

## **Smart Beta Performance Report**

**Scientific Beta**

**March 2014**

### **Introduction**

Recent years have seen the development of numerous smart beta indices whose weighting schemes depart from those of cap-weighted indices. Smart beta indices may be obtained by tilting economic factors, such as book-to-market, size or volatility, or by introducing greater diversification into the index, as illustrated in multi-strategy indices. The positive performance of smart beta indices over the long term has been largely documented in the literature. However, these indices are exposed to risk factors that differ from those of cap-weighted indices and that may cause variations in performance over short periods. As a result, the presentation of long-term performance is not enough for investors, who are also demanding performance figures over recent and shorter periods. The present report gives a complete picture of smart beta index performance with both long-term and short-term figures that illustrate the variations in performance over the different time periods, as well as the variations in performance between the various strategies. As a result, combining the various smart beta strategies makes it possible to obtain more robust performance.

Performance for smart factor beta indices exposed to risk factors known to be well rewarded over long periods remains strong with annual performance in excess of broad cap-weighted indices ranging from 1.45% to 2.95% since inception for the Developed universe. In addition, High Momentum and Value strategies provide the three best-performing indices over the long term. Over shorter periods, the strategies are exposed to fluctuations depending on variations in market conditions.

This month, the best performing index among smart factor indices is the High Dividend Yield index with a relative return of 0.84% compared to broad cap-weighted indices, closely followed by the Low Momentum index with a relative return of 0.72%, while the Low Dividend Yield index and the High Volatility index post the lowest relative return (-1.22% and -1.04%, respectively). However, we note that over the latest one year period, these two indices, namely the High Volatility index and the Low Dividend Yield index, were the two best performing indices among smart factor indices, with relative returns of 7.13% and 4.06% respectively compared to broad cap-weighted indices.

Over the latest one-year period, the best performing index among the 2,844 indices available on the platform was the SciBeta Eurozone HLIq Value Maximum Decorrelation (Country Neutral) Index, with a relative return of 30.17% compared to cap-weighted.

## 1. Performance Overview for Smart Factor Indices for the Scientific Beta Developed Equity Universe and Long-Term US Indices

Tables 1a and 1b display the performance of diversified multi-strategies. The six tilts selected – book-to-market, dividend yield, size, liquidity, volatility and momentum – are the common tilts documented in the literature as liable to produce outperformance compared to cap-weighted indices. The table presents performance statistics for both high and low stock selections by factor tilt. In addition, the table displays the performance of the index including all stocks. All these indices serve to create a diversified portfolio of the relevant stocks. In particular, they draw on different smart beta weighting schemes<sup>1</sup>, which we refer to as a diversified multi-strategy index. In addition, these indices offer investable proxies for smart beta factor indices. These indices allow investors to be both exposed to a specific risk factor (beta) and to have good diversification of other risk factors, leading to quite a good Sharpe ratio associated with the factor tilt. Table 1c displays the performance of long-term US indices based on the same factor selection and weighting scheme, the initial reference universe of these long-term US indices being the 500 largest market cap US stocks.

*Table 1a: Short-Term Performance Overview for Smart Factor Indices for the Scientific Beta Developed Equity Universe*

Diversified Multistrategy Index for	Past month (as of 31/03/2014)						Year-to-date (as of 31/03/2014)			
	Absolute Return		Relative Return compared to tilted cap-weighted		Relative Return compared to broad cap-weighted		Absolute Return		Relative Return compared to broad cap-weighted	
All Stocks	0.06%		-0.16%		-0.16%		2.90%		1.64%	
High/low stock selections by	High	Low	High	Low	High	Low	High	Low	High	Low
Book-to-market	0.66%	-0.63%	-0.23%	-0.21%	0.44%	-0.85%	3.84%	2.06%	2.58%	0.80%
Dividend Yield	1.06%	-1.00%	-0.29%	0.50%	0.84%	-1.22%	2.66%	2.96%	1.39%	1.69%
Size	0.31%	-0.10%	-0.03%	-0.54%	0.09%	-0.32%	2.00%	3.96%	0.73%	2.70%
Liquidity	0.05%	-0.08%	-0.30%	0.23%	-0.17%	-0.29%	2.22%	3.50%	0.96%	2.24%
Volatility	-0.82%	0.61%	-0.07%	-0.24%	-1.04%	0.39%	2.39%	3.27%	1.12%	2.01%
Momentum	-0.70%	0.94%	-0.05%	-0.18%	-0.91%	0.72%	2.29%	3.35%	1.03%	2.09%

The history of Scientific Beta Index returns begins on 21/06/2002. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. ERI Scientific Beta uses the yield on Secondary Market US Treasury Bills (3M) as a proxy for the risk-free rate in US Dollars. All results are in USD.

