Managing Retirement Portfolio Withdrawals in Turbulent Times: Precautionary Savings, Investment Reserves, and Mid-Term Adjustments

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Investors withdrawing money from their portfolios are often concerned about the probability of ruin, where ruin is defined as the depletion of the portfolio prior either to a fixed date, or to a random date such as the end of retirement (i.e., the end of a lifetime). Investors worry about a portfolio's ability to support a desired level of consumption, like a child's college expenses or a minimum standard of living throughout retirement. The market turmoil that has characterized the first years of the 21st century has heightened fears regarding the ability of some retirement portfolios to meet long-term financial objectives.

This essay provides insights into several issues:

- Does a 35% drop in a retirement portfolio's value translate into a 35% drop in expected future retirement income?
- How should "rainy day" funds be designed and implemented?
- What moderate course corrections can retirees take now to avoid draconian corrections at a later date?

Among the myriad of investment advice books and articles, one often finds admonitions to establish a reserve fund. Although almost everyone agrees that a reserve fund is a good idea, there seems to be much ambiguity surrounding its funding level and intended uses. The commonplace meaning of a reserve account for individuals is an emergency fund, a rainy-day fund, or some similar moniker. As the names imply, investors contemplate using the fund to soften economic shocks to income (unemployment), to tangible assets (home repairs), or for other untoward events (health emergencies).

Further confusion arises when the emergency fund asset is linked directly to portfolio management issues. Consider the following excerpt from "Managing Individual Investor Portfolios" [Bronson, James W., Scanlan, Matthew H., & Squires, Jan R. in Managing Investment Portfolios: A Dynamic Process, eds. Maginn, Tuttle, McLeavey & Pinto. John Wiley & Sons, Inc (New Jersey, 2007), p. 39]:

> *"As a precaution against unanticipated events such as sudden unemployment or uninsured losses, keeping an emergency reserve is highly advisable. The reserve's size should be client specific and might cover a range from three months to more than one year of the client's anticipated expenses. Individuals working in a cyclical or litigious environment may require a larger reserve than those in more stable settings."*

It is not entirely clear whether the suggested reserve should be a buffer supply of *investment wealth* that would argue for a more conservative portfolio allocation, all else equal, or a cash or near cash account maintained separately from the portfolio. If the latter, the existence of such an account presumably would presumably allow for greater liquidity and investment risk in the portfolio proper.

By limiting our discussion to retirees, we can clarify the nature and scope of reserve accounts because retirees have no labor income and must live off accumulated assets. At the limit, most retirement income portfolios must support a minimum standard of living objective even though funding such an objective may impair certain complementary gift and bequest goals. The critical risk for retirees is the failure to earn a return on assets sufficient to support their spending target. If the reserve account is incorporated into the investment portfolio as a buffer supply of investment wealth, then its value becomes a function of portfolio performance. But, since the portfolio is the main source of retirement income, caution is required. Positive correlation (dollar values moving in tandem) between reserve account value and investment wealth may be self-defeating.

Additionally, we can differentiate between (1) precautionary saving to fund a traditional rainy day account for immediate emergencies; and, (2) investment reserves used to enhance the probability that the portfolio will achieve its intended long-term financial objectives through efficient management of withdrawals. The distinction is of great importance. The following discussion turns, first, to precautionary saving and then to investment reserves.

Precautionary Savings: An Academic Perspective

A common academic approach to the "theory of precautionary wealth accumulation" [Huggett, Mark, "Precautionary Wealth Accumulation," Review of Economic Studies Vol. 71 (2004)] is to replicate the plight of the investor who must decide how much to consume from wealth currently so as to be satisfied with the sufficiency of the next period's wealth, given:

1. Expectations regarding the risks faced in the subsequent period; and
2. Consumption preferences for that period.

Or, in academic jargon: the goal is an optimal allocation of resources between current consumption and end-of-period wealth. Under classic equilibrium theory, this implies that the marginal utility of consumption must equal the marginal utility of asset value. If this were not the case, an investor could do better by moving the marginal dollar from investments into consumption, or vice versa.

