RVK

RVK Investment Perspectives
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REBALANCING MULTI-MANAGER EQUITY PORTFOLIOS

Introduction

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Rebalancing a portfolio at the multi-asset level is a well understood and widely utilized tool by strategic long-term investors to keep the total portfolio close to chosen risk and return targets and intended levels of diversification. An appropriate rebalancing policy serves to narrow a portfolio's range of outcomes by steering it towards its respective return and risk targets, thus avoiding misalignment with the investor's long-term goals.

For many multi-asset class portfolios, the public equity allocation – or equity composite -- is the most powerful driver of both total return and risk. The analysis presented here explores the application of specific rebalancing methods within the equity composite. The paper outlines several straightforward methodologies that investors can apply to their own equity composite with the goal – as in the case of the total portfolio – to ensure diversification and steer risk and return toward their intended drivers. One key assumption made throughout the analysis was an explicit intention to provide full exposure to the global equity market. This objective of full market exposure is fairly common among multi-asset investors seeking to fulfill an asset allocation that includes equities along with other diversifying investments. More specifically, the rebalancing plans presented centered on controlling tracking error versus the MSCI All Country World Investable Market Index (MSCI ACWI IMI) with the goal of seeking to improve the information ratio of a global equity portfolio.

We set out to show that there were at least two benefits from a sound rebalancing applied to the equity composite. They were:

1. A reduction of relative risk (tracking error versus the MSCI ACWI IMI) through balanced risk and return contribution from regions, market cap segments, style groups or individual strategies. This relative risk reduction was expected as the analyzed rebalancing policies reduce overweight or underweight equity composite exposure to specified absolute or benchmark relative allocation targets.

2. Excess returns versus the MSCI ACWI IMI from rebalancing. This benefit was expected from incremental excess returns driven by the contrarian act of reducing exposure to mature equity market trends and increasing exposure to developing equity market trends or neglected areas of the market over the course of a long-term period.

This study included a long-term comparison of different rebalancing strategies to measure how each has performed over the past 25 years. This period of length was chosen to avoid the risk of period dependency and to match the many portfolios who have long-term or often perpetual focuses. The end goal was to evaluate whether the two benefits discussed above would have actually been realized during this period. This analysis does not include the potential effects of taxes which are likely to be triggered by rebalancing and so is most applicable for tax exempt or tax agnostic investment pools.

There were many takeaways garnered from this exercise which could prove useful to investors. One primary observation was that a less complex rebalancing strategy which requires far fewer rebalancing events could be as effective as a more complex plan that requires frequent rebalancing.

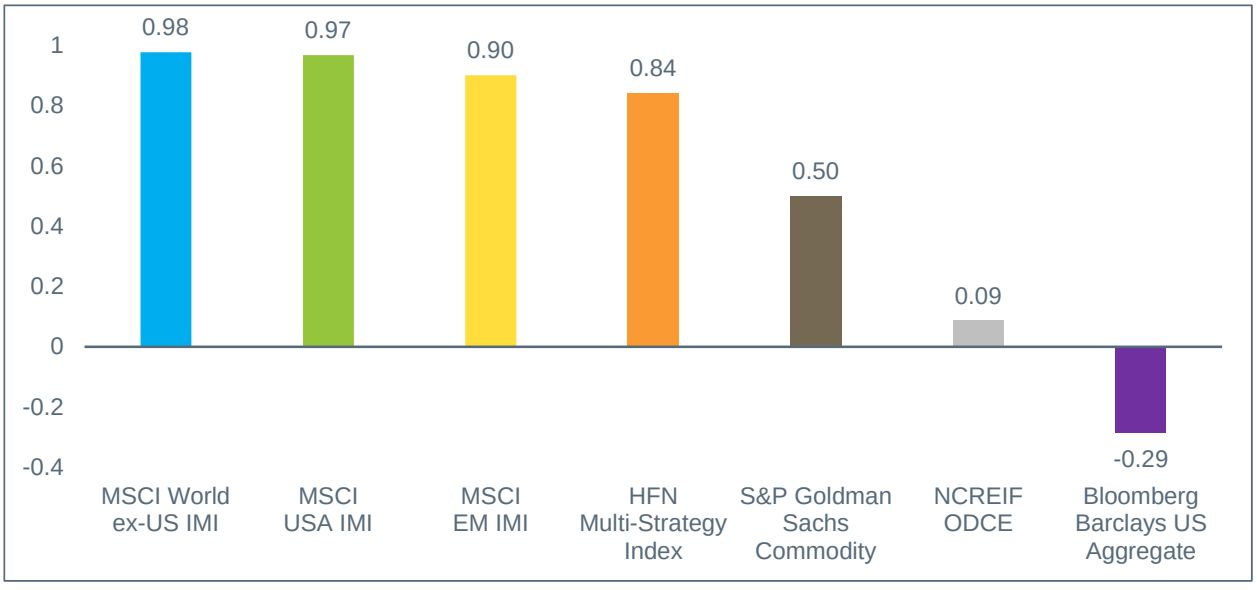
Background

Rebalancing can be an uncomfortable exercise for investors, as it typically requires moving assets from regions, market cap segments, styles or individual strategies that have performed well and have violated their prescribed allocation range or limit. The proceeds are then normally placed into areas of the market or strategies that have experienced lower trailing returns. In short, rebalancing is an inherently contrarian endeavor.

As with other contrarian practices, rebalancing is not without risk, particularly in the short-term. Investors should educate themselves and enter into a rebalancing plan knowing that the impact can sometimes be muted or potentially detract in the short-term when compared to a buy-and-hold approach. One fundamental determinant of whether equity composite rebalancing is more likely to bring material benefits over time are the correlations of two equity asset classes or mandates. If highly correlated, the risk and return benefit of rebalancing may be limited, however correlations can experience temporary declines.

