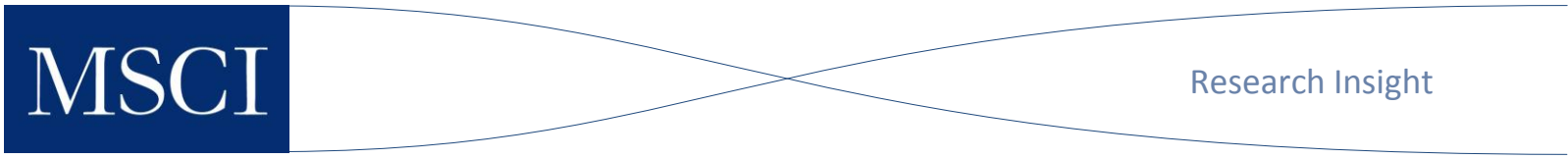

Research Insight

Demystifying Equal Weighting

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Introduction

The idea of accessing risk premia through the use of index-based funds and ETFs has been gaining momentum in recent years. MSCI Risk Premia Indices aim to reflect well-known equity premia to stock characteristics such as value, size, or momentum. Among the risk premia indices, equally-weighted indices are some of the oldest and most well-known. In this paper, we revisit the rationale behind equal weighting and profile their recent performance.

Investing in Risk Premia

Portfolio returns have traditionally been attributed to a combination of passive market exposure and active portfolio management. Any return in excess of the market return was considered added value from active management. More recently, many return components that were considered added value (alpha) are increasingly being recognized as risk premia (beta). Systematic risk premia such as value, size or momentum can account for a substantial part of long-term institutional portfolio performance. Over the last few years, we have seen the development of many new indices that reflect systematic risk premia, opening up the possibility to capture risk premia through indexation.

Risk premia strategies can be classified into two broad categories reflecting two primary ways for achieving superior risk-adjusted performance: (1) risk-based strategies aim to lower risk or improve diversification; and (2) return-based strategies aim to tilt towards a specific factor.

MSCI Risk Premia Indices for each category are shown in Exhibit 1. For additional detail on MSCI Risk Premia Indices, we refer to Melas, Briand, and Urwin (2011).

Exhibit 1: MSCI Risk Premia Indices

Risk-Based Indices	Return-Based Indices
MSCI Equal Weighted Indices •Equal allocation across parent index constituents	MSCI GDP Weighted Indices •Index country weights based on nominal GDP
MSCI Risk Weighted Indices •Weights based on the inverse of historical variance	MSCI Value Weighted Indices •Weighted according to sales, earnings, cash flow, and book value
MSCI Minimum Volatility Indices •Constructed using minimum variance optimization	MSCI Factor Indices •Constructed using long/short portfolio optimization to capture Barra risk factors

One important point is that risk premia appear to exhibit time variation. As shown in Melas, Briand, and Urwin (2011), systematically tilting an equity portfolio towards any one fundamental factor does not guarantee long-term outperformance over the market portfolio. Rather, risk premia are better combined with one another for diversification.

As seen in Exhibit 1, we categorize equal weighted indices as a risk-based index.[1] Later on, we will see that over the January 1999 to March 2012 time period, equal-weighted versions for MSCI flagship indices such as the MSCI EAFE and Emerging Markets Indices have historically delivered significantly enhanced returns over their cap weighted counterparts.

Why Equally Weight Stocks?

Academics and practitioners have long studied the potential benefits of equal weighting.[2] The equal weighting scheme is simple—an investor holds the same dollar value in each stock so that each stock represents an equal part of the value of the portfolio. Many institutional money managers, for example, will often equally weight the stocks they select. There are a range of reasons that have been proposed for why equally weighting a broad universe of stocks may outperform a cap weighted portfolio. The four main explanations are:

(1) ***Take advantage of inefficient markets:*** If investors are irrational and prone to over-optimism with respect to high-flying stocks, and over-pessimism for beaten-down stocks, then market cap weighting reflects those inefficiencies through its definition as shares times price. Equal weighting on the other hand does not suffer from this issue.

