



What's the Best Approach for Portfolio Rebalancing?

There are advantages to letting technology help maintain an appropriate level of risk in a portfolio.

KEY INSIGHTS

- Rebalancing is an important way to help minimize volatility in a portfolio and may improve long-term returns.
- Setting specific thresholds that trigger rebalancing can help eliminate emotion from the rebalancing process.
- An analysis of model portfolios based on historical data demonstrated the benefits of a systematic approach.

Having an asset allocation that is appropriate for an investor's goals is important, and periodic rebalancing helps keep a portfolio in line with its allocation target. However, one of the challenges of effective rebalancing lies in how one defines "periodic." Rebalance too often and investors may miss out on some positive momentum in their stock investments, as well as potentially incur unnecessary taxes in a taxable account. But go too long without rebalancing and a portfolio's allocation may shift enough that it no longer meets an investor's objectives. It could carry more risk than is appropriate for an investor's risk tolerance or have less growth potential than what's needed to achieve investment goals.

Research suggests investors can benefit from monitoring allocations frequently but only rebalancing if the portfolio drifts away from the target allocation by a meaningful amount. Two key questions are: How much drift should be allowed before investors rebalance, and how can they implement this strategy?

To help answer the first question, T. Rowe Price conducted research using rolling 10-year periods from historical market data dating back 25 years. The analysis compared various rebalancing methodologies against three hypothetical model portfolios, evaluating which methodology provided the best return. (For detailed information, see More Details on the Study Methodology.)

Using tolerance bands to drive rebalancing

The foundation of most investment plans is a target allocation that balances risk with the need to generate enough growth to meet the investor's financial goals. This target allocation could change over time as an investor's time horizon or goals change. A portfolio may need to be brought back into alignment with its target allocation due to market performance: Certain assets in the portfolio may outperform others, thus causing the allocation to shift. That misalignment could affect either the overall mix or the individual securities.



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More Details on the Study Methodology

Our research considered three hypothetical model portfolios across 25 years of market data.

Our analysis compared the outcomes of four rebalancing strategies with a control portfolio where no rebalancing took place. Each strategy used a different method to determine specific “tolerance bands,” the acceptable range of portfolio drift that would not require a rebalance. They included:

- 2% fixed band (for example, rebalance if an investment with a 20% allocation target is above 22% or below 18% of the total portfolio value)
- 3% fixed band (rebalance if the same investment goes above 23% or below 17%)
- 20% relative band (rebalance if the same investment goes above 24% or below 16%)
- 25% relative band (rebalance if the same investment goes above 25% or below 15%)

The system was set to evaluate allocations on a daily basis but only to rebalance as necessary. When triggered, rebalancing brought an investment's allocation back to its original target, not just to within its tolerance band boundary.

In addition to these strategies at the individual investment level, at the end of each month, a full rebalance was performed if the overall equity allocation drifted more than 5% above or below its initial target. This process was employed across all four test strategies to prevent the broader portfolio from remaining too far away from its target, even if each individual investment remained within tolerance.

The four rebalancing strategies were evaluated using three model portfolios. These models featured 30%, 60%, and 90% equity allocations, with either seven or eight market indices in each. (Allocations for specific indices are shown on page 6.)

The models were run through a series of 10-year periods with weekly starting points, based on daily return data from February 1, 1998,¹ through January 31, 2023. This time frame allowed us to examine a broad range of market environments. Some 10-year periods included all or part of one or two bear markets, whereas some had no bear markets.

¹ The starting date is the earliest date available for the indices used.

The foundation of most investment plans is a target allocation that balances risk with the need to generate enough growth to meet the investor's financial goals.

Rebalancing is typically accomplished by selling outperforming assets and using the proceeds to invest in opportunities in another asset class. To avoid emotional decisions about when to buy and sell, investors can rely on a system of rules to determine when to rebalance. Those rules typically involve setting an allocation threshold, such as a percentage, that triggers rebalancing. Some common approaches for these tolerance bands involve using percentages based on a **fixed band** or a **relative band**. While there are other options, fixed and relative bands have garnered attention from researchers, as they are relatively easy for people to understand and for software systems to implement.

