Financials	30.2	13.26	4.26	27.8	12.41	3.81	.26	.25	.51
Health Care	--	--	--	.8	.93	.01	-.03	--	-.03
Industrials	4.1	.08	.02	5.2	7.97	.45	-.10	-.32	-.41
Information Technology	2.8	22.55	.63	2.3	22.55	.52	.11	-.00	.11
Materials	17.9	-19.60	-4.18	20.1	-20.15	-4.89	.54	.14	.68
Telecommunication Services	2.9	-.90	-.06	3.2	-4.82	-.06	-.13	.10	-.02
Utilities	2.1	2.88	.04	6.0	6.15	.41	-.27	-.08	-.35

Easily Represented Graphically

+ Viewing data as a scatter chart enables you to easily identify key groups for additional research

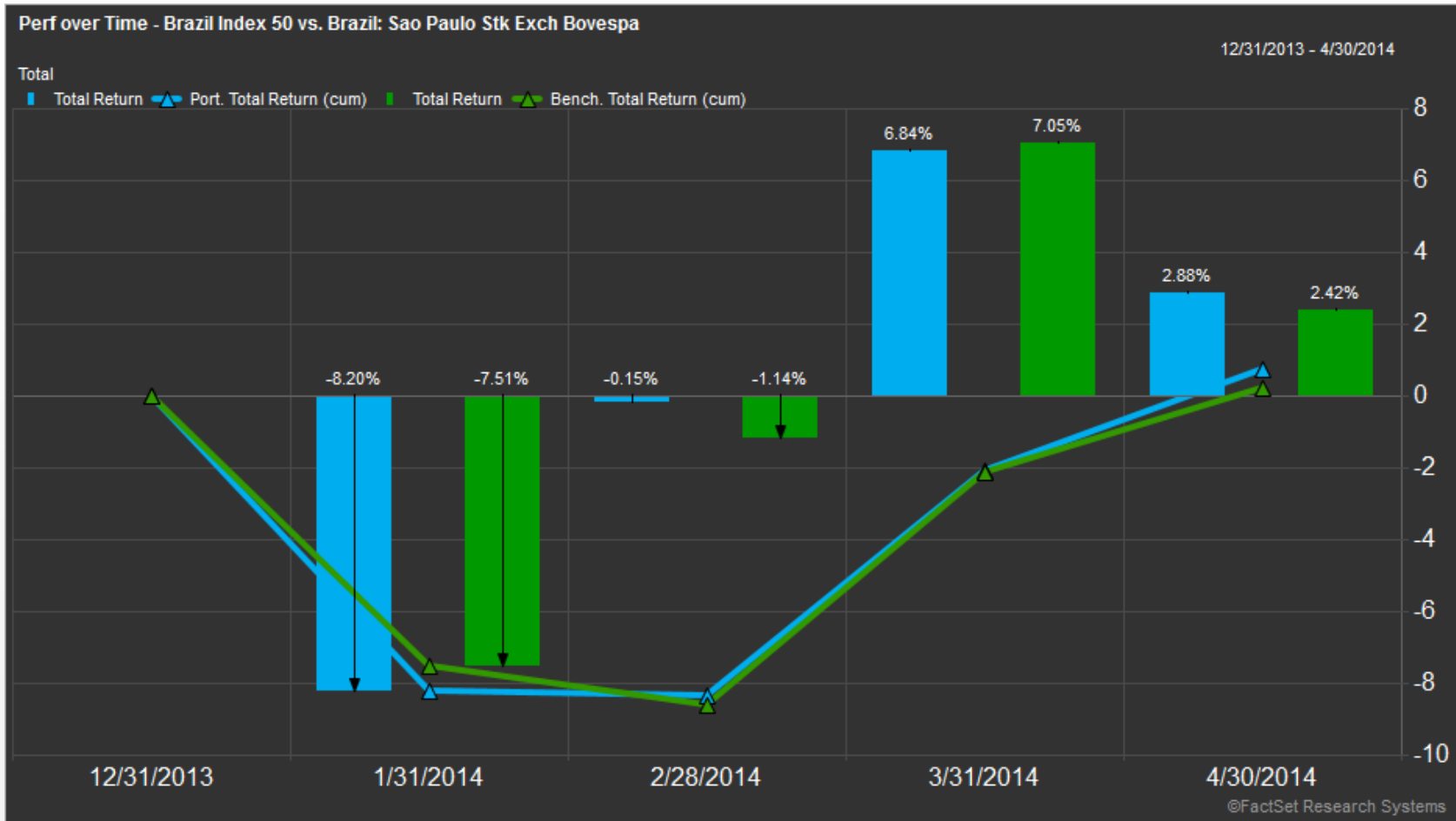


2D to 3D Analysis of Results

