INVESTMENT PROFESSIONAL USE ONLY

THE NEXT FRONTIER OF TARGET DATE INVESTING

Seeking to Provide Lifetime Income in Retirement

STATE STREET GLOBAL ADVISORS

Defined Contribution (DC) plans have now become the predominant retirement savings vehicle in the United States, and the share of retirees that rely primarily on defined contribution savings has increased sharply. However, DC plans are still mainly designed for the accumulation phase and they lack the lifetime income provided by Defined Benefit (DB) plans. Through our integrated solution we seek to take DC plans to the next level, providing lifetime income in retirement while still preserving the flexibility of traditional DC plans.

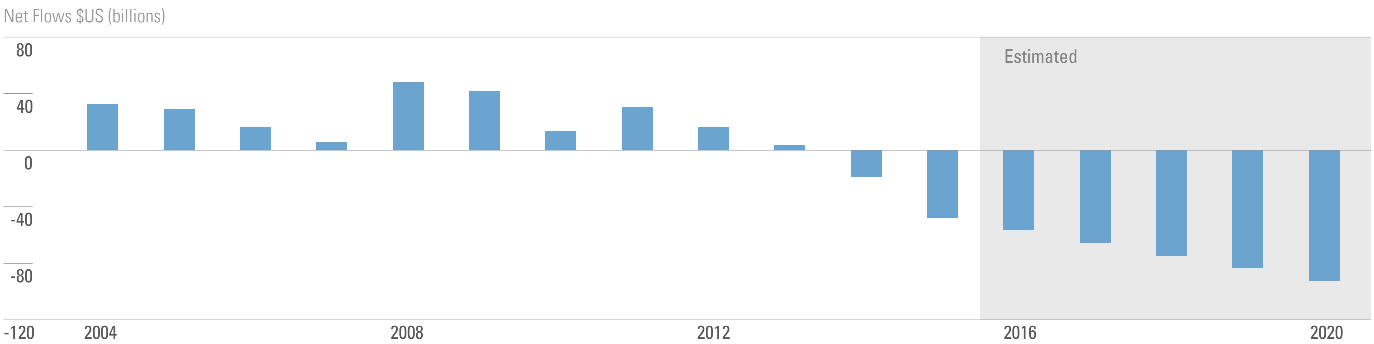
From the participant's point of view, current DC plans have two main disadvantages compared to Defined Benefit (DB) plans.

First, participants in DC plans have to bear all the responsibility and uncertainty for investing and drawing down their savings by themselves, whereas in DB plans investment professionals make the decisions. Second, unless they purchase an annuity and very few do, participants in DC plans are fully exposed to the risk of outliving their savings. With steadily increasing life expectancy and median defined contribution savings balances of only $76,000, it is no wonder that concerns regarding retirement consistently top the list of Americans' financial concerns.[1,2]

The landscape for plan sponsors is also changing. Until recently, most sponsors viewed defined contribution plans primarily as a savings vehicle, and many participants rolled their assets out of the plans at retirement. Many plans have started to see flows turn negative in recent years, and this trend is expected to strengthen over the next decade as more participants begin to retire (Figure 1). Not surprisingly, we have seen increased interest among plan sponsors in developing solutions for retaining participant assets in plans post-retirement. Policymakers are also taking steps to make it easier for employers to include income solutions in their plans. Most notably, the Department of Labor provided guidance facilitating the incorporation of deferred income annuities into a plan's default target date fund.

The retirement income approach that we have developed provides an integrated solution for both the accumulation and decumulation phases of retirement saving. First, we describe the basic philosophy underpinning our retirement income approach. Next, we describe how our product works in the different phases of the retirement saving process and how it mitigates the main risks participants face in each phase. Third, we discuss the benefits of an in-plan solution to both plan sponsors and participants; and finally, we compare our approach to other products available in the marketplace and show how our approach is unique.

Figure 1: 401k Distributions Started to Outpace Contributions in 2014



Source: Cerulli 2015, US Retirement Market.

[1] Gallup Economy and Personal Finance Survey, April 6–10, 2016.

[2] Vanguard "How America Saves 2015" Median account balance for 55–64 year old participants in defined contribution plans.

OUR PRINCIPLES

A Simple, Seamless Approach that Offers Advantages for Sponsors and Participants

In creating our retirement income solution, we have adhered to three key principles. We believe that the product should be simple for participants to use correctly and for plan sponsors to offer; should enable a seamless transition from the accumulation to the decumulation phase; and should provide good value for both participants and plan sponsors.

1 Simple for Participants to Use and Sponsors to Provide

Although most participants consider stable lifelong income in retirement a top priority, very few purchase annuities (a type of product that can guarantee it*) because of the complexity of the process for purchasing an annuity. Our integrated retirement income solution is designed to be offered within a qualified default investment alternative (QDIA). This structure makes the solution very simple for participants to use, while leaving them the freedom to opt out of the income purchase if they wish. Likewise, by designing an integrated solution that is offered as part of a QDIA, and acting as a 3(38) fiduciary for insurer selection, we make it easy for plan sponsors to offer an income solution within their plan.

