

# Retirement

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## Introducing the Morgan Stanley Wealth Management Retirement Framework

Traditional approaches to asset allocation involve maximizing return relative to a benchmark with a similar risk profile. They are deficient when it comes to retirement investing. Specifying a retirement strategy based on a risk profile derived from a vague notion of volatility tolerance is a profound simplification of both the multidimensional nature of client objectives—say, leaving a legacy—and of the breadth of risks that can cause an investor to outlive his or her resources. These risks include but are not limited to volatility, inflation, longevity and interest rates.

The Morgan Stanley Wealth Management Retirement Framework evaluates strategy in this more appropriate enlarged context to produce customizable asset allocations that leverage all the rigor of our existing investment process and account for how the challenge varies according to life stage. Going forward on a quarterly basis, we will track the framework's capacity to deliver on client objectives through the hypothetical progress toward goals of three archetypical investors employing its strategies from different stages in their saving and investing lives. We believe our solutions can potentially achieve better long-term results than could be achieved through the generic application of techniques currently available in the market.



## Executive Summary

Traditional approaches to providing asset allocation advice focus on wealth preservation and accumulation and anchor squarely on maximizing returns for a client-specified level of risk, typically proxied by the volatility of portfolio returns. Designing solutions toward the goal of funding a client's lifestyle in retirement is much more complex, as portfolios must address the challenges of savings and withdrawal behaviors and event timing while also broadening the definition of risk considerations to include the potential of outliving one's resources. As such, we have launched the Morgan Stanley Wealth Management Retirement Framework to complement our traditional suite of asset allocation models.

Our framework contemplates three new investment approaches that are meant to optimize the likelihood of achieving the customized retirement goals of clients against the associated risks, depending on where in the lifecycle they begin their planning and investing journey: at the beginning, "Building" their retirement resources and starting a savings plan; in the middle, "Securing" their retirement plan with greater granularity around income requirements; or toward the end, "Living" in retirement and managing liquidity needs and legacy goals. By matching asset allocation approaches with our innovative portfolio construction techniques (Target Date custom glide paths, Target Income with annuities or Target Liquidity Time-Segmented Bucketing), we try to address the most relevant drivers of success for potential retirees. Core to our proprietary approach is a focus on an

individual's "funding ratio," which allows us to simply track progress toward retirement goals in real time, based on purely objective criteria. Rather than being based on long-term capital market forecasts or complex probabilistic models, our funding ratio uses a client's current asset values and market pricing to discount retirement liabilities. Armed with this metric, our advice can remain customized through its responsiveness to changing market conditions and opportunities.

Implementing the advice embedded in this framework is achieved by way of three families of guided asset allocation models (Target Date, Target Income, Target Liquidity), which clients and Financial Advisors can fulfill using this broad and deep open-architecture platform of third-party investment managers, strategies and products. Importantly, by leveraging this approach to portfolio construction in each case, we believe we can potentially achieve better long-term results than could be achieved through the generic application of techniques currently available in the market. Utilizing these models, we believe our framework lends itself to generalized progress tracking that helps educate clients and increases transparency on how various approaches fare in different market environments. Just as our asset allocation models are measured regularly for their risk/return performance versus market benchmarks, we anticipate tracking the "performance" of our retirement models by measuring the funding ratio progress of three archetypical investors (one for each investment approach/life stage) toward their goals.

## RETIREMENT

## Reaching Retirement Goals Has Never Been More Challenging

Preparing for retirement is a daunting challenge for today's investors. A generation ago, most Americans could count on a traditional pension to cover many of their expenses in retirement. Fast-forward 30 years and traditional pensions have been replaced almost entirely by self-directed investment vehicles like 401(k)s and IRAs (see Exhibit 1), wherein investors must manufacture their own retirement incomes out of lump-sum savings and assume the attendant risks of running out of money. This radical realignment has made individual investors responsible for decisions with deep and complex implications, such as when to retire, how to budget spending in retirement, what investment strategy to pursue, when to reverse course and when not to. These decisions can have enormous consequences for the sustainability of a person's retirement plan; moreover, the complex issues underlying these decisions are beyond most people's capacity to understand.

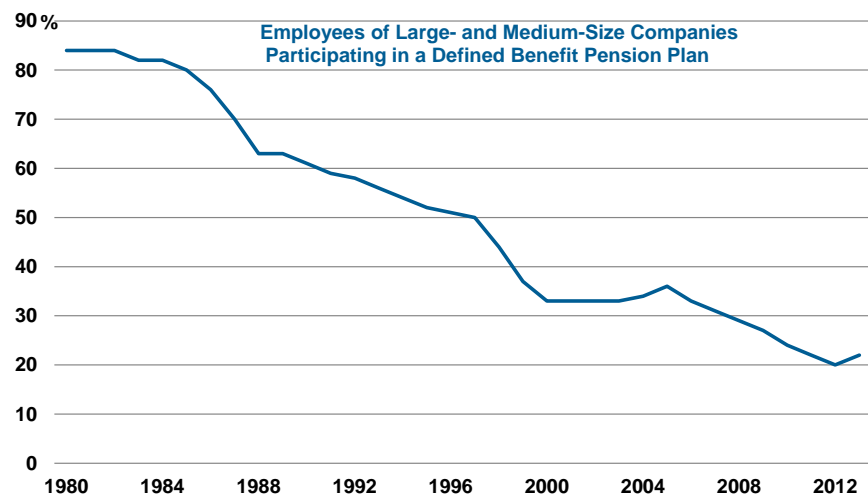
Complicating matters is the fact that this new responsibility is being imposed at a time when most experts anticipate that, on a dollar-for-dollar basis, financial assets will produce significantly less income than they once did. This is due primarily to "financial repression," that is, the ultralow interest rates global monetary authorities have pursued since the financial crisis to manage down the extraordinary debt confronted by governments and the private sector. These policies have had a profound impact on retirement savers, as measured by the size of a three-month US Treasury bill portfolio required to generate \$50,000 in annual interest income at different times (see Exhibit 2).

In plain English, financial repression entails the transfer of wealth from savers (including retirement savers) to debtors by holding down the returns on the financial

assets in which their savings reside. This has made retiring more difficult. While Exhibit 2 depicts Treasury bill investments, the reality is that repressive rate policies have impacted prospective returns across the spectrum of risk and liquidity. In an

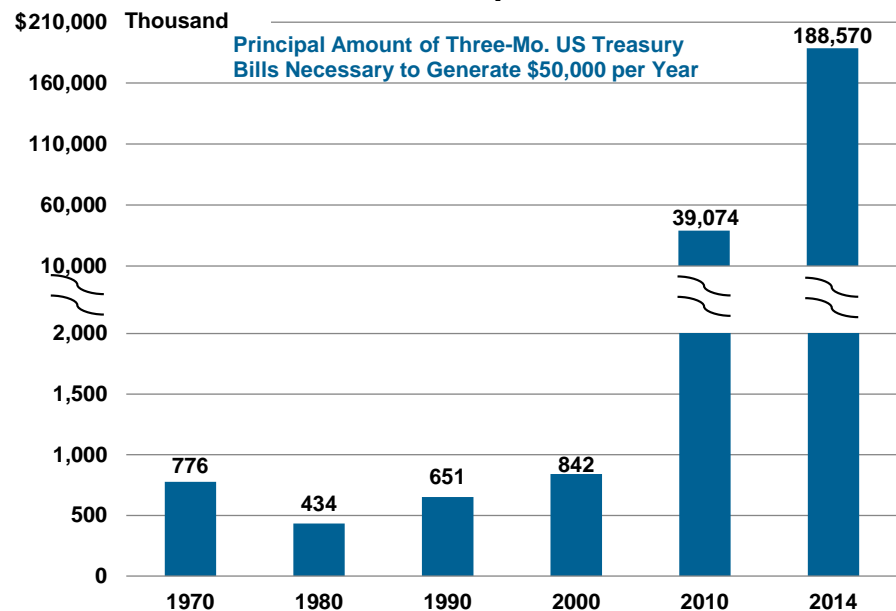
earlier report (*Annuities in a Portfolio Solution Context*, October 2014), we found that a typical retirement strategy generated only 85% of the retirement income going forward than it would have been able to generate had past 50-year historical

### Exhibit 1: Diminishing Participation of Private-Sector Employees in Defined Benefit Pension Plans



Source: Bureau of Labor Statistics Employee Benefits Survey and National Compensation Survey, Morgan Stanley Wealth Management GIC as of December 2013

### Exhibit 2: With Financial Repression, Generating Income Has Become More Expensive



Source: Bloomberg, Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

average returns still been in place. The specific number, to be sure, depends on a combination of factors, but retirees are facing a significant pay cut relative to history, whatever assumptions one makes.

### Considerations in Developing a Retirement Framework

In this environment, investors need enlightened, sophisticated advice to help them maximize the capacity of their resources to meet their goals. Unfortunately, what often passes for retirement advice falls short of that standard. To illustrate this point, consider the two common approaches to retirement investing. The first approach regards investing for retirement in much the same way as one would with any other goal in mind: Start with an assumed risk profile and construct a portfolio that strives to deliver superior returns relative to that bogey (the market benchmark or peer universe at that level of risk).

The shortcoming of that approach is that aligning strategy with a goal is not necessarily the same thing as building a strategy around an input risk profile. To take an extreme example, it does little good to point out to an investor who is on the verge of retirement that the deep decline in the retirement nest egg actually represents substantial outperformance relative to the S&P 500 Index. That may be a success in the context of the problem the portfolios were designed to solve, but it is a clear failure to solve for the right problem, given the goals associated with those savings.

The second approach holds that investing for retirement means being “goals-based”: determining risk exposures based on factors like an investor's retirement date. Goals-based strategies get the problem right, but typically devote minimal attention to the investment program that implements it. For example, target date funds have historically maintained allocations to a narrow group of asset classes based on an investor's

retirement date, without regard to market conditions, and have implemented those allocations entirely via a single fund family. The investment process of some “robo-advisors” works similarly.

