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

Patrick J. Collins, Ph.D., CFA

(as published on the Wealth Strategies Journal website)

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 to either a fixed date, or prior to a random date such as the end of retirement (i.e., the end of one's lifetime). More generally, investors worry about a portfolio's ability to support a desired level of consumption where consumption may be a child's college expenses or a minimum standard of living throughout retirement. Recent investment losses have heightened fears regarding the ability of some retirement portfolios to discharge long-term financial objectives.

This paper provides insights into several issues:

- Does a 35 percent drop in a retirement portfolio's value translate into a 35 percent drop in expected future retirement income?
- How should "rainy day" funds be designed and implemented?
- What moderate course corrections can retirees take now in order 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 this is a good idea, there seems to be much ambiguity surrounding its funding level and its 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 that the fund is an asset that can be used 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 is 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* separate from the portfolio. If the latter, the existence of such an account presumably allows the investor to take greater liquidity and portfolio investment risks.

A focus on retirees, however, allows us to 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 threshold consumption target. If the reserve account is incorporated into the investment portfolio (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 that he is satisfied with the sufficiency of the next period's wealth, given (1) the investor's expectations regarding the risks he will face in the next period; and (2) the investor's consumption preferences for the next period. Or, in academic jargon: the goal is to make 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 improve his situation by moving an additional dollar either from investments into consumption or from consumption into investments.

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)].

One insight of the mathematical modeling approach is that investors may exhibit a "Prudence Function." Intuitively, this suggests that investors seeking higher expected returns from more risky portfolios also recognize that higher risk also 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 the higher earnings expectations do not pan out.

Most academic studies are not interested in how this wealth should be allocated (within the portfolio or in a separate account outside of the portfolio). Rather, they focus on mathematical models of investor choice, or on fitting of empirical data to econometric models, or on consumer survey evidence. For example, one recent 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 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. Most of us learned about rainy day funds at our Mother's knee; however, many retirees are not fully aware of the benefits of an investment reserve account.

"Feeding the Bear" Can Be Detrimental to Your Wealth

Why have an investment reserve? The underlying mathematics of compound return indicate that the more volatile the investment, the lower a portfolio's long-term growth rate, all else equal. An investment that losses 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, unless you are very wealthy or very old, you will almost surely guarantee that it will be unable to sustain distributions throughout your retirement. Fortunately, a variety of asset management strategies are available in tough economic times. Although the following list is not meant to be a comprehensive overview of retirement income planning techniques, nevertheless it deserves careful attention:

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 planning tools are important, the remainder of this essay focuses on points 1 and 4.

Smoothing the Ride with an Investment Reserve

The value of retirement nest eggs invested in risky assets will go up and down 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 the current plunge in portfolio values require a draconian cut in withdrawals?

The answer to the above question depends, in part, on the existence of an investment reserve account that is invested in cash or near-cash financial instruments so that its return remains uncorrelated to that of the retirement income investment portfolio. If feeding the bear multiplies the deleterious effects of portfolio declines, an investment reserve account can allow the portfolio to recover its dollar value more quickly. During periods of substantial decline in market values, the investment reserve account 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 account must be restored. Thus, an investment 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.

