Russell Investments

Russell Research

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The Russell Equal Weight Indexes: An enhancement to equal weight methodology

Over the past few years, market observers have seen increased interest in indexes that use "alternative" weighting methodologies, as contrasted with the traditional market capitalization weighting methodology used by indexes such as the Russell 3000® Index. While market cap weighting is an excellent choice as benchmarks for active management and as the basis of investable products such as passive mutual funds, exchange traded funds (ETFs), futures and options, investor interest in alternative index weighting methodologies, such as equal weighting and fundamental weighting, is growing.

In this paper we provide an overview of some of these alternatives and a broader analysis of equal weighted indexes.

Our paper is organized as follows: we first describe cap weighted, fundamental weighted and equal weighted indexes and compare their characteristics. We then discuss in greater detail the conventional equal weighted index structure and introduce Russell's enhancement to this method: the sector equal weighted index methodology. We compare and contrast the conventional equal weighted methodology to the sector equal weighted indexes and illustrate the benefits that a sector equal weighted index can provide. We then extend this analysis to the international indexes and analyze whether the characteristics observed in the domestic market persist.

Based on our simulations, we find that:

- Equal weighting by constituents, while simple and transparent, introduces sector risk into an index. The Russell Equal Weight Indexes address this risk by equal weighting the sectors, and then equal weighting the constituents within each sector.
- Sector equal weighted indexes provided a better absolute return with lower volatility for the time period tested.
- Indexes equal weighted by sector provided better risk-adjusted returns than a constituent equal weighted index and the respective cap weighted index.

- These results are consistent across the domestic large cap, mid cap and small cap spectrum and the global developed and emerging regions.

Capitalization-weighted indexes

Market cap weighting remains the most popular approach to index construction. Cap weighting is an objective, practical and theoretically grounded weighting scheme: objective, in that market values represent the market's assessment of the relative values of firms; practical, given that a portfolio automatically adjusts its constituent weights as market prices move—fewer rebalancing trades are needed; and theoretically grounded, with its heritage tracing to the capital asset pricing model.

The capital asset pricing model (CAPM) and the efficient market hypothesis (EMH) provide the theoretical bases for cap weighted indexes. The efficient market hypothesis[1] states that asset prices are rationally priced by all investors, who have equal access to relevant information. Thus, the price of a security (and by inference, its market capitalization) reflects its true value, based upon all available information at any given point in time.

The CAPM designates the aggregation of all assets as being the "market portfolio" and states that the market portfolio is efficient, i.e., that it has the highest level of expected return for its level of risk. According to the CAPM, the market portfolio (which holds risk-free assets in some proportion) is the only risky asset portfolio investors need to invest in.

While there is justifiable debate on the validity of the CAPM, the theory establishes the market portfolio as an important baseline methodology. The assumption that cap weighted indexes measure the market portfolio has led to their being considered the best proxies for measuring the performance of a market and of active managers, and it forms the theoretical basis for passive index investing (Christopherson, Carino, Ferson).

Over and above the theoretical basis, weighting the constituents of an index by their market capitalization has many practical advantages that appeal to passive investors. Cap weighted indexes are the only indexes to represent a buy-and-hold strategy and to provide broad market representation at a very low cost within the replicated portfolio. The wide array of ETFs based on cap weighted indexes allows investors to choose exposures to the market that are not available through any other weighting methodology. Because they do not require frequent rebalancing, cap weighted indexes help to keep transaction costs low within the replicated portfolio. Most cap weighted indexes also have an objective and transparent methodology that is simple to understand, construct and track.

Critics of cap weighted indexes point to the fact that basing index constituents' weights on their market capitalization results in the largest securities having the biggest weights in the index, so much so that the contribution of smaller capitalization securities can be minimal. Passive investment based on cap weighting captures the return of the benchmark. But if investors believe markets are not efficient, they must believe it is possible to earn excess return over the benchmark.

While market cap weighting is an excellent choice for passive investable products, there is growing interest in alternative index weighting methodologies. Two leading alternative approaches are fundamental weighted indexes and equal weighted indexes.

Fundamental weighted indexes

Fundamental indexes present an investment strategy based on the premise that market prices cannot reliably represent the underlying value of a company, because markets are

[1] There are three forms of the EMH: The weak form asserts that all past information is fully reflected in the price of a security. The semi-strong form asserts that all publicly available information is fully reflected in the price of a security. The strong form asserts that all information is reflected in the price of a security.

not efficient. Fundamental indexes weight stocks by business metrics such as sales, cash flows, book value, dividends and buybacks (the so-called "Main Street" factors), rather than by the float-adjusted market capitalization[2] of securities.

By weighting stocks on the basis of subjective factors, an index is inherently placing a bet on which companies have greater performance potential than others (see, for example, Blitz and Swinkels). This passive investment strategy has been seen to provide a higher return with lower volatility relative to cap weighting, over sample periods (see Arnott, 2005).

Since fundamental indexes weight securities by a firm's economic fundamentals, critics argue that this creates a value bias within the index. Companies that invest heavily in future growth will tend to have low earnings and therefore have a smaller weight in a fundamental index. This creates a scenario wherein fundamental indexes overweight value stocks and underweight growth stocks.

Fundamental indexes also have target weight allocations that will be violated as the price performance of the constituents produces a shift from the fundamental weights at construction. This causes turnover to be higher in a fundamental index than in a cap weighted index.

Equal weighted indexes

Equal weighting does not attempt to assume a value for a stock—it is indifferent to the value of a stock. Cap weighted indexes assume that the value of a stock is determined correctly by the market. Equal weighting does not consider any information about the stocks within an index; the only relevant information is the number of stocks in the index. The basis of the equal weighting approach is to assign a weight of 1/N to each security in an index, where N is the number of securities in the index.

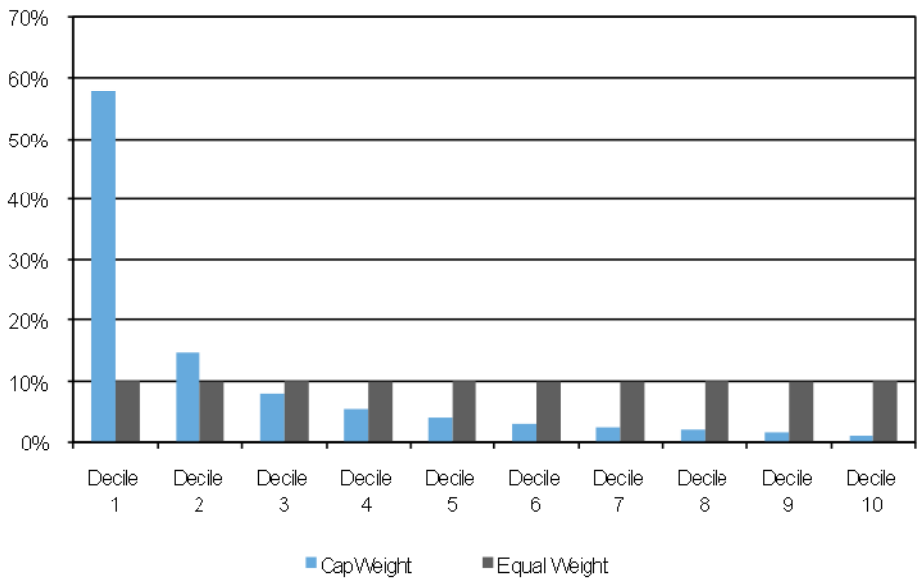
Assume, for example, that you "know" which security is going to be the best performer in the Russell 1000® Index. If you want the best return, you will hold only that security. If you diversify away from that future best-performing security by purchasing any other securities, you will not achieve the best possible return. But since most investors know they don't have infallible foresight, they diversify in order to make sure they don't own only the worst-performing security.

Similar motivations for diversification have been noticed in some active managers' portfolios. Some active managers, in an attempt to diversify across their holdings, tend not to weight their portfolios by market capitalization. As Fabozzi (1998) notes, "…managers tend to not capitalization-weight their portfolios for a variety of reasons. The most often cited reason is related to the manager's aversion to putting too much money in any one basket (such as IBM)—they want stock name diversification."

While market capitalization–weighted indexes provide diversification benefits by providing exposure to every security in the index, equal weighting provides equal exposure to every company in the index. Figure 1, below, presents the weights represented by the Russell 1000 cap weight and the Russell 1000 constituent equal weight indexes, grouped by deciles of company size. The largest 10 percent of companies account for 58% of the overall weight in the Russell 1000 cap weight index, compared to just 10% of the overall weight in a Russell 1000 equal weight index. Equal weight indexes provide equal exposure to every size decile of the index, while smaller capitalization securities have very small weights in a cap weighted index. In diversifying across all securities in an index by holding equal weights, the investor avoids the risk of large capitalization securities driving the returns of the index.

