

Global Investment Committee | June 26, 2024

What's Your Investment Benchmark?

Determining appropriate performance benchmarks remains an inexact and unsatisfying dimension of modern wealth management. On one hand, media-driven benchmarks tied to popular stock indexes are imprecise and misleading for investors pursuing a diversified, multi-asset class approach to risk management. On the other, benchmarking performance on a strategy-by-strategy basis is often overwhelming and ends up too far from a holistic picture. Financial advisors have tried to address this by emphasizing asset allocation, which accounts for 80% to 90% of portfolio performance. However, that approach often lacks customization and dynamism, and is usually based on imprecise gauges of risk tolerance. Asset allocation schematics frequently assume efficient frontiers based on historical trends, but since efficient frontiers tend to shift over time, they often lead to ineffective benchmarks. Financial planners, for their part, have suggested measuring outcomes according to probabilities of successfully achieving goals-based plans. While that is laudable, especially in regard to savings discipline and cash-flow expectations, it is complex and potentially too aspirational, as it may not link to the portfolio clients actually own and is biased toward conservatism.

We believe that there is a superior, hybrid approach that combines financial planning's cash-flow-based constraints with the risk/return optimization embedded in financial advisory, and that it can produce simple, customized benchmarks. Such a "custom benchmark," or personalized asset allocation, yields a target-return-premised savings rate, spending rate and degree of illiquidity, making the implicit connections between planning and active asset allocation more explicit. By pursuing these practitioner partnerships linking planning assumptions and probability of success directly to returns, we can deliver more-holistic advice and maximize client understanding, satisfaction and outcomes.

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Executive Summary

One of the most challenging things for most individual investors and private clients to determine is how they are doing. Is the advice they are getting and paying for adding value? What is their benchmark? Somewhat ironically, a comprehensive answer to that question often isn't straightforward. There are multiple reasons for confusion: a powerful, 24/7, financial news media that reduces investment opportunities to the performance of a commercial stock index; financial services fund and strategy providers who promote benchmarks based on single-asset-class peer groups; and a tendency for client-reporting systems to take a line-item view of portfolio components rather than gauging performance in the context of overall portfolio attributes. Further obscuring the view for clients is a poor understanding of various asset classes' risk/return trade-offs, often with a focus on absolute gross return rather than risk-adjusted, after-tax performance. The reason that most clients are not routinely "beating the S&P 500" is that few have 100% of their wealth in megacap US stocks!

Skilled financial advisors have tried to address this challenge by acknowledging the importance to client outcomes of asset allocation, which accounts for approximately 80% to 90% of portfolio performance, and suggesting broad asset-allocation-based benchmarks. While this approach is an improvement over narrow, single-asset-class markers, it often suffers from a lack of customization and dynamism, as it is anchored to imprecise measurements of risk tolerance and other concepts. Inherently non-normative, risk tolerance is based on emotional and behavioral factors that don't appropriately consider objective inputs such as liquidity preference, tax sensitivity and timing of cash flows. Perhaps more critically, these asset allocation plans are often premised on static heuristics that assume "efficient frontiers" based on historically stylized or long-term secular trends. But because efficient frontiers are not static—tending to shift over time based on valuations, correlations, inflation and policy regimes—they too often lead to ineffective benchmarks premised on suboptimal and "guesstimated" asset allocations.

Historically, one of the financial services industry's answers to this conundrum has been to shift client conversations and objectives away from a confusing focus on returns and toward a more customized approach via financial planning. This process usefully focuses on client goals—most importantly retirement funding—setting behavioral parameters that foster measurable discipline around saving and spending and a commitment to long-term asset allocation that minimizes costly market-timing errors. By typically delivering a road map featuring a probability of success toward goals achievement, it promotes client confidence and peace of mind. But traditional planning approaches continue to suffer from low overall adoption, with less than 20% to

30% of the advisory industry tying portfolio solutions to their output. The reason is obvious: Most financial planning outputs, while featuring a road map and actionable tasks, fall short of optimized portfolios because asset allocation is viewed as a pure input—a means to an end. Yet, most clients' primary objective is an investment portfolio.

Happily, we believe that a better and more client-centric approach exists—one that produces more robust and customized benchmarks. Delivering it, however, requires two fundamental shifts around mindset and process for clients and practitioners. First, it requires an integrated, tools-based and iterative approach to portfolio construction that breaks down the historical barriers between planners and portfolio managers. Financial planners, who are adept at articulating goals, translating them into spending and savings requirements over an identified timeframe and navigating probabilistic models, need to be open to the idea that their outputs must go beyond probability of success. They must deliver objective, quantitative insights that help the financial advisor construct portfolios with greater precision. Financial advisors must embrace the power that cash-flow-based modeling can provide in order to generate a more client-specific asset allocation that transcends generic efficient frontier frameworks and customizes for client constraints.

Second, delivering this approach requires both planners and portfolio managers to move toward solutions based on client *risk capacity*, not just imprecisely imputed risk tolerance. By pursuing these practitioner partnerships, we think that we can deliver more holistic financial advice and get closer to maximizing client outcomes. The resulting asset allocations and custom benchmarks could translate to a personalized average annual portfolio return goal, given certain savings and withdrawal parameters over time, based on an assumed 85% probability of success.

