Three Questions That Every Fund Should Ask Themselves

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BOB PRINCE

BRIDGEWATER

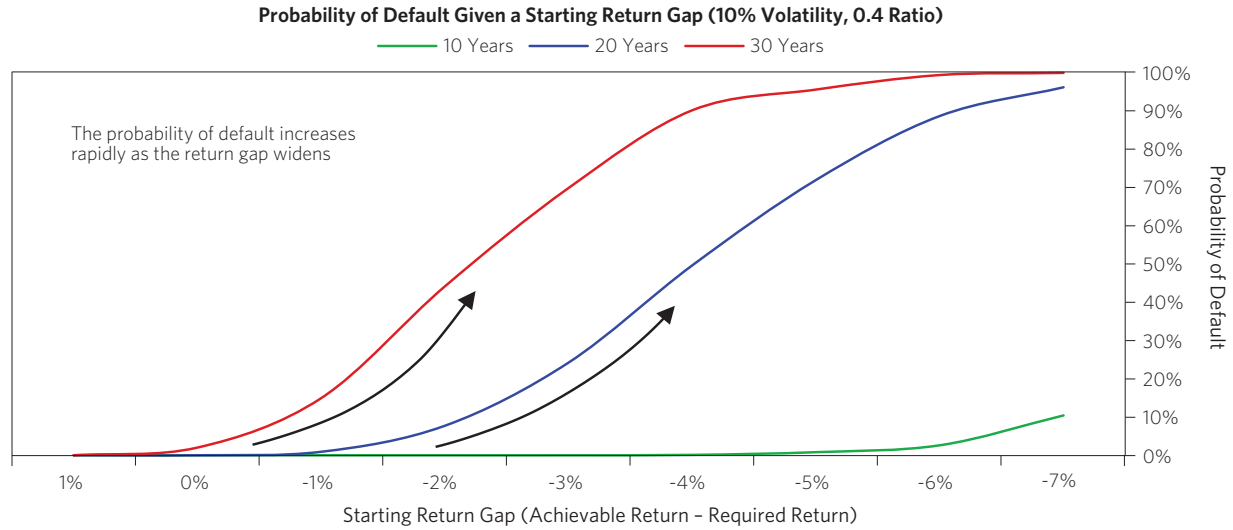
Stepping back from the market action, we want to pause for a moment and share some thoughts about longer-term investment strategy that have been part of our recent client conversations. When discussing current conditions in relation to their circumstances, we find it useful to ask three basic questions:

What is your required return?
What is your achievable return?
How big of a hit can you take along the way?

By required return we simply mean the return that is necessary for current assets to meet future needs and obligations. Achievable return reflects current asset pricing and skill. And the tolerable hit considers compounding effects. Given how straightforward the questions are, we and the client are often surprised that the answers are not just sitting on the tip of the tongue. The questions are useful because they are common sense, they are grounded in the realities of cash flows and asset pricing, and they naturally lead to a more robust assessment of long-term sustainability across a range of market outcomes and funding strategies.

How These Three Questions Work Together to Convey Sustainability

By knowing the return gap between what is required and what is achievable, and potential losing periods or low returns, longer-term probabilities of default can be estimated and managed. For example, the following chart shows a sample calculation of the probability of default (i.e., asset values of zero) within 10, 20, and 30 years for a fund with contractual liabilities, given a range of initial return gaps and the performance characteristics of a traditional 60/40 asset mix. As shown, due to compounding effects, if the required return is more than 2% above the achievable return, the probability of default begins to accelerate higher.

