

Alternative Indexation



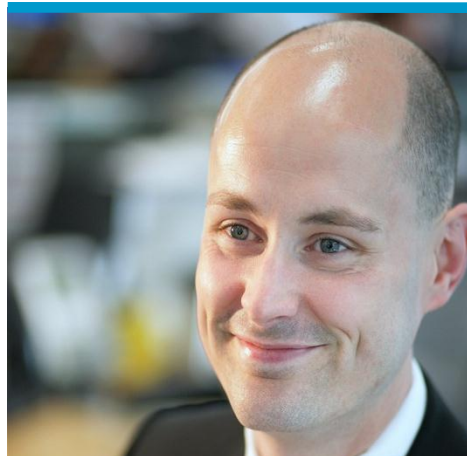
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Understanding your requirements

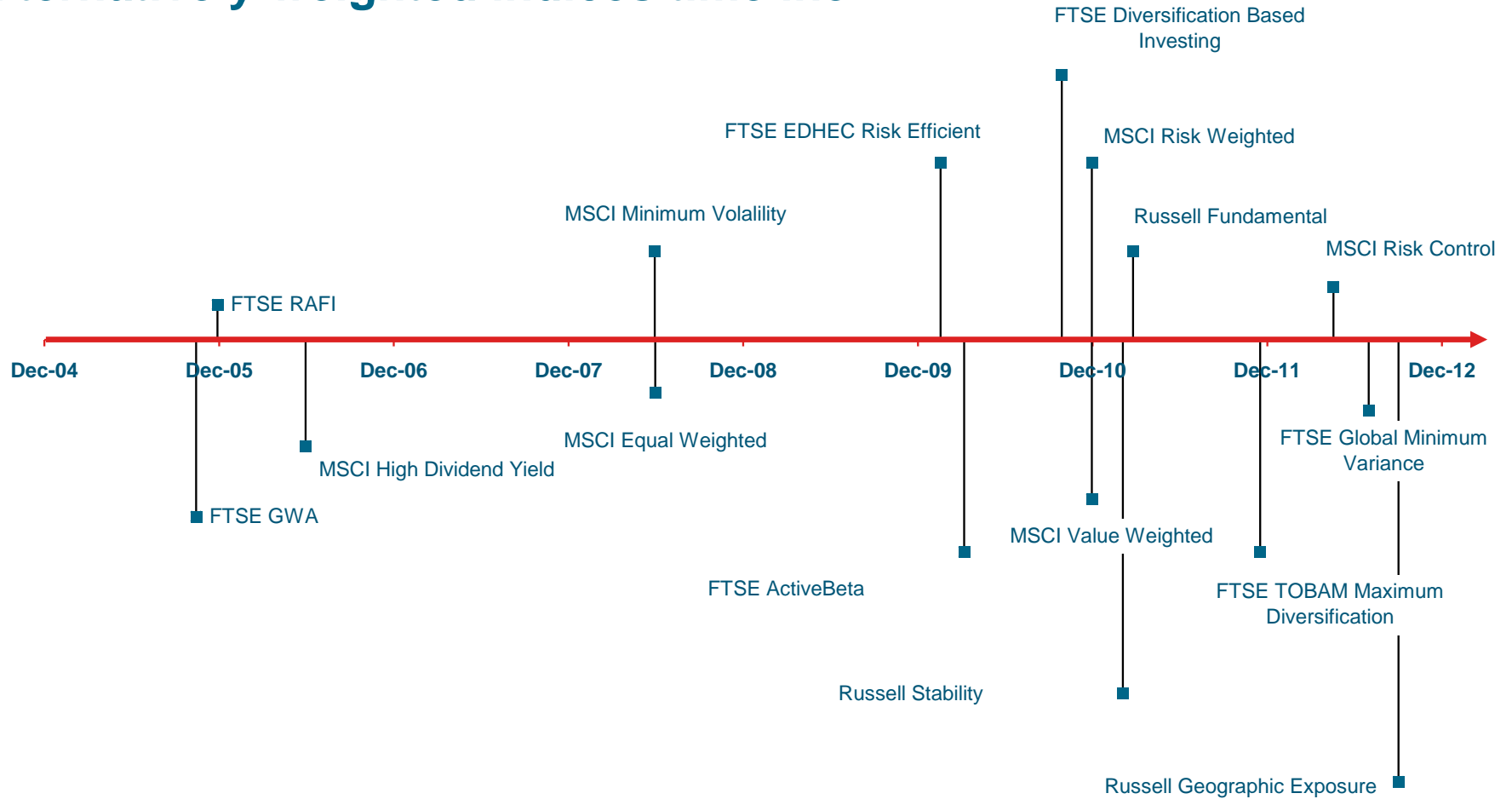
Your objective

- To understand the pros and cons of the alternative indexation products that LGIM currently offers