Figure 1 shows that all equity geographic regions are highly correlated over long periods of time, especially when compared to the correlations between equity and fixed income or alternative asset classes. Put simply, reducing an equity allocation to invest in fixed income or alternatives will have a greater impact on total portfolio return and risk compared to rebalancing from one equity segment to another within the portfolio's equity composite. The underlying reason is straightforward: the non-equity asset classes are far less correlated with global equity markets than any of the subcomponents within global equity are with one another. All regional equity markets share a dominant driver of return and risk – equity market risk.

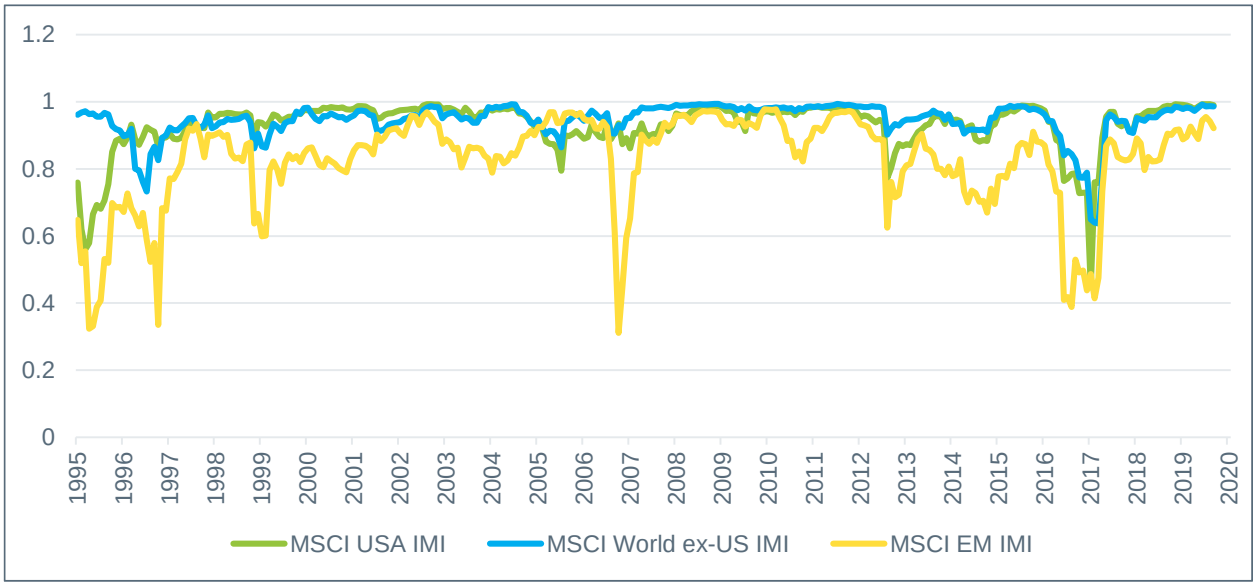
Figure 1: 20-Year Asset Class Correlations with the MSCI ACWI IMI



Performance shown is gross of fees as of 6/30/2020.

While the effects on the total portfolio of rebalancing between equity asset classes are almost certain to be lower than the effect of rebalancing between equity and non-equity asset classes, an investor should also keep in mind that the intra-equity market correlations are not static. Figure 2 shows that the correlations between equity regions go through periods where they are sharply lower than their long-term averages. Capturing these sharp declines in correlations, events which are difficult or more likely impossible to predict, is the driving reason behind having a disciplined rebalancing plan in place for the equity composite. These are precisely the periods where an equity composite rebalancing policy can produce potential return enhancement and risk mitigation benefits. Failing to adjust during these periods is an opportunity cost for both the composite and the total portfolio which can grow over time if specific allocations become significantly overweight or underweight relative to their policy or benchmark targets and remain so until market or manager performance intervenes.

Figure 2: 3-Year Rolling Correlation with the MSCI ACWI IMI



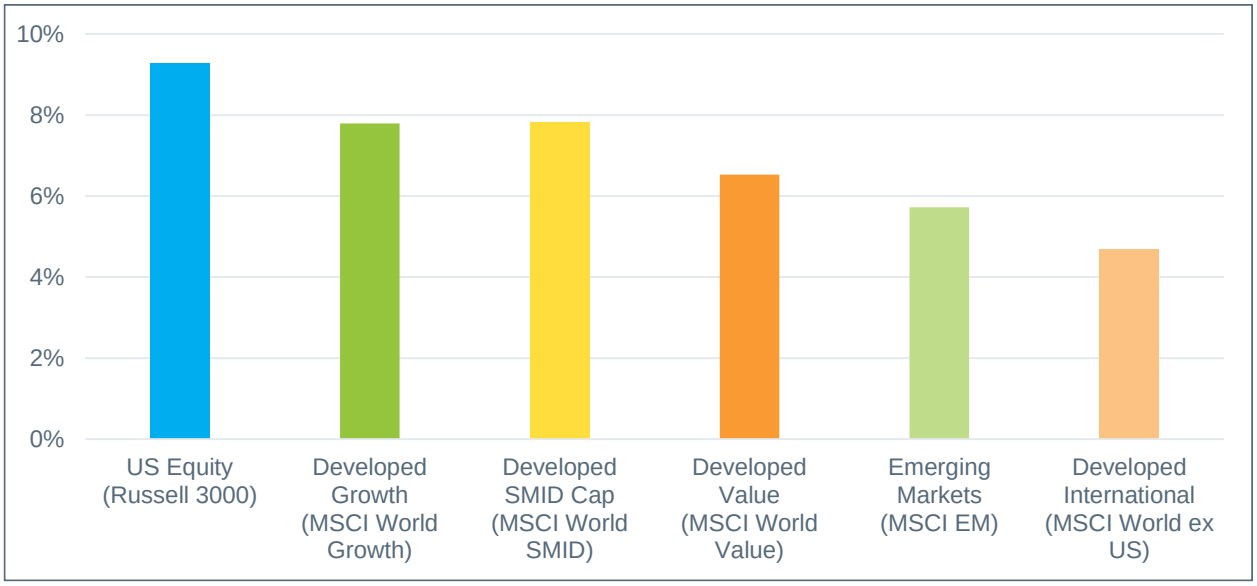
Performance shown is gross of fees as of 6/30/2020.

