

# The Evolution of Indexes & Smart Beta Strategies

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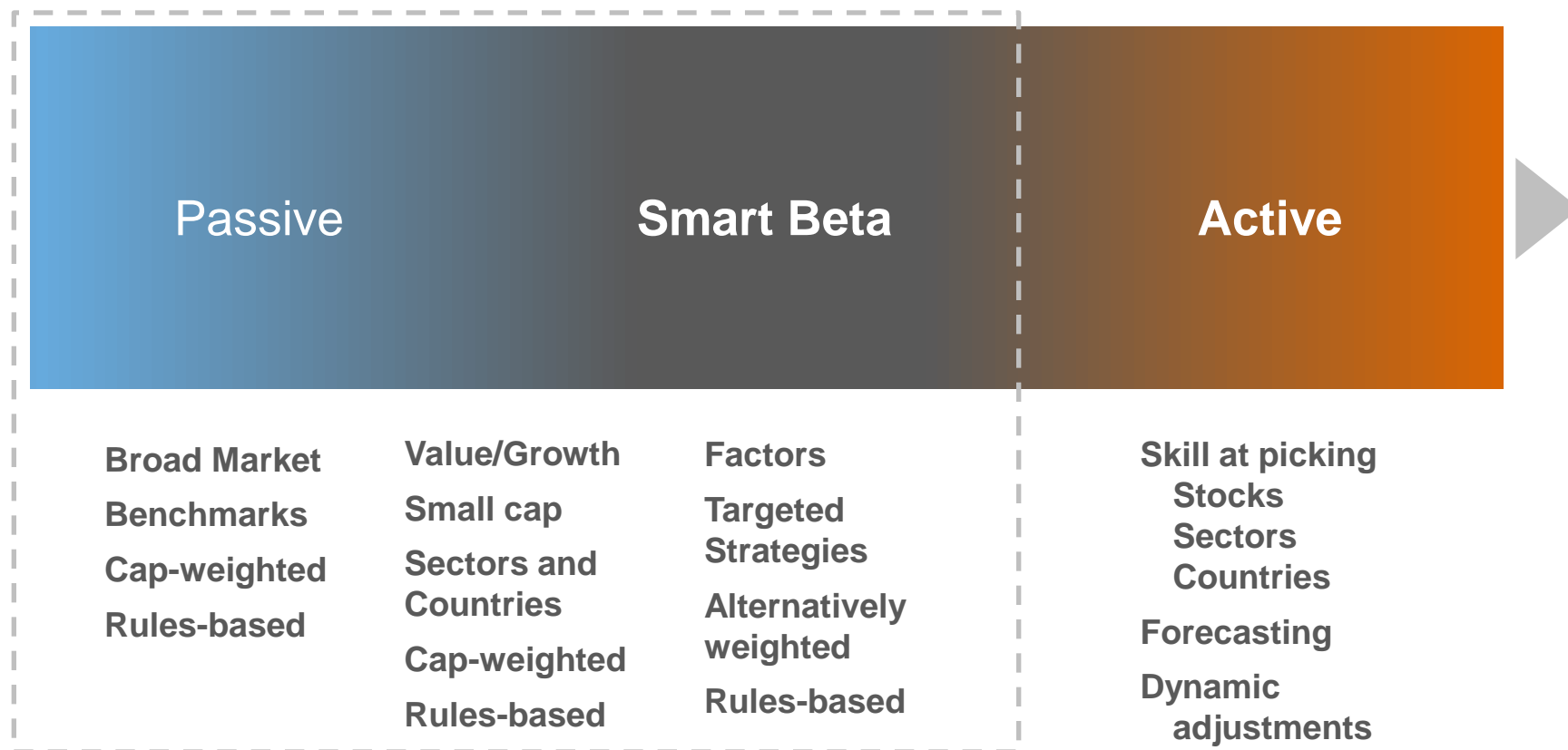
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# Evolution of indexes as investments

## Smart Beta as 50 shades of purple



Note: Indexes are unmanaged and cannot be invested in directly. Investments are available through mutual funds or exchange traded funds that seek to closely track an index.

# Russell smart beta indexes

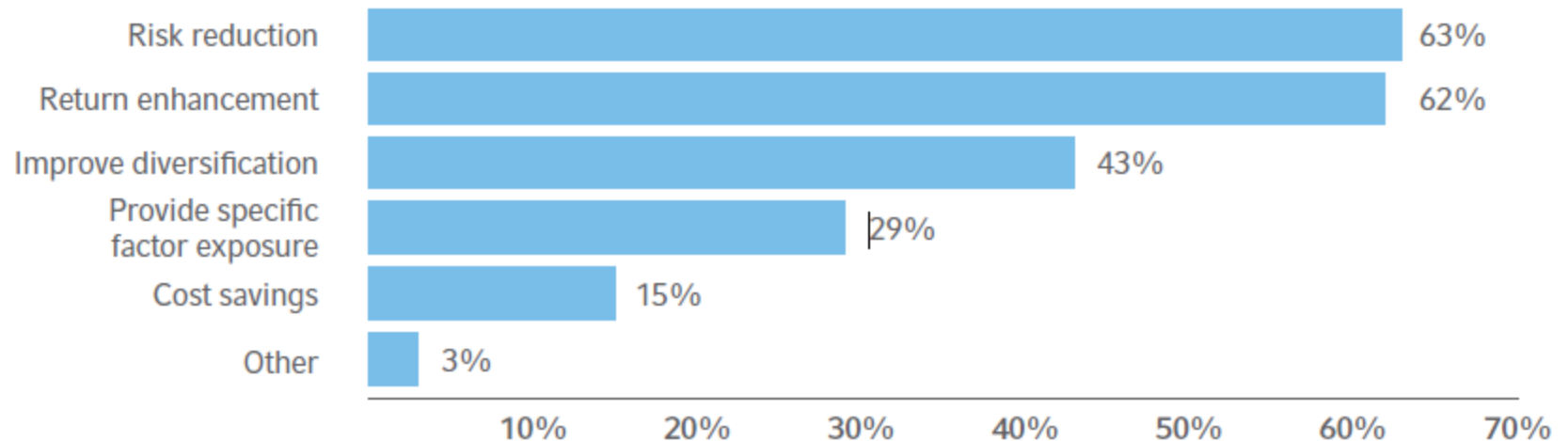
## A definition

### Smart beta index...

A transparent, rules-based index that is designed to provide a specific exposure to market segments or factors

# Interest in smart beta has been driven by the desire for risk reduction and returns enhancement, rather than for cost savings

*What investment objective initiated evaluation of smart beta strategies?*



Multi pick; Segment = Currently evaluating smart beta, evaluated and decided not to implement, or have smart beta allocation