The Challenge With Benchmarking

Some of the most frequent requests we get from investors and promises we hear from the media revolve around "beating the market." But this aspiration begs the question: Which market are you trying to beat and, more importantly, why? When pushed, investors and commentators will most often clarify: "The *stock* market, of course!" They will quickly follow with assertions about common US stock market indexes featured in the news and cited by providers of mutual funds and exchange-traded funds—like the Dow Jones Industrial Average, the S&P 500 or the Nasdaq Composite. Perhaps even more frustratingly, investors will suggest that their implicit goal is to beat the specified index.

Then, quite innocently, either in self-directed fashion or in the context of seeking out a financial advisor, they will measure success by whether or not their investment performance has immediately delivered.

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On one level, this is understandable. It is human nature to define and describe our endeavors in a relative fashion, versus so-called benchmarks of success. Such benchmarks are usually generally available, measured in a consistent way and widely understood. For example, in baseball, a “good hitter” should boast a batting average over .300; an adult in “good physical shape” should have a body mass index (BMI) between 19 and 25; and a “good student” should have a grade point average (GPA) above 3.5. As market participants, we understand the value of indexes as quick, shorthand summaries of behavior—of the opportunity set in US stocks, for example, over a select period—especially amid an ocean of data. Furthermore, in our role as financial advisors, we understand the importance of measuring the value of advice. But just as batting averages, BMIs and GPAs may be broad metrics of success at certain points, in certain situations and for certain people, when generalized, they may be inappropriate, misleading or insufficient for a specific person or time.

We think this is the case for stock indexes as well, especially when considering our holistic investment strategy. Measuring a narrowly defined asset class against a comparably risky and diversified index that represents the opportunity set for a strategy might be appropriate in a specific instance; however, we rarely allocate 100% of our investments to a single asset class.

To the contrary, we believe that every goals-based investor has an implicit custom performance benchmark. That benchmark is built from a comprehensive financial plan that contemplates cash flow requirements, risk tolerance, time horizons, tax management and estate planning, values alignment and liquidity needs. Thus derived, it implies an underlying target asset allocation with precise parameters for tolerable risk, while establishing an annualized personal target return that our active investment decisions are geared toward attempting to enhance. The aim of this report is to articulate why we believe our method—an integrated financial planning, portfolio-construction approach—is superior to a simplistic and dangerous focus on the S&P 500 Index as a benchmark and/or the generic implementation of stylized efficient-frontier stock-and-bond combinations.

The Opportunity: A Custom Client Benchmark

For clients and investment managers alike, few aspects of the advisory relationship are more important than understanding experienced results relative to expectations. Despite the fact that satisfaction on these metrics correlates with relationship depth and longevity, we are often insufficiently precise when establishing personalized benchmarks, opting reflexively and

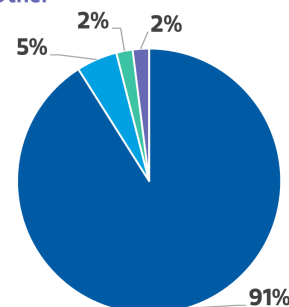
dangerously for generic ones based on broad regulatory disclosures from client statements. Likewise, we too often guide clients and investors to take a disaggregated, asset-class-level view of benchmarks. Complex and confusing, this may obscure an otherwise holistic picture of client satisfaction and understanding amid an array of “strategy” performance statistics. In so many ways, this is unfortunate and a missed opportunity.

Empirical evidence has long supported the assertion that approximately 80% to 90% of investment outcomes are derived from asset allocation (see Exhibit 1). Most clients understand that their money is being managed to some such target combination, but few identify it as a personal benchmark.

Exhibit 1: Asset Allocation Is the Biggest Driver of Investment Outcomes

Potential Return Contribution

Asset Allocation Strategy Security Selection
Market Timing Other



Source: Roger G. Ibbotson and Paul D. Kaplan. “Does Asset Allocation Explain 40, 90 or 100 Percent of Performance?” *Financial Analysts Journal*, January/February 2000; Gary P. Brinson, Brian D. Singer and Gilbert L. Beebower. “Determinants of Performance II: An Update,” *Financial Analysts Journal*, May/June 1991. Based on US pension fund data from 1977 to 1987

Why is that? After all, asset allocations imply a set of performance characteristics comprising attributes of a good benchmark: expected returns, volatility, maximum historical drawdowns, efficiency and liquidity. But for many financial advisors and clients, deriving benchmarks in this way is either too conceptual and stylized or too complex, removing some of the “art of investing” that many oversimplify to mean maximizing risk-adjusted returns.

We have a different take, as we have observed that this shortcoming is an outgrowth of professional practices and the historical decoupling of financial planning exercises and client portfolio construction. We believe that a reframing of the planning and investing objectives can produce custom client benchmarks that are useful, easily explained and grounded in analytics.