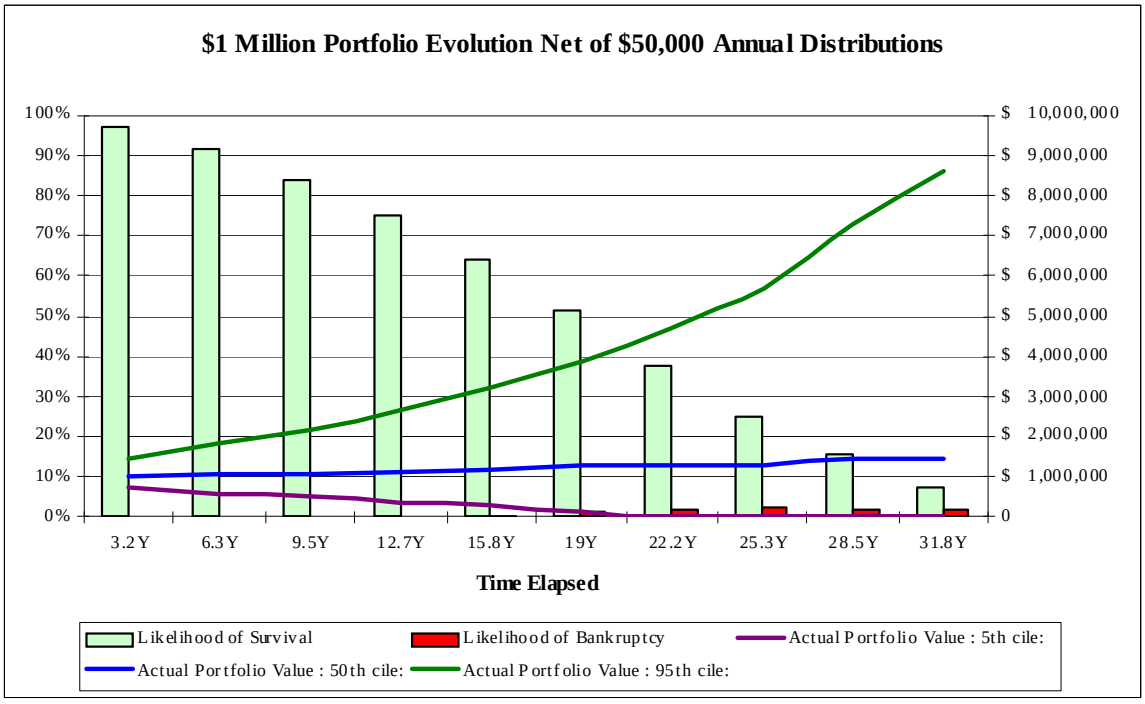
The reserve account smoothing function can operate under retirement income formulas that are based on taking periodic fixed withdrawals or under periodic fixed fractions of actual dollar values. For example, a retiree has a portfolio of $1 million from which he or she withdraws 5% per year ($50,000). 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); 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 investment reserve account. On a happier note, when the portfolio value grows above $1 million, the fixed fraction formula triggers a yearly distribution in excess of $50,000. However, the excess cannot be spent prior to re-funding the investment reserve account. The same principle applies to periodic fixed amount withdrawals.

All else equal, the higher the investment reserve account's dollar values, the more risk the investor can afford to take in the retirement income investment portfolio. This is because, a properly designed and skillfully used investment reserve account 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 graph 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. The portfolio is allocated 80% to equity and 20% to fixed income, is globally diversified in various capital markets (fourteen different asset classes). The values shown in the graph take into account reasonable investment fees and expenses. The Green columns represent the likelihood of survival (stochastic 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 columns represent the percentage of trials in which the investor remained alive and the portfolio was bankrupt [the conditional probability of ruin].