Such an approach, in our view, is too simplistic. A risk profile does not define an asset allocation nor does it identify the ultimate choice of investment products—securities, funds and the like—with which to implement it. Decisions made in this regard can have a big impact on the returns ultimately experienced by investors, something that should not be ignored, not least in an age of financial repression when baseline returns have shrunk. Most traditional wealth management investment processes devote substantial research and other resources to addressing these problems effectively, our own included, but the same rigor has not historically been found in the many solutions designed for retirement savers.

To count as sound advice, a retirement strategy must combine the strengths of these two approaches, rather than choosing one or the other. But just calling a strategy “goals based” does not ensure a robust finished product. The following are the eight features of what, in our view, a well-constructed goals-based process must entail:

1. Appropriately defines what investors care about, including the fact that both the likelihood of running out of money and the size of the resulting shortfall matter. A singular focus on increasing “probability of success” can paradoxically expose investors to inappropriately large risks.
2. Addresses the shifting complexion of issues and concerns investors face at different stages in their lives.
3. Can be customized to suit investor-specific circumstances and preferences, especially their particular retirement readiness and legacy goals.
4. Considers risks that make goals more difficult to attain, such as the potential that higher inflation or lower interest rates might result in the need for a

bigger nest egg to provide the requisite retirement income.

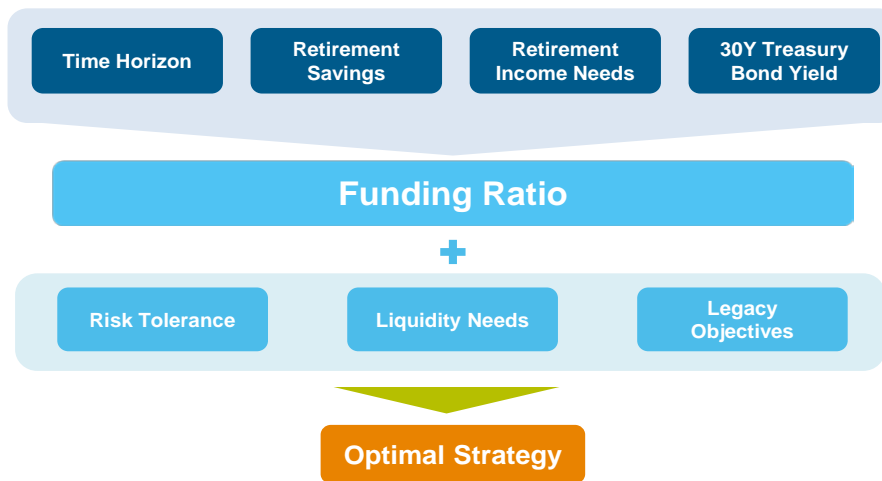
5. Seeks to mitigate behavioral risk, such as poor decisions like panic selling and overspending, which can damage an investor's finances.
6. Seeks to reduce the drag on returns imparted by taxes and fees.
7. Can evaluate the effect and effectiveness of products with asymmetric risk exposures such as annuities with minimum income benefits in the context of an overall strategy.
8. Is dynamic, designed to respond to market conditions or developments within an investor's life, to realign strategy in accordance with investor goals.

### The Morgan Stanley Wealth Management Retirement Framework

The Morgan Stanley Wealth Management Retirement Framework is an analytical framework that attempts to capture the most essential and unique elements of a client's retirement planning situation (their time horizon, risk tolerance, current savings, anticipated savings rate and expected lifestyle cash flow and reserve liquidity needs during retirement) to deliver an asset allocation and portfolio construction approach that is designed to be optimal based on funding ratio, liquidity needs, risk tolerance and legacy objectives (see Exhibit 3, see page 5). Customization among *all* these variables—not an approach based on only one—is what is critical to getting to an optimal strategy.

We have chosen the funding ratio as a centerpiece of our framework for its objectivity and simplicity, borrowing from years of experience with institutional investors who have thought about building portfolio solutions to support their retirees' retirement benefits. The “funding ratio” (see page 5) is essentially the value of retirement savings (accumulated plus planned future savings) divided by the

### Exhibit 3: The Morgan Stanley Wealth Management Retirement Framework—Customizing Strategy



Source: Morgan Stanley Wealth Management GIC

present value of the retirement income needs the savings are needed to support, (basically, retirement expenses net of other sources of retirement income like a pension or Social Security). Retirement income needs are developed in consultation with the client about his or her monthly lifestyle needs in retirement. To calculate the present value, we use the current yield on the 30-year US Treasury bond, which presents the most conservative picture of potential future returns and inflation. Investors and their Financial Advisors can manage their funding ratio by changing their savings rates, retirement date and retirement spending plans, and improve it over time through selection of the right strategy.

Though this customization process is theoretically applicable to everyone no matter where they are in their lives, the reality is more nuanced. That is because, in reality, the relevant unknowns people confront and the concerns they have change over their lifetimes. This has implications both for advice and for the way in which investors relate to it. As can be seen in Exhibit 4 (see page 6), our framework applies a different set of portfolio construction approaches to create strategies for investors at different stages in their lives based on the differing

objectives, key unknowns and risks that apply to them. Yes, the overarching goal is “retirement,” but what that really means at different life stages is what our framework focuses on. Are we mid-career savers trying to maximize our total wealth during our working life? Are we later career professionals, trying to navigate the dwindling number of years of work and savings while minimizing the risk of poor market timing, wherein a major correction

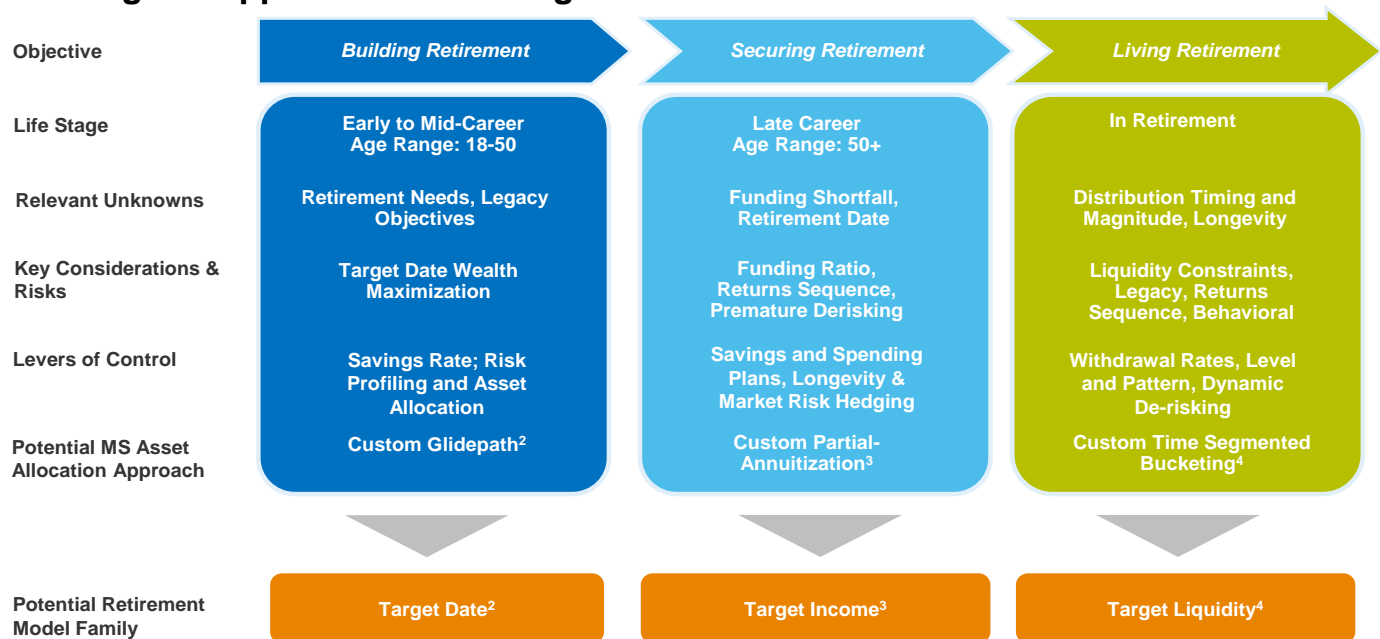
just around the corner delivers a blow from which my savings can’t recover? Or, finally, am I already in retirement and beginning to make choices about my withdrawals and drawdowns and managing the increasing uncertainty about my health care needs, life expectancy or survivor bequests?

For investors in the “Building Retirement” phase, the goal is to maximize the wealth they can accumulate by a target retirement date. The levers they have to affect that outcome are their savings rate, their risk profile and their asset allocation. Of the three factors, savings is most important, both the savings rate and how early in the lifecycle savings begin. Risk profile and asset allocation are also important, however, and here we suggest a custom glidepath approach to portfolio construction. A custom glidepath approach derives asset allocations that grow more conservative as an investor accumulates wealth, which can reduce an investor’s exposure to a poor sequence of returns while at the same time facilitating the growth they need to build a retirement nest egg. Our framework recommends a specific custom glidepath approach to creating a Target Date model that is described in detail in the Retirement

#### What Is a “Funding Ratio” and Why Do We Care?

A funding ratio is a measure of progress toward a retirement goal calculated as the present value<sup>1</sup> of investor savings and planned future savings divided by the present value of anticipated retirement expenses net of other sources of retirement income (e.g., Social Security). The virtue of a funding ratio lies in its simplicity and objectivity. Because it is based on inputs of projected saving and spending, current assets and a market discount rate (in particular, the current yield on a 30-year US Treasury bond), its calculation is not dependent on the whims of subjective forecasts of potential future capital market returns. Because it distills all the complexity of a retirement plan into a single number that indicates not just whether a retirement plan is on track or off, but by how much, it is an ideal metric for both tracking the health of a retirement plan and for pointing up opportunities to enhance it, such as by altering savings or spending behavior or changing strategy (see Exhibit 3). For most investors, funding ratios begin low and grow over time, representing the work investors put into building toward, securing and eventually living their retirement. The way the funding ratio relates to the health of a plan is depicted in Exhibit 12 (see page 11) of this document, where dark blue zones indicate good health, light blue the need to vigilantly monitor progress and olive green the need for a deeper reevaluation of the plan, so as to identify the policies to get it back on track. Ultimately, assembling a retirement strategy is not a point-in-time conversation, but an ongoing objective that should be managed closely from the word go. Funding ratio is an invaluable tool to that end.