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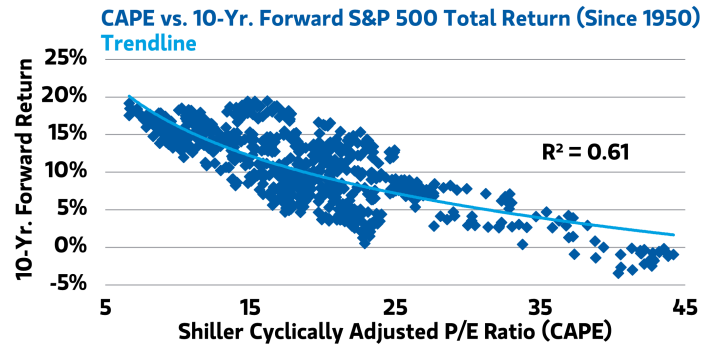
“Risk Tolerance” as an Input: An Imprecise Guesstimate

Reframing our approach requires some rethinking, however. Consider that industry and regulatory best practices dictate that asset allocation recommendations be anchored in comprehensive assessments of risk tolerance. But the Global Investment Committee’s (GIC) nearly 30 years of investment experience, on average, suggests that, despite best efforts around determining time horizons, liquidity needs and volatility appetites, much of today’s asset allocation is still achieved through loose and non-normative heuristics and ascertained from well-intentioned but informal conversations about “risk tolerance.” These exercises tend not to be grounded in personal cash flow needs or probabilistic modeling of outcomes, but in relatively simplistic questionnaires that group clients into broad categories based on age/stage of life and stated preferences.

The results of this risk-tolerance-first approach are often far from optimal or personalized. Through the application of broad expertise in customization, disintermediation by professional financial advisors can refine the generic. However, even those efforts are often imprecise, frequently leaving clients “better than we found them” or “in good shape” vis a vis expectations established by commercially available indexes for major asset classes, like the S&P 500 Index or the Bloomberg Aggregate Bond Index, but detached from customized goals. While beating the so-called objective benchmark of available market-based investment opportunities may feel good and may highlight the skill of a financial advisor over a particular period, it still lacks the personalization that *could* define individual client success contextualized through the lens of life-goal achievement.

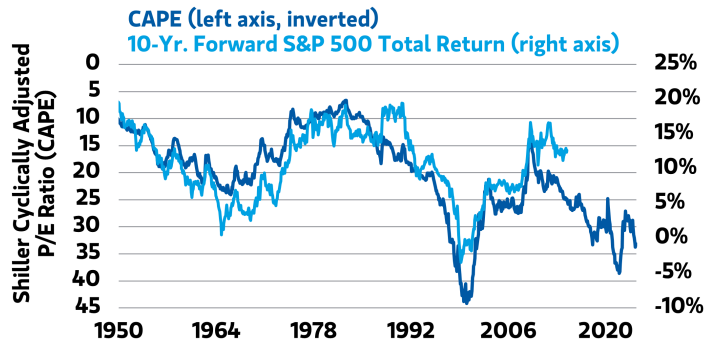
Furthermore, absent client-specific analytical inputs, portfolios embedding a standard combination of asset class building blocks associated with general levels of so-called risk are often assumed to sit on an idealized efficient frontier—a pillar of modern portfolio theory (think the classic 60/40 or 50/50 stock/bond portfolio construction). For many clients, most of whom view themselves as long-term investors, such “strategic allocations” are foundational and remain largely unchanged. However, our analysis has revealed that efficient frontiers shift meaningfully over time and across business cycles; that asset class returns are a function of dynamic starting valuations that change materially from year to year (not extensions of recent trends); and that asset class correlations, which determine the degree of diversification, are regime-specific, depending on growth and inflation. Furthermore, inflation itself can meaningfully eat into net returns (see Exhibits 2a, 2b, 3, 4 and 5).

Exhibit 2a: Asset Class Returns Are a Function of Dynamic Starting Valuations ...



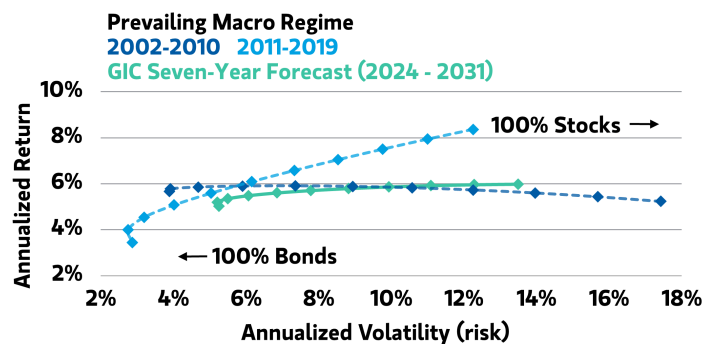
Source: FactSet, Morgan Stanley Wealth Management Global Investment Office as of May 31, 2024

Exhibit 2b: ... That Change Materially From Year to Year



Source: FactSet, Morgan Stanley Wealth Management Global Investment Office as of May 31, 2024

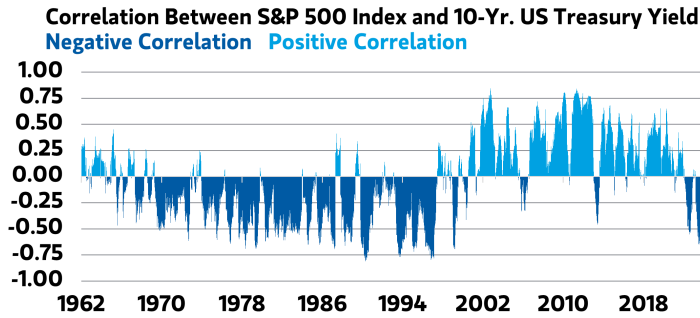
Exhibit 3: Efficient Frontiers Shift Over Time