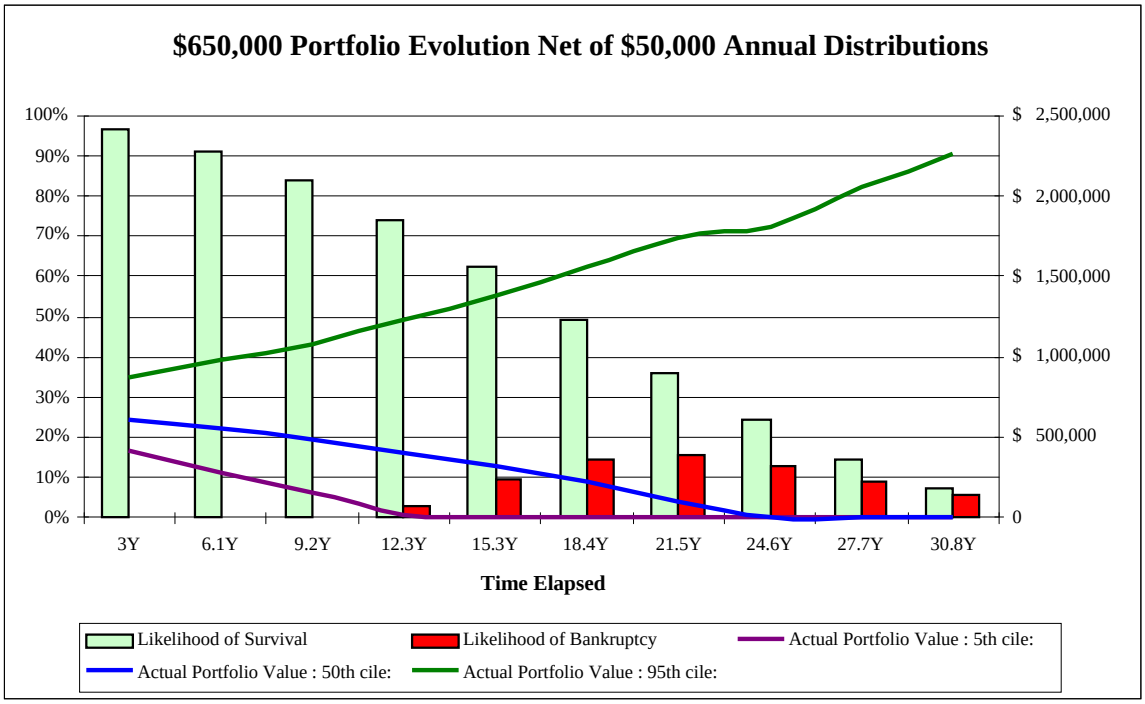
Case Study - Example 1



Although not shown on this graph, the unconditional probability across all trials of the portfolio running out of money while the investor remains alive is 5.3 percent. Thus, our hypothetical retiree has a 94.7 percent confidence level 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? The retiree is now age 66 and, presumably in good health (if not in good spirits). The graph on the next page tells the story.