› Cost savings ranked at the bottom of the list

Source: Russell Smart Beta Survey, "Smart Beta: A deeper look at asset owner perceptions." April 2014

## The U.S. and the UK are using fundamental index strategies; Europe ex-UK and Canada are using low volatility

*What smart beta strategies have you evaluated or are you currently evaluating?*

	US	Canada	UK	Europe (ex UK)
Low volatility	54%	86%	55%	81%
Fundamental	61%	29%	90%	59%
High quality	32%	43%	30%	44%
Maximum diversification	11%	36%	20%	41%
Risk parity	25%	50%	40%	37%
Momentum	25%	29%	15%	26%
Equal weight	25%	29%	40%	44%
Stability (defensive / dynamic)	36%	21%	25%	22%
High dividend	21%	29%	40%	41%
Other	4%	7%	5%	11%

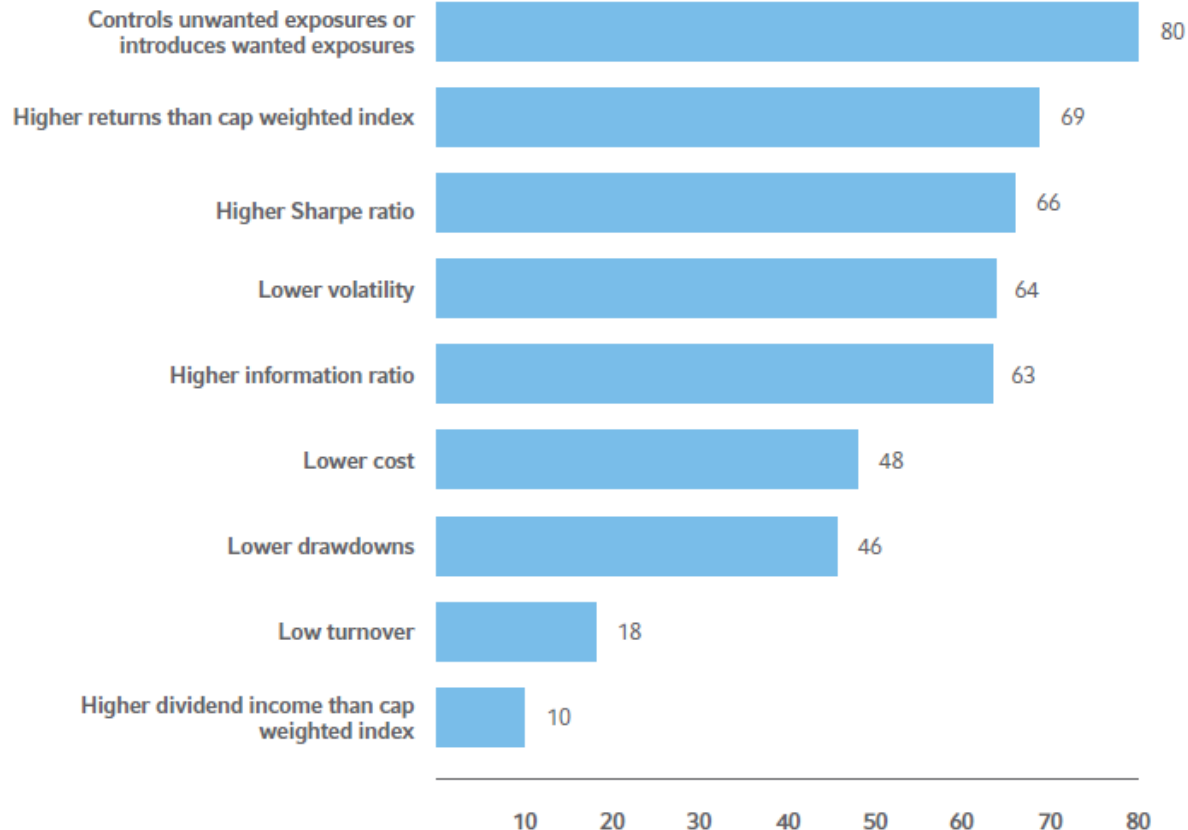
Multi pick; Segment = Currently evaluating smart beta, evaluated and decided not to implement, or have smart beta allocation

- › Similarly, among those with a smart beta allocation, low volatility usage is highest in Canada (100%) and Europe ex UK (77%) while fundamental usage is highest in US (67%) and UK (60%).

Source: Russell Smart Beta Survey, "Smart Beta: A deeper look at asset owner perceptions." April 2014

# Greatest unmet need is for smart beta indexes that control exposures

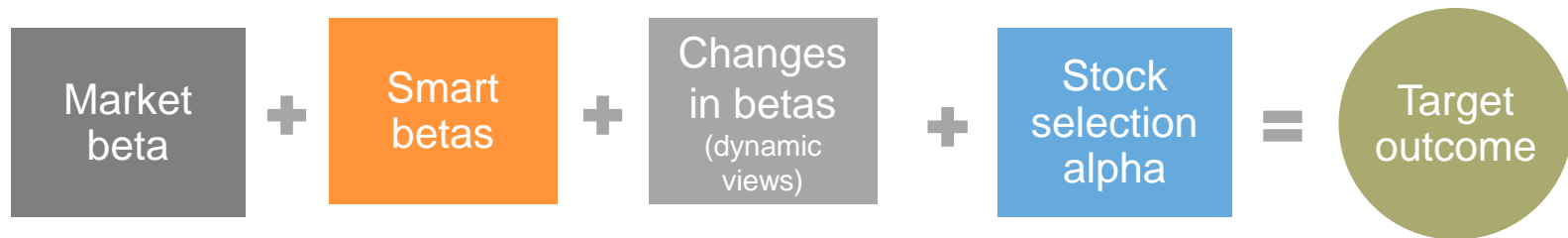
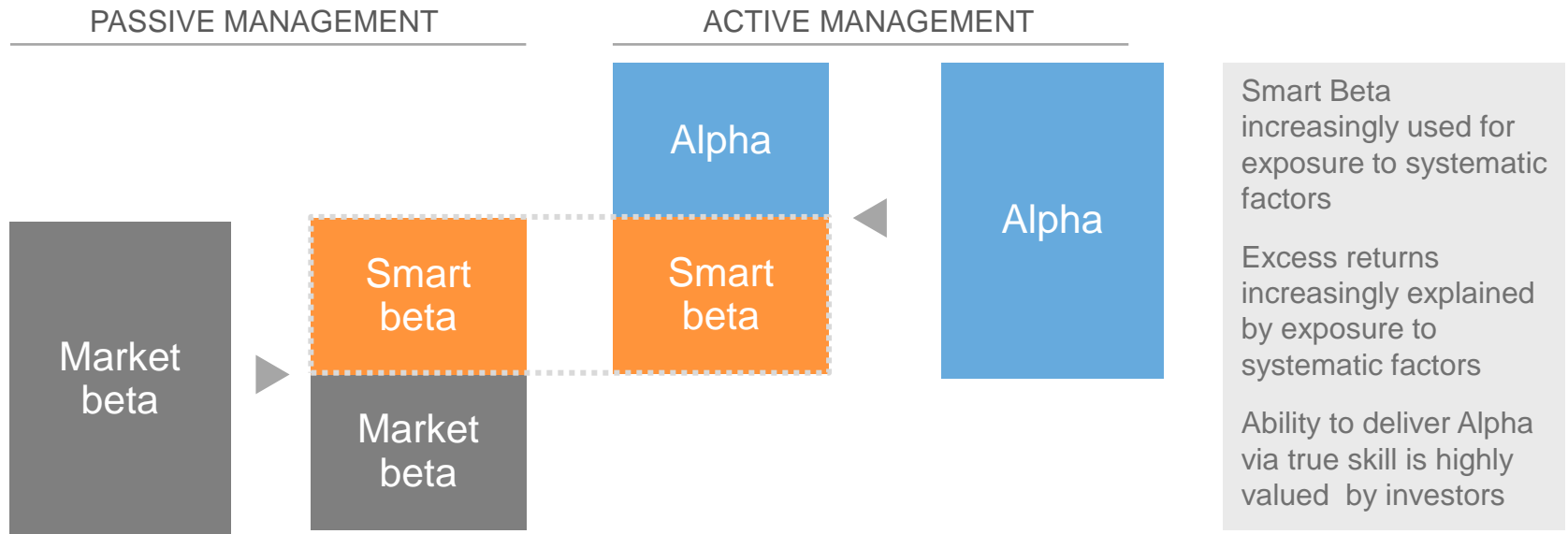
## Equity Investment Product Feature Unmet Need Score



