INVESTMENT BULLETIN

Keel Point

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8065 Leesburg Pike, Ste. 300
Vienna, VA 22182
www.keelpoint.com

Risk Management

The hardest part of our job is risk management. The challenge compounds as the language to communicate on the topic is designed for the university math department rather than the real world. We would like to use this space to update you on some of our risk management techniques and, in that discussion, hopefully improve translation accuracy.

First, two quick notes on our discussion. Though it connotes the chance to lose something, for us, risk is bidirectional; there is also the chance of insufficient gains. Losses are easier to frame, at least in a historical sense, because they are absolute in nature. Insufficient gains can be absolute or relative, and usually manifest over a longer period, thus posing a framing challenge. A risk assessment, nonetheless, should have something to say about both directions of risk.

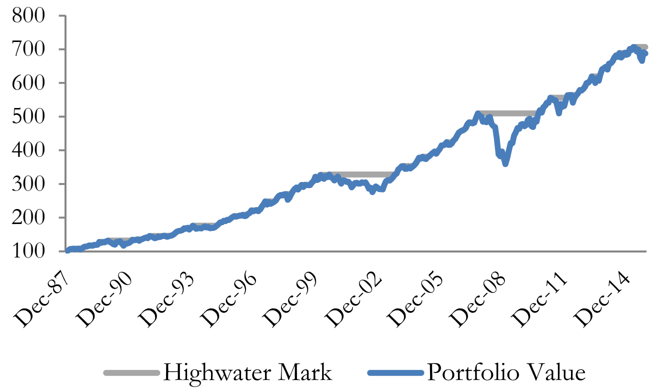
Second, we will use a simple 50/50 portfolio of stocks and bonds to illustrate our thoughts throughout this piece. The stock portion of the portfolio is proxied by the MSCI All Country World Index ("ACWI"), a market value weighted aggregation of large cap stocks in all developed and emerging markets as defined by MSCI. The bond side uses the traditional Barclays Aggregate Bond Index ("Agg"), comprised of US bonds issued by the government, quasi-government agencies, and investment grade corporations. We analyze data going back to 1988 as that is the year data becomes available for the ACWI. We do not actually use such a portfolio in practice; rather we see many ways to improve it, but its lack of complexity makes for a clearer illustration.

Downside Risk

Psychologists have observed that people rely on a "peak-end rule" to evaluate an experience. Some of the early evidence came from test patient recall of pain during medical procedures – they tended to remember the worst (peak) of it and how they felt at the conclusion, but very little else no matter the duration. If you want to maximize patient happiness, figure out how to reduce the pain at its most intense and concluding points. A person reflecting on their investment experience may also rely on the peak-end heuristic. How did I feel when my portfolio was at its nadir and how do I feel now?

Figure 1 illustrates the pain points. The blue line is a growth plot for our sample 50/50 portfolio. The grey line plots the portfolio's highwater mark, or its maximum previous value reached, adjusted for contributions and withdrawals (not relevant here, but certainly so in the real world). The grey is often obscured by the blue because the portfolio is usually at or near its maximum. However, there are some periods when the blue dips far below – these are periods we call drawdowns. The frequency, duration, and magnitude of drawdowns are critical elements of our mutual (client and advisor) understanding of risk.

Figure 1: Growth of a 50/50 Portfolio
12/31/1987 scaled to 100
Source: Bloomberg



Here's how we apply the concept. The most important test is peak pain or maximum drawdown. The 50/50 portfolio, for instance, experienced its maximum drawdown in February 2009 at which point it was 30% below its October 2007 peak. The portfolio did not establish a new highwater mark until October 2010. That's three years of "I used to have $500 dollars, now I have less" and a few hair-raising months in early 2009 of "I've lost $150!!" We ask ourselves if this historical scenario is acceptable given your goals and investment horizon and ask the same introspection of you.

The "peak" portion of the analogy is the easy part; the "end" is nebulous. For these purposes any day you sit down to review your portfolio is the "end". There are therefore many "ends" and potentially many ways to experience those "ends". Our analysis toolkit endeavors to use historical data to more completely explain the range of these experiences.