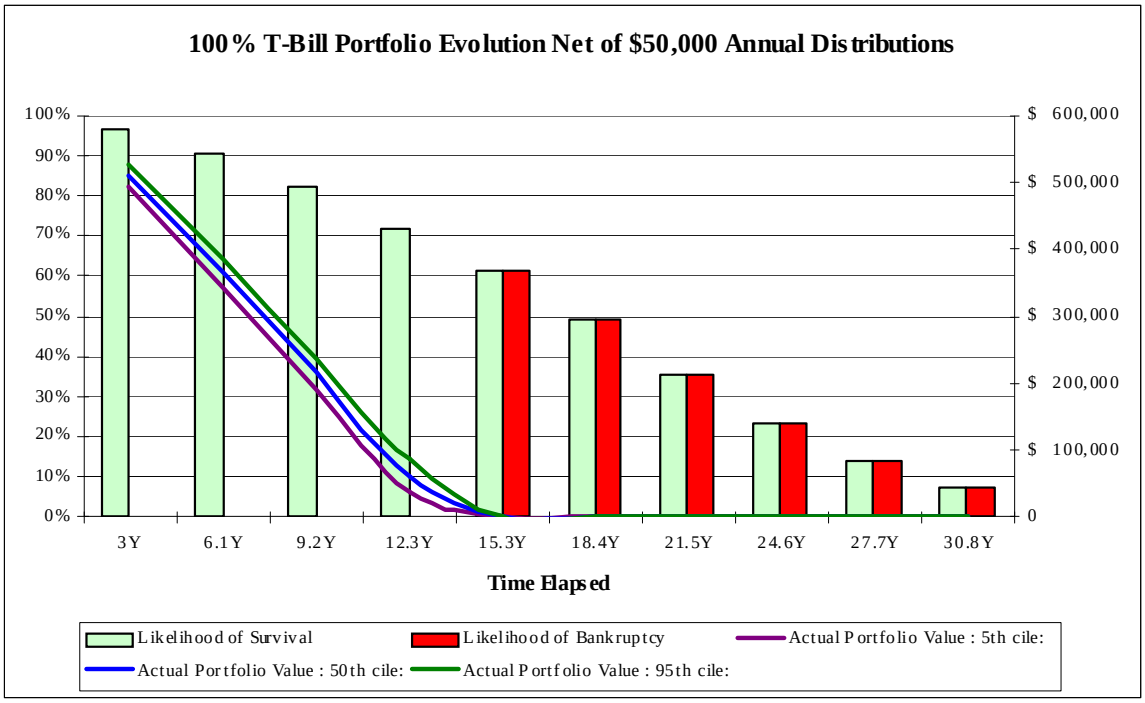
Case Study - Example 2



If the retiree makes no changes in 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 percent. There is both "good" and "bad" news here. The bad news is that wealth has suffered a significant decline; the good news is that the retiree 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 the retiree takes action in the face of the equity market debacle? One possible action is to 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 thousand in short term U.S. treasuries. Again, he elects to continue the $50,000 inflation-adjusted yearly withdrawal. The results are illustrated in the graph labeled Case Study, Example 3.

Case Study - Example 3

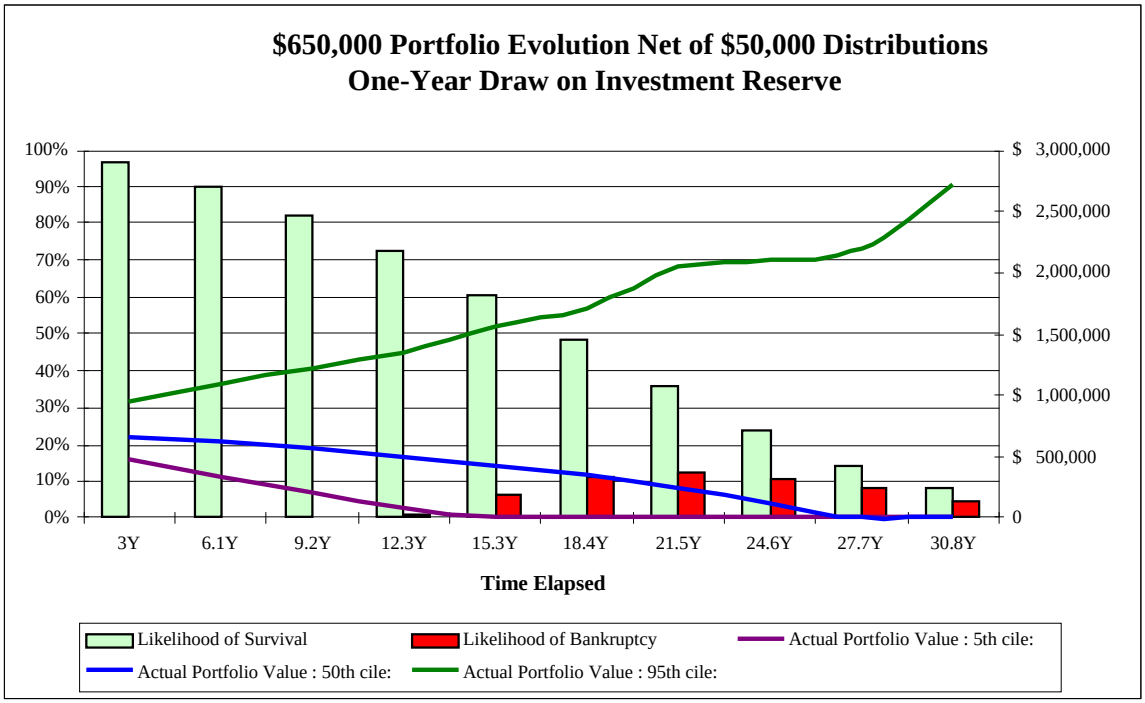


By preserving capital, the investor has, perhaps unwittingly, compromised the portfolio's ability to provide a comfortable retirement. The unconditional probability of bankruptcy across all trials now increases to a staggering 67.5 percent. To put it bluntly, our 66 year old should not plan to live past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

Another possible action is to replace the $50,000 per year income from an investment reserve account for a one year period, while leaving the portfolio intact. At this point in time, the targeted inflation-adjusted withdrawals continue for the remainder of the retiree's life span. Observe the results in Case Study - Example 4, on the following page.

By exercising a one-year moratorium from feeding the bear, the retiree drops the unconditional risk of bankruptcy from 29.9 to 23.9 percent—a 20 percent improvement. If the retiree draws on an separate investment reserve for two years, the risk of bankruptcy decreases further to 16.7 percent—a 44 percent improvement.

