Safely crossing the retirement finishing line

Helping more DC members win the race for retirement security with target date fund design
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These are exciting times for the pensions industry. Thanks to auto-enrolment, millions of UK workers will—for the first time—be able to exercise greater control over the standard of living they’ll have at retirement.

But the evolution of the UK pension landscape is only just beginning. Pension scheme providers now face an even greater test.

They need to make sure the investment strategies that drive defined contribution schemes are capable of achieving the desired outcomes – while treating all members fairly.

That means challenging conventional wisdom on default funds, and setting the bar higher when it comes to getting more members safely to the point of retirement.

In this white paper, Katherine Santiago and Katy Thorneycroft from J.P. Morgan Asset Management’s Global Multi-Asset Group will be setting out the challenges faced by trustees and DC schemes. Katherine and Katy will also be introducing research and analysis on some of the ways those challenges can be met.

Auto-enrolment has given the pensions industry a welcome shot in the arm. We now owe it to every single plan member to take the necessary steps to ensure they get the best retirement outcome possible.

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Executive summary

What is the most effective default investment design for DC members?

This paper aims to answer this fundamental question by examining how default investment design interacts with member behaviour to shape retirement outcomes.

To help schemes evaluate their default options, we put various lifecycle structures to the test and compared them with a target date fund, using JPMorgan SmartRetirement as our example. We projected retirement balances for these default investment designs based on real-world member saving patterns and a wide range of market cycles that might be expected to occur over a lifetime of DC investing. The results of this analysis are intended to help sponsors assess how default design can affect member outcomes.

KEY POINTS

The DC default investment model is quickly evolving beyond mechanistic lifecycle structures towards more sophisticated target date fund solutions

• As DC schemes become the primary retirement savings vehicle for a rapidly growing number of UK workers, regulators and plan sponsors continue to look for ways to help members become better prepared for the realities of self-funded retirement.
EXECUTIVE SUMMARY

One of the most important choices DC schemes make is the selection of an appropriate solution to meet the needs of roughly 80-85% of members currently relying on the default strategy to get them over the retirement finish line. The most commonly used default options are lifecycle structures however, an evolution in default design appears to be underway with the growing adoption of target date funds. These DB-calibre, all-in-one portfolios are designed to put members’ assets to work in a more efficient manner, and offer notable advances in expected investment risk/reward characteristics, as well as in overall member experience.

Target date funds increase the number of members positioned to achieve safe levels of replacement income in retirement

- DC investment success is ultimately measured by how many members can afford to retire. Our research shows that the wide dispersion of outcomes and the limited diversification offered by many lifecycle structures expose too many members to significant risk of falling short of their replacement income needs.

- The benefits of a target date fund extend beyond pure investment considerations.

Target date funds are much easier to understand and communicate than lifecycle structures

- Target date funds eliminate some of the communication and monitoring challenges of lifecycle structures. As standalone portfolios, there is no need for schemes to communicate complex ideas about investing, so plan sponsors can instead concentrate their communications on improving savings rates. Meanwhile, members only need to make one simple choice: the date that they expect to retire. Furthermore, this date need not be fixed. Members can typically extend beyond previously anticipated timelines either by remaining in their chosen “cohort” for longer or moving cohort to one with a later target date.

- In contrast, the more sophisticated diversification, dynamic asset allocation and greater flexibility provided by the single-manager structure of target date funds mean they are better positioned to address market volatility and reflect real-life saving behaviour, increasing the likelihood that members will achieve safe levels of retirement income.

- The strategic asset allocation in target date funds often de-risks gradually over time, therefore should members decide to retire later their portfolios would not have to change significantly, unlike in lifecycle structures where de-risking can happen over as little as five years. This capability of target date funds to adapt to meet changing member needs is invaluable in the rapidly evolving pensions market.

Each of these topics is more thoroughly explored in the sections that follow. For additional information about this research or to learn more about increasing DC scheme success through default investment design, please contact your usual J.P. Morgan Asset Management representative.
The evolution of default design

With auto-enrolment expected to contribute to a near-threefold increase in DC members over the next decade—from six million today to around 16 million by 2020\(^1\)—getting the default option right is more important than ever before.