## Exhibit 4: The Morgan Stanley Wealth Management Retirement Framework—Tailoring the Approach to Life Stage



Source: Morgan Stanley Wealth Management GIC

Models section of this report; however, all glidepath approaches can potentially share this feature. For this reason, a Target Date model may be appropriate for clients in this life stage.

For investors late in their careers and in the “Securing Retirement” phase, the focus is different. Such investors are likely to be able to identify their retirement income needs with a greater degree of accuracy, but will lack clarity on when they can afford to retire, how much more savings they will need to get there and whether the immediate market horizon is one that will reward their portfolios or one that requires them to lower their risk exposure to protect nest eggs from poor market timing and sequence of returns risk. At this stage in the lifecycle, our framework emphasizes the importance of funding ratio shortfalls and puts greater emphasis on techniques to manage event “tail risk.”

Relatedly, and in marked contrast to many of the approaches advocated in the industry, our framework recognizes that managing a funding shortfall at this stage in the lifecycle is not as simple as increasing risk and swinging for the fences.

This somewhat obvious and yet surprisingly elusive fact is based on the reality that the incremental pain associated with an income shortfall is progressively larger than its incremental magnitude. Furthermore, significant investment losses are particularly difficult to “make up” in and around retirement, a phenomenon known as “sequence of returns” risk. On the flip side, “derisking”—adopting a more conservative portfolio—can expose investors to other risks, given the substantial amount of time for which today’s investors are likely to need their savings to last as life expectancy continues to increase. In these cases, the best approach to portfolio construction and asset allocation may be to use a Target Income model that, where appropriate, allocates to risk-management solutions like annuities.

Finally, investors who are already retired have new unknowns, or at least newly relevant unknowns, such as irregular expenses, medical expenses, the need for liquidity and the increased attention to longevity risk and legacy objectives. At this stage, retirement

strategy is still highly sensitive to a poor sequence of returns—that is to say, poor investment performance early in retirement. While going to a highly conservative portfolio invested mostly in cash or high-quality bonds remains an option for those who are actively drawing down their accounts, it is an incredibly expensive and risky alternative for all but the most well-funded investors.<sup>5</sup> The risk of outliving one’s money is high against a backdrop where life expectancy continues to expand each and every year.

Perhaps even more importantly, while behavioral mistakes can affect investor retirement plans at any age, as an empirical matter, retirees are most exposed. They are exposed to the risk of overestimating the degree to which wealth can be stretched into retirement income and, as illustrated in Exhibit 5 (see page 7), are particularly susceptible to panic selling relative to those who are still in the labor market and have the associated income flexibility. A key element of any strategy designed for retirees is that it helps them to navigate these decisions and their own emotions, which can be as simple as

## WEALTH MANAGEMENT

managing expectations and working through contingencies from the outset. For investors in retirement, our best option may be to use a Target Liquidity model, where funds are “bucketed” to facilitate a matching between the timing of cash flow needs and the investment horizon.

### The Morgan Stanley Wealth Management Retirement Models

All the sophistication and nuance of our proprietary advice framework is about a single objective: delivering investment excellence to our retirement clients. But what does that mean in this context? It’s a question that’s usually not difficult to answer. Fund managers, for example, measure investment excellence by how their fund’s performance compares to other products with the same opportunity set, ground rules and benchmarks. This practice has generally focused competition within the fund management industry on product attributes that enhance advice to the benefit of investors. It has also provided the managers themselves with invaluable feedback about their successes and failings. However, to our knowledge, advisors have not historically tracked the effectiveness of their retirement strategies—at least not publicly—notwithstanding the fact that retirement strategy is of

greater consequence to an investor's financial well-being than a manager’s relative performance.

That needs to change. It is all well and good for investors to understand how managers are performing, but, as an industry, we also need to provide transparency into the effectiveness of the strategies clients are counting on to make ends meet in retirement. Investors need it, so they can hold their Financial Advisors to account for the strategies they recommend, and Financial Advisors need it, to increase their awareness of and insight into the successes and failures of their advice frameworks. At Morgan Stanley Wealth Management, we have spent years developing a robust framework for retirement that we believe measures up to the challenge. Going forward, we intend to put that proposition to the test.

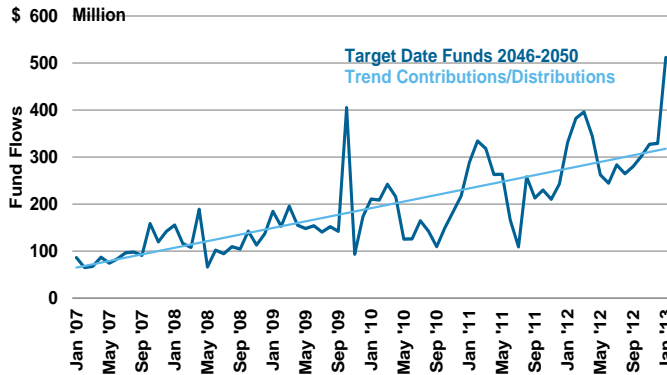
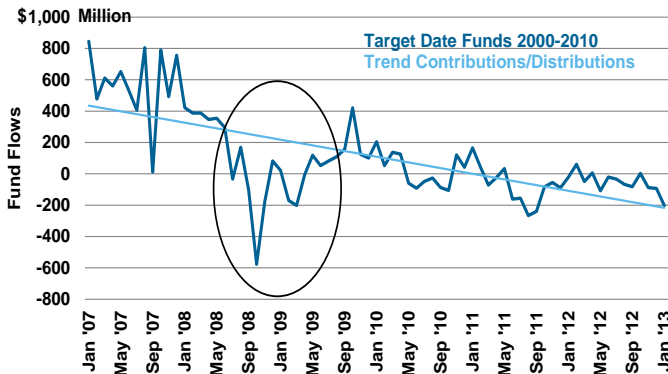
For us, this means something we are calling the Morgan Stanley Wealth Management Retirement Models, three model approaches to portfolio construction and asset allocation based on our proprietary retirement framework to address the retirement needs of hypothetical persons at three different stages: The Target Date Model will track a target date strategy for an individual in the Building Retirement phase, assumed to be 45; the Target Income Model will track a partial annuitization strategy for someone

in the Securing Retirement phase, assumed to be 55; and the Target Liquidity Model will track a time-segmented bucketing strategy for an investor in the Living Retirement phase, assumed to be 65. These strategies consist of dynamic asset allocation and asset class level retirement income recommendations, and we will track their ability to deliver on the retirement goals of these three hypothetical investors on a quarterly basis by calculating their funding ratio.

The Target Date Model is a dynamic asset allocation strategy that strikes a balance between addressing market, inflation and longevity risks to an investor's retirement plan. The strategy optimizes the distribution of risk—allocating differing quantities of market, interest rate and inflation risk to different times during an individual's working life. The methodology then creates a recommended asset allocation corresponding to each level of risk on the basis of a sophisticated portfolio construction methodology that is sensitive to market conditions. In other words, this strategy is based on both a process for distributing risk over time and on adjustments to allocations based on market conditions (for example, an underweight to the domestic equity market in favor of an overweight to international equities).

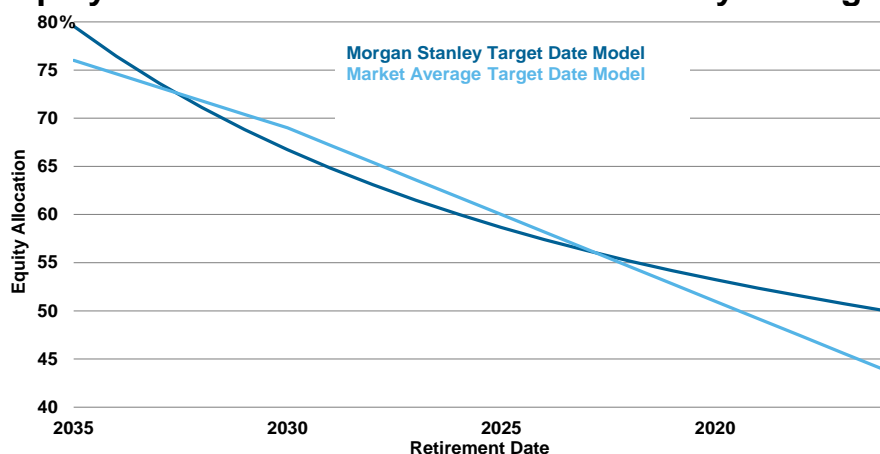
Optimizing the distribution of risk is

### Exhibit 5: Retirees and Near-Retirees Sold Heavily During the Financial Crisis, but Younger Investors Did Not



Source: Morningstar, Morgan Stanley Wealth Management GIC as of Sept. 30, 2015  
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### Exhibit 6: The Morgan Stanley Target Date Model's Equity Distribution Differs From the Industry Average



Source: MarketGlide, Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

important because, while most investors think of "diversification" as a portfolio with investments across a broad variety of sectors, geography and tiers of the capital structure, there is another sense in which it is even more significant: the impact of time. While it is difficult to hide from a bear market, it is highly unusual to experience one lasting two decades, which is the type of horizon that many retirement investors have, if not longer. In other words, when you can stay invested for a long time, you are likely to experience both the good and the bad, and at the end of it all, likely to be left with the average. When it comes to riskier investments like equities, that would be a good result, especially for retirement investing, in which the need for return and the sensitivity to risk are great.<sup>6</sup>

