portfolio construction forum

# Backgrounder: Portfolio rebalancing strategies

Will Jackson | PortfolioConstruction Forum | 21 August 2017

> "The conventional view is that rebalancing is a minor aspect of fund management, not worthy of much commitment of time or intellectual energy. That view is very, very wrong."
> – Robert Arnott, 2001[1]

In the 16 years since Robert Arnott, founder of Research Affiliates and unofficial "godfather" of smart beta, urged investors to pay closer attention to rebalancing, academics and practitioners have increased their focus on this once neglected branch of portfolio theory. Researchers propose a range of improvements to traditional time-based rebalancing, including threshold and cash flow strategies, designed to increase effectiveness and efficiency. Meanwhile, new technologies are enabling practitioners to implement ever more sophisticated rebalancing approaches.

## REBALANCING AS A RISK MANAGEMENT TOOL

Discussion of rebalancing typically begins with debate over two proposed benefits:

- that it is essential for controlling portfolio risk; and,
- that rebalancing offers a return "bonus", by systematically buying low and selling high.

While the first idea is widely accepted, the second is controversial.

Regarding risk management, rebalancing addresses a fundamental problem for multi-asset investors – that asset classes have different risk/return profiles, and that the asset mix of a strategy will therefore change over time, as various components outperform and underperform one another.

Data from Vanguard illustrates how unbalanced multi-asset strategies may become, over extended timeframes, given the historical tendency of riskier assets to generate higher returns.[2] Vanguard calculates that, between 1926 and 2009, a non-rebalanced 60/40 US equities/bonds strategy would have drifted to 98% stocks and 2% bonds – undermining portfolio diversification, and potentially exposing underlying investors to substantially higher than expected levels of volatility.[2]

Similarly, problems emerge in equity market downturns, where bond outperformance may result in a portfolio too conservative to meet its return objective. For example, in a period

where equities decline 20% and bonds gain 10%, an equally-weighted equity/bond portfolio will drift to a 42/58 split. However, once such a problem is recognised, the solution is relatively straightforward. In this instance, a practitioner may swiftly rebalance the portfolio to its original 50/50 weighting, by selling down 14% of the bond allocation, and buying equities with the proceeds.

## THE RETURN BENEFITS OF REBALANCING

Some practitioners argue that rebalancing may additionally enhance portfolio returns. This is an idea which gained momentum in 1996, when US-based financial adviser and author William Bernstein described what he called the "rebalancing bonus".[3] Through analysis of US stock and bond returns between 1926 and 1994, Bernstein found that an annually-rebalanced 50/50 portfolio generated a yearly gain of 8.34%. While the return was somewhat lower than that of a non-rebalanced portfolio, it was 0.49 percentage points above the arithmetic mean (or "Markowitz return") of the two asset classes. Further, Bernstein suggested that the bonus is most significant between assets which are lowly-correlated and highly volatile, and which therefore create regular rebalancing opportunities.

Other practitioners have made the case for rebalancing as a source of additional returns. For example, Gobind Daryanani, former managing director of US broker TD Ameritrade, proposed that opportunistic rebalancing – where asset allocation is regularly reviewed, and rebalanced when required – boosts the returns of a multi-asset portfolio comprising equities, listed property, commodities and bonds.[4] "Opportunistic rebalancing goes beyond simply controlling risk; it also increases return benefits by capturing sporadic buy-low/sell-high opportunities. The benefits from opportunistic rebalancing far outweigh the costs associated with trading, taxes, and looking," Daryanani concluded.

However, other commentators dispute the attractiveness of the returns available from rebalancing, particularly over longer timeframes. Michael Edesess, research associate at the EDHEC-Risk Institute, questions the calculations underpinning Bernstein's bonus theory, and reaches a different conclusion – that while rebalanced portfolios beat buy-and-hold 70% of the time, buy-and-hold beats rebalancing by a far greater margin when it outperforms. As a result, he claims the return benefits are negligible.[5]

In a follow-up article, published last year, Edesess wrote: "Contrary to common belief and to the misguided conclusions of most of the articles in academic finance journals, it is that rebalancing offers no 'free lunch' either in terms of enhanced return or reduced risk. The choice of rebalancing as an investment discipline as compared with an alternative such as buy-and-hold is simply a risk-return trade-off – though one that is a little more subtle than most."[6] Similarly, a study by Ajit Dayanandan, associate professor of finance at the University of Alaska Anchorage, finds that the return gains from rebalancing between US stocks and bonds are insignificant, given the additional costs incurred.[7]

In a nuanced review of the research on rebalancing strategies, Michael Kitces, wealth management director at US-based Pinnacle Advisory Group, concludes that rebalancing between uncorrelated assets reduces returns over time, and that rebalancing is therefore primarily a risk management strategy for stock and bond portfolios.[8] However, he further observes that rebalancing between investments with highly-correlated returns – such as large cap and small cap US stocks – may indeed produce a small bonus. Understanding this difference is crucial when evaluating the benefits of rebalancing, Kitces adds.

