Managing Multi-Asset Portfolios in Turbulent Market Environments
Key Takeaways

There is no “one ring to rule them all”—no single rebalance policy is superior under all circumstances. Our analysis of rebalance strategies over roughly the last 20 years shows that no one policy reliably produces the best outcomes.

The tradeoff between cost and risk control under typical market conditions (in terms of trading costs and liquidity) argues for fairly narrow rebalance bands. We find that a reasonable balance between minimizing costs and controlling risk comes with asset class bands of approximately 2%, rebalancing halfway to target.

Under periods of high volatility when trading frictions rise (i.e., correlations and trading costs surge and liquidity falls), tighter bands become undesirable and indeed can be counterproductive as the portfolio is whipsawed by market movements. Under such periods, it is preferable to widen the bands to about 5%, lowering the frequency of rebalancing.

Alpha should be derived from the larger portfolio allocation decision and should not be thought of as an objective or outcome of an “optimal” rebalance policy. And while return is not a specific objective of a rebalance policy, a well-designed rebalance strategy should not impose costs that reduce returns.

There is an important role for active management in the rebalance policy during periods of extreme volatility—insights about trading costs and execution, market liquidity and investment opportunity can be particularly impactful at such times.
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Identifying and maintaining a desired asset allocation over time is a universal concern of asset managers and their clients. This is because asset allocation is the single most important determinant of portfolio risk and return over time. But while the intended allocation may be static, no living, breathing portfolio is stationary. Because markets are dynamic, the more finely we tune our portfolio, the more it needs maintenance. So in addition to the initial allocation decision, we must also carefully consider our portfolio rebalancing policy. Said differently, every investor has a goal, an investment policy they are trying to express. Rebalancing is a perhaps underappreciated tool to help achieve those portfolio goals.

A rebalance policy is not an alpha generation tool in its own right. Rather, the focus on return enhancement and alpha generation should be at the strategic and tactical allocation level. The rebalance policy is the tool or methodological approach we use to keep the portfolio on track in an effort to meet its investment objectives. Questions about the “best” rebalance policy are complicated, and the problem has been subject to significant analysis by practitioners and academics. What’s more, the environment in which the portfolio operates turns out to be extremely important—what works best in “normal” market conditions may be impractical during moments of extreme volatility. In this paper, we define the problem, review the existing literature, and present our findings with particular emphasis on rebalancing during volatile markets.

Setting Up the Problem

Each rebalancing strategy carries a tradeoff between transaction costs and tracking error, or how closely we adhere to our portfolio allocation targets. And to further complicate matters, both transaction costs and market liquidity, or ease of trading, vary over time. Such costs and trading constraints are most pronounced in times of market stress. The recent market crisis provides an excellent case study of these effects. As a result, we believe a discussion of rebalancing theory and practice is particularly timely now, in the wake of an historic market sell-off and rebound, when allocations may be quite far from their intended targets.

When we think of rebalancing a portfolio, we may first think of a few core objectives that typically underpin a rebalance policy. As a generic objective, we wish to minimize tracking error to a target portfolio (or even a benchmark), or to minimize drift away from its target. It is important to understand, however, that these specific objectives are designed to serve a broader purpose: to minimize deviation from our portfolio objectives, expressed by our investment policy. For example, if a portfolio has a low-risk objective, we must not allow equity exposure (a principal source of absolute risk) to become too high. Specific rebalancing strategies such as tracking error minimization are tools we use to accomplish this goal, not goals in and of themselves. Additionally, at the core of any rebalance policy is an inherent tradeoff between meeting these objectives and the costs required to do so. Here we focus on costs that are obvious and quantifiable, such as the spread paid to a market maker or a commission paid for execution. We must also consider more abstract costs involved in executing the strategy since greater complexity and the need for coordination among portfolio managers and traders may ultimately lead to higher fees.