(2) ***Avoid concentrating too much of the portfolio into a few large stocks:*** Market cap weighting can result in a large part of the portfolio concentrated in a few names which may not be desirable from the perspective of concentration risk. Equal weighting, on the other hand, avoids this issue.

(3) ***Get more exposure to smaller cap stocks compared to cap weighting:*** By construction, stocks with smaller market cap get lower weights in a market cap weighting scheme. This can be good (as they may be riskier) or bad (as they have historically had stronger performance). Equal weighting a portfolio assigns more capital to these smaller cap stocks. Conversely, equal weighting also assigns less capital to larger stocks.

(4) ***Build in disciplined rebalancing that takes account of mean reversal in stock returns:*** A market cap weighted portfolio evolves naturally and in theory never has to be rebalanced (if the portfolio constituents remain constant). Equal weighted portfolios are rebalanced at a chosen frequency (e.g. daily, weekly, monthly) and tend to sell recent winners and buy recent losers.[3] In between rebalancing dates, stock weights will fluctuate with prices. Thus, an equally weighted portfolio builds in disciplined rebalancing which takes advantage of mean reversal in stock

[1] As with all risk premia strategy indices, equal weighted portfolios are a special case of mean-variance optimal portfolios. The assumptions for equal weighted indices are that the expected returns and volatilities for all stocks are the same and the correlations between all stocks are zero. Melas, Briand, and Urwin (2011) categorize these indices as risk-based strategy indices because there are no expected return assumptions.

[2] Empirical support for the performance of equal weighted portfolios relative to cap weighted indices include Lessard (1976), Roll (1981), Ohlson and Rosenberg (1982), Breen et al. (1989), Grinblatt and Titman (1989), Korajczyk and Sadka (2004), Hamza et al. (2007) and Pae and Sabbaghi (2010). Furthermore DeMiguel et al. (2007) show the strong performance relative to optimized portfolios.

[3] If the portfolio is re-weighted daily, and no names enter or leave the portfolio, then the weight for each stock remains the same. To maintain this constant weight, shares would have to be sold or bought daily since prices are constantly changing, thus affecting the weight of the stock in the portfolio. Because broker-dealers set the cost of trading, rebalancing daily in small amounts is generally not efficient so in practice, equal weighted portfolios are not rebalanced daily. They tend to be rebalanced at a longer frequency, which forms an implicit contrarian strategy.

returns and locks in recent gains/losses.[4] Between rebalancing dates, the stocks whose prices go up by the most tend to expand in weight the most. These recent winners are then sold off at the next rebalancing date. On the flip side, the stocks whose prices decrease the most tend to shrink in weights the most.[5]

From the perspective of the risk premia framework, the third rationale above (smaller cap exposure) is the most well understood and widely accepted, whereas the other three rationale may be capturing types of risk premia that are less well documented.[6]

Historical Performance and Characteristics

Exhibit 2 demonstrates the significant outperformance of the equal weighted versions of the MSCI EAFE and Emerging Markets Indices. The indices garnered 2.7% and 1.6%, respectively, of additional annual returns relative to their cap weighted parent indices from December 31, 1998 through May 24, 2012.

Exhibit 2: Select Equal Weighted Indices Have Outperformed Cap Weighted Indices Since 1998
(Cumulative Relative Returns of Equal Weighted Indices Relative to Their Market Cap Weighted Parent Indices, Gross Daily Returns, December 31, 1998 to May 24, 2012)