## TIME-BASED VERSUS THRESHOLD STRATEGIES

Whether investment practitioners rebalance to pursue a return bonus, or simply to control portfolio risk, rebalancing frequency is a key consideration. However, academic research is divided on this topic. For example, a study by David Smith at The State University of New York at Albany, finds that rebalancing frequency may substantially influence the risk-adjusted returns of stock and bond portfolios, and that patient rebalancing outperforms "quick-trigger, mechanistic" strategies. Indeed, Smith proposes that rebalancing every four years is superior to a monthly or quarterly approach.

In contrast, Vanguard suggests that there is no optimal rebalancing frequency, when considering a 60/40 equity/bond portfolio. Its analysis of historical data reveals little difference in the returns and volatility of a portfolio rebalanced on a monthly, quarterly and annual basis. It therefore concludes that frequency should be more influenced by consideration of trading costs – the number of rebalancing events ranged from more than 1,000 for the monthly portfolio, to just 83 for the annual portfolio – and by the ability of underlying investors to tolerate deviations from the target asset allocation.

Rather than a time-based approach, Vanguard proposes a "time-and-threshold" strategy. Such an approach involves regular portfolio monitoring but – crucially – only requires practitioners to rebalance allocations which drift from target by more than a predetermined threshold. Vanguard suggests that annual or semi-annual monitoring, coupled with a 5% rebalancing threshold, provides an attractive trade-off between risk control and trade cost minimisation, for broadly-diversified stock and bond portfolios. A 2015 update to the study, which assumes a 50/50 equity/bond split, similarly concludes that annual or semi-annual monitoring, combined with a 5% threshold, is optimal.[9]

## RELATIVE AND ASYMMETRIC THRESHOLDS

Given the complexity of modern multi-asset portfolios – which typically comprise more than the two asset classes, and often include several "satellite" allocations – Kitces proposes a refinement of Vanguard's "time-and-threshold" approach. Instead of applying a uniform rebalancing threshold across a diverse set of positions, Kitces suggests that practitioners set target allocation bands based on a relative percentage of the investment position. Such an

approach focuses attention on relative, rather than absolute, asset class returns – allowing outperforming positions to be trimmed, and for money to be reinvested in strategies which have underperformed the rest of the portfolio.

In terms of magnitude, Kitces notes that rebalancing thresholds should be set wide enough that investments may be allowed to run "near extremes", but narrow enough to capture any subsequent mean reversion. He highlights the Daryanani study, which suggests that a relative threshold of 20% is optimal.

In a further modification, Kitces proposes that practitioners consider asymmetric tolerance bands, which reflect the tendency of markets to rise more than they fall, over time. For example, the upper rebalancing threshold for equities may be set at 25%, with a lower bound at minus-15%.

While threshold strategies bring greater complexity, practitioners may use specialist rebalancing software to ease the burden. Such software has grown in sophistication in recent years, and there are now a a range of functions on offer, including continuous monitoring of portfolio drift, adjusting single securities and asset classes to target, and the ability to set asymmetric tolerance bands.

## REDUCING TRADING COSTS

In addition to implementing thresholds, investment practitioners may lessen the trading costs associated with rebalancing in other ways. Vanguard proposes that portfolio cash flows – including dividends, interest payments, realised capital gains and new contributions – may be directed into underweight asset classes, as part of a scheduled rebalancing event. Its research indicates that such a strategy would have offered substantial cost savings between 1926 and 2009 (while cautioning that portfolios were unlikely to benefit from similar levels of investment income, in future.)

Kitces proposes the inverse approach for portfolio decumulation. Instead of rebalancing by buying low, retirees may sell high – by crystallising gains in outperforming investments. Kitces argues that such a framework also reduces the likelihood that retirees will be tempted to sell from the equities portion of a multi-asset portfolio, in the aftermath of a stock market crash. "In essence, then, rebalancing is actually a retirement liquidation strategy to manage sequence-of-return risk as well, reducing the need for other types of 'bucket' strategies to generate retirement cash flows," he writes.

## ENDNOTES

1. Arnott, R. “Rebalancing: dull and unimportant... not!”, FQ Perspective, First Quadrant, April 2001

2. Jaconetti, C., Kinniry, F. and Zilbering, Y. "Best practices for portfolio rebalancing", Vanguard Research, July 2010

3. Bernstein, W. “The rebalancing bonus”, www.efficientfrontier.com, 1996

4. Daryanani, G. "Opportunistic rebalancing: a new paradigm for wealth managers", Journal of Financial Planning, January 2008

5. Edesess, M. "Does Rebalancing Really Pay Off?", www.advisorperspectives.com, April 2014

6. Edesess, M. "The failure to understand rebalancing", www.portfolioconstruction.com.au, September 2016

7. Dayanandan, A. & Lam, M. "Portfolio Rebalancing – Hype or Hope?", The Journal of Business Inquiry, 14, Issue 2, 2015.

8. Kitces, M. “An in-depth look at portfolio rebalancing strategies”, The Kitces Report, Volume 2, 2015

9. Zilbering, Y., Jaconetti, C. and Kinniry, F. "Best practices for portfolio rebalancing", Vanguard Research, November 2015

*Will Jackson is an Analyst/Writer with PortfolioConstruction Forum.*