

PORTFOLIO LONGEVITY:

What Constitutes an Optimally Designed Investment Portfolio?

Portfolio Longevity: The successful conversion of retirement savings into a secure, sustainable stream of income requires three things:

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;

Sophisticated portfolio design—including extreme diversification across multiple asset classes, companies and countries, customized for your unique vision and risk tolerance profile—positions the investment and retirement income strategy for success;

Beyond-the-market portfolio management—the big-picture implementation and oversight of your portfolio design—can generate incremental return beyond that derived from the portfolio design itself.

Collectively, these three elements can extend your portfolio's longevity, maximizing the security of your retirement income.

The Foundation

Many factors influence the performance and sustainability of an investment portfolio. Inflation, taxes, emotion-driven investment decisions, poor diversification, misinformation — to name just a few — each impact a portfolio's longevity. Given these potential risks, how should you go about optimizing your portfolio's life expectancy while maximizing your retirement income?

The first step involves developing a comprehensive financial plan that includes your values, spending aspirations, charitable intentions, estate plans, taxes, health status, risk tolerance and lifestyle expectations both now and in retirement. The amount of income you choose to withdraw from your portfolio is not a decision to rush or arrive at lightly. The amount, timing and method of portfolio withdrawals are each and collectively critical to portfolio longevity and retirement income security.

Furthermore, the how involves logistical planning and understanding, including: 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 process withdrawals from taxable accounts? Should withdrawals be taken monthly, quarterly or annually? Regarding taxes, how might imminent/future tax law changes impact the withdrawal strategy? These are only some of the difficult questions that must be addressed in order to maximize portfolio longevity and retirement income security.

Finally, a comprehensive financial plan provides a scientifically sound portfolio design and management strategy for their retirement savings. Further, it establishes a clear and precise roadmap for how (and how not) to invest retirement assets. This last point cannot be overemphasized. Studies have shown consistently that investors succumb all too often to media noise, emotional biases and financial industry marketing gimmicks. Unfortunately, such investors subsequently pay an exceptionally high price in terms of lost dreams and dollars [Figure 1].

A Roadmap to Retirement Security

Portfolio design is the art and science of weaving together multiple asset classes into a balanced, integrated whole in order to

maximize return potential at an acceptable level of risk. So, what exactly are asset classes? Asset classes are 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 the traditional asset classes of stocks and bonds. Examples include U.S. large company value stocks, investment-grade government bonds, high-yield bonds, managed futures, commodities, emerging markets small company stocks, international real estate and many more. With regard to asset class incorporation into your portfolio, the adage “more is better” resoundingly applies.

FIGURE 1 Average Investor Returns



Extensive academic studies have demonstrated repeatedly that a portfolio's returns — and subsequently its longevity — are largely a function of its design. On three separate occasions, Professors Brinson, Beebower, Singer and Hood¹ conducted exhaustive examinations of the largest pension funds in the United States. They determined that portfolio design (i.e., the method of allocation across multiple asset classes) accounted for more than 90 percent of a portfolio's return in any given year.

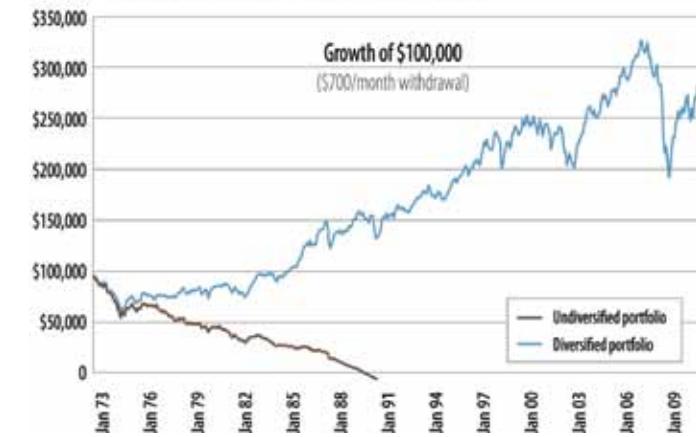
Diversification in Design

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 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” risk include individual company risk (investing in relatively few stocks), currency risk (investing in U.S. dollar-denominated assets only) and geopolitical risk (investing in one or two countries only). Fortunately, such risks can be “diversified away” by investing in multiple asset classes comprised of thousands of individual stocks and bonds, and by strategically investing in a globally diversified portfolio.