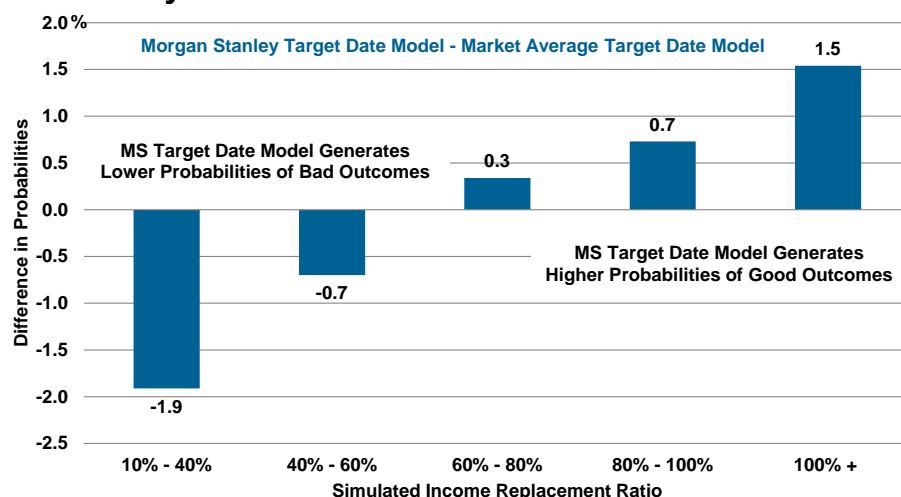
We distribute risk over a lifetime in a way that seeks to maximize the time diversification of a retirement strategy. This results in the recommended equity allocations given in Exhibit 6 by investor retirement dates that differ considerably from the MarketGlide Index, which measures the average asset allocations employed by the target-date-fund industry

for those retirement dates. More importantly, it results in the differing distribution of projected income replacement ratios in a Monte Carlo simulation of various potential future capital market outcomes as shown in Exhibit 7. The differences most notably include a substantially lesser potential for very low projected end-of-career income

replacement and a corresponding increase in the potential for higher levels of income replacement. The result is robust across a variety of simulation assumptions; however, the specific ones used to create the figures in Exhibit 7 are spelled out in the endnotes of this report.<sup>i</sup>

The Target Income Model is based on the Retirement Framework's ability to evaluate the inclusion of annuities with guaranteed minimum-income benefits as part of an integrated retirement strategy. Investors approaching retirement must walk a tightrope between generating the return necessary to maintain and improve their funding status and exposing themselves to market risks that can substantially damage their finances, given their heightened sensitivity to poor returns at this stage. Given this dual mandate, our framework suggests that at least some level of minimum income floor is optimal across a broad variety of investor circumstances at this stage. Variable annuities with guaranteed income riders, in particular, can be an attractive way to create such a floor, as they allow for

### Exhibit 7: The Morgan Stanley Target Date Shifts Probability Toward Good Outcomes



Source: MarketGlide, Cannex, Morgan Stanley Wealth Management GIC as of June 30, 2015

The analysis in Exhibit 7 is based on a Monte Carlo simulation.<sup>i</sup>

Monte Carlo simulation involves repeated sampling of asset class returns from a known distribution. It is used here to estimate thousands of different potential future evolutions of different strategies, from which we can infer the likelihood of various outcomes.

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

For more information about the risks to hypothetical performance, please see the Risk Considerations section beginning on page 17 of this report.

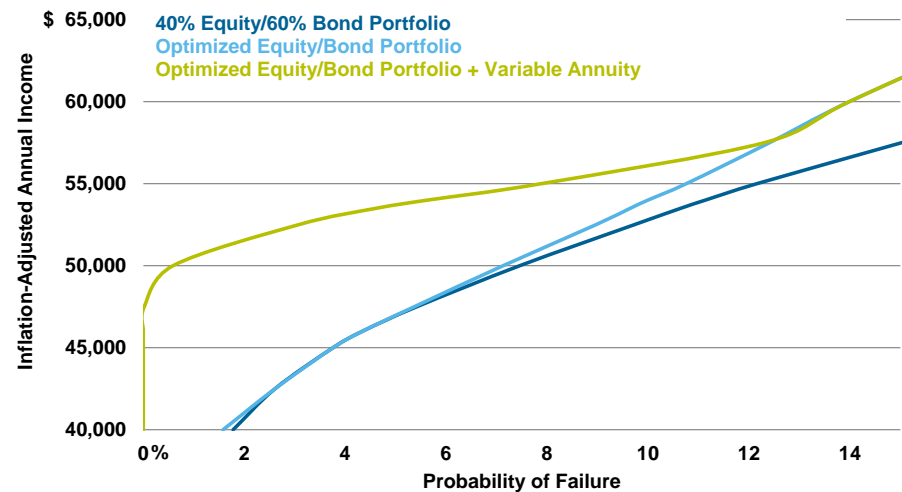


potential upside participation in the market while providing a hedge against market risk.

To create the allocation to investments and annuities, the framework evaluates each potential combination thereof and selects the one that, based on our assumptions, has the greatest capacity to increase funded status for any given level of downside risk to retirement income. This strategy construction method is known as “optimization,” and it results in a substantial improvement in strategy efficiency in the Monte Carlo simulation of potential future capital market outcomes depicted in Exhibit 8. As can be seen there, an optimized strategy that seeks the most favorable combination of investments and annuities has a higher projected income at any given risk of a shortfall in income, denoted as the height of the Annual Income line at a given Probability of Failure versus a 40% stocks and 60% bonds baseline strategy.

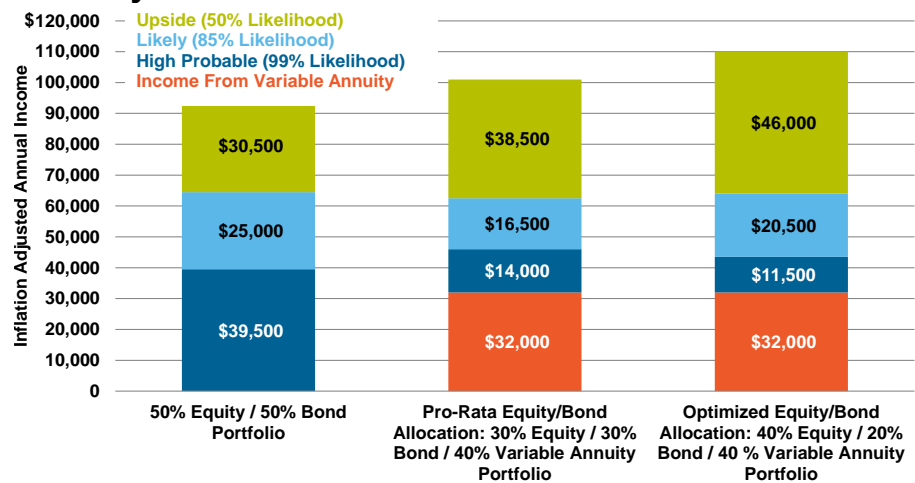
A look under the hood gives a better idea of why that is (see Exhibit 9). Essentially, through their capacity to hedge longevity and market risk, variable annuities<sup>7</sup> with guaranteed income riders can increase the security of projected income (note the increase in the height of the “highly probable” income from the first bar to the second), notwithstanding the additional costs that are associated with that protection. If a high degree of income security is not the focus of the client’s objectives, that reduction of retirement income risk can be traded in for greater potential income, as depicted in the third bar, by pairing the annuity allocation with a more aggressively postured investment portfolio. In other words, income guarantees can, in some cases, be leveraged to help get more of what investors are looking to achieve than would be possible otherwise given available resources. The assumptions

### Exhibit 8: Optimizing Can Increase the Income Available at Any Given Probability of Failure



Source: Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

### Exhibit 9: Annuity Guaranties Can Increase Income Security or Income Potential



Source: Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

behind the analysis depicted in Exhibit 8 and Exhibit 9, including the additional fees assumed for the variable annuity, are outlined in detail in the endnotes of this report.<sup>ii</sup>

The final Morgan Stanley Wealth Management Retirement Model, Target Liquidity, utilizes a strategy that combines

time-varying asset allocation with a structure designed to increase transparency into finances and thereby mitigate behavioral risk.<sup>8</sup> The strategy is known as time-segmented bucketing (TSB). TSB is a method of savings decumulation in which the portfolio is divided into separate pools of assets to be drawn on sequentially to

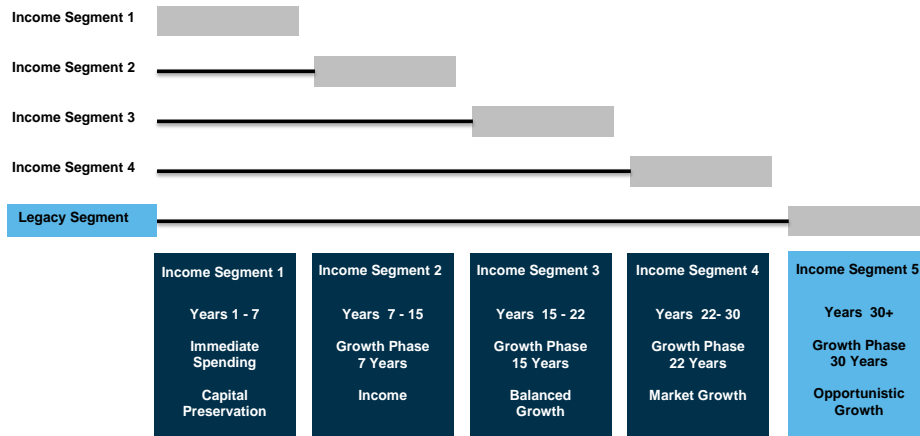
The analyses in Exhibits 8 and 9 are based on a Monte Carlo simulation.<sup>ii</sup>

Monte Carlo simulation involves repeated sampling of asset class returns from a known distribution. It is used here to estimate thousands of different potential future evolutions of different strategies, from which we can infer the likelihood of various outcomes.