Many academics suggest that the amount of next-period wealth that maximizes investor satisfaction will determine the current consumption decisions. This amount, in turn, is dependent on such factors as the investor's risk probability measures for future periods, the investor's subjective time preference for money (impatience to consume), the investor's risk aversion, and other factors motivating precautionary savings. This motivation for precautionary savings is determined by a complex relationship between resources and spending preferences, with the individual's risk aversion acting as a critical factor. In the presence of perfect certainty (a zero risk probability measure), consumption increases, all else equal. The size of precautionary savings is the difference between a consumption level under conditions of certainty and the consumption level under conditions of perceived risks. [For example, Carroll, Christopher D. & Kimball, Miles S., "Precautionary Savings and Precautionary Wealth," The New Palgrave Dictionary of Economics (March 15, 2006)].

This mathematically based modeling approach indicates that investors might exhibit a "Prudence Function." Intuitively, this suggests that investors seeking higher expected returns from riskier portfolios also recognize that more risk means a higher dispersion of possible outcomes—both favorable and unfavorable. Whereas the utility of consumption is higher in environments where earnings risk is also high, this will also lead to greater precautionary savings. The more money you expect to earn from risky investments, the more you are predisposed to save lest you become unable to preserve your future standard of living if your expectations of higher earnings do not pan out.

Most academic studies are not interested in whether this wealth should be treated as a part of the portfolio or as a separate account outside it. Rather, they focus on:

- Mathematical models of investor choice, or
- Fitting empirical data to econometric models, or
- Consumer survey evidence.

For example, one 2005 survey asked consumers about their target level of precautionary assets, and found that the target level was approximately 8% of total net worth and 20% of total financial wealth [Kennickell, Arthur, & Lusardi, Anna-Maria, "Disentangling the Importance of the Precautionary Saving Motive," Working Paper, Dartmouth College (2005)].

We are thus confronted with two disparate views of precautionary saving:

1. A rainy day fund to handle 'one-time' unanticipated emergencies (home repairs or medical/dental costs) that are, in all likelihood, uncorrelated—i.e., one dollar in an emergency fund can self-insure multiple risks because the risks are not expected to occur simultaneously; and
2. A "consumption smoothing" fund that mitigates the rollercoaster ride of shocks to portfolio dollar values.

The notion of saving for a rainy day is a commonplace, but many retirees are not fully aware of the benefits of a reserve.

"Feeding the Bear" Can Be Detrimental to Your Wealth

Why have an investment reserve? The first quarter 2007 issue of our Investment Quarterly discusses the concept of Variance Drain ["Why Diversify? An Academic Perspective"]. The article reviews the underlying mathematics of compound return, and demonstrates that, all else equal, the more volatile the investment, the lower its long-term growth rate. An investment that loses 20% in period one needs 25% in period two in order to get back to even. Periods of negative returns not only decrease portfolio value but, if the portfolio is also funding retirement distributions, the distributions take dollars out of the portfolio at the worst possible time. In a nutshell, distributions multiply the bad consequences of negative returns and cap the benefits of positive returns. The Wall Street term for taking money out of portfolios during periods of economic distress is "feeding the bear."

Any strategy that mitigates or avoids feeding the bear can help sustain a retirement portfolio's long-term viability. Unfortunately, the most readily available risk mitigation strategy does not work. Although you may be tempted to preserve capital by permanently exiting the market, if your portfolio has no exposure to equity, then unless you are either very wealthy or very old, you will almost surely guarantee that it will be unable to sustain distributions throughout your retirement. Fortunately, other asset management strategies are available in tough economic times. Prudent retirement income planning strategies include:

1. Adjust withdrawal amounts in response to investment gains and losses
2. Move from periodic fixed amount withdrawals to withdrawing a constant fraction of wealth in each period
3. Add a smoothing function to the constant fraction withdrawal formula by linking withdrawals to the portfolio's 36 or 60 month average value (i.e., let good years offset bad years)
4. Establish an investment reserve
5. Implement a combination of the above

Notice the command/control verbs in the above list: "adjust," "move," "add," "establish," and "implement." They imply that retirees can take useful actions to preserve their long-term standard of living from permanent damage due to bear markets. Although all these planning tools are important, the remainder of this essay focuses on strategies 1 and 4.

Smoothing the Ride with an Investment Reserve

The value of retirement portfolios invested in risky assets will vary over time. The portfolio's dollar value, however, is the primary source of retirement income, and it is difficult to know how to adjust withdrawal amounts, given constant fluctuations in portfolio value. When portfolio value skyrockets, it appears as if a high withdrawal rate is feasible; when value plummets, it appears as if retirement security may be ruined. When the portfolio's value is high, should the retiree be cautious regarding increasing periodic withdrawals lest they become unsustainable? When the portfolio's value is low, should the retiree pessimistically ignore the potential for future growth? It is difficult to know what midcourse corrections should be made so that the retiree can safely take out more money during good times and less money during bad. For example, does a plunge in portfolio values require a draconian cut in withdrawals?