Case Study - Example 4



Investment portfolios are dynamic and, therefore, may require a flexible response in reaction to changes in their dollar value. Although hindsight is always 20-20, it appears that the most readily available response to the recent market downturn ["go to cash"] is not optimal under most conditions. This fact shifts the locus of planning to retirement income distributions. The dynamic character of the investment return generating process suggests that periodic withdrawals for retirement income are best considered as "options" rather than as set-in-stone formulae that forever remain on autopilot. The decision on option exercise is a complex function of the retiree's required income, risk tolerance, health status, portfolio value, and other important factors. Nevertheless, it is critical to have clear and unbiased information so that the option decisions are prudent. Advanced simulation capabilities can provide information to retirees so that they stand the best chance of weathering bear market storms.

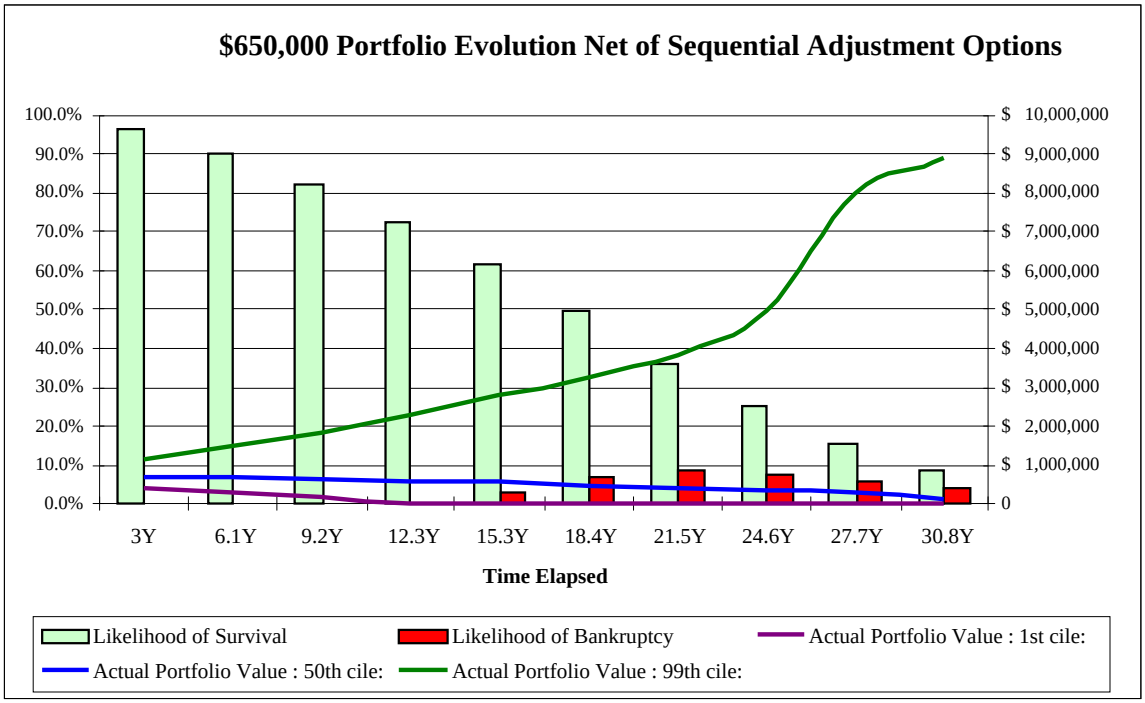
Returning to our example, assume that the retiree elects a combination of adjustments along the following lines:

- Use the investment reserve account 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, elect to 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, elect to make a $45,000 inflation adjusted withdrawal for the subsequent three years;

- Examine the portfolio value in 72 months from today; and if there is continued recovery, elect to return to the target distribution of $50,000 per year throughout 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 percent:

Case Study: Example 5



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

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; this 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 of the most efficient tools to execute such mid course corrections are investment reserves and the willingness to change withdrawal amounts as conditions warrant. Optimal withdrawal management is a critical part of sound investment policy. Surviving the bear market does not require abandonment of policy; but, most certainly, requires sound management of investment wealth.