Lastly, it is critical that we form a disciplined framework as the foundation of our policy. This is because a rebalancing policy must be consistent across portfolios and across time. Of course, we do not refer to naïve rebalancing approaches based on calendar dates or time periods. Rather, it is clear that rebalancing decisions should depend on asset weights, volatility levels and tracking error considerations. We believe an effective rebalancing policy then should consist of clear guidelines, not rules to be followed blindly. They should allow some room for portfolio manager judgment regarding execution and implementation. This is consistent with our view that there must always be some subjectivity in portfolio management, which we believe to be a significant advantage of active management. Knowledge of market liquidity, structural changes across asset classes, and where key opportunities may lie are valuable context for this process. Nevertheless, a rebalancing policy with clear guidelines should form the disciplined foundation at the core of any strategy.

As we look closely at how to construct a policy that navigates these objectives, we maintain a focus on the additional challenges presented by high-volatility environments. A rebalance policy designed only around average market conditions can quickly fall flat when correlations surge, liquidity disappears and trading costs jump. The COVID-19 crisis has highlighted many of these challenges and presents an excellent case study for designing a successful rebalance policy.

Of course, investment flows in or out of a portfolio provide a mechanism to more or less continuously rebalance in “normal” environments, selling overweight assets to fund outflows, and directing inflows to underweight assets. In a typical environment, the steady daily nudges of these flows may be sufficient to
maintain the portfolio’s target weights for long periods. Hence, we focus here on high-volatility environments where the market can quickly outpace this equalizing force. In these cases, an asset manager must have a policy to make an active decision and rebalance from one part of the portfolio into another.

**Key Considerations**

While we must consider the various objectives of any portfolio on an individual basis in order to form an effective rebalancing strategy, we can generally begin with a basic structure that will underpin any such approach. First, we aim to minimize tracking error, drift in exposures, and unwanted volatility. Second, we must balance these objectives against the various costs of doing so. Beyond this, there are a host of theoretical and practical considerations, creating a more complex problem than it may seem at face value.

**Types of Rebalancing Strategies**

The simplest strategy would be to rebalance periodically, for example monthly or quarterly. This requires little regular intervention in the portfolio, but evidence shows that this naively ignores many of the variables described above. A practical strategy is to rebalance at a threshold, to a threshold. That is, to set some bands around asset weights that will trigger rebalancing when breached. Upon drifting outside this tolerance, we must also decide the extent to which we will rebalance. For example, we could rebalance fully to the target weight, or just enough to bring the portfolio into compliance. These parameters define how strict the rebalance policy will be. In general, tighter bands and more complete rebalancing enforce lower tracking error, but come at a higher maintenance cost due to portfolio turnover and transaction costs.

**Costs**

Costs can be both fixed (commissions) and variable (spreads and market impacts), and may be highly dependent on the market environment. For example, spreads may be much wider under high-volatility and low-liquidity conditions. Here we should also mention the potential cost of being whipsawed by volatile markets—that is, being forced to buy and sell the same assets repeatedly in an attempt to maintain a targeted asset allocation amid sharp volatility. We believe this is an area where active portfolio management and implementation may be well suited to identify opportunities and risks and minimize such “costs.”

**Frictions and Practical Execution**

The size of trades and available liquidity can make the difference between easy and impossible execution. While it may almost always be easy to transact in U.S. large-cap equities, for example, smaller or less liquid asset classes are more difficult. This can be particularly acute in times of market dislocation, and unfortunately, these are often the times that rebalancing must be considered. Compounding this difficulty, liquidity can be difficult to measure in a multi-strategy, fund-of-funds setting. Rebalancing can provide or take away liquidity for a strategy where the fund may not be the only investor. Lastly, in a fund-of-funds setting, there are limitations to when and how trading may be executed. Mutual funds transact only at end of day pricing, which is known only after market close, but decisions about rebalancing must be made well in advance of this, adding additional uncertainty.

**Benchmarking**

Any time we measure performance against a benchmark, that benchmark brings along with it assumptions about its construction that make it impossible to track in the real world. It is usually assumed that the benchmark will rebalance only at the end of each month. This means that any time we rebalance during the month, we may be more faithfully reflecting our portfolio’s investment objectives, but we diverge from the composition of the benchmark. Any resulting difference in performance must be later quantified and explained. It is also assumed that benchmark rebalances occur at market-close prices, an almost impossible feat of instant information processing and no-cost transacting.