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

**For more information about the risks to hypothetical performance, please see the Risk Considerations section beginning on page 17 of this report.**

### Exhibit 10: How Time-Segmented Bucketing Works

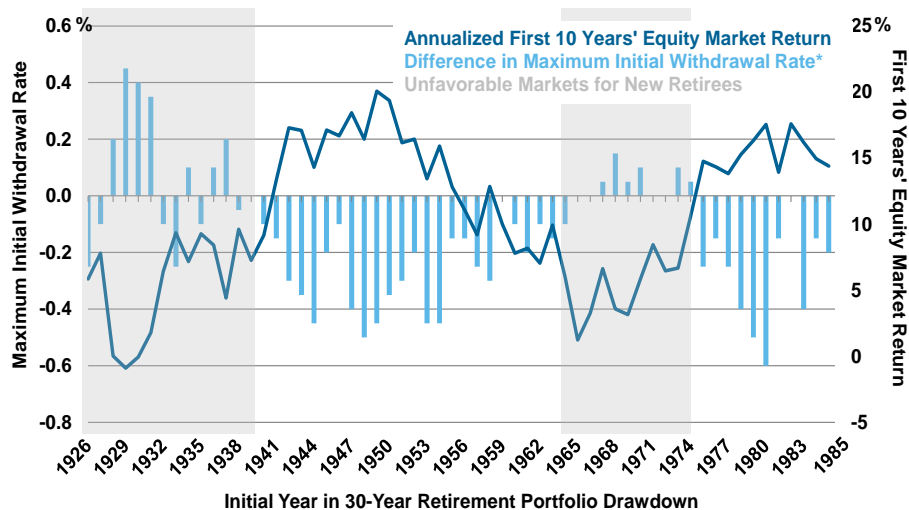


Source: Morgan Stanley Wealth Management GIC as of Oct. 22, 2015

fund retirement expenses (see Exhibit 10). In a TSB strategy, the allocations of the pools of assets used to fund current or imminent expenses is conservative; and the allocations of savings not needed for an extended period of time are invested in growth-oriented asset classes. This component of the strategy is denoted by the GIC Model that is chosen to

implement it, with the initial “bucket” being aligned with the GIC’s most conservative “Capital Preservation” model, and the final legacy “bucket” being aligned with the GIC’s most aggressive “Opportunistic Growth” model. TSB also clarifies legacy planning, as the process of allocating wealth across buckets also helps discern any residual that can be anticipated,

### Exhibit 11: Time-Segmented Bucketing Has Performed Well When Investors Needed it Most



\*Maximum Initial Withdrawal Rate of a Time-Segmented Bucketing Approach minus the Maximum Initial Withdrawal Rate of a Systematic Withdrawal (constant allocation) Approach with the same average risk profile.

Source: Ibbotson Associates, Morgan Stanley Wealth Management GIC as of Dec. 31, 2014

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which will fund the final legacy bucket.

When it comes to retirement income strategy, the amount of withdrawals that can be taken with a reasonable margin of safety is typically considered a good way to measure its efficacy. However, the reality is actually more nuanced. In reality, it's not just whether a strategy generates more withdrawals but the circumstances under which it does that define its value. Fire insurance is a good illustration of this dynamic—people pay more in premiums than they could expect to receive in claims simply because the policies pay during periods of financial vulnerability, which reduces financial risk. Timing also matters when it comes to retirement strategy.

Since a TSB approach results in lower risk allocations earlier in retirement, it tends to work best when market performance is poor during that time, which happens to be when retiree portfolios are at their largest size and when the length of time they are needed to sustain expenses is at its longest. In other words, poor market performance early in retirement is the single most adverse market outcome a retirement plan can be confronted with, and TSB tends to work better than other strategies under such conditions. That tendency is the key to understanding the value of a TSB approach, much more so than any effect on the average sustainable income, which was only nominally higher in our analysis.

This proves out in the historical analysis depicted in Exhibit 11, wherein the bars on the chart represent the change in sustainable withdrawal rates between a traditional systematic withdrawal strategy and a TSB strategy assuming a 30-year retirement period beginning on the date listed on the horizontal axis (the final date in the chart is 1985 given that a 30-year retirement that began at the start of 1985 would have ended at the end of 2014, the final year for which we have complete data). All calculations in Exhibit 11 are based on index return data and assumptions as detailed in the endnotes of this report.<sup>iii</sup> As can be seen there, a TSB strategy outperformed most during periods that featured poor equity markets in the

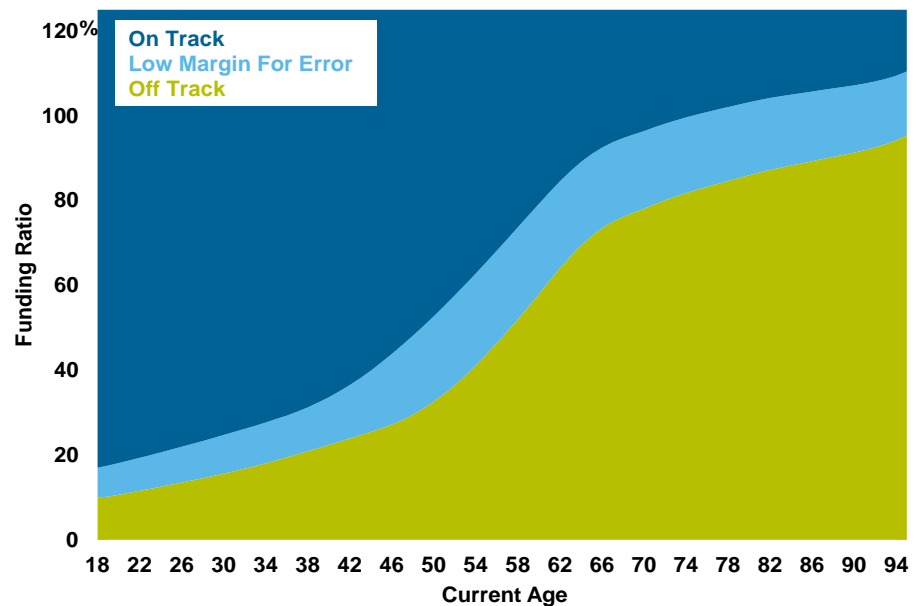
first decade of retirement, as charted by the solid blue line. Given that the pain of a shortfall in nondiscretionary spending is more significant than the pleasure of that extra trip to Europe, outperforming in an adverse environment is more important than doing so when all is good. Combining the risk-mitigating features of TSB with its increased transparency into budgeting makes it a highly effective strategy for investors who choose to go with an investments-only decumulation strategy, in our view.

In practice, a retirement income strategy should be customized to a person's needs. A standard TSB strategy will feature high equity allocations late in a person's retirement, which will not be appropriate for everyone. However, the strategy can be tailored, for example, to include dynamic rebucketing, a dynamic spending strategy<sup>9</sup>, annuities or some combination of these asset allocation dynamics or retirement income products, to alter that picture to make it more appropriate for a given investor.

## Applying the Retirement Framework and Retirement Models in Practice

The Morgan Stanley Wealth Management Retirement Models (Target Date, Target Income and Target Liquidity) are illustrative of our Retirement Framework, but do not circumscribe the multitude of retirement solutions that can be derived from it. Like more general asset allocation models, they are a starting point, not an ending point. In constructing the Retirement Models, we have chosen to illustrate specific approaches to building a strategy at different points in an investor's life, acknowledging that few clients come to the conversation with a completely clean slate, but many can identify with a generalized life-stage archetype. In practice, we know that portfolio construction and asset allocation is customized to existing positions and potential constraints. For example, if client

## Exhibit 12: Funding Ratio Can Be Used to Diagnose an Investor's Retirement Plan\*



\*Depending on an investor's age, funding ratio provides immediate feedback about the health of their retirement plan. When the plan is in the dark blue, the plan is solidly on track. The margin for error for a plan in the light blue is low. A plan in the green is in jeopardy.

Source: Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

preferences and circumstances dictate it, we can apply the framework to construct a strategy for a near-retiree in the Securing Retirement phase that eschews annuities in favor of an investments-only approach, regardless of whether annuities would be effective in the client's strategy. Likewise, we could apply the framework to construct a partial-annuitization strategy for a retiree in the Living Retirement phase who was uncomfortable with the market or longevity risks of an investments-only strategy.

At its core, the framework is a multivariable optimization capability our Financial Advisors can apply to create goals-oriented strategies for clients that are based on the client's prioritization of those variables. While the exact solution implementations may vary, what they share is a unifying philosophical and analytical approach to measuring success through the funding ratio. Point being, our approach to the retirement investment problem is not to look for the magic bullet or a proprietary calculation, but rather to bring a large toolbox to the task of

managing it, out of which the approach we judge as best fitting the investor in question can be used to devise a strategy. In practice, that means strategy is assessed in a deliberative and iterative process with investors, where tradeoffs and any constraints are discussed and progress is monitored, especially as changes take place in both the markets and life circumstances. Exhibit 12 depicts how we propose helping clients track the progress of their strategies through the use of the funding ratio. On an ongoing basis, we will track our three Retirement Models through an illustrative case study, as a basis for demonstrating the sensitivities of these strategies to market developments in real time.

## Notes on the Retirement Models

Starting Oct. 1, 2015, we began tracking the hypothetical progress the three hypothetical investors in the Retirement Models make toward their goals, and we will publish it on a quarterly basis. As the phrasing suggests, the metric

that will comprise this track record will be the hypothetical investor's funding ratio as it changes over time. A funding ratio allows us to, in real time, look past the trees of capital market developments to the forest of what it means in a broader goals-based context. It also allows us to put investment performance in other meaningful contexts, such as the effect of delaying retirement or otherwise altering retirement plans.

