

# PORTFOLIO LONGEVITY: WHAT IS YOUR PORTFOLIO'S LIFE EXPECTANCY?

## Maximizing Retirement Distributions

### INTRODUCTION

It is a question that speaks directly to some of our deepest, darkest fears surrounding our retirement aspirations: Will I outlive my retirement savings? Or will my savings outlive me?

In light of the worst financial crisis in a generation, global economic recession, poor market returns, low interest rates, increasing life expectancies and unnerving questions regarding the fiscal health of Social Security and Medicare, the most central question facing current and future retirees is how to successfully transform their retirement savings — representing years of hard work and sacrifice — into a secure and sustainable retirement income stream.

Portfolio longevity — the subject of this report — refers to your portfolio's life expectancy. In other words, given how much you have accumulated in retirement savings and the income you hope to withdraw from those savings (your withdrawal rate), what are the chances that you will not outlive your savings? The process of converting years of accumulated retirement savings into a steady, secure stream of retirement income is not nearly as easy or simplistic as the financial press or conventional wisdom would lead you to believe.

There exists a plethora of risks that threaten the longevity of your portfolio and subsequently, your retirement income sustainability. Inflation, taxes, emotion-driven investment decisions, poor diversification — to name just a few — can all have a profound and lethal impact on your portfolio's longevity. Given these risks, how should you go about optimizing your portfolio's life expectancy while maximizing your retirement income?

### OUR POSITION

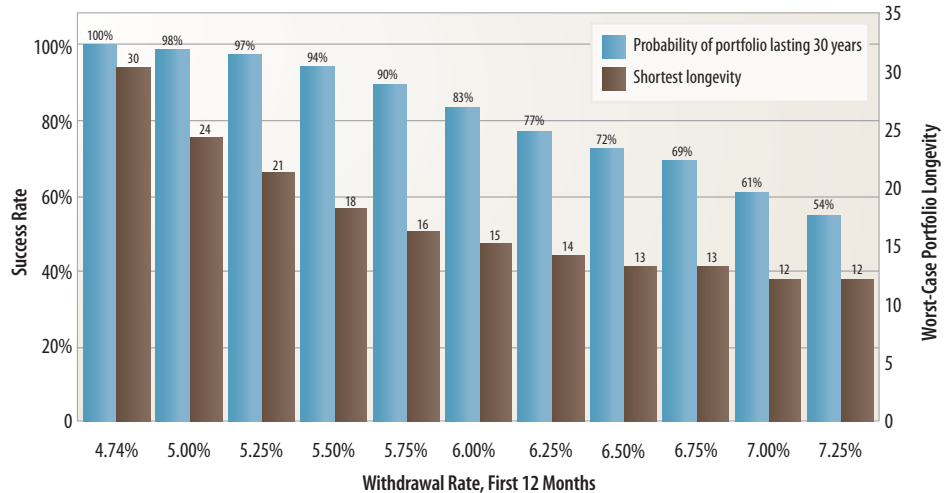
A comprehensive financial plan, a scientifically sound portfolio design and sophisticated, tax-sensitive portfolio management are the three most critical elements to maximizing portfolio longevity and retirement income security successfully.

### DISCUSSION

#### A Comprehensive Financial Plan: The Foundation

Maximizing your portfolio's life expectancy begins with developing a comprehensive financial plan that takes into account your values, spending aspirations, charitable intentions, estate plans, taxes, health status, risk tolerance and more. The amount of income you choose to withdraw from your portfolio should not be a decision arrived at lightly. At Mercer Advisors, we arrive at a very client-specific withdrawal rate only

FIGURE 1 Probability of Success by Withdrawal Rate<sup>†</sup>



<sup>†</sup>40% cash, 40% US large, 20% US small, 30-year scenario

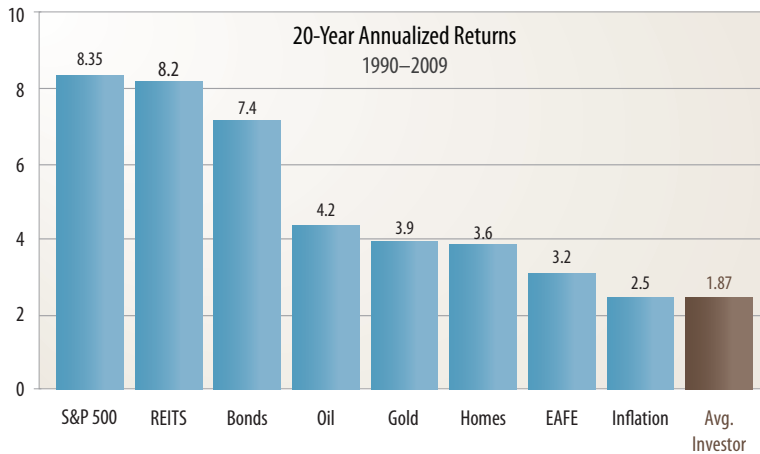
after engaging in significant advisor-client dialogue. Knowing precisely how much, when and how to make withdrawals from one's portfolio are all critical to portfolio longevity and retirement income security.