**Potential for Return Enhancement**

If a manager has the ability to take opportunities in various assets or asset classes and incorporate this into a rebalance framework, there exists the potential for the rebalance policy to enhance the returns of the portfolio. This is an attractive idea, but little supported by evidence. Essentially, what is being described is a technical trading strategy. If assets exhibit a tendency toward mean reversion over a monthly horizon, for example, rebalancing monthly could deliver additional return for the portfolio. However, as with all technical strategies, this requires stability (invariance) in the occurrence of mean reversion, or its opposite, momentum. Again, it’s worth repeating that we see the rebalancing policy as an extension or tool of the larger asset allocation and investment policy. It is not meant to be a source of excess return in and of itself.

**Additional Considerations for Turbulent Markets**

Managing a portfolio through periods of high volatility exacerbates an already challenging problem and presents an additional set of challenges to executing any rebalancing strategy. The policy risks, and potential payoffs, are both significantly higher in periods of extreme volatility.

**The Recent Crisis as a Showcase of Extreme Risk**

Timing risk is an issue for any rebalance policy, but the extreme market movements of the recent crisis have made this risk much more obvious: if the equity market could swing up or down by 10% tomorrow, should we rebalance now, or hold steady? Beyond the risk of longer-term profit or loss due to lucky (or unlucky) timing, this also highlights the risk of whipsawing the portfolio, that is, being forced to repurchase recently sold assets in an effort to maintain proper portfolio positioning as the markets froth unpredictably. This crisis also exposed significant liquidity risks even in Treasury bonds, normally among the most liquid and easily tradeable assets. Further, the risks of diverging significantly from benchmark allocations were pushed to the extreme.
With equities down 13% in March, for example, this meant that if a 60/40 portfolio did not rebalance at month-end, it would have a 3% gap in equity exposure versus the benchmark as the benchmark rebalanced.

These conditions have spotlighted a key opportunity for active managers and traders to exercise their considered judgment. It is critical during periods such as this to have a deep understanding of asset class liquidity, and to incorporate manager views on the markets and on individual asset classes that help us navigate these conditions. This is because liquidity constraints and trading costs may soar during such periods, such that trading in the size required to effect portfolio shifts may be impractical or even impossible. As a result, it is critical not only to utilize manager insight, but also to make the policy itself flexible and dynamic, adapting to changing market conditions. This is why we prefer to think in terms of rebalancing “guidelines” rather than hard-and-fast “rules” to be executed mechanically whenever certain bounds or parameters are reached.

**During a crisis, should we rebalance more or less?**

Recent volatility also exposes an interesting conundrum. We must balance risk control with the costs and frictions of doing so. Higher market volatility means both higher risk and higher costs, but which is the more significant factor? This may be an argument to tighten our policy and rebalance more, in an effort to directly address the increased risk, or to loosen our policy and rebalance less, allowing the markets to move and process new information without having to chase every new development. We can more carefully analyze this problem by getting to the root factor: how liquidity and volatility impact risk, trading costs and opportunity.

As market liquidity declines, transaction costs per unit traded increase. If we keep our rebalance thresholds the same, larger and more volatile market moves will result in the need to trade more shares or units, and as a consequence, higher cost to the portfolio. The benchmark rebalance issue also points to the need for timing: if our goal is to track the benchmark, we can set wider bands during the month and allow exposures to drift alongside the benchmark, and tighten these bands toward the end of the month to bring the portfolio in line with the benchmark as it rebalances. However, we wish to not only track a benchmark, but also to deliver on policy objectives. This might take the form of a targeted percent equity allocation, which we cannot deliver on if we drift significantly from that target. From a risk-control perspective then, this would argue for setting the bands at least the same as under normal conditions.