[2] The float-adjusted market capitalization of a stock is the total market capitalization net of closely held shares that are not freely available to the public.

Figure 1 / Russell 1000 weight by size deciles as of 1/1/2010



The Russell Equal Weight Indexes: Exceptional index construction

As outlined in the section above, equal weighted indexes provide potentially attractive diversification benefits to investors. The conventional approach to the construction of equal weighted indexes, however, brings with it issues such as inherent sector biases, potential capacity constraints/liquidity concerns, high turnover and rebalancing issues. The Russell Equal Weight Indexes are constructed to eliminate or mitigate these problems.

Sector biases

An index with equal weights across all constituents (constituent equal weighting: CEW) will allocate significantly higher weights to some sectors than to others, embedding sector bias into the index. Historical sector weights are provided below in Figures 2 and 3 for the equal weighted Russell 1000 Index and the cap weighted Russell 1000 Index.

Figure 2 / Russell 1000 CEW Index historical sector weights

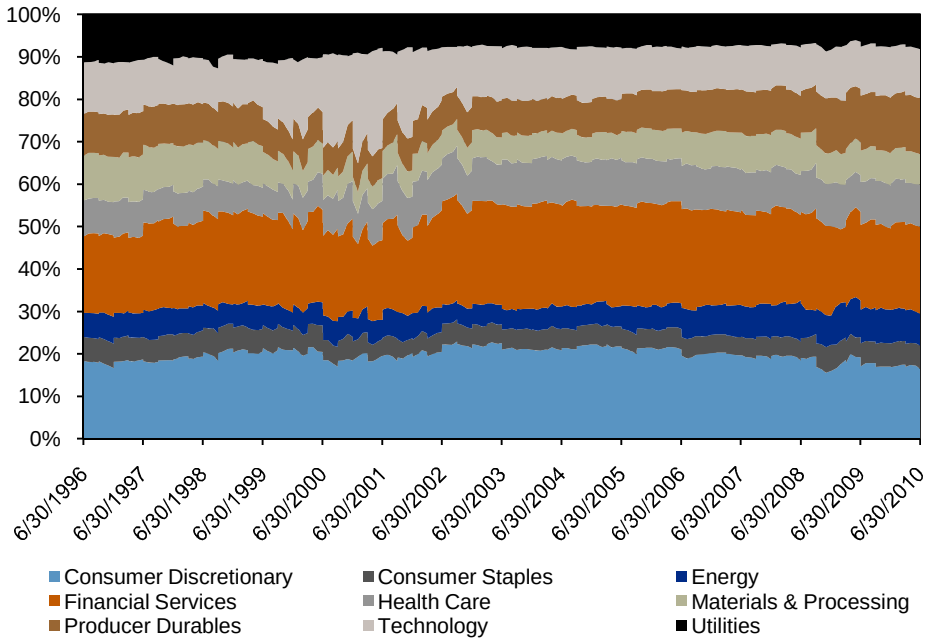
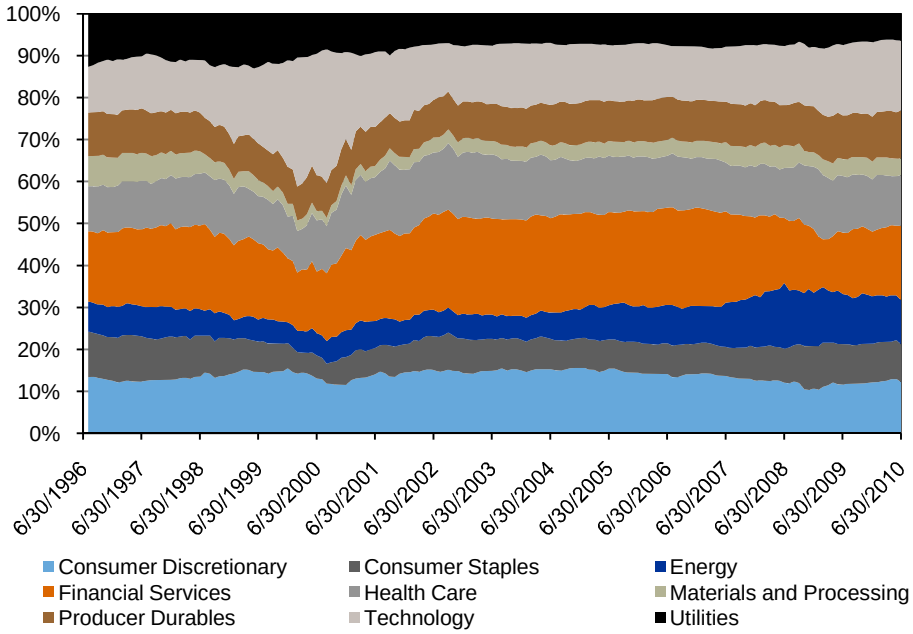


Figure 3 / Russell 1000 cap weighted index historical sector weights



Changes in sector weights are influenced by two things: the performance of sectors relative to each other, and the number of securities within each sector. Shifts in sector weights in an equal weighted index will occur very slowly. This is because when the index is reweighted each quarter, the number of constituents within each sector will not change significantly. Thus the sector weights will revert to the original weights without reflecting the relative performance of each sector. In effect, the equal weighted index holds sector weights "constant." Only significant changes in the membership of the underlying index will cause shifts in sector weights

Sector equal weighting

Russell Indexes has created the Russell Equal Weight Indexes, which use a sector equal weighted (SEW) approach to address the concerns about sector risk posed by constituent equal weighted indexes (CEW). Table 1, below, compares the sector weights of the Russell 1000 cap weighted index, the Russell 1000 CEW index and the Russell 1000 SEW index as of January 1, 2010. The financial services, producer durables and consumer discretionary sectors clearly dominate a conventional equal weighted index, accounting for more than 50% of the index. This can create additional risk within the portfolio, where the return and risk of the index can be driven by one or two sectors that have significant weight within the portfolio.

Table 1

Sector (as of 1/1/2010)	Russell 1000 Cap weighted	Russell 1000 Constituent Equal Weight	Russell 1000 Sector Equal Weight
Consumer Discretionary	12.0%	16.9%	11.1%
Consumer Staples	9.2%	5.6%	11.1%
Energy	11.4%	7.9%	11.1%
Financial Services	15.4%	19.7%	11.1%
Health Care	12.5%	10.0%	11.1%
Materials & Processing	4.3%	7.4%	11.1%
Producer Durables	10.6%	13.1%	11.1%
Technology	17.9%	11.8%	11.1%
Utilities	6.7%	7.6%	11.1%

Russell's sector equal weighted indexes allocate an equal portion of the portfolio to each of the nine Russell sectors, and then equal weight the constituents within each sector. This enhancement to the constituent equal weight approach addresses the sector risk posed by the equal weighted indexes currently in the marketplace. It diversifies equally across sectors to minimize the negative impact of any one sector.

Why equal weight constituents within the sector?

Equal weighting the constituents within a sector assures that a few large companies will not drive the performance of the sector. This may also add diversification benefits similar to those outlined above for equally weighted sectors. To test this, we simulate a portfolio that is equal weighted at the sector level, but the constituents within each sector are weighted according to their float-adjusted market capitalization (SEW-MC). Rolling 36-month correlations between the SEW-MC, SEW and the cap weighted Russell 2000® Index are presented in Figure 4.

The results are surprising. The correlation between the SEW index and the Russell 2000 drops dramatically during the technology boom-and-bust period, dropping as low as 60% on August 2001 and maintaining a correlation of 90% to 95% after May 2003. The correlation of the SEW-MC index to the Russell 2000 stays above 95% through the whole period.

We do not see a big drop in correlations during the 2008–2009 financial crisis, and a closer look at the sector volatility of the Russell 2000 explains why. We calculate the volatility of the sector returns of the Russell 2000 index for two periods, 1998 to 2000 and 2007 to 2009. For the 1998–2000 period, volatility is high in the energy, health care and technology sectors, while the other sectors have relatively low volatility. For the 2007–2009 period, volatility is spread out across all sectors, with just the energy sector comparatively higher than the other sectors (see Table 2). This suggests that during periods where volatility is increasing within a few sectors, the SEW index could potentially provide diversification

benefits when used in conjunction with cap weighted indexes. We note that equal weighting the constituents within sectors adds attractive diversification features to the index, and that simply equal weighting the sectors does not replicate an SEW index.