Rebalancing plans – whether applied to the total portfolio or the equity composite -- are not designed to produce the highest possible returns each year. Rather the objective is to help prevent a portfolio from taking excessive relative risk versus its prescribed benchmark by constraining known risk exposures and allowing potential sources of compensated risk exposures (such as active stock selection or factor risk) to determine the excess returns of the portfolio. Interestingly, buy-and-hold investors might be surprised to find that without rebalancing activity, their portfolios could fail to capture developing trends as their portfolios become overweight to maturing trends with higher trailing performance. Investors using a rebalancing strategy naturally retain exposure to both current and future market trends by not becoming too heavily reliant on either.

Market Environment

As is commonly known, the past 10-year period has been characterized by persistently stronger returns from growth and US equity stocks when compared to other styles and regions. The dominant performance of these groups is now having an impact on even longer time horizons, as shown in Figure 3.

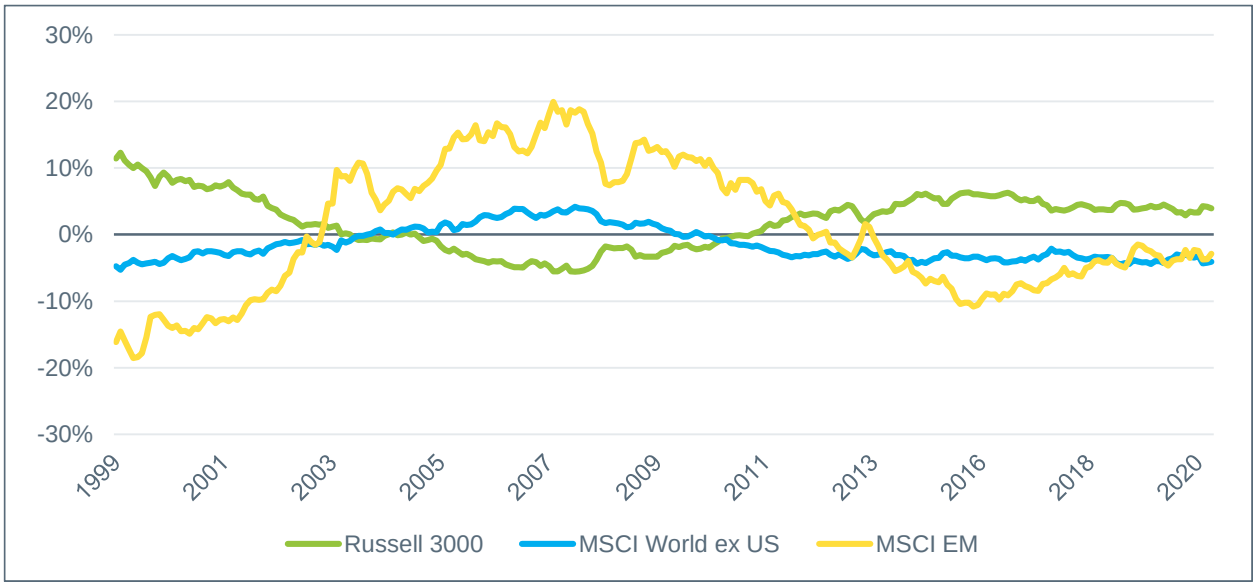
Figure 3: 25-Year Annualized Returns



Performance shown is gross of fees as of 6/30/2020.

However, as Figure 4 illustrates, the leadership position of regional equity segments shifts over time. This aspect of equity markets can be difficult to discern when only reviewing long-term trailing data. For forward looking investors, this can often be beneficial as the next market cycle normally looks quite different than the past market cycle. It is critical to remember that there were periods in the past 25 years, for example, where US and growth stocks were not the obvious areas in which to invest. Putting money to work in these spaces could actually have been viewed as contrarian at different times in the past, even though they appear today to be obviously optimal choices in hindsight.

Figure 4: Rolling 5-Year Excess Returns of Major Equity Regions vs. the MSCI ACWI IMI



Performance shown is gross of fees as of 6/30/2020.

The awareness that equity segment leadership can shift over time is beneficial for investors who are able and willing to implement a rebalancing strategy for an equity composite. Figure 4 also illustrates an attribute of global equity markets, which can make rebalancing a difficult activity for investors; namely, that regional trends can provide much better returns than others for extended periods of time. Similar conclusions can be drawn for capitalization and style trends. Given that regional, market cap and style leadership trends can last for multiple years, an equity composite rebalancing policy that is overly aggressive from a timing point of view can create opportunity costs as investors will be rebalancing assets from segments that have worked well and placing them in segments that have not been in favor long before the trends reverse. However, a thoughtfully designed rebalancing plan can help investors avoid missing out completely on exposure to ongoing long-lived trends. Instead, investors can control that exposure while reducing the risk of becoming significantly underweight segments of the market that have underperformed and better capture the inflection point when performance starts to improve.

