Research Note:

Evidence Based Rebalancing

betafolio
by timeline

What has portfolio rebalancing got to do with the amount of time it takes the earth to revolve around the sun?

Did you say nothing?

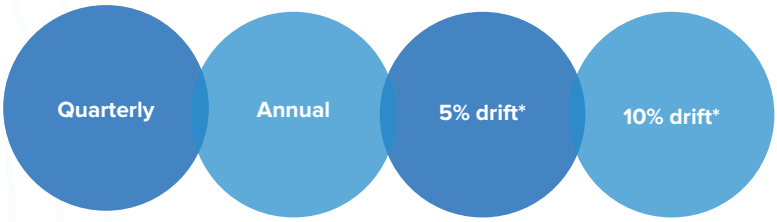
Yet advisers typically rebalance their portfolios on a periodic basis, annually. Not to mention discretionary MPS, where the portfolios are rebalanced sheepishly on a quarterly basis!

While annual rebalancing isn't a terrible idea, it is less than optimal. The time consuming process of obtaining client permissions alongside the abundant opportunity for error, isn't ideal. Quarterly rebalancing on the other hand is the work of the devil!

And you should know by now, that we don't make a statement like this without first crunching the numbers...

Let's turn to empirical data.

We examined £100k invested in a 50/50 portfolio over a 30 year period. We ran every rolling 30 year period from Jan 1915 to Dec 2019, which gives us 910 scenarios for the following rebalancing options:



Given that there are 910 scenarios, we ranked the terminal balances into percentiles, i.e. worst, 10th, 20th, 30th .... 100th percentile for each rebalancing method.

Terminal Balance (£m) for £100,000 Invested in 50%/50% Global Equity/ Bond Portfolio, 30 Yrs, 1% Fee

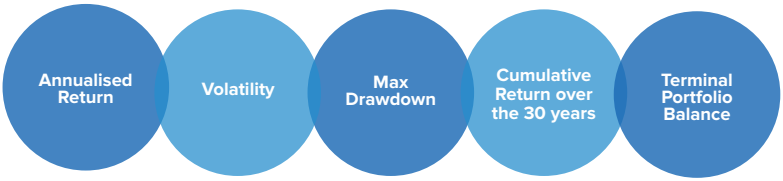
	Worst	10th	20th	30th	40th	50th	60th	70th	80th	90th	Best
Quarterly	£0.33	£0.51	£0.59	£0.64	£0.70	£0.80	£1.00	£1.21	£1.39	£1.62	£2.34
Annual	£0.33	£0.53	£0.61	£0.65	£0.72	£0.81	£1.02	£1.21	£1.41	£1.63	£2.37
5% Band	£0.33	£0.52	£0.60	£0.65	£0.72	£0.82	£1.02	£1.24	£1.42	£1.65	£2.44
10% Band	£0.34	£0.53	£0.62	£0.67	£0.73	£0.82	£1.05	£1.25	£1.42	£1.65	£2.50

Source: Timelineapp, data from Jan., 1915 - Dec., 2019, 30 – yr rolling scenarios.

*5%/10% drift means rebalancing when the weight of equity or fixed income in the portfolio has increased or decreased by 5%/10% relative to its original target

Deeper Dive

We dug a little deeper to look at key metrics for the the worst, median and the best case scenarios. For each rebalancing option, we considered the following metrics:



£100,000 Invested in 50%/50% Global Equity/ Bond Portfolio, 30 Yrs, 1% Fee

Worst Scenario	Annual Return	Volatility	Drawdown	Cumulative Return	Nominal Balance (£k)
Quarterly	4.56%	9.25%	-30.54%	136.90%	£335.0
Annual	4.52%	9.34%	-30.73%	135.54%	£330.0
5% Band	4.50%	9.03%	-30.74%	135.02%	£330.6
10% Band	4.60%	9.24%	-30.74%	138.12%	£339.1

Median Scenario	Annual Return	Volatility	Drawdown	Cumulative Return	Nominal Balance (£k)
Quarterly	7.46%	12.34%	-21.69%	223.73%	£716.8
Annual	7.56%	12.37%	-20.57%	226.87%	£737.7
5% Band	7.51%	12.34%	-21.83%	225.43%	£728.0
10% Band	7.63%	12.45%	-22.69	228.98%	£749.4

Best Scenario	Annual Return	Volatility	Drawdown	Cumulative Return	Nominal Balance (£k)
Quarterly	11.62%	11.55%	-16.35%	348.70%	£2,336.2
Annual	11.71%	11.90%	-17.24%	351.29%	£2,366.7
5% Band	11.79%	11.56%	-17.13%	353.63%	£2,442.0
10% Band	11.90%	11.73	-16.76	356.89%	£2,502.5

Source: Timelineapp, data from Jan., 1915 - Dec., 2019, 30 - yr monthly rolling scenarios.