Figure 4 / Correlations between an SEW Russell 2000 with constituent equal weighting within the sectors vs. an SEW Russell 2000 with market cap–weighted constituents within sectors

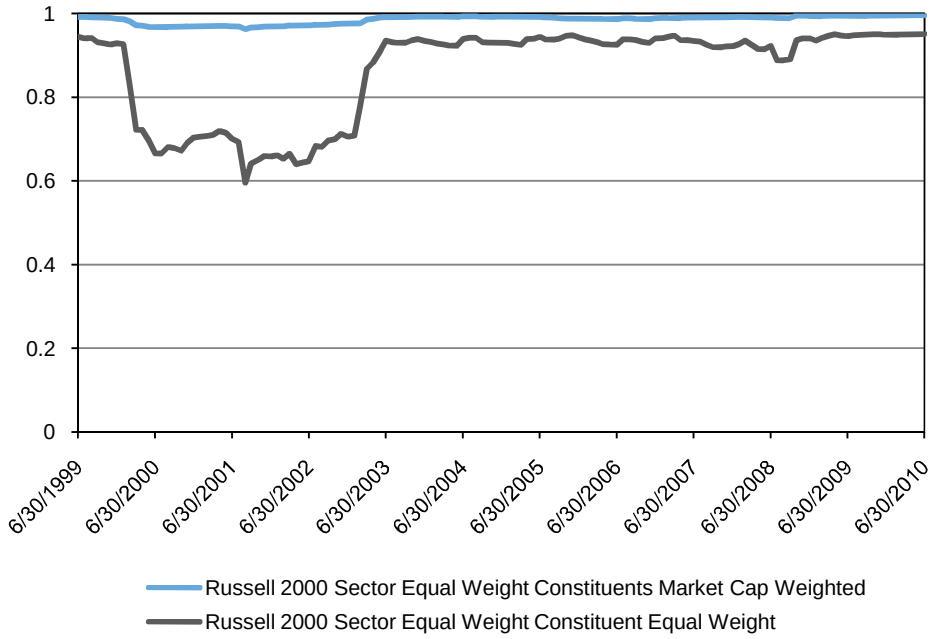


Table 2 / Volatility of the Russell 2000 Index

Sector	1998–2000	2007–2009
Consumer Discretionary	6.56	9.56
Consumer Staples	4.55	5.12
Energy	13.87	12.70
Financial Services	5.03	7.64
Health Care	13.30	6.66
Materials & Processing	6.33	9.03
Producer Durables	7.12	8.09
Technology	13.57	8.13
Utilities	5.42	4.97

Capacity constraints

Equal weighted indexes have been criticized for the capacity constraints potentially posed by constituents that are too small to take an equal position. Other concerns focus on high turnover caused by frequent rebalancing. These problems can be eliminated or mitigated in the construction and maintenance of the equal weighted index.

To address one of the main criticisms of equal weighted indexes — that an investor can take a significant position within a smaller capitalization security, posing a liquidity risk — the Russell Sector Equal Weight Index methodology applies a screen prior to the

construction of each index, which is designed to remove securities that could have difficulty assuming their required positions in a particular security.

This screen has an insignificant impact on the returns of the index. For the period 1996 to 2010, the Russell 1000 SEW index with a capacity screen applied had an annualized tracking error of only 28 basis points to the same index with no capacity screen applied. For the small cap Russell 2000 SEW index, the annualized tracking error was 38 basis points. Since the Russell Indexes are sector equal weighted, there is no loss of sector exposure and greater liquidity is gained. This might not be the case in a conventional equal weighted index, where applying a capacity screen can affect certain sectors more acutely than others, causing changes in the sector representation of the index.

Turnover

While portfolio turnover can be a concern with equal weighted indexes, it is helpful to remember that much of this turnover can be attributed to the reconstitution of the associated cap weighted index. The average quarterly turnover on the Russell 1000 sector equal weighted index was 6.3% for the July 1996 to June 2010 period. However, when we remove the July period of each year (when reconstitution of the cap weighted Russell 1000 index occurs), the average turnover becomes 4.2%. This suggests that the reconstitution of the underlying index can have a significant influence on the turnover observed in the equal weighted index. Even when the reconstitution period for the underlying index is taken into account, the portfolio turnover observed in the Russell 1000 sector equal weighted index is comparable to those of equal weighted indexes currently in the marketplace and certainly lower than the turnover observed in active funds.

Additional measures can be taken in the daily maintenance of the index to avert turnover in the index between reweighting periods, which might otherwise be caused by corporate actions affecting the constituents. For example, not applying month end share adjustments and not increasing a company's weight when a company acquires another company from different size tiers can reduce turnover between reweighting periods.

Rebalancing frequency

Sector equal weighted indexes assign a weight to each security at each rebalancing period. However, between rebalancing periods, the weights of each security will deviate from this target weight due to daily changes in price. A perfect implementation of the sector equal weight strategy would require sectors and constituents to rebalance daily. Daily rebalancing would be impractical to implement as a passive strategy; it would require selling and buying constituents' shares daily to keep the weights constant, and thus bring about high transaction costs for replicated portfolios.

Thus, a trade-off is required between representation of the strategy and turnover. To keep portfolio turnover down, we reweight less frequently but incur some tracking error to a hypothetical portfolio that is reweighted daily. To test the impact of different reweighting periods, we simulate sector equal weighted strategy indexes based on different reweighting time frames—daily, monthly, quarterly, semiannually and annually. Intuitively, we should see tracking error maximized for the scenario with the longest reweighting period and turnover maximized for the shortest reweighting period.

We measure the tracking error of each reweighting time frame against the theoretical perfect implementation of daily reweighting. We also calculate the turnover of the portfolios for each of the different reweighting time frames. These results are presented in Table 3 for the Russell 1000 and Russell 2000 sector equal weighted indexes.

The results are as expected. When the frequency of reweighting increases, so does the turnover of the portfolio. However, as the frequency is increased, the tracking error of the

portfolio decreases. A daily reweighted large cap portfolio has turnover of more than 175%. The turnover is more pronounced for the daily reweighted small cap portfolio, where it is more than 250%. Turnover decreases dramatically for both the large cap and small cap portfolios when the reweighting is done on a monthly basis, becoming less than a quarter of that of the daily reweighted portfolio. The annually reweighted large cap portfolio has the least turnover (16%), but also the highest tracking error (4.6%).

The Russell Equal Weight Indexes will be reweighted quarterly. The results below indicate that quarterly reweighting provides the best trade-off between turnover and tracking error. While semiannual reweighting presented an opportunity for lower turnover, the reduction was not significant enough given the increase of over 30% in tracking error when compared to quarterly reweighting.

Table 3

Russell 1000 Sector Equal Weight		
Reweighting Frequency	**Tracking Error[3]**	**Turnover (average per annum)[4]**
Daily	0.00	177.67%
Monthly	1.03	39.09%
Quarterly	1.76	26.15%
Semiannually	2.32	21.33%
Annually	4.60	16.08%

Russell 2000 Sector Equal Weight		
Reweighting Frequency	**Tracking Error**	**Turnover (average per annum)**
Daily	0.00	253.75%
Monthly	1.51	55.77%
Quarterly	2.48	37.80%
Semiannually	3.34	33.44%
Annually	6.54	26.65%

The Russell Equal Weight Indexes: Performance[5]

In this section we examine the investment performance of cap weighted SEW and CEW index structures in the U.S. large and small cap equity markets and in global developed and emerging markets. Generally we find that the Russell Equal Weight Indexes display superior returns when compared to cap weight and CEW indexes at lower levels of volatility over our sample periods.

Performance of U.S. Indexes

Figure 5, below, displays the performance of the Russell 1000 SEW, CEW and cap weight indexes from December 1978 to June 2010. The Russell 1000 SEW outperformed the respective CEW and cap weight indexes historically. The cumulative return of the SEW index was almost double that of the cap weighted Russell 1000 index from January 1st 1979 to June 2010 and 35% more than that of the CEW index. Since 1979, the cap weighted indexes outperformed the equal weighted indexes for a meaningful period of time just once, during the tech bubble of the late 1990s.

[3] Tracking error is calculated as the standard deviation of monthly excess return over the daily reweighted portfolio multiplied by the square root of 12.

[4] Turnover is the average turnover (calculated as the minimum of the addition and deletion percentage of the portfolio) per time frame multiplied by the number of times the portfolio is reweighted per annum.

[5] The returns of the Sector Equal Weight and the Constituent Equal Weight indexes are simulated and the constituents are not screened for capacity constraints.

Previous research has suggested that during periods of strong bull markets, equal weighted indexes can underperform cap weighted indexes (Dash and Loggie). However, an extension to this might be necessary. While it may be true that equal weighting underperformed during this period, we should note that from 1998 to 2000, the market was sector-led. Mega-cap technology stocks contributed significantly to the return of the cap weighted indexes during this period. The weight of the technology sector in the Russell 1000 cap weighted index increased significantly over this time period, going from 11.5% on January 1st 1998 to a high of over 30% on July 3rd 2000. Comparatively, the weight of the technology sector in the Russell 1000 SEW index was 11.1% throughout this sample time period. It is fair to conclude that the outperformance of the sector during this period led to the outperformance of the cap weight indexes over the equal weighted indexes. We also note that having such a large weight in the technology sector of the Russell 1000 Index hurt performance after the bubble burst, with the equal weighted indexes faring better than the cap weighted indexes during the technology sector downturn in 2001 and 2002.