In summary, while rebalancing can have long-term benefits, the opportunity cost of rebalancing can be real in the short-term. The primary goal should be to design a rebalancing plan which investors can implement and remain committed to over the long-term, consistent with the horizon of the total portfolio. Often, this will mean opting for a plan where there are fewer rebalancing events as long as the benefits from rebalancing can still be realized.

Methodology

A benchmark-aware portfolio construction approach was used in this study to explore the impact of rebalancing different exposures (region, capitalization and style) within an equity composite over a 25-year historical time period. The various levels that were analyzed were interconnected and must be addressed as such. While composite structures differ from investor to investor, three different levels were monitored for this study, as illustrated below in Figure 5.

Figure 5: Region and Market Cap Overview

<table>
<tr><td>Level 1: Global Composite</td><td colspan="4">Global Composite</td></tr>
<tr><td>Level 2: Region Composites</td><td colspan="2">US</td><td colspan="2">Developed International</td><td>Emerging Markets</td></tr>
<tr><td>Level 3: Style and Market Cap Composites</td><td>US Large Cap</td><td>US Small Cap</td><td>Developed Int'l Large Cap</td><td>Developed Int'l Small Cap</td><td></td></tr>
</table>

Due to the focus on controlling tracking error risk, standard market cap weighted benchmarks were used for each sub composite, region composite and global composite. Typically, investors compare the performance of their active managers, passive strategies and composites versus these standard benchmarks. The rebalancing strategies examined were designed to control certain exposures relative to the market cap benchmarks. Different risks can be controlled through rebalancing activity within each composite level, as described on the following pages:

Single Manager Risk (controlled at the Sub Composite level): Allowing a single or small subset of managers to dominate portfolio risk and returns runs counter to a strategy seeking protective diversification in the equity composite via a multi-manager approach. Institutional investors commonly assign target weights or ranges to manager allocations within the equity composite. This study set initial managers weights within each sub-composite equal to one another. Median manager returns were used for the study, so moderate tracking errors were expected for growth and value managers. Should an investor wish to pair low and high tracking error managers the weight assigned to each manager group could differ if an investor decided to target equal tracking error contribution from each manager.

Style Risk (controlled at the Sub Composite level): Whether a portfolio is style neutral (compared to a standard market index) or has an intended style bias, this risk must be monitored at the sub composite, regional and global composite levels. Because the sub composite broad benchmarks generally provide roughly balanced exposure to growth and value stocks by construction, this study paired growth and value managers for each sub composite, with equal weights assigned to each. The result is that the manager and style rebalancing efforts are controlled through the equal manager allocations within each sub composite.

Market Cap Risk (controlled at the Regional Composite level): Similar to style, investors can choose portfolio market cap neutrality or target an intended bias. For the US composite, this study targeted a market cap allocation similar to the Russell 3000 Index. For the Developed International composite, this study targeted a market cap allocation similar to the MSCI EAFE IMI.

Regional Risk (controlled at the Global Composite level): This study used the regional weights (US, Developed International, Emerging Markets) within the MSCI ACWI as the benchmark for rebalancing regions to resemble a market cap weighted index.

The Emerging Markets composite was not rebalanced based on style or market cap allocation. Some investors can choose to further breakout the emerging markets asset class into growth, value and small cap buckets. The study in this paper targets emerging markets using all cap strategies with the main intention of capturing full exposure to the region.

Two simple approaches were used for rebalancing, as described below: threshold-based and calendar-based.

Threshold-based Rebalancing: Threshold limits are placed on specific exposures (i.e. small cap exposure). When a threshold is exceeded then the portfolio is rebalanced back to push an exposure back to its target weight. In the case of a market cap rebalance, if a small cap threshold is exceeded then funds are taken from the small cap composite and placed into the large cap composite thereby reducing the excess small cap stock exposure.

Calendar-based Rebalancing: Specific targets (absolute or benchmark-relative) are assigned to certain portfolio exposures. The portfolio is rebalanced back to these targets based on a set schedule (6 months, 1-year, 2-year, etc.).

For this study, four initial different rebalancing strategies were reviewed relative to a buy-and-hold portfolio. The buy-and-hold strategy served as a control group to compare against the four active rebalancing strategies. This approach assumes an investor allocates to the respective portfolio at market weights, with no rebalancing activity throughout the given time period. The end result is a portfolio where style, market cap and region allocations are dictated only by market movements. Each composite started as a market weighted portfolio.

The initial five rebalancing strategies reviewed are below and on the following page:

- Composite A: Rebalancing thresholds of 1% for style, market cap and region allocations
- Composite B: Rebalancing thresholds of 2% for style, market cap and region allocations

- Composite C: Annual rebalancing schedule
- Composite D: Biennial rebalancing schedule
- Composite E: Buy-and-Hold

The model portfolio structure used for this study, outlined below in Figure 6, was intended to mimic a common portfolio structure often implemented by investors. The weights to each regional composite (US, Developed International and Emerging Markets) were rebalanced towards the MSCI ACWI regional characteristics. Within the US and Developed International composites, the large and small cap allocations were rebalanced toward the Russell 3000 Index and MSCI EAFE IMI market cap weights, respectively. The US Large Cap, US Small Cap and Developed International Large Cap segments were style rebalanced as well. Style specific allocations were not used within Developed International Small Cap or Emerging Markets.