Why is diversification so critical to portfolio longevity? While there is nothing inherently wrong with investing in bonds or dividend-paying stocks, the problem with such an approach is that a portfolio consisting of only bonds and/or dividend-paying stocks is

exposed to “uncompensated” risk. This portfolio contains too few asset classes to be truly diversified. Consider Figure 2, which compares two retirement portfolios — one highly diversified (holding many asset classes) and the other undiversified (holding relatively few asset classes). Diversified portfolios can sustain periodic withdrawals throughout retirement more reliably and confidently.

FIGURE 2 Diversification and Retirement Income Distribution



The Power of Cross-Correlation

Why is asset class diversification so 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 designed to incorporate multiple asset classes with differing correlations, the result is a retirement portfolio with higher expected return and lower overall risk level (as measured by standard deviation), and subsequently, greater portfolio longevity. Table 1 outlines the incremental gains achieved through the construction of a 10-asset class portfolio.

To demonstrate this principle 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 arithmetic mean annual return of 10 percent, contains very different levels of risk due to the correlation among the asset classes within each portfolio. [Table 2].

Portfolio Management: The Driver

Portfolio management is the art and science of implementing your portfolio design and integrating it with your comprehensive financial plan. Get this wrong and even the best portfolio design will have been constructed in vain. Many components influence the successful portfolio implementation, some of which include:

Fund Selection

Access to institutional funds is paramount. Unavailable to the average retail investor, 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 U.S. large company stocks has an average annual expense ratio

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.

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

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of 1.21 percent per year, whereas an institutional-grade U.S. large company fund has an expense ratio of only 0.16 percent per year. 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 portfolio consisting of 60 percent stocks in early 2009 would now hold nearly 80 percent of its assets in stocks. This would result in the portfolio containing exceptionally more risk than originally intended. Studies have shown periodic rebalancing to provide an excess "bonus return"² of anywhere from 0.50 percent to as much as 2 percent per year.³ At minimum, the retiree could earn an additional \$10,000 per year in return.

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 percent, with strategic planning, retirees are often able to reduce their effective tax rate in retirement to as low as 15 percent (sometimes lower). Such tax management strategies may include "harvesting" tax losses (which reduce or eliminate future capital gains taxes) opportunistically 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 could provide potential tax savings of more than \$55,000 per year.⁴

A comprehensive financial plan, a scientifically sound portfolio design and sophisticated, tax-sensitive portfolio management are the three most critical elements for maximizing portfolio longevity and establishing retirement income security. Is your portfolio optimally designed to meet your retirement expectations?

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

2 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.

3 Arnott, Robert D. and Plaxo, Lisa M. "Rebalancing a Global Policy Benchmark", *Journal of Portfolio Management*, Winter 2002, pp.9-22.

4 \$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. The unique tax circumstances of each individual investor will vary.

References and Sourcing:

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.

Figure 1: Indexes include: REITS: NAREIT Equity REIT Index; EAFE: MSCI EAFE; Oil: WTI Index; Bonds: Barclays Capital U.S. Aggregate Index; Gold: USD/troy oz.; Inflation: CPI. Average asset allocation investor return based a Dalbar Inc. analysis which utilizes the net of aggregate mutual fund sales, redemptions and exchanges each month as a measure of investor behavior. Returns are annualized (and total return where applicable) and represent the 20-year period ending 12/31/11 to match Dalbar Inc.'s most recent analysis.

Figure 2: S&P 500, MSCI, Dimensional, CRSP, Bloomberg. Mercer Advisors Investment Committee. Diversified Portfolio is 60 percent diversified equity allocation mix consisting of U.S., International and Emerging Market Equities and 40 percent Short-term Fixed income. The Undiversified portfolio consists of 60 percent U.S. Large Equities and 40 percent Barclays Gov't Bond Index. Beginning with \$100,000 in 1973, \$700 is distributed monthly from each portfolio.

Table 1: "Diversification Returns and Asset Contributions," David G. Booth & Eugene F. Fama. *Financial Analysts Journal*, May/Jun 93, Vol. 48 Issue 3, pp. 26-32.

Table 2: Mercer Advisors Investment Committee

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