- › An objective with a high unmet needs score has high importance to respondents but low satisfaction with current solutions.

Source: Russell Smart Beta Survey, "Smart Beta: A deeper look at asset owner perceptions." April 2014

# Smart beta in portfolio context





# Three types of usage for a factor index

## Strategic

### Factor exposure as a substitute

Align factor exposure with investor objective

Make long-horizon fixed allocation

## Dynamic

### Factor exposure as a tactic

Time exposure to risk factors as an explicit source of value add

Use factor strategies for cost-effective exposure

## Risk Management

### Factor exposure to manage risk

Control portfolio exposures and active risk levels

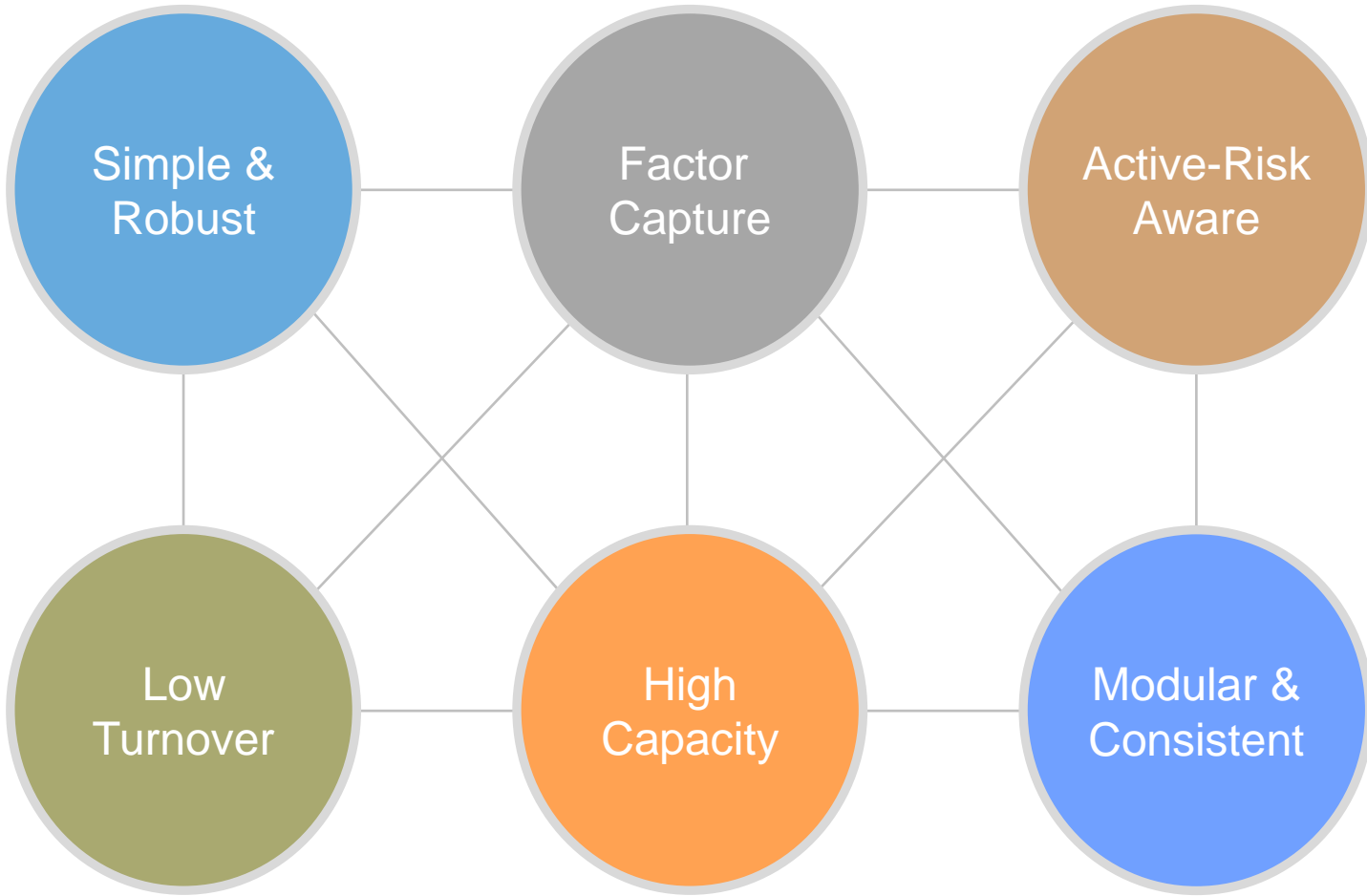


Complement existing active strategies



# Smart beta index requirements

## Russell High Efficiency™ Factor Index (HEFI) Series



# Methodology Overview

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Russell High Efficiency Factor Indexes