The answer to the above question depends, in part, on the existence of a reserve invested in cash or near-cash financial instruments, so that its return remains uncorrelated to that of the portfolio. Because it reduces the likelihood of feeding the bear, a reserve can allow the portfolio to recover more quickly. During periods of substantial decline in market values, the reserve acts as a source of income replacement as portfolio withdrawals are trimmed or, in the extreme, eliminated. However, during periods of portfolio surplus, the reserve must be restored. Thus, a reserve acts as a "smoothing" device that prevents severe cuts in portfolio income during periods of negative growth and limits portfolio withdrawals during periods of positive growth.

The reserve's smoothing function can operate under retirement income formulas that are based on taking periodic fixed withdrawals or under periodic fixed fractions of actual dollar values. For example, a retiree has a portfolio of $1,000,000 and annual withdrawals of 5% ($50,000). If the portfolio declines to $600,000, the withdrawal formula calls for a $30,000 per year distribution. The feeding-the-bear problem is mitigated (less is being taken from the portfolio during bad performance periods), true. But if the retiree needs a minimum amount of $40,000 per year, the fixed fraction formula does not support the minimum standard of living. In this simple example, the $10,000 shortfall would be made up from the reserve. On a happier note, when the portfolio value grows above $1,000,000, the fixed fraction formula triggers a yearly distribution in excess of $50,000. However, the excess cannot be spent prior to re-funding the reserve. The same principle applies to periodic fixed amount withdrawals.

All else equal, the greater the reserve's value, the more risk the investor can afford to take in the portfolio. This is because a properly designed and skillfully used reserve acts as a "collar" on income that avoids short-term feast-or-famine reactions by investors and, therefore, is a powerful contributor to long term retirement income stability.

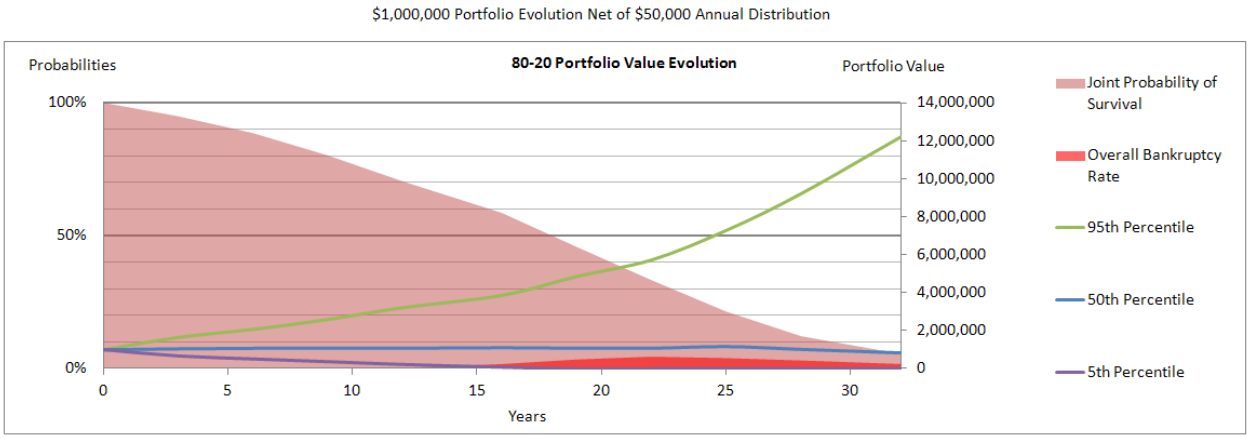
A Case Study

Consider the following chart of simulated outcomes for a male investor, in excellent health, age 65 who wishes to take $50,000 per year adjusted for inflation from a portfolio with a current value of $1,000,000.[1] The portfolio is allocated 80% to equity and 20% to fixed income, and is globally diversified across various capital markets (fourteen different asset classes). The values shown in the chart take into account reasonable investment fees and expenses. The pink area represents the likelihood of survival (stochastic

1 The charts in this essay were all generated using WealthCaster® a proprietary risk modeling algorithm developed at SCLC. Because it takes longevity into account, and therefore utilizes mortality tables that differ according to gender, the algorithm must take the gender of the investor into account.

longevity), while the solid lines represent the range of possible investment results (in inflation-adjusted dollars) as the portfolio evolves over time. The maroon line represents "worst case" results; the blue line represents average results; and the green line represents "best case" results [results are recorded over a 90 percent confidence interval]. Finally, the red area represents the percentage of trials in which the investor remained alive and the portfolio was bankrupt [the conditional probability of ruin].