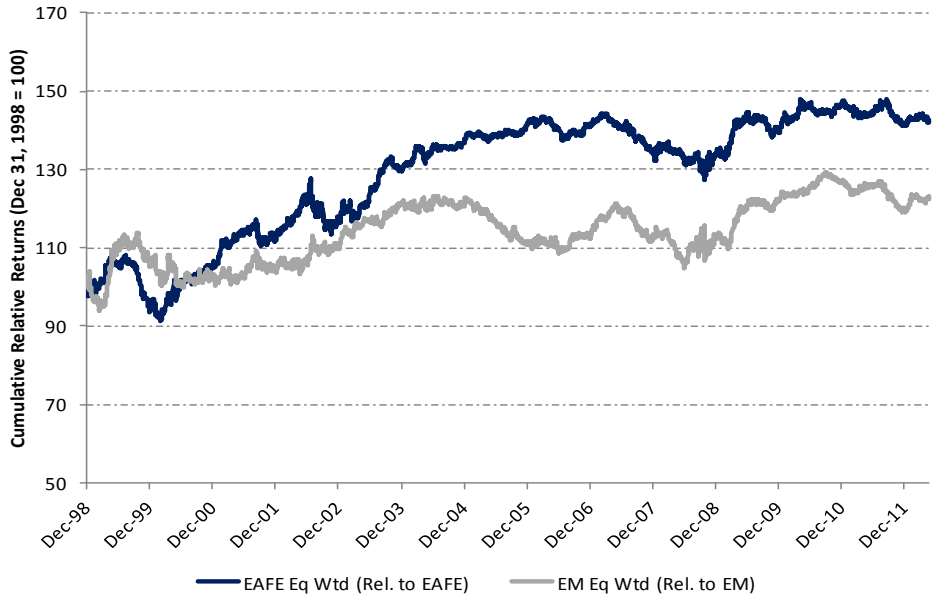


Exhibit 2 also highlights sub-periods when the MSCI Equal Weighted Indices underperformed and outperformed their cap weighted parent indices. The periods of underperformance include September 1999 to March 2000, July 2002 to October 2002, March 2008 to October 2008, and September 2011 to

[4] The impact of rebalancing has been documented in a number of papers. Perold and Sharpe (1995) examined the benefitsof rebalancing from a strategic asset allocation perspective. By comparing different strategies, they conclude that a constant-mix (rebalanced) approach tends to outperform a buy-and-hold (unrebalanced) strategy when markets are characterized more by reversals than by trends. Interested readers can also refer to papers by Bernstein (1996a), (1996b) and Bernstein and Wilkinson (1997).

[5] In theory there is an optimal rebalancing frequency that takes into account the natural momentum and reversal cycle in most stocks. Moreover, the rebalancing frequency should take into account the turnover at each rebalancing date and the cost of trading.

[6] For instance, the first rationale may be capturing a risk premia that arises from behavioral biases and is essentially a premium to stocks that have been overbought or oversold whereas the fourth rationale might be capturing a premium to contrarian stocks over certain frequencies.

December 2011. For the most part these were periods just before and at the onset of major market corrections. Periods of strong performance immediately followed those above: March 2000 to July 2002, February 2003 to July 2007, and November 2008 to September 2010.

Exhibit 3 summarizes return and additional metrics for the MSCI Equal Weighted Indices and their cap weighted counterparts.

- MSCI Equal Weighted Indices universally outperformed their cap weighted parent indices historically over the last 12+ years with the exception of Latin American Emerging Markets
- The volatility (standard deviation) of monthly returns was somewhat higher for most regions but return-to-risk ratios were significantly higher[7]
- MSCI Equal Weighted Indices tended to have betas and correlations that were close to 1

Exhibit 3: Performance Summary
(Gross Index Monthly Returns, January 29, 1999 to May 31, 2012)