Our solution

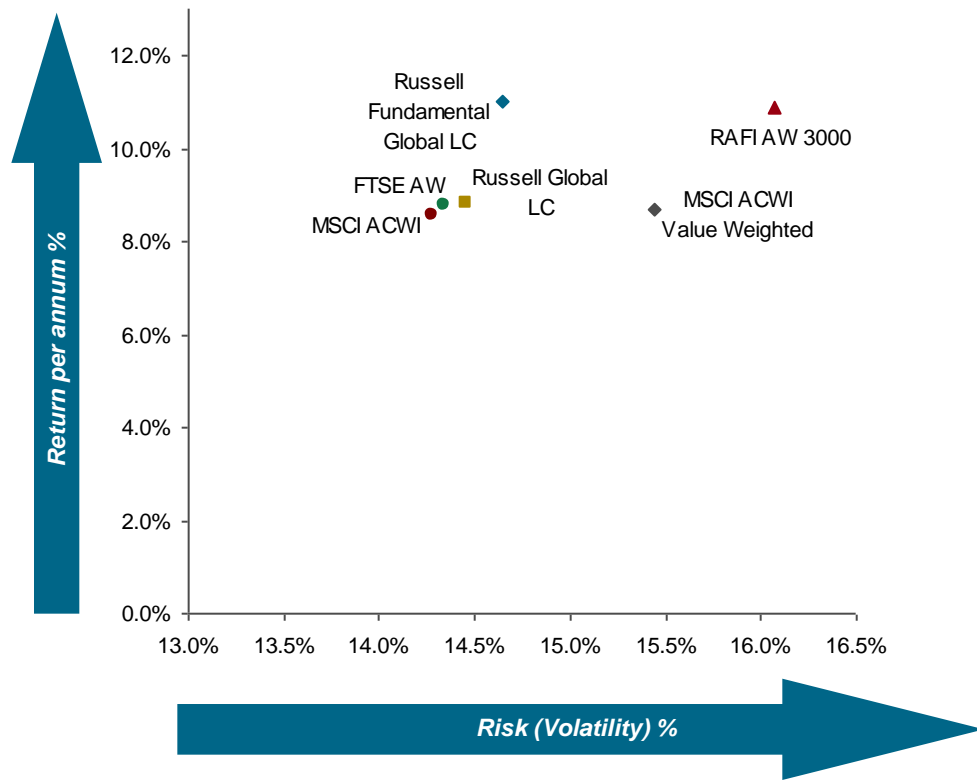
- FTSE-RAFI All World 3000 Equity Index Fund
- Benchmark: FTSE RAFI AW 3000 Index

Alternatively-weighted indices timeline



Fundamental vs. Market Capitalisation Weighted Indices

Risk Return Profile



Fund	Return	Risk	Return per unit of risk
Russell Fundamental Global LC	11.0%	14.7%	0.75
RAFI AW 3000	10.9%	16.1%	0.68
FTSE AW	8.8%	14.3%	0.61
Russell Global LC	8.8%	14.5%	0.61
MSCI ACWI Value Weighted	8.7%	15.4%	0.56
MSCI ACWI	8.6%	14.2%	0.60

Source: Russell / FTSE / MSCI / Datastream: GBP Total Return Indices from Dec 03 to Dec 13

Past performance is no guarantee of future results

Alternatively-weighted indices

- These indices have grown in popularity with the increase in demand for alternative beta investment strategies
- Positive tilt towards 'value' and a negative tilt towards 'momentum'
- Exposure to these indices can provide a systematic 'active' element whilst maintaining the key advantages of index management.
- Cost efficient way of implementing an 'active' value strategy.
- LGIM has been a major provider of alternative funds from all major index providers for over 6 years.
- LGIM's scale and expertise helps to mitigate the higher portfolio turnover evidenced over market cap weighted indices.

Potential Benefits of Fundamental Weight Indexing

- **Diversified exposure**
- **High capacity**
- **Transparency & index oversight**
- **Clearly published rules & underlying data**
- **Free-float adjusted**
- **Liquidity screened**
- **Active manager selection not required**

Comparison of fundamentally weighted indices

- Weight companies by their economic footprint rather than their market cap
- Positive tilt towards 'value'
- A diversified disciplined way of managing a value based portfolio of equities

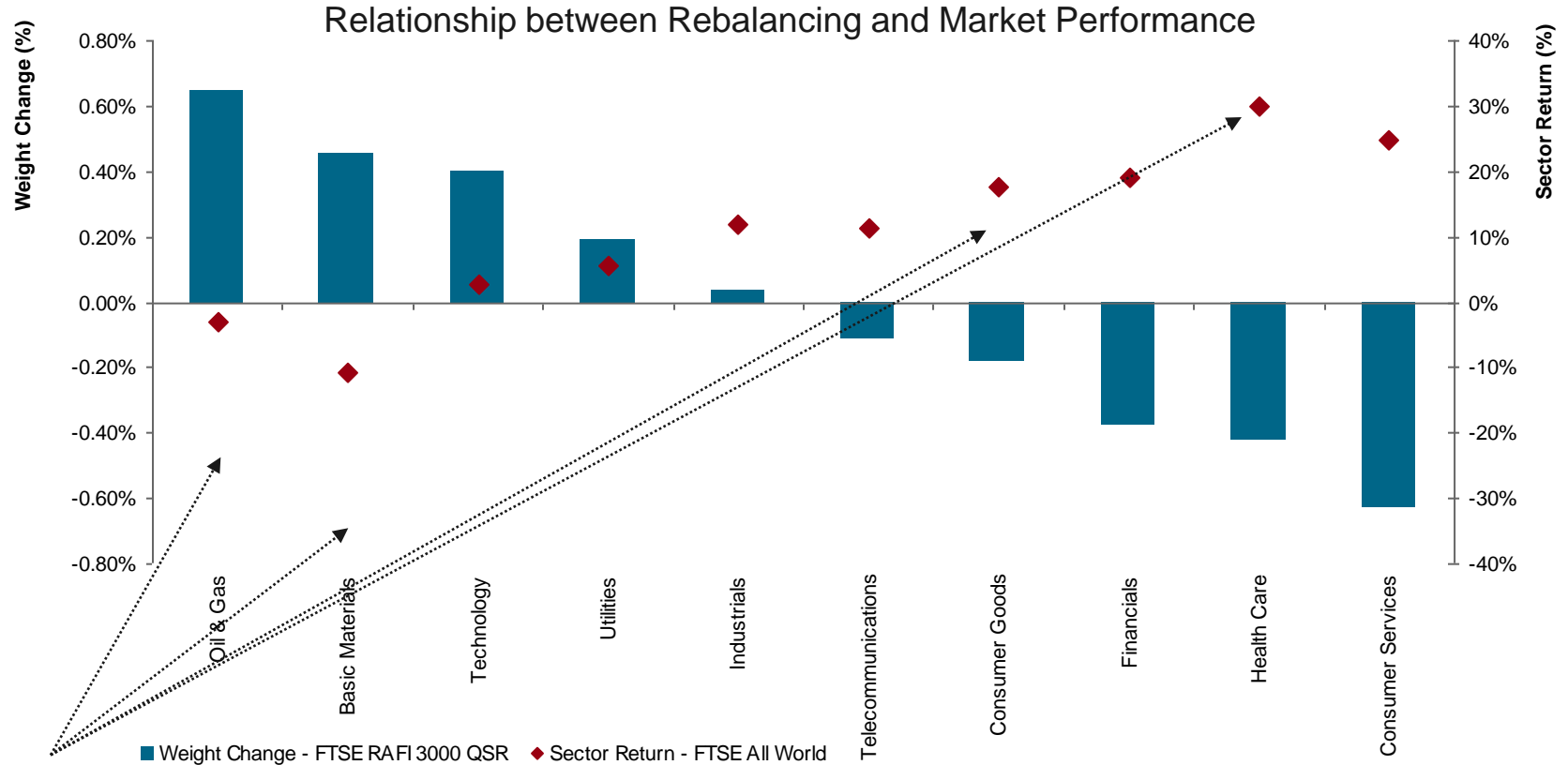
Comparison of market cap & fundamentally weighted indices