Cumulative returns are presented for the cap weighted, SEW and CEW Russell 2000 indexes from 1979 to 2010 in Figure 6. The Russell 2000 cap weighted index outperforms both the SEW and CEW indexes for much of the1980s and 1990s, with the cap weighted index handily outperforming both during the tech bubble of the late ’90s. However, after the year 2000, the SEW index outperformed the cap weighted Russell 2000. When we look at calendar-year returns, there are only two years in which the cap weighted indexes outperform the SEW index within this decade.

The Russell 2000 SEW index outperformed the respective CEW index over this time period. We note that the value of an investment in the CEW index would not have been higher than that of a like investment in the sector equal weighted index for any significant period of time.

Figure 5 / Growth of a dollar for Russell 1000 SEW, CEW and cap weighted indexes

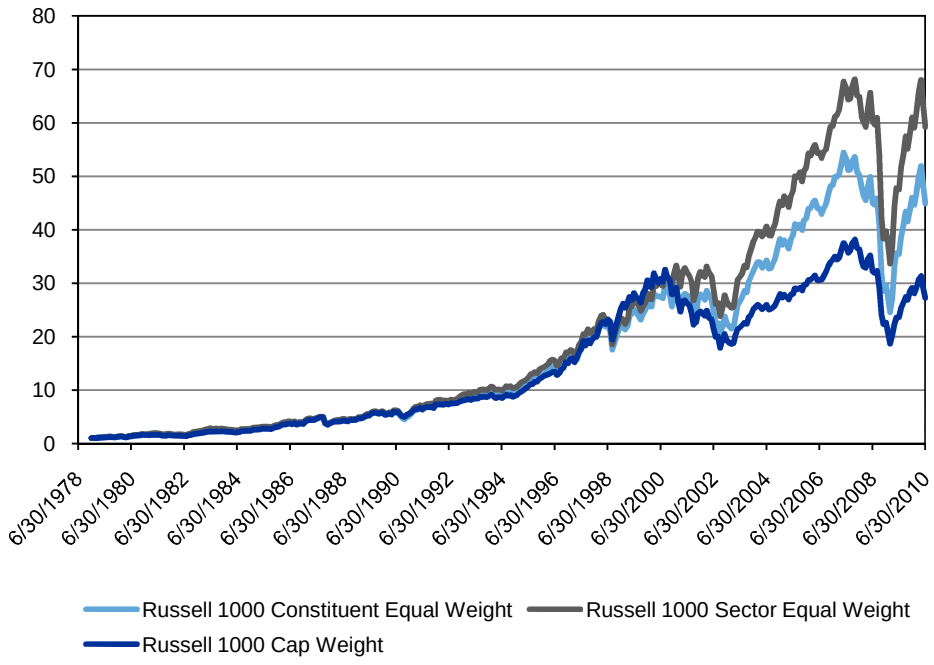
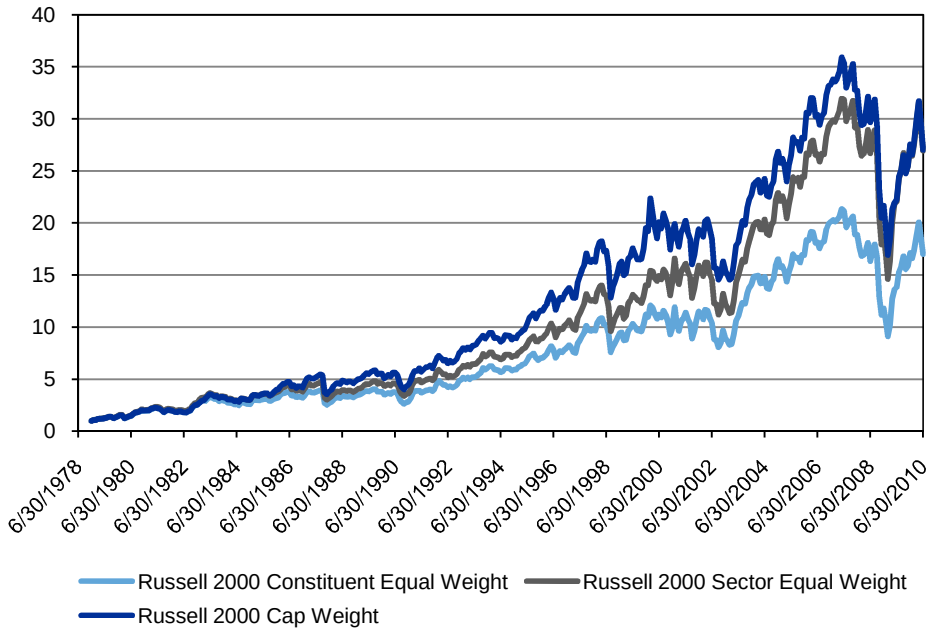


Figure 6 / Growth of a dollar for Russell 2000 SEW, CEW and cap weighted indexes

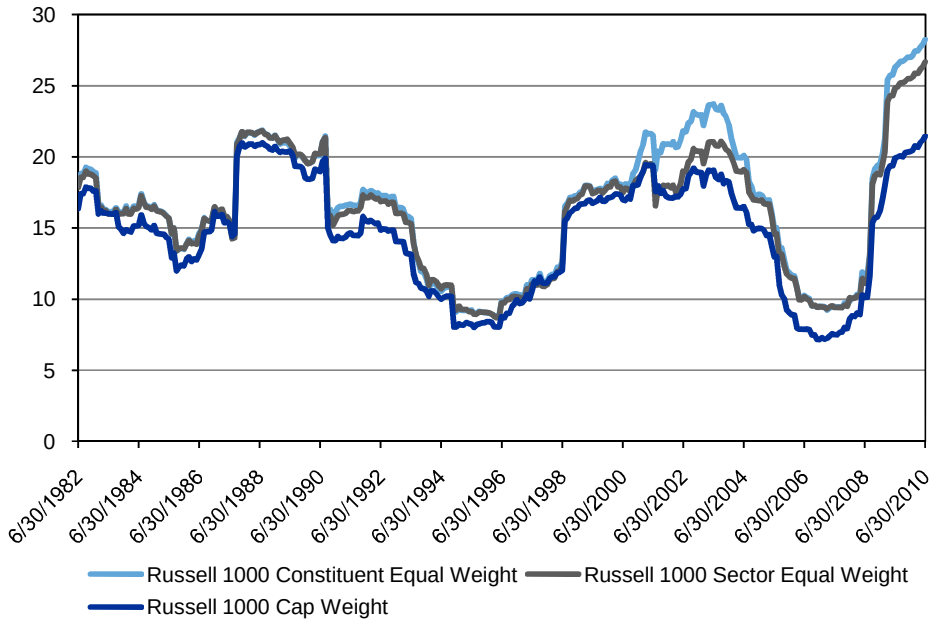


Volatility

The volatility of the Russell 1000 and Russell 2000 — as measured by the annualized rolling three-year standard deviation of monthly returns — in the cap weight, SEW and CEW indexes is displayed in Figures 7 and 8.

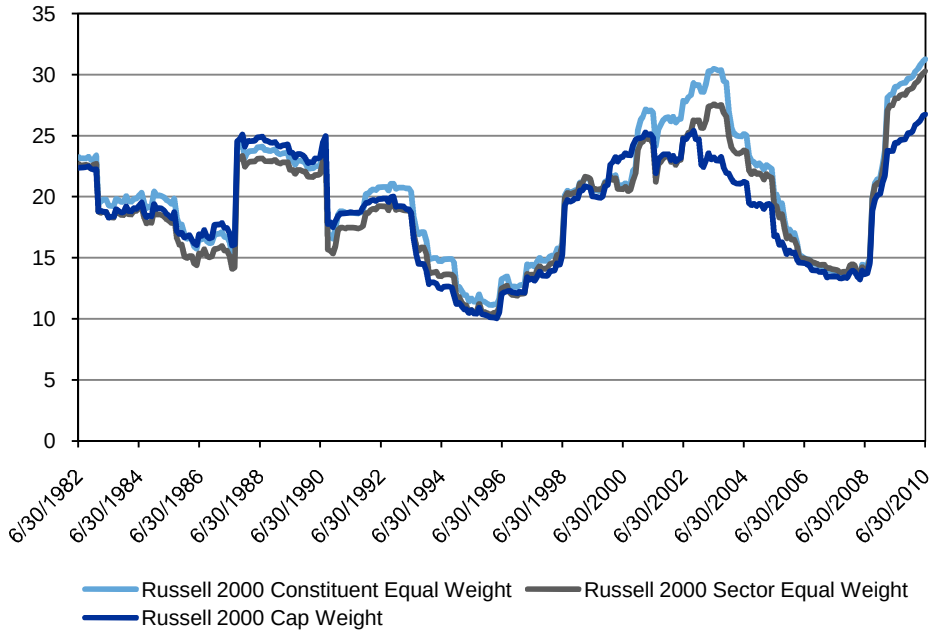
The Russell 1000 cap weighted index has lower volatility than both of the respective equal weighted indexes for the entire period, except in the late 1990s, when the volatility of the cap weighted indexes exceeds the level of the other two indexes, going from a low of 8.0% at the end of April 1996 to a high of 19.5% on April 2001. The SEW index consistently has lower volatility than the CEW index. The CEW Russell 1000 index has significantly higher volatility than the other two indexes from 2002 to 2005, deviating as much as 3% from the SEW index.