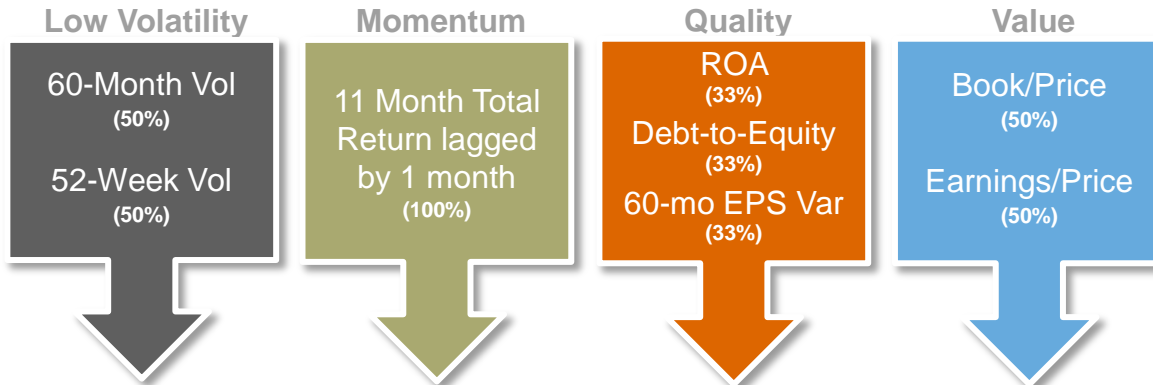
# Russell High Efficiency Factor Indexes

## Methodology

→ **Step 1**

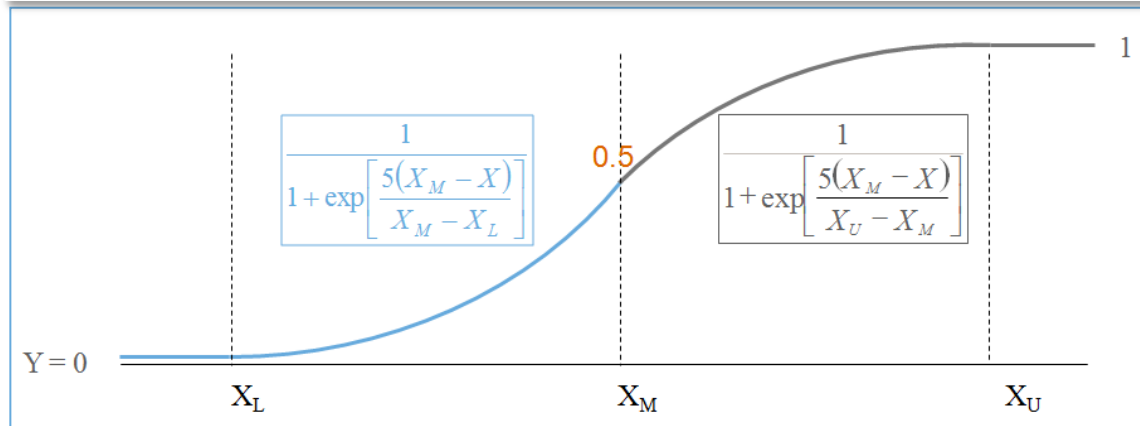
**Select a Russell Parent Index**  
(e.g. Russell 1000, Global LC Index)

→ **Step 2a.**  
Gather variables for each stock



**Apply the NLP algorithm as a scoring tool**

→ **Step 2b.**  
Convert variables into scores from 0 to 1 using NLP algorithm



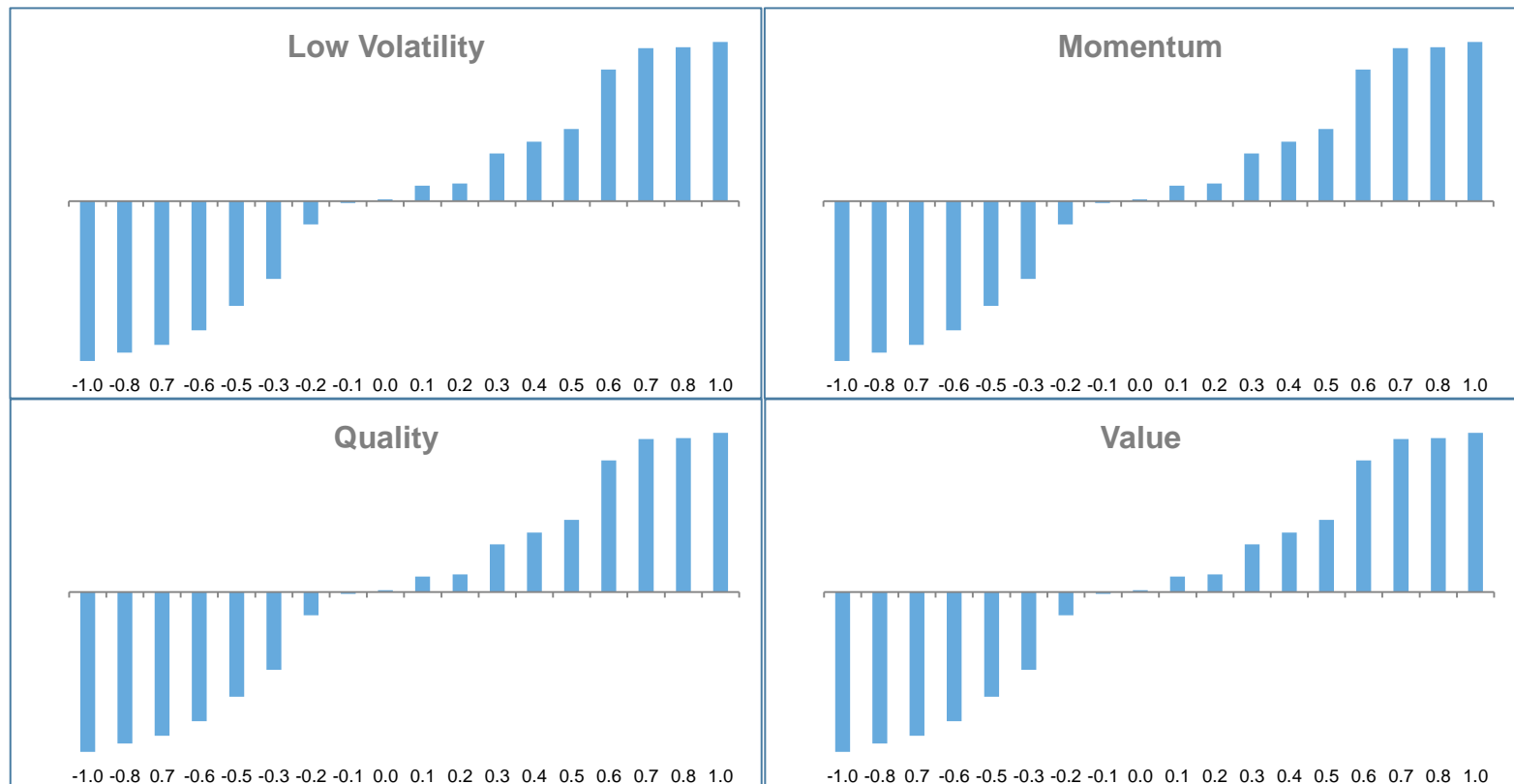
# Russell High Efficiency Factor Indexes

## Methodology

→ Step 2c.