The lifecycle structures widely used today represent a significant evolution from the 100% equity structures and simple balanced structures of the early days of the DC default. In recent years, a further wave of evolution has come in the form of diversified growth funds (DGFs), which have been used by many plans to increase diversification in lifecycle structures. However, given the corresponding evolution of the DC marketplace, the lifecycle structure may no longer be the best solution for maximising the number of members positioned for retirement success. Lifecycle structures are often too mechanistic, rigid and confusing to serve the needs of the rapidly growing number of members who will come to depend on DC plans to accumulate the vast majority of their retirement savings.

These challenges explain why sponsors are considering target date funds as a more appropriate default investment solution. In 2012, the National Employment Savings Trust (NEST) adopted a target date fund approach as its default option, and it seems likely that more and more plans will follow this lead.

“Given the evolution of the DC marketplace, lifecycle structures may no longer be the best solution for maximising the number of members positioned for retirement success.”

\(^1\) Source: Pensions Policy Institute, 2012.
Target date vs. lifecycle: Investment structures

To evaluate how lifecycle and target date design differences may affect performance, we have assessed how the risk/reward profile of each default vehicle interacts with changing market cycles and member saving behaviours to shape long-term outcomes.

**LIFECYCLE STRUCTURE**

In a lifecycle structure, a series of individual funds are combined, typically by a consultant, to make up the default. Members are rotated out of risk assets mechanistically by the platform or administrator, according to their date of birth, as they near their retirement date.

**TARGET DATE FUND**

A target date fund provides a professionally managed glide path to retirement in a single fund. The ‘target date’ is the date at or around when the member plans to retire. The asset allocation gradually changes over time, becoming more conservative as the retirement date approaches.

**GLIDE PATH**

A glide path is the changing mix of assets that the fund invests in as it progresses to its target date.

Lifecycle structures are made up of individual funds, usually combined by a consultant. They typically maintain an equity allocation of 100% (or close to it) in the asset accumulation phase. Depending on the scheme, this may be more or less diversified by country, sector and market cap. Many lifecycle structures now also include DGFs in this phase, with the aim of reducing risk and enhancing performance potential. Allocations generally remain static until five or 10 years from retirement, at which point the structure employs a linear derisking transition to cash and, often, fixed income assets, such as government or corporate bonds.

In contrast, target date funds offer more dynamic asset allocation that gradually changes over time. Like lifecycle structures, individual target date funds may be more or less diversified, but because target date funds are holistically managed by a single manager, diversification can be more sophisticated. Target date fund managers can assess correlations and manage risk at a more granular level to avoid overlapping exposures and unintended portfolio tilts.
CAUTION AHEAD
When lifecycle structures were first introduced, there was a prevailing expectation for equity investments to deliver an impressive 8% to 10% or more per year, with little attention paid to downside exposure. Times have certainly changed. Since the financial crisis, investors have experienced some of the most extreme market conditions on record, and managing risk has become just as important as delivering returns. Equity markets worldwide experienced remarkable returns in 2013, but most market forecasts now call for more subdued stock returns in the foreseeable future, with continued expectations for elevated volatility. Lifecycle funds, with their relatively fixed allocations and mechanistic derisking, have limited scope to adapt to this more uncertain environment. In contrast, the dynamic asset allocation of target date funds allows them to be more market aware.

PREPARING FOR CHANGE
In his 2014 Budget, Chancellor George Osborne announced a consultation to fundamentally change the way people access their retirement savings. It is proposed that in April 2015, the effective requirement to buy an annuity will end. DC members will instead be able to take their pension savings as a complete lump sum or draw them down over time, if they prefer. This is just one example of how regulatory change can affect the DC landscape.

While 92% of DC members currently buy annuities at retirement, this will undoubtedly change in the coming years if the proposals allow savers to take advantage of greater pension freedoms. The flexibility of target date fund glide paths allows them to evolve rapidly to reflect changes of this kind without disruption to plans and their members.

Many target date funds employ active asset allocation. While lifecycle allocations simply follow a predetermined course regardless of market conditions, actively managed target date funds can be more market aware. This means they have the potential to capture additional alpha from short- to medium-term market movements—as well as to introduce additional downside protection in periods of volatility.

Target date funds also have greater flexibility to respond to structural changes such as shifts in member savings or retirement behaviour, new regulation or changes in the investment landscape. Modifications to the glide path can be implemented in a relatively short timeframe, without any disruption to member accounts, without triggering member communications and without the need for the extended due diligence processes that would be necessary to change the mechanistic model of a lifecycle structure.