<sup>1</sup> Maximum Deconcentration, Diversified Risk Weighted, Maximum Decorrelation, Efficient Max Sharpe, Efficient Minimum Volatility.

Table 1b: Long Term Performance Overview for Smart Factor Indices for the Scientific Beta Developed Equity Universe

Diversified Multistrategy Index for	Since Inception: from 21/06/2002 to 31/03/2014															
	Absolute Return		Relative Return compared to tilted cap-weighted		Relative Return compared to broad cap-weighted		Volatility		Sharpe Ratio		Maximum Relative Drawdown		Outperformance Probability (1Y)		Outperformance Probability (3Y)	
All Stocks	10.58%		2.22%		2.22%		15.82%		0.57		4.07%		85.4%		100.0%	
High/low stock selections by	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
Book-to-market	11.25%	9.81%	2.21%	1.70%	2.89%	1.45%	16.79%	15.10%	0.58	0.55	5.79%	6.08%	78.0%	69.8%	85.2%	87.1%
Dividend Yield	10.72%	10.18%	2.24%	1.97%	2.35%	1.82%	15.27%	16.42%	0.60	0.53	5.22%	8.32%	76.9%	73.9%	99.8%	95.0%
Size	9.92%	11.31%	2.00%	0.23%	1.56%	2.95%	15.97%	15.83%	0.53	0.62	3.58%	6.77%	86.1%	82.1%	99.3%	90.2%
Liquidity	10.11%	11.06%	2.27%	0.62%	1.75%	2.70%	16.86%	14.99%	0.51	0.64	4.37%	6.67%	78.5%	78.9%	97.6%	94.6%
Volatility	10.06%	10.87%	2.26%	2.23%	1.70%	2.50%	19.19%	13.55%	0.45	0.69	16.94%	9.20%	68.4%	63.8%	55.3%	94.6%
Momentum	10.94%	10.14%	1.88%	2.06%	2.58%	1.78%	15.51%	16.73%	0.61	0.52	12.00%	8.82%	77.6%	59.3%	83.0%	67.3%

The history of Scientific Beta Index returns begins on 21/06/2002. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. ERI Scientific Beta uses the yield on Secondary Market US Treasury Bills (3M) as a proxy for the risk-free rate in US Dollars. The tilted cap-weighted indices are obtained based on the same selection of assets as each of the smart factor indices. All results are in USD.

Table 1c: Performance Overview for Long-Term US Indices

Diversified Multistrategy Index for	Long Term US Track Records since 1970 (as of 31/12/2012)					
	Relative Return compared to cap-weighted		Volatility		Sharpe Ratio	
All Stocks	2.31%		15.95%		0.46	
High/low stock selections by	High	Low	High	Low	High	Low
Book-to-market	2.17%	3.01%	15.93%	16.31%	0.45	0.49
Dividend Yield	3.50%	1.08%	14.79%	17.77%	0.57	0.34
Size	1.36%	4.14%	15.91%	16.41%	0.40	0.56
Liquidity	1.31%	3.94%	16.89%	15.27%	0.37	0.58
Volatility	2.13%	2.69%	19.17%	14.08%	0.37	0.55
Momentum	2.56%	2.23%	16.00%	16.52%	0.47	0.44

Long-Term US indices are style factor indices constructed from the 500 largest market cap US stocks. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. The yield on Secondary Market US Treasury Bills (3M) is used as a proxy for the risk-free rate in US Dollars. All results are in USD.

Over the long term all diversified multi-strategy indices exhibit a positive relative return compared to cap-weighted indices, whether they are broad or tilted cap-weighted indices. The best performances relative to broad cap-weighted indices are posted by the small-cap index and the high book-to-market (value) index (2.95% and 2.89%, respectively), which is not surprising as value stock and small-cap stock premiums are largely documented in the literature. Tilted cap-weighted indices are factor indices that use the same universe of assets as each smart factor index. The outperformance of smart factor indices

compared to those indices is due to the difference in weighting scheme, which results in better diversification for smart factor indices compared to cap-weighted indices. We observe that while the gain in performance for smart beta indices compared to tilted cap-weighted indices is higher for the high stock selection than the gain of performance compared to broad cap-weighted indices – which is the case for half of the indices – we have the reverse relation for the low stock selection, and vice versa.