Convert scores from a range of 0.0 to +1.0  
to a range of -1.0 to +1.0

$$\text{Rescaled Score} = (\text{Composite Score} * 2) - 1$$

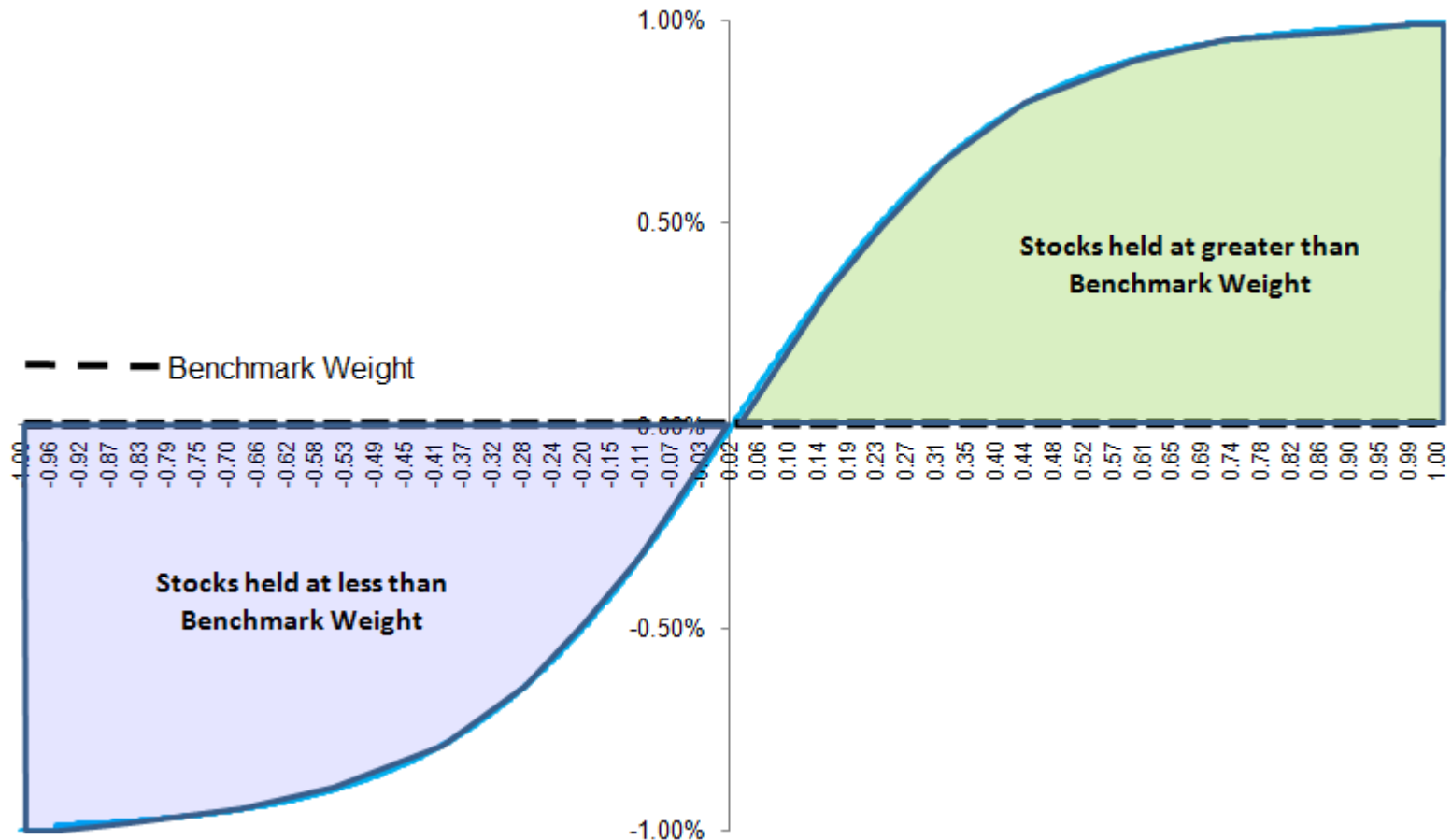


# Russell High Efficiency Factor Indexes

## Methodology

→ Step 3

Apply NLP Algorithm as a weighting tool to create hypothetical weights

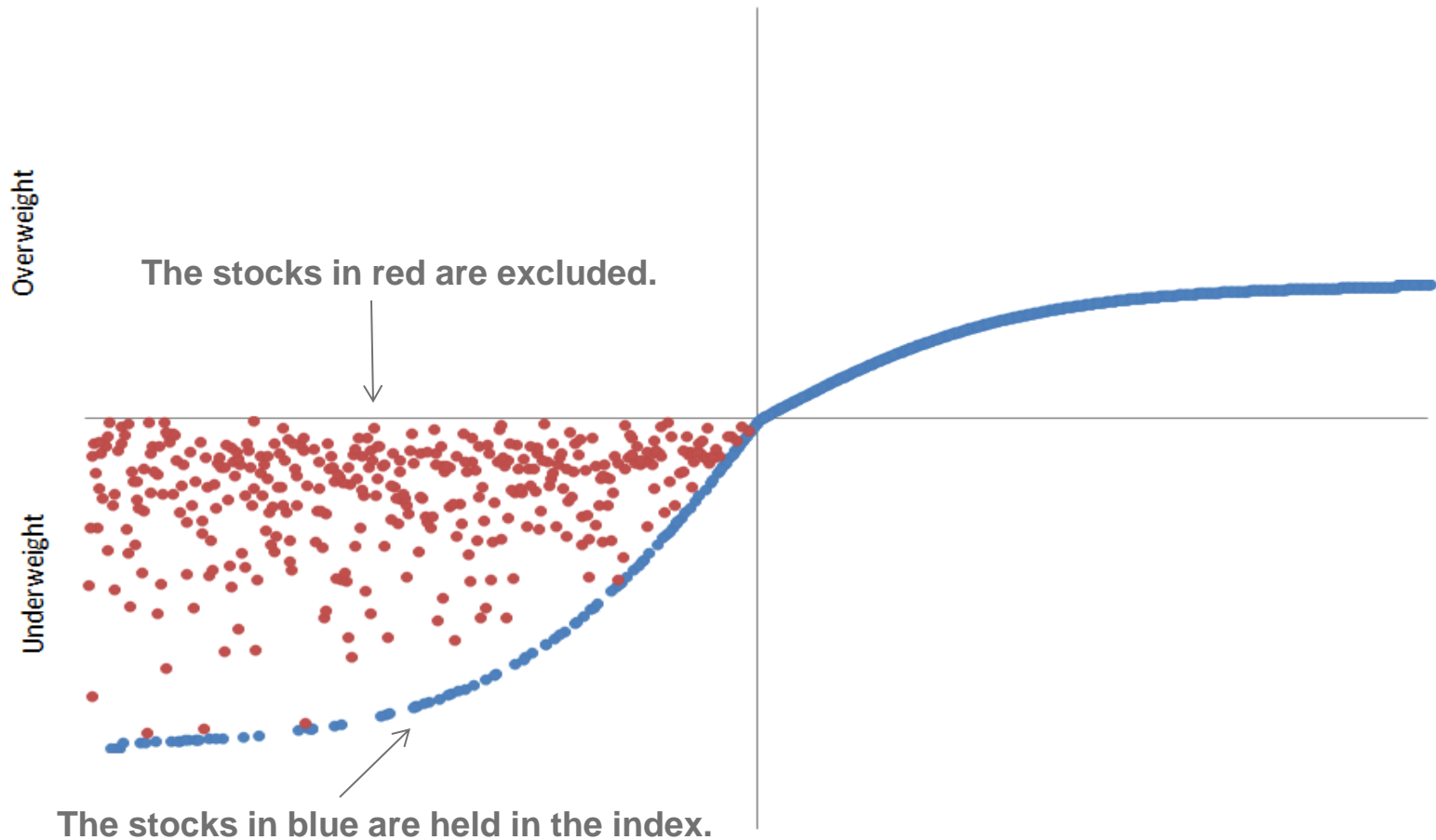