2 Integrated Solution To Provide Seamless Transitions

Most currently available products are designed primarily for either the accumulation phase (for example, target date funds) or the decumulation phase (payout funds). If a target date fund participant wants to receive lifelong income in retirement, he or she currently has to make an active decision to purchase it separately. Our integrated solution spans the different phases of the retirement saving process, allowing it to provide a seamless transition from accumulation to decumulation.

We know that communicating the integrated solution throughout the saving and spending phases will be critical if participants are to understand the full benefit of having an annuity as part of the default. SSGA will build an effective communications strategy for the integrated retirement income solution. The strategy will leverage insights from research on behavior and psychology, and from the science of intuitive design and behavioral nudging.

3 Leverage the Institutional Advantage to Maximize Value for Sponsor and Participants

Plan sponsors are uniquely positioned to help maximize value for participants. As sophisticated investment organizations, plan sponsors are in a powerful position to negotiate the pricing and implementation of an integrated retirement income solution on behalf of participants, with the aim of achieving an outcome that is better than participants could obtain by themselves in the retail market. For plan sponsors, providing a competitive retirement package may improve the ability to attract key employees and enhance workplace productivity.

* Subject to the claims-paying ability of the issuing insurance company.

AN EVOLVING SOLUTION To Mitigate Key Risks in Different Stages

Unlike a DB participant, participants in a DC plan bear all of the risks associated with funding retirement. Specific risks include:

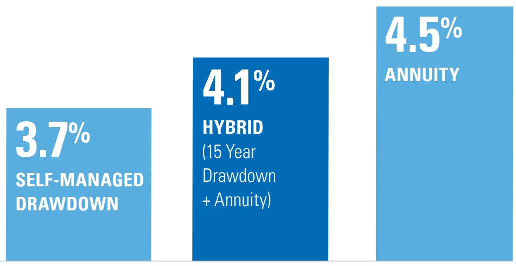
- **Accumulation risk** The risk of not accumulating enough assets to fund retirement, which may result from insufficient savings rate and/or low investment returns
- **Longevity risk** The risk of outliving one's assets and sources of income
- **Inflation risk** The risk that the purchasing power of income will decline over time
- **Sequencing risk** The point-in-time risk related to asset price fluctuations; in this solution, sequencing risk is particularly relevant to the annuity purchase
- **Decision risk** The risk of not making the right decisions at the right times

Our research shows that most participants would benefit from using part of their balance to purchase an annuity. Not having to protect against the risk of outliving their assets (longevity risk) would allow participants to make higher annual withdrawals from the rest of their balance (Figure 2). Despite these benefits and a widely expressed preference for stable income in retirement, very few participants purchase an annuity, partly because it requires considerable active effort (decision risk) to choose between providers and annuity features. Participants are also exposed to sequencing risk in making a one-off purchase of an annuity for retirement.

In developing our retirement income solution, we have created an integrated approach that mitigates the various risks that participants face in the different stages of the retirement saving process. Rather than forcing participants to choose a new investment option for each stage, the investment solution itself evolves so that participants can stay with the same product throughout their retirement journey. Incorporating a deferred annuity into the retirement solution as a default mitigates both the sequencing and decision risk of an annuity purchase, providing participants with a solution that they may not have been able to create by themselves. SSGA also performs a review of the annuity to make sure that the product is prudently selected. SSGA is able to offer this level of integration by partnering with a major insurance company and by facilitating the conversation between the plan sponsor and the recordkeeper.

Figure 2: Incorporating a Deferred Annuity and a Drawdown Strategy Retains Benefits of Both Liquidity and Income Security

Annual rate at which participants can draw down assets with a 95% probability of not exhausting their assets during their lifetime



	Self-Managed Drawdown	Hybrid	Annuity
LIQUIDITY	✓	Partial	X
INCOME SECURITY	X	Income Security past 80 with deferred annuity[3]	✓

Source: SSGA Defined Contribution team, December 2015. For illustrative purposes only. Annuity prices are as of December 2015 and may have changed.

All calculations made using mortality rates from the Society of Actuaries RP-2014 mortality tables for healthy annuitants using a 50/50 blend of male and female mortality and ISG capital market forecasts for Q4/2015. The median life-expectancy at age 65 in these tables is 85. Drawdown assumptions include a 2% cost of living adjustment and a retirement age of 65. **Self-managed drawdown:** we assume the participant has all their retirement assets in a 35/65 portfolio with an expected return of 4.5% and a risk level of 7.3%. The drawdown rate is the annual rate at which a participant could draw down their assets with a 95% probability of not exhausting their assets during their lifetime. **Hybrid:** we assume the participant uses 25% of their retirement assets to purchase a 50% joint and survivor annuity with a return of premium benefit and a 2% COLA which starts payments at age 80 and invests the remainder of the assets in a 35/65 portfolio with an expected return of 4.5% and a risk level of 7.3%. The hybrid drawdown rate is the continuous annual rate at which the participant could draw down their assets between the ages 65 and 80 and use the remainder of their assets to supplement their annuity income after the age of 80. **Annuity:** the annual payment that the participant would receive if they used all their retirement assets to purchase an immediate 50% joint and survivor annuity with a 2% COLA starting payments at age 65. Calculations for the self-managed drawdown and the drawdown portion of the hybrid solution are based on simulations (simulation count = 100,000) and do not reflect the effects of unforeseen economic and market factors on decision-making. Annuity prices are based on MetLife quotes for December 2015. Expected returns are based upon estimates and reflect subjective judgments and assumptions.