Figure 7 / Volatility of the Russell 1000 cap weight, SEW and CEW indexes



In contrast, as we show in Figure 8, the Russell 2000 cap weight index does not consistently display lower volatility than the Russell 2000 SEW . The SEW index shows lower volatility than the cap weighted indexes from 1982 to 1993 and during the technology boom-and-bust period, while the cap weighted indexes have lower volatility for much of the current decade. There is no significant period of time during which the CEW index has lower volatility than the cap weighted index or the SEW index.

Figure 8 / Volatility of the Russell 2000 cap weight, SEW and CEW indexes



We observed similar risk and return characteristics for the Russell U.S. Midcap Index. The Midcap SEW index outperformed both the Midcap CEW and the cap weighted index over the 1996–2010 time period. The cap weighted midcap index outperformed the SEW and the CEW indexes during the late1990s, with the SEW indexes outperforming during the 2000s. The outperformance of the cap weighted index in the late 1990s was not to the degree that was observed in the Russell 1000 and Russell 2000 indexes. Surprisingly, the performance of the U.S. Midcap SEW was higher than those of the Russell 1000 and Russell 2000 SEW indexes over the 1996–2010 time period. The return of the U.S. Midcap SEW was 328%, while the Russell 1000 SEW and Russell 2000 SEW had returns of 282% and 171%, respectively.

Similarly to what we observed in the Russell 1000 and Russell 2000 indexes, the U.S. Midcap SEW index had lower volatility than the CEW index. In fact, the U.S. Midcap SEW index had lower volatility than the Russell 2000 SEW index, while earning a higher return for the sample period 1996 to 2010.

Figure 9 / Growth of a dollar for Russell 1000 SEW, CEW and cap weighted indexes

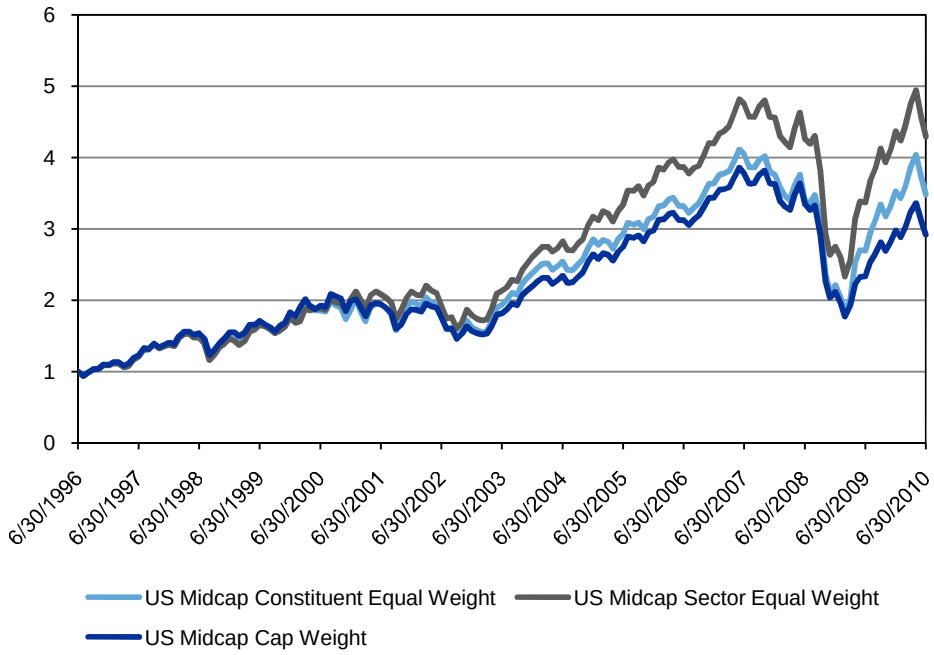
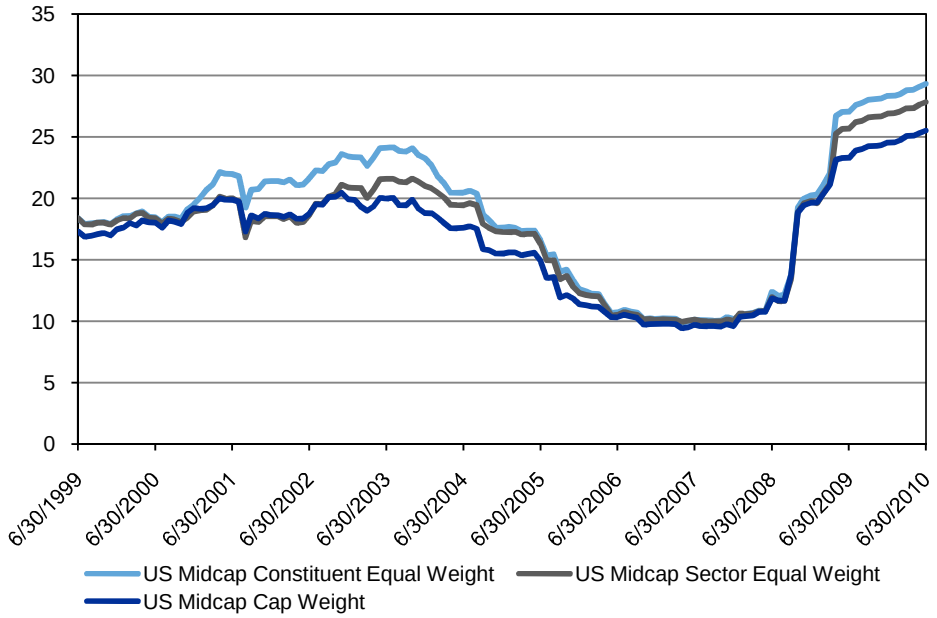


Figure 10 / Volatility of the Russell U.S. Midcap SEW, CEW and cap weighted indexes



International Indexes[6]

We observed similar return and risk characteristics when we tested the SEW and CEW methodologies based on the Russell Global Indexes. The SEW index consistently outperformed the CEW index, with lower volatility.

Figures 11, 12 and 13 present growth of a dollar charts for the Russell Global, Developed and Emerging Markets Indexes. The return patterns are very similar to those of the Russell 1000 and Russell 2000 Indexes, with the cap weighted indexes outperforming during the technology boom and the SEW index outperforming thereafter.

Within emerging markets, the outperformance of the cap weighted indexes during the late 1990s over the sector equal weighted indexes is not as acute as in developed markets. We also note that the CEW index does not outperform the cap weighted indexes in emerging markets over this time period, but the SEW does. Since 2001, the Emerging Markets SEW index had a total cumulative return of 348%, while the cap weighted index had a cumulative return of 223%.

[6] The performance of the Russell Global SEW and CEW Indexes is simulated, and does not make use of a liquidity measure or a capacity screen. Russell Global Equal Weight Indexes have an additional liquidity screen applied prior to application of the capacity screen.

