Managing sequencing risk - buckets v rebalancing

Michael Kitces | Pinnacle Advisory Group | 13 November 2014

If there's one fundamental takeaway that's been drawn from the research on safe withdrawal rates, it's the fact that market volatility really matters during the retiree withdrawal years. Even when long-term returns average out in the end, if the sequence of volatile returns is unfavorable, there is a danger that ongoing distributions during the "bad" years early on could deplete the portfolio before the "good" years ever show up.

As a result, many practitioners and their clients use strategies that will avoid taking distributions from asset classes like equities during down years – for instance, setting aside buckets as a reserve against market crashes, and/or creating a series of decision rules that might simply state outright that equities will only be sold if they're up, otherwise bonds are liquidated instead, and cash/TDs will be used if everything else is down at once.

Yet, when such a decision-rules strategy is paired with simple rebalancing, it turns out that the outcome is no better than merely managing the portfolio on a total return basis without the decision rules at all. The key, as it turns out, is that rebalancing alone already has an astonishingly powerful effect to help avoid unfavorable liquidations, as the process systematically ensures that the investments that are up (the most) are sold, and the ones that are down (the most) are actually bought instead. In the end, we may not be giving rebalancing nearly the credit it deserves to accomplish similar – or even better – results than buckets and decision rules alone. It may mean that such approaches are better purposed as explanatory tools for clients than actual systems for generating cash flows in retirement.

LIQUIDATION DECISION RULES AND MANAGING SEQUENCE OF RETURN RISK

To avoid the danger of selling equities (or any other asset class) after a loss, one of the most popular solutions is simply to establish a series of decision rules that outright dictate that equities will not be sold in such circumstances. For instance, a retiree separates their portfolio into three buckets: #1 holds equities for 60% of the portfolio; #2 is invested in (intermediate government) bonds for 30% of the portfolio; and bucket #3 holds the last 10% of the portfolio in cash (TDs, 3 month government bonds).

Once these three buckets are established, the retiree might then use the following decision-rule framework for liquidations:

1. If equities are up, take the retirement spending from equities.
2. If equities are down but bonds are up, take the spending from bonds instead.

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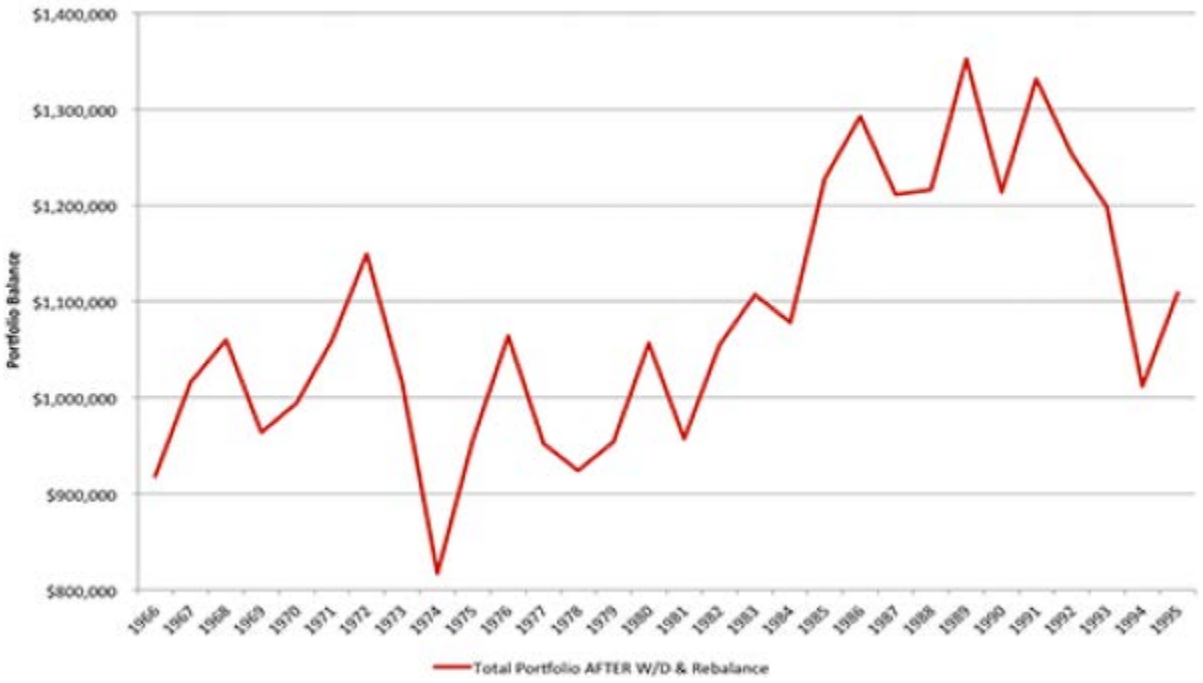
3. If both equities and bonds are down in the same year, take the distribution from Treasury bills.