The results show that quarterly rebalancing is less than optimal; producing the worst figures in terms of annualised and cumulative returns, for all but the absolute worst scenarios. It slightly dampens volatility and max drawdown, but at the cost of portfolio return. In the median scenario, you'd rebalance a whopping 120 times in a 30 year investment period, only to end up with around £20k less than annual rebalancing. It's wholly unnecessary and potentially damaging.

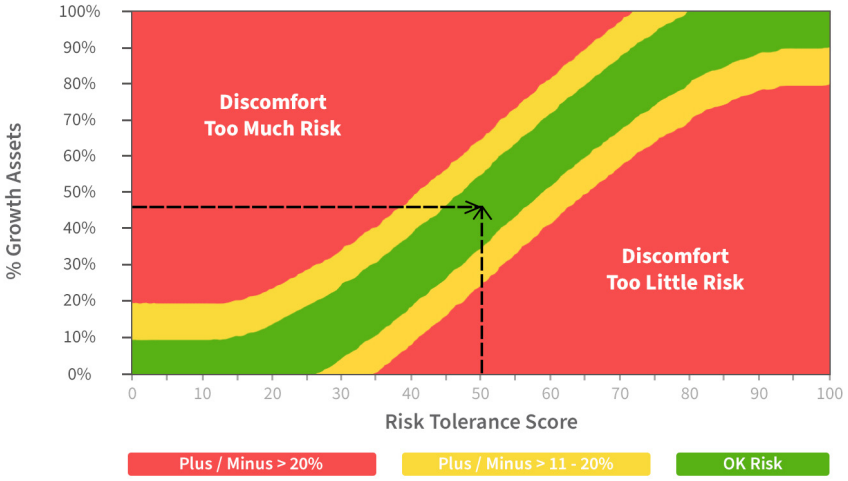
"Quarterly rebalancing is indeed the work of the devil"

Annual rebalancing isn't terrible, still it's less than prime when compared to 10% drift - the clear winner across the scenarios in terms of return. Rather than rebalancing the portfolio based on how long it takes the earth to rotate around the sun, we only rebalance the portfolio if it drifts away from the initial allocation by more than 10%.

Why 10% drift? It's all about risk tolerance.

Perhaps, one of the strongest arguments for tolerance-based rebalancing is to ensure that the portfolio remains in line with the client's agreed risk profile.

This chart below by FinaMetrica, the grandfather of risk profiling, plots a risk tolerance score against the percentage of growth assets in the portfolio. For any given risk score, a deviation of 10% in growth assets is considered psychologically comfortable. The implication is that, if a client is placed in a 50% equity portfolio, the range of 45% to 55% equity is a 'perfect fit'. However, anything from as low as 40% to as high as 60%, is acceptable.



Accordingly, we can think of the superiority of tolerance based rebalancing in 3 distinct ways:

1.

Risk Management

From a risk management point of view, the tolerance based rebalancing approach allows the allocation within the portfolio to drift within a range in line with what is acceptable, based on the client's risk tolerance.

2.

Performance

The annual returns are marginal, ranging from 8pbs to 19bps, compared to annual rebalancing. But over a 30 year retirement, this adds up to between 2% and 8% additional return, compared to annual rebalancing.

3.

Frequency & Efficiency

With a 10% tolerance approach, you end up rebalancing less frequently than annually, and obviously way less than quarterly. This means you get more bang for your buck. Another side of this is that you keep portfolio friction generated as a result of bid-spread offer in funds to the minimum by trading much less often than annually.