- + Standard attribution reports summarize relative performance & attribution for entire report period
- + Necessary when viewing data as a table
- + How we reached those summarized results is lost
- + Time dimension reveals direction and volatility
 - + Is relative performance improving or deteriorating?
 - + How consistently do we trend with the benchmark?
 - + Are we consistently better at allocation or stock selection?

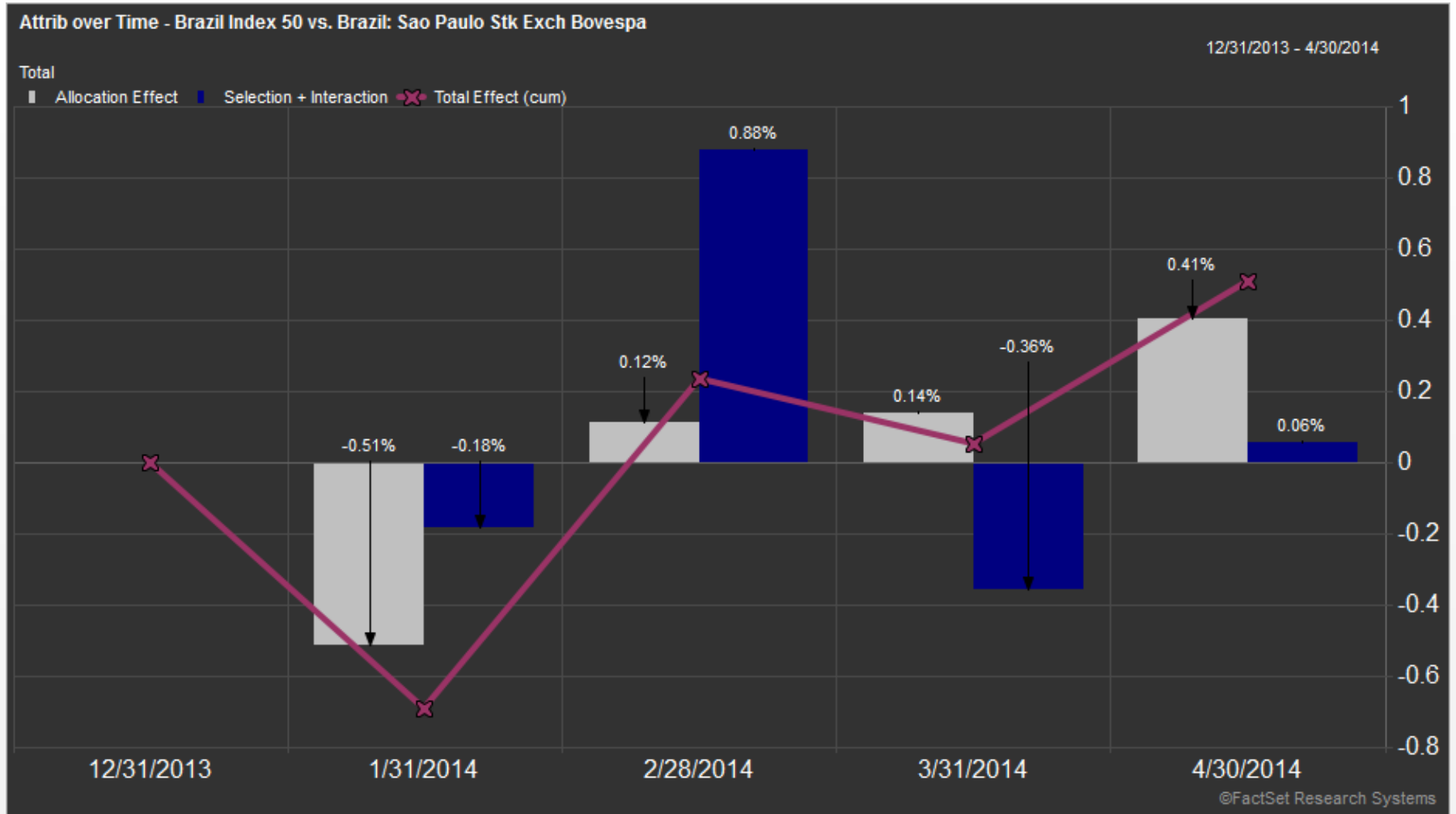
Performance over Time

- + Is relative performance improving or deteriorating?
- + Does our performance trend with the benchmark?