Note: The efficient frontier is a set of investment portfolios that are expected to provide the highest returns at a given level of risk. A portfolio is said to be efficient if there is no other portfolio that offers higher returns for a lower or equal amount of risk. Source: Morgan Stanley Wealth Management GIC, Bloomberg as of April 30, 2024

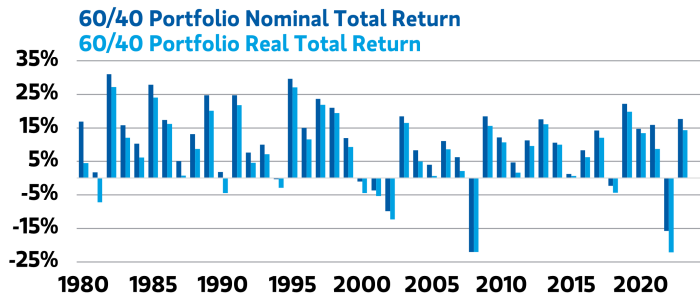
WHAT'S YOUR INVESTMENT BENCHMARK?

Exhibit 4: Asset Class Correlations Also Change, Depending on Factors Such as Growth and Inflation



Source: Morgan Stanley Wealth Management GIC, Piper Sandler as of June 6, 2024

Exhibit 5: In an Inflationary Regime, Real Returns Are More Important



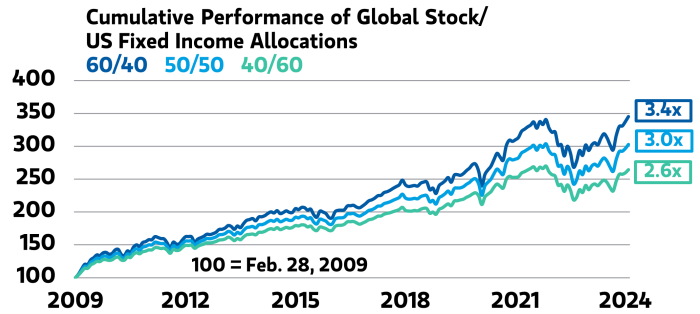
Note: Equities represented by S&P 500 Index; bonds by Bloomberg US Aggregate Index. Source: FactSet, Bloomberg, Morgan Stanley Wealth Management Global Investment Office as of April 30, 2024

Certainly, the most skilled financial advisors can adjust for some of that dynamism, adding value for clients. But since dispersion between different asset allocation schematics can be large and imprecision can compound, overly generalized strategies, especially if unmatched to individual client goals, can have meaningful costs. For an investor with \$1 million in starting principal, the difference between a 60/40 and a 40/60 stock/bond portfolio over the past 15 years equates to \$800,000 (see Exhibit 6).

Beyond the analytical shortcomings of the traditional, subjective, risk-tolerance-driven approach to asset allocation are the practical ones. Over several decades, what constitutes best-in-class advice has evolved from simply maximizing risk-adjusted returns to delivering portfolio solutions optimized for client preferences regarding fee sensitivity, tax awareness, values alignment, illiquidity budget and guaranteed income requirements, to name a few. Further, in a post-defined benefit world, client wealth must fund lifetime cash needs, factoring in lengthening lifespans (see Exhibits 7a and 7b). Thought of this way, building a client portfolio *away* from cash-flow-based and tools-enabled planning is at best an educated guess about what is optimal or sustainable. Despite this reality, industry statistics suggest only about 20% to

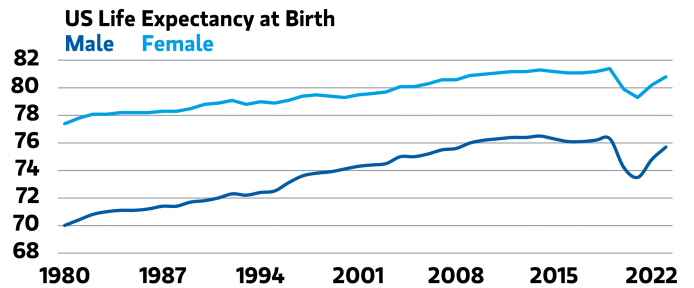
30% of clients have activated portfolios linked to a financial plan with this multivariable optimization in mind (see Exhibit 8). And even fewer have adopted blended-asset-class benchmarks, as is typical for institutional mandates.