Again, we should point out that alpha opportunity in severe market dislocations is mixed, reflecting the tension between momentum-based and mean-reversion strategies. Early on in a sell-off, when downward momentum is prevalent, it would be best not to rebalance. Near the market bottom, while volatility is still high, it pays to be counter-leaning, emphasizing mean reversion. This could suggest that it is optimal to tighten rebalance thresholds as we move deeper into a crisis. However, whether or not this policy could add portfolio alpha depends heavily on our ability to identify the current regime, and whether we expect momentum or mean reversion to prevail going forward. Remember, our rebalancing policy is not intended as an explicit alpha-generation tool, but rather as a means to implement the larger portfolio strategy. Nevertheless, rebalancing decisions we make at moments of extreme market stress have the potential to meaningfully affect the risk-and-return profile clients intend. This is why we believe such moments require a delicate touch informed by manager intuition and experience.

**Literature Survey**

**Fundamental Tenets**

There is little consensus as to what the “right” rebalancing strategy may be. However, several tenets come up repeatedly in the literature around which we can begin to build a strategy:

1. A manager’s rebalance discipline should be methodical so as to avoid knee-jerk decision-making or inconsistent management.
2. It should codify views into a methodical approach, or, be a mechanism for the manager to implement/effect their views as expressed in the strategic or tactical allocation targets.
3. Rebalancing only at regular intervals, such as quarterly or semi-annually, ignores market conditions as they develop in the intervening periods…
4. …So instead we set limits on how far we let the portfolio drift, and rebalance when those limits are exceeded. We must decide where to set those limits, and the extent that we bring the portfolio back in line when they are exceeded.
5. Not all assets are unique: two like assets (e.g. two stocks) drifting creates less tracking error than if two unlike assets drift (e.g. stocks vs. bonds) (Masters [2003], among others).
6. No strategy can be unconditionally optimal: it depends on risk preference, or how much we are willing to pay to eliminate risk (Tokat and Wicas [2007], among others).
7. We can also use portfolio income and investment flows to keep the portfolio in line without turning over existing assets, or use derivatives to maintain targeted exposures at low cost, such that rebalancing strategies may result in only modest turnover (Arnott and Lovell [1993], among others).

**Returns**

There is some limited agreement on other fundamentals as well. Evidence appears weak that a successful rebalance strategy can improve portfolio returns. Some earlier research reached this conclusion (Arnott and Lovell [1993]), albeit based on limited historical data. However, there is a strong influence from whether markets are trending or reverting during the period in question (Tokat and Wicas [2007]). If there is mixed evidence that this can be predicted, exploiting this is difficult, and an appropriate model for returns is closer to a random walk (Campbell, Lo, MacKinlay [2006]). In addition, the return that can be attributed to the specifics of the strategy itself should be disentangled from the effects of maintaining portfolio...
diversification (Cuthbertson et al. [2016]). Dichtl, Droetz, and Wambach [2011] show that improved portfolio return with rebalancing can be attributed to reduced risk, suggesting the proper focus should be on risk management instead of return enhancement. Our own view is that the rebalancing policy exists to support larger portfolio risk and return objectives. It should not be thought of as a market timing or alpha generation strategy in its own right. So while rebalancing can improve returns through risk reduction and maintaining diversification, we conclude that observing improved returns over any finite period should not be a condition for the success of the rebalance strategy.

**Where to Set Rebalance Limits/Threshold**

Various research points out that where to set asset thresholds depends broadly on the risk tolerance of the investor. However, there are a few observations that we can keep in mind when setting these bands. We should set limits for broader asset classes in addition to individual assets (Masters [2003], among others). This allows us to tolerate higher dislocations among like assets (small contribution to active risk) and focus on rebalancing drift among unlike assets (e.g. stocks vs. bonds: high contribution to active risk). Kohler and Wittig [2014] reiterate and generalize these themes by using a risk contribution approach: we are not concerned with how far positions have drifted from their targets, but rather, how those active positions add to active portfolio risks.

**How Far to Rebalance**

There have been various conclusions on this point as well. Some have concluded that it is optimal to bring weights fully back to their targets (Arnott and Lovell [1993]), while others have concluded that a lighter touch is better, rebalancing only to the limits we’ve set (Leland [1996]). We put more weight on the more sophisticated approach of Masters [2003], who concludes that rebalancing halfway to target balances the benefits gained by reducing risk with the cost required to do so.