	Market Cap	FTSE RAFI	MSCI Value Weighted	Russell Fundamental
Stock Selection Methodology	Shares Price X Shares in issue X Free Float	Five year average data for: (i) sales (ii) cashflow (iii) book value (iv) dividends	Three year average data for : (i) sales (ii) cashflow (iii) book value (iv) earnings	Five year average data for : (i) sales (ii) cashflow (iii) dividends
Turnover	Low	Medium	Medium	Medium
Rebalancing Frequency	Quarterly	Annual (QSR)	Semi-annual	Annual (QSR)
Universe	FTSE	Sub-set of FTSE GEIS	Reweighting of MSCI Market Cap Parent	Russell 3000



N.B. An additional fee is payable for the use of these indices for the intellectual property rights to track the index.

Contrarian rebalancing – March 2013 FTSE RAFI AW 3000 Rebalance



Tends to under-weight a market that is over-bought and vice versa. i.e. avoiding potential bubbles

Alternatively Weighted – LGIM Offering

- Growing demand for alternatively weighted indices

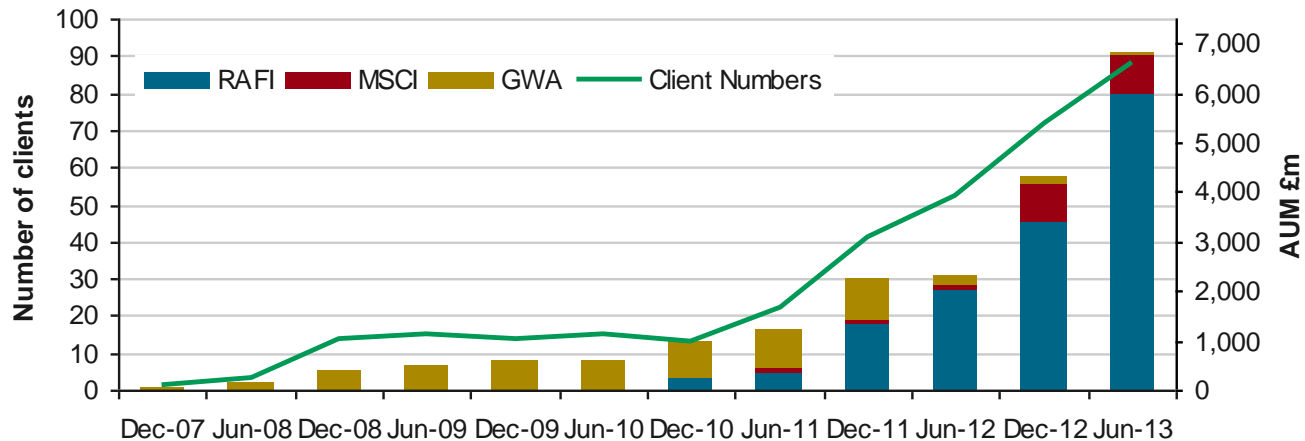
Index	AUM (£m)	Launch Date
FTSE RAFI All-World 3000	5,040	Oct-2010
FTSE RAFI All-World Developed 3000	98	Oct-2011
FTSE RAFI Developed 1000	917	Oct-2011
FTSE RAFI Emerging Markets	802	Oct-2011
FTSE RAFI Dev North America	137	Nov-2012
FTSE RAFI Dev Europe ex UK	91	Nov-2012
MSCI Developed World Value Weighted	159	Jan-2011
MSCI ACWI Value Weighted	563	Sep-2012
MSCI High Dividend Yield	410	Apr-2013
Russell Geo Exposure	156	Aug-2013
Russell Fundamental	252	Nov-13
Russell Defensive	251	Nov-13



LGIM – Manager of choice for alternatively weighted indices

- Managing fundamentally weighted index strategies since 2006
- Over £7bn in fundamentally weighted index strategies
- Leading global position as manager of FTSE RAFI Indices, c.25% market share
- Range of Global & Regional funds available

Growth of Fundamentally Weighted Index Funds



Source: LGIM

Philosophy and investment approach

Tracking performance of FTSE RAFI & flagship regional funds to 31 December 2013

FTSE RAFI Funds	1 yr %	2 yrs % p.a.	3 yrs % p.a.	Since Inception % p.a.
FTSE RAFI 3000	+0.35	+0.28	+0.22	+0.23
FTSE RAFI Dev 1000	+0.12	+0.15	n/a	+0.14
FTSE RAFI Emerging Markets	+0.16	+0.11	n/a	+0.23

Flagship Market Cap Funds	1 yr %	2 yrs % p.a.	3 yrs % p.a.	5 Year % p.a.
UK	+0.19	+0.15	+0.15	+0.22
North America	+0.05	+0.05	+0.05	+0.11
Europe ex UK	+0.13	+0.13	+0.18	+0.27
Japan	+0.14	+0.14	+0.15	+0.16
Asia Pacific ex Japan (Dev)	+0.10	+0.10	+0.09	+0.37
Emerging Markets	+0.18	+0.18	+0.15	+0.16

All comparisons before fees. Annual performance for rolling 12 months ending 30 September. *Since inception (October 2005). Cumulative performance to 30 September 2013. Performance is against the funds' benchmarks. More details available on request.