Exhibit 6: Mistakes in Asset Allocation Are Costly



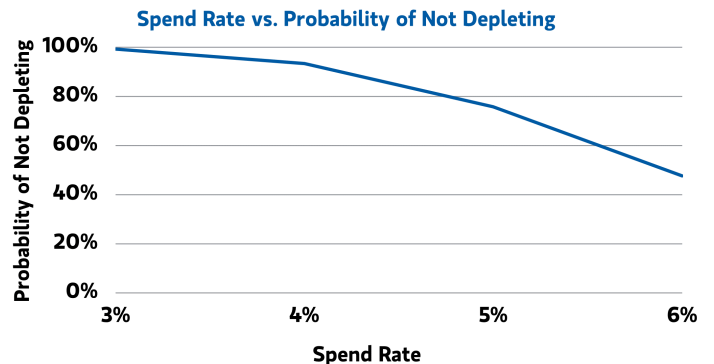
Note: Equities represented by MSCI ACWI Index; bonds by Bloomberg US Aggregate Index. Source: Morgan Stanley Wealth Management GIC, FactSet, Bloomberg as of May 31, 2024

Exhibit 7a: Longer Lifespans Have Implications for Sustainable Asset Allocations



Source: World Bank, Social Security Administration, Morgan Stanley Wealth Management Global Investment Office as of Dec. 31, 2023

Exhibit 7b: Spend Rates Are Critical Constraints to Probability of Success

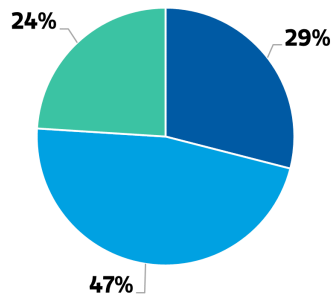


Note: Assumes a 60/40 stock/bond portfolio invested for 30 years utilizing the GIC's secular capital market assumptions (see the March 27 report, "Annual Update of GIC Capital Market Assumptions"). Equities represented by MSCI ACWI Index; bonds by Bloomberg Global Aggregate Index. Spend rate represents a percent of the portfolio depleted for the first year's spend and is grown at 2.28% inflation for later years. Source: Morgan Stanley Wealth Management Global Investment Office as of June 11, 2024

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Exhibit 8: Still Few Integrating Planning and Portfolio Construction

Use No Planning Tools
 Separately Implement Some Planning Tools and Asset Allocation
 Take an Integrated Approach to Planning and Asset Allocation



Source: Cerulli, Financial Advisor Tools Survey, 2022; Morgan Stanley Wealth Management Global Investment Office

Historical Obstacles: Financial Planning Speaks Its Own Language

One of the main reasons for low adoption of an integrated approach (financial planning-driven asset allocation) is that traditional financial planning has historically failed to deliver the sought-after portfolio solution. For most Certified Financial Planners (CFPs), portfolios and investment management are a means to an end. Some clients and their financial advisors, on the other hand, undertake a more comprehensive process anchored in traditional financial planning that attempts to “pressure-test” goals against

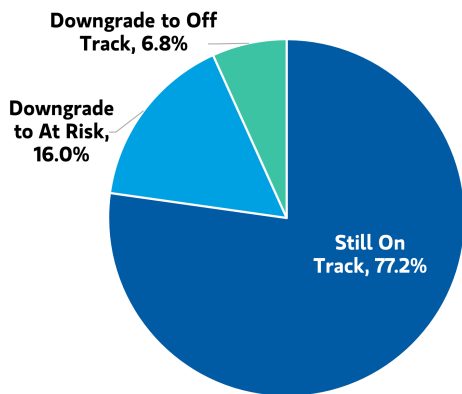
existing asset allocations and map them against long-term cash flows and life needs based on capital market assumptions and Monte Carlo simulations; they stop short of the optimized portfolio that considers all the possible construction choices, as the exercise is typically more geared to a plan’s so-called probability of success.

Unquestionably, a positive aspect of this approach is that clients and financial advisors can usually be confident that it will deliver good odds of goals achievement for their portfolio of choice, thereby encouraging investors to stay the course and remain disciplined relative to a target-asset-allocation “north star” over market cycles (see Exhibit 9 and our April 16 Special Report, “Plan Not to Panic: Navigating Market Volatility with Financial Planning”).

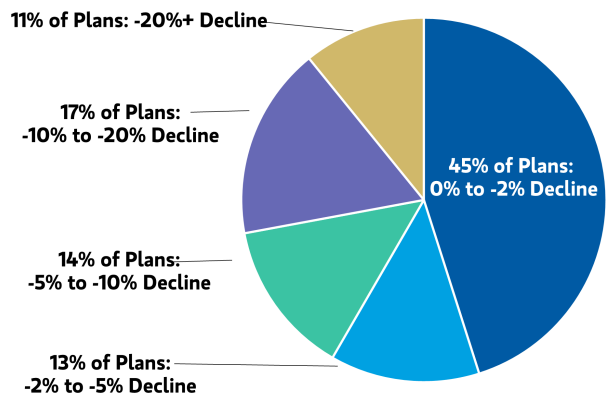
A further positive is that most financial plans are grounded in prospective asset class return forecasts rather than premised on extrapolations of historical performance or guesses about long-run averages. Absent a focus on the optimal portfolio with dynamic efficient frontiers, however, not only are clients and financial advisors adrift regarding how to personalize implementation, they are left without a benchmark to contextualize performance. Consider, for instance, whether a client is doing well if their portfolio delivers subpar returns versus their expectations every year but their probability of success remains unchanged or increases. This could occur if the client suggests unnecessary conservatism versus their risk capacity and restrains their spending; after all, any plan with no future spending or liabilities has a 100% probability of success! (See Exhibit 10.)