# Russell High Efficiency Factor Indexes

## Methodology

→ Step 4

Remove stocks with negative weights.  
Sum all the stocks underweighted.

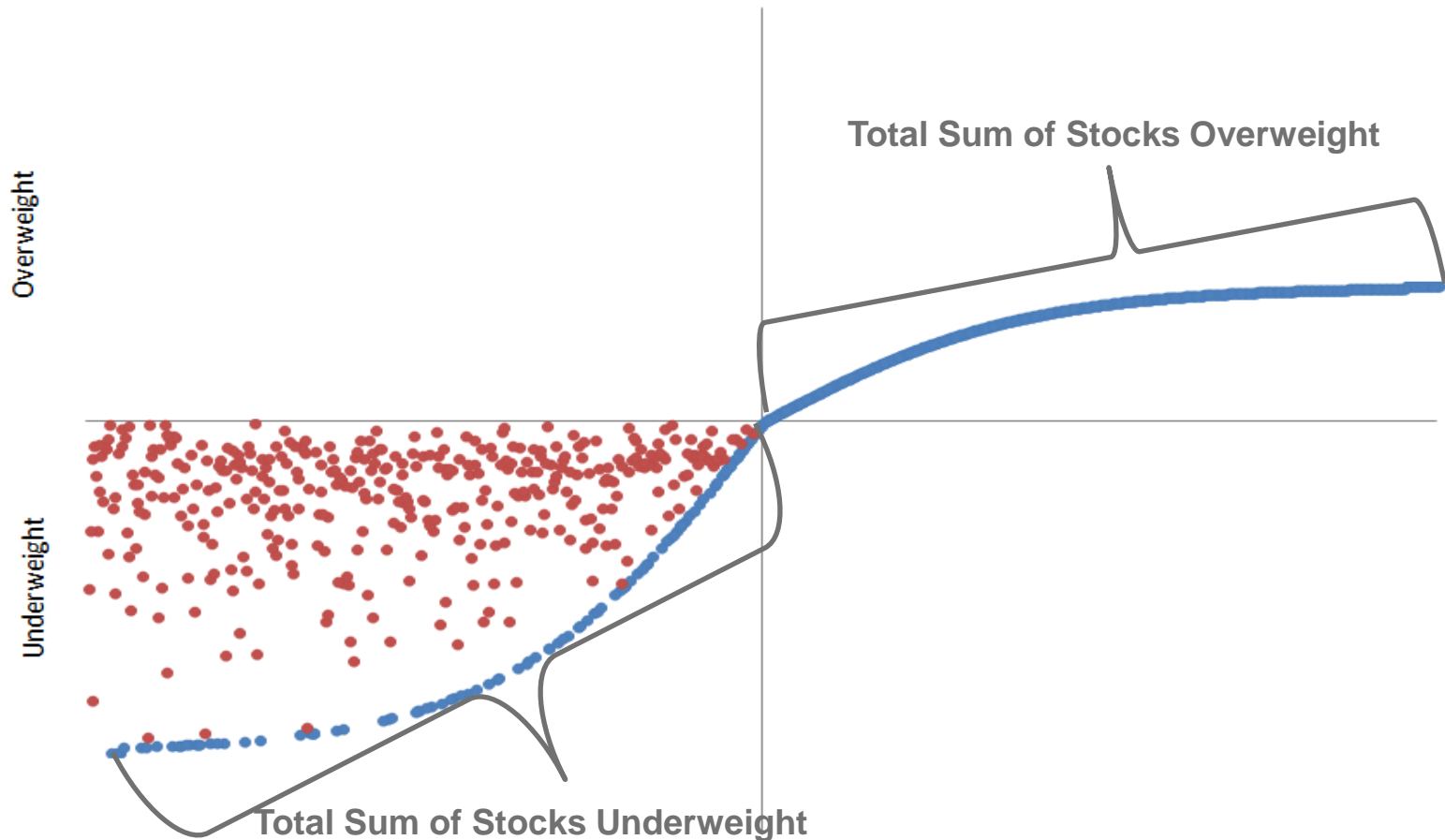


# Russell High Efficiency Factor Indexes

## Methodology

→ Step 5

Calculate the overweights based on the total sum of the Underweights.