The **fixed band** approach sets a fixed threshold, say two percentage points, both above and below the target allocation. If a holding strays beyond that band, it's time to rebalance. For example, a portfolio with 20% of its total assets invested in a domestic bond fund should rebalance if rising bond prices (or falling prices in other investments) drive the bond allocation above 22% of the portfolio (or if market activity pushes the bond allocation below 18%).

By comparison, a **relative band** sets the trigger as a percentage of the actual allocation target. For example, a 20% relative band on the same domestic bond allocation target would mean a rebalancing trigger of four percentage points above or below the target allocation (that is, 20% of the 20% bond allocation). Therefore, the portfolio would be rebalanced if that fund's allocation goes above 24% or below 16%.

Note that with a relative band, investments with small or large allocations should be similarly likely to trigger rebalances. With fixed bands, rebalances tend to be driven by investments with large allocations that drift outside their bands. For example, it takes much less market volatility to move an investment from a 36% allocation to 39% than from 4% to 7%. There is something intuitively appealing to relative

bands. However, we did not want to assume that any approach would be best in the real world before analyzing the data.

How did the rebalancing approaches perform based on these portfolios?

The T. Rowe Price analysis demonstrated that, in general, rebalancing is a valuable strategy for investors to use in managing their portfolios. Rebalancing strategies only underperformed the non-rebalanced control portfolio during time periods driven by long bull markets. This finding is to be expected: In the absence of a bear market, a higher allocation to equity has historically yielded better returns, even when that allocation is not in line with an investor's risk tolerance. However, developing an investment strategy based on bull markets alone is very risky and not recommended. Choosing not to rebalance could easily lead to underperformance in an eventual bear market.

So if rebalancing helps, what specific strategy helps the most? In the T. Rowe Price study, the wider tolerance bands generally outperformed the narrower bands. Depending on the model, either the 3% fixed band or 25% relative band was the best-performing method based on return. (See Rebalancing with Different Strategies.)

These findings are generally consistent with other research that has shown a benefit from wide ranges. The analysis also confirmed that larger bands lead to fewer and smaller rebalancing events per year. (See Bigger Bands, Fewer Transactions.) While none of the rebalancing strategies triggered an excessive number of rebalancing events, larger bands would have potentially had an additional benefit of generating fewer taxable transactions when implemented in a taxable account.

In addition to performing well on average, the wider bands were most often the best across the full range of portfolios and scenarios. They performed particularly well in periods with bear markets.

The analysis also found that the level of equities in the portfolio was a factor in determining the performance spread between rebalancing and not rebalancing. The most pronounced difference in median returns occurred for the 60% equity portfolio, followed by the 90% portfolio. These findings are in line with other industry analyses.

Portfolio rebalancing

This analysis helps answer the first question of how much portfolio drift to allow before it makes sense to rebalance. It also underscores the value of rebalancing. The




graph on page 6, How Rebalancing Can Affect Overall Portfolio Return, illustrates one hypothetical example of how rebalancing events might have occurred over a specific 10-year period, and how that could have changed the portfolio value.

The second question may be harder: How can an individual implement a systematic, tolerance-based approach?

If an investor is managing their own portfolio, they may be rebalancing periodically (perhaps on an annual basis) or using their own judgment as to when they

Rebalancing With Different Strategies

When considering the performance of different rebalancing methods, wider bands generated the best overall returns.*

<div> <div></div> Green cells indicate best return </div>		Annualized Return				
		No Rebalance	Relative Bands		Fixed Bands	
			20%	25%	2%	3%
 30% Equity	Mean	5.52%	5.50%	5.50%	5.54%	5.57%
	Median	5.44%	5.46%	5.47%	5.53%	5.53%
	Average for periods with bear markets**	5.32%	5.64%	5.64%	5.66%	5.72%
 60% Equity	Mean	6.90%	6.89%	6.98%	6.90%	6.90%
	Median	6.53%	6.83%	6.95%	6.88%	6.86%
	Average for periods with bear markets**	6.11%	6.48%	6.61%	6.48%	6.49%
 90% Equity	Mean	7.98%	7.88%	7.93%	7.88%	7.94%
	Median	7.50%	7.83%	7.83%	7.81%	7.85%
	Average for periods with bear markets**	6.59%	6.71%	6.75%	6.72%	6.77%

* Data based on the average of rolling 10-year periods.