Exhibit 9: Optimized Portfolios Typically Generate Strong Prospects for Goals Achievement

Plan Status at Market Trough



Peak-to-Trough Decline in Probability of Success



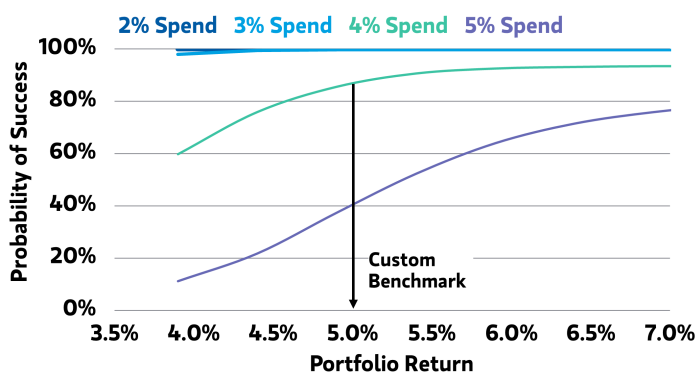
Note: All plans designated “on track” at market peak included in this analysis. Analysis is composed of all retirement plans made, using the Goals Planning System (GPS), that were enrolled in progress to goals reporting during the Feb. 21, 2020-March 27, 2020 period, with dates representing the peak and trough of the US equity market during the COVID crash measured using week-end data. See Appendix for additional methodological notes.

Source: Morgan Stanley Wealth Management Investment Platforms, Morgan Stanley Wealth Management Global Investment Office

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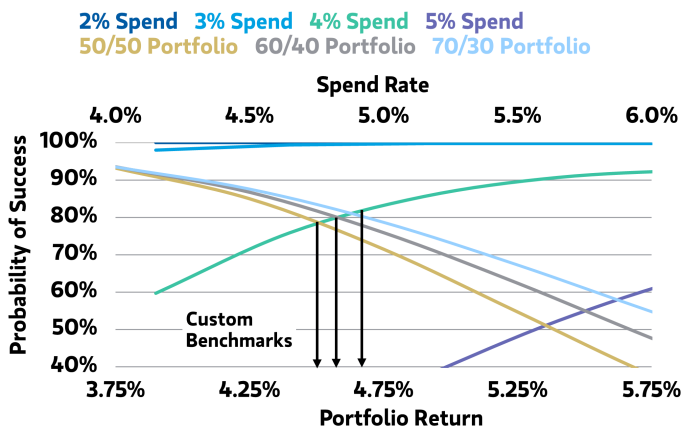
Thought of another way, clients overly focused on probability of success to the detriment of other factors might also be assuming a level of risk that is insufficient to experience optimal outcomes. If the client decided to push their spending from 3% to 4%, for example, their probability of success would go down, but perhaps to an acceptable level, and their potential return may go up. Triangulating these two variables leads to what we identify as the custom benchmark. Exhibit 11 shows how this premise can be refined further with scenario analysis in order to define the custom benchmark in a more granular fashion.

Exhibit 10: Spending Is the Biggest Constraint on Probability of Success



Note: Analysis encompasses the efficient frontier of portfolios that maximizes the probability of meeting all spending needs over 30 years, utilizing the GIC's secular capital market assumptions. Spend rates represent percent of portfolio depleted for the first year's spend and are grown at 2.28% inflation over subsequent years. Source: Morgan Stanley Wealth Management Global Investment Office as of June 20, 2024

Exhibit 11: Balancing Returns With Probability of Success Creates Better Custom Benchmarks



Note: Analysis compares the efficient frontier of portfolios that maximizes the probability of meeting all spending needs over 30 years, utilizing the GIC's secular capital market assumptions to estimate the probability of success for specific portfolios at different spend rates. Equities represented by MSCI ACWI Index; bonds by Bloomberg Global Aggregate Index. Spend rates represent percent of portfolio depleted for the first year's spend and are grown at 2.28% inflation over subsequent years. Source: Morgan Stanley Wealth Management Global Investment Office as of June 20, 2024

A Potential Solution: Solve for Risk Capacity

If neither approach is ideal for delivering an optimal portfolio and a benchmark, how do we choose? We believe that the historical divide between these two approaches—one from those *who invest* and create portfolios with an eye toward guesstimating risk tolerance and liquidity preference, and one from those *who build goals-based plans* with an eye toward a portfolio that ensures a certain probability of success—is in fact artificial. In both cases, portfolios are presumed to be inputs for the exercise. We believe that tools and technologies exist that suggest that building portfolios and effective financial planning can in fact be one and the same. We just need the practitioners to speak the same language and acknowledge that optimization in both cases requires grounding in robust asset class selection menus, capital market forecasts and cash-flow-based inputs, as well as an articulation of constraints.

