

Prudent investment principles such as asset allocation and global diversification are valuable tools for managing risk and volatility in a portfolio. But maintaining the proper structure of your portfolio is just as important. Once you have established a portfolio allocation that suits your unique financial situation and risk tolerance, rebalancing helps you stay on track for achieving your long-term financial goals.

## What's Rebalancing's Effect on a Portfolio?

We've all heard the investing adage that we should "buy low, sell high." This is exactly what rebalancing attempts to accomplish...taking money from assets that have performed well and reinvesting in assets that haven't. Rebalancing helps keep your portfolio allocated to your desired mix of stocks and bonds. Without rebalancing, your portfolio can drift from one level of risk to another as the markets change. This drift can add extra risk to your plan that you never intended or expected.

Rebalancing does not guarantee greater returns over every period, but it can help reduce portfolio risk and should deliver better risk-adjusted returns over time.

In bull markets, rebalancing can test an investors' resolve...because when markets are trending upward, rebalancing will continually sell the strongest performing asset and invest in the weaker performing assets. For example, during prolonged periods when stock returns are higher than bond returns, not rebalancing will produce higher returns, but at the cost of increasing portfolio risk. This is because higher returning asset classes, with higher risk, will increase in a portfolio over time.

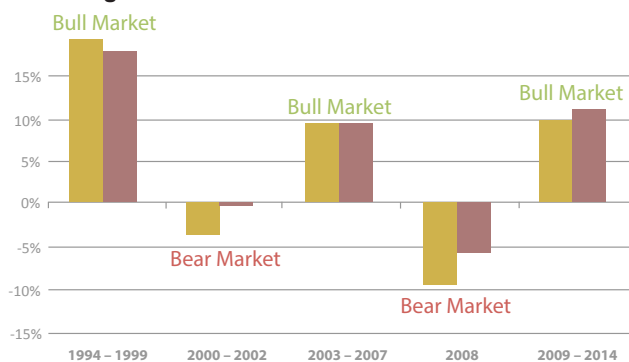
As you can see from this chart, the annually rebalanced portfolio was less volatile over the last 20 years. It may not have soared as much during bull markets, but it didn't decline as much during bear markets. And overall, it offered slightly better performance with less risk than the drifting, un-rebalanced portfolio.

## The Logistics of Rebalancing

Once you've made the decision to help control risk in your portfolio via rebalancing there are several parameters to consider. Should you rebalance back to your original allocation every month, quarter, year? How much of an increase or decrease in a particular asset class should trigger rebalancing...2%, 3%, 5%? Do you consider trading costs and the after-tax effects of this trading? All of these are important questions you should discuss with your financial advisor.

In our extensive research on rebalancing, we reviewed how rebalancing works, when it does and doesn't potentially provide higher returns, and explored opportunities for greater rebalancing benefits. We also compared alternative rebalancing methodologies and reviewed the

Rebalancing and a 50% Stocks/50% Bonds Portfolio 1995–2014



	1 Year	3 Years	5 Years	10 Years	20 Years	20-Year Standard Deviation (%)
Stocks vs. Bonds Drifting Annual Return (%)	17.99	12.10	12.78	7.59	9.30	11.10
Stocks vs. Bonds Rebalanced Annual Return (%)	18.78	12.91	13.30	8.77	10.18	9.53

Data source: Morningstar Direct 2015. Past performance is no indication of future results. All investments involve risk, including loss of principal. Stocks are represented by the S&P 500 Index. Bonds are represented by the SBBI Long-Term Bond Index. Indexes are unmanaged baskets of securities in which investors cannot invest and do not reflect the payment of advisory fees associated with a mutual fund or separate account. Returns assume dividend and capital gain reinvestment. Rebalancing does not guarantee a return or protect against a loss. The buying and selling of securities for the purpose of rebalancing may have adverse tax consequences.



benefits and costs associated with each methodology. Finally, our research examined the interrelation of multiple stock asset classes in portfolios to determine when the potential benefits of rebalancing outweigh the costs after considering taxes and transaction costs.