Performance Attribution over Time

+ Are we consistently better at allocation or security selection?



Attribution Model Fit

Attribution Model Fit

- + What's the right attribution model for your investment process?
 - + Brinson – 2 or 3 Factor (w/ currency effect for global strategy)
 - + Top Down – Decision tree starts at allocations (region/country/sector)
 - + Balanced

Asset Class	Relevant Subcomponent Returns
Equity	Currency & Residual Returns
Fixed Income	Shift, Twist, Carry, Spread, Income, Inflation, Currency & Residual Returns
Cash	Currency & Residual Returns

- + Fixed Income Performance
- + Fixed Income Return
- + Multi-Variate / Risk Based
- + Macro (fund of fund analysis)
- + Alpha - Beta

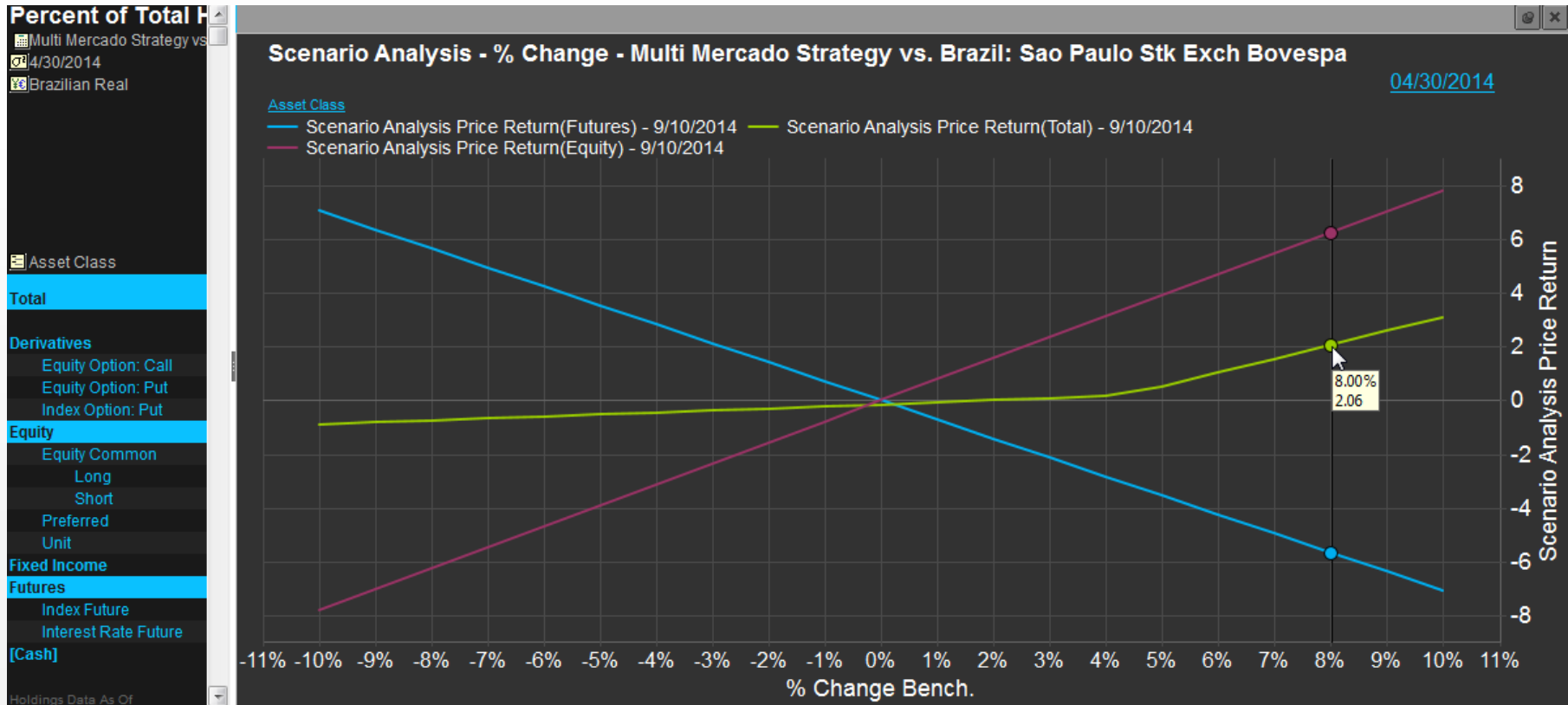
Multi Mercado Strategy

- + Know your exposures – use deltas, betas, and leverage factors to calculate weights

ID Ticker	Asset Class	Direct		Delta Adjusted			
		Portfolio Market Value	Portfolio Weight	Portfolio Market Value	Portfolio Weight	Gross Weight	Net Weight
Total		163,713,523	100.00	163,713,523	100.00	139.37	78.35
Derivatives		2,833,750	1.73	4,547,385	2.78	5.81	2.78
Equity Option: Call		262,500	.16	4,532,885	2.77	2.77	2.77
Equity Option: Put		71,250	.04	-2,485,500	-1.52	1.52	-1.52
Short		71,250	.04	-2,485,500	-1.52	1.52	-1.52
PETR4.BR#PCLYT-BSP	Petroleo Brasileiro SA Pfd Put MAY14 18.00	71,250	.04	-2,485,500	-1.52	1.52	-1.52
Index Option: Put		2,500,000	1.53	2,500,000	1.53	1.53	1.53
Equity		99,775,824	60.95	99,775,824	60.95	112.29	60.95
Equity Common		46,007,274	28.10	46,007,274	28.10	79.45	28.10
Long		88,040,289	53.78	88,040,289	53.78	53.78	53.78
Short		-42,033,015	-25.67	-42,033,015	-25.67	25.67	-25.67