Because a goals-based strategy is grounded on real-world outcomes, the performance of a retirement strategy cannot be abstracted from the broader details of an investor's financial life. For example, the justification for reducing risk exposure as an investor ages is the natural buildup of savings during an investor's

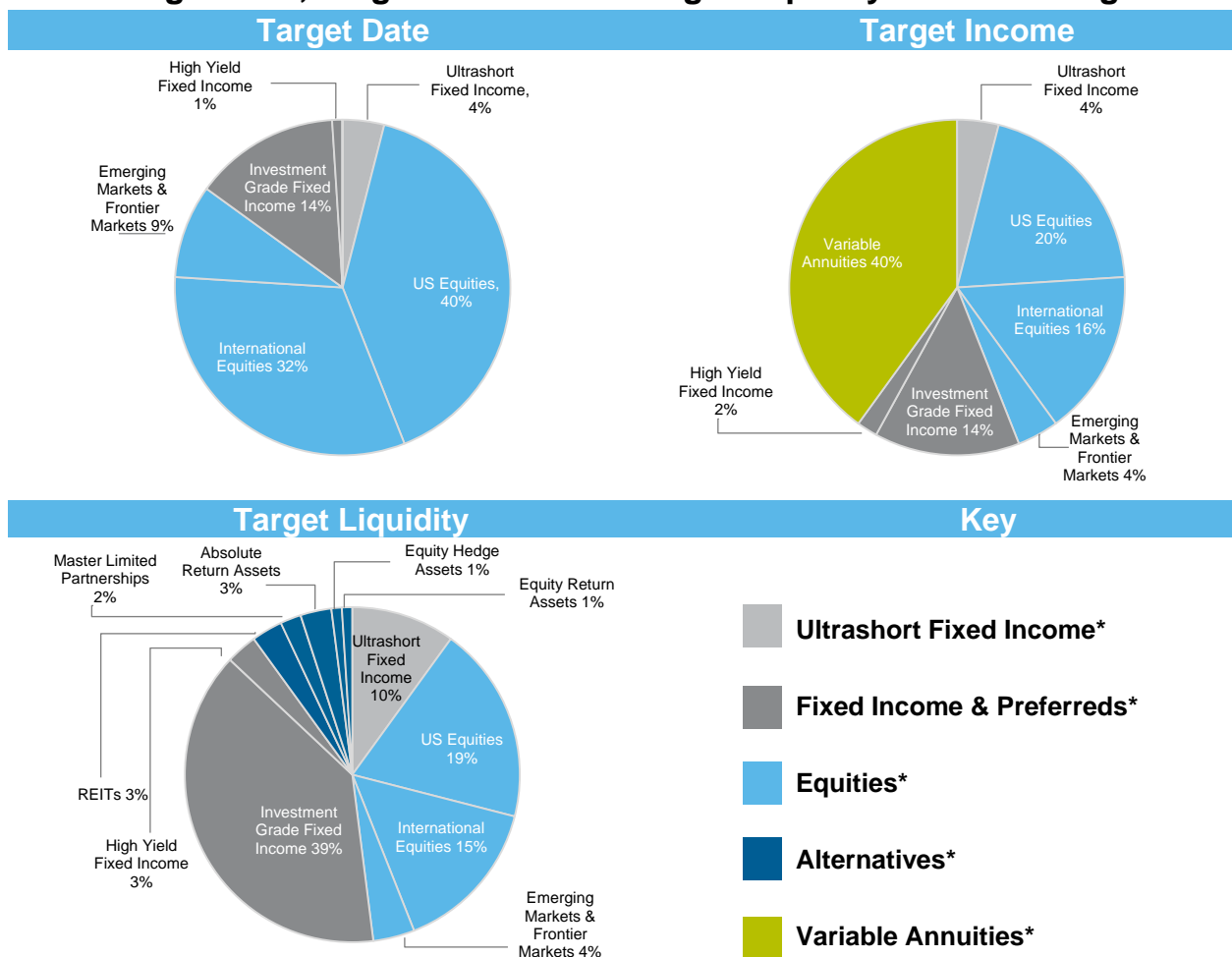
working life and drawdown of those savings in retirement. It follows then that we must assume certain circumstances about the hypothetical investors employing these retirement strategies, if we are to capture whether the strategies are reaching the goals they are designed to achieve.

The assumptions required include the amount of savings the hypothetical investors have accumulated, their retirement spending goals, their age and their future savings and spending patterns. In each case, we have elected for the most simplified assumptions, to clarify the focus on the particulars of the strategies. Each of our investors will have spending needs somewhat in excess of the savings they have accumulated, but will be sufficiently funded for their retirement plan to be on

track, as depicted in the dark blue region of Exhibit 12.

As for age, savings and spending, the individual in early retirement following the Target Liquidity Retirement Model is 65, and will spend regularly, as if taking a paycheck from his portfolio, while adjusting spending for inflation on an annual basis. The mid-career individual pursuing the Target Date Model is 45, while the late-career individual pursuing the Target Income Model is 55. These two individuals save regularly, while increasing their savings at a rate of 1% per year plus adjustments for inflation until retirement. A more complete discussion of the assumptions and calculations that will be applied toward creating a hypothetical track record for the Morgan Stanley

**Exhibit 13: Target Date, Target Income and Target Liquidity Model Strategies**



Source: Morgan Stanley Wealth Management GIC as of Sept. 30, 2015

\* Please see endnote <sup>iv</sup> for the specific market index proxies of each of the sub-asset classes listed above, as well as assumptions regarding the Target Income Model's variable annuity allocation.

Wealth Management Retirement Models can be found in the Endnotes section of this report.<sup>iv</sup>

## The Initial Constituents

As discussed in the Strategies section, the holdings underlying each Morgan Stanley Wealth Management Retirement Model are dynamic, meaning that their exposures will change over time in ways that are both predictable and responsive to market conditions. They will not, however, change more than quarterly, when the hypothetical investor funding ratios will be

updated. Exhibit 13 (see page 12) illustrates the current positions underlying each of the Retirement Models, effective Oct. 1, 2015.

## Conclusion

The Morgan Stanley Wealth Management Retirement Framework is now many years in the making, but remains an organic entity that we continue to hone and shape. The Morgan Stanley Wealth Management Retirement Models are a critical part of our strategy for doing so. The models articulate the framework,

given the strategies they represent are drawn from it, as well as complement it, by providing live measurements by which we can understand how well our advice is working and the experience of our clients more broadly. Aside from yielding insights into avenues for enhancement, our plan to update this hypothetical track record on a quarterly basis will provide us an opportunity to engage with our clients on issues related to retirement and investing on a regular basis. We are excited to continue those conversations. ■

## Footnotes

<sup>1</sup> A present-value calculation computes the value in today's dollars of anticipated future cash flows based on how many dollars would be required to "cover them" if those dollars were set aside immediately and grew at a given interest rate, known as a "discount rate." The cash flows at issue in calculating a funding ratio are an investor's future savings, retirement cash needs and other sources of retirement income, and the discount rate applied is the US 30-Year Treasury bond yield.

<sup>2</sup> A Custom Glidepath approach to creating a retirement strategy derives a series of asset allocations whose risk profile declines as investors age. These can be well suited for solving a goals-based problem with a defined time horizon. We employ a Custom Glidepath Approach to create our Target Date family of models.

<sup>3</sup> A Custom Partial Annuitization approach evaluates the effect on a retirement strategy of carving out a portion of investment assets for investment in an annuity with guaranteed minimum income benefits, as well as attempts to allocate the remaining assets in a maximally complimentary way. We employ a

Custom Partial Annuitization approach to create our Target Income family of models.

<sup>4</sup> A Custom Time-Segmented Bucketing approach to creating a retirement decumulation strategy segregates investor assets into different pools of money matched against a specific time horizon, where each pool is assigned an asset allocation deemed appropriate for its horizon. We employ a Custom Time-Segmented Bucketing approach to create our Target Liquidity family of models.

<sup>5</sup> Not taking risk is very risky when it comes to retirement investing, as it dramatically increases the probability of running out of money in retirement, especially in the age of financial repression and low interest rates.

<sup>6</sup> Of course, asset classes are not investments, so just remaining allocated to a specific class of investments for a long time in and of itself does not guarantee an investor will receive the average return of that asset class over that period.

<sup>7</sup> Note that the terms of the annuity contract used in the strategy are based on those currently prevailing in the marketplace, but do

not reflect a specific product, as is true of the other classes of investments.

<sup>8</sup> Note that while strategies to mitigate behavioral risk such as panic selling are critical to a well-designed investment strategy, there is no objective way to model behavioral risk; thus, behavioral factors will not be illustrated within the hypothetical track record of the retirement models. We fully intend, however, to seize on any teachable moments to discuss it.

<sup>9</sup> Dynamic elements of a strategy are elements that change the strategy as circumstances change in a pre-defined way. Dynamic rebucketing in a Time Segmented Bucketing strategy refers to reallocating funds across the various pools of money that have been created to reflect changing values, for example, to bank a surplus of funds in the legacy bucket or to 'harvest' it into a more conservative bucket. Dynamic spending refers to automatic triggers that ratchet up or down portfolio distributions based on investment performance. These triggers can dramatically increase the viability of a strategy, at the cost of uncertainty around their retirement income.

## End Notes

<sup>i</sup> The analysis in Exhibit 7 depicts the difference in probabilities of a range of income replacement ratios for two asset allocation strategies: the Morgan Stanley Wealth Management Target Date Model and the MarketGlide Index average of target date fund allocations. The income replacement calculation assumes the client begins at age 45 with 3.46 times his annual income in retirement savings, and that his income grows at a 1% real rate per annum until age 65. Each year, the investor saves 9.5% of his income per annum to a retirement account. Contributions are assumed to take place at the beginning of each year. Investments are assumed to be made within qualified tax-deferred retirement accounts. No fees and transactions costs are incorporated in this analysis. Each year, asset-class returns and inflation are simulated based on the capital markets assumptions (*Inputs for GIC Asset Allocation: Annual Update of Capital Market Assumptions*, March 2015). The translation of projected terminal wealth to annual income is based on projected single-premium fixed annuity payout rate at age 65 given a cost of living adjustment and based on an initial payout rate of 4.75%. Annuity prices evolve according to the simulated interest rate environment. At age 65, all simulated final portfolio values are converted to income replacement ratios by multiplying simulated annuity payout rates to lump-sum portfolio

values and divided by final nominal wages. 10,000-iteration Monte Carlo simulation are carried to evaluate each strategy and results are grouped into different income replacement ratio buckets for comparison.