Using this decision-rules approach, Figure 1 below shows the retiree's results assuming retirement began in 1966, and assuming a 4% initial withdrawal rate, distributions adjusted each subsequent year for inflation, with liquidations occurring at the end of each year, where the portfolio is rebalanced back to its original 60/30/10 allocation at the start of each year. (Transaction costs are assumed to be negligible, taxes not included.)

Figure 1: Bucket liquidation strategy



A deeper look at the year-to-year returns shows that, in fact, the liquidations really did have to come from varying asset class buckets over time to avoid ever selling after a decline. Given that most of the time equities have positive returns, in 23 years, the distribution really did come from equities. However, in six years, it came from bonds and in one year (1969), the distribution came from Treasury bills (as both stocks and bonds were down that year). Figure 2 summarises the source of liquidations from year to year.

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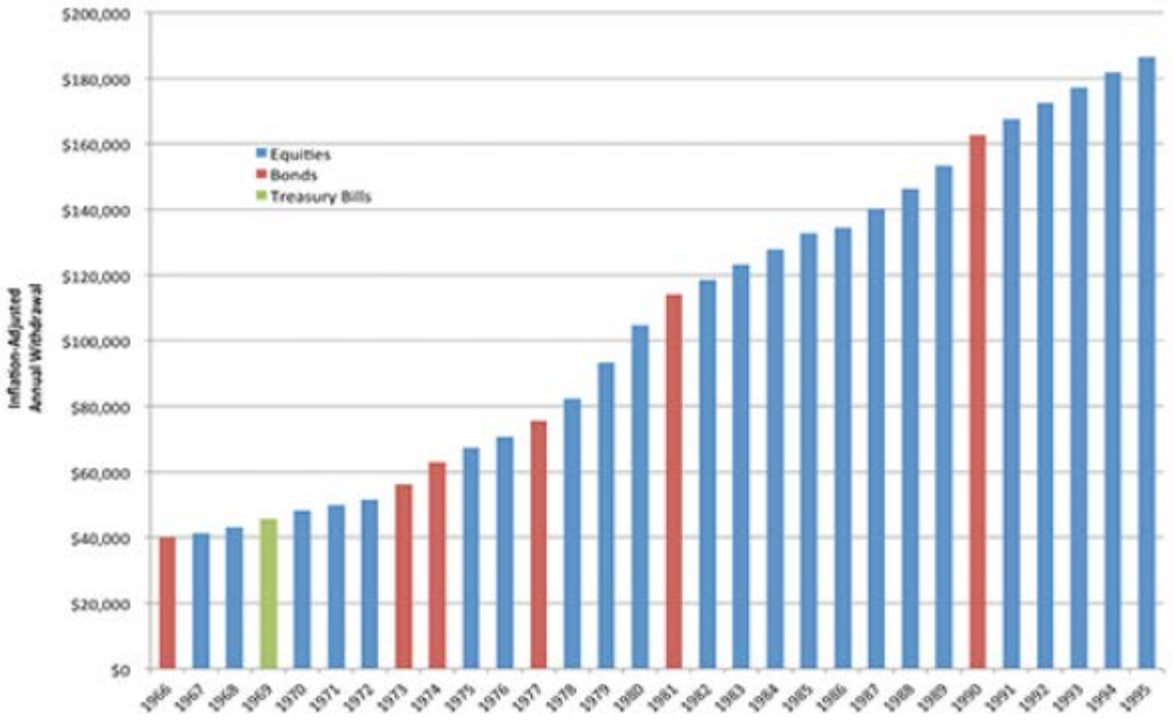
Figure 2: Annual liquidations - bucket strategy



Thus, as the outcomes highlight, the retiree really can avoid taking distributions from investments that have declined and, in fact, the approach allows the retiree to effectively preserve principal at a 4% initial withdrawal rate even through this difficult time period (leaving over nearly all the principal at the end to boot).