Looking at year-to-date relative returns, we observe that all strategies post positive return relative to cap-weighted. The best performing index among smart factor indices is the Small Cap index with a relative return of 2.70%, closely followed by the High Book-to-Market (Value) index, with a relative return of 2.58%. In addition, the spread in relative return between the two smart factor indices, respectively resulting from high and low stock selections, greatly differs between the strategies, with some of them presenting a moderate spread, such as the dividend yield strategy, which exhibits the lowest one, with a relative return of 1.39% for the high dividend yield index, compared to 1.69% for the low dividend yield index. The volatility strategy also exhibits a quite moderate spread year-to-date between high and low volatility selection stocks. Other indices exhibit larger spreads in relative return between high and low selection stocks, like size indices, with a relative return of 0.73% for the large cap index, compared to 2.70% for the small cap index since the start of 2014. The book-to-market indices also present quite a large spread between high and low stock selection (2.58% and 0.80%, respectively) since the start of 2014.

Looking at market betas<sup>2</sup> for all these strategies, the link between the similarity of the high and low market betas and the spread of performance between high and low betas is not so clear. For example, the large-cap and small-cap indices have market betas of 0.93 and 0.91, respectively, and a spread of 1.97% between high and low stock selections, while the high dividend yield and low dividend yield indices have a market beta of 0.89 and 0.95, respectively, and a spread of 0.30% between high and low stock selections. Conversely, the largest difference in beta is observed for volatility indices with market betas of 1.11 and 0.78 for high and low indices, respectively, while the spread between the performance of the two indices is only 0.89% year-to-date.

Looking at the performance of the all stocks diversified multi-strategy index, it appears that investing in this index smoothes the variations in performance observed among the smart factor indices, which leads to more robust performance. The performance is obtained with lower variations in short-term performance, compared to smart factor indices, as shown by its maximum relative drawdown, which is very low compared to the smart factor indices displayed in table(s) 1.

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<sup>2</sup> All beta values are from [www.scientificbeta.com](http://www.scientificbeta.com).

## 2. Performance Overview for Plain Vanilla Diversification Schemes for the Scientific Beta Developed Equity Universe and Long-Term US Indices

Table 2 displays the performance of indices using the various diversification schemes that have been identified as alternatives to the cap-weighted scheme, which is known to generate indices that are concentrated in a limited number of stocks. In addition, the tables display the performance of the diversified multi-strategy index including all stocks, as well as the performance of long-term US indices based on the same stock selection and weighting scheme.

*Table 2a: Short-Term Performance Overview for Plain Vanilla Diversification Schemes for the Scientific Beta Developed Equity*

Weighting scheme	Past month (as of 31/03/2014)		Year-to-date (as of 31/03/2014)	
	Absolute return	Relative Return compared to broad cap-weighted	Absolute return	Relative Return compared to broad cap-weighted
Maximum Deconcentration	0.08%	-0.14%	2.67%	1.41%
Diversified Risk Weighting	0.31%	0.09%	2.63%	1.37%
Maximum Decorrelation	-0.38%	-0.60%	3.03%	1.76%
Efficient Max. Sharpe	0.01%	-0.20%	3.09%	1.82%
Efficient Minimum Volatility	0.29%	0.07%	3.08%	1.82%
Diversified Multistrategy	0.06%	-0.16%	2.90%	1.64%

The history of Scientific Beta index returns begins on 21/06/2002. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. ERI Scientific Beta uses the yield on Secondary Market US Treasury Bills (3M) as a proxy for the risk-free rate in US Dollars. All results are in USD.

*Table 2b: Long-Term Performance Overview for Plain Vanilla Diversification Schemes for the Scientific Beta Developed Equity Universe*

Weighting scheme	Since Inception: from 21/06/2002 to 31/03/2014								
	Absolute Return	Relative Return compared to broad cap-weighted	Volatility	Sharpe Ratio	Maximum Relative Drawdown	Outperformance Probability (1Y)	Outperformance Probability (3Y)	Turnover	Capacity
Maximum Deconcentration	10.30%	1.94%	17.35%	0.51	9.49%	72.3%	88.5%	28.8%	17157
Diversified Risk Weighting	10.46%	2.09%	16.46%	0.54	6.48%	83.7%	94.8%	28.7%	18129
Maximum Decorrelation	10.45%	2.08%	16.07%	0.56	4.03%	78.3%	99.6%	32.5%	17444
Efficient Max. Sharpe	10.60%	2.23%	15.45%	0.59	4.04%	86.9%	100.0%	32.1%	18327
Efficient Minimum Volatility	11.02%	2.65%	13.96%	0.68	8.14%	73.7%	99.3%	30.9%	20649
Diversified Multistrategy	10.58%	2.22%	15.82%	0.57	4.07%	85.4%	100.0%	25.9%	18341