**Combating Negative Convexity**

When we rebalance a portfolio, we sell winning assets and buy underperformers. Intuitively, this can hurt the portfolio if markets continue to trend one way or another, i.e. the underperformers we’ve bought continue to underperform. This gives a rebalanced portfolio so-called negative convexity, or a non-linearity of returns compared to the returns of the underlying assets. Many studies have highlighted this issue. Rattray, Granger, Harvey and Van Hemert [2020] suggest various ways of combatting it, such as delaying rebalancing if markets are trending downward. By definition, this suggests we will not double down on losers in an extended market downturn.

But the success of this strategy depends again on whether markets generally exhibit momentum or mean reversion, and our ability to forecast the horizon at which that occurs. Because we cannot know if markets are characterized by mean reversion or momentum in the short run, our rebalance policy shouldn’t be solely or even primarily informed by attempts to enhance returns through market-timing decisions. Of course, asset managers will have return forecasts and views on the attractiveness of assets at any given time. Our argument is that the technical behavior of markets depends on many variables and is too complex to factor into a rebalance strategy. Instead, a better place to express these views in the investment process is at the portfolio design and allocation stage. Strategic and tactical allocation decisions are the tools to capture returns, not the rebalancing policy.

**Other Conclusions**

We can conclude with a more practical note regarding the role of an active manager. The need to control active risk arises from the need to deliver what was promised to the client, that is, a portfolio that has certain characteristics and expected behavior. Rebalancing is required not just to meet risk tolerance requirements, but to deliver a portfolio that maintains the characteristics it was promised to have (Tokat and Wicas [2007]).

**American Century Research and Findings**

In order to form the foundation of our own rebalance policy, we complement the existing literature by examining the impacts of various potential rebalance strategies. Here we can use a representative 60/40 balanced strategy for our analysis. Further, we focus on the effects of rebalancing this strategy during the recent COVID-19 crisis. We see how heightened volatility can push us to trade more at exactly the time that it becomes more expensive to do so, highlighting how a successful rebalance policy can and should be adaptive to market conditions.

We identify several key takeaways:

i. Cost and trading frequency increase with the level of risk control that the policy requires.

ii. In a high-volatility environment, we need to trade more (responding to market movements) at a time when it costs more to do so (driven by lower liquidity).

iii. No policy has higher expected return; alpha should be derived from the larger portfolio allocation decision, and should not be an objective of an “optimal” rebalance policy.

iv. While return is not a specific objective of rebalance policy, it pays to remember that returns are part of any investor’s objective. So we must be mindful that our policy does not impose “costs” through lower returns.

We find that there is no optimal strategy that meets our objectives significantly more efficiently than any other. There is no “one ring to rule them all.” Rather, we seek to make informed and intelligent tradeoffs to balance the various objectives, in a context specific to each portfolio.
A Simplified Example

Our hypothetical balanced portfolio targets 60% U.S. large-cap core exposure benchmarked to the S&P 500 Index. The 40% fixed-income allocation is represented by core bonds benchmarked to the Bloomberg Barclays U.S. Aggregate Bond Index. As the literature (and mathematics) make clear, there is more benefit in rebalancing among diversified assets than among like assets. For example, rebalancing among equity and fixed income carries more impact than reallocating the same amount between two equities. For this reason, the balanced portfolio provides a highly simplified example of the impacts of rebalance policy while still capturing the majority of those impacts.

Policy Parameters

To define our policy, we must determine two key parameters: the band or threshold that will trigger a rebalance if asset weights drift beyond it, and the extent to which we rebalance to the target weight when that occurs. For example, we could rebalance only back to the edge of the bands to bring the portfolio into compliance, fully back to the target (100%), or somewhere in between. These options are illustrated conceptually in Exhibit A below, which displays asset class movements away from the targeted allocation and toward our threshold for rebalancing (the upward arrow). The downward arrow represents the magnitude of the move back toward our target.