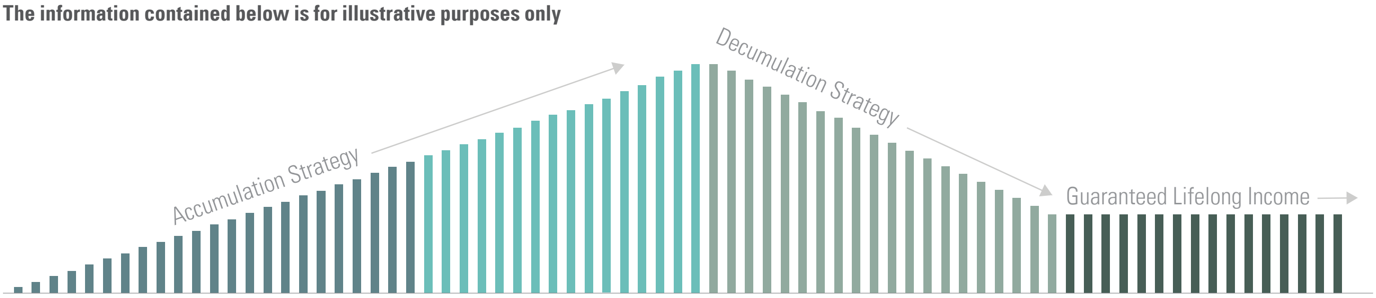
[3] Income security past 80 is subject to the claims-paying ability of the issuing insurance company.

RETIREMENT SAVING PROCESS

In order to better understand how the solution addresses different risks over time, we have divided the retirement saving process into three main phases: (1) the saving or accumulation phase until age 65, (2) the drawdown phase age 65–80 and (3) elderhood after 80. We further subdivide the accumulation phase into (1a) the core accumulation phase before 55 and (1b) the pre-retirement phase 55–65. The importance of each risk at a given time depends on the life stage of the participant.

Our Solution Evolves to Address Participant Risks at Different Stages

The information contained below is for illustrative purposes only



	CORE ACCUMULATION (<55) PHASE 1A	PRE-RETIREMENT (55–65*) PHASE 1B	DRAWDOWN (65*-80) PHASE 2	ELDERHOOD (>80) PHASE 3
Portfolio Characteristics	Accumulates assets and operates like a normal target date strategy	Allocates a portion of the fund to an annuity pre-funding strategy	Income distributed through the sale of investment assets via a drawdown, while assets in the pre-funding strategy are used to buy deferred income annuities	Income distributed in the form of guaranteed[4] lifelong[5] annuity[6] payments
Key Risks	1. Accumulation risk 2. Decision risk 3. Sequencing risk	1. Sequencing risk 2. Decision risk 3. Accumulation risk	1. Decision risk 2. Sequencing risk 3. Inflation risk	1. Longevity risk 2. Decision risk 3. Inflation risk
Current Gaps	Only half of employers auto-enroll employees into retirement savings plans	Limited guidance for decisions related to post-retirement phase Current TDFs do not protect against decision risks related to annuity purchase	Very few participants annuitize to protect against longevity risk Current TDFs do not protect against market and decision risks related to annuity purchase	Significant exposure to longevity risk: only a small fraction of people have purchased annuities More than half of people in advanced life stage suffer from significant cognitive impairment, limiting their ability to make effective decisions
Integrated Retirement Income Solution	Auto-enroll employees into age-appropriate target date funds at a sufficiently high contribution rate	The target date fund automatically starts to allocate to an annuity prefunding portfolio to prepare for annuity purchase at 65	The participant is defaulted into an annuity purchase at 65 (with the ability to opt out), using the assets they have built up in the prefunding portfolio Participants make withdrawals from the drawdown fund to provide income until annuity payments start. The drawdown fund will include inflation-protected assets	At 80, the participant starts to receive automatic payments from the deferred annuity they purchased at 65 The annuity incorporates a COLA to protect against inflation

Source: State Street Global Advisors Defined Contribution; * Assumed age at retirement; The information contained above is for illustrative purposes only.

[4] An annuity contract's financial guarantees are solely the responsibility of and are subject to the claims-paying ability of the issuing insurance company.

[5] Average US life expectancy at age 80 is 9.48 years (UN population projections). The annuity described in this paper incorporates a return of premium benefit. This means that if the participant (and spouse in the case of a J&S annuitant) dies before they have recouped their initial premium, the difference between the initial premium and the payments received will be returned to the estate.