The history of Scientific Beta index returns begins on 21/06/2002. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. ERI Scientific Beta uses the yield on Secondary Market US Treasury Bills (3M) as a proxy for the risk-free rate in US Dollars. The table shows the turnover level of the index in % and the average capacity of the index as measured by the average market capitalization in M\$, as of 21/03/2014. All results are in USD.

*Table 2c: Performance Overview for Long-Term US Indices*

Weighting scheme	Long Term US Track Records since 1970 (as of 31/12/2012)		
	Relative Return	Volatility	Sharpe ratio
Maximum Deconcentration	2.18%	17.13%	0.42
Diversified Risk Parity	2.25%	16.45%	0.44
Maximum Decorrelation	2.22%	16.34%	0.44
Efficient Max. Sharpe	2.53%	15.67%	0.48
Efficient Minimum Volatility	2.28%	14.42%	0.50
Diversified Multistrategy	2.31%	15.95%	0.46

Long Term US indices are based on the 500 largest market cap US stocks. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised and performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. The yield on Secondary Market US Treasury Bills (3M) is used as a proxy for the risk-free rate in US Dollars. All results are in USD.

Since inception in 2002, all diversification schemes post positive relative returns. In terms of risk-adjusted performance, the best performance is delivered by the Efficient Minimum Volatility index, with a Sharpe ratio of 0.68. In terms of probability of outperformance for a one-year holding period, the best strategy appears to be the Efficient Max Sharpe strategy with a probability of 86.9%. The performance of all strategy indices since inception in the Developed Markets universe is quite comparable to the long-term US track record.

Year-to-date, all strategies delivered positive returns relative to cap-weighted, as well as positive absolute returns. The best performing strategies are the Efficient Max Sharpe strategy and the Efficient Minimum Volatility strategy, both in absolute (3.09% and 3.08%, respectively) and relative terms (1.82% for both), while the worst performing strategy is the Diversified Risk Weighting strategy, both in absolute (2.63%) and relative (1.37%) terms. The Diversified Multi-strategy index allows these extremes to be avoided by diversifying across the five weighting schemes and posts year-to-date relative return of 1.64%. Since inception in 2002, the Diversified Multi-strategy index also has the lowest turnover. It appears that investing in the Diversified Multi-strategy index cancels out some of the transactions occurring in the single strategies. The turnover is only 25.9% per year. The low max relative drawdown of the Diversified Multi-strategy index shows that combining several strategies leads to more robust performance over the long term.

### 3. Best and Worst Performing Indices for All Regions

In this section, we focus on the performance of the best and worst performers among the 2,844 Scientific Beta indices. Tables 3a and 3b display the top three indices and the bottom three indices, since inception and over the latest one-year period respectively. In addition, we provide the median performance statistic values for the period since inception.

Table 3a: Best and Worst Performing Indices since Inception on 21/06/2002 (all regions – 2,884 indices)