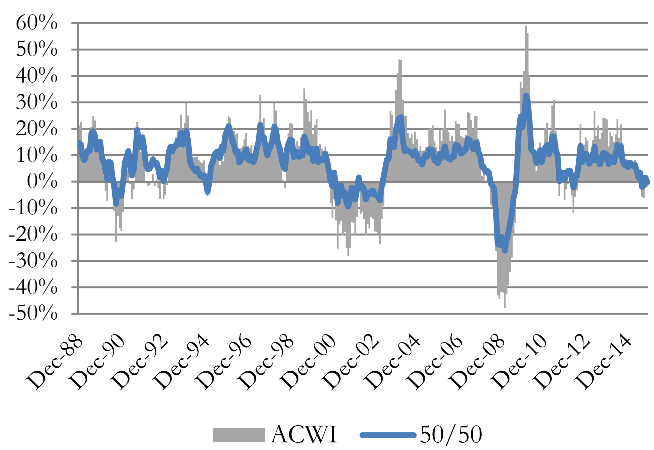
We can summarize the magnitude of all drawdowns, not just the worst. For this portfolio we can say that, on average, if you are below the portfolio highwater mark (blue line below gray, hard to see in many cases of small drawdowns), the lost ground peaks at 3%. In other words you open your statement and exclaim "I used to have $100, now I have $97!"

We can also take the view that the "end" is the last twelve month's returns. How often would you open a report to find the portfolio went backwards over that time? The historical data for this example says you have a one-in-six chance. These negative twelve month results averaged 7% in the sample. This figure differs from the drawdown average because the latter measures many different time periods (some drawdowns last one month, some last years).

It's Bidirectional

What about risk to the upside? Perhaps the best way to gain comfort is to review historical periods of underperformance relative to equities. Figure 2 plots the last twelve month's returns of the 50/50 portfolio (blue) and the ACWI (grey) as of each date on the x-axis. One year underperformance reached 27% after the post-financial crisis rally ('10), 22% in the midst of the post-tech wreck rally ('04), and 18% at the height of the tech boom ('99). These examples of insufficient gains, however, came at the beginning or end of stock busts that leaned on bond diversification for value protection.

Figure 2: Rolling Twelve Month Returns
Source: Bloomberg



This is another opportunity for reflection. The foregone gains represent an opportunity cost that, just like losses, might instigate a strategy reassessment. It's best to contemplate and decide beforehand. Do we mutually feel that the opportunity cost is worth the risk reduction summarized previously? If your "end" is one of underperformance to equities (this was true 60% of the time in our example), how do you evaluate the investing experience? There are adjustments that can be made if downside risk or insufficient gain risk don't match expectations.

Before we leave this section, it's important to note that we show the comparison to equities to help guide a decision on opportunity cost, not to suggest it's the correct benchmark for the portfolio. Our goal is to settle on a benchmark that mimics the risk we mutually agree to target. A portfolio that we expect to exhibit risk characteristics similar to the 50/50 portfolio, for example, would benchmark against the 50/50 portfolio.

Sensitivities

History isn't our only guide to risk management. In fact, it's probably not so robust when it comes to the Agg, or bond, portion of our illustrative portfolio. Yields in the late '90s and middle '00s, when the asset class was called on to bailout a subsequent equity bust, were much higher than they are today. A historical-only approach misses the obvious headwind of potentially rising interest rates.

One of our answers here is regression analysis, the output of which gives us an idea of how sensitive a portfolio is to economic factors. For instance, we calculate how sensitive portfolios are to changes in interest rates. We also calculate sensitivity to equity markets, credit markets, and volatility and can apply these observations to a hypothetical recession scenario. Say equities drop an amount equivalent to their recession average, but rates fall just 1% in sympathy (they can't fall much more), how does the portfolio respond to this lackluster boost from bonds (whose value increases as rates decrease)?

Where there is Difficulty…

We started this month with a statement on the difficulty of risk management. We know it might have been construed as a lament, but take the view that where there is great difficulty, there is an opportunity for great value-add.

We've evaluated portfolio behavior using a broader set of descriptive statistics in an absolute and relative (to equities and to sensitivities) sense. We think the combination of this better empirical output interpreted through the lens of experience makes us better risk managers. Our hope is that this expands the risk lexicon in a way that makes interaction between client and adviser easier. Our chance for significant value-add exists in the successful communication of these concepts and understanding of your input – how you feel about the peak and how you feel about the range of "ends". □

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