[6] Annuities available via SSGA are issued by third-party insurance companies, which are not affiliated with any State Street Bank and Trust Company entity, including SSGA.

PHASE 1A & 1B ACCUMULATION

Building Assets and Exposure to an Annuity Prefunding Strategy

In the core accumulation phase (1a), until the participant reaches 55, the product operates like a traditional target date fund. The plan sponsor can help participants by automatically enrolling them into the fund at a sufficiently high contribution rate and possibly by providing a matching contribution.

The pre-retirement phase (1b), after the participant turns 55, is where the integrated solution starts to diverge from a standard target date fund. At this point the solution starts to build an allocation to an annuity prefunding strategy. One of the key risks participants face when seeking to purchase an annuity is sequencing risk, also known as point-in-time risk. In the context of an annuity purchase, this is the risk that either the price of annuity income is exceptionally high or the value of the assets used to purchase the annuity is exceptionally low at the time of purchase (or both). Due to the long-dated nature of a deferred annuity intended to protect against longevity, even small changes in interest rates can lead to significant differences in the amount of income that the participant is able to purchase.

In order to prepare participants for the annuity purchase, the target date fund starts to build an allocation to an annuity prefunding strategy 10 years prior to the expected date of retirement. This strategy consists of a pool of assets with a risk profile that is broadly consistent with the expected cash flows and price of the annuity. The fund will systematically increase the allocation to the prefunding strategy on a quarterly basis, reaching the target allocation when the fund reaches maturity (for example, the 2020 fund will reach maturity in 2020). The target allocation for the prefunding strategy will vary depending on interest rates and expected returns on asset classes, but under current rules it will be capped at a maximum of 25% of total assets. After participants reach 65, they will use up to 25% of their assets or $125,000 to purchase the deferred group annuity (unless they have opted out).

Building the exposure up gradually can protect participants against changes in the cost of annuity income at a given point in time. A participant with an allocation to an annuity prefunding portfolio is less exposed to fluctuations in interest rates than one making a cash purchase of an annuity. *See "Annuity Prefunding in Practice" on the next page.*

Annuity Prefunding Strategy in Practice

The pre-funding strategy helps to mitigate the sequencing risk associated with an annuity purchase by building up exposure to annuity prices over 10 years. The objective of the prefunding strategy is to invest in a pool of assets that have a risk profile broadly consistent with the expected cash flows and pricing of the annuity. These assets include fixed income securities such as long-maturity investment grade corporate bonds, Treasury securities and high yield corporate bonds. The fund steadily increases its allocation to the prefunding strategy to reach the target level when the fund reaches its target year. The target level for the prefunding strategy may change over time, depending on asset class forecasts and the expected level of income from the annuity. The amount of assets the participant may ultimately use to pay the premium for the Qualified Longevity Annuity Contract currently is capped at the greater of $125,000 or 25% by regulations.

In a rising interest rate environment, the market value of the assets within the pre-funding strategy would be expected to decline. At the same time, due to the inverse relationship between interest rates and annuity prices, the annuity would be able to provide more expected income for a given premium value. Thus, fewer assets are required to achieve a similar income level from the annuity purchase than would have been available prior to the interest rate increase. The following chart illustrates the impact of a rise or fall in interest rates on the value of the prefunding portfolio, and the annuity income that could be purchased with that portfolio.

The annuity prefunding strategy is liquid, so it allows complete flexibility for the participants to change their investment option between ages 55 and 65 according to their needs and preferences. As such, they do not have to commit to any annuity purchases prior to 65. Second, the liquidity of the annuity prefunding strategy makes it easy to withdraw the assets in the event that the participant decides to change employers and roll their savings over to the new employer's plan.[7] Last, the annuity prefunding strategy is relatively simple to administer and record keep, and is cost-effective at relatively low scale.

As **Interest Rates** go up, cost of the **Annuity** goes down.

Estimated Impact of Changes in Interest Rates

On Value of Prefunding Portfolio and Annuity Income

Interest Rate Level	Prefunding Strategy Estimated Value	Estimated Monthly Benefit
December 2015 Rates	100,000	1,260
+ 100 bps	79,910	1,090
- 100 bps	125,670	1,277

These payout rates are estimates for a joint annuity purchased at age 65 with payout beginning at age 80, a 2% COLA, death benefit and cash refund, assuming a 50% male and 50% female population. The estimated prefunding strategy value is based upon an instantaneous parallel shift in rates with no change in credit spreads based on interest rates as of December 31st 2015. The impact of duration and convexity are included. The portfolio duration of the prefunding strategy portfolio is assumed to match the duration of the estimated annuity cash flows. The estimated monthly benefits are based upon MetLife quotes as of December 2015. These calculations assume that the value of the prefunding portfolio does not exceed 25% of the participants' total assets; the actual amount used to purchase the annuity will depend on the total ending portfolio value.

The above estimates based on certain assumptions and analysis made by SSGA. There is no guarantee that the estimates will be achieved.

