
The Default Investment Decision: Weighing Cost and Personalization

Morningstar Investment Management LLC

Working Draft as of June 7, 2017

David Blanchett, PhD, CFA, CFP®

Head of Retirement Research

david.blanchett@morningstar.com

Abstract

Target-date funds (TDFs) are the dominant default in defined contribution (DC) plans today, although interest in more personalized solutions, such as managed accounts (MAs), has been growing. This paper introduces (and explores) a number of factors that should be considered when selecting the plan default investment, especially the ability of the default option to appropriately match a participant's risk level. The analysis suggests that MAs is likely to result in an outcome that is equal or better than TDFs among each of the factors considered. The relative benefit of MAs as a default (over TDFs) was largely driven by the increased personalization of the solution, which typically comes at a higher cost than TDFs, ranging from (effectively) free to over 50 bps for some providers. The higher cost associated with MAs will obviously have a material impact on the potential value participants will realize from the solution. Therefore, it is critical for plan sponsors and DC consultants to understand which types of participants are more likely to benefit from MAs as a default to make a more objective default decision.

The Default Investment Decision: Weighing Cost and Personalization

Although selecting a default investment for a defined contribution (DC) plan may seem deceptively simple, since there are just three basic options: target risk (balanced), target-date fund (TDF), and retirement managed accounts (MAs), in reality there are a variety of important factors to consider. Complicating things further, plan sponsors need to consider what's right for their participants, not for the general public—if one size doesn't fit all, many participants will be underserved.

Among the three qualified default investment options, TDFs are the most popular, with approximately 75% of plans using them as the default today. TDFs can seem like an easy choice—they usually offer low fees and provide basic asset allocation adjustments to, and sometimes through, retirement. While TDFs can be customized to a plan they can't be personalized to each participant. In contrast, managed accounts (MAs) can provide recommendations better tailored to the unique attributes of each participant. Personalization varies across providers, but MAs can typically provide highly personalized investment services, as well as offer savings, retirement, and other financial advice.

Today, MAs are most commonly used as an opt-in offering (versus TDFs, which are opt-out), which has resulted in relatively low adoption. Little research has explained this behavior, but we might speculate that at least three forces are at work: inertia tends to keep most participants from making any changes; participants tend to not understand MAs; and MAs tend to carry an additional fee, which participants are hesitant to pay.

To better understand what default works best for participants a variety of factors are reviewed, such as historical performance, risk appropriateness, engagement, the savings impact, the ability to incorporate annuities, and the general impact of engagement.

Historical performance is often the first thing plan sponsors focus on when comparing defaults options (e.g., TDFs vs. MAs). While research¹ has found that MA participants have historically outperformed TDF investors net of fees and after controlling for age, it is not clear to what extent this outperformance will (or even should) persist in the future. More importantly, historical performance is generally a poor measure of the efficacy of the respective options. For example, if one product has a more aggressive allocation during a period of strong equity performance and subsequently outperforms, it does not mean that that product is inherently better. Risk suitability is a more important consideration, i.e., understanding whether the recommended portfolio is appropriate given the participant's situation and preferences.

TDF glide paths are generally created based on some type of average representative investor for the glide path. But the efficacy of each glide path depends on how well it fits the actual characteristics of each participant population. While MA solutions typically have a relatively limited insight into the investor's complete financial picture in a default setting (i.e., such as age, salary, savings rate, DC

1. Financial Engines (2014) and Advised Asset Group (2016a and 2016b).

plan balance, existence of an employer pension, etc.), MAs nevertheless typically deliver a portfolio recommendation that is more appropriate than that from a TDF (especially for older investors). The efficacy of either solution increases if unique information about the participant can be incorporated into the default selection decision. While unique participant data can be incorporated in the TDF selection process (or in a custom glide path created for that plan); it can only be incorporated at the cohort level, not at the individual participant level. This is especially important for plans with frozen pension plans or other structural differences in retirement benefits across participants.

Another way managed accounts stand apart from TDFs is in their ability to provide greater value through participant engagement. Empirical evidence suggests that approximately 10% of participants engage² with MAs at enrollment and that engagement increases to over 20% two years after being defaulted into the solution. Higher levels of engagement allow for not only more appropriate portfolio recommendations, but also allow the participant to take advantage of additional features of MAs, such as guidance on appropriate savings levels, retirement withdrawal strategies, etc. Research by Blanchett and Kaplan (2013), among others, suggests the benefit of these services can be significant.

Empirical evidence suggests that MAs and TDFs are both relatively “sticky” defaults, both at enrollment and thereafter. Approximately 85% of participants tend to go with the default option (versus approximately 50% of the assets) and participants who use the default investment tend to be younger, with lower savings rates, lower salaries, and lower balances.