2 Source: ABI, 2013.
Target date vs. lifecycle: Investment outcomes

Any discussion about the effectiveness of DC default design must begin with the most fundamental question: what are plans hoping to achieve for members with their default offerings?

Objectives

The typical standard of success for default solutions has been performance relative to peers or to a benchmark. However, this is not necessarily a meaningful measure to people who need to rely on their DC assets for their post-retirement income needs. Instead, success for members means accumulating enough in their DC pots to be able to maintain their standards of living in retirement. An outcome-based perspective considers how effective the investment solution may be in helping members to achieve this aim.

To quantify this type of outcome, our analysis focuses on the goal of replacing working income. For practical purposes, maintaining lifestyle standards after retirement is principally about generating enough income to replace a large enough proportion of lost wages to meet anticipated expenses. We believe a successful default is one that delivers as many members as possible to retirement with at least minimum levels of replacement income.

At retirement, many people are likely to have paid off their mortgages, while expenses such as travel costs will be significantly reduced. As a result, they can generally maintain their working lifestyle on a lower income. Our calculations arrive at a required replacement rate of about 70% of final salary (the methodology is included in the appendix). Depending on working income, state benefits will replace a greater or lesser proportion of this.

For the purposes of our analysis, we looked at 1.2 million members across 10,000 plans. In this sample, the average salary at retirement was approximately £50,000. The state pension currently replaces around 15% of a working income of this level at the age of 65, meaning DC savings would need to account for the remaining 55%. (People with lower final salaries would need their DC savings to provide a lower proportion of replacement income as the state pension would make up a greater proportion.)

While the proposed changes announced in the 2014 Budget mean annuities may no longer be the only or even the main route that savers take at retirement, the primary objective of the accumulation phase remains unchanged. Schemes will still need to ensure that as many members as possible reach the end of their careers with sufficient savings to generate at least minimum levels of replacement income. As a proxy to assess the size of retirement pot that would be needed to achieve the required level of replacement income, we used our forward-looking market assumptions to estimate the market price of an annuity that would provide an income equivalent to 55% of a £50,000 final salary. We found that a lump sum of approximately £335,000 would be required. In our study, this £335,000 benchmark acts as our retirement finish line. Crossing it means members have achieved an acceptable amount of retirement income funding.

“Success for members means accumulating enough in their DC pots to be able to maintain their standards of living in retirement.”

3 Source: DCisions, 2010-2012.
Data set

In 2011, the Department for Work and Pensions analysed the asset allocations of default options set up or reviewed in the previous three years, and identified three categories of lifecycle structure: adventurous, balanced and cautious. We used these as a basis for our model lifecycle portfolios.

The Lifecycle Adventurous structure most closely reflects the asset classes and allocations found in the majority of DC defaults today, and has the highest equity allocation during the pre-retirement period. The Lifecycle Balanced structure maintains a more moderate equity allocation, while in the Lifecycle Cautious structure this allocation is even lower. Each of these three structures starts out holding mostly equities, and then 10 years from retirement begins to shift to Gilts and or cash, reaching its most conservative allocation at retirement. We added the Lifecycle New Generation structure, which is based on the Lifecycle Adventurous structure, but replaces 50% of the equity allocation with a median-performing DGF.

We compared these lifecycle structures with the JPMorgan SmartRetirement target date fund strategy. The SmartRetirement glidepath is more diversified and has a higher number of extended asset classes. It also begins to reduce equity exposure much sooner, since its wider range of low and non-correlated holdings allows it to be less reliant on equity returns.

The glide paths and portfolio characteristics of all five models are provided in Exhibit 1. The different paths and characteristics of the portfolios make a significant difference to expected risk/return profiles. JPMorgan SmartRetirement provides a smoother expected journey to retirement, helped by higher exposure to fixed income at the beginning of the glide path, which reduces portfolio volatility. Early in the glide path, it takes less risk than Lifecycle Adventurous, but generates a slightly higher expected return.

At the end of the glide path, the sharp derisking of all four lifecycle structures means expected returns fall significantly. By derisking gradually and maintaining a much more diversified portfolio, JPMorgan SmartRetirement provides significantly stronger expected returns as members approach retirement, without a corresponding increase in risk.