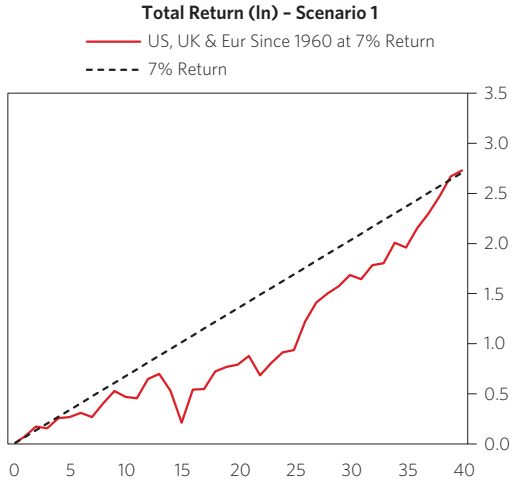


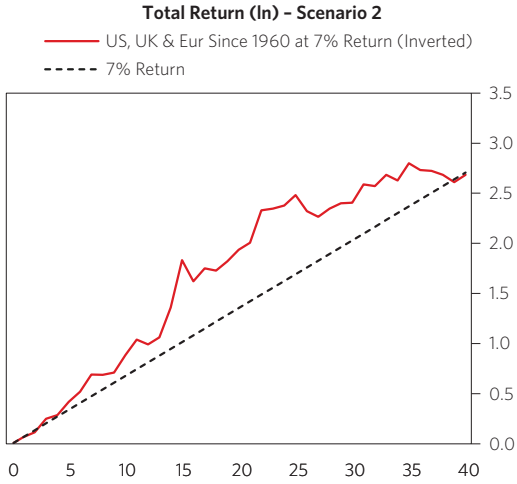
Understanding the Compounding Effects Which Cause Near-Term Underperformance to Hinder Long-Term Sustainability

If the only dynamic at play was the difference between the required and achievable return, it would be easy to calculate the probability of default. A -2% return gap would give you about 50 years of coverage. But losses or sustained underperformance change the dynamics, with the specific effects dependent on the nature of the liability.

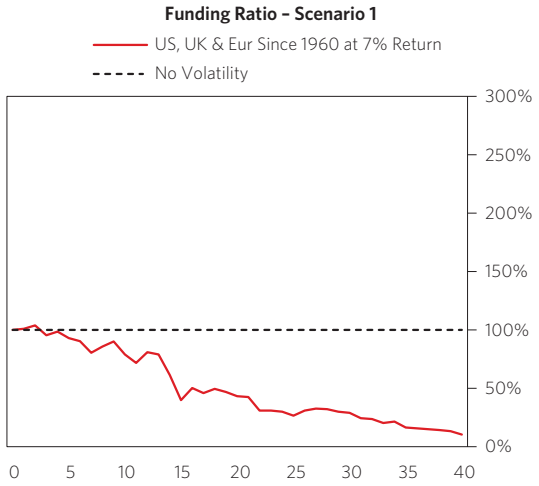
Consider the following simple example. If you have $100 in assets and a $5 payment to make this year, you need to make a 5% return to cover the payment. If the assets fall in half, you still have to make the $5 payment, so the required return rises to 10%. If you then only make 5%, you've made $2.50, so you need to sell an additional $2.50 of assets to cover the payment. The remaining assets are then $47.50, and the required return rises further to 10.5%. If actual returns are less than the required return for too long, it becomes impossible to earn the required return, and all assets are ultimately liquidated. The same dynamic can occur via moderate underperformance over a longer period of time.

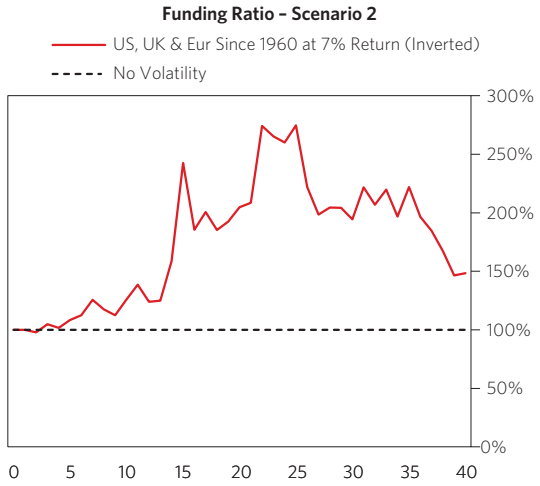
These compounding effects create path dependencies that are important to understand, because path dependencies cause long-term outcomes to be significantly impacted by near-term losses or low returns. The following stylized example shows two cases to illustrate the dynamic. In both cases, the actual long-term return equals the expected return of 7%. But, in the first case, you have poor returns in the early period, whereas, in the second case, you have good returns in the early period.