MANAGING SEQUENCE OF RETURN RISK VIA REBALANCING WITH A TOTAL RETURN APPROACH

For many practitioners, the goal of managing a portfolio is to manage it holistically on a total return basis - which is not necessarily consistent with a decision-rules-based buckets liquidation strategy. With a total return approach, portfolios are often still rebalanced systematically to keep them on target (which will trigger some sales and purchases), but there is no overt strategy to avoid taking retirement income distributions from asset classes that were down in the prior year and only generate distributions from those investments which were up.

Nonetheless, we can evaluate the effectiveness of taking systematic withdrawals from a total return portfolio that is rebalanced annually. Accordingly, Figure 3 shows the retiree's results assuming retirement began in 1966 and assuming a 4% initial withdrawal rate, distributions are arbitrarily taken pro-rata (60/30/10) from each asset class at the end of every year, with

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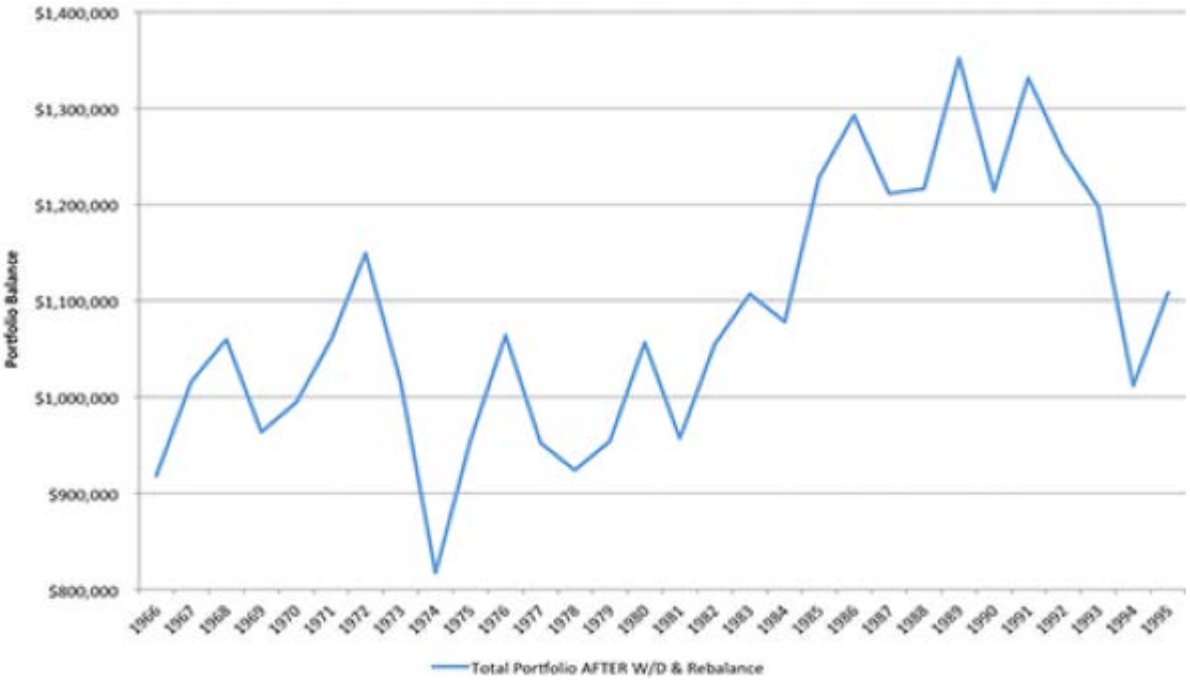
the portfolio rebalanced back to its original 60/30/10 allocation at the start of each year. (Again, transaction costs are assumed to be negligible, taxes not included.)