EXHIBIT 1: ASSET ALLOCATION GLIDE PATHS

<table>
<thead>
<tr>
<th></th>
<th>25 years</th>
<th>45 years</th>
<th>65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash</strong></td>
<td>0%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Bonds</strong></td>
<td>0%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>100%</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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<tr>
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<td>0%</td>
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<td>50%</td>
</tr>
<tr>
<td><strong>Bonds</strong></td>
<td>15%</td>
<td>15%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>85%</td>
<td>85%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Lifecycle Cautious**

- **Asset mix at age:**
  - **Cash:** 0% 0% 100%
  - **Bonds:** 37.5% 37.5% 0%
  - **Equity:** 62.5% 62.5% 0%

**Lifecycle New Generation**

- **Asset mix at age:**
  - **Cash:** 0% 0% 25%
  - **Bonds:** 0% 0% 75%
  - **Equity:** 100% 100% 0%

**JPMorgan SmartRetirement**

- **Asset mix at age:**
  - **Cash:** 0% 0% 10%
  - **Bonds:** 15% 26% 70%
  - **Equity:** 85% 74% 20%
Member behaviour

A significant driver of DC success is how the size and timing of cash flows interact with the size and timing of portfolio returns. We therefore based our simulations on our research into real-life member behaviour.

We used data that tracked 1.2 million savers in 10,000 plans, across the age spectrum and across a wide range of platforms. We looked at factors such as contribution rates, salary growth rates, changes to savings rates and replacement income needs seeking to identify the realities, rather than the ideals, of DC saving.

Importantly, member contributions fall well short of expected levels. Contributions start, on average, at only 3.5%. This amount quickly escalates to 7.5% of salary by age 40, but then rate increases tend to stagnate, taking until age 57 to reach 8%. In addition, contributions can be highly volatile. Overall, the average contribution rate is 7.2%, but 22% of members actively change the amount they invest in any given year. Almost 8% increase their rates, but 11% make reductions and 3% stop contributions altogether (see Exhibit 2).

Obviously, higher or lower contribution levels have a direct impact on accumulated balances at retirement, but cash flow volatility can also have an amplifying effect on market volatility, so it is important to factor in these realistic savings patterns when assessing the effectiveness of default solutions.

Measuring success

We analysed potential retirement outcomes for each of the five default designs by combining various market scenarios with our research into member behaviour. We conducted a statistical simulation of 10,000 different member scenarios to project a full range of possible outcomes, measured by expected retirement account balances at age 65.

The simulations were designed to replicate the wide, random gamut of returns that might occur across the 40-year timeframe in which workers are expected to contribute to a DC scheme, as well as real life member behaviour. Each employee in the simulation starts with the same salary, but the outcome ranges are wide due to the broad array of possible market conditions, from strong bull markets to crashes, and varying contribution rates from members.

Rather than using historical returns, our portfolio simulations used forward-looking risk/return assumptions, based on J.P. Morgan Asset Management’s Long-Term Capital Markets Return Assumptions. A more detailed description of our methodology can be found in the appendix.

EXHIBIT 2: AVERAGE OVERALL CONTRIBUTION RATE AND MEMBER CONTRIBUTION CHANGES

Results: Helping as many members as possible to a secure retirement

Our analysis projected a range of possible member outcomes for the various default fund designs. Exhibit 4 illustrates our findings, with the red line running across all five projections representing the £335,000 retirement finishing line that members would need to cross to achieve an income equivalent to 55% of a £50,000 final salary. Please note that projections are based on current pound value.

In terms of retirement safety, the strongest performer was JPMorgan SmartRetirement. This target date fund took members across the finish line in 76% of potential outcomes and offered a more consistent, tighter range of outcomes. The median pot of £431,722 was well above those for the New Generation, Balanced and Cautious structures and slightly above that of the Adventurous portfolio. Downside protection was also stronger, with the 95th percentile outcome producing a balance of £234,298—notably higher than for all of the lifecycle structures.

### Exhibit 3: Expected account balances at retirement: analysis explained

<table>
<thead>
<tr>
<th>Target date fund</th>
<th>Median pot size (£)</th>
<th>95th percentile</th>
<th>% pots above target</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartRetirement</td>
<td>431,722</td>
<td>234,298</td>
<td>76%</td>
</tr>
<tr>
<td>New Generation</td>
<td>430,760</td>
<td>217,523</td>
<td>73%</td>
</tr>
<tr>
<td>Balanced</td>
<td>410,911</td>
<td>203,578</td>
<td>68%</td>
</tr>
<tr>
<td>Cautious</td>
<td>368,118</td>
<td>200,805</td>
<td>60%</td>
</tr>
<tr>
<td>Adventurous</td>
<td>321,552</td>
<td>189,614</td>
<td>45%</td>
</tr>
</tbody>
</table>

This target pot and end salary are examples. Changing the target pot and end salary does not change the spread of outcomes.