Why are these factors so important? Consider the couple who enters retirement without a comprehensive financial plan. How much can they withdraw safely from their retirement savings each year? Studies have shown that, should a retired couple get this wrong — even if only by a mere percentage point or two — they could unknowingly and irreversibly reduce their portfolio's longevity by almost 50% (FIGURE 1).

Further, consider the couple who has decided to spend 5% of their retirement portfolio each year. While at first glance this particular withdrawal rate may appear sustainable, questions remain. For example, *how* exactly should this 5% withdrawal be taken from the portfolio? Which asset classes should be sold to raise the cash needed? From which accounts — pre-tax, taxable, or tax-exempt — should these withdrawals be taken in order to minimize taxes? Which accounting method should be used to account for withdrawals from their taxable accounts? Should withdrawals be taken monthly, quarterly or annually? Speaking of taxes, how might future tax law changes impact their withdrawal strategy? These are only some of the difficult questions that must be addressed in order to maximize portfolio longevity and retirement income security. Mercer Advisors clients — working hand-in-hand with their advisor — have a written, comprehensive plan to address each of these critical questions.

Finally, a comprehensive financial plan provides a scientifically sound portfolio design and management strategy for their retirement savings. It also lays out a clear and precise roadmap for how (and how *not*) to invest retirement assets. This last point cannot be overemphasized. Studies

FIGURE 2 Average Investor Returns



Source: US Bureau of Labor Statistics, Dalbar, S&P 500, Bloomberg, Factset, MSCI

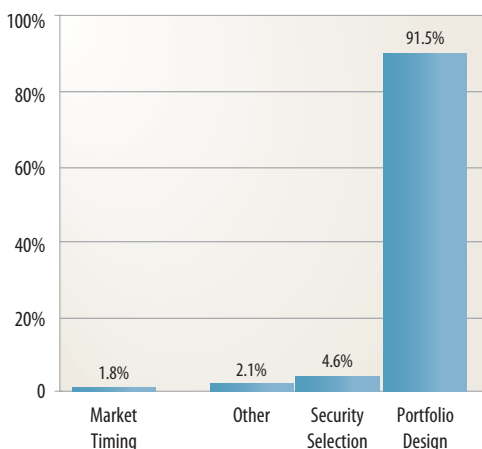
have shown consistently that investors succumb all too often to media noise, emotional biases and financial industry marketing gimmicks. Unfortunately, they subsequently pay an exceptionally high price in terms of lost dreams and dollars (FIGURE 2).

### Portfolio Design: Roadmap to Retirement Security

Portfolio design is the art and science of weaving together multiple asset classes into a balanced, integrated whole in such a way as to mathematically maximize return potential at an acceptable level of risk. So, what exactly are asset classes? Asset classes are groups or categories of investments that share similar risk and return characteristics, regulatory constraints, financial accounting measures and occasionally, geography. Scientific and sophisticated asset class definitions extend far beyond traditional asset classes such as stocks and bonds. Examples include US large company value stocks, investment grade government bonds, high yield (“junk”) bonds, managed futures, commodities, emerging markets small company stocks, international real estate and many more. When it comes to incorporating asset classes into your portfolio, the axiom “more is better” resoundingly applies. Currently, Mercer Advisors’ portfolios incorporate 17 different asset classes.

Extensive academic studies have repeatedly demonstrated that a portfolio’s returns — and subsequently its longevity — are largely a function of its design.