# Russell HEFI Factor Indexes Risk/Return Statistics

July 1996 – March 2014	Russell 1000 Index	Russell 1000 HEFI - Low Vol	Russell 1000 HEFI - Momentum	Russell 1000 HEFI - Quality	Russell 1000 HEFI - Value
Annualized Return (%)	8.2	9.4	9.8	9.7	10.8
Annualized Standard Deviation (%)	16.1	12.4	17.1	15.7	16.5
Sharpe Ratio	0.41	0.58	0.48	0.50	0.55
Tracking Error (%)	-	7.3	5.1	2.7	5.9
Information Ratio	-	0.17	0.32	0.54	0.44
Maximum Drawdown (%)	-51.1	-42.8	-49.1	-44.9	-54.0
# of Stocks	1,016	321	506	507	523
Up Capture Ratio (%)	100.0	78.6	106.8	99.7	101.9
Down Capture Ratio (%)	100.0	64.4	101.4	92.3	89.9

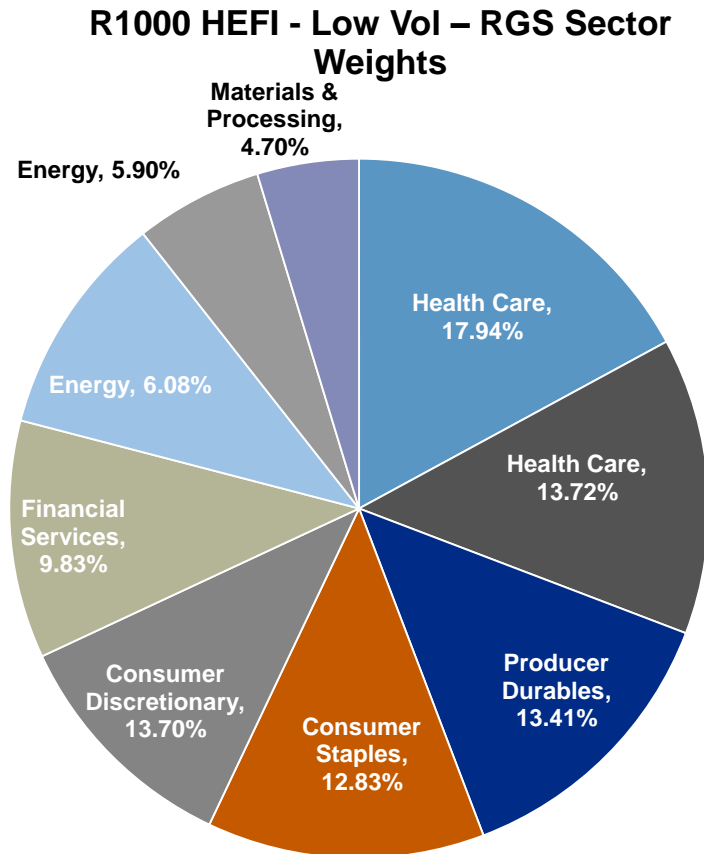
- › Over the historical period from 1996 through March 2014:
  - › Higher returns than the parent index
  - › High Sharpe ratios and information ratios
  - › Strong factor capture

TTE = Target Tracking-Error. Low TTE have a long-term targeted tracking error of 3% and Moderate TTE have a long-term targeted tracking error of 6%.

# Russell 1000 HEFI – Low Volatility

## Snapshot as of March 31, 2014

Statistics	R1000 HEFI Low	R1000 Index
Number of Holdings	324	1,016
<b>Capitalization Statistics (in billions)</b>		
Average Market Cap (\$-WTD)	97.3	108.6
Median Market Cap	12.6	7.6
Largest Stock by Market Cap	503.8	503.8
<b>Fundamental Characteristics</b>		
Price/Book	2.8	2.6
Dividend Yield (%)	2.3	1.9
P/E	18.2	19.3
Price/Cash Flow	12.2	12.3
Price/Sales	1.8	1.9
Top 10 Holdings	R1000 HEFI Low	R1000 Index
Exxon Mobil Corp	2.53	2.25
Apple Inc	1.87	2.61
Johnson & Johnson	1.72	1.43
Chevron Corp	1.46	1.19
Proctor & Gamble Co	1.41	1.14
Pfizer Inc	1.40	1.11
Berkshire Hathaway Inc	1.36	1.16
International Business Machine Corp	1.32	1.04
AT&T Inc	1.25	0.98
Microsoft Corp	1.24	1.77
<b>Total</b>	<b>15.6%</b>	<b>14.7%</b>



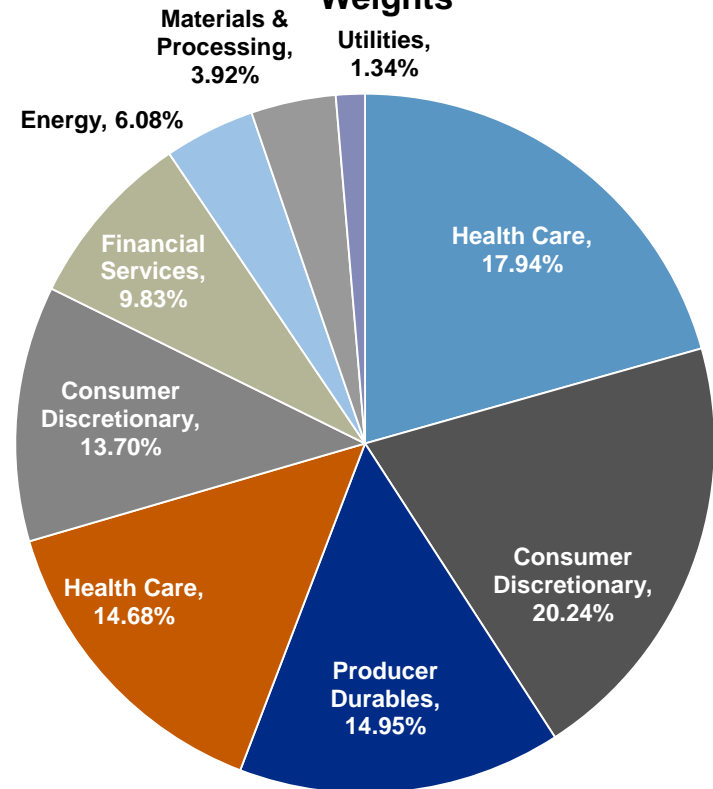
As of 2/28/2014

# Russell 1000 HEFI - Momentum

## Snapshot as of March 31, 2014

Statistics	R1000 HEFI-Mom	R1000 Index
Number of Holdings	510	1,016
<b>Capitalization Statistics (in billions)</b>		
Average Market Cap (\$-WTD)	76.9	108.6
Median Market Cap	8.9	7.6
Largest Stock by Market Cap	503.8	503.8
<b>Fundamental Characteristics</b>		
Price/Book	2.7	2.6
Dividend Yield (%)	1.4	1.9
P/E	20.8	19.3
Price/Cash Flow	13.3	12.3
Price/Sales	1.8	1.9
Top 10 Holdings	R1000 HEFI-Mom	R1000 Index
Microsoft Corp	0.95	1.77
Google Inc	0.90	1.55
Johnson & Johnson	0.76	1.43
General Electric Co	0.76	1.39
JPMorgan Chase & Co	0.70	1.19
Wells Fargo & Co	0.66	1.24
Berkshire Hathaway Inc	0.63	1.16
Pfizer Inc	0.62	1.11
Novartis AG	0.62	0.00
Roche Holdings AG	0.59	0.00
<b>Total</b>	<b>7.2%</b>	<b>10.8%</b>