Figure 6: Global Equity Composite Structure

<table>
<tr><th colspan="4">US</th><th colspan="3">Developed International</th><th>Emerging Markets</th></tr>
<tr><th colspan="2">US Large Cap</th><th colspan="2">US Small Cap</th><th colspan="2">Developed Int'l Large Cap</th><th>Developed Int'l Small Cap</th><th>100% Active Emerging Markets</th></tr>
<tr><td colspan="2">50% Passive S&P 500</td><td>50% Active Small Growth</td><td>50% Active Small Value</td><td>50% Active Int'l Large Growth</td><td>50% Active Int'l Large Value</td><td>100% Active Int'l Small Cap</td><td></td></tr>
<tr><td>25% Active Large Growth</td><td>25% Active Large Value</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Every rebalance resulted in the portfolios return to their target weights. For the portfolios using a threshold approach, the rebalance occurred the month after the threshold was triggered, but only if the portfolio remained beyond the threshold. Gross of fee active manager returns were used for each sub-composite sourced from the relevant manager peer groups within the eVestment database. The monthly median return from each asset class were used to estimate the returns of active management over the past 25 years. These base-level manager return steams underlined each composite, so that the rebalancing strategies could account for the differences in return and risk throughout the period. The study resulted in the creation of five different global composites using the five rebalancing methodologies, Composites A through E, as outlined earlier. The same median manager return streams underlined each sub-composite to better isolate the impact of the rebalancing plans on return or risk levels for each composite.

The structure of the composite and the type of rebalancing plans reviewed were intended to follow practices observed from investor behavior, but there are real world aspects of portfolio construction that this study does not address. Two of these aspects are introduced below. The study did not address either directly as both are very specific decisions or elements of investor portfolios.

Tracking Error Targets: Targeting a specific tracking error for the portfolio can help investors build related year-to-year expectations for deviation from benchmark performance. Increasing or decreasing tracking error can be targeted through changing the allocation to active management or targeting active managers with specific levels of tracking error. Since investor tracking error preferences or requirements can vary widely it was not factored into this analysis.

Cash Flows: Rebalancing plans which consider patterns of expected regular cash flows are helpful in designing sustainable rebalancing efforts, which may be implemented with fewer out of cycle or scale transactions needed. Intermittent cash flows – commonly encountered in almost all portfolios, for example allocation pension contributions and benefit payments or endowment gift income and spending requirements -- can be viewed as additional opportunities to move toward desired exposure targets within the equity composite.

Results

The results shown in Figure 7 are annualized over a 25-year period, with excess returns calculated versus the MSCI ACWI IMI. We draw several conclusions from this analysis:

1. Composite E (Buy-and-Hold) underperformed the rest of the group, while also generating a higher level of tracking error. In our view, this suggests potential value to investors in equity composite rebalancing.

2. Given the lower tracking error levels and higher absolute returns of the rebalanced portfolios, the risk-adjusted returns of these rebalancing methodologies also outpaced the Buy-and-Hold results. This also confirms the potential value of rebalancing.

3. However, the number of rebalances required, even when spread over 25 years, is likely daunting for many investors (for instance, the 1% Threshold strategy would have resulted in over five rebalancing events per year, on average). The rebalances spurred by style risk were most frequent as these were applied to three sub-composites (US Large Cap, US Small Cap, Int'l Large Cap). Market cap risk also caused a significant amount of rebalancing for the US and Int'l Composites. The region-based rebalances were less frequent as these were applied only to the total Global composite. This suggests that unless rebalancing was executed via normal asset flows, transactions costs could significantly reduce or fully offset benefits from rebalancing.

These observations led to the creation of a Composite F which was based around major market downward movements rather than portfolio exposures. The Composite F portfolio would be rebalanced to its regional, market cap and style targets only when the total global market declined by 15% or more over the most recent trailing 12-month period. Following a rebalance, there would be a 6-month blackout period until another rebalance could occur if the 15% decline was still in effect. Using these criteria, there were six rebalancing events during the 25-year period. Rebalancing under this paradigm significantly reduces the risk that transactions costs would materially reduce the benefits. Three occurred during the 2000-2002 period, two occurred during the 2007-2008 period and one occurred recently in April 2020.

Figure 7: Risk and Returns of Rebalancing Composite

Global Composites Rebalancing Plan Results (Gross of Fee Returns versus MSCI ACWI IMI)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Region Rebalances
Global Composite A (1% Threshold)	8.39	1.75	1.36	1.29	15
Global Composite B (2% Threshold)	8.39	1.75	1.36	1.29	7
Global Composite C (1-Year)	8.43	1.79	1.36	1.32	25
Global Composite D (2-Year)	8.38	1.75	1.33	1.31	12
Global Composite E (Buy-and-Hold)	8.32	1.68	1.46	1.15	0
Global Composite F (15% Rule)	8.39	1.75	1.35	1.30	6

Performance shown is gross of fees as of 6/30/2020.

The results of Composite F illustrated the benefits of rebalancing without incurring more frequent rebalancing events and related transaction costs. With these additional results in mind, the broad conclusions were:

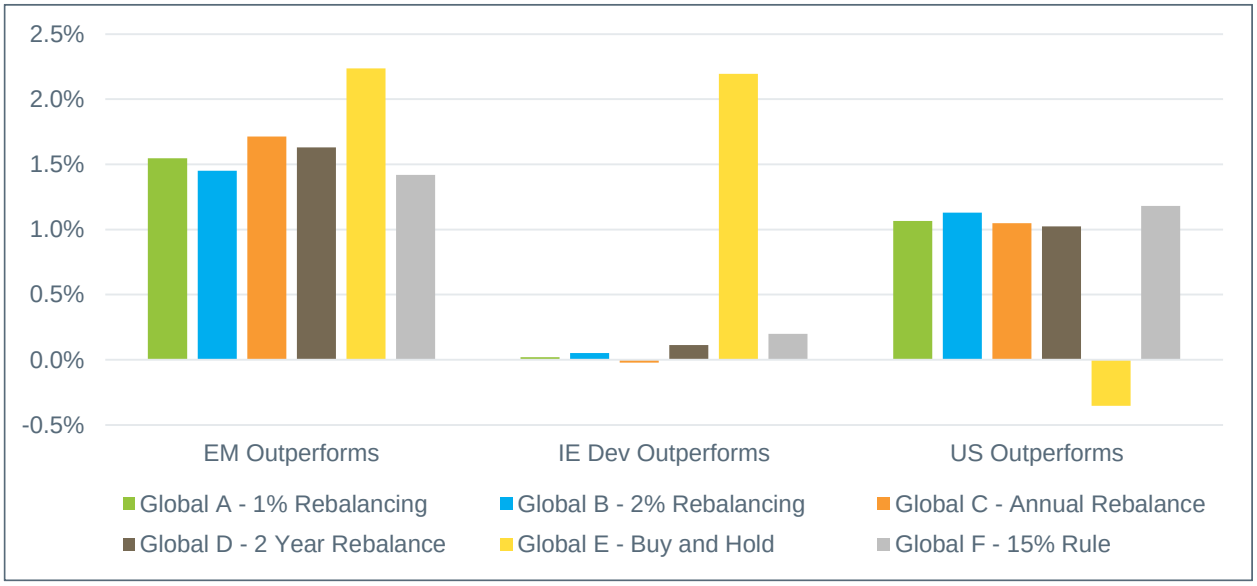
1. Rebalancing, despite the frequency, had a positive impact on the composites.
2. There were certain risks, such as style or market cap, where wider thresholds or less frequent calendar rebalances might be needed to reduce the transactions costs and effort required to follow a strategy.

The next step of the analysis involved evaluating how each composite performed in different types of market environments.

Further Evaluation

The portfolios behaved differently during months when different regions or styles led. A key finding was that Composite E (Buy-and-Hold) portfolio resulted in an underweight to the US market after the sharp drop in returns during the technology crash of 2000-2002 and then further underweight after the Great Financial Crisis (GFC) of 2008-2009. It remained underweight to the region for the remainder of the time period. If the rebalancing plans had not increased weight to the US region following the dotcom era crash, then they would not have benefited as heavily from the recent dominant performance of that region. The Buy-and-Hold portfolio relied more heavily on performance during months when developed international or emerging markets outperformed, and trailed in the current extended period of US equity leadership (illustrated in Figure 8 on the following page).

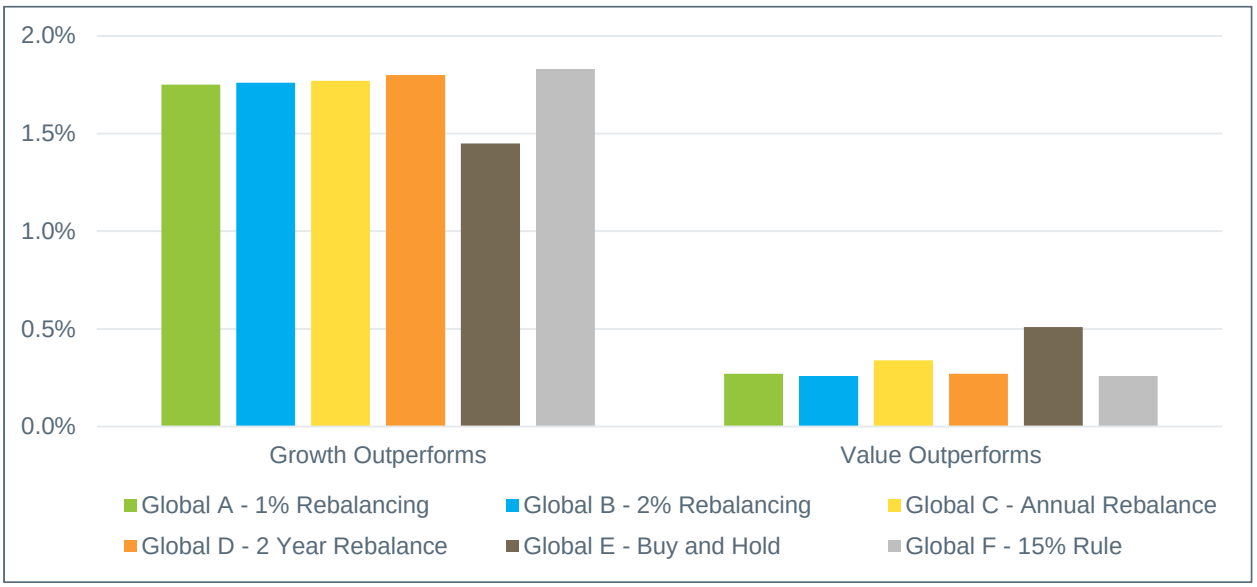
Figure 8: Composite Excess Returns in Periods of Regional Leadership



Performance shown is gross of fees as of 6/30/2020. Excess returns are annualized.

It is also interesting to note that annualized excess returns were positive for all composites in both growth and value led months. Additionally, the rebalanced portfolios were able to capture the growth returns more successfully, while the Buy-and-Hold portfolio relied more on excess returns in value led months. This analysis is shown in Figure 9.