FIGURE 3 Determinants of Return



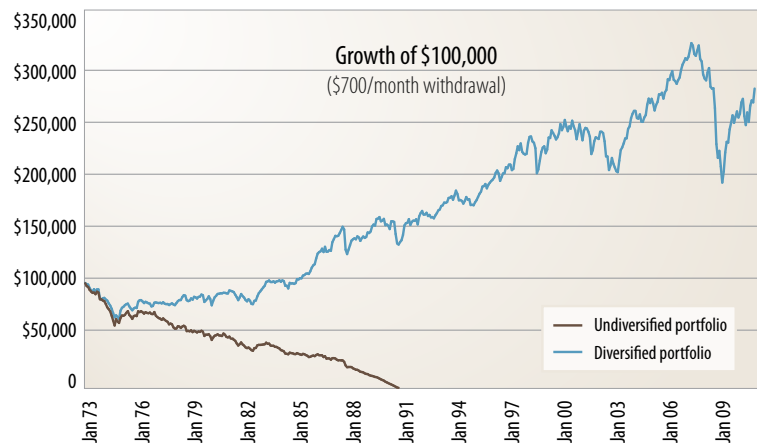
On three separate occasions, Professors Brinson, Beebower, Singer and Hood<sup>1</sup> conducted exhaustive examinations of the largest pension funds in the United States. They subsequently determined that portfolio design (i.e., how exactly it was allocated across

different asset classes) accounted for more than 90% of a portfolio’s return in any given year. (FIGURE 3)

### Diversification: Portfolio Design in Action

Diversification is the practice of investing across multiple asset classes with the goal of maximizing the portfolio’s long-term expected return while removing various, “uncompensated” risks. What are “uncompensated” risks? Studies have shown that investors who hold portfolios concentrated in only a handful of stocks or asset classes do not earn higher returns commensurate with the risks associated with holding such a portfolio. Examples of “uncompensated” risks include individual company risk (investing in relatively few stocks), currency risk (investing only in US dollar-denominated assets) and geopolitical risk (investing in only one or two countries). Fortunately, these are risks that can be “diversified away” by investing in multiple asset classes consisting of thousands of individual stocks and bonds, and by strategically investing in a globally diversified portfolio. At Mercer Advisors, our portfolios consist of, on average, 17 asset classes composed of more than 10,000 company stocks, hundreds of corporate and government bonds and more than 40 different countries, resulting in a truly state-of-the-art, globally diversified portfolio.

FIGURE 4 Diversification and Retirement Income Distribution



Why exactly is diversification so critical to portfolio longevity? What is wrong with investing in just bonds or dividend-paying stocks? There is nothing inherently wrong with investing in bonds or dividend-paying stocks. However, the problem with such an approach is that such a portfolio would invest *only* in bonds or dividend-paying stocks — and likely not enough of them, resulting in the addition of “uncompensated” risk. The real problem with this approach is that the portfolio would hold too few asset classes to be truly diversified. Consider FIGURE 4, which compares two retirement portfolios — one highly diversified (holding many asset classes) and the other undiversified (holding relatively few asset classes). Diversified portfolios can more reliably and confidently sustain periodic withdrawals throughout retirement.

## A Free Lunch: The Power of Cross-Correlation

What is it that makes diversification through asset class investing so inherently powerful? The answer lies in correlation. Correlation measures the movement of asset classes relative to one another within a portfolio. Asset classes may be co-correlated (they move up or down together in unison, though not necessarily in a one-to-one relationship), inversely-correlated (one moves up when the other goes down), or non-correlated (no relationship). When a portfolio is scientifically designed to incorporate multiple asset classes with differing correlations, this strategy results in a retirement portfolio with a higher expected return and lower overall risk level (as measured by standard deviation), and subsequently, greater portfolio longevity. Consider TABLE 1, which demonstrates the incremental gains achieved through the construction of a 10-asset class portfolio.

TABLE 1 Diversification Returns & Asset Contributions

DIVERSIFICATION ADDS RETURN AND REDUCES RISK					
Quantity of Asset Classes	Asset Class Risk (%)	Cumulative Portfolio Risk (%)	Asset Class Return (%)	Portfolio Compound Return (%)	Diversification Benefit (%)
1	20	20.00	8.00	8.00	0.00
2	20	18.44	8.00	8.30	0.30
3	20	17.89	8.00	8.40	0.40
4	20	17.61	8.00	8.45	0.45
5	20	17.44	8.00	8.48	0.48
6	20	17.32	8.00	8.50	0.50
7	20	17.24	8.00	8.51	0.51
8	20	17.18	8.00	8.53	0.53
9	20	17.13	8.00	8.53	0.53
10	20	17.09	8.00	8.54	0.53

In this example, each asset class alone contains the same risk (20%) and return (8%). However, by combining them within an equally weighted portfolio, retirees can reduce their “cumulative portfolio risk” while increasing their “portfolio compound return”. This risk reduction and increase in return is a direct benefit of low-correlation asset classes working together within a portfolio.

