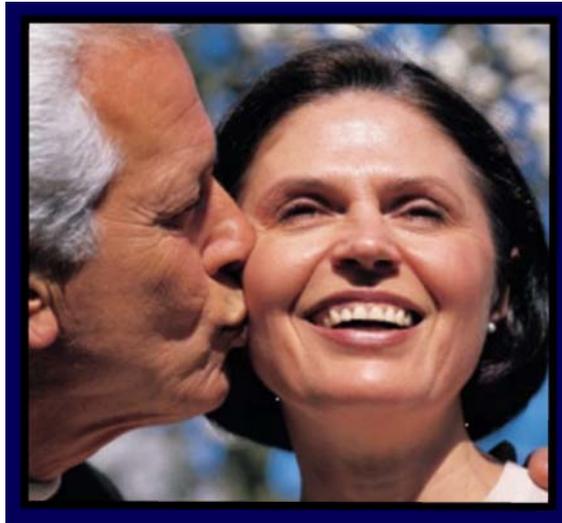


Investing During Retirement

A Comprehensive Approach



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Overview:

Investing **during** retirement is completely different than investing **for** retirement. The requirement to generate liberal, consistent, and reliable income over a long-term, indefinite time horizon changes the problem in a fundamental way.

During the accumulation phase it is completely rational and consistent to take a full measure of global equity risk in return for the probable higher returns. The emphasis is correctly placed on attaining the highest possible accumulation.

At retirement the objectives change to: Generating income, and Not running out of money! An entirely different strategy is called for.

Retirees have several key concerns:

- How much can I safely withdraw from my portfolio?
- How can I make my nest egg last forever?
- Can I hedge the portfolio for inflation?
- If anything is left over, how can I get the most to the next generation?

Several factors complicate the retiree's problem even further:

- Fixed dollar withdrawal programs increase investment risk and introduce the possibility of self-liquidating the portfolio during extended market declines.
- Investment time horizons are extended, but cannot be predicted exactly in advance. The average life expectancy for a couple age 60/55 is 32.3 years.
- Inflation is embedded within government policy. We cannot count on it going away.
- Taxes are a dead drag on performance and the largest expense investors face.
- Because investment returns are finite, expenses must be rigorously controlled.

- IRA and pension forced withdrawals at age 70 ½ may accelerate receipt of principal and its taxation far in excess of needs.
- Beneficiary selection and estate planning is complex due to the intersection of IRA withdrawal rules, income and estate tax considerations.

Decision-making is complicated by uncertainty. Most of the factors that determine success or failure are beyond our direct control. Retirees cannot control or predict market returns, interest rates, or even their own mortality. So, we must focus on the things that we can control, and devise a conservative investment strategy that will yield the highest probability of success.

Because no two retirees have identical situations or objectives, each case must be individually considered. A comprehensive approach will consider all the complicating factors before reaching a solution. No single facet can be considered in a vacuum. The process is a little like putting together a puzzle with many parts. Some compromise may be necessary, and retirees must face up to the possibility of mid-course corrections.

Sustainable Withdrawal Rates

The first piece of the puzzle is how much can we safely withdraw each year for expenses without outliving my portfolio?

Old Assumptions Are Hazardous To Your Wealth

The traditional financial planning assumption about retirement income generation goes something like this: You will make 10% on average, withdraw 6% per year, each year your account balance and income will grow by an average of 4%, you will die rich, and your children will receive a windfall. This sounds wonderful in theory, but it's a bust in the real world.

The fatal problem with the traditional assumption is that it does not account for the variability of returns in the real world facing the retiree. We know from past experience that projecting average returns forward straight line is totally inappropriate. Average

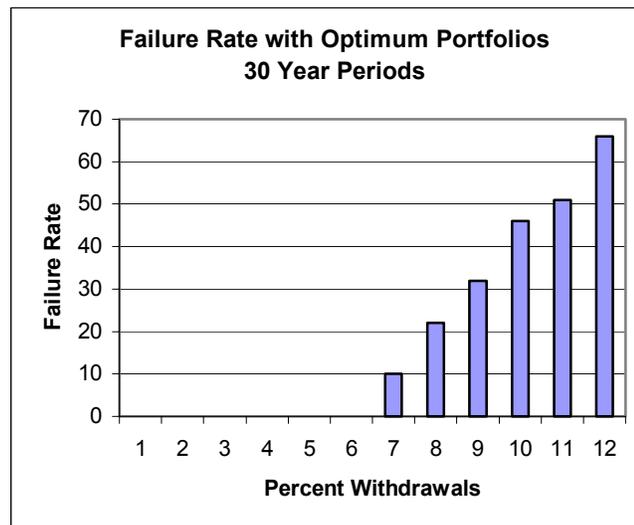
returns count for nothing if your retirement precedes a period like the Depression or 1973-1974.