	Annualized Return		Annualized Risk		Return-to-Risk Ratio		Beta of Equal Weighted to Cap Weighted	Correlation Btwn Equal Weighted and Cap Weighted
	Cap Wtd	Equal Wtd	Cap Wtd	Equal Wtd	Cap Wtd	Equal Wtd		
ACWI	2.9%	8.6%	17.1%	19.6%	0.17	0.44	1.09	0.95
EAFE	2.4%	5.7%	18.2%	18.7%	0.13	0.30	0.99	0.96
EM	11.4%	13.9%	24.7%	24.8%	0.46	0.56	0.98	0.97
Europe ex UK								
UK	2.0%	3.7%	21.7%	23.4%	0.09	0.16	1.05	0.97
Pacific	2.1%	5.3%	22.0%	20.1%	0.09	0.26	1.07	0.93
Japan	9.8%	12.1%	22.0%	22.3%	0.45	0.54	0.99	0.97
USA	2.5%	6.5%	16.4%	18.7%	0.15	0.35	1.09	0.95
Canada	2.2%	5.6%	16.2%	18.9%	0.13	0.30	1.11	0.95
EM Asia	10.4%	11.1%	22.5%	21.0%	0.46	0.53	0.86	0.92
EM EMEA	9.7%	11.1%	25.8%	26.7%	0.38	0.41	1.00	0.96
EM Latin America	15.8%	5.7%	29.0%	33.8%	0.55	0.17	0.93	0.80

One of the reasons raised by proponents of equal weighting is to circumvent concentration risk, i.e., holding too much of the portfolio in a single stock or set of stocks. In Exhibit 4, we compare the weights of the ten largest companies in the market cap weighted versus the equal weighted versions of the MSCI EAFE and Emerging Markets Indices. Large companies such as Nestle and HSBC in EAFE, and Samsung Electronics and Taiwan Semiconductor in Emerging Markets were allocated significantly smaller weights in the equal weighted indices as of June 1, 2012.[8]

[7] When daily returns are used instead of monthly returns for calculating standard deviations, over the same period, volatilities are instead lower for equal weighted indices than cap weighted indices with the exception of the US, UK, and Latin America. This suggests that serial correlation in daily returns can have an important impact in evaluating the risk of the two types of indices.

[8] Whether one wants to underweight these names depends on the investor's own beliefs. Behavioralists might argue that large weights in these names are risky if investors are irrational and those higher valuations are not permanent.

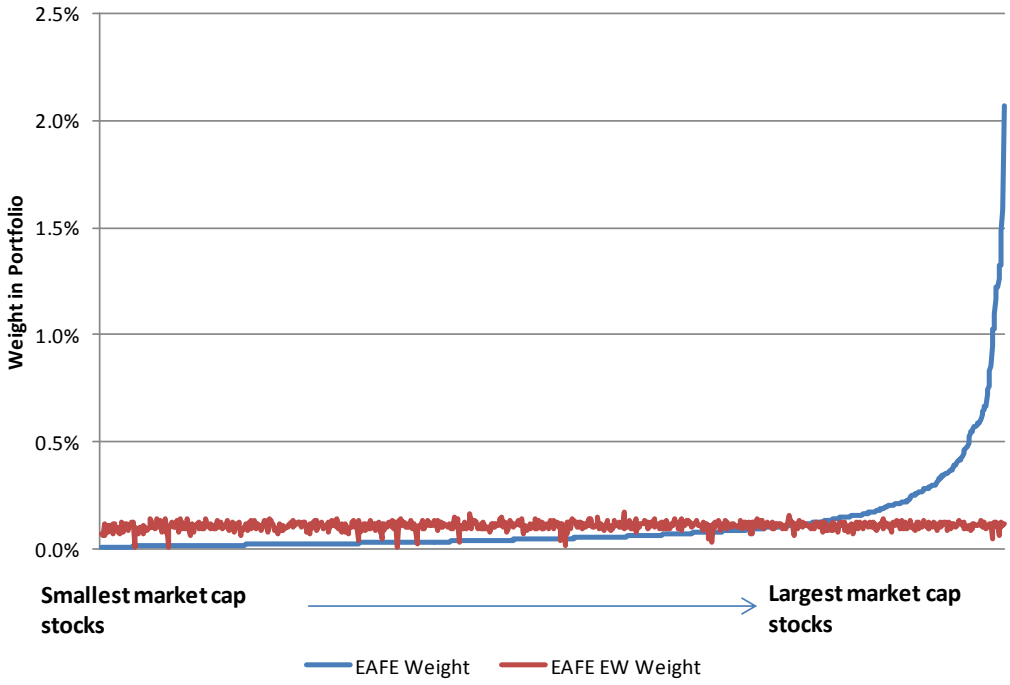
Exhibit 4: Equal Weighting Reduces the Concentration in Big Names
(Index Constituents as of June 1, 2012)