<sup>ii</sup> Exhibits 8 & 9 Assumptions: The analysis in Exhibit 8 depicts the maximum inflation-adjusted annual income attainable at a given probability of failure threshold—defined as the probability of running out of money before end of planning horizon in a 10,000-iteration Monte Carlo simulation—for three different groups of strategies: (1) a 60%/40% bond/equity systematic withdrawal portfolio; (2) the combination of equities, bonds, cash and alternatives that gives the maximum inflation-adjusted income at that level of probability of failure; and 3) any combination of equities, bonds, cash and alternatives and a variable annuity with guaranteed minimum withdrawal benefits which gives the maximum inflation-adjusted income at that level of probability of failure. The analysis in Exhibit 9, based on the same 10,000-iteration Monte Carlo simulation, depicts anticipated sustainable retirement income at different levels of certainty that depend on the performance of the three different asset allocation strategies under the assumed capital market conditions: 50% equity/50% bonds; 30% equity/30% bonds/40% variable annuity; and 40% equity/20% bonds/40%

variable annuity. The probability that the various allocation strategies are capable of supporting the given income level is calculated based on the underlying simulation.

The simulation underlying both analyses assumes a 55-year-old investor who starts with \$1 million in retirement assets and plans to retire at age 65. The individual saves \$9,500 per year, adjusted for inflation. At retirement he will withdraw a fixed amount of inflation-adjusted annual income until age 90. After age 90, the investor is assumed to take mortality-adjusted spending based on IRS actuarial table 2000CM. Portfolios are rebalanced annually to initial allocations aside from the allocation to variable annuities, which is permitted to drift. Investments are assumed to be made within qualified tax-deferred retirement accounts. No fees and transactions costs are incorporated on the equities, bonds, cash and alternatives investments in this analysis. Each year, asset-class returns and inflation are simulated following March 2015 GIC capital markets assumptions. Variable annuity fees are assumed to be 2.5% per annum of the contract value, of which the guaranteed lifetime withdrawal benefits rider accounts for 1.2%. The rider is assumed to provide a minimum roll-up provision of 6% on the benefit base, on an annual, non-compounded basis. The variable annuity is assumed to hold the maximum equity

allocation of 70%, with the remaining 30% invested in bonds. Annuity payments are set at 5% of the higher of benefit base or contract value at age 65.

<sup>iii</sup> The analysis in Exhibit 11 depicts the difference in maximum sustainable withdrawal rates of two strategies, a systematic withdrawal strategy and a time-segmented bucketing (TSB) strategy based on historical return data, in particular total returns for US 30-day Treasury bill, intermediate-term government bonds, large-cap stocks and inflation, all starting in 1926 and sourced from Ibbotson Associates. For each 30-year period in the historical analysis, the maximum sustainable withdrawal rate is calculated as the maximum inflation-adjusted distribution as a fraction of initial assets that can be withdrawn from the portfolio on a regular basis without the portfolio running out of money before the end of the planning window. The chart plots the difference in maximum withdrawal rates assuming the planning window began on the date on the horizontal axis. Also plotted is the equity market return realized in the first 10 years of the historical scenario for reference. For each testing window, the equity allocation target in the systematic withdrawal strategy is calibrated to have same dollar-weighted average equity allocation as in the time-segmented strategy, such that the difference in maximum initial spending rate is not a function of differences in average risk. For the TSB strategy, if a segment depletes before the time horizon it was meant to cover ends, funds are drawn from segment four to cover withdrawals. If segment four is also depleted, the legacy fund is drawn upon. Conversely, if excess funds remain at the end of a segment's time period, those funds are allocated to the legacy fund.

<sup>iv</sup> Model Calculation Assumptions: Starting Oct. 1, 2015, we will begin tracking the hypothetical funding ratio of three hypothetical investors in the three Retirement Models—

Target Date, Target Income and Target Liquidity—and publishing it on a quarterly basis. Each model's funding ratio will be computed as the value of the investment portfolio, assumed to equate to the sum of the value of the positions in the underlying asset classes (whose performance will be measured through representative market indexes), plus the present value of the projected living benefits furnished by an annuity, where applicable, divided by the discounted value of the projected required income. The projected living benefits furnished by an annuity, where applicable, are derived based on a 10,000 Monte Carlo simulations based on the March 2015 GIC capital markets assumptions and discounted to the present on a probability-weighted basis and at the applicable discount rate. The asset classes in the Retirement Model strategies will be represented by the following indexes: for US Equities, Russell 3000 Index; for International Equities, MSCI EAFE Index; for Emerging Markets Equities, MSCI Emerging Markets Index; for Investment Grade Fixed Income, Barclays US Aggregate Bond Index; for High Yield Fixed Income, Barclays US High Yield Index; for Cash, Citigroup 3-Month T-Bill Index; for REITs, FTSE EPRA/NAREIT Global index; for MLPs, Alerian MLP Index; for Absolute Return Assets, Equity Hedge Assets & Equity Return Assets, HFRI Fund Weighted Composite Index. After each quarter's new funding ratio is calculated, model strategies will be rebalanced based on the strategy, and in the case of the variable annuity in the Securing Retirement Model, permitted to drift. New allocations will be disclosed in the quarterly publications that will report the hypothetical investor's updated funding ratio. All investments are assumed to be housed in qualified tax-deferred retirement accounts. Investment returns will not be netted against assumed transactions costs or other fees. The hypothetical investor utilizing the Target Date model is assumed to have \$300,000 in retirement savings, with total annual income

of \$50,000 per year. The hypothetical investor utilizing the Target Income model is assumed to have \$500,000 retirement savings, with total annual income of \$70,000 per year. The individual in early retirement following the Target Liquidity Retirement Model is assumed to have \$1,000,000 retirement savings. The hypothetical investors utilizing the Target Date and Target Income Models is assumed to save 9.5% of pretax income, and to experience real wage growth of 1.0% per annum. The retirement liability for all investors is assumed to be the real value of \$50,000 per annum, adjusted for inflation, starting at age 65 and lasting until age 80. After age 80, the investor is assumed to take mortality probability adjusted spending based IRS actuarial table 2000CM. The present value of income liabilities and living benefits from annuity contracts is calculated based on the 30-year US Treasury discount rate. The initial funding ratios for the hypothetical investors in the Target Date, Target Income and Target Liquidity models are 64%, 76% and 93% respectively.

Variable Annuity Terms: The projected value of income furnished by annuities will be calibrated according to the assumed terms of the contract, (e.g., roll-up rates, withdrawal rate), assuming retirement at age of 65 and the simulated value of the subaccount investments, assuming performance in line with the asset allocation indexes. Variable annuity fees are assumed to be 2.5% per annum of the contract value, of which the guaranteed lifetime withdrawal benefits rider accounts for 1.2%. The rider is assumed to provide a minimum roll-up provision of 6% on the benefit base, on an annual, noncompounded basis. The variable annuity is assumed to hold the maximum equity allocation of 70%, with the remaining 30% invested in bonds. Annuity payments are set at 5% of the higher of benefit base or contract value at age 65.

## Index Definitions

**ALERIAN MLP INDEX** A composite of the 50 most prominent energy Master Limited Partnerships that provides investors with an unbiased, comprehensive benchmark for this emerging asset class. The index, which is calculated using a float-adjusted, capitalization-weighted methodology, is disseminated real-time on a price-return basis and on a total-return basis.

**BARCLAYS US AGGREGATE BOND INDEX** This index tracks US-dollar-denominated investment grade fixed rate bonds. These include US Treasuries, US-government-related, securitized and corporate securities.

**BARCLAYS US CORPORATE HIGH-YIELD INDEX** This index measures the market of US-dollar-denominated, noninvestment grade, fixed-rate, taxable corporate bonds.

**CITIGROUP 3-MONTH T-BILL INDEX** Measures monthly return equivalents of yield averages that are not marked to market. The 3-Month Treasury Bill Indexes consist of the last three 3-Month T-Bill issues.

**FTSE EPRA/NAREIT GLOBAL INDEX** Reflects trends in real estate equities worldwide. Relevant real estate activities are defined as the ownership, disposure, and development of income-producing real estate.

**HFRF FUND WEIGHTED COMPOSITE INDEX\*** Includes over 2200 constituent funds. Includes both domestic and offshore funds; equal-weighted index; all funds report assets in USD; no fund of funds included in index; all funds report net of all fees returns on a monthly basis; constituents must have at least \$50 Million under management or

have been actively trading for at least 12 months.

**MARKETGLIDE INDEX** measures the average asset allocations employed by the target-date-fund industry for those retirement dates.

**MSCI EAFE INDEX** This capitalization-weighted index tracks the total return of stocks in 21 developed-market countries in Europe, Australia and the Far East.

**MSCI EMERGING MARKETS IMI** This index captures large, mid and small cap representation across 21 emerging markets countries.

**S&P 500 INDEX** This capitalization-weighted index includes a representative sample of 500 leading companies in leading industries in the US economy.

## \*HFRI Indices

While the HFRI Indices are frequently used, they have limitations (some of which are typical of other widely used indices). These limitations include survivorship bias (the returns of the indices may not be representative of all the hedge funds in the universe because of the tendency of lower performing funds to leave the index); heterogeneity (not all hedge funds are alike or comparable to one another, and the index may not accurately reflect the performance of a described style); and limited data (many hedge funds do not report to indices, and the index may omit funds, the inclusion of which might significantly affect the performance shown). The HFRI Indices are based on information self-reported by hedge fund managers that decide on their own, at any time, whether or not they want to provide, or continue to provide, information to HFR Asset Management, L.L.C. Results for funds that go out of business are included in the index until the date that they cease operations. Therefore, these indices may not be complete or accurate representations of the hedge fund universe, and may be biased in several ways.