The real world that you face is much more complicated and risky than an “average” return might indicate.

A Pioneering Study

Three business professors from Trinity University of Texas, Philip L. Cooley, Carl M. Hubbard and Daniel T. Walz, broke new ground with their paper: “Retirement Savings: Choosing a Withdrawal Rate That Is Sustainable”. They employed historical back testing to demonstrate the relationship between withdrawal rates, time horizon, and asset allocation. The results reveal that portfolio failure rates are directly related to time horizon and withdrawal rates, and influenced by asset allocation.

Using the S&P 500 and bonds in various combinations over varying time periods commencing in 1926, the study tracked failure rates against withdrawal amounts. Even in the best possible case where there were no taxes, no expenses or transaction fees, and the optimum portfolio was known in advance, significant failure rates occurred above 6%.



The Cooley, Hubbard, Walz study highlights the need for conservative withdrawal rates, and by implication the need to accumulate liberal amounts of capital to fund a comfortable retirement. Historical back testing is a useful tool and provides a powerful “sanity check”. Like any modeling tool, it has limitations. In this case, we are stuck with only one series of data. Unless we believe that the past results will re-occur in exactly the same sequence our findings will not be as robust as we might hope. For instance, running

the sequence backwards or any other re-shuffling will result in entirely different results. Furthermore, historical back testing leaves us with no simple method to vary either rates of return or volatility in the sample set.

New and more powerful modeling tools confirm these principles and add additional insight, but do not replace the need for very conservative assumptions if the retiree wishes to have a high probability of success.

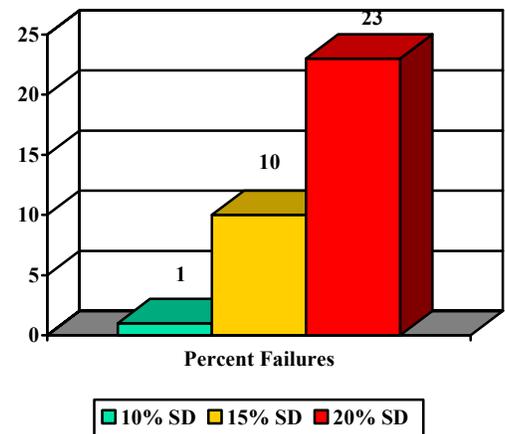
The fact remains that the highest risk factor a retiree faces, and the only decision directly under his control, is the withdrawal rate.

Recognizing the Effect of Volatility

Monte Carlo simulation and today's powerful spreadsheet applications give us far more insight into the problem, and point out some additional solutions that would not have been possible with historical back testing.

Simply put, Monte Carlo Simulation utilizes random draws of numbers from pools constructed with specified rates of return and volatility (risk). Much like a lottery, we build a pool of numbers and pull them out at random to construct a single test. Then we repeat the process 1000 or 10,000 times and summarize the results. The summary provides a quantitative estimate of the range and distribution of the possible returns. By varying the construction of the pools of numbers we can examine different strategies to see which ones give a higher probability of success.

For instance, we could construct pools of numbers that have an average return of 10% and a standard deviation of 10%. Then starting with a \$1 million dollar portfolio, we can test the survival rates of a 4%, 5%, 6% and 7% withdrawal amounts 1000 times each. Our findings will generally confirm the Cooley, Hubbard, Walz study.



For instance, we run the tests again using a pool of numbers with a 10% rate of return but a standard deviation of 10%, 15%, and 20%, and a withdrawal rate of 6% per year. At 30 years only 1% of trials fail at 10%, but 23% fail at a standard deviation of 20%. Failure rates soar with the higher volatility! All ten percent returns are not equal. (See Illustration at right)

The simulation reveals a clear link between volatility and survival of the portfolio at any given time horizon. So that anything we can do to reduce portfolio volatility (given the same rate of return and withdrawal rates) will significantly enhance the chance that a retiree's nest egg will survive.

Totally Skewed

In the traditional analysis referred to above, you might think that half of all trials would result in greater than expected returns, and half less. But, it's worse than that. The only case where each trial yields the average result occurs where there is no portfolio volatility. In that special case, every trial survives and gets the identical result.

With volatility, outcomes become skewed. Even though we obtain the expected rate of return across the sample, the median return is less than the average. The higher the volatility, the greater the sample becomes skewed at any time horizon. So, while we get the average return we expect, the average result is less than what we expect. As the number of failures goes up, the number of extraordinary results also goes up. A small number of players obtain much higher than expected results, while a large number of players' portfolios either fail or obtain lower than expected results.