Past performance is no guarantee of future results

Investment Mandate

Investment Fund	Market Index	Benchmark %	Ranges %	Position at 31 Dec 2013 %
North America Equity Index	FTSE AW - Devd N America	16.0	14.75 - 17.25	16.6
Europe (ex UK) Index-GBP Hdgd	FTSE AW - Devd Europe (ex UK) - Ste Hdg	16.0	14.75 - 17.25	16.7
Japan Equity Index	FTSE AW - Japan	1.0	0.50 - 1.50	1.1
Japan Equity Index-GBP Hedged	FTSE AW - Japan - Ste Hdg	3.5	3.00 - 4.00	3.9
Asia Pac exJap Dev Eqty Index	FTSE AW - Devd A-Pac (ex Japan)	6.5	6.00 - 7.00	6.2
Global Emerging Markets Index	S&P/IFCI Composite	7.5	6.75 - 8.25	7.3
Over 15y Gilts Index	FTSE A UK Gilts > 15 Years	5.0	4.50 - 5.50	4.8
Invnt Grade Cp Bnd All Stks Ind	Markit iBoxx GBP Non-Gilts (All Stocks)	29.5	27.50 - 31.50	29.1
Over 5y Index-Linked Gilts	FTSE A Index-Linked > 5 Years	10.0	9.00 - 11.00	9.7
EM Passive Local Ccy Govt Bond	JP Morgan Gvmt Bond Index - Emerging Mkts - Global Diversified	5.0	4.50 - 5.50	4.6
Total		100.0		100.0

Continuous monitoring. Cash flow used to tighten distribution. Automatic rebalancing

Activity & Valuation as at 31 December 2013

Investment Fund	Mid Value at 31 Dec 2012		New Money	Encashments	Switches Out	Switches In	Mid Value at 31 Dec 2013		Bmk %
	GBP	%					GBP	GBP	
North America Equity Index	-	-	-	-	(10,424,293)	115,328,732	126,460,650	16.6	16.0
Japan Equity Index	6,815,950	1.0	-	-	-	-	8,529,301	1.1	1.0
Asia Pac exJap Dev Eqty Index	14,351,623	2.1	-	-	(3,708,405)	37,219,135	47,510,351	6.2	6.5
Global Emerging Markets Index	54,269,189	7.8	-	-	(356,202)	2,610,000	55,166,286	7.3	7.5
Over 15y Gilts Index	32,883,600	4.7	-	-	-	5,910,094	36,684,904	4.8	5.0
Over 5y Index-Linked Gilts	67,790,485	9.7	-	-	-	5,712,306	73,894,215	9.7	10.0
Inv't Grade Cp Bnd All Stks Ind	203,152,700	29.1	-	-	-	15,492,463	220,014,803	29.1	29.5
Japan Equity Index-GBP Hedged	27,445,892	3.9	-	-	(9,208,578)	-	29,878,734	3.9	3.5
Europe (ex UK) Index-GBP Hdgd	115,017,658	16.5	-	-	(14,369,064)	-	127,349,181	16.7	16.0
N America Eq Index-GBP Hedged	109,652,640	15.7	-	-	(115,328,732)	-	-	-	-
A/Pac exJap Dev Index-GBP Hdgd	32,328,469	4.6	-	-	(33,301,474)	-	-	-	-
EM Passive Local Ccy Govt Bond	34,466,084	4.9	-	-	-	4,424,018	34,892,334	4.6	5.0
Total	698,174,290	100.0	-	-	(186,696,748)	186,696,748	760,380,759	100.0	100.0

Performance

Periods to 31 December 2013

Investment Sector Fund	3 Months		1 Year		3 Years		Tracking Target ±% p.a. *
	Fund %	Dev %	Fund %	Dev %	Fund % p.a.	Dev % p.a.	
North America Equity Index	+7.5	+0.0	n/a	n/a	n/a	n/a	±0.50
Japan Equity Index	+0.0	-0.1	+25.1	+0.2	n/a	n/a	±0.50
Asia Pac exJap Dev Eqty Index	-1.1	+0.1	+2.5	+0.1	n/a	n/a	±0.75
Global Emerging Markets Index	-0.1	+0.0	-2.7	-0.1	-3.3	+0.2	±1.50
Over 15y Gilts Index	-1.8	+0.0	-5.9	+0.0	+6.9	+0.0	±0.25
Over 5y Index-Linked Gilts	-0.9	+0.0	+0.6	+0.0	+7.7	+0.1	±0.25
Inv Grade Cp Bnd All Stks Ind	+0.0	+0.0	+0.7	-0.2	+6.9	+0.1	±0.50
Japan Equity Index-GBP Hedged	+9.2	-0.1	+53.0	+0.1	+14.4	+0.1	±0.50
Europe (ex UK) Index-GBP Hdgd	+6.6	+0.0	+24.8	+0.1	+9.4	+0.1	±0.50
EM Passive Local Ccy Govt Bond	-3.7	+0.1	-10.8	+0.0	n/a	n/a	±0.50
Total Assets	+2.1	+0.0	+8.9	+0.1	+7.4	n/a	n/a