MSCI EAFE Index			MSCI Emerging Markets Index		
Top 10 Companies	**Weight in Cap Wtd**	**Weight in Eql Wtd**	**Top 10 Companies**	**Weight in Cap Wtd**	**Weight in Eql Wtd**
NESTLE	2.07%	0.11%	SAMSUNG ELECTRONICS CO	3.48%	0.12%
HSBC HOLDINGS (GB)	1.56%	0.11%	TAIWAN SEMICONDUCTOR MFG	2.15%	0.12%
VODAFONE GROUP	1.47%	0.11%	CHINA MOBILE	1.87%	0.12%
NOVARTIS	1.32%	0.11%	CHINA CONSTRUCTION BK H	1.53%	0.12%
BP	1.28%	0.11%	GAZPROM (RUB)	1.44%	0.12%
ROYAL DUTCH SHELL A	1.26%	0.11%	AMERICA MOVIL L	1.42%	0.12%
GLAXOSMITHKLINE	1.24%	0.11%	PETROBRAS PN	1.22%	0.12%
ROCHE HOLDING GENUSS	1.21%	0.11%	ICBC H	1.21%	0.12%
TOYOTA MOTOR CORP	1.18%	0.11%	VALE PNA	1.12%	0.12%
BHP BILLITON LTD	1.11%	0.11%	ITAU UNIBANCO PN	1.01%	0.12%
Sum	10.99%	0.62%	Sum	16.45%	1.24%

Exhibit 4 also shows the aggregate weights of the ten largest index constituents, highlighting the top-heavy characteristic of a capitalization weighted scheme.

Another well-known characteristic of equally weighted portfolios is that they tend to overweight smaller cap stocks. By construction, equal weighted indices have a lower weighted market cap (a tilt towards smaller cap stocks) since they give more weight to stocks at the lowest end of the market cap range and less weight to stocks at the highest end of the market cap range. This is illustrated in Exhibit 5 which compares the weights across the capitalization spectrum resulting from the two weighting schemes.

Exhibit 5: Equal Weighting Tilts Towards Smaller Cap Stocks
(Weights Resulting from Cap Weighting vs. Equal Weighting for MSCI EAFE, June 1, 2012)



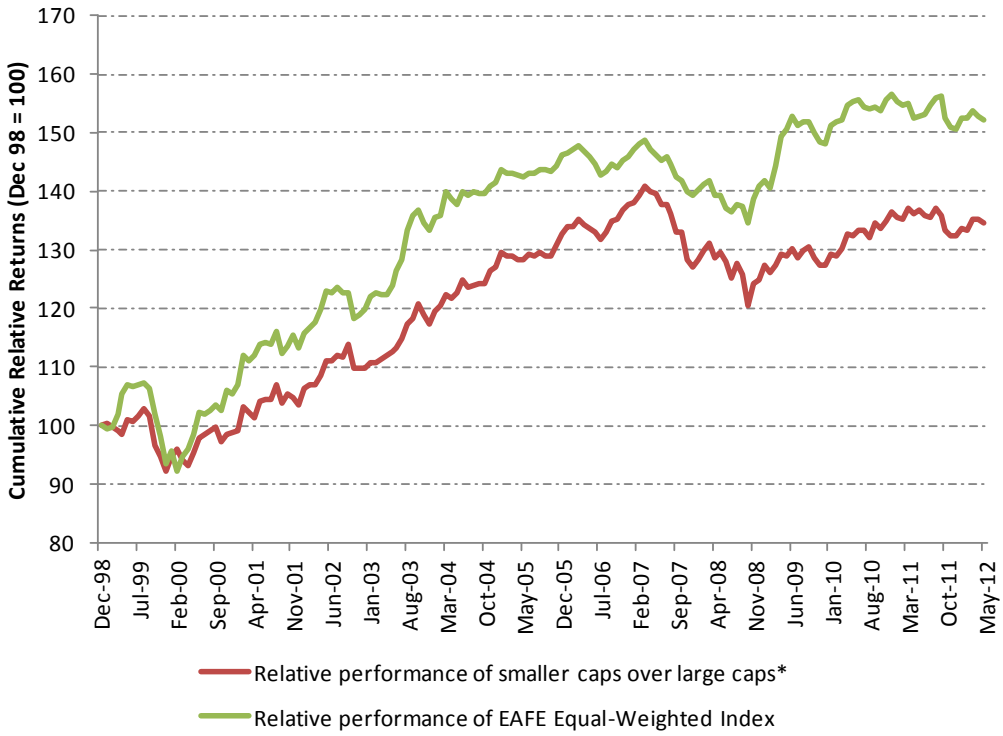
One reason why the MSCI Equal Weighted Indices performed better over the observed period is because of this smaller cap bias. Smaller cap stocks outperformed larger cap stocks over the last decade. For instance, the MSCI EAFE Small Cap and Mid Cap Indices earned 6.9% and 4.2% annualized returns, respectively over the period January 1999 to May 2012, while the MSCI EAFE Large Cap Index only returned 1.9%.[9] In the next section, we quantify how much return arises from this effect.