Proportion of savers that reach retirement with a pot larger or equal to £335,000.

Source: J.P. Morgan Asset Management, 2013. Monte Carlo simulations used to generate 10,000 different possible portfolio outcomes to test our glide path, and those of different lifecycle strategies. End salary based on current UK DC investor data from DCisions.
Because of the narrower dispersion of outcomes, the 5th percentile balance, at £804,200, was lower than for Lifecycle Adventurous and New Generation. However, it makes little sense to select a default that excels only when markets are strong and members behave ideally. Instead, we believe default design should provide the largest amount of members with the greatest chance of achieving replacement income in retirement, in a broad range of market conditions and under a broad range of savings behaviour scenarios. In a pension scheme with 10,000 members, JPMorgan SmartRetirement would deliver an expected 300 to 3,100 more individuals safely to retirement compared with its lifecycle peers.

The Lifecycle Adventurous structure, with its higher equity allocations, performed better than the other portfolios under ideal market conditions and with ideal member behaviour, with the top 5% of outcomes producing balances of £908,002 or higher. However, in less than ideal scenarios, this structure underperformed in comparison with SmartRetirement. Lifecycle Adventurous delivered members across the target retirement finish line in 73% of cases – meaning that 300 fewer members achieved the minimum income replacement level in this structure than in SmartRetirement. The dispersion of outcomes was wider, and the bottom 5% of outcomes delivered pots of £217,523 or below.

The Lifecycle New Generation structure, with its higher equity allocations and added DGF exposure, also performed well under ideal market conditions and with ideal member behaviour, and performed less well in more challenging conditions. Notably, the perceived risk-reduction benefits of adding DGF exposure often failed to materialise. This structure delivered members over the finish line in only 68% of the projected cases – 800 fewer than SmartRetirement in a scheme of 10,000 members. As with the Adventurous structure, the dispersion of outcomes was quite wide. The median pot size was £410,911, but while the top 5% accumulated £863,111 or above, the bottom 5% came in at £203,578 or below.

The Lifecycle Balanced structure delivered markedly lower returns compared to the New Generation and Adventurous designs, even under ideal market conditions and with ideal member behaviour. The median pot size was £368,118, while the top 5% accumulated £673,749. In challenging market scenarios or with less than ideal behaviours, there was significant risk of members falling short, with only 60% of projected outcomes delivering members over the finish line. In the bottom 5% of projected outcomes, members accumulated pots of £200,805 or lower.

“In terms of retirement income replacement, the strongest performer was SmartRetirement. This target date strategy took members across the finish line in 76% of potential outcomes and offered a more consistent, tighter range of outcomes.”
The Lifecycle Cautious structure, with its heavier reliance on cash and traditional fixed income, was the poorest performer. The median pot, at £321,552, fell short of our £335,000 finish line, with just 45% of potential outcomes delivering members over the line. The bottom 5% of members achieved balances of £189,614 or lower. Even the modest number of members who reached the target did so with lower balances compared to the other strategies, with a balance of £518,974 achieved in the 5th percentile outcome.

What role do DGFs play?
Many plans have added DGFs to their scheme lifecycle structures to help capture equity-like returns with lower volatility.

The DGF universe is broad, and funds can differ widely, with diverse objectives – some seek positive total returns, while others aim to beat benchmarks, for example. When DGFs work well they can help improve risk-adjusted performance, but significant dispersion between top and bottom quartile returns creates a large amount of uncertainty around outcomes. DGFs rely heavily on manager skill, and plan sponsors must carefully weigh the manager’s ability to add alpha through changing market cycles to ensure the strategy can deliver over the long term, not only when its approach is in favour. Furthermore, DGFs often serve as “bolt-on” diversification in lifecycle structures, and may introduce unintended portfolio tilts.

Quantifying the pain of downside risk
The pain of having too little retirement income per year is far greater than the benefit of any surplus. In fact, by applying a methodology developed by behavioural economists Daniel Kahneman and Amos Tversky, we have found the investor pain of each pound deficit to be about 2.5 times the pleasure of each pound surplus. To illustrate this point, imagine yourself at a sandwich shop at lunchtime. A sandwich costs £3, and you have £3.50. You can get lunch and also a chocolate bar. If you only have £2.50, you cannot afford the sandwich at all. Having £0.50 too little hurts far more than the extra £0.50 helps. Now consider this scenario, on a far bigger scale, in retirement.
Target date funds: Engagement and governance advantages

Our research findings highlight the investment advantages that underpin our expectation that target date funds will continue to emerge as the preferred default vehicle. In addition, target date funds offer significant benefits over lifecycle structures from a scheme management perspective.