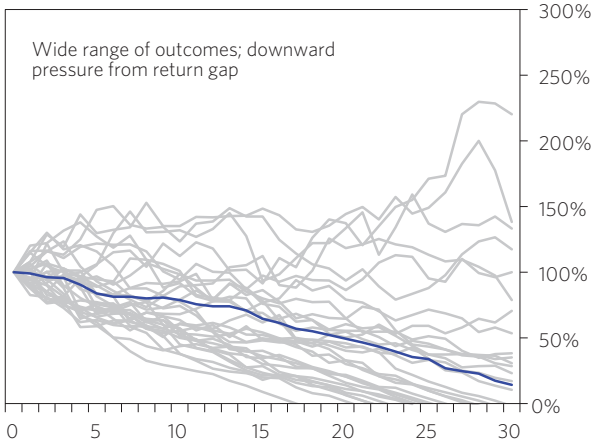
Simulating these two return scenarios over time against a stream of liability payments, in the first case you run out of money, but in the second case you have excess.



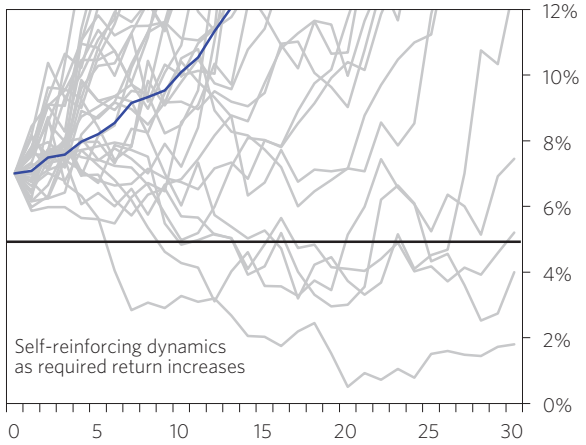


The three questions provide a good proxy for these dynamics. Given a particular return gap and level of volatility, you can simulate future outcomes across a range of future market return scenarios. For this exercise we generally use actual market returns over the past 100 years and across countries, but the effects can also be clearly seen through hypothetical returns generated with predefined return and risk characteristics. The two charts below show a range of outcomes based on simulated return scenarios, given a starting return gap of -2%, an asset portfolio volatility of 10%, and a Sharpe ratio of 0.4. Across these scenarios (absent any emergency contributions), the funded status generally falls over time and hits zero about 40% of the time within 30 years. This is because—consistent with the simple example above—when asset returns are less than the required return, assets must be liquidated to cover the payments and, with that, the future required return rises. If this happens often enough and by large enough amounts, the problem spirals. The below-right chart shows the corresponding path of the required return for each of the return scenarios. It goes up when asset returns are less than required, setting a new, higher hurdle each time that assets underperform the required return in that period.