Figure 11 / Growth of a dollar – Russell Global Index

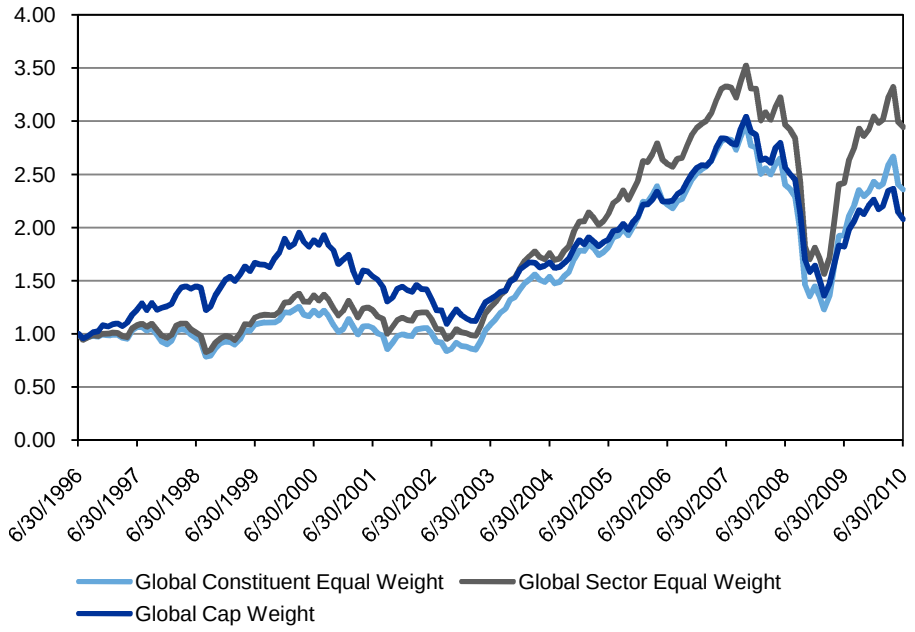


Figure 12 / Growth of a dollar – Russell Developed Markets Index

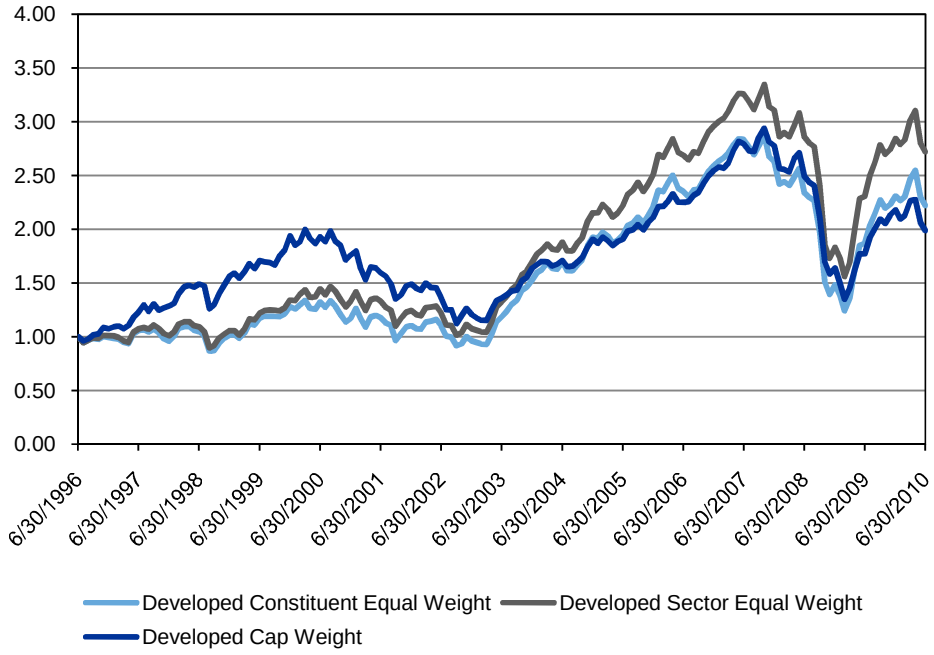
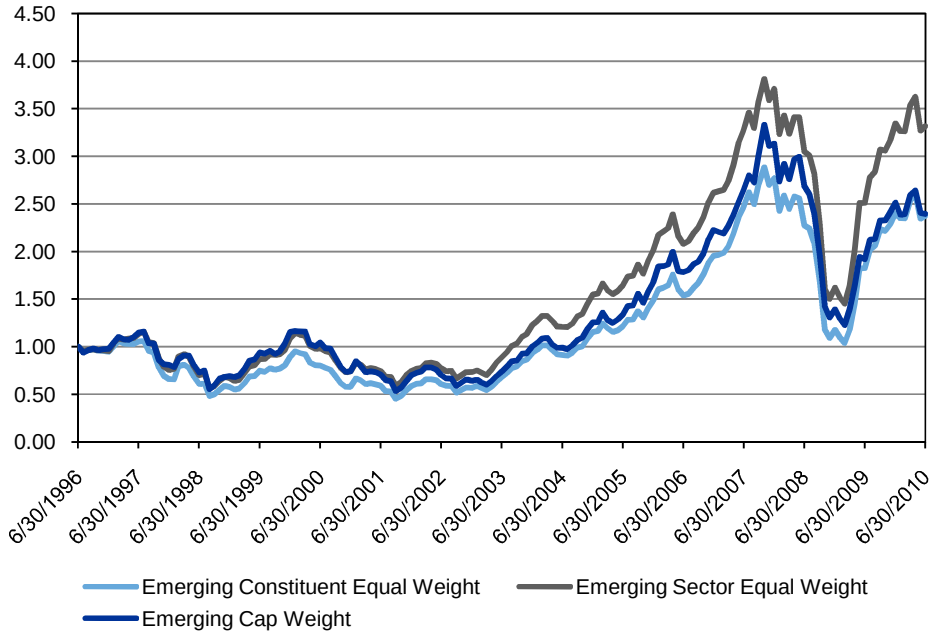


Figure 13 / Growth of a dollar – Russell Emerging Markets Index



The pattern of volatility of the structures in the Russell Global and Developed indexes is similar to what was observed for the Russell 1000 Index, while the pattern within emerging markets is similar to what we observed in U.S. small cap index structures.

Within the global and developed markets, the volatility of the cap weighted indexes was lower compared to the SEW and CEW indexes from 1996 to 2010, as we see in Figures 14 and 15.

Cap weighted indexes had higher volatility than the SEW in emerging markets until recently, when they crossed paths in 2008 (Figure 16).

Figure 14 / Rolling 3-year annualized standard deviation of monthly returns for the Russell Global Index

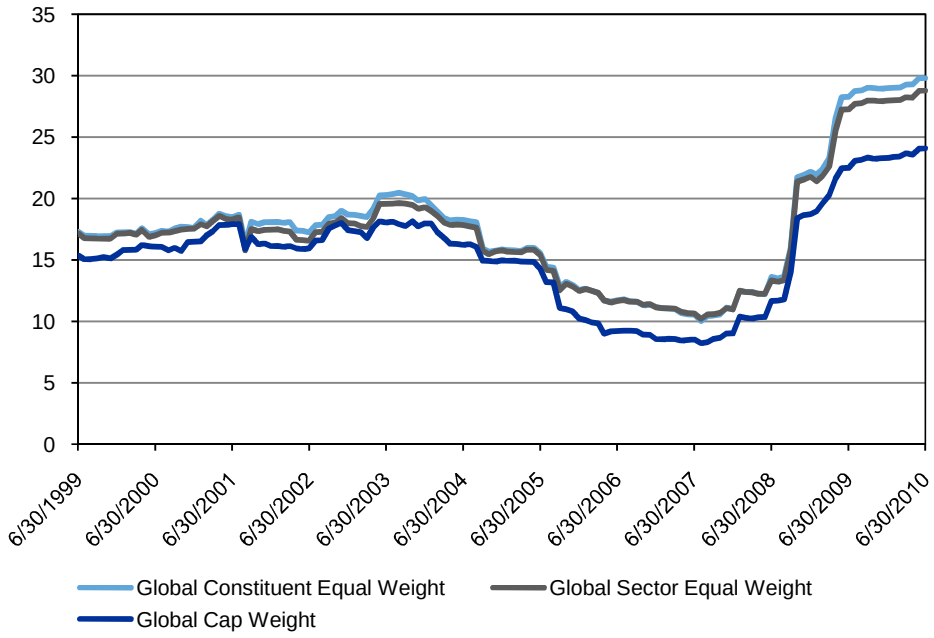


Figure 15 / Rolling 3-year annualized standard deviation of monthly returns for the Russell Developed Markets Index