Figure 3: Rebalancing strategy



Notably, the results appear quite similar to the decision-rules strategy. In fact, if we graph them together (Figure 4), the decision-rules strategy (red line) coincides precisely with the total return rebalancing strategy (blue line), producing a (red plus blue makes) purple line, as the colors meld together. In other words, the results are not just similar, the aforementioned decision rules bucket approach is actually having no impact at all over the total return rebalancing approach, as they are precisely identical outcomes at every step along the way.

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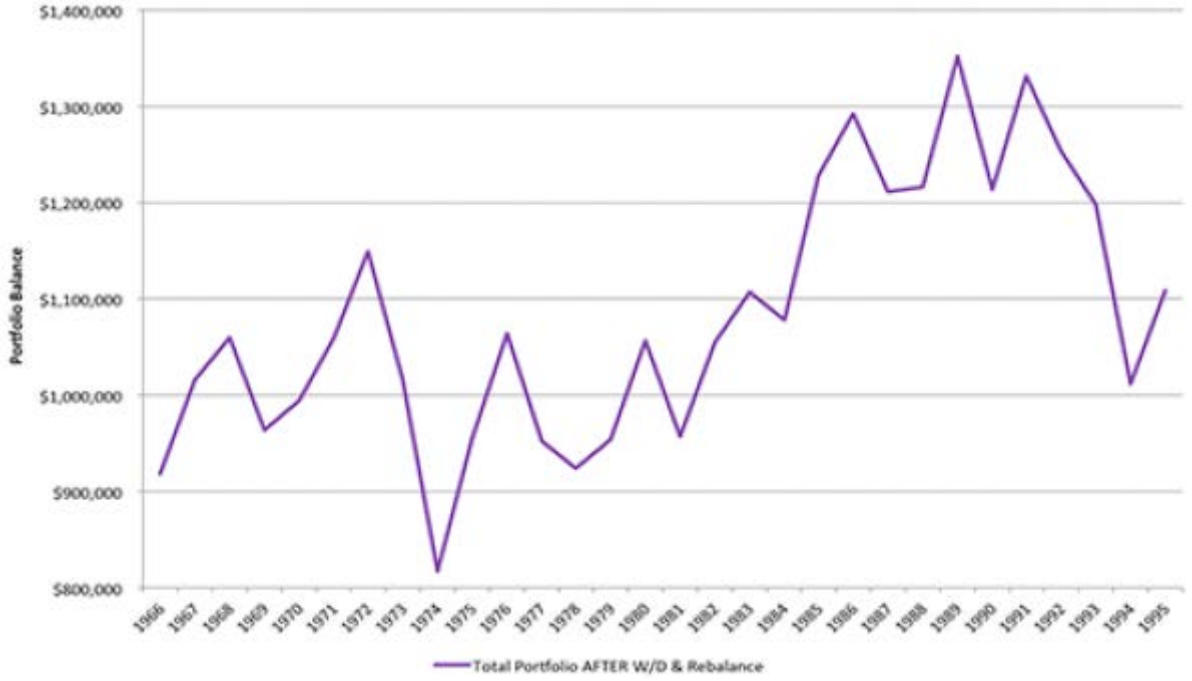
Figure 4: Overlay of rebalancing and bucket strategies



DECISION RULES WITH BUCKETS, TOTAL RETURN REBALANCING, AND MANAGING SEQUENCE-OF-RETURN RISK

To understand why the decision-rules-based buckets liquidation strategy and the total return rebalancing strategy were the same, it's necessary to go back to the assumptions used for the decision-rules framework. These were:

1. If equities are up, take the retirement spending from equities.
2. If equities are down but bonds are up, take the spending from bonds instead.
3. If both equities and bonds are down in the same year, take the distribution from Treasury bills.

Using this decision-rules approach, Figure 5 shows the retiree's results assuming retirement began in 1966 and assuming a 4% initial withdrawal rate, distributions adjusted each subsequent year for inflation, with liquidations occurring at the end of each year, and the portfolio rebalanced back to 60/30/10 at the start of each year.