**Includes all 10-year periods starting before April 2009. Those periods would include all or part of the 2000-2002 or 2008 bear markets.

Past performance cannot guarantee future results.

(See More Details on the Study Methodology on page 2 and information about portfolio allocations on page 6.)

Bigger Bands, Fewer Transactions

A key benefit of larger bands is that they trigger fewer rebalancing events, thus potentially capitalizing on positive momentum in stock investments and avoiding potential tax liabilities in a taxable account.*

<div> <div></div> Green cells indicate smallest rebalancing activity </div>		Relative Bands		Fixed Bands	
		20%	25%	2%	3%
 30% Equity	Rebalance triggers per year	2.4	1.4	1.4	0.7
	Dollar value of rebalances per year, as percentage of average portfolio balance	3.2%	2.7%	3.1%	3.1%
 60% Equity	Rebalance triggers per year	2.8	1.6	2.2	1.0
	Dollar value of rebalances per year, as percentage of average portfolio balance	3.8%	4.2%	4.5%	3.7%
 90% Equity	Rebalance triggers per year	2.2	1.6	1.4	0.7
	Dollar value of rebalances per year, as percentage of average portfolio balance	2.7%	2.4%	3.2%	2.3%

Note: These rebalance statistics include both types of rebalancing events, namely investment-level rebalancing and total equity-level rebalancing. (See More Details on the Study Methodology on page 2 and information about portfolio allocations on page 6.)

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*Data based on the average of rolling 10-year periods.

think the markets have gotten carried away. Those methods can succeed in getting an investor's allocation and risk level back to where they want them. However, the performance of a calendar-based approach can depend heavily on whether their decision to rebalance happened at a favorable time or not. The judgment-based approach is a lot like market timing, which is notoriously difficult to implement successfully and prone to behavioral biases.

Can an individual shift from one of those methods to a systematic approach? Monitoring a portfolio's overall allocation on a monthly basis is possible, but very challenging for a typical investor. Checking allocations daily at the individual security level against a threshold is virtually impossible without a lot of help from technology.

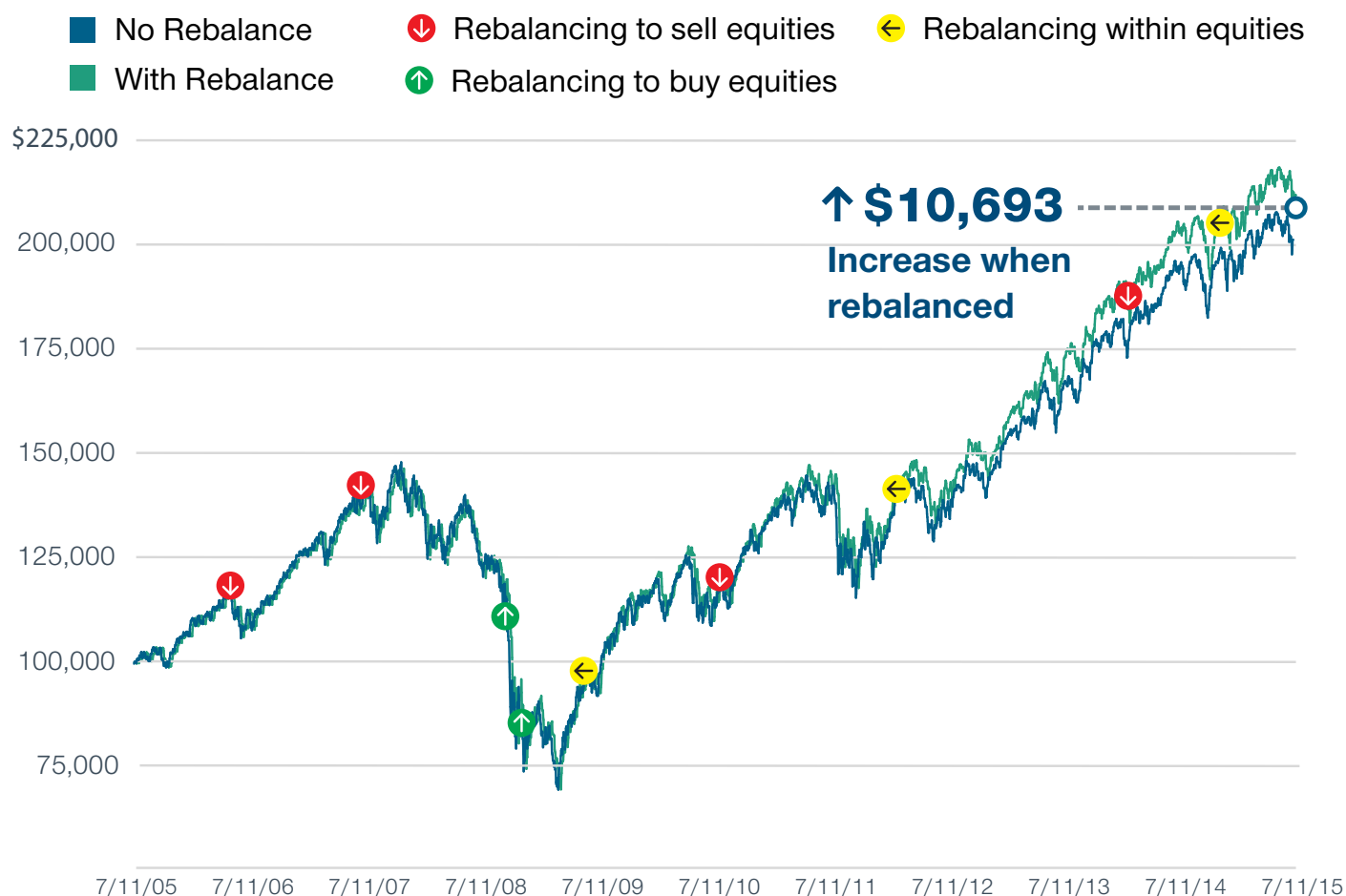
Fortunately, some investment services rebalance portfolios automatically using