Managed accounts may help participants save more, too. Research by Blanchett, Bruns, and Voris (2016) suggests participants defaulted in MAs tend to save at a rate 2 percentage points more than those defaulted in TDFs (i.e., participants defaulted in MAs initially defer 6%, on average, versus 4% for TDF defaulted participants). However, after controlling for various demographic variables and plan features, the difference declines significantly to approximately 0.5 percentage points.³ It’s difficult to know exactly why participants who were defaulted into MAs saved more than TDF-defaulted participants, it could be that MA increased retirement awareness or increased communication drove the change; however additional research would need to analyze this further. Regardless, the research does note a statistically significant difference in savings rates between the two default investment options.

While annuities are relatively rare in DC plans, especially as part of the default investment, they have been receiving increased attention by plan sponsors to help participants achieve a more secure retirement. MAs allow for greater personalization with respect to the annuity purchase (or annuity allocation) decision. For example, lower income participants are less likely to benefit from annuities, since they are likely to receive a larger share of retirement income from public pension benefits

2. The extent of participant engagement is not known for this analysis.

3. The actual difference depended on the regression model. Plans that use MA as the default tended to have older participants with higher compensation, which explains a significant amount of the noted differences.

(i.e., Social Security retirement benefits) and have shorter life expectancies (Chetty et al., 2016). MAs can incorporate these unique participant attributes in the allocation decision (even when used as a default), and this can have a significant impact on the resulting recommendations (see also Blanchett, 2016).

In our analysis that follows, we find that MAs are equal to or better than TDFs in every way discussed above. The benefits associated with MAs are largely due to the more personalized nature of the solution, since MAs can consider unique participant demographics (beyond age) as well as additional information, if provided. The increased personalization of MAs usually comes at a higher cost, which can vary significantly by provider, from (effectively) free to over 50 basis points. Therefore, it is important to understand which types of participants or plans are likely to benefit more from MAs, which we explore.

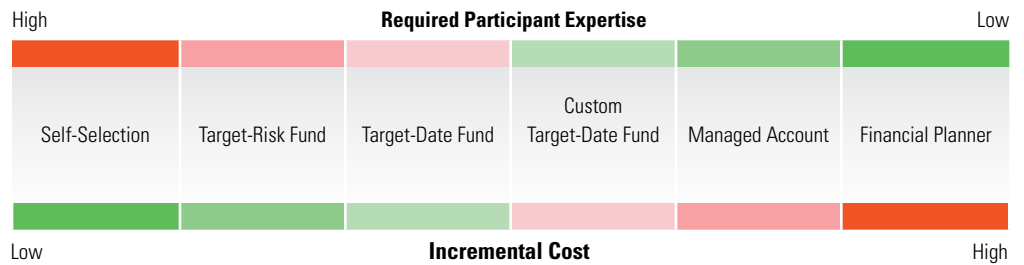
Understanding which participants may benefit most from MAs would help enable plan sponsors to potentially lower implementation costs by providing MAs to a portion of participants and low-cost TDFs to the rest of participants. Under such an arrangement, some participants—likely younger, lower income, and/or lower balance participants—would be defaulted into a low-cost TDF while other participants—older, higher income/balance ones—would be defaulted into MAs. In this way, the default would be “dynamic” based on some type of participant attribute, such as age, income, balance, etc. (or even some combination of these), so that as participants grow older or became better funded they would move (by default) into managed accounts. While there are relatively few recordkeepers offering a “dynamic default” solution currently, we expect it to become more widely available in the future.

The potential value of MAs continues to increase as costs decline and providers offer additional features and functionality. Therefore, it is critical for plan sponsors and DC consultants to understand which types of participants are more likely to benefit from MAs as a default to make a more objective default decision.

The Advice Continuum

When thinking about the potential investment solutions available for DC participants, it helps to put them in context in terms of both cost and the level of required participant expertise. Generally, more-personalized solutions that require less participant expertise are more expensive, although this isn't always the case. The options available to DC participants are noted in an "advice continuum" in Exhibit 1.

Exhibit 1 The Advice Continuum



Source: Morningstar.

On the right side of the spectrum—the high-cost/low-expertise-required side—is the financial planner. In the absence of costs, participants would arguably be best served meeting initially with an independent, accredited financial planner who can develop a robust, personalized savings and investment strategy, and then regularly revisit the strategy over time (e.g., at least annually). At the other end of the retirement advice continuum (far left) is the do-it-yourself investor. This would be a participant who self-selects from the available investment options or, in some cases, uses a brokerage window. Self-selection generally delivers among the worst investment outcomes for participants, since the "average" investor has been noted to be notoriously bad one. One benefit of self-selection, though, is that it typically has the lowest incremental cost from a fee perspective (not an outcomes perspective). TDFs fall somewhere in the middle, since they are a "one-size-fits-many" approach to participant investing that can be right for the average participant of a given age, but can be very wrong for individual participants, based on each participant's unique situation.

Default Investments

TDFs are without a doubt the most common default used in DC plans today, and the dominance of TDFs is predicted to continue (Cerulli Associates, 2014). While estimates vary, approximately 75% of DC plans use TDFs as the default option.⁴ TDFs make an attractive default investment for a variety of reasons: They are relatively simple (i.e., are a prepackaged investment solution); they are commonly used (i.e., they don't require plans sponsors take much career risk); they can be low-cost; there is publicly available data and ratings on TDF mutual funds (e.g., Morningstar, Inc. has an annual report exploring mutual fund TDFs); and TDFs can potentially be customized at the plan level (e.g., incorporating the unique demographics of a participant population).