**Random Simulation Results For 65% Stocks, 35% Bonds Index Mix**

	Cumulative Returns	PRE-TAX RESULTS		Sharpe Ratio*	Number of Trades	POST-TAX RESULTS		Sharpe Ratio*
		Annualized Returns	Std Dev			Annualized Returns	Std Dev	
<b>Drifting Portfolio</b>	6894%	11.83%	13.81%	0.44	—	11.83%	13.81%	0.44
<b>Periodic Rebalancing</b>								
Monthly	6417%	11.60%	10.85%	0.54	4104	10.38%	10.72%	0.44
Quarterly	6667%	11.73%	10.87%	0.56	1395	10.81%	10.76%	0.48
Annual	6794%	11.78%	11.02%	0.55	342	11.16%	10.99%	0.50
<b>Vary Thresholds for Each Asset Class</b>								
Monthly	6902%	11.83%	11.08%	0.55	115	11.63%	11.06%	0.54
Quarterly	7048%	11.89%	10.96%	0.57	113	11.66%	10.92%	0.55
Annual	7097%	11.91%	11.11%	0.56	102	11.71%	11.10%	0.54

\*Risk-Free rate for the period is 5.69% as measured by the one-month Treasury bill. Geometric vs. arithmetic returns were used.

Source: Morningstar Direct. Index Mix as follows: 15% (S&P 500 Index), 12% (Russell 1000 Value Index), 8% (Russell 2000 Index), 4% (Dow Jones U.S. Select REIT Index), 14% (MSCI World Ex USA Value Index (net div.)), 7% (MSCI World Ex USA Small (net div.)), 5% (MSCI Emerging Markets Index (net div.)), 17% (Citi WGBI 1-5 Yr Hdg USD), 16% (BofA ML Corp & Govt 1-3 Yr TR), 2% (Cash, 0% return).

Returns shown are average results from a Monte Carlo simulation using 38 year periods. A Monte Carlo simulation calculates the results of the model portfolio many times, each time using a different sequence of returns. These multiple trials provide a range of possible results. In analyzing this information, please note that the analysis does not take into account actual market conditions, which may severely affect the outcome of the results over the long-term.

The return assumptions in this chart are not reflective of any specific product, and do not include any fees or expenses that may be incurred by investing in specific products. It is not possible to directly invest in an index. Returns should not be considered a guarantee of future performance or a guarantee of achieving overall financial objectives. Past performance is not a guarantee or a predictor of future results of either the indices or any particular investment.

Sharpe Ratio — A measurement of the tradeoff between risk and return. The calculation is as follows:  $Sharpe\ Ratio = \frac{R - RF}{\sigma_{R - RF}}$  R: The return on the asset. RF: The risk free rate (For the analysis in Appendix B, the risk free rate used is the historical return on the 1 Month US Treasury Bills.)  $\sigma_{R - RF}$ : The standard deviation of the excess of the asset return over risk free rate. The calculated number can be translated as the amount of return per unit of risk.

By running thousands of scenarios of randomized historical data, we can attempt to find the rebalancing strategy that would work the best under a wide variety of market conditions. Looking at the data from the table above, we first see that a portfolio based on 65% stocks, 35% bonds with 9 asset classes without rebalancing (drifting). This portfolio had returns of 11.83%, with a standard deviation of 13.81%, for a Sharpe Ratio of 0.44. (The Sharpe Ratio is a measure of risk and performance. The higher a portfolio's Sharpe ratio, the better its risk-adjusted performance.)

We can improve on this strategy by implementing our own custom thresholds for each asset class varying from 2% to 5%, based on historical volatility. With this strategy we observed a similar risk return relationship but a drastic reduction in the number of trades, regardless of the frequency. By only trading an asset class when it had drifted by more than a few percentage points away from its target we are able to reduce trading, while still maintaining the long-term structure of the portfolio.

The reduction in trading meant lower costs, (we assumed \$20 trade costs in the study), as well as less frequent realized gains subject to taxes.

**Conclusion**

While our objective for rebalancing is primarily risk management, if return benefits can be achieved strategically (vs. tactically) then it is truly a benefit to investors. Our rebalancing methodology appears to have the potential to deliver both.

The most important aspect of rebalancing is simply having a disciplined plan that removes emotion from the decision. It helps you stay focused as you work towards your long-term goals with the advice and guidance of your financial advisor.

Asset Class	Thresholds
Bonds	+/- 4% (+/- 2% per holding)
U.S. Market/ Large	+/- 4%
U.S. Value	+/- 4%
U.S. Small	+/- 5%
Int'l Large	+/- 4%
Int'l Small	+/- 3%
REITs	+/- 3%
Emerging Markets	+/- 2%