## Hedge Fund Index Performance Biases

It should be noted that the majority of hedge fund indexes are comprised of hedge fund manager returns. This is in contrast to traditional indexes, which are comprised of individual securities in the various market segments they represent and offer complete transparency as to membership and construction methodology. As such, some believe that hedge fund index returns have certain biases that are not present in traditional indexes. Some of these biases inflate index performance, while others may skew performance negatively. However, many studies indicate that overall hedge fund index performance has been biased to the upside. Some studies suggest performance has been inflated by up to 260 basis points or more annually depending on the types of biases included and the time period studied. Although there are numerous potential biases that could affect hedge fund returns, we identify some of the more common ones throughout this paper.

Self-selection bias results when certain manager returns are not included in the index returns and may result in performance being skewed up or down. Because hedge funds are private placements, hedge fund managers are able to decide which fund returns they want to report and are able to opt out of reporting to the various databases. Certain hedge fund managers may choose only to report returns for funds with strong returns and opt out of reporting returns for weak performers. Other hedge funds that close may decide to stop reporting in order to retain secrecy, which may cause a downward bias in returns.

Survivorship bias results when certain constituents are removed from an index. This often results from the closure of funds due to poor performance, "blow ups," or other such events. As such, this bias typically results in performance being skewed higher. As noted, hedge fund index performance biases can result in positive or negative skew. However, it would appear that the skew is more often positive. While it is difficult to quantify the effects precisely, investors should be aware that idiosyncratic factors may be giving hedge fund index returns an artificial "lift" or upwards bias.



## Glossary

**ANNUITY** A contract in which an insurance company agrees to provide a periodic income payable for the lifetime of one or more persons, or for a specified period.

**ANNUITIZATION** The practice of converting an annuity into a fixed series of periodic income payments over the span of one's life or for a specified period.

**DEFINED BENEFIT PENSION PLAN A**

Defined Benefit Pension Plan is an employer-administered pension plan in which the retired employee receives lifetime payments based on salary, years of service and age at retirement. The employer bears the investment and longevity risk.

**DRAWDOWN** This term refers to the largest cumulative percentage decline in net asset value or the percentage decline from the highest value or net asset value (peak) to the lowest value net asset value (trough) after the peak.

**FAILURE RATE** The probability that an investment strategy has failed to provide for the desired level of income throughout the retirement horizon defined in the study.

**RISK TOLERANCE** In this paper, risk tolerance is defined as an investor's ability and willingness to bear risk within a retirement strategy, in particular, the risk of a shortfall in income relative to needs.

**VARIABLE ANNUITY** An annuity contract into which the buyer makes a lump-sum payment or series of payments. In return, the insurer agrees to make periodic payments beginning immediately or at some future date. Purchase payments are directed to a range of investment options, which may be mutual funds or direct investment into the separate account of the insurance company that manages the portfolios. The value of the account during accumulation, and the income payments after annuitization

vary depending on the performance of the chosen investment options.

**VARIABLE ANNUITY INCOME RIDER** The optional feature or benefit that an annuity owner may opt to purchase to supplement annuity income: for example, a guaranteed lifetime withdrawal benefit.

**VOLATILITY** A measure of the magnitude of variability of the returns of an asset class or security. It is generally the case that a larger dispersion of return implies greater risk, as this implies more substantially adverse outcomes for a given level of likelihood of their occurrence. Volatility is measured statistically as the forecasted standard deviation of return. Standard deviation can be thought of as the average difference between an individual data point (in this case an observed investment return) and the average value of all data points under consideration.

## Risk Considerations

### Variable Annuities

Morgan Stanley Smith Barney LLC offers insurance products in conjunction with its licensed insurance agency affiliates.

**Variable annuities are sold by prospectus only. The prospectus contains the investment objectives, risks, fees, charges and expenses, and other information regarding the variable annuity contract and the underlying investments, which should be considered carefully before investing. Prospectuses for both the variable annuity contract and the underlying investments are available from your Financial Advisor. Please read the prospectus carefully before you invest.**

Variable annuities are long-term investments designed for retirement purposes and may be subject to market fluctuations, investment risk, and possible loss of principal. All guarantees, including optional benefits, are based on the financial strength and claims-paying ability of the issuing insurance company and do not apply to the underlying investment options.

Optional riders may not be able to be purchased in combination and are available at an additional cost. Some optional riders must be elected at time of purchase. Optional riders may be subject to specific limitations, restrictions, holding periods, costs, and expenses as specified by the insurance company in the annuity contract.

If you are investing in a variable annuity through a tax-advantaged retirement plan such as an IRA, you will get no additional tax advantage from the variable annuity. Under these circumstances, you should only consider buying a variable annuity because of its other features, such as lifetime income payments and death benefits protection.

Taxable distributions (and certain deemed distributions) are subject to ordinary income tax and, if taken prior to age 59 ½, may be subject to a 10% federal income tax penalty. Early withdrawals will reduce the death benefit and cash surrender value.

### Hypothetical Performance

**General:** Hypothetical performance should not be considered a guarantee of future performance or a guarantee of achieving overall financial objectives. Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets.

Hypothetical performance results have inherent limitations. The performance shown here is simulated performance, not investment results from an actual portfolio or actual trading. There can be large differences between hypothetical and actual performance results achieved by a particular asset allocation.

Despite the limitations of hypothetical performance, these hypothetical performance results may allow clients and Financial Advisors to obtain a sense of the risk / return trade-off of different asset allocation constructs.

Investing in the market entails the risk of market volatility. The value of all types of securities may increase or decrease over varying time periods.

This analysis does not purport to recommend or implement an investment strategy. Financial forecasts, rates of return, risk, inflation, and other assumptions may be used as the basis for illustrations in this analysis. They should not be considered a guarantee of future performance or a guarantee of achieving overall financial objectives. No analysis has the ability to accurately predict the future, eliminate risk or guarantee investment results. As investment returns, inflation, taxes, and other economic conditions vary from the assumptions used in this analysis, your actual results will vary (perhaps significantly) from those presented in this analysis.

The assumed return rates in this analysis are not reflective of any specific investment and do not include any fees or expenses that may be incurred by investing in specific products. The actual returns of a specific investment may be more or less than the returns used in this analysis. The return assumptions are based on hypothetical rates of return of securities indices, which serve as proxies for the asset classes. Moreover, different forecasts may choose different indices as a proxy for the same asset class, thus influencing the return of the asset class.

## MLPs

Master Limited Partnerships (MLPs) are limited partnerships or limited liability companies that are taxed as partnerships and whose interests (limited partnership units or limited liability company units) are traded on securities exchanges like shares of common stock. Currently, most MLPs operate in the energy, natural resources or real estate sectors. Investments in MLP interests are subject to the risks generally applicable to companies in the energy and natural resources sectors, including commodity pricing risk, supply and demand risk, depletion risk and exploration risk.

Individual MLPs are publicly traded partnerships that have unique risks related to their structure. These include, but are not limited to, their reliance on the capital markets to fund growth, adverse ruling on the current tax treatment of distributions (typically mostly tax deferred), and commodity volume risk.

The potential tax benefits from investing in MLPs depend on their being treated as partnerships for federal income tax purposes and, if the MLP is deemed to be a corporation, then its income would be subject to federal taxation at the entity level, reducing the amount of cash available for distribution to the fund which could result in a reduction of the fund's value.

MLPs carry interest rate risk and may underperform in a rising interest rate environment. MLP funds accrue deferred income taxes for future tax liabilities associated with the portion of MLP distributions considered to be a tax-deferred return of capital and for any net operating gains as well as capital appreciation of its investments; this deferred tax liability is reflected in the daily NAV; and, as a result, the MLP fund's after-tax performance could differ significantly from the underlying assets even if the pre-tax performance is closely tracked.

**International investing** entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include political and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may have relatively unstable governments and less established markets and economies.

**Alternative investments** which may be referenced in this report, including private equity funds, real estate funds, hedge funds, managed futures funds, and funds of hedge funds, private equity, and managed futures funds, are speculative and entail significant risks that can include losses due to leveraging or other speculative investment practices, lack of liquidity, volatility of returns, restrictions on transferring interests in a fund, potential lack of diversification, absence and/or delay of information regarding valuations and pricing, complex tax structures and delays in tax reporting, less regulation and higher fees than mutual funds and risks associated with the operations, personnel and processes of the advisor.

**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.

**Bonds rated below investment grade** may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk and price volatility in the secondary market. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance before investing in high-yield bonds. High yield bonds should comprise only a limited portion of a balanced portfolio.

**Ultrashort-term fixed income** asset class is comprised of fixed income securities with high quality, very short maturities. They are therefore subject to the risks associated with debt securities such as credit and interest rate risk.

The majority of \$25 and \$1000 par **preferred securities** are "callable" meaning that the issuer may retire the securities at specific prices and dates prior to maturity. Interest/dividend payments on certain preferred issues may be deferred by the issuer for periods of up to 5 to 10 years, depending on the particular issue. The investor would still have income tax liability even though payments would not have been received. Price quoted is per \$25 or \$1,000 share, unless otherwise specified. Current yield is calculated by multiplying the coupon by par value divided by the market price.

The initial interest rate on a **floating-rate security** may be lower than that of a fixed-rate security of the same maturity because investors expect to receive additional income due to future increases in the floating security's underlying reference rate. The reference rate could be an index or an interest rate. However, there can be no assurance that the reference rate will increase. Some floating-rate securities may be subject to call risk.

The market value of **convertible bonds** and the underlying common stock(s) will fluctuate and after purchase may be worth more or less than original cost. If sold prior to maturity, investors may receive more or less than their original purchase price or maturity value, depending on market conditions. Callable bonds may be redeemed by the issuer prior to maturity. Additional call features may exist that could affect yield.

Some \$25 or \$1000 par **preferred securities** are QDI (Qualified Dividend Income) eligible. Information on QDI eligibility is obtained from third party sources. The dividend income on QDI eligible preferreds qualifies for a reduced tax rate. Many traditional 'dividend paying' perpetual preferred securities (traditional preferreds with no maturity date) are QDI eligible. In order to qualify for the preferential tax treatment all qualifying preferred securities must be held by investors for a minimum period – 91 days during a 180 day window period, beginning 90 days before the ex-dividend date.

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

**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.

**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.

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

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.

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**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.

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