The key, here, is the final sentence - once a portfolio is going to be rebalanced every year, the impact of decision rules is made null and void and the buckets are essentially just an asset allocation mirage. This is because the total amount of withdrawals is always the same (regardless of which asset classes it's taken from) and the final allocation is always the same (due to the rebalancing). For instance, if we look back to the first year of 1966, Figure 5 shows the results (before any rebalancing or withdrawals through the year).

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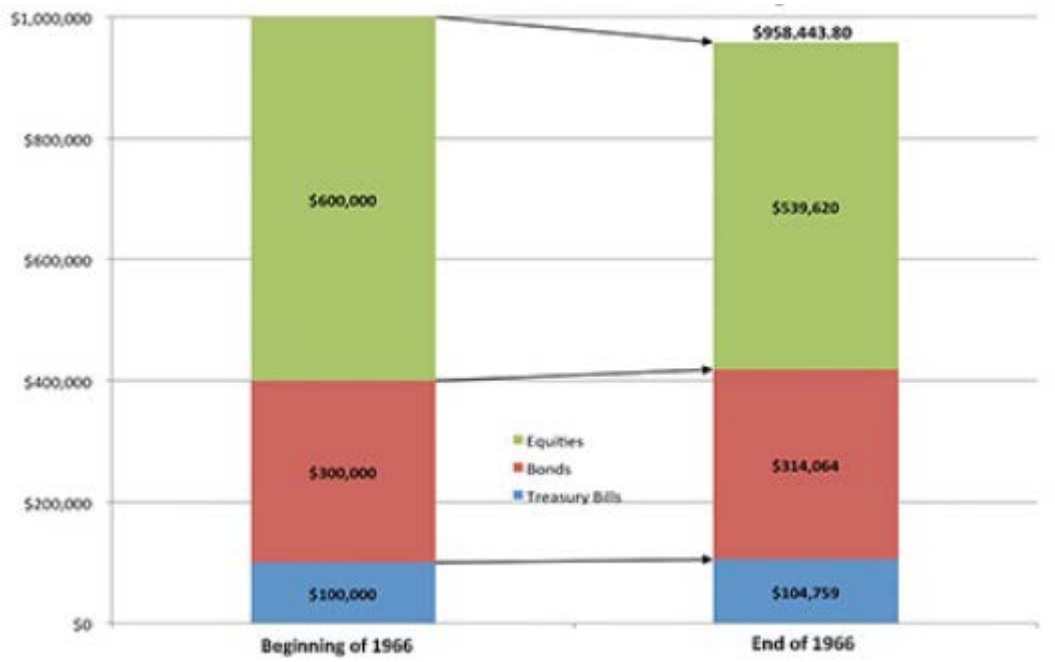
Figure 5: Stock/bond/bills balance at beginning and end of 1966, no rebalancing



The portfolio that starts out with $1,000,000 finishes the year at $958,443.80, due to a combination of a fairly significant equity loss that is only partially offset by gains in bonds and bills. And, because a $40,000 withdrawal must occur (from some asset class or another), the ending balance after withdrawals is going to be $918,443.80. This means, no matter where the withdrawal is taken from, the asset class allocations will ultimately be rebalanced back to 60/30/10 or $551,066.28 in equities, $275,533.14 in bonds, and $91,844.38 in bills. Changing which pre-rebalancing asset classes generate the distribution could impact the (assumed-to-be-negligible) transaction costs, but it doesn't change the account balance ($958,443.80) right before the liquidation, nor does it change the 60/30/10 allocations of the remaining $918,443.80 right after the liquidation and entering the following year.