[7] Participants who leave the fund prior to receiving their annuity will not be eligible for the income benefits described in this document. Participants who are not in the correct fund for their age may not obtain the income benefits.

PHASE 2 DRAWDOWN Deferred Annuity Purchase and Drawdown

Many target date funds continue to evolve their asset allocation for some years after the landing date. However, the decision for how to draw down their assets in retirement typically is left to the participants. One of the most challenging parts of that decision is how long they will need to make their money last.

The integrated retirement income solution balances the various trade-offs by using as much as 25% of the target date fund's balance at age 65 to purchase a deferred annuity. The deferred annuity will start to pay income when the participant reaches the age of 80. We use a deferred annuity for two main reasons:

1. Using a deferred annuity enables us to use only a portion of the participant's assets to provide insurance against longevity risk, while maintaining the flexibility to draw down the remaining 75% of assets at their own pace. Research and practical experience has shown that people are far more willing to annuitize part rather than all of their savings and that early in retirement participants may need considerable flexibility.[8] For participants, knowing that they will receive a guaranteed income from 80 will reduce the complexity of the spending decision, as they will know how long they need to make their money last. This should allow them to draw down their savings faster than if they had to allow for an uncertain time horizon. We will provide participants with some guidelines for prudent withdrawal rates at different ages, but participants will have full flexibility to determine their own spending, subject to minimum distribution requirements.
2. For most people, financial decision-making capacity peaks in the mid-50s and remains strong through the 60s. The rate of cognitive decline increases rapidly after the age of 70, to the point that about half of the population between ages 80 and 89 has significant cognitive impairment.[9] The integrated retirement income solution is designed so that participants make the decision to invest in the annuity prefunding strategy at age 65, when they are close to the peak of their decision-making abilities. From the age of 80 on, participants will receive steady income from the deferred income annuity, providing security that they will not outlive their savings and relieving them of the need to make significant financial decisions at a time when they are likely to have diminished capacity to do so.

Once participants reach 65, provided they are in the right fund for their age, a portion of their accumulated balance, up to the lesser of 25% or $125,000, will be used to purchase a deferred annuity.[10] The upper limit is set by the Treasury guidance regarding the maximum size of a QLAC purchase. *See "What is a Qualifying Longevity Annuity Contract?" on page 10.* The annuity will start to pay income when participants reach age 80.

Participants who do not wish to purchase the annuity will have to affirm that they wish to opt out. These participants will always have the option of choosing from other funds on the plan menu or rolling their assets out of the plan.

[8] Beshears, John, James J. Choi, David Laibson, Brigitte C. Madrian, Stephen P. Zeldes, 2013 "What Makes Annuitization More Appealing".

[9] Agarwal, Sumit, John C. Driscoll, Xavier Gabaix, David Laibson, 2009 "The Age of Reason: Financial Decisions over the Life-Cycle with Implications for Regulation"

[10] Participants have the ability to opt out prior to the annuity purchase. Participants who are not invested in the correct fund for their age may not receive the income product.

What is a Qualifying Longevity Annuity Contract (QLAC)?

In July 2014, the US Treasury issued final regulations on the QLAC. This form of deferred income annuity allows participants to:

- Defer a portion of their guaranteed income payments to a later age
- Reduce their Defined Contribution plan balance subject to required minimum distribution (RMD) rules

For a deferred income annuity (DIA) to satisfy QLAC regulations, it must:

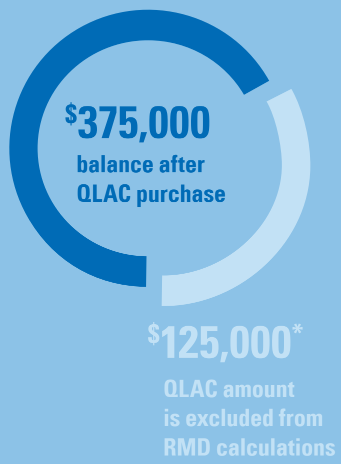
- Limit premiums to the lesser of 25% of the participant's balance or $125,000*
- Specify an income payment start date that begins before age 85
- Provide no cash value, commutation benefit or other similar features
- Provide annuity income payments that meet the applicable RMD rules

PRIOR REGULATIONS

RMD calculations based on full $500,000 balance regardless of QLAC purchase

NEW REGULATIONS

RMD calculations based on balance after QLAC purchase



Participants will retain full access to the part of their assets that has not been annuitized. The remainder of the accumulated balance will go into the Drawdown Fund. This is a relatively conservative, multi-asset class fund that is designed specifically for participants who have purchased the QLAC annuity. The fund will provide a source of income until annuity payments start at age 80. If they wish, participants can also leave money in the Drawdown fund after age 80 to supplement the income from the annuity after payments have started.