- for two years in three

Past performance is no guarantee of future results



Appendix



Russell Fundamental vs. FTSE RAFI

Top 10 Securities

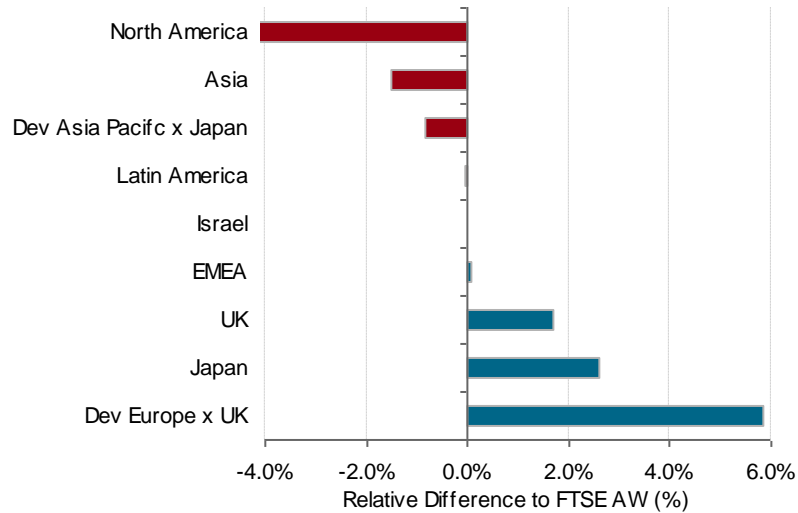
Top 10 - Russell Fundamental Global LC			Top 10 - RAFI AW 3000			Top 10 - FTSE All World		
Sedol	Name	Weight	Sedol	Name	Weight	Sedol	Name	Weight
2326618	Exxon Mobil Corp	2.22%	2326618	Exxon Mobil Corporation	1.20%	2046251	Apple Inc.	1.40%
0798059	BP PLC	1.16%	0798059	BP	0.94%	2326618	Exxon Mobil Corporation	1.22%
2838555	Chevron Corp	1.07%	2295677	Bank of America	0.90%	B020QX2	Google Class A	0.86%
B15C557	Total SA	0.98%	B16GWD5	Vodafone Group	0.82%	2380498	General Electric	0.79%
2831811	AT&T Inc	0.89%	2380498	General Electric	0.81%	2588173	Microsoft Corp	0.78%
B09CBL4	Royal Dutch Shell PLC A Shs	0.88%	2831811	AT&T	0.76%	2475833	Johnson & Johnson	0.70%
2588173	Microsoft Corp	0.86%	B15C557	Total	0.75%	2838555	Chevron	0.67%
2685717	ConocoPhillips	0.85%	2838555	Chevron	0.73%	2649100	Wells Fargo & Company	0.67%
B16GWD5	Vodafone Group PLC	0.75%	0540528	HSBC Hldgs	0.72%	7123870	Nestle	0.66%
2380498	General Electric Co	0.69%	2190385	JPMorgan Chase & Co	0.71%	2190385	JPMorgan Chase & Co	0.62%