Source: “Diversification Returns & Asset Contributions,” David G. Booth & Eugene F. Fama..Financial Analysts Journal, May/June 93, Vol. 48 Issue 3, p26-32

How does this principle apply in the real world with real money? To demonstrate this conceptually, consider two portfolios — a “risky” portfolio consisting of relatively few asset classes, and a “stable” portfolio consisting of many asset classes. Each of these portfolios, while returning the same average annual return of 10% per year, contains very different levels of risk, due to the correlation among the asset classes within each portfolio. (TABLE 2)

The primary lesson to be learned from TABLE 2 is that risk, or portfolio volatility, matters. However, what TABLE 2 does not demonstrate is that the rules change for retirees making withdrawals from their savings. This is because the *timing of returns* matters when a couple makes the transition

from accumulating savings to making withdrawals from those savings. This transition — from wealth accumulation to *decumulation* (making periodic withdrawals) — has a significant impact on the mathematics of a portfolio's life expectancy.

TABLE 2 The Power of Correlation: When 10% Is Not 10%

Year	RISKY PORTFOLIO			STABLE PORTFOLIO		
	Account Balance	Return Percentage	Dollars	Account Balance	Return Percentage	Dollars
1	\$1,000,000	30%	\$300,000	\$1,000,000	10%	\$100,000
2	\$1,300,000	-10%	-\$130,000	\$1,100,000	10%	\$110,000
3	\$1,170,000	30%	\$351,000	\$1,210,000	10%	\$121,000
4	\$1,521,000	-10%	-\$152,100	\$1,331,000	10%	\$133,100
5	\$1,368,900	30%	\$410,670	\$1,464,100	10%	\$146,410
6	\$1,779,570	-10%	-\$177,957	\$1,610,510	10%	\$161,051
7	\$1,601,613	30%	\$480,484	\$1,771,561	10%	\$177,156
8	\$2,082,097	-10%	-\$208,210	\$1,948,717	10%	\$194,872
9	\$1,873,887	30%	\$562,166	\$2,143,589	10%	\$214,359
10	\$2,436,053	-10%	-\$243,605	\$2,357,948	10%	\$235,795
Net: \$1,192,448				Net: \$1,593,743		
10-year difference: \$401,294						
30-year difference: \$6,910,681						

Why is this? Consider a 65 year old retiree withdrawing 9% of his retirement savings per year. Further assume that this retiree invests in a portfolio earning of 7% per year. Assuming our retiree's portfolio had zero risk, he would deplete his savings at age 86.5 (characterized as the “ruin age” in TABLE 3). In the real world however, we know that portfolios contain risk; assume this portfolio, while still earning an *average* return of 7%, also had a standard deviation (or volatility, a.k.a. “risk”) of 20% per year. This means that the portfolio's returns would range from 27% (7% average return plus 20%) to -13% (7% minus 20%). If we scramble the sequence of these three returns (+7%, +27%, and -13%), we find that our retiree exhausts his retirement savings at different ages, ranging from age 83 to nearly 95 years of age. Subsequently, we see that the timing (or sequence) of returns has a significant impact on portfolio longevity.

TABLE 3 Return Sequence Performance

Return Sequence	Ruin Age
+7%, +7%, +7%...	86.50
+7%, -13%, +27%...	83.33
+7%, +27%, -13%...	89.50
-13%, +7%, +27%...	81.08
+27%, +7%, -13%...	94.92

## Portfolio Management: The GPS of Portfolio Design

Portfolio management is the art and science of implementing your portfolio design and integrating it with your comprehensive financial plan. This is where the rubber meets the road. Get this wrong and even the best portfolio design will have been constructed in vain. There are many components of successful portfolio implementation, some of which include:

- **Fund Selection.** How exactly does one go about investing in multiple asset classes? At Mercer Advisors, we implement our portfolio designs using exclusive, state-of-the-art institutional funds. By excluding average retail investors, these funds ensure lower overall portfolio operating costs, true asset class representation (i.e., no 'style drift') and the incorporation of the latest, peer-reviewed academic research. For example, the average retail mutual fund investing in US large company stocks has an average annual expense ratio of 1.21% per year<sup>2</sup>, whereas Mercer Advisors' institutional-grade US large company fund has an expense ratio of only 0.16% per year. Depending upon the portfolio's asset allocation, for a retiree with \$2,000,000 in retirement assets, this equates to a potential savings (extra return) of more than \$20,000 per year.
- **Periodic Rebalancing.** Rebalancing your portfolio by selling "winners" to buy "losers" may sound counterintuitive, but doing so is fundamentally critical to long-term investment success and to maintaining your portfolio's desired overall risk level. For example, if left unbalanced, a Mercer Advisors portfolio consisting of 60% stocks in early 2009 would now hold nearly 80% of its assets in stocks. This would result in the portfolio containing exceptionally more risk than was originally intended. Studies have shown periodic rebalancing to provide an excess "bonus return"<sup>3</sup> of anywhere from 0.50% to as much as 2% per year.<sup>4</sup> At a minimum, a Mercer Advisors client could potentially earn an additional \$10,000 per year in return from rebalancing alone.
- **Tax Management.** Sound portfolio management, when properly integrated with your comprehensive financial plan, minimizes your income tax exposure in retirement. For example, despite current federal income tax brackets as high as 35%, with strategic planning retirees are often able to reduce their effective tax rate in retirement to as low as 15% (sometimes lower). Such tax

management strategies may include opportunistically "harvesting" tax losses (which reduce or eliminate future capital gains taxes) and executing zero-tax Roth Conversions to move retirement assets into tax-exempt accounts. For a retiree seeking to spend \$150,000 per year in retirement, strategic tax management alone could potentially provide tax savings of more than \$55,000 per year.<sup>5</sup>

- **Exclusive Access to Unique Asset Classes.** We have already explained why more asset classes are better when it comes to successful portfolio design. However, it is important to note that not all investment managers have access to all asset classes. Through Mercer Advisors' institutional purchasing power, we provide our clients with exclusive access to the best performing asset classes available. For example, reconsider FIGURE 1 — Probability of Success by Withdrawal Rate. When William Bengen completed his study in 2002, he subsequently determined the "safest" withdrawal rate to be 4.74% of one's portfolio assets per year. This rate was arrived at by using a portfolio consisting of 40% US large stocks, 20% US small stocks, and 40% bonds (three asset classes). By comparison, a portfolio designed and managed by Mercer Advisors, incorporating 17 different asset classes, increases the "safe withdrawal rate" to 5.3% per year, representing an increase of almost 12% per year. In dollar terms, for a typical client this equates to an extra \$18,000 per year in retirement spending.

## CONCLUSION

In summary, the successful conversion of your retirement savings into a secure, sustainable stream of income requires three things. First, a comprehensive financial plan — outlining how much, when and how to withdraw from your portfolio — is the foundation for a well-designed retirement income strategy. Second, the diversification of your portfolio design — not only across multiple asset classes, but also in the *right* asset classes — will have a significant impact on your portfolio's long-term life expectancy. Finally, proper portfolio management — the actual implementation of your portfolio design — can lead to higher returns above and beyond those provided by your portfolio design alone. Taken as a whole, these three elements can substantially increase your portfolio's longevity and subsequently maximize your retirement income security.

<sup>1</sup>Brinson, Gary P., Brian D. Singer, and Gilbert L. Beebower, "Determinants of Portfolio Performance II: An Update," *Financial Analysts Journal*, May-June 1991.

<sup>2</sup>Morningstar Principia.

<sup>3</sup>See Bernstein, William J. "Case Studies in Rebalancing," *Efficient Frontier* (Fall 2002) and "The Rebalancing Bonus," *Efficient Frontier* (Fall 1996) online at [www.efficientfrontier.com](http://www.efficientfrontier.com).

<sup>4</sup>Arnott, Robert D. and Plaxo, Lisa M. "Rebalancing a Global Policy Benchmark," *Journal of Portfolio Management*, Winter 2002, p.9-22.

<sup>5</sup> $\$150,000 / (1 - 0.35) = c.\$231,000$  in required portfolio withdrawals whereas  $\$150,000 / (1 - 0.15) = c.\$176,500$  in required portfolio withdrawals. Intended for demonstration purposes only. Each client's unique tax circumstances will vary.

### REFERENCES:

Milevsky, Moshe A., and Thomas S. Salisbury, "Asset Allocation and the Transition to Income: The Importance of Product Allocation in the Retirement Risk Zone", September 27, 2006.

Past performance is not indicative of future returns. As with any investing, there is the possibility for loss as well as gain.

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