Transaction Costs

Transaction costs have several components, including fixed (commissions) and variable (spreads) costs. The simplest assumption we can make about these costs is that they do not change with the market environment. Already, this highlights a key relationship: in general, more risk control simply costs more.

The General Case With Time-Invariant Costs

Transaction costs have several components, including fixed (commissions) and variable (spreads) costs. The simplest assumption we can make about these costs is that they do not change with the market environment. Already, this highlights a key relationship: in general, more risk control simply costs more.

Using historical returns for the equity and fixed-income asset classes represented by the hypothetical balanced portfolio, we can evaluate the impacts of varying the rebalance bands and the rebalance extent of a rebalance policy. Figure 1 below shows that tightening the policy, either by narrowing the bands or by rebalancing more completely, reduces tracking error but results in higher transaction costs. The reverse is also true. Importantly, we also see that the relationship is monotonic. That is, that there is no minimum that would suggest some optimal way to tighten the policy and also result in lower costs through prevention of future rebalancing. It always costs more to reduce risk. There is some variation in these outcomes specific to this historical sample; testing with simulated returns and a much larger sample (not shown here) suggests a much smoother relationship.

We also find that this relationship is non-linear. As a rough rule of thumb:

\[
\text{Transaction Costs} \sim \frac{1}{\text{Tracking Error}}
\]

While there is no “optimal” tune, this non-linearity is important. We see that for the general case, setting rebalance bands around 2% offers a reasonable balance that avoids significant tracking error while only marginally increasing required transaction costs.

Transaction Costs

In practice we find that transaction costs do change with the market environment, and specifically, they can become quite high in periods of high volatility. As the COVID-19 crisis developed, we observed this not only in risky assets like small-cap equities and high-yield bonds, but in areas of the market that are typically seen as relative safe havens during market turmoil. Liquidity in investment-grade bonds, a fixed-income staple in core allocation portfolios, saw extraordinary disruption. The investment-grade ETF LQD closed more than 500bps below its NAV on March 19, 2020, despite typically being extremely liquid, as its name suggests. We even observed significant loss of liquidity in Treasury bonds, considered to be among the safest and most easily tradeable assets, and even at the shorter end of the yield curve.

This crisis has shown that while typical transaction costs may be small, especially in large and liquid markets, they can become extraordinarily high during periods of market disruption. It is critical to our understanding of any rebalance policy, then, that we assume transaction costs have some dependence on the market environment. Fabozzi [1991] lays out a useful summary of how to effectively model transaction costs, and we take many of these techniques to heart. However, many of the factors that are important in modeling the idiosyncrasies of trading in a single security become less critical in an asset allocation sense as we transact in units of larger diversified baskets.

First, then, we simply need to differentiate between asset classes (small-cap vs. large-cap stocks or developed vs. emerging regions, for example) in order to capture the bulk of the cross-sectional variation in transaction costs. An important result is that different portfolios have different costs to rebalance. We expect an aggressively positioned portfolio with healthy allocations to less liquid and transparent asset classes such as emerging markets equities or high-yield credit to be more expensive to rebalance than a more conservative portfolio.
The second critical piece, to which we have previously alluded, is dependence on market volatility. Using the framework laid out in Fabozzi, and simplifying to these two factors, the result is a simple model for transaction costs that is consistent with our observations across a variety of market environments and appropriate for the aggregate level rebalance policy of an asset allocation portfolio. Figure 1 shows that by assuming higher costs during high market volatility, there is a significant increase in overall transaction costs compared to assuming that costs always reflect typically low levels. This highlights the need for a successful rebalance policy to not only plan for these dislocations, but also to change dynamically to navigate the prevailing environment.

**Compounding the Problem: The Need for Trading in a High-Volatility Environment**

Compounding the problem of higher transaction costs during high market volatility, we are also pushed to trade more in order to respond to quickly changing portfolio exposures. Figure 2 shows a simple example trading strategy with rebalance bands set at 2%. It’s clear from this illustration that for a given fixed policy, the resulting rebalance frequency jumps in response to high volatility. Unfortunately, we are being pushed to trade at the worst possible time to do so, when trading frictions and transaction costs can be much higher than normal. As active managers, we can control this situation by simply loosening the policy during periods of high volatility.