**Member engagement**

DC members may struggle to understand lifecycle structures or concepts such as DGFs. Target date funds are simple to understand: one fund, with one target—replacement of a specified level of income, at a specified time in the future. The name of the fund is the year around which the member will aim to retire. Plan sponsors can easily explain target date funds to new members, helping to streamline the onboarding process. As members travel along their journey to retirement, sponsors can focus communications on the area where they can make a real difference—savings behaviour—rather than needing to explain complex investment ideas. While account statements in lifecycle structures show multiple funds, with multiple managers, target date members are only invested in one fund, making it easier for them to check in on their savings.

**Flexibility**

Lifecycle structures are typically built towards a member’s precise retirement date, which is often the day when they turn 65 years of age. For many people, the date they plan to retire may change as it can depend on several factors that are often only known as retirement nears. The main factor is whether the member has accrued a big enough pension pot to meet their retirement needs. Instead of being fixed to a set date in the future, target date funds aim for a specific year that is suitable for members planning to retire within approximately 2.5 years of that date. This cohort structure gives members much more flexibility than a lifecycle structure. Members can also switch to a later target date cohort, should they significantly alter their retirement plans.

Furthermore, target date funds typically de-risk over a longer time period than lifecycle structures – sometimes as much as 30 years, versus as little as five. Therefore, if a member chooses to extend their retirement date, it does not mean that they have to significantly re-risk, only to de-risk again, which could negatively impact their portfolio. Given the changes to pensions legislation proposed in the 2014 Budget, and the expectation that the pensions industry will continue to evolve, this level of freedom and flexibility will be required by even greater numbers of retirees in the future.

**Governance**

As standalone portfolios, target date funds are also easier for plan sponsors to compare and track. Review efforts can be focused on the target date fund manager’s multi-asset investment skill, glide path effectiveness and track record, in contrast with the lifecycle model, where sponsors also need to conduct a thorough assessment of each underlying investment and assess how well they fit together. If market conditions, the regulatory environment or the investment landscape change, sponsors do not need to assess new funds or asset classes with a view to adding them to the glide path, but can leave this task to the investment manager. This can help to free up time and resources that sponsors can dedicate to member engagement and other key areas of scheme governance.
Conclusion: Target date funds represent the future of the DC default

DC investing is likely to represent many people’s best chance to maintain their standards of living in retirement. It will therefore be vital that plan sponsors make the right choices for their DC defaults. Investment design has evolved significantly since the early days of the DC default, with lifecycle structures providing members with greater diversification and more appropriate investments throughout their careers in comparison to the early equity-only and simple balanced structures.

However, our analysis shows that the mechanistic derisking, limited and unsophisticated diversification and inappropriate levels of risk (either too aggressive or too cautious) of the three most prevalent types of lifecycle structure means they fall short in helping members to secure adequate levels of replacement income at retirement. While some lifecycle structures have the potential to deliver strong outcomes in ideal market conditions and for members with ideal savings patterns, these structures may amplify the detrimental effects of less than ideal markets and more realistic savings behaviours. Lifecycle structures are also slow to evolve, meaning that they struggle to adapt to changes in behaviour and in the regulatory environment.

According to our research, target date funds provide DC savers with a greater likelihood of crossing the retirement finish line with at least minimum levels of replacement income, in a diverse range of market conditions and taking into account real-life member behaviour. This reflects the more sophisticated diversification and flexibility that target date funds are able to offer as a result of their single-fund, single-manager structure, while active asset allocation helps increase the likelihood of success. Target date funds also offer significant advantages in terms of scheme governance and member communications, freeing plan sponsors up to focus their efforts on improving savings behaviour.