Case Study—Example 1

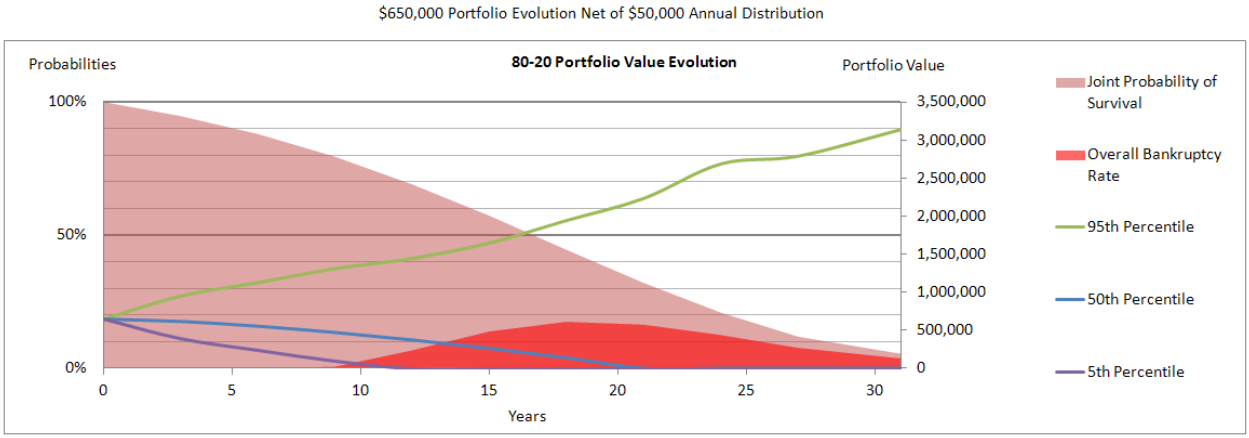


Source: WealthCaster®

Although not shown on this chart, the unconditional probability across all trials of the portfolio running out of money while the investor remains alive is 5.3%. Thus, our hypothetical retiree has a 94.7% probability that his retirement will be economically successful.

What happens if, over the next year, the value of the portfolio drops to $650,000 and he makes no adjustment in his withdrawal amount? He is now 66 and, presumably, in good health (if not perhaps in very good spirits). The chart identified as Case Study—Example 2 tells this story.