Specifically, such an integrated approach simply requires shifting the order of our thinking and what we are looking for as outputs. We postulate that an optimized personalized portfolio construction process answers the following question: What is the optimal portfolio (and annual savings rate) for me that has a minimum 85% probability of success over the next x years and will allow me to achieve my goals while aligning with my other preferences? Risk-taking preferences are not inferred or inputted. Rather, we ask how much risk the client should optimally take to reach their goals given the constraints around savings, withdrawals, maximum drawdown and liquidity. Risk, i.e., the portfolio, is the output. Here, the goal of the financial planning/portfolio construction tool is not maximizing probabilities of success but optimizing around all the client's constraints to produce a personal portfolio. Implicitly embedded in that optimized portfolio is a customized asset allocation that translates to a personal benchmark—a very specific combination of expected risk, return and illiquidity. It reflects the client's *risk capacity*.

How liberating would it be for client and advisor to both know that the client's personal benchmark was a 9% average annualized return, with 20% of wealth in illiquid investments and annual savings of \$100,000, and that a portfolio thus constructed had at least an 85% probability of funding post-retirement living expenses of x for y years? This personalized benchmark—shorthand for the customized portfolio—allows us to measure both the progress and periodic success of our goals, untethering us from generic commercial indexes and the tyranny of "beating the market." Equally compelling, it creates transparent analytics for the client to track progress toward goals and probability of success by linking them to the custom benchmark (see Exhibit 12).

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Exhibit 12: Your Custom Benchmark Dashboard



Note: Exhibit and performance results shown are for illustrative purposes only and do not represent any client or market benchmark, client account, portfolio outlook, or Morgan Stanley asset allocation strategy, recommendation or dashboard. There is no guarantee that the illustrative performance results shown will be achieved. Source: Morgan Stanley Wealth Management Global Investment Office

The Hitch: Collaboration and Iteration

Achieving this customized portfolio and benchmark for clients amounts to closing the historical divide between delivering a financial plan and a separate portfolio proposal. It means teaming across disciplines to provide clients genuinely holistic advice. For both planners and portfolio managers, it means shifting our mission a bit and committing to collaboration. For

portfolio constructors, it means a willingness to move away from basic and too often static asset allocation heuristics in favor of customizing asset allocation recommendations according to goals-based, personally constrained cash flows based on savings and spending rates net of taxes. For financial planners, it means iterating scenarios for optimal risk capacity and asset allocation—not stopping short at probabilities of success.

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Appendix

This strategy is not provided as part of an investment advisory service offered by Morgan Stanley, is not available to be directly implemented as part of an investment advisory service and should not be regarded as a recommendation of any Morgan Stanley investment advisory service. All returns displayed are gross figures and as such, do not take into account fees and other expenses, including advisory fees, the deduction of which, when compounded over a period of years, would decrease returns. Information regarding Morgan Stanley standard advisory fees is available in the Form ADV Part 2, available at www.morganstanley.com/adv.

Empirical Analysis of Financial Plans

Our analysis of financial plan performance comprises all retirement plans made using our Goals Planning System (GPS) that were enrolled in progress to goals reporting during the period in question (Feb. 21, 2020 through March 27, 2020). These dates represent the peak and trough of the US equity market during the 2020 COVID crash, measured using week-end data, as necessitated by source-data availability.

Accounts with large cash inflows or outflows during this period were removed to control for the potential impact on plan status of unrelated cash-flow activity, as were accounts that were closed or removed during this period. Plans with less than \$50,000 in assets were removed as outliers.

Our analysis comprised 119,813 plans that met these conditions, with portfolio values ranging from \$50,000 through about \$303 million measured on March 27, 2020. The average portfolio value across the plans measured was \$1.2 million, and 90% of plans considered in our analysis had a value of roughly \$2.6 million or less on that date.

Life stage (saving for retirement, nearing/early retirement and mid/late retirement) was defined relative to the specified retirement age for each plan. Those with more than 10 years before the stated age of retirement were designated as saving for retirement; those with 10 or fewer years to retirement or in the first five years of retirement were put in the nearing/early retirement category; and those with over five years since beginning retirement were designated as mid/late retirement.

Probability of success (POS) for each plan was calculated in GPS using Monte Carlo analysis and the Global Investment Committee's capital market assumptions at the time (see the March 27 report, "Annual Update of GIC Capital Market Assumptions").

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Disclosure Section

Important Information

The **Global Investment Committee (GIC)** is a group of seasoned investment professionals from Morgan Stanley & Co. LLC, Morgan Stanley Investment Management, and Morgan Stanley Wealth Management who meet regularly to discuss the global economy and markets. The committee determines the investment outlook that guides our advice to clients. They continually monitor developing economic and market conditions, review tactical outlooks and recommend asset allocation model weightings, as well as produce a suite of strategy, analysis, commentary, portfolio positioning suggestions and other reports and broadcasts.

Patrick Gremban is not a member of the Global Investment Committee and any implementation strategies suggested have not been reviewed or approved by the Global Investment Committee.

For index, indicator and survey definitions referenced in this report please visit the following: <https://www.morganstanley.com/wealth-investmentsolutions/wmir-definitions>

Glossary

Correlation This is a statistical measure of how two securities move in relation to each other. This measure is often converted into what is known as correlation coefficient, which ranges between -1 and +1. Perfect positive correlation (a correlation coefficient of +1) implies that as one security moves, either up or down, the other security will move in lockstep, in the same direction. Alternatively, perfect negative correlation means that if one security moves in either direction the security that is perfectly negatively correlated will move in the opposite direction. If the correlation is 0, the movements of the securities are said to have no correlation; they are completely random. A correlation greater than 0.8 is generally described as strong, whereas a correlation less than 0.5 is generally described as weak.