While lifecycle structures are slow to implement change, target date funds can easily adapt to new regulation, changing behaviour or new investment opportunities, without disruption to members. As demonstrated by recent developments, including auto-enrolment, the charge cap and the proposed changes in the 2014 Budget, the DC landscape is continuously evolving, and it will be vital that default solutions are able to adapt. As a result, we expect target date funds to continue to emerge as the preferred DC default fund of the future.
Methodology overview

Target date and lifecycle strategies present special challenges in estimating expected returns, since portfolio asset allocations change over time and the sequence of both cash flows and market returns can affect results. Historical returns, therefore, may often not be a valid representation of future performance, as the order of returns or extreme market events is unlikely to repeat exactly. A common approach to solving this problem is a series of Monte Carlo simulations.

Monte Carlo simulations incorporate both randomness and repetitiveness to create large samples of observations and minimise the influence of outlier return values or return order. By using a series of repeating computations, these simulations create a large number of outcomes for the portfolio, each with an independent path of returns, which combined have a specified return and volatility. In the simulations for this research, we utilised changing, or stochastic, return patterns to generate 10,000 different possible portfolio outcomes.

Although the most common application of Monte Carlo simulations in portfolio construction is to simulate various market return scenarios, assumptions on other variables can also be incorporated. Our simulations encompassed two different stochastic processes; member behaviour simulator and the capital markets simulator.

Member behaviour simulator

Our study also included careful modelling of member behaviour. In order to best reflect the observed diversity of behaviour in the simulations, we did not assume “average” contributions, but instead created a distribution of member behaviours that collectively presents the same characteristics as our sample from the DCisions member database. To model a member base that resembled the real world, we generated simulated values for several variables:

- Member contribution rate and changes to that rate over time
- Frequency of salary growth
- Timing and size of post-retirement withdrawals, including annuitisation

The 10,000 simulations each incorporated the variability in member cash flows and market returns to best account for all possible portfolio outcomes. As with the capital market simulator, this member simulator allowed us the flexibility to test the portfolios’ sensitivities to changes in each variable.

These robust processes for simulating market returns and member traits, as well as the number of simulations run, provide a comprehensive sample for comparing the characteristics of different default investment designs and give us confidence in our results.
**Capital markets simulator**

There are several ways to determine potential returns of a portfolio. The simplest is a static return model, where an expected average market return is applied for each period. A static analysis can approximate the level of long-term average returns, but it ignores the impact of volatility.

Another approach generates a distribution of simulated returns with the desired long-term average and standard deviation, but it assumes that each year is independent of the next. This approach accounts for the importance of volatility, but it still ignores correlations among assets, as well as asset trends or mean reversions that can distort short-term movements and alter the volatility of the portfolio. A slightly more complex approach, stochastic return generation, incorporates all of the typical characteristics of asset returns (long-term average, volatility, correlation and autocorrelation), while introducing additional randomness into the returns to prevent exclusive reliance on historical or assumed patterns.

In order to develop the most robust analysis of these portfolios, we applied simulated market returns using stochastic return generation to incorporate uncertainty in future market returns. Our approach combined numerous layers to simulate a fully robust market environment.

- **Return generator:** Asset returns were generated so that future values were dependent on previous returns and the long-term mean, volatility and autocorrelation levels of the assets remained near their desired levels.
- **Market environment generator:** We incorporated correlations among assets so that over time, asset returns maintained the desired relationships. For example, high UK equity returns were unlikely to correspond to low or negative international equity returns.
- **Randomness generator:** Asset returns were influenced by a small amount of random noise to introduce realistic short-term movements. This multi-layered approach also gave us the ability to stress test the portfolios by changing the underlying assumptions of average returns, volatility or correlations to simulate more extreme market environments.

**Replacement ratio analysis**

By looking at spending data from the Office for National Statistics (ONS), we were able to carry out analysis on how much people are likely to need in retirement. The average gross end salary of the 1.2m DC savers whose behaviour we analysed was approximately £50,000, and we therefore used this as a base from which to carry out our spending analysis.

We first deducted pre-retirement taxes owed for this income level and average pre-retirement savings, assuming people no longer save in retirement. Then, we accounted for changes in expenses in retirement by reviewing pre- and post-retirement spending, and deducted taxes due in retirement. Our analysis led us to arrive at a required income replacement ratio of 70%. With this proportion of their end annual salary, people could maintain their standard of living in retirement. The state pension currently replaces around 15% of a working income of this level at the age of 65. Therefore, we used 55% as our income replacement ratio target. This is in line with guidance from the Department for Work and Pensions, which stated in its 2012 ‘Estimates of the number of people facing inadequate retirement incomes’ that someone with an end salary of approximately £50,000 should target an income replacement ratio of 50% in retirement.