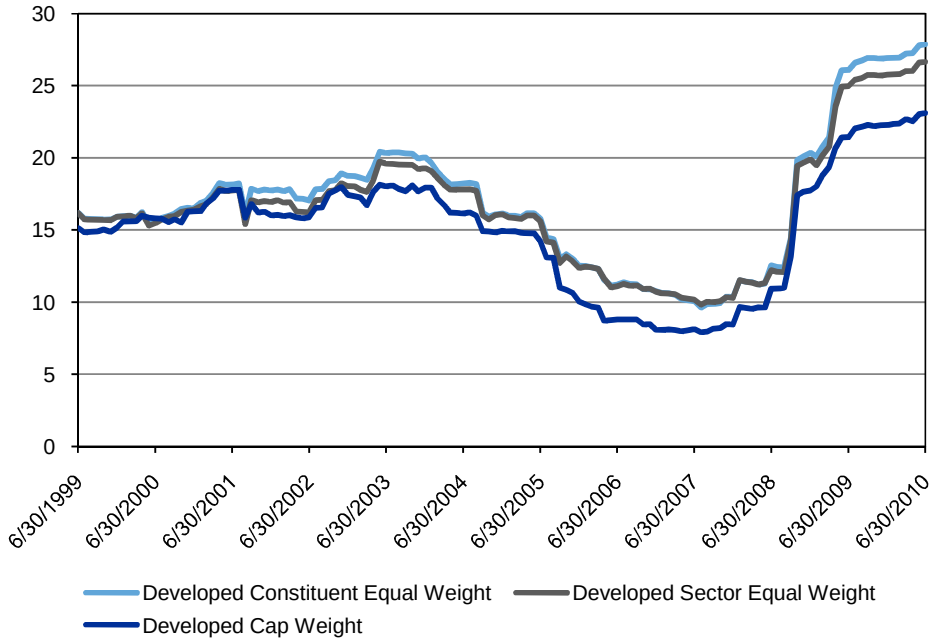
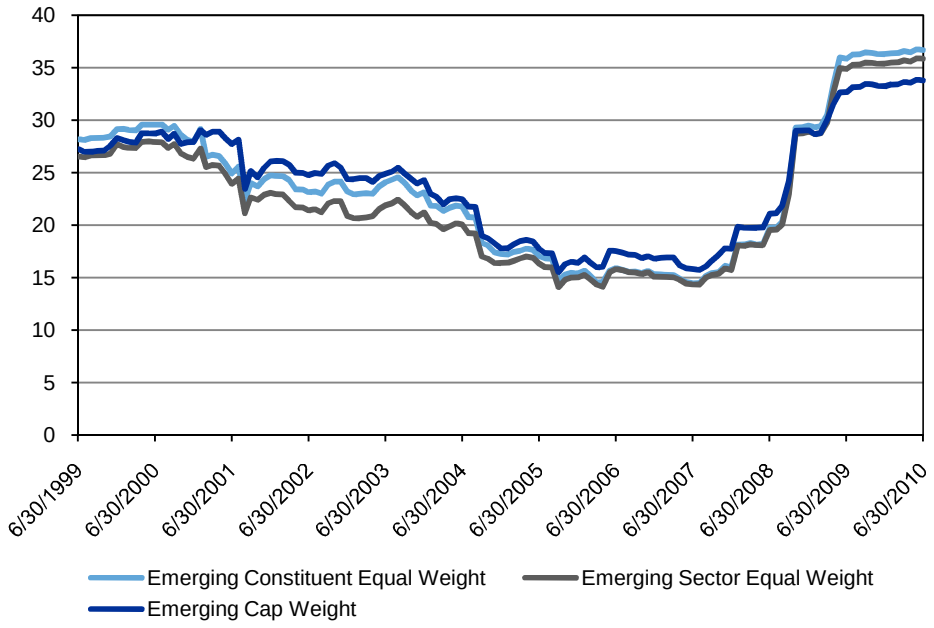


Figure 16 / Rolling 3-year annualized standard deviation of returns for the Russell Emerging Markets Index



Risk-adjusted returns

The Russell SEW indexes have outperformed cap weighted indexes over the entire period under review (1/1/1979–6/30/2010) in the domestic U.S. indexes and in international markets. However, the outperformance was accompanied by higher volatility.

We present Sharpe ratios over three time periods for the Russell 1000, 2000 and 3000 Indexes for the cap weighted, SEW and CEW indexes below (see Tables 4 through 6). With the exception of the Russell 2000, over the longest sample time period (1979 to June 2010), the risk-adjusted returns for the SEW were higher than for the cap weighted and CEW indexes.

For the period 1996 to 2010, which includes the outperformance of cap weighted indexes during the technology boom, absolute returns and Sharpe ratios are higher for the SEW indexes.

Table 4 / Sharpe ratios for the Russell 1000, Russell 2000 and Russell 3000 Indexes from 1979–2010, 1996–2010 and 2001–2010

January 1979–June 2010	Value of a Dollar	Volatility (annualized)	Sharpe Ratio
Russell 1000	$27.25	15.68	0.1182
Russell 1000 CEW	$44.86	17.86	0.1354
Russell 1000 SEW	$59.19	17.20	0.1535
Russell 2000	$27.03	19.96	0.1039
Russell 2000 CEW	$17.02	21.47	0.0807
Russell 2000 SEW	$26.92	20.43	0.1025
Russell 3000	$27.06	15.81	0.1172
Russell 3000 CEW	$24.98	19.89	0.1001
Russell 3000 SEW	$36.28	18.90	0.1207
January 1996–June 2010	**Value of a Dollar**	**Volatility (annualized)**	**Sharpe Ratio**
Russell 1000	$2.23	16.44	0.0657
Russell 1000 CEW	$3.49	19.62	0.1091
Russell 1000 SEW	$4.22	18.44	0.1332
Russell 2000	$2.33	20.99	0.0677
Russell 2000 CEW	$2.42	23.58	0.0702
Russell 2000 SEW	$3.03	22.47	0.0904
Russell 3000	$2.22	16.52	0.0651
Russell 3000 CEW	$2.76	21.87	0.0827
Russell 3000 SEW	$3.42	20.58	0.1049
January 2001–June 2010	**Value of a Dollar**	**Volatility (annualized)**	**Sharpe Ratio**
Russell 1000	$0.97	16.38	–0.0216
Russell 1000 CEW	$1.64	20.94	0.0717
Russell 1000 SEW	$1.87	19.52	0.0932
Russell 2000	$1.43	20.90	0.0517
Russell 2000 CEW	$1.73	25.26	0.0768
Russell 2000 SEW	$1.90	23.89	0.0892
Russell 3000	$0.99	16.58	–0.0154
Russell 3000 CEW	$1.71	23.55	0.0759
Russell 3000 SEW	$1.90	22.01	0.0916

Table 5 / Sharpe ratios for Russell Global, Developed and Emerging Markets Indexes from 1979–2010, 1996–2010 and 2001–2010

July 1996–June 2010	Value of a Dollar	Volatility (annualized)	Sharpe Ratio
Russell Global Cap Weight	$2.08	17.0	–0.02
Russell Global CEW	$2.36	19.6	0.00
Russell Global SEW	$2.94	19.1	0.03
Russell Developed Cap Weight	$1.99	16.6	–0.03
Russell Developed CEW	$2.22	18.7	–0.01
Russell Developed SEW	$2.72	18.1	0.01
Russell Emerging Cap Weight	$2.40	25.4	0.02
Russell Emerging CEW	$2.38	26.0	0.02
Russell Emerging SEW	$3.32	24.8	0.04
January 2001–June 2010	**Value of a Dollar**	**Volatility (annualized)**	**Sharpe Ratio**
Russell Global Cap Weight	$1.13	17.7	–0.05
Russell Global CEW	$2.26	21.1	0.06
Russell Global SEW	$2.42	20.4	0.07
Russell Developed Cap Weight	$1.13	17.2	–0.06
Russell Developed CEW	$1.90	20.2	0.03
Russell Developed SEW	$2.04	19.5	0.04
Russell Emerging Cap Weight	$3.23	25.3	0.10
Russell Emerging CEW	$4.09	25.9	0.13
Russell Emerging SEW	$4.48	24.9	0.14

Where is the outperformance coming from?

To analyze where the outperformance of the SEW indexes is coming from and to gain additional insight, we perform a Fama-French three-factor regression analysis and calculate contribution to returns by sector and size.

Fama-French factor regression

We regress the returns of the Russell 1000 and the Russell 2000 SEW indexes using the Fama-French three-factor model of market, size and style for each decade on the Russell 1000 and Russell 2000 cap weighted indexes. The dependent variable is the excess return of the respective SEW index, minus the risk free rate. The small capitalization factor (SmB) for the Russell 1000 SEW index is measured as the excess return of the Russell Midcap® Index over the Russell Top 200® Index, and for the Russell 2000 SEW index as the excess return of the Russell 2000 over the Russell 1000. The high minus low (HmL) style factor is taken as the value minus growth of the respective cap weighted indexes. The regression results are presented in Table 6.

When adjusted for size and style factors, the equal weighted indexes exhibit an alpha of 0.10% and 0.13% per month for the Russell 1000 and Russell 2000 SEW indexes, respectively, in the last decade, though these are not statistically significant. For the 1980s and 1990s, a negative alpha is observed for both the Russell 1000 and Russell 2000 SEW indexes and is statistically significant.