Case Study—Example 2

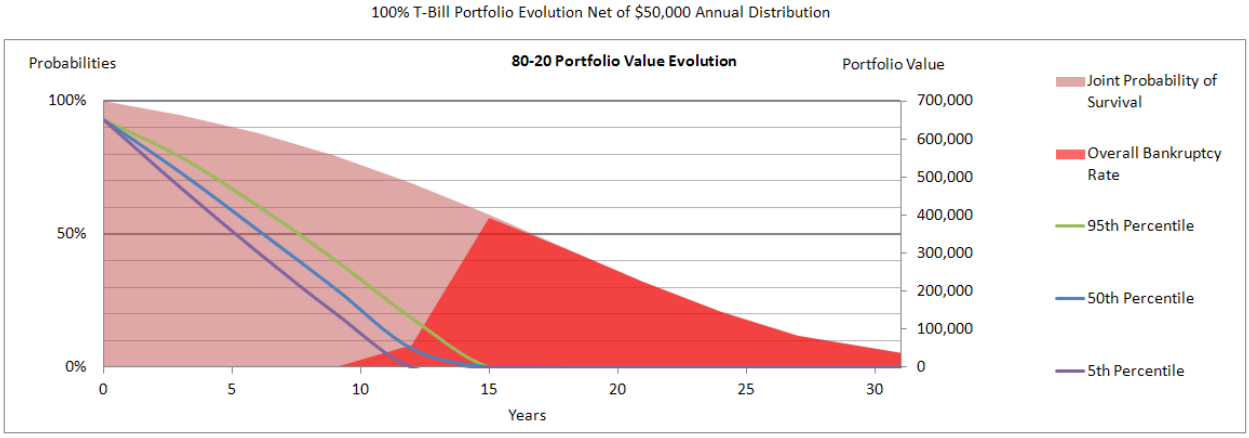


Source: WealthCaster®

If he makes no changes to the distribution amount, the probability of running out of money during his lifetime increases substantially. The unconditional risk of bankruptcy across all trials increases from 5.3% to 29.9%. There is both good and bad news here. The bad news is that wealth has suffered a significant decline. The good news is that he can still maintain a 70% confidence level that his retirement will be successful despite his insistence on maintaining the targeted inflation-adjusted yearly withdrawal.

What happens if he takes action in the face of the equity market debacle? He could conserve the remaining principal by abandoning all investments in risky assets. In this case, our healthy but disgruntled 66 year old cashes in the portfolio and places the remaining $650,000 in short term U.S. treasuries. Again, he continues the $50,000 inflation-adjusted yearly withdrawal. The results are illustrated in the below chart labeled Case Study—Example 3.

Case Study—Example 3



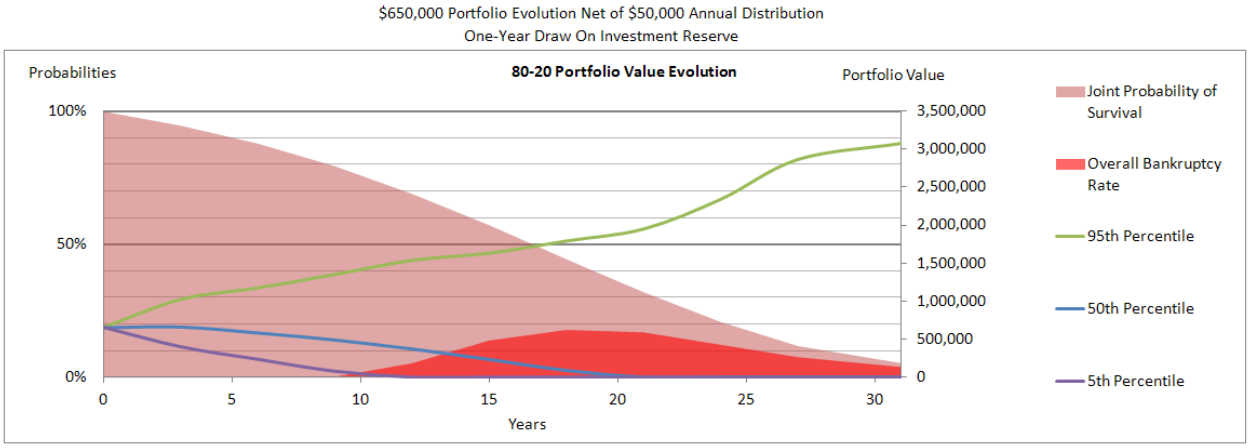
Source: WealthCaster®

By preserving capital, he has, perhaps unwittingly, compromised his portfolio's ability to provide a comfortable retirement. The unconditional probability of bankruptcy across all trials now increases to a staggering 67.5%. To put it bluntly, our 66 year old should not plan to live past age 80.

What if he were instead to take one year's income of $50,000 from a reserve, rather than from the portfolio, and then afterward take annual targeted inflation-adjusted withdrawals from the portfolio for the rest of his life? Observe the results in Case Study—Example 4.

By exercising a one-year moratorium from feeding the bear, the retiree drops the unconditional risk of bankruptcy from 29.9% to 23.9%—a 20% improvement in his prospects. If he draws on the separate investment reserve for two years, the risk of bankruptcy decreases further to 16. 7%—a 44% improvement in his prospects.

Case Study—Example 4



Source: WealthCaster®

Investment portfolios are dynamic, and may therefore require flexible responses to changes in value. Although hindsight is always 20-20, it appears that the most readily available response to a market downturn ["go to cash"] is not optimal under most conditions. This fact shifts the locus of planning to retirement income distribution policy. The dynamic character of the investment return generating process suggests that periodic retirement income withdrawals should be treated as "options" rather than as set-in-stone formulae that forever remain on autopilot. Deciding how much to withdraw each year should be a complex function of the retiree's required income, risk tolerance, health status, portfolio value, and other important factors. Access to clear and unbiased information is crucial to prudent withdrawal decisions. Given our advanced simulation capabilities, we can provide retirees with information that affords them the best chance of weathering bear market storms.