Funding Ratio, -2% Starting Return Gap

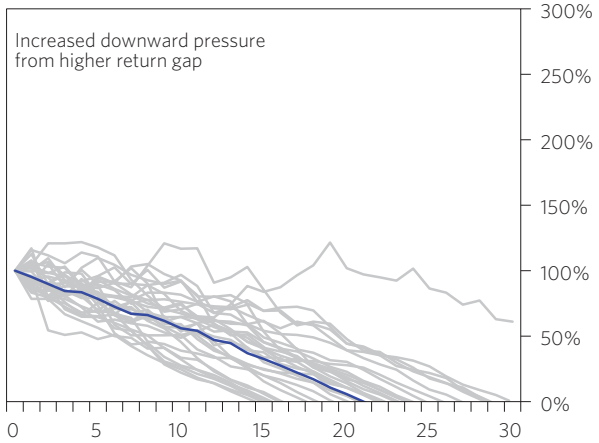


Required Return, -2% Starting Return Gap

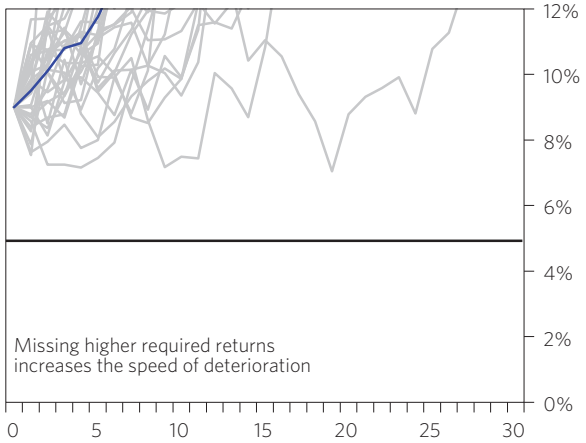


And if the starting return gap is -4%, the picture looks like this: almost certain bankruptcy within 30 years.