The regression results provide strong empirical support for assertion that equal weighted indexes tilt toward smaller capitalization securities to a statistically significant level. For each decade, the SmB coefficient is more than 0.4 for the Russell 1000 SEW index and more than 0.9 for the Russell 2000 SEW index. Thus, the Russell 1000 SEW index is influenced by midcap securities, and the Russell 2000 SEW index is strongly influenced by securities at the middle to bottom of the Russell 2000 benchmark.

What is even more interesting is the shifting influence of growth and value factors from one decade to the next for both the Russell 1000 and Russell 2000 SEW indexes. The indexes seem to exhibit a growth tilt for much of the 1980s, a “valuey” tilt for the 1990s, and then a growth tilt for the2000s.

Table 6 / Regression results for the Russell 1000

1/1/1979–12/31/1990		Russell 1000	
R Square	0.9884	t Stat	P-value
Intercept	–0.6780	–13.8474	0.0000
Russell 3000	0.9723	86.2907	0.0000
Russell Midcap - Russell Top 200	0.4730	18.4476	0.0000
Russell 1000® Value - Russell 1000® Growth	–0.0467	–1.9097	0.0582
1/1/1991–12/31/2000		**Russell 1000**	
R Square	0.9414	t Stat	P-value
Intercept	–0.3346	–3.4871	0.0007
Russell 3000	1.0321	41.3417	0.0000
Russell Midcap - Russell Top 200	0.4264	10.5634	0.0000
Russell 1000 Value - Russell 1000 Growth	0.2269	8.2533	0.0000
1/1/2001–6/30/2010		**Russell 1000**	
R Square	0.9700	t Stat	P-value
Intercept	0.1024	1.0637	0.2898
Russell 3000	1.0473	49.2877	0.0000
Russell Midcap - Russell Top 200	0.5812	12.4487	0.0000
Russell 1000 Value - Russell 1000 Growth	–0.0296	–0.8431	0.4010

Table 7 / Regression results for the Russell 2000

1/1/1979–12/31/1990		Russell 2000	
R Square	0.9711	t Stat	P-value
Intercept	–0.7324	–8.1698	0.0000
Russell 3000	0.9001	41.2856	0.0000
Russell 2000 - Russell 1000	0.9637	28.0772	0.0000
Russell 2000® Value - Russell 2000® Growth	–0.0213	–0.4972	0.6198
1/1/1991–12/31/2000		**Russell 2000**	
R Square	0.9247	t Stat	P-value
Intercept	–0.5357	–3.8859	0.0002
Russell 3000	1.0376	26.4475	0.0000
Russell 2000 - Russell 1000	0.9380	22.1299	0.0000
Russell 2000 Value - Russell 2000 Growth	0.1765	4.5246	0.0000
1/1/2001–6/30/2010		**Russell 2000**	
R Square	0.9485	t Stat	P-value
Intercept	0.1345	0.8866	0.3772
Russell 3000	1.1150	31.8928	0.0000
Russell 2000 - Russell 1000	0.9666	16.8875	0.0000
Russell 2000 Value - Russell 2000 Growth	–0.1187	–2.2406	0.0271

Contribution to return by sector

We compare cumulative contribution to return by sector from July 1996 to December 1999 and January 2000 to June 2010 between the Russell cap weighted and SEW indexes. Not surprisingly, the technology, consumer discretionary and financial services sectors contribute almost 66% of the total return. While all of the sectors in the Russell SEW 1000 index had a positive return for the period 1996 to 1999, the contribution from seven of the nine sectors underperformed the sector returns of the cap weighted index.

We see similar results for the Russell 2000, with the technology and financial services sector driving the returns of the cap weighted index. Although the Russell 2000 SEW index has five of the nine sectors contributing higher returns than those of the cap weighted index, they are not high enough to overcome the low contributions from the technology and financial services sectors. Thus, the cap weighted index outperformed the Russell 2000 SEW index for the 1996–1999 time period.

As we previously observed, the outperformance is reversed within the last decade, with the SEW indexes outperforming the cap weighted indexes significantly. Every sector in the Russell 1000 SEW has a positive return and a higher contribution than the cap weighted indexes. The energy sector has the highest contribution, providing 25.4% of the total return for the SEW indexes. Comparatively, within Russell 1000 cap weighted index, the energy sector contributes only 1.7%, with the consumer staples sector providing the largest contribution at 3.7%. The technology sector has a large negative contribution of 13.7% in the Russell 1000 cap weight index, resulting in the index having a negative performance of 10.9% for the 2000–2010 time period.

Again, we see similar results in the Russell 2000 SEW index from 2000 to 2010. The energy sector provides the largest contribution, at 26.8%, while the utilities sector has the only negative contribution. The financial services sector performs the best within the Russell 2000 cap weighted index, with a contribution of 22.7%, larger than that of the Russell 2000 SEW index.

Table 8 / Contribution to return by sector

	7/1/1996–12/31/1999				1/1/2000–6/30/2010			
	Russell 1000		Russell 2000		Russell 1000		Russell 2000	
Sector	Cap Weight	SEW	Cap Weight	SEW	Cap Weight	SEW	Cap Weight	SEW
Consumer Discretionary	14.4%	7.2%	5.5%	2.8%	–1.5%	8.8%	7.3%	7.8%
Consumer Staples	8.5%	7.3%	1.7%	4.2%	3.7%	15.5%	2.1%	13.3%
Energy	5.8%	6.2%	0.5%	1.8%	1.7%	25.4%	4.4%	26.8%
Financial Services	23.7%	11.3%	12.4%	5.2%	1.0%	13.1%	22.7%	14.5%
Health Care	13.9%	7.0%	1.5%	0.0%	1.9%	17.6%	7.3%	11.7%
Materials & Processing	3.7%	4.8%	–0.4%	0.2%	0.6%	12.7%	7.7%	13.6%
Producer Durables	11.4%	8.5%	5.5%	5.6%	–0.6%	12.9%	3.3%	11.6%
Technology	31.7%	18.3%	19.2%	12.2%	–13.9%	3.2%	–15.7%	0.2%
Utilities	12.4%	10.5%	6.3%	9.5%	–3.8%	1.5%	–0.7%	–7.7%

There are some interesting results we should consider from the sector contributions, particularly the large deviation in the technology sector from 2000 to 2010 for both the Russell 1000 and the Russell 2000. The differences in contribution to return cannot entirely be attributed to the sector weight differences or the different rebalance schemes. We provide the contribution to return by deciles below in Table 9 for the Russell 1000 cap weighted index. The large negative contribution of –22.58% from the top 10% of the largest companies in the index played a significant role in the index achieving a negative return for this time period.

Table 9 / Contribution to return by company size deciles

	Russell 1000					
	7/01/1996–12/31/1999			12/31/1999–6/30/2010		
	Average Weight	Total Return	Contribution to Return	Average Weight	Total Return	Contribution to Return
MC Decile 1	54.35	139.41	72.30	52.98	–30.91	–22.58
MC Decile 2	15.00	110.15	16.68	10.77	6.08	0.59
MC Decile 3	8.16	78.40	7.41	7.38	4.12	0.39
MC Decile 4	5.99	158.36	8.23	5.56	73.16	2.88
MC Decile 5	4.24	68.49	3.32	4.25	37.34	1.67
MC Decile 6	3.42	37.14	2.06	3.10	52.56	1.44
MC Decile 7	2.73	45.97	1.85	2.64	82.04	1.50
MC Decile 8	2.45	39.90	1.75	1.83	73.31	1.06
MC Decile 9	1.64	86.30	1.43	1.87	77.39	1.18
MC Decile 10	1.47	40.78	0.76	5.27	41.31	2.42
[N/A]	0.56	106.83	0.64	4.34	–19.16	0.55

Source: FactSet

The Fama-French regression analysis showed the large influence of smaller capitalization securities in the SEW index. We surmise from these results that the outperformance of smaller capitalization securities and the underperformance of large cap companies led to the SEW index outperformance from 2000 to 2010. This suggests that when larger cap companies outperform smaller cap companies, the SEW index might underperform a cap weighted index.

Conclusion

Equal weighting by constituents, while simple, introduces sector risk into an index. Russell Indexes has introduced sector equal weighted indexes as an enhancement to equal weighted indexes currently in the marketplace. We find that the sector equal weighted indexes provided a better absolute return with lower volatility for the time period tested. On the basis of simulated returns, we find that equal weighting by sector provided better risk-adjusted returns than a constituent equal weighted index and the respective cap weighted index over our sample periods. These results are consistent across the domestic large cap and small cap spectrum and the global developed and emerging markets. The analysis of the performance attribution and regression shows that the sector equal weight index is strongly influenced by small capitalization securities in the index, suggesting that the sector equal weight index might underperform a cap weighted index when larger capitalization securities outperform smaller capitalization companies.

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Disclosures

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