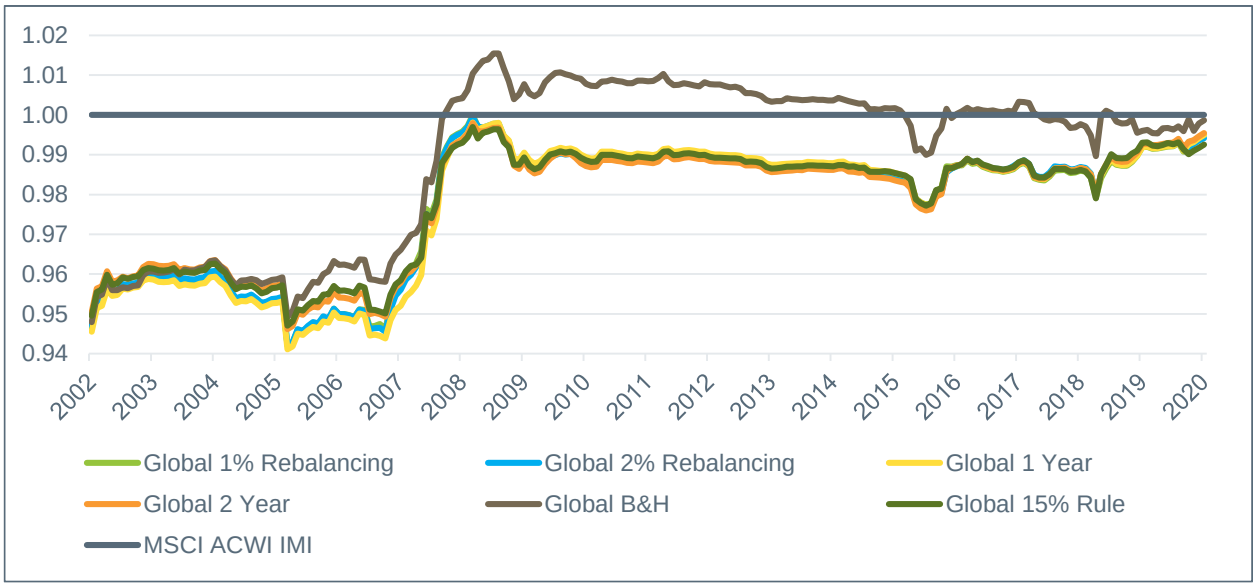
Figure 9: Composite Excess Returns in Periods of Style Leadership



Performance shown is gross of fees as of 6/30/2020. Excess returns are annualized.

Market sensitivity was evaluated for each portfolio over rolling time periods. Figure 10 illustrates that the Buy-and-Hold portfolio exhibited greater beta levels during a majority of rolling periods. The ability to better control the market sensitivity (as measured by beta) and reduce the variability of beta can be another potential benefit of implementing a rebalancing strategy.

Figure 10: Rolling Market Sensitivity (Beta)



Performance shown is gross of fees as of 6/30/2020. 3-year rolling beta vs. the MSCI ACWI IMI.

Conclusion

The simplicity of a Buy-and-Hold equity composite is likely enticing for many investors, especially given the strong returns of the US and growth segments over the past 10 years. Despite this, there are benefits for investors looking for a disciplined rebalancing strategy with a preference for balancing risks with an equity composite. Specifically, the rebalanced portfolios resulted in improved absolute returns and risk-adjusted returns. However, the performance results and market sensitivity of more complex rebalancing strategies, which involved a meaningfully higher number of rebalancing events, were not significantly different than those of the lower maintenance strategies. For investors with less ability to rebalance a portfolio frequently, focusing on strategies where only select risks are addressed (for instance, rebalancing region exposure, but not market cap or style) or using a market event driven methodology are likely more realistic paths toward a sustainable rebalancing strategy. Based on the results of this study, these somewhat lower maintenance rebalancing approaches appear able to achieve comparable results to more intricate rebalancing systems, and we encourage institutional investors with limited capacity to consider employing them as opposed to resigning themselves to the drawbacks of a buy-and-hold investment approach.

Additional observations from this exercise included:

- Depending on the exposure (region, market cap, style, individual strategy) being controlled, the 1% threshold approach resulted in a number of rebalancing events that is likely beyond the comfort level of most investors. Specifically, the style rebalances within the US small cap segment totaled 47 over the 25-year period. If style or

market cap rebalances strategies are deemed too frequent, investors could consider wider bands or calendar-based plans.

- As is true for total multi-asset class portfolios, the most beneficial periods for the rebalanced equity composites tended to be around market events, specifically when increasing the allocation to the US segment following the Tech Crash and GFC. These decisions led to less attractive returns for short periods, but positioned the portfolios for an extended period of outperformance.

- Remaining committed to a long-term strategic plan is often the most important decision. Any of the rebalancing approaches analyzed in this study would have been beneficial for investors that implemented them consistently.

Rebalancing can help investors navigate the unknowns of investing. Taking advantage of the shorter-term cycles through the implementation of a long-term rebalancing plan can help limit unintended biases in a portfolio. Another potential benefit for implementing a rebalancing strategy is that it can prove useful for investors with frequent cash flows by removing much of the guess work throughout a market cycle. A rebalancing strategy can act as guide to place incoming funds or source outgoing funds. With the potential benefits identified, investors must also keep in mind that an overly complex or high maintenance strategy may not be worth the additional effort and transaction costs. Generally, there are three criteria to keep in mind when developing a rebalancing strategy. The strategy should:

- Be transparent, with straightforward implementation procedures.

- Balance the drivers of portfolio returns over changing market cycles.

- Avoid causing overly frequent or unnecessary rebalancing events and incurring the associated transaction costs.