Preferred		48,553,551	29.66	48,553,551	29.66	29.66	29.66
Unit		5,215,000	3.19	5,215,000	3.19	3.19	3.19
Fixed Income		17,752,787	10.84	17,752,787	10.84	10.84	10.84
Futures		6,188,081	3.78	6,188,081	3.78	10.42	3.78
Index Future		5,277,291	3.22	5,277,291	3.22	9.60	3.22
Interest Rate Future		910,790	.56	910,790	.56	.82	.56
[Cash]		37,163,081	22.70	35,449,445	21.65	--	--

Understand your Risk

+ Test changes in benchmark returns impact on portfolio



Attribute the Performance

- + Decompose contribution to beta and alpha returns

Asset Class	Weights			Port. Beta	Port. & Market Returns		Return Decomposition	
	Average Gross Weight	Average Net Weight	Average Beta Adj. Weight		Port. Contribution To Return	Market Total Return	Contribution to Beta Return	Contribution to Alpha Return
Total	144.93	81.12	58.15	.58	3.48	2.42	1.45	2.00
Derivatives	.33	.33	.34	1.01	1.51	2.42	-.00	1.52
Long	.33	.33	.34	1.01	1.51	2.42	-.00	1.52
Equity	120.08	65.10	47.26	.73	1.65	2.42	1.16	.46
Long	92.59	92.59	71.50	.77	1.98	2.42	1.74	.19
Short	27.49	-27.49	-24.23	.88	-.33	2.42	-.62	.28
Fixed Income	10.85	10.85	--	--	.12	2.42	--	.12
Futures	13.66	4.83	10.55	2.12	-.03	2.42	.30	-.33
Long	9.24	9.24	13.77	1.47	.04	2.42	.38	-.34
Short	4.42	-4.42	-3.22	.73	-.07	2.42	-.08	.01
[Cash]	--	--	--	--	.23	2.42	--	.23

Summary

- + View attribution with custom groupings that accurately reflect your investment process
- + Quantify your instinctive observations about performance to create talking points for internal discussion of relative performance
- + Answer questions of Why?, What? & How? at total fund level, group level & security level

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