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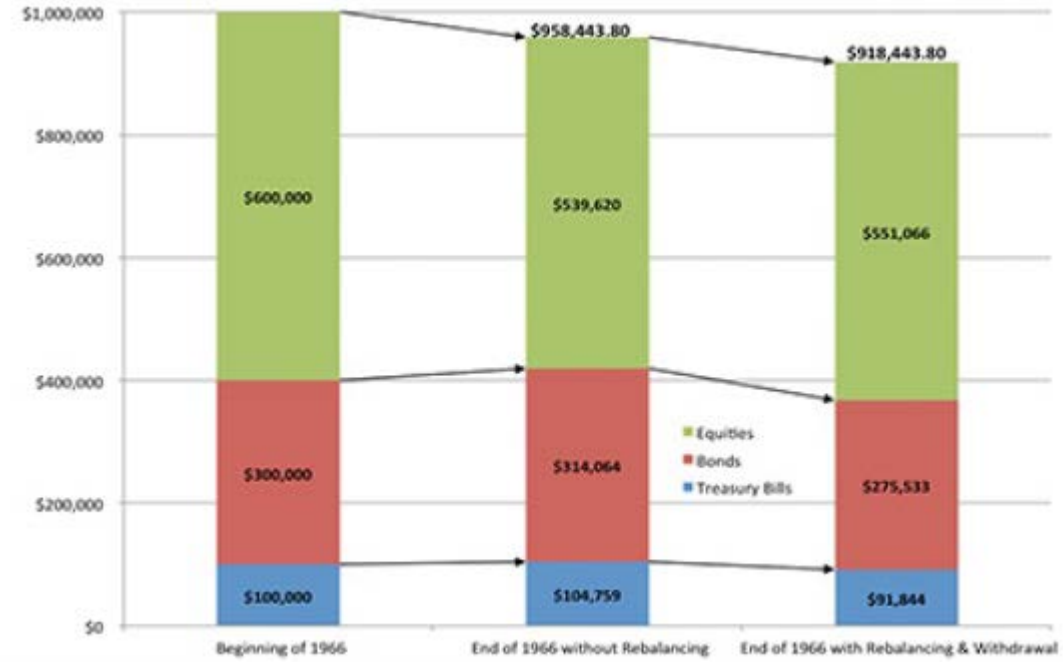
Figure 6: Stock/bond/bills balance at beginning and end 1966 with and without rebalancing



What is also notable about this rebalancing result is that the investor will actually be selling bonds and bills to buy equities. In other words, the decision rules are not actually necessary at all to ensure that equities are not sold when they are down. In fact, rebalancing alone not only ensures that result, but also leads to the purchase of even more equities when they are down to benefit from the rebound in the future.

In fact, Figure 7 shows the results of *just* using the decision-rules approach without rebalancing along the way. As the results reveal, it is worse – so much worse, that the portfolio barely has anything left at the end with the decision rules alone, while the outcome is drastically better with rebalancing because it actually buys equities during dips.

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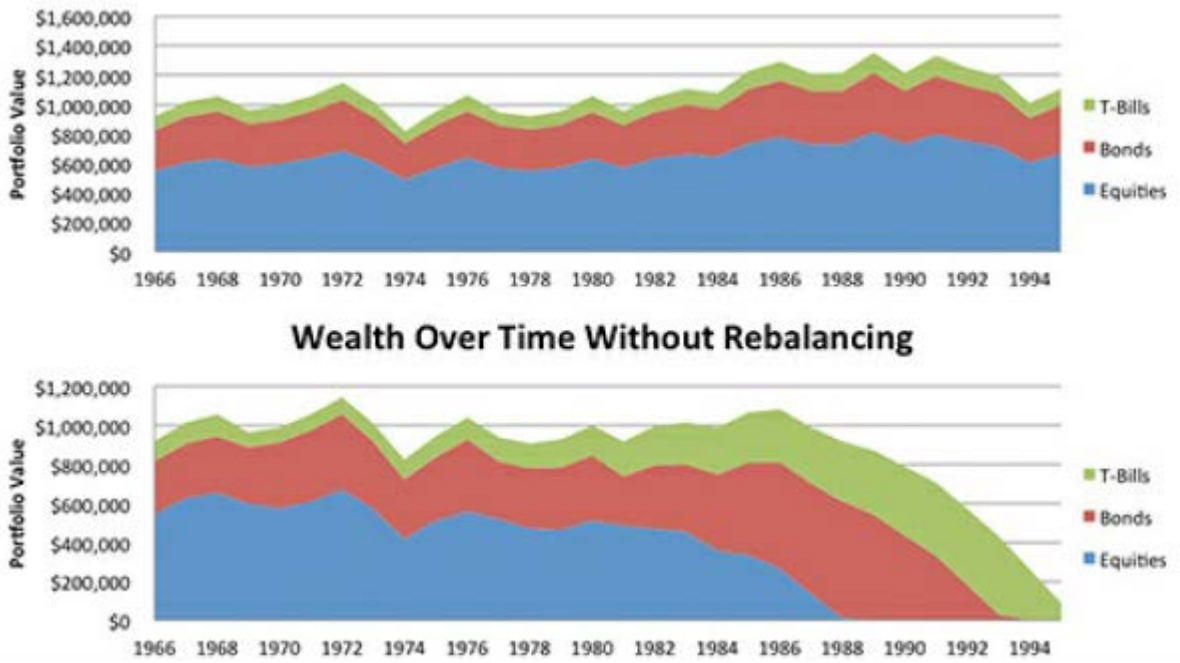
Figure 7: Wealth over time with rebalancing