**Impact of Strategy “Tightness” on Performance in Crisis Environment**

Because of the converging factors of higher-than-normal transaction costs and need for more frequent rebalancing, it makes sense to keep looser bands in a high-volatility environment. Figure 3 graphically illustrates the difference in rebalance activity for two example strategies during the most recent crisis. The tighter strategy has rebalance bands set at 2%, while the looser strategy has bands set at 5%. Both policies rebalance 50% to target. Rebalance frequency is the total number of rebalances in a rolling one-month period.
results in significantly lower transaction costs in this brief period, summarized in Figure 5. Trading less frequently also has additional benefits. Trading frictions during this time made it more difficult to transact than simply accepting a higher cost, requiring extensive coordination among portfolio managers and traders to manage transactions.

We also see that the looser policy had a better return outcome in this scenario, but that was far from guaranteed. With daily equity market moves of more than 10%, choosing whether or not to reallocate to equities or to hold while the situation played out came with extraordinary risk, and could have resulted in significantly different outcomes if the timing of these trades were different.

Figure 5 separates this timing risk from the costs that can be directly attributed to the transactions themselves.

Lastly, we note that along with the benefits of this looser policy comes increased active risk versus the benchmark.

Impact on Returns

While it is intuitive that the lenience of our policy directly impacts tracking error and transaction costs, its impact on return is less obvious. It is appealing to think of the rebalance policy as a potential source of portfolio alpha, but this depends critically on knowing the frequency at which momentum or mean reversion might be the dominating factor. Without correctly forecasting this time structure, a rebalance policy cannot be expected to add alpha through optimal timing. Figure 4 shows the percentile rank for each calendar year of the variety of policies tested here, and confirms findings in the literature. For short periods, it is obvious that a tight or loose policy have resulted in better returns. 2017 is a great example where momentum dominated and any rebalancing would have reduced exposure to very successful equities. However, we see that year to year, there is never one end of the spectrum that dominates the other. Further, within each period, similar strategies can have quite different results depending on chances to capture or miss market moves.

FIGURE 4

Our Analysis Shows Neither Strict nor Loose Bands Consistently Perform Best

For each calendar year, various rebalance policies are tested for the hypothetical balanced portfolio assuming index returns. Rebalance bands range from 1.0% to 5.0%, and rebalance extent ranges from 0% (to band) to 100% (fully to target). From top to bottom, the strictest policy has rebalance bands at 1.0% and rebalances fully to target, and the loosest policy has rebalance bands at 5.0% and rebalances only to the edge of those bands. Total returns for the range of strategies are ranked for each calendar year. Hypothetical results shown for illustrative purposes only.

Source: American Century Investments.
Conclusions and Current American Century Policy

Intuitively, we find that a stricter rebalance policy incurs higher costs to implement, but better controls tracking error, and the reverse for a looser policy. Unfortunately, there is no optimal balance between the various factors, but we find that for the general case, bands of approximately 2% and rebalancing halfway to target is a reasonable balance between minimizing cost and controlling risk.

Further, our analysis suggests it is advantageous for a variety of reasons to loosen bands during a high-volatility environment. Because volatility is persistent, this does not depend critically on precise regime forecasting. We find that widening rebalance bands to 5% during market disruptions such as volatility spikes and sharp drawdowns helps to lower transaction costs and approach the market in a measured fashion as information becomes available, rather than being forced into knee-jerk responses to a rapidly changing environment. As expected, we find no significant evidence that this type of strategy is able to enhance return through optimal design. Rebalance policy should not be thought of as an alpha strategy on its own.

As active managers, we must build a consistent and disciplined foundation for our policy, but never follow it blindly. Our policy is always informed by traders, portfolio managers, and others with the expertise to recognize opportunities within and across asset classes, and to reflect changing liquidity and risk conditions in our implementation.

Bibliography

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