PHASE 3 ELDERHOOD Annuity Payments Start

Once participants reach age 80, they will start to receive payments from the deferred income annuity they purchased at 65. These payments will provide the participant with protection against the risk of outliving their assets and will relieve them of the burden of making financial decisions at a time when they may be suffering from cognitive impairment or other health problems. All participants will receive a return of premium guarantee, meaning that if they die before they have recouped their initial premium, the remainder of the premium payments will be returned to their designated beneficiaries. The annuity also will have a Cost of Living Adjustment (COLA) to help protect against inflation.[11]

In-Plan Annuities Offer Advantages for Plan Sponsors and Participants

Plan Sponsors Can Leverage Their Institutional Advantage to Improve Participant Outcomes

For plan sponsors, providing a retirement income solution as an in-plan solution offers a number of benefits. First, plan sponsors can leverage their scale and institutional investment knowledge to offer participants an integrated solution to which they would not have access otherwise. This institutional advantage can improve participant results both before and during retirement. Providing an attractive retirement package may help plan sponsors to position themselves as an employer of choice in attracting and retaining talent.

Second, keeping assets in the plan after retirement is likely to be beneficial for both employers and employees. The retirement of the baby boomers will lead to asset outflows from DC plans. Plan sponsors seeking to retain scale may want to provide participants with an investment solution that allows them to keep their assets within the sponsor's plan during their retirement. When asked, most participants say they consider stable income in retirement to be "a must." Most trust their employer and would welcome assistance from their employers in how to save for retirement.[12]

Features of the QLAC in the Integrated Retirement Income Solution

The QLAC that we will use in our retirement income product includes the following features:

Cost of Living Adjustment (COLA)

The annuity payments will rise by a fixed percentage each year to protect against increases in the cost of living.[11]

Death Benefits and Return of Premium

Annuity Type	Single Life	Joint & Survivor
Participant dies before 80	Return of premium to estate	**Surviving Spouse** assumes ownership of QLAC (at 50% or 75%) **If both spouses die** there is a return of premium to the estate
Participant (and/or surviving spouse) dies after age 80	Cash refund of un-recouped premium to estate	**Surviving Spouse** will receive 50% (or 75% annuity) **If Surviving Spouse dies** there will be a cash refund of un-recouped premium to estate

[11] There is no guarantee that the income from the annuity will keep pace with the rate of inflation generally, or for certain types of services including healthcare costs.

[12] SSGA Biannual DC Investor Survey July 2013. Partnered with TRC Market Research, an independent marketing research firm located in suburban Philadelphia 20-minute online survey Panel of 1,498 verified 401(k), 403(b), 457 and profit-sharing plan participants and retirees, age 40 to 70, who were actively engaged with their plans.

Third, recent guidance from the Department of Labor and Treasury clarifies the fiduciary implications to plan sponsors of offering in-plan annuities.[13] According to this guidance, the plan sponsor can outsource the selection of the annuity provider to a third-party investment manager. Insurance companies are regulated at the state and federal level, and most states guarantee annuity products up to the value of at least $100,000 (many offer higher guarantees). As the investment manager, State Street Global Advisors would assume the fiduciary liability of choosing and monitoring the annuity provider, to ensure both that the annuity is a prudent choice and that the annuity provider is credit worthy. This structure provides an additional level of fiduciary relief above state guarantees. SSGA's Independent Fiduciary Team has more than 25 years of institutional experience providing independent fiduciary oversight so that plan sponsors are able to focus on their corporate goals and the continued growth of their business.

Participants Gain Access to a Unique, Integrated Product at an Institutional Price

For most participants, the process of researching insurance providers and selecting the appropriate annuity is too complicated and time consuming. As a result, very few participants make the active choice to convert part of their savings into an annuity, despite the clear benefits of doing so for many investors. By providing the annuity as a default option in the DC plan, we make it simple for these participants to enjoy the benefits of an annuity without the hassle.

An in-plan contract makes it possible for all participants to purchase a professionally designed, integrated product that has no direct equivalent in the retail marketplace. In addition to the actual annuity purchase, this solution incorporates:

- **Annuity purchase as a default solution:** the plan sponsor and investment manager use their institutional expertise to select and purchase an annuity with no active effort from the participant (who may opt out if they wish)
- A **pricing review** to ensure that the annuity product is reasonably priced
- An **annual fiduciary review** to assess the solvency of the insurance provider
- A **professionally managed annuity prefunding portfolio** that reduces the sequencing risk of the annuity purchase yet provides the participant with full liquidity
- A **customized annuity design** that incorporates the features that are most valuable to participants (inflation protection, death benefit) while eliminating unnecessary, expensive features (market risk protection)
- An **integrated drawdown** fund from which to draw down income during the period before the annuity payments begin

In this solution, all participants gain access to institutional pricing for the actual annuity purchase. They do not have to pay the distribution fees associated with retail annuities, which can be as high as 4%. Additionally, by defaulting participants into the solution, we may be able to mitigate some of the costs associated with adverse selection. Adverse selection means that the people who choose to purchase annuities tend to be those with higher-than-normal life expectancies; this dynamic increases the price of annuities. According to academic research, adverse selection may add between 2% and 5% to the price of immediate annuities.[14]

An Integrated Solution

The solution that we are proposing in this paper offers an approach that evolves to mitigate the specific risks that participants face at the different stages of the retirement saving process. Various competing products are available to solve for some of the risks that participants face during their retirement journey, but none offer the integrated, holistic solution that we propose here.