For example, suppose we expect a terminal value of \$100,000 for a particular withdrawal rate, rate of return and time horizon. If one result yields \$1,000,000, and nine results yield \$0 at some particular risk level, we have achieved our average return. But, nine of ten retirees are broke!

Summary

It's hard to overestimate the importance of selecting a realistic withdrawal rate.

- If capital is insufficient, the retiree may be tempted to increase the withdrawal rate.
- A high withdrawal rate increases his chance of going broke
- Reaching for higher investment returns increases volatility which in turn increases the chance of going broke

Now that we have reviewed the biggest problem facing retiree's, we can now move on to things the retiree can do to minimize the risk of outliving his portfolio.

Constructing the Investment Policy

Every step of the investment policy must support the retiree's objectives. The ideal policy will support the required withdrawal rate while maximizing the probability of success.

The first problem that faces the retiree is that "guaranteed" investment products are unlikely to provide sufficient total return to meet his reasonable needs. Meanwhile, equities are far too volatile to provide a reliable income stream. A compromise must be reached. A combination of stocks and bonds will probably best meet the needs.

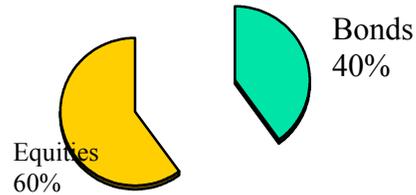
Because at least part of the portfolio will be volatile, the question of risk management moves to the forefront. Our first step is to construct a "two bucket" portfolio.

Bucket One - Adequate Liquid Reserves

Recognizing that equity investments are too volatile to support even moderate withdrawal rates safely, investors must temper their portfolios with a near riskless asset that will lower the volatility at the portfolio level and be available to fund withdrawals during down market conditions. As a minimum liquidity requirement, I suggest high quality, short-term bonds sufficient to cover five to seven years of income needs beginning of retirement. While it is tempting to chase higher yields with longer duration or lower

quality issues, past experience indicates that the enormous increase in risk swamps the small additional yield benefit.

So, if you expected to draw down 6% of your capital each year for income needs you might want to have 30-42% in fixed investments. That way if the market takes a dive, as it probably will sometime during your retirement, you will have plenty of time for it to recover.

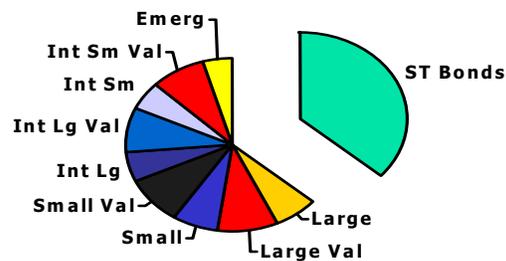


Meanwhile you can draw down the bonds. This protects your growth assets during market declines.

Bucket Two – World Equity Market Basket

Our second bucket will contain an approximate weighted world equity market basket. The design philosophy is to construct the equity portfolio with the highest possible return per unit of risk.

This investment policy recognizes the impact of volatility and employs standard portfolio construction concepts to reduce it. These well known Modern Portfolio Theory techniques include utilization of multiple asset classes with low



correlations to one another. For example, I utilize nine distinct global equity asset classes. These classes each have high expected returns at tolerable risk levels and relatively low correlation to each other. We overweight the US for our domestic clients currency preferences, and overweight small and value stocks to increase expected returns while diversifying into dissimilar asset classes.

Withdrawal Strategy – Preserve Volatile Assets in Down Markets

A rational withdrawal strategy will recognize that equities are volatile and short-term bonds are not. So, we employ a specific strategy designed to protect volatile assets during down market conditions. Otherwise, excessive equity capital will be consumed during market downturns.

Most advisors have been content to treat retirement assets as a single portfolio. For instance, many would advocate a “life style” portfolio comprised of 60% stocks and 40% bonds. However this leads to withdrawals on a pro rata basis from both equity and fixed assets regardless of market experience. It does nothing to protect volatile assets during down markets.

A far superior alternative strategy would treat the equity and bond portfolios separately, then impose a rule for withdrawals that protects equity capital during down markets by liquidating only bonds during “bad” years. During “good” years withdrawals are funded by sales of equity shares and any excess accumulation is used to re-balance the portfolio back to the desired asset allocation. Again, using spreadsheet models with Monte Carlo simulation we find substantial incremental improvement by imposing this simple rule.

Implementation

In all cases, implementation is via no-load institutional class index funds. This policy spreads risk as widely as possible in some of the world’s most attractive markets while controlling costs, preventing “style drift”, minimizing taxes, and eliminating “management” risk.

Evaluation of Alternative Strategies

Finance has been silent on the question of where on the efficient portfolio an investor should choose to invest. Monte Carlo Simulation gives us a powerful tool to evaluate alternative strategies. For instance, should an investor needing a 6% withdrawal rate invest in a portfolio with a 10% return and a 12% standard deviation, or one with an 11% return with a 15% standard deviation? Does this answer depend on the time horizon?