Funding Ratio, -4% Starting Return Gap

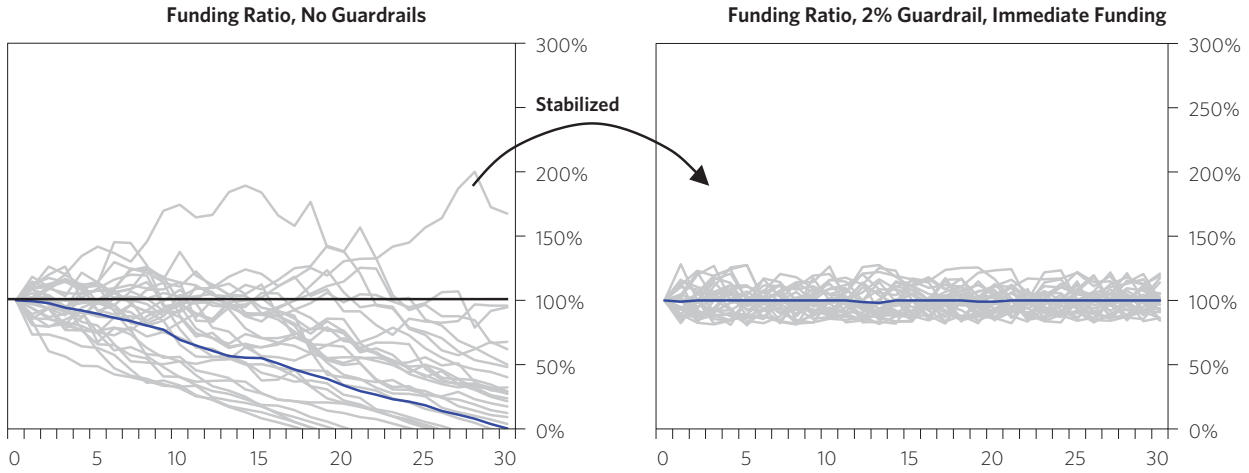


Required Return, -4% Starting Return Gap

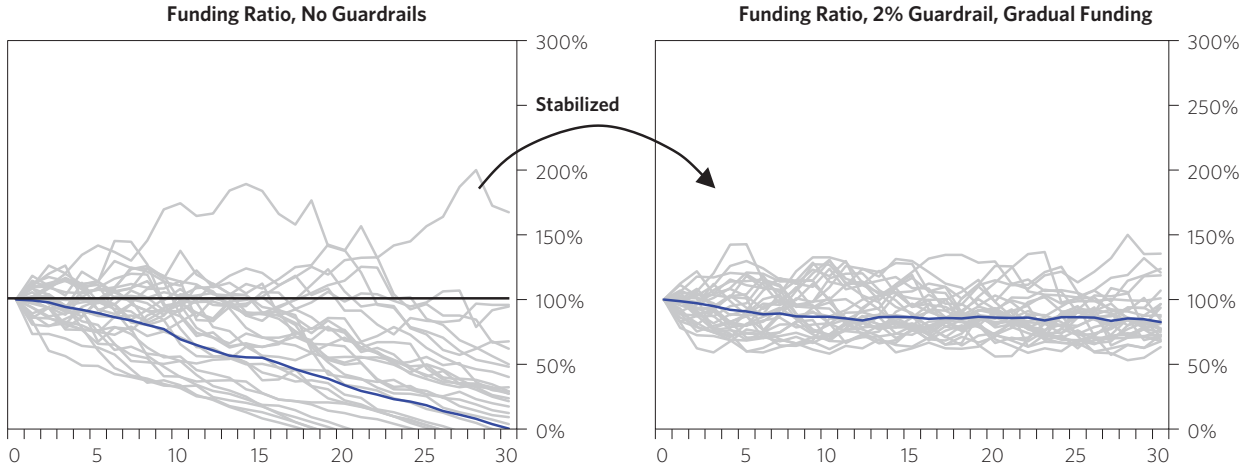


Establishing Guardrails

Understanding these dynamics also allows the formulation of contingency plans (i.e., guardrails), which preempt the downward spiral that can result from a bad combination of circumstances and events. Recognizing that probabilities of default can accelerate when the return gap is worse than -2%, we simulated a funding rule where if the return gap is worse than -2%, add enough funds to the portfolio to bring it back to zero. And if the return gap is higher than 2%, pull assets out to bring the return gap back to zero (this is to illustrate the concept, of course practical issues exist). Starting with a -2% return gap, the long-term deterioration and wide range of outcomes (below-left chart) is stabilized and tightened (below-right chart), as you would expect.



A more practical approach than regularly moving big chunks of assets is shifting funds gradually, by accelerating or decelerating the rate of contributions when guardrails are breached. In the below example, when the return gap is worse than -2% we accelerate contributions sufficient to bring the gap to -1% within half of the duration of the liability (e.g., about 7.5 years). And decelerate contributions when there are enough assets that the achievable return is more than 2% above the required return. This approach also stabilizes outcomes, with more slack along the way. There is an endless range of circumstances and strategies around these concepts.



Raising Returns by Taking More Risk versus Taking Risk More Efficiently

In today's low-return environment, the need to raise investment returns in order to meet future obligations and return targets presents investors with two broad choices: take more risk, or take risk more efficiently. The dynamics explained above help inform this choice. Depending, of course, on the nature of your liability, the compounding effects of losses mean that raising returns by taking more risk may not significantly reduce the long-term probability of default, and actually can raise it over shorter periods. This is because even though the expected return of the fund is higher, on an expected value basis the probability may not improve, because the compounding drag from losses can be fully offsetting. On the other hand, if the return is raised by taking risk more efficiently (i.e., a higher return-to-risk ratio), the benefit of a higher return is realized without the drag of more risk.

						Probability of Default			
	Return Gap	Required Return	Achievable Total Return	Sharpe Ratio	Risk	10 Years	20 Years	30 Years	
Base Case	-2%	7%	5%	0.4	10%	0%	6%	44%	↻ similar
More Risk	0%	7%	7%	0.4	15%	0%	9%	30%	
More Efficiency	0%	7%	7%	0.6	10%	0%	1%	13%	← lower

Answering the three questions can be helpful in assessing current circumstances against market conditions, forming contingency funding plans, and informing the effectiveness of one's investment strategy. It is also an easy perspective to explain. The actual dynamics will be different for every investor, depending on the nature of their liability or benchmark, but the three questions are almost always relevant and useful.

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