[13] Department of Labor, Field Assistance Bulletin No. 2015–02, July 13, 2015.

[14] Webb, Anthony "Is Adverse Selection in the Annuity Market a Big Problem?" An Issue in Brief January 2006, Number 40, Center for Retirement Research at Boston College.

How the Integrated Retirement Income Solution Compares to Other Products

Retirement income products have failed to achieve widespread adoption due to a number of challenges:

CHALLENGES		SSGA'S SOLUTION
Decision Risk	While participants value guaranteed income, they struggle with the complexity of most annuity products and do not actively opt into annuity purchases	**Annuity purchase is part of the default**
Liquidity	Many income products are not liquid and participants have expressed a preference for at least partial liquidity in retirement	**Drawdown strategy provides partial liquidity in retirement**
Cost	Most income products have complicated features and are expensive	**Costs controlled through passive management and longevity targeted insurance**
Fiduciary Risk	Many plan sponsors are uncomfortable with taking on the fiduciary risks associated with insurer selection	**SSGA takes on fiduciary role of insurer selection**

Where other solutions fall short:

Out-of-Plan Annuity Purchase Platform	In-plan Deferred Annuity Purchase	Immediate Annuity Tracking Indices	LDI-based Target Date Funds	Income Option in Managed Accounts	TDF w/ Variable Annuity (e.g. GMWB)	Payout Funds
• Participants first need to roll assets out of plan and make an active decision to purchase annuity • Retail as opposed to institutional pricing • Low utilization when offered	• Participants need to make an active decision to select the annuity from plan investment menu • Annuity certificates are illiquid and subject to surrender fees • Plan sponsor would have to take on fiduciary risk of insurer selection	• Indices that aim to track the cost of purchasing an immediate annuity • Participants need to make an active decision to select the annuity and the insurance provider outside the plan	• The strategy targets a level of income in retirement and may offer a suggested drawdown schedule, but does not purchase an annuity or offer insurance against the longevity risk	• Requires active engagement from the participant to receive full benefit from customization • Participants need to make an active decision to purchase an optional annuity outside the plan	• High fees (IM + guaranty fees) • Excess withdrawals can trigger penalties or reduce the guaranteed withdrawal amounts • Participants pay guaranty fees during accumulation and through retirement for a benefit they may never use	• Balanced fund that provides suggested withdrawal rates • Does not include an annuity component so no mitigation of longevity risk

SUMMARY

The Plan Sponsor is Uniquely Placed to Help Participants Achieve Retirement Success

This solution can help the plan sponsor make meaningful improvements to participants' lives by reducing their financial worries before and in retirement. Incorporating a deferred life annuity into the target date funds enables the plan sponsor to mitigate the longevity, sequencing, decision and inflation risk that participants face. The plan sponsor is uniquely positioned to provide this advantage; not only can it use its institutional advantage to provide participants with an outcome superior to what they might be able to achieve individually, but by including the annuity purchase as a default in the integrated retirement income solution, the plan sponsor can also significantly increase the probability that participants will obtain this essential insurance.

The integrated retirement income solution is a comprehensive plan to help make retirement work. The key aspects of this solution are:

Deferred Annuity Purchase Incorporated as a default Option Within the Target Date Fund

- Deferred annuity seeks to provide protection against longevity risk and meaningful income
- Target date funds gradually allocate assets to an annuity prefunding strategy, mitigating sequencing risk
- The participant obtains the annuity as a default, without the need for action unless they decide to opt out
- Participants can draw down assets at their own pace in the early years of retirement, without the risk of outliving their savings
- Holistic, integrated product design

The Plan Sponsor Can Use Its Institutional Advantages to Provide Better Outcomes for Participants

- Economies of scale can lead to better pricing on annuity products
- SSGA carries out a pricing review to ensure that the annuity product is reasonably priced
- SSGA's status and experience enable us to bring a coalition of partners together to provide your participants with an integrated solution

SSGA will Assume Fiduciary Risk for Insurer Selection

- The plan sponsor can delegate responsibility for the selection and monitoring of the insurance provider to an investment manager (SSGA), if desired
- The annuity contract is backed by state insurance guarantees; most states guarantee annuity products up to the value of at least $100,000

Glossary

3(38) Fiduciary A plan sponsor may engage a 3(38) investment manager to evaluate and select both insurers and specific products. A 3(38) fiduciary is a bank, insurance company or registered investment advisor that assumes legal responsibility for selecting, monitoring and replacing investments. For example, SSGA is a 3(38) fiduciary that routinely represents plan sponsors in DB plan annuitizations and could serve in this capacity.

Annuity A financial product offered by an insurance company and designed to accept and grow funds from an individual and then, upon annuitization, pay out a stream of payments to the individual over a specified period of time. Annuities are often used to secure steady cash flow during retirement years.