What Drives Performance?

The impact of the tilt towards smaller cap names is strong. Exhibit 6 shows the relative performance of the MSCI EAFE Equal Weighted Index alongside the relative returns of smaller over large caps. There is a very high correlation of 0.73 between the relative returns.

[9] The MSCI ACWI Small Cap and Mid Cap Indices earned 7.8% and 6.1% annualized returns, respectively during the period January 1999 to May 2012 while the MSCI ACWI Large Cap Index returned 2.3%.

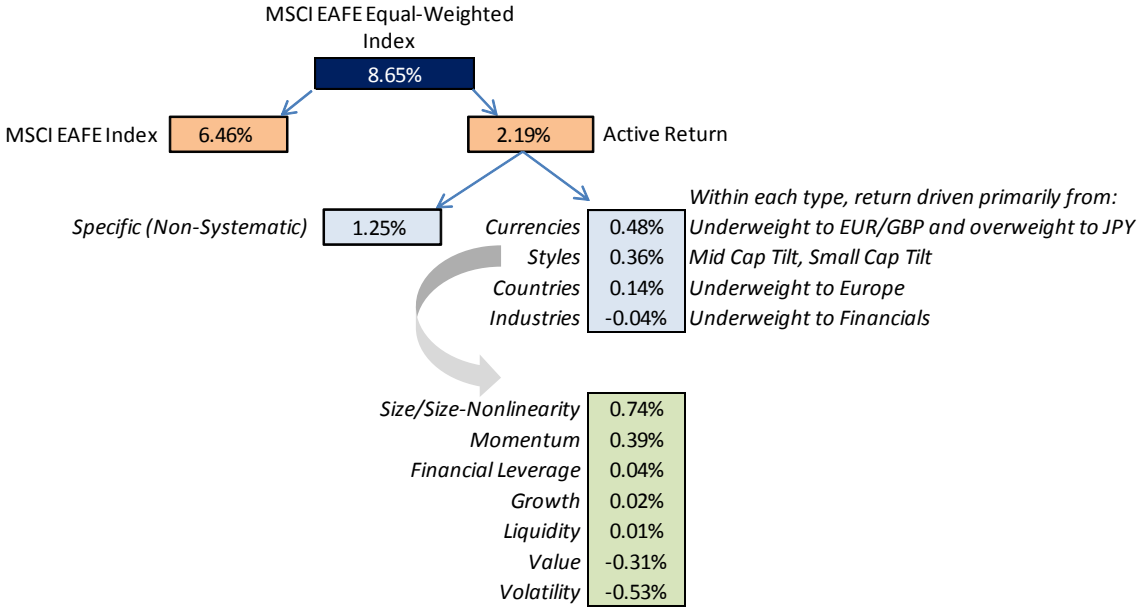
Exhibit 6: The Performance of Equal Weighted Indices Is Tied to the Performance of Smaller Cap Stocks (Relative Monthly Gross Returns, January 1999 to May 2012)