Drawdown s the peak-to-trough decline during a specific period.

R², or the coefficient of determination, is a statistic used in the context of statistical models whose main purpose is either the prediction of future outcomes or the testing of hypotheses, on the basis of other related information. It provides a measure of how well observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by the model.

Shiller P/E ratio A measurement of stock market valuation that uses a 10-year average of inflation-adjusted earnings. It is also known as the cyclically adjusted P/E ratio (CAPE).

Volatility This is a statistical measure of the dispersion of returns for a given security or market index. Volatility can either be measured by using the standard deviation or variance between returns from that same security or market index. Commonly, the higher the volatility, the riskier the security.

Risk Considerations

Monte Carlo Analysis Assumptions: As indicated above, this forward-looking analysis uses a Monte Carlo simulation to generate randomized, correlated returns that overall have similar characteristics to the Global Investment Committee's 2024 strategic (seven-year capital markets assumptions). The Monte Carlo simulation involves sampling from those monthly returns for the constituent asset classes. From those monthly returns, we can compute hypothetical monthly returns for portfolios constructed with a lump-sum investing or dollar-cost averaging approach as of any month in the simulated returns data.

IMPORTANT: The projections or other information generated by this Monte Carlo simulation analysis regarding the likelihood of various investment outcomes do not reflect actual investment results and are not guarantees of future results. Results may vary with each use and over time.

Equity securities may fluctuate in response to news on companies, industries, market conditions and general economic environment.

Investing in foreign markets entails risks not typically associated with domestic markets, such as currency fluctuations and controls, restrictions on foreign investments, less governmental supervision and regulation, and the potential for political instability. These risks may be magnified in countries with **emerging markets and frontier markets**, since these countries may have relatively unstable governments and less established markets and economies.

Bonds are subject to interest rate risk. When interest rates rise, bond prices fall; generally the longer a bond's maturity, the more sensitive it is to this risk. Bonds may also be subject to call risk, which is the risk that the issuer will redeem the debt at its option, fully or partially, before the scheduled maturity date. The market value of debt instruments may fluctuate, and proceeds from sales prior to maturity may be more or less than the amount originally invested or the maturity value due to changes in market conditions or changes in the credit quality of the issuer. Bonds are subject to the credit risk of the issuer. This is the risk that the issuer might be unable to make interest and/or principal payments on a timely basis. Bonds are also subject to reinvestment risk, which is the risk that principal and/or interest payments from a given investment may be reinvested at a lower interest rate.

High yield bonds (bonds rated below investment grade) may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk, price volatility, and limited liquidity in the secondary market. High yield bonds should comprise only a limited portion of a balanced portfolio.

Yields are subject to change with economic conditions. Yield is only one factor that should be considered when making an investment decision.

Investing in smaller companies involves greater risks not associated with investing in more established companies, such as business risk,

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significant stock price fluctuations and illiquidity.

Stocks of medium-sized companies entail special risks, such as limited product lines, markets, and financial resources, and greater market volatility than securities of larger, more-established companies.

Growth investing does not guarantee a profit or eliminate risk. The stocks of these companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations.

Value investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected.

Environmental, social, and governance-aware investments (ESG) in a portfolio may experience performance that is lower or higher than a portfolio not employing such practices. Portfolios with ESG restrictions and strategies as well as ESG investments may not be able to take advantage of the same opportunities or market trends as portfolios where ESG criteria is not applied. There are inconsistent ESG definitions and criteria within the industry, as well as multiple ESG ratings providers that provide ESG ratings of the same subject companies and/or securities that vary among the providers. Certain issuers of investments may have differing and inconsistent views concerning ESG criteria where the ESG claims made in offering documents or other literature may overstate ESG impact. As a result, it is difficult to compare ESG investment products or to evaluate an ESG investment product in comparison to one that does not focus on ESG. There is no assurance that an ESG investing strategy or techniques employed will be successful. Past performance is not a guarantee or a dependable measure of future results.

Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets.

Nondiversification: For a portfolio that holds a concentrated or limited number of securities, a decline in the value of these investments would cause the portfolio's overall value to decline to a greater degree than a less concentrated portfolio. Portfolios that invest a large percentage of assets in only one industry sector (or in only a few sectors) are more vulnerable to price fluctuation than those that diversify among a broad range of sectors.

Artificial intelligence (AI) is subject to limitations, and you should be aware that any output from an IA-supported tool or service made available by the Firm for your use is subject to such limitations, including but not limited to inaccuracy, incompleteness, or embedded bias. You should always verify the results of any AI-generated output.

Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

The **indices** are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. The indices are not subject to expenses or fees and are often comprised of securities and other investment instruments the liquidity of which is not restricted. A particular investment product may consist of securities significantly different than those in any index referred to herein. Comparing an investment to a particular index may be of limited use.

The **indices selected by Morgan Stanley Wealth Management** to measure performance are representative of broad asset classes. Morgan Stanley Wealth Management retains the right to change representative indices at any time.

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