Annuity Prefunding Portfolio A portfolio of fixed income instruments, such as long-dated government and corporate bonds, that aims to track the price of a deferred income annuity by matching the key rate durations and credit spreads of the prefunding portfolio to those of the annuity. By building up the exposure to the annuity purchase over time, it is possible to reduce the point-in-time risk of the annuity purchase.

COLA The cost of living adjustment means that the value of the annuity payout increases by a predetermined amount each year. This helps preserve the purchasing power of the annuity against inflation.

Deferred Annuity An annuity that does not start payments immediately, but at some specified future date.

Defined Benefit Plan An employer-sponsored retirement plan where employee benefits are derived from a specified formula using factors such as, but not limited to, salary history and duration of employment. Investment risk and portfolio management are entirely under the control of the company.

Defined Contribution Plan An employer-sponsored retirement whereby employees make contributions to accumulate wealth during their working years to provide income in retirement. Often times, an employer will match an employee's contribution, up to a certain amount.

ERISA 3(38) The Employee Retirement Income Security Act (ERISA) is a Federal law that sets standards of protection for individuals in most voluntarily established, private-sector retirement plans. ERISA requires plans to provide participants with plan information, including important facts about plan features and funding; sets minimum standards for participation, vesting, benefit accrual, and funding; provides fiduciary responsibilities for those who manage and control plan assets; requires plans to establish a claims and appeals process for participants to get benefits from their plans; gives participants the right to sue for benefits and breaches of fiduciary duty; and if a defined benefit plan is terminated, guarantees payment of certain benefits through a Federally chartered corporation, the Pension Benefit Guaranty Corporation (PBGC). (Source: dol.gov).

IRA Individual Retirement Account, an investment account used by individuals to save for retirement.

Longevity Risk The risk that an individual will live longer than expected with the potential result of exhausting all income sources before death.

QDIA Qualified Default Investment Alternatives are investments such as target date or balanced fund investments plan that plan sponsors are allowed to automatically place participants who do not specifically chose other investments into.

Target Date Fund An investment fund designed to adjust an asset allocation mix over time typically by becoming more conservative as the target date (usually retirement) approaches.

About State Street Global Advisors

For four decades, State Street Global Advisors has served the world's governments, institutions and financial advisors. With a rigorous, risk-aware approach built on research, analysis and market-tested experience, we build from a breadth of active and index strategies to create cost-effective solutions. As stewards, we help portfolio companies see that what is fair for people and sustainable for the planet can deliver long-term performance. And, as pioneers in index, ETF, and ESG investing, we are always inventing new ways to invest. As a result, we have become the world's third largest asset manager with US $2.72 trillion* under our care.

*AUM reflects approximately $32.9 billion (as of June 30, 2018), with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent; SSGA FD and State Street Global Advisors are affiliated.

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Investing involves risk including the risk of loss of principal.

SSGA Target Date Fund are designed for investors expecting to retire around the year indicated in each fund's name. When choosing a Fund, investors should consider whether they anticipate retiring significantly earlier or later than age 65 even if such investors retire on or near a fund's approximate target date. There may be other considerations relevant to fund selection and investors should select the fund that best meets their individual circumstances and investment goals. The funds' asset allocation strategy becomes increasingly conservative as it approaches the target date and beyond. The investment risks of each Fund change over time as its asset allocation changes.

This document may contain certain statements deemed to be forward-looking statements. All statements, other than historical facts, contained within this document that address activities, events or developments that SSGA expects, believes or anticipates will or may occur in the future are forward-looking statements. These statements are based on certain assumptions and analyses made by SSGA in light of its experience and perception of historical trends, current conditions, expected future developments and other factors it believes are appropriate in the circumstances, many of which are detailed herein. Such statements are subject to a number of assumptions, risks, uncertainties, many of which are beyond SSGA's control. Please note that any such statements are not guarantees of any future performance and that actual results or developments may differ materially from those projected in the forward-looking statements.

Please note that SSGA's role as a fiduciary does not begin until SSGA has been retained to act in a fiduciary capacity pursuant to a written agreement and receipt of a fee. Prior to such time, SSGA is not undertaking to provide impartial investment advice or to give advice in a fiduciary capacity in connection with the sale or distribution of SSGA products or services. SSGA has a financial interest in the sale of our investment products and services.

Bonds generally present less short-term risk and volatility than stocks, but contain interest rate risk (as interest rates raise, bond prices usually fall); issuer default risk; issuer credit risk; liquidity risk; and inflation risk. These effects are usually pronounced for longer-term securities. Any fixed income security sold or redeemed prior to maturity may be subject to a substantial gain or loss.

Investing in high yield fixed income securities, otherwise known as junk bonds, is considered speculative and involves greater risk of loss of principal and interest than investing in investment grade fixed income securities. These Lower-quality debt securities involve greater risk of default or price changes due to potential changes in the credit quality of the issuer.

Increase in real interest rates can cause the price of inflation-protected debt securities to decrease. Interest payments on inflation-protected debt securities can be unpredictable.

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