Does the answer change if the withdrawal rate changes? Here Monte Carlo Simulation can guide us to the best choice depending on the investor's unique requirements and goals. The correct choice is the one with the highest probability of success.

We can also stress test our assumptions. For instance, what happens if we have volatility right but rate of return falls 2% short of our estimate?

Transition Planning

The investor will want to transition from the full accumulation mode to the retirement asset allocation plan sometime in advance of retirement date in order to assure that sufficient liquidity is available when needed.

For instance, with ten years before you retire, you still have a fairly long time horizon. While there is never a guarantee, the odds are greatly in your favor that a heavy exposure to equities will pay off handsomely. Think how you would feel if you had missed out on the last ten years in the market.

But, as you approach retirement, you probably will want to scale back to your preferred retirement asset allocation. Exactly how you manage the transition from stocks to a balanced portfolio is up to you. Too early and you are likely to miss out on a lot of growth, too late and you may be exposed to a market downturn at or near your retirement.

Here's a suggestion that you can modify to meet your needs:

1. Determine your optimum asset allocation at retirement.
2. About five to seven years before you expect to retire begin shifting equal amounts once a year into short-term bonds so that the year you retire you are at your preferred asset allocation.

Mid Course Corrections and Inflation Adjustments

The discussion's assumption that a retiree will continue a fixed dollar withdrawal program regardless of investment results is simplistic. (However, without that

assumption, no guidelines could be derived.) In fact, a retiree may be in a position to temporarily decrease withdrawals during down markets until his capital recovers. Or, assuming early results in excess of expectations, the retiree may elect to increase her withdrawals as capital increases. In many cases, terminal values were a gratifying multiple of starting capital (Table 4 appendix). So, mid-course adjustments to withdrawal rates are possible and may very well be positive.

A built in inflation adjustment increases risk in the same manner as a higher initial withdrawal rate. The lower the initial rate, the more likely that positive adjustments can be made to hedge inflation.

Alternative Withdrawal Plans

If income requirements are variable or capital permits, an alternative policy of making fixed percentage withdrawals against the annual principal values may be an acceptable solution for many retirees. This policy will provide a variable income stream that is automatically adjusted for investment results.

Retirees that can accept a variable income, and withdraw a constant percent of remaining capital rather than make fixed dollar withdrawals, never face the prospect of zeroing out their accounts--no matter how bad their investment results are in the short term. This option is generally only acceptable to retirees with modest income needs relative to their available capital.

Additional Considerations

Retirement planning cannot proceed in a vacuum. All aspects of the family situation and objectives must be considered.

Tax Considerations

Taxes are a dead drag on performance and the highest cost individual investors face. Every dollar that marches off the field to the IRS is no longer available to grow for your future. Two portfolios with identical pre-tax returns may have widely differing after tax returns. The rational retiree will adopt an investment policy designed to maximize after tax returns. There are a variety of useful techniques that can be employed to minimize the tax bite:

- In non-qualified accounts evaluate the use of tax-free bonds for income and safety requirements.
- Generate income from sale of appreciated shares qualifying for capital gains treatment.
- Distribute high turnover funds like value and small company funds to qualified portfolios where possible.
- Minimize turnover in non-qualified funds.
- Utilize tax efficient index funds
- Some retirees will benefit from Roth conversion opportunities.

Lifetime Distribution Planning

Required distributions at age 70 ½ may cause inconvenient or awkward income streams. Proper selection of distribution elections prior to the Required Beginning Date (RBD) can ensure that funds are delivered in the quantity and at times desired. Full or partial conversion to Roth may help alleviate the problem.

Estate planning

Many retirees will want to ensure that their assets, including retirement plans will not be consumed by unnecessary costs and transfer taxes. With proper planning a beneficiary may be able to defer income tax for many more years on the vast majority of an inherited IRA. Appropriate attention must be paid to beneficiary selection of qualified plans and coordination with a comprehensive estate plan. Roth IRA conversion may be the most powerful, overlooked, and under-used estate-planning opportunity available for many retirees.

Use of properly designed inter vivos trusts and/or a durable power of attorney for non-qualified assets will minimize potential estate tax and probate fees, and provide a management vehicle in the event of incapacity.

Cost Containment

Market returns are finite, and costs reduce them. Professional advice, transaction costs, and other expenses are not free. But, the market is competitive, and total costs should be closely controlled.

Be Prepared for Midcourse Corrections

Absent a totally reliable crystal ball, the best mathematical models cannot anticipate all eventualities. By making conservative initial assumptions, we increase the probability that mid course corrections will be positive.