Source: Russell / FTSE – 31 Dec 2013

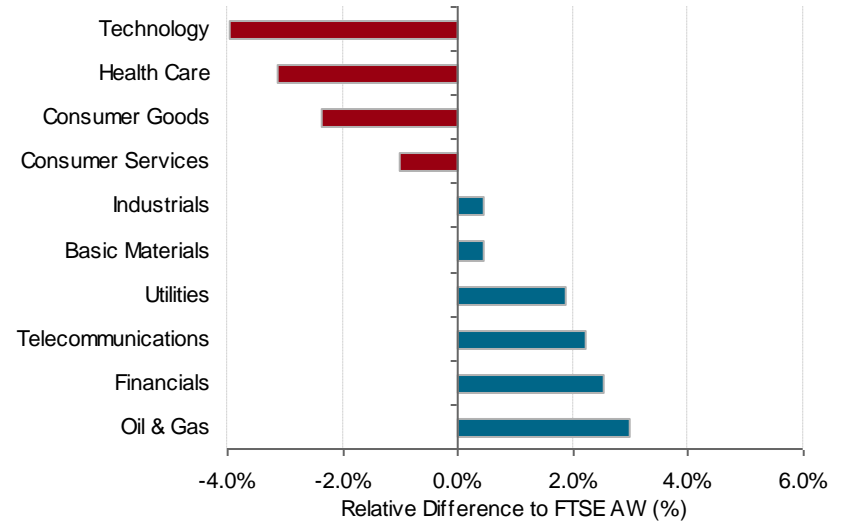
RAFI AW 3000

Relative Allocation to FTSE All World

Region Comparison



Sector Comparison

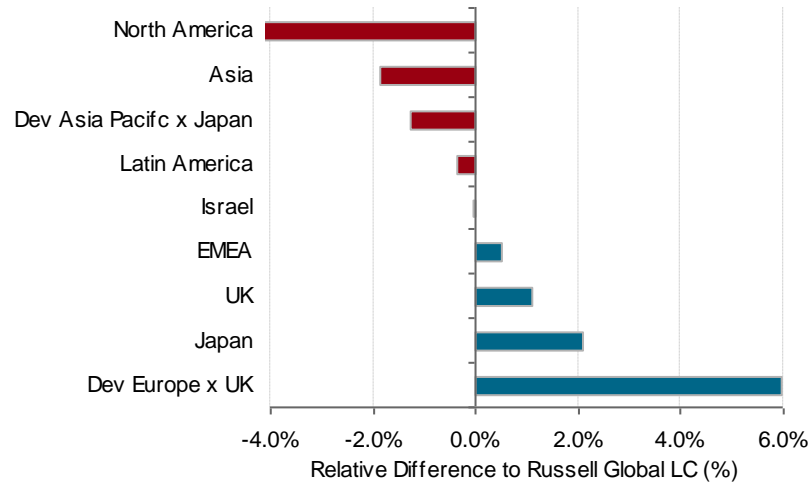


Source: FTSE – 31 Dec 2013

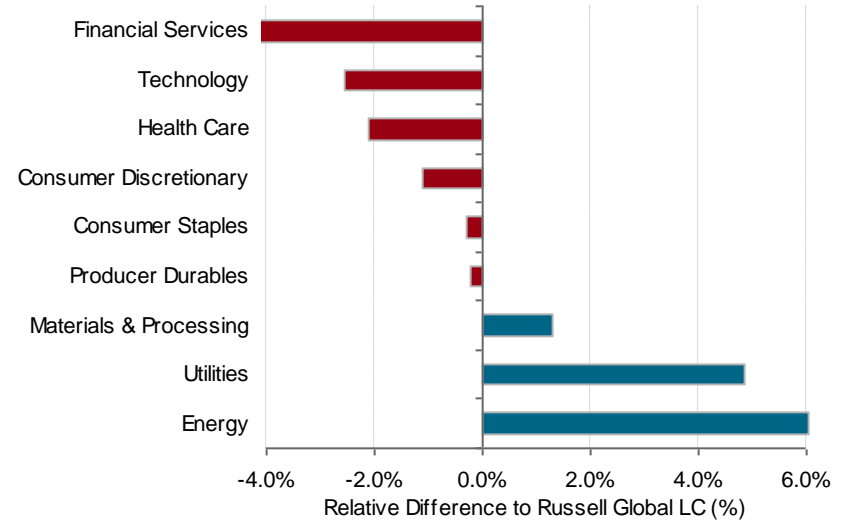
Russell Fundamental Global LC

Relative Allocation to Russell Global LC

Region Comparison



Sector Comparison

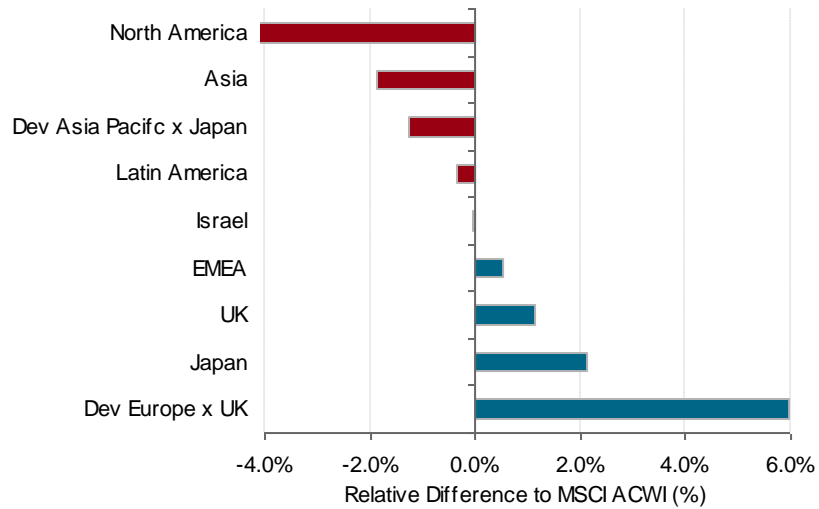


Source: Russell – 31 Dec 2013

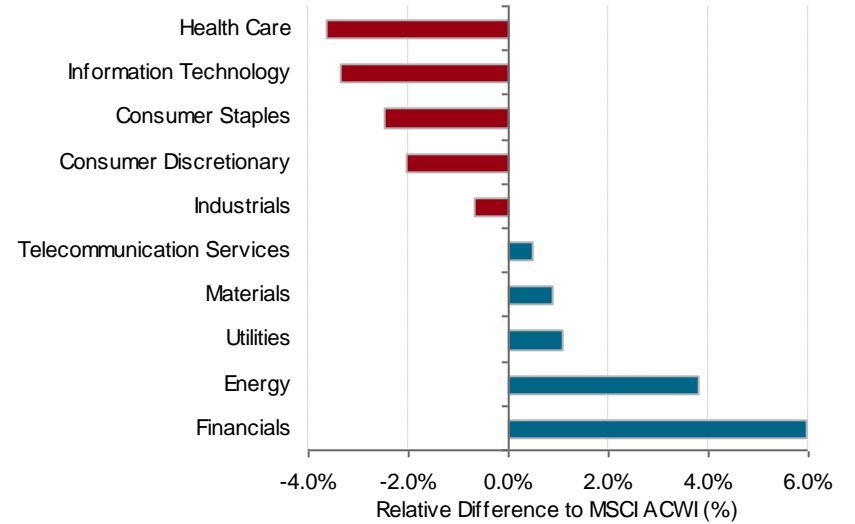
MSCI ACWI Value Weighted

Relative Allocation to MSCI ACWI

Region Comparison



Sector Comparison



Source: MSCI – 31 Dec 2013

Russell Fundamental vs. FTSE RAFI

Security Distribution

Index	Russell Fundamental Global LC		RAFI AW 3000		FTSE All World	
Index Weight	Count	Index Weight	Count	Index Weight	Count	Index Weight
< 0.02%	639	9.1%	2059	18.2%	1,851	13.9%
0.02% - 0.05%	573	18.1%	530	16.5%	567	17.8%
0.05% - 0.10%	224	15.9%	212	14.9%	247	17.2%
0.10% - 0.25%	158	23.8%	154	23.4%	156	23.8%
0.25% - 0.50%	43	14.6%	40	13.4%	41	13.9%
0.50% - 1.00%	19	12.5%	16	11.2%	17	10.8%
1.00% - 2.00%	3	3.8%	2	2.4%	2	2.6%
> 2.00%	1	2.2%	0	0.0%	0	0.0%
Total	1660	100.0%	3013	100.0%	2,881	100.0%

Source: Russell / FTSE – 31 Dec 2013

RAFI 3000

Top 10 Under / Over Weight relative to FTSE All World

Top 10 - Overweight		
Sedol	Name	Weight
B03MLX2	Royal Dutch Shell	0.56%
0798059	BP	0.53%
2295677	Bank of America	0.43%
5705946	Banco Santander	0.42%
B15C557	Total	0.41%
5732524	Telefonica	0.39%
B16GWD5	Vodafone Group	0.29%
2685717	ConocoPhillips	0.28%
5176177	Orange	0.25%
7145056	Eni	0.25%