With these points of guidance in mind, we offer the caveat that the rebalancing portfolios in this study were not real-world exercises in the sense that they were actually executed over these time periods. However, we would point out that they rest on actual performance data drawn from the equity manager universe. Despite our caveat, we believe investors may be able to use the lessons learned from this evaluation to construct a strategy that best fits their needs. The primary objective of an effective rebalancing strategy, regardless of the strategy selected by an investor, should be to implement a sustainable rebalancing discipline, cognizant of its related strengths and weaknesses, which can be adhered to over the long-term, even when difficult conditions arise.

Investors can also choose to rebalance on an as-needed basis relying on their experience and view of changing market conditions. However, having a specified plan can help avoid the impact of behavioral biases. As long-term investors well know, there are instances when redeeming from a strategy with strong performance and increasing the allocation of a strategy with weaker performance can be a very challenging prospect.

Appendix

The relative results and number of relevant rebalancing decisions within each region composite and sub-composite over a 25-year time period are included in the following tables. The primary focus of the paper was on the total performance of the global composites. However, brief takeaways from the sub-composite analysis are below.

- Composite A (1% Threshold) caused the highest number of rebalances, especially when applied to market cap risk in the US Equity Composite and style risk in the US Small Cap Composite.
- Composite B (2% Threshold) generally provided some of the top results within each composite with a reduced number of rebalancing events compared to the other strategies.
- Generally, none of the strategies solely relied on a single composite for generating excess returns. Where there were improvements compared to Composite E (Buy-and-Hold), they tended to be incremental and spread across each composite.

US Composites Rebalancing Plan Results (Gross of Fee Returns versus Russell 3000 Index)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Market Cap Rebalances
US Composite A (1% Threshold)	9.76	0.48	0.94	0.51	27
US Composite B (2% Threshold)	9.81	0.52	0.95	0.55	17
US Composite C (1-Year)	9.82	0.53	0.95	0.56	25
US Composite D (2-Year)	9.76	0.48	0.87	0.55	12
US Composite E (Buy-and-Hold)	9.69	0.40	0.84	0.48	0
US Composite F (15% Rule)	9.73	0.44	0.83	0.53	6

Int'l Developed Composite Rebalancing Plan Results (Gross of Fee Returns versus MSCI EAFE IMI)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Market Cap Rebalances
IE Dev Composite A (1% Threshold)	7.19	2.48	2.51	0.99	15
IE Dev Composite B (2% Threshold)	7.23	2.52	2.51	1.00	5
IE Dev Composite C (1-Year)	7.20	2.50	2.52	0.99	25
IE Dev Composite D (2-Year)	7.18	2.47	2.51	0.98	12
IE Dev Composite E (Buy-and-Hold)	7.23	2.52	2.52	1.00	0
IE Dev Composite F (15% Rule)	7.22	2.52	2.53	0.99	6

Performance shown is gross of fees as of 6/30/2020.

US Large Cap Composites Rebalancing Plan Results (Gross of Fee Returns versus Russell 1000 Index)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Style Rebalances
US LC Composite A (1% Threshold)	9.61	0.20	0.96	0.21	19
US LC Composite B (2% Threshold)	9.65	0.24	0.97	0.25	9
US LC Composite C (1-Year)	9.65	0.25	0.97	0.25	25
US LC Composite D (2-Year)	9.60	0.20	0.90	0.22	12
US LC Composite E (Buy-and-Hold)	9.58	0.17	0.84	0.21	0
US LC Composite F (15% Rule)	9.60	0.20	0.85	0.23	6

US Small Cap Composites Rebalancing Plan Results (Gross of Fee Returns versus Russell 2000 Index)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Style Rebalances
US SC Composite A (1% Threshold)	10.72	2.56	2.85	0.90	43
US SC Composite B (2% Threshold)	10.70	2.54	2.85	0.89	17
US SC Composite C (1-Year)	10.85	2.69	2.68	1.00	25
US SC Composite D (2-Year)	10.63	2.47	2.70	0.92	12
US SC Composite E (Buy-and-Hold)	10.53	2.37	2.62	0.90	0
US SC Composite F (15% Rule)	10.65	2.49	2.69	0.93	6

Int'l Large Cap Composites Rebalancing Plan Results (Gross of Fee Returns versus MSCI EAFE)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Style Rebalances
IE LC Composite A (1% Threshold)	6.82	2.28	2.43	0.94	19
IE LC Composite B (2% Threshold)	6.87	2.33	2.43	0.96	11
IE LC Composite C (1-Year)	6.87	2.33	2.46	0.95	25
IE LC Composite D (2-Year)	6.83	2.29	2.45	0.93	12
IE LC Composite E (Buy-and-Hold)	6.83	2.29	2.44	0.94	0
IE LC Composite F (15% Rule)	6.87	2.33	2.47	0.95	6

IE Small Cap and EM Composites (Gross of Fee Returns versus S&P Global ex US Small and MSCI EM)	Total Return	Excess Return	Tracking Error	Information Ratio	Number of Style Rebalances
IE SC Composite	9.12	2.50	3.12	0.80	N/A
EM Composite	7.80	2.09	2.62	0.80	N/A

Performance shown is gross of fees as of 6/30/2020.

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[1]Between July and October 2019, Greenwich Associates conducted interviews with 1,100 individuals at 896 of the largest tax-exempt funds in the US–including corporate and union funds, public funds, endowments and foundations–with either pension or investment pool assets greater than $150 million. Study participants were asked to provide quantitative and qualitative evaluations of their asset managers and investment consultants, including qualitative assessments of those firms soliciting their business and detailed information on important market trends. RVK is one of three firms recognized in the large investment consultant category. The ratings may not be representative of any one client's experience with RVK; rather they are representative of those clients submitted and that chose to participate in the survey. The results are not indicative of RVK's future performance.
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