Best performers since inception (top 3 indices by relative return as of 31/03/2014)	Relative return	Outperformance probability			Relative bull/bear market performance		Relative high/low volatility performance		Maximum relative drawdown
		1 year	3 year	5 year	Bull	Bear	High volatility	Low volatility	
SciBeta Developed Asia-Pacific ex-Japan High-Momentum Efficient Minimum Volatility	8.48%	81.5%	93.0%	98.0%	4.47%	12.30%	9.70%	6.21%	18.32%
SciBeta Developed Asia-Pacific ex-Japan High-Momentum Maximum Decorrelation	8.23%	85.3%	99.1%	100.0%	8.63%	6.33%	5.48%	12.02%	13.59%
SciBeta Developed Asia-Pacific ex-Japan Value Maximum Decorrelation (Sector Neutral)	8.17%	67.7%	86.9%	96.9%	11.84%	2.24%	2.82%	15.99%	16.74%
Worst performers since inception (bottom 3 indices by relative return as of 31/03/2014)	Relative return	Outperformance probability			Relative bull/bear market performance		Relative high/low volatility performance		Maximum relative drawdown
		1 year	3 year	5 year	Bull	Bear	High volatility	Low volatility	
SciBeta Developed Asia-Pacific ex-Japan HLIq Growth Maximum Decorrelation	-2.19%	28.8%	8.9%	8.7%	-6.59%	3.70%	-1.43%	-3.35%	35.34%
SciBeta Developed Asia-Pacific ex-Japan HLIq Low-Momentum Maximum Decorrelation (Sector Neutral)	-2.03%	30.2%	28.8%	1.7%	-3.89%	0.51%	-1.81%	-2.40%	34.13%
SciBeta Developed Asia-Pacific ex-Japan HLIq Growth Maximum Deconcentration (Country Neutral)	-2.01%	31.3%	16.3%	12.1%	-1.60%	-2.21%	-4.14%	1.28%	33.07%
Median performance statistics since inception as of 31/03/2014	Relative return	Outperformance probability			Relative bull/bear market performance		Relative high/low volatility performance		Maximum relative drawdown
		1 year	3 year	5 year	Bull	Bear	High volatility	Low volatility	
	1.87%	66.4%	75.6%	91.8%	1.37%	2.28%	1.42%	2.23%	12.28%

The history of Scientific Beta index returns begins on 21/06/2002. The statistics are based on daily total returns (with dividend reinvested). All statistics are annualised, except bull and bear market performances and high and low volatility market performances, which are quarterly values. Performance ratios that involve the average returns are based on the geometric average, which reliably reflects multiple holding period returns for investors. ERI Scientific Beta uses the yield on Secondary Market US Treasury Bills (3M) as a proxy for the risk-free rate in US Dollars. All results are in USD.

The top three indices based on the relative returns since inception are all from the Developed Asia-Pacific ex-Japan region. The first two are High Momentum indices and the third one is a Value index. While both the value premium and the momentum premium have been largely documented in the literature, the value premium is considered a long term effect, while the momentum premium is described as a short-term phenomenon. In addition, these indices use two weighting schemes –Maximum Decorrelation and Efficient Minimum Volatility– that take into account the correlations between stock returns. The three indices exhibit similar conditional profiles, namely that they all posted positive returns during both bull and bear markets and during both high and low volatility markets.

The bottom three indices based on the relative returns since inception are all High-Liquidity indices. Two are Growth indices and the third is a Low Momentum index. Since Value and High Momentum indices are found in the winner group, it is not surprising to find Growth and Low Momentum indices in the bottom group. The two indices that use the Maximum Decorrelation weighting scheme exhibit similar conditional return profiles, namely negative returns during bull markets, and during both high and low volatility markets. The third, which uses a Maximum Deconcentration weighting scheme, differs from the other two by posting negative returns during bear markets and positive returns during low volatility markets. These three indices are from the Developed Asia-Pacific ex-Japan region, like the top three indices, which shows that the best or worst performer status of these indices is first of all related to the strategy chosen (Value or High Momentum, rather than Growth or Low Momentum), rather than to the geographic selection.

*Table 3b: Best and Worst Performing Indices over the Latest One-Year Period (all regions – 2,844 indices)*

Best performers over one year (top 3 indices by relative return as of 31/03/2014)	Relative return	Outperformance probability			Relative bull/bear market performance		Relative high/low volatility performance		Maximum relative drawdown
		1 year	3 year	5 year	Bull	Bear	High volatility	Low volatility	
SciBeta Eurozone HLiq Value Maximum Decorrelation (Country Neutral)	30.17%	62.2%	46.0%	43.7%	5.71%	-2.11%	-0.64%	6.04%	21.41%
SciBeta Eurozone HLiq High-Volatility Maximum Decorrelation (Country Neutral)	28.54%	63.2%	68.6%	47.3%	10.87%	-6.61%	0.34%	5.30%	24.36%
SciBeta Eurozone HLiq Value Maximum Deconcentration (Country Neutral)	27.44%	65.4%	51.9%	55.8%	8.34%	-5.12%	-0.83%	5.80%	19.68%
Worst performers over one year (bottom 3 indices by relative return as of 31/03/2014)	Relative return	Outperformance probability			Relative bull/bear market performance		Relative high/low volatility performance		Maximum relative drawdown
		1 year	3 year	5 year	Bull	Bear	High volatility	Low volatility	
SciBeta Eurozone HLiq Low-Volatility Efficient Minimum Volatility	-14.49%	61.1%	83.4%	93.0%	-4.88%	10.77%	3.85%	-0.14%	15.89%
SciBeta Eurozone Growth Efficient Minimum Volatility (Country Neutral)	-13.83%	66.8%	87.6%	91.0%	-4.14%	11.19%	6.35%	-2.05%	17.49%
SciBeta Eurozone Low-Volatility Efficient Minimum Volatility (Country Neutral)	-13.38%	65.5%	95.2%	95.8%	-5.09%	11.95%	5.11%	-0.93%	17.29%