This reminds me of the saying attributed to Charlie Munger -

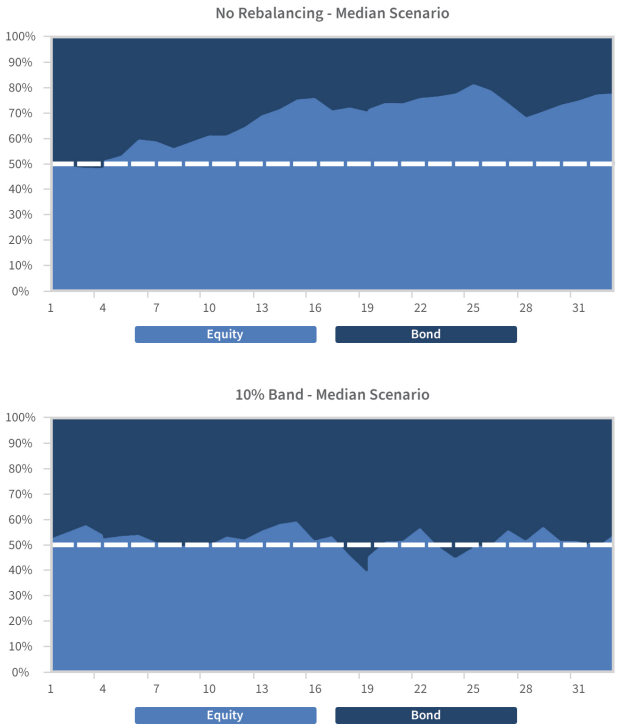
'The first rule of compounding is to never interrupt it unnecessarily.'

Rebalancing is a form of interruption to the compounding process, so we only want to do it when it is absolutely necessary.

Why rebalance at all?

The primary role of rebalancing is to ensure that the portfolio remains within the investor's risk profile. Since equities tend to rise faster than bonds, it is likely that the allocation to equities relative to bonds within the portfolio will rise if left unchecked. Accordingly, it is important to set the portfolio back to the target allocation.

The chart below shows what happens to a Global 50/50 portfolio, in the median scenario, if it is not rebalanced vs rebalancing with a 10% drift tolerance.



Basically, without rebalancing, your 50/50 portfolio ends up becoming 80/20, as equities overwhelms bonds over time. The portfolio ends up breaching the client's risk profile severely.

Whereas, the 10% drift-based rebalancing keeps the equity/bond split close to the original allocation by rebalancing.

Accordingly, rebalancing requires a disciplined and structured approach. It involves monitoring the portfolio drift and carefully resetting the portfolio back to its target allocation when it breaches acceptable limits. It's important not to let emotions get in the way.

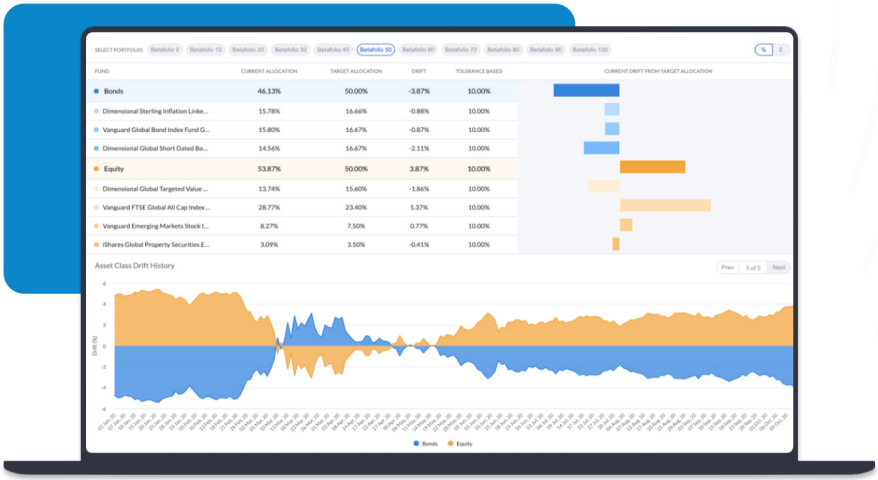
Applying the theory in practice

The challenges in implementing a tolerance based rebalancing are two fold;

First

You need an effective way to track and monitor portfolio drift at asset class and holding level.

Here at Betafolio, we let technology do the heavy lifting when tracking the portfolio drift, both at asset class and holding level. This is built into our Control Centre technology.



Second

An efficient way to implement the rebalancing.

For portfolios managed on an advisory basis, obtaining client authorisation to rebalance the portfolio on an annual basis is hard enough, doing so on a tolerance basis is impossible. This is of course where Betafolio's discretionary permission becomes extremely useful, as it eliminates all the paperwork and associated headache of obtaining client's consent.

In summary...

Brute force empirical data show that tolerance-based rebalancing is far more efficient than a periodic based approach.

As financial planning evolves into an evidenced- based practice - rebalancing shouldn't be the exception.

It has nothing to do with the time it takes the earth to revolve round the sun!

Past performance is no guarantee of future return. The value of investments and the income from them can go down as well as up. You may get back less than you invest. Transaction costs, taxes and inflation reduce investment returns.

Please contact **support@betafolio.co.uk** for further assistance