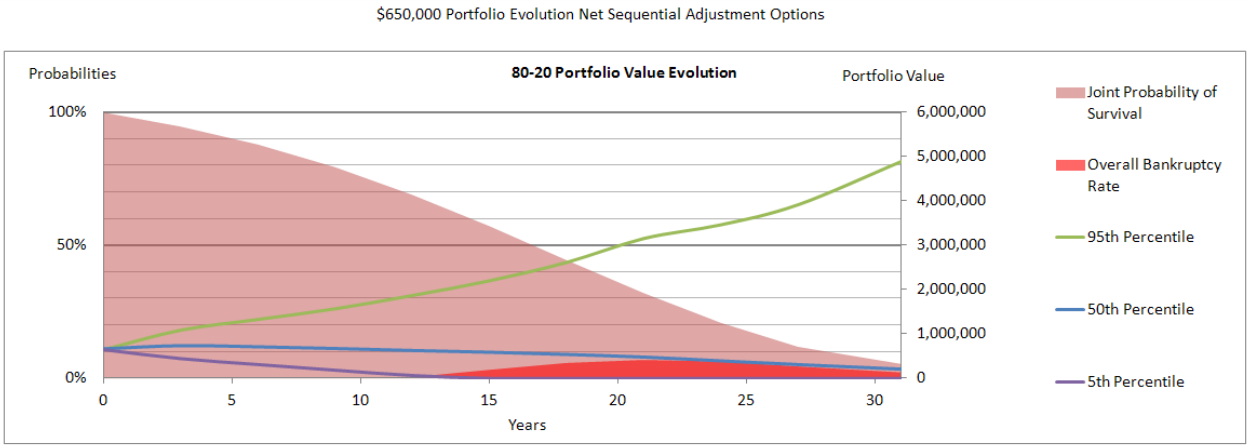
Returning to our example, assume that the retiree elects a combination of withdrawal adjustments such as the following:

- Use the reserve to support a $50,000 standard of living target for the next year
- Examine the portfolio value 12 months from today, and assuming that the portfolio's dollar value remains low, reduce the planned distribution from $50,000 to $40,000 (inflation adjusted) for the subsequent two years

- Examine the portfolio value 36 months from today and if there is sufficient recovery, make a $45,000 inflation adjusted withdrawal for the subsequent three years
- Examine the portfolio value 72 months from today, and, if there is continued recovery, return to the target distribution of $50,000 per year for the remainder of retirement

Note that the adjustments are the equivalent of exercising options where the advisability of exercise is determined by current circumstances rather than by a rigid adherence to a distribution target. In this case, the hypothetical adjustments reduce the unconditional risk of ruin to 18.1%:

Case Study—Example 5



Source: WealthCaster®

While the probability of depleting the portfolio may be higher than desired, not all is lost. The likelihood of ruin emerges relatively late across simulated lifetimes. Happily, when the probability of survival is high, the probability of bankruptcy is low. If, for example, our hypothetical retiree is a home owner during a bear market in real estate, this gives ample time for a possible recovery in housing prices that might provide an opportunity to consider other retirement income options, such as a reverse mortgage.

Preserving Wealth and Income

Most investors expect retirement portfolios to operate over lengthy planning horizons. This is "bad" because the money must last for many years. It is "good" because modest mid-course corrections generate effects that can compound over many years. The most important point is that a series of periodic mid-course corrections based on the economic reality of portfolio value—not on hunches, panics, or prognostications—can decrease the risk of running out of money in bad times, and increase the amount of money available in good times. Two efficient tools for executing mid-course corrections are maintaining investment reserves and changing withdrawal amounts as conditions warrant. Optimal withdrawal management is a critical part of sound investment policy. Surviving a bear market does not require abandoning policy, but does require sound management of investment wealth.

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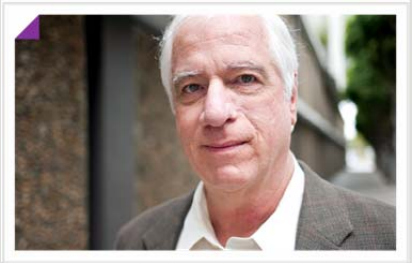

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