* Relative returns are (1) the returns of the EAFE Equal Weighted Index minus the returns of the EAFE Index; and (2) the returns of the EAFE Large Cap Index minus the returns of the EAFE Mid Cap Index. The MSCI EAFE and EAFE Equal Weighted Indices contain only large and mid caps (defined according to the MSCI Global Investable Market Index (GIMI) methodology) thus explaining why we use the EAFE Mid Cap Index (instead of the EAFE Small Cap Index) as a comparison to large caps.

Since the correlation between the two series shown in Exhibit 6 is not perfect (equal to 1), clearly there are other drivers of return at work in equal weighted indices. Using a factor model to attribute sources of return is a well-established way to understand the return drivers of a portfolio or index. Moreover, if there is an explicit factor capturing the effect of market cap size, we can quantify precisely how much return is derived from the smaller cap tilt. Exhibit 7 shows the annualized 10-year return of the MSCI EAFE Equal Weighted Index broken down into various component factors. (Note that the components directly sum up.)

Exhibit 7: Sources of Return (Annualized Return From Each Source Using Barra Global Equity Model, April 2002 to April 2012)



The MSCI EAFE Equal Weighted Index outperformed the MSCI EAFE Index by 2.19% annually over this period. Of that 219 basis points of annual outperformance (the active return shown in Exhibit 7), more than half of it (125 bps) could not be explained by the sources of systematic return in the model (labeled "Specific" in Exhibit 7). Systematic sources of return encompass different types: "Currencies", "Styles" (representing well-known stock characteristics known to be priced[10]), "Countries", and "Industries". While tilts to different currencies, countries, industries and styles all contributed positively to return, they made up less than half of the return. Meanwhile, bundled under the category "Styles", the cap tilts accounted for 74 bps of outperformance. This was a substantial contribution; however it was offset by other style tilts such as an underweight to value stocks. [11]

Ultimately it is the 125 basis points of non-attributable return that remains most intriguing. It is not just that equally weighting stocks picks the right currencies, countries, industries, etc., or that it is capturing a small cap premium in a different way. There appears to be some attribute unique to equal weighting that generates outperformance, perhaps related to one of the other three reasons cited for investing in equally weighted indices or portfolios. This subject deserves further study and is a prime candidate for future research.

[10] The Barra Global Equity Model identifies 8 main style factors: Momentum, Volatility, Value, Growth, Size, Size-Nonlinearity, Leverage, and Liquidity.

[11] Over time, the MSCI EAFE Equal Weighted Index has sometimes shown a greater tilt towards value stocks than the cap weighted parent index, MSCI EAFE: in 2002-2003 and briefly in November 2008 to April 2009. The rest of the time during the April 2002-April 2012 period, it was less tilted towards value stocks.

Conclusion

Equal weighting is one of the earliest alternative weighting schemes to market capitalization weighting. Despite (or because of) the simplicity of the approach, over the January 1999 to March 2012 period, equal weighted versions for MSCI flagship indices such as the MSCI EAFE and Emerging Markets Indices historically delivered significantly enhanced returns over their cap weighted counterparts. Moreover, their volatilities were only slightly higher, producing extremely attractive return-to-risk ratios over the same period. Proponents of equal weighting suggest there are various reasons for these benefits that investors may want to consider. Equal weighting may make sense for investors who wish to take advantage of market price inefficiencies, reduce concentration in their portfolio, get more exposure to smaller cap stocks, and/or build in a disciplined rebalancing process.

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[1] *As of June 30, 2011, based on eVestment, Lipper and Bloomberg data.*