### R1000 HEFI - Momentum – RGS Sector Weights



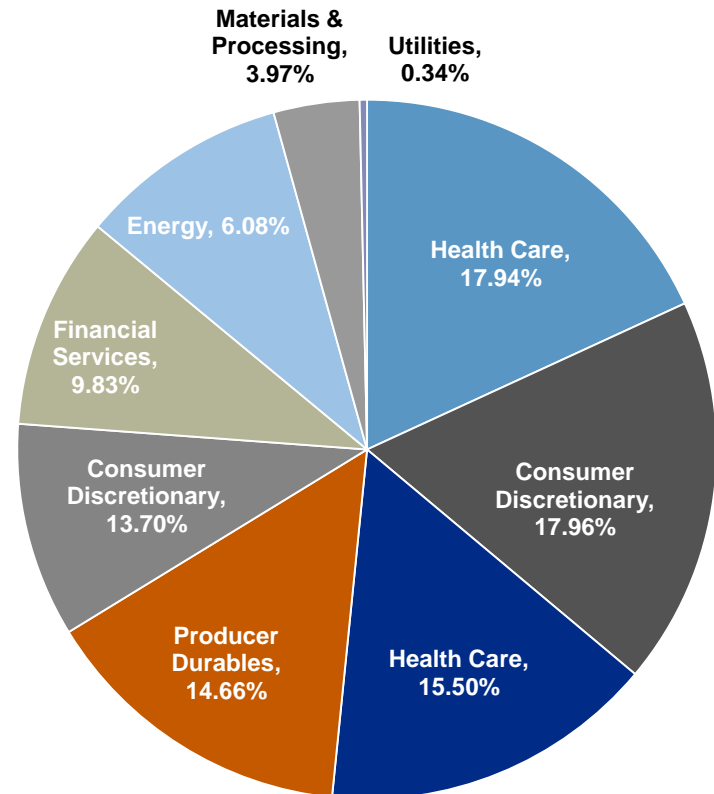
As of 2/28/2014

# Russell 1000 HEFI - Quality

## Snapshot as of March 31, 2014

Statistics	R1000 HEFI-Qual	R1000 Index
Number of Holdings	511	1,016
<b>Capitalization Statistics (in billions)</b>		
Average Market Cap (\$-WTD)	97.0	108.6
Median Market Cap	10.0	7.6
Largest Stock by Market Cap	503.8	503.8
<b>Fundamental Characteristics</b>		
Price/Book	3.4	2.6
Dividend Yield (%)	1.7	1.9
P/E	19.4	19.3
Price/Cash Flow	13.5	12.3
Price/Sales	1.9	1.9
Top 10 Holdings	R1000 HEFI-Qual	R1000 Index
Apple Inc	2.72	2.61
Exxon Mobil Corp	2.42	2.25
Microsoft Corp	1.79	1.77
Google Inc	1.57	1.55
Johnson & Johnson	1.44	1.43
Chevron Corp	1.27	1.19
Pfizer Inc	1.25	1.11
Proctor & Gamble Co	1.24	1.14
International Business Machine Corp	1.20	1.04
Berkshire Hathaway Inc	1.17	1.16
<b>Total</b>	<b>16.1%</b>	<b>15.3%</b>

**R1000 HEFI - Quality – RGS Sector Weights**

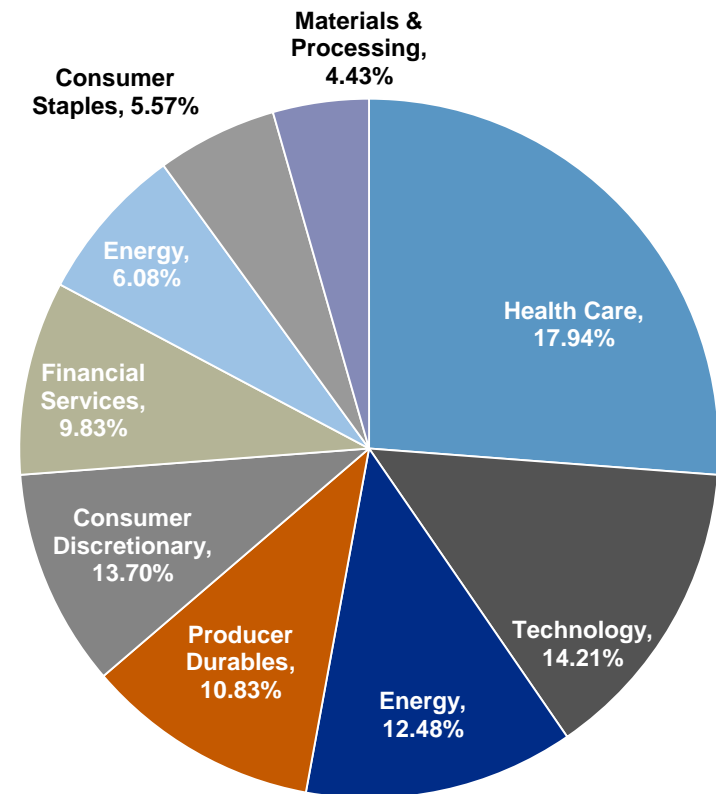


As of 2/28/2014

# Russell 1000 HEFI - Value Snapshot as of March 31, 2014

Statistics	R1000 HEFI-Val	R1000 Index
Number of Holdings	526	1,016
<b>Capitalization Statistics (in billions)</b>		
Average Market Cap (\$-WTD)	93.1	108.6
Median Market Cap	7.7	7.6
Largest Stock by Market Cap	503.8	503.8
<b>Fundamental Characteristics</b>		
Price/Book	1.9	2.6
Dividend Yield (%)	2.1	1.9
P/E	15.9	19.3
Price/Cash Flow	10.3	12.3
Price/Sales	1.5	1.9
Top 10 Holdings	R1000 HEFI-Val	R1000 Index
Apple Inc	2.64	2.61
Exxon Mobile Corp	2.45	2.25
Microsoft Corp	1.78	1.77
General Electric Co	1.57	1.39
Wells Fargo & Co	1.42	1.24
JPMorgan Chase & Co	1.41	1.19
Chevron Corp	1.37	1.19
Berkshire Hathaway Inc	1.35	1.16
Pfizer Inc	1.33	1.11
Procter & Gamble Co	1.06	1.14
<b>Total</b>	<b>16.4%</b>	<b>15.1%</b>

**R1000 HEFI - Value – RGS Sector Weights**



As of 2/28/2014

# Applications and research directions

- › Use factor indexes selectively to reduce unwanted risks or enhance desired risks.
  - › Example: Use HE Momentum Index to offset anti-momentum bias in Russell Fundamental Index.
- › Combine HE indexes into a multi-factor portfolio
  - › Static mix of HE indexes, e.g., Value and Momentum
  - › Dynamic mix of factors – beyond indexing into active quant