this type of threshold parameter, setting both the percentage threshold and whether it is a fixed or relative band. For instance, T. Rowe Price's Retirement Advisory Service uses frequent evaluation of drift in its portfolio management system.

Investors should talk to a financial professional about what method they could use to rebalance their portfolio. When using a service with a systematic approach, learning how these thresholds work can help an investor understand why their portfolio has been rebalanced (or perhaps why it hasn't been rebalanced) as market conditions develop. Our Retirement Advisory Service uses wide tolerance bands, which delivered strong outcomes in our analysis. Even though it doesn't trigger rebalancing as often as other methods, we believe this approach offers our clients a good combination of risk management and potential performance.

How Rebalancing Can Affect Overall Portfolio Return

In this example, rebalancing with a 3% fixed threshold led to a balance increase of over \$10,000 and a 56-basis-point increase in annualized returns over a 10-year period compared with a portfolio without rebalancing.



For illustrative purposes only. Based on a hypothetical portfolio consisting of eight market indices and cash, for a single 10-year period starting July 11, 2005. The hypothetical diversified portfolio uses a 90% target equity allocation (see below). Rebalancing is based on the 3% fixed tolerance band method, as described in the article. We chose this starting date and 90% equity model to illustrate the way rebalancing could play out over the years and to be representative of a situation where the 3% fixed bands exhibited the best performance among methods tested. Results for different starting dates, and for the 30% and 60% equity models, would differ. Does not reflect fees. Cash is assumed to have 0% returns. Individuals cannot invest directly in an index. **Past performance cannot guarantee future results.**

Index Weights			
Index	30% Equity	60% Equity	90% Equity
Russell 1000 Growth Index	5%	9%	19%
S&P 500 Index	11%	19%	18%
Russell 1000 Value Index	5%	9%	19%
Russell 2000 Index	0%	5%	7%
FTSE All World ex US Index	9%	14%	21%
S&P Emerging BMI	0%	4%	6%
Bloomberg U.S. Aggregate Bond Index	36%	26%	9%
J.P. Morgan Global Government Bond Index ex U.S.	24%	13%	0%
Bloomberg 1–3 Year U.S. Government/Credit Bond Index	9%	0%	0%
Cash	1%	1%	1%

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