Top 10 - Underweight		
Sedol	Name	Weight
2046251	Apple Inc.	-1.05%
B020QX2	Google Class A	-0.66%
2588173	Microsoft Corp	-0.37%
2000019	Amazon.Com	-0.35%
B7TL820	Facebook Class A	-0.28%
7110388	Roche Hldgs (GENUS)	-0.28%
2475833	Johnson & Johnson	-0.26%
2369174	Gilead Sciences	-0.26%
B2PZN04	Visa	-0.25%
2206657	Coca-Cola	-0.25%

Source: FTSE – 31 Dec 2013

Russell Fundamental Global LC

Top 10 Under / Over Weight relative to Russell Global LC

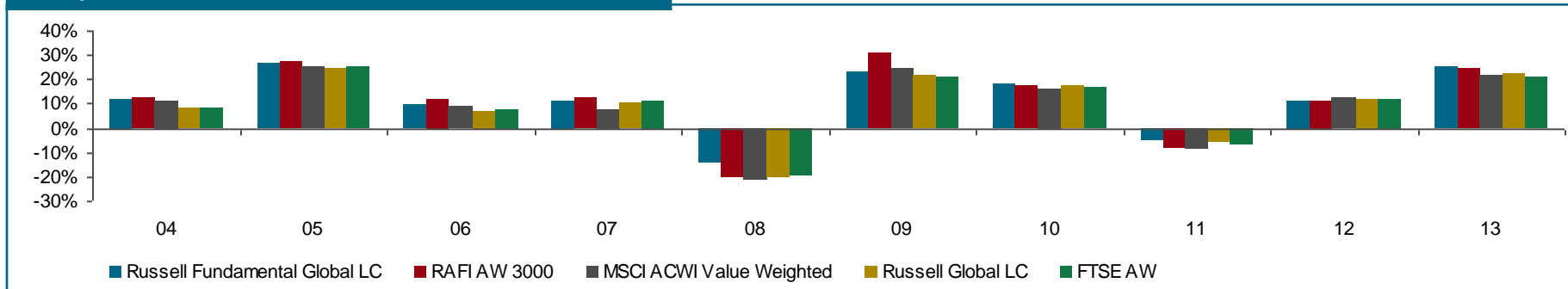
Top 10 - Overweight		
Sedol	Name	Weight
2326618	Exxon Mobil Corp	1.05%
B09CBL4	Royal Dutch Shell PLC A	0.91%
0798059	BP PLC	0.76%
2685717	ConocoPhillips	0.62%
B15C557	Total SA	0.61%
2838555	Chevron Corp	0.44%
2424006	Hewlett-Packard Co	0.43%
2831811	AT&T Inc	0.40%
5732524	Telefonica SA	0.36%
5176177	Orange	0.33%

Top 10 - Underweight		
Sedol	Name	Weight
2046251	Apple Inc	-1.06%
B020QX2	Google Inc	-0.62%
2000019	Amazon.com Inc	-0.33%
2073390	Berkshire Hathaway Inc	-0.26%
B2PZN04	Visa Inc	-0.26%
7110388	Roche Holding AG	-0.24%
2714923	QUALCOMM Inc	-0.22%
B121557	Mastercard Inc	-0.20%
2369174	Gilead Sciences Inc	-0.19%
7103065	Novartis AG	-0.19%