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Over one year ending 31/03/2014, the top three indices are all Eurozone High Liquid and Country Neutral indices. Two are Value indices, and the third is a High Volatility index. The value premium is largely documented in the literature. The rising market context over one year is a favourable situation for high volatility indices. Looking at the Carhart performance attribution<sup>3</sup> for the three indices, it appears that the decomposition of the performance between the factors is quite similar for the three indices. The market factor explains about one quarter of the performance. The size factor makes a contribution of about 2% to the performance. The value factor makes a significant contribution to the performance of both the two Value indices and the High Volatility index, while slightly higher for the two Value indices (12.86%, 11.75% and 10.53%, respectively). The contribution of the momentum factor to the performance is quite weak for the three indices, though statistically significant (less than 1% for the High Volatility index and less than 0.5% for the two Value indices). In

<sup>3</sup> Carhart factor analysis and sector performance attribution results are available on [www.scientificbeta.com](http://www.scientificbeta.com).



terms of sector contribution, the sector effect is positive for the two Value indices and ranges from 1.61% to 2.52%, and negative for the High Volatility index (-0.72%).

The bottom three indices are all Eurozone indices and all three use the Efficient Minimum Volatility weighting scheme. Minimum Volatility indices are indices that perform especially well during bear markets and encounter negative performances relative to cap-weighted indices during bull markets. Two are Low Volatility indices and the third is a Growth index. Since Value and High Volatility indices are found in the winner group, it is not surprising to find Growth and Low Volatility indices in the bottom group. As we saw with the long-term results, the same geographical region may provide the best performing indices, as well as the worst performing ones, showing that the choice of strategy (e.g. Value or High Volatility, rather than Growth or Low Volatility) prevails over the geographical selection in performance results. Looking at the Carhart performance attribution, it appears that the three indices have similar performance profiles, except as far as the momentum factor is concerned. The market factor makes a contribution of about 21% to the performance of the three indices. The size factor has a positive, but low contribution (about 1%) for the three indices. The value factor has a negative contribution for the three indices, ranging from -7.55% to -6.12%. Finally the momentum factor has a positive, but weak and not statistically significant, contribution (0.23%) only for the Growth index, while its contribution is negative, but also weak and not significant, for the two Low Volatility indices (-0.25% and -0.12%, respectively). In terms of sector contribution, the sector effect is negative for the two Low Volatility indices (-1.81% and -1.90%, respectively), while it is positive for the Growth index (1.64%).

## About ERI Scientific Beta

ERI Scientific Beta aims to be the first provider of a smart beta platform to help investors understand and invest in advanced beta equity strategies. It has three principles:

**Choice:** A multitude of strategies are available allowing users to build their own benchmark, choosing the risks to which they wish, or do not wish, to be exposed. This approach, which makes investors responsible for their own risk choices, referred to as Smart Beta 2.0, is the core component of the index offerings proposed by ERI Scientific Beta.

**Transparency:** The rules for all of the Scientific Beta series are replicable and transparent.

**Clarity:** Exhaustive explanations of construction methodologies are provided, as well as detailed performance and risk analytics.

Established by EDHEC-Risk Institute, one of the very top academic institutions in the field of fundamental and applied research for the investment industry, ERI Scientific Beta shares the same concern for scientific rigour and veracity, which it applies to all the services that it offers investors and asset managers.

Part of EDHEC Business School, a not-for-profit organisation, EDHEC-Risk Institute has sought to provide the ERI Scientific Beta services in the best possible economic conditions. As such, ERI Scientific Beta's business model also allows free access to a series of indices.

The ERI Scientific Beta offering covers three major services:

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**Scientific Beta Fully-Customised Benchmarks:** The Scientific Beta Fully-Customised Benchmarks service enables investors and asset managers to benefit from its expertise and the ability to determine and implement their choice of stocks, weighting schemes, and absolute and relative risk constraints in keeping with their objectives.

With a concern to provide worldwide client servicing, ERI Scientific Beta has a presence in Boston, London, Nice, Singapore and Tokyo.

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