In other words, not only are the decision rules actually irrelevant once the portfolio is regularly rebalanced, but eliminating the rebalancing is so damaging that the decision rules alone actually lead to a worse outcome for the portfolio.

The reason is that in an adverse scenario like this – especially with an equity decline from the start –the ongoing inflation-adjusting withdrawals become so significant that they eventually overwhelm the equity portfolio, especially when there are not any additional purchases of equities after they go through a decline. As Figure 7 shows shows, without rebalancing back into equities after market declines, the inflation-compounding impact of the withdrawals eventually depletes the equity exposure altogether, and of course once the equities are gone, the remainder of the portfolio – now entirely in fixed income –struggles to keep up.

PRACTICAL IMPLICATIONS FOR MANAGING SEQUENCE-OF-RETURN RISK FOR RETIREES

So what does all of this mean for practitioners trying to help navigate sequence-of-return risk for their retired clients?

The first key point is simply to recognise the awesome impact of rebalancing itself. While classically viewed as a mechanism to just "keep the portfolio on target with its allocations", the reality is that rebalancing itself is a tool to ensure that only the investments that are up are sold, and that the investments that are down are actually bought as well. To the extent that a retiree is taking ongoing withdrawals, the effective result is still the same; rebalancing

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implicitly assures that all distributions end out coming from the asset classes that were up (the most), and never from those that were down (the most).

The second key issue is to recognise that decision-rules strategies liquidating from various buckets may be insufficient to sustain retirement as well. It's not because they're ensuring that equities don't get sold when they're down, but rather because they fail to buy even more when equities are down. In other words, the bond and cash buckets need to do more than just generate retirement distributions when equities are down, they also need to be deployed to proactively buy more equities after they're down (something that automatically occurs with rebalancing, but not with buckets alone) which indirectly ensures the retiree "sells high and buys low" to enhance long-term returns. (Sidenote: This is also why a systematically rebalanced portfolio is a better means to implement a rising equity glidepath than "just" a buckets-based liquidation strategy.)

In other words, don't underestimate the incredible impact that rebalancing really does have in a portfolio, from "automatically" ensuring that liquidations come from investments/asset classes that are up, to also creating a process that allows the retiree to buy even more of an asset class when it is down. And, of course, the more (not-perfectly-correlated) asset classes the retiree holds, the greater the opportunity for rebalancing to exert its favorable effects (i.e., the outcomes may be even better than the 3-asset-class example here). And, in the meantime, be cautious about decision-rule bucket strategies that can actually go so far as to adversely distort the portfolio in a manner that leads to worse outcomes (eg, by leading to an excess cash position, or by failing to buy more equities after a decline and allowing equities to be depleted too rapidly in the event of a bad return sequence).

Nonetheless, the point of all this discussion is not to make the case that decision-rules bucketing strategies are inferior. To the contrary, as long as they are implemented along with rebalancing, their results are exactly the same. And if clients are more comfortable with bucketing strategies – if only because they appeal more naturally to our tendency towards mental accounting – then so much the better. But just be certain to recognise that while it may be more effective to explain portfolios as a series of buckets to clients, be cautious not to allow the asset allocation to become distorted by trying to manage the portfolio that way!

Michael Kitces is a Partner and the Director of Research of Pinnacle Advisory Group, a US-based private wealth management firm that works with over 700 families and manages close to US$1 billion in assets for clients in the US and around the world. The above article is reproduced with permission from Michael's blog "The Nerd's Eye View". Michael is a member of PortfolioConstruction Forum's core faculty of leading investment professionals.