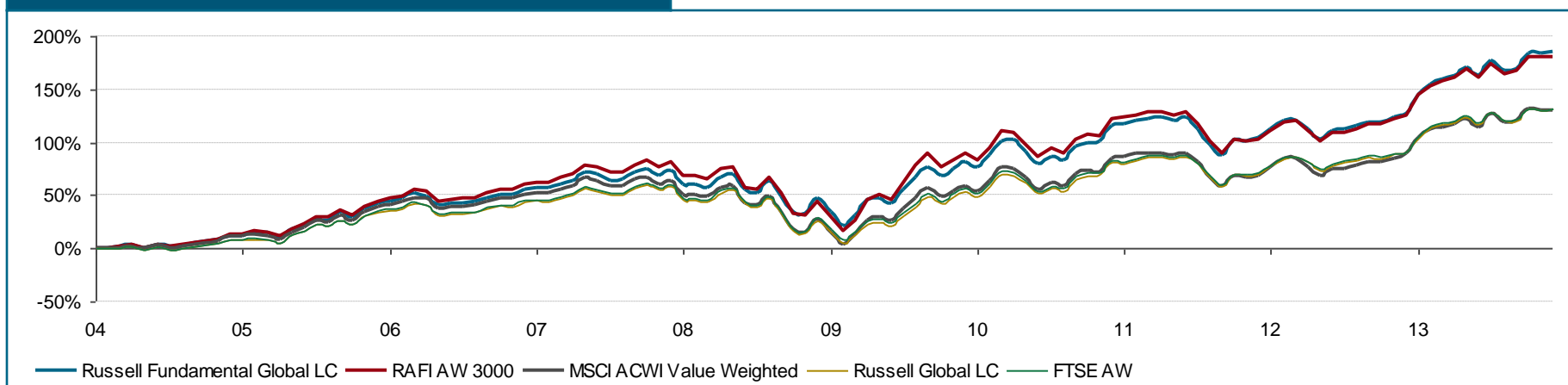
Source: Russell – 31 Dec 2013

Fundamental vs. Market Capitalisation Weighted Indices Performance Comparison

Yearly Performance



Cumulative Performance

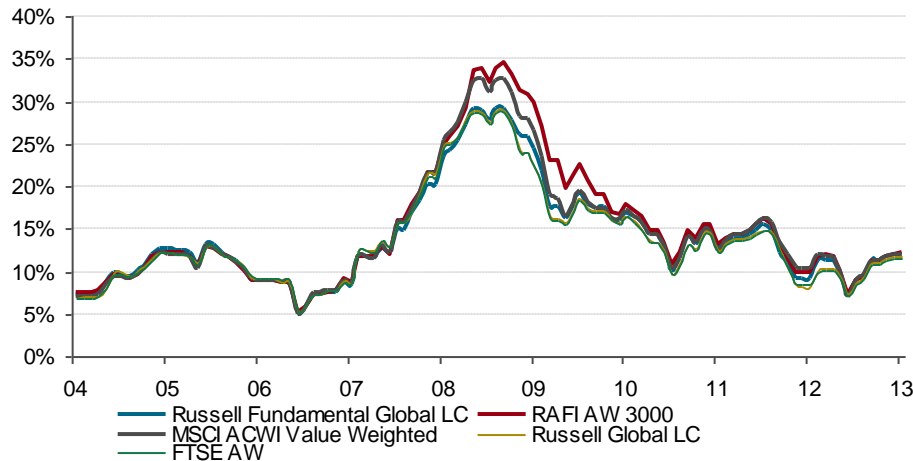


Source: Russell / FTSE / MSCI / Datastream: GBP Total Return Indices from Dec 03 to Dec 13

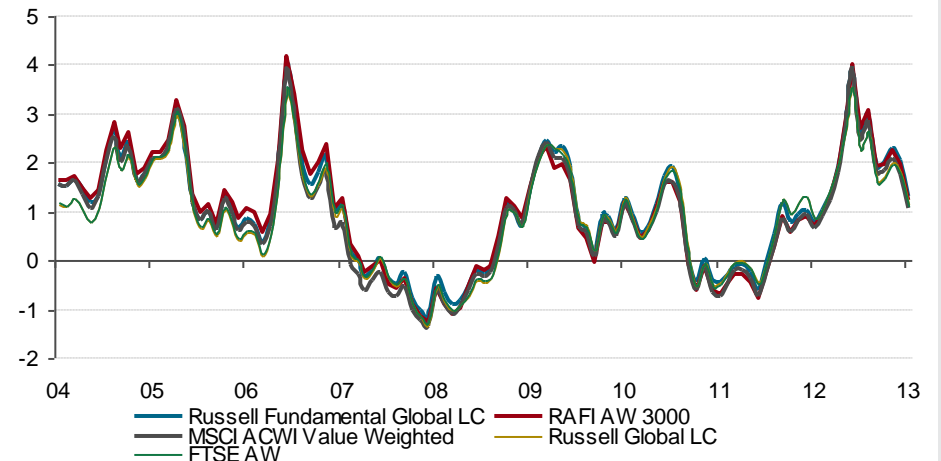
Past performance is no guarantee of future results

Fundamental vs. Market Capitalisation Weighted Indices Performance Comparison

12 M Rolling Volatility



12 M Rolling Risk Return Ratio



Source: Russell / FTSE / MSCI / Datastream: GBP Total Return Indices from Dec 03 to Dec 13

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Advantages and disadvantages of capitalisation-weighted indices

Advantages

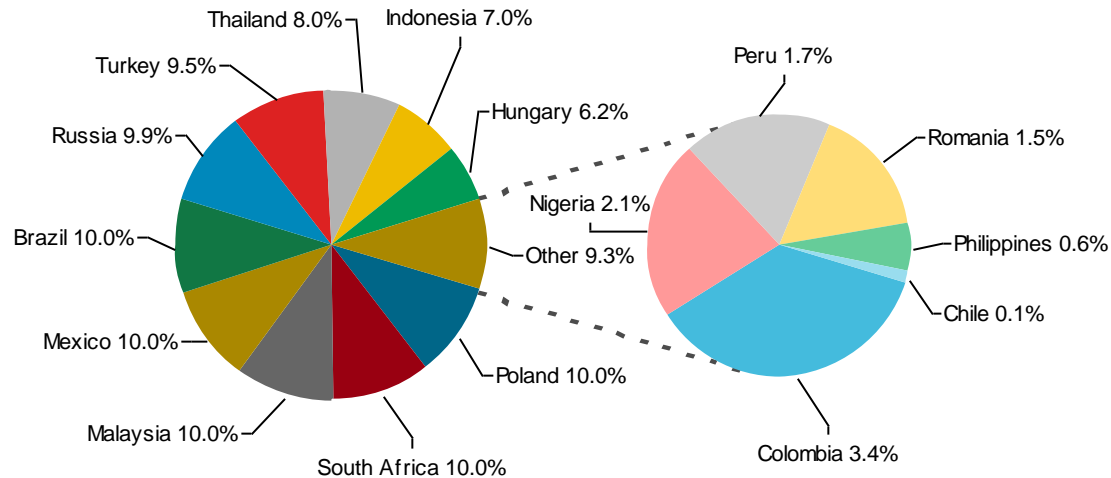
- Clear and easily understood
- Provides, in theory, maximum diversification
- Easily traded – sufficient liquidity
- Low transaction costs
 - Self re-balancing
- As a portfolio – low cost strategy

Disadvantages

- The theory is imperfect
 - The market may not always be efficient
- Always overweight overvalued shares
 - Tech stock at end 90s
 - Financial stocks in 00s
- Always underweight undervalued shares
- Can lead to concentration

Index characteristics – Local Currency

- JPMorgan GBI-EM Global Diversified – Local Currency Index
 - Investable index only including countries accessible to majority of international investors (excludes China and India)
 - Diversification rules limit country weights to 10% at each rebalancing point
 - Index typically rebalanced on a monthly basis



Yield to maturity (%)	6.7
Duration (years)	4.7
Market value £bn	561
No. of securities	183
No. of countries	16

Source: LGIM internal as at 31 December 2013

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Each fund managed by the Index Team will seek to track the performance of a particular benchmark index, that benchmark index will dictate which asset classes, geographic domiciles and market sectors the Fund can gain exposure to. For example the UK Small Companies Fund will only gain exposure to shares issued by small companies listed on the London Stock Exchange, as represented by the FTSE Small Cap Index. Each asset class, geographic domicile and market sector will carry a different risk profile. Therefore both you and your Investment Consultant should always consult the Key Features Document and Description of Funds to understand the exact risks associated with each Index Tracking Fund prior to any investment.