Some disadvantages of TDFs are participant misunderstanding and misuse (e.g., they can be combined with other investments in the core menu), their performance can be difficult to benchmark (TDFs are much more difficult to benchmark than a single-strategy investment like a large-cap manager), they are often built entirely from a single firm's proprietary products (something called "closed architecture"), and they do not allow for different asset allocations for participants other than for different age cohorts (i.e., it's a one-size-fits-all kind of approach).

The primary advantage for MAs over TDFs is that they are a more comprehensive investment solution because they can provide a highly personalized portfolio, but also financial planning guidance on things like how much to save for retirement, when to retire, how to optimally claim Social Security retirement benefits, etc. MA portfolios are also generally built using the core menu investment options, which leverages the work of the plan consultant and/or plan sponsor investment committee and can result in possible reductions in fund pricing.

The most commonly cited disadvantage of MAs is cost. Because more services are provided in a managed accounts service, generally providers command fees higher than those for TDFs, although the additional cost of MAs varies significantly by provider. Some providers include the cost in the base recordkeeping fee (i.e., there is zero marginal cost to participants to use the service although the total cost of the plan might be higher), while fees from other providers can exceed 70 bps (although 40 bps is more common, especially for larger plans). Evaluation of MAs can be difficult for many of reasons, such as understanding the technology integration, methodology for portfolio assignment, the asset allocation, etc.

Performance reporting can be difficult for MAs due to the various participant portfolios, even at the same equity allocation target, which can make performance difficult to assess.

Further complicating things is the fact that the largest MA providers control the vast majority of DC participants and assets.⁵

4. Callan (2015) notes 74.6% of plans used TDFs as the default as of 2014 (which was a slight increase from 70.2% in 2011), Vanguard (2014) notes that 91% of its plans with a designated QDIA chose a TDF, and Towers Watson (2014) notes that 95% of plans that responded to its survey offered a TDF, with 85% of plans offering it as the default.

5. Financial Engines is by far the largest MA provider by assets, while Morningstar has the most participants in MAs.

The final issue with MAs is the lack of complete information on participants. Portfolios can't be truly personalized without the additional information that participants need to provide, such as information about savings outside the DC plan, and participants can be lax on handing over this information. This is especially true when MAs are used in a default setting, since the participant has experienced the "buy-in" of selecting the MA program. The impact of limited information is relatively unclear, and will be explored in considerable depth later.

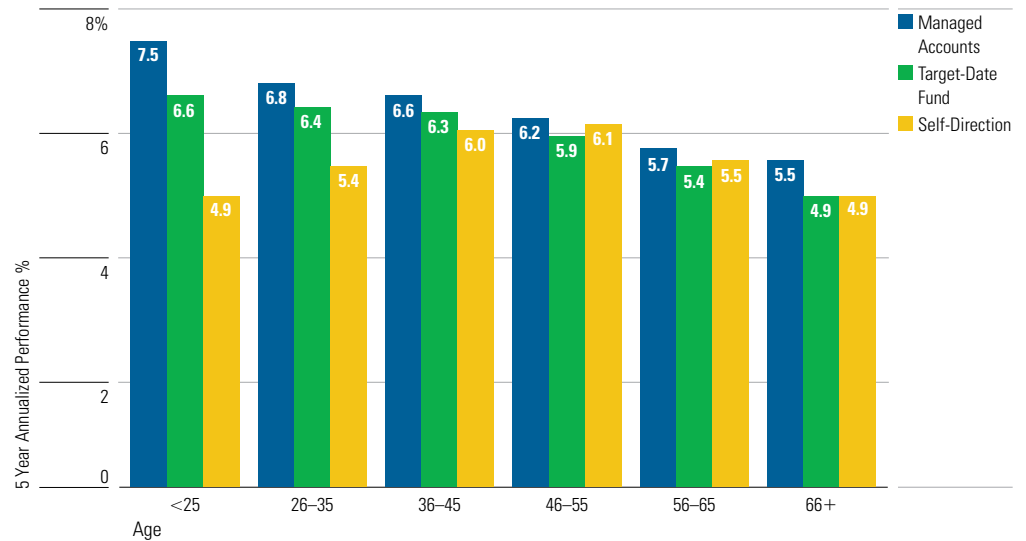
Although target-risk funds are one of the three qualified default options, they not considered for the analysis since they are generally the same cost as TDFs but less customized (i.e., all investors get the same allocation, regardless of age). While some plan sponsors may consider a single target-risk fund an attractive default, there are notable differences in how 25-year-olds and 65-year-olds should be invested, on average, and TDFs at least capture these differences in prepackaged approach.

Performance

Historical performance is generally one of the first things plan sponsors consider (or ask about) when selecting the default investment for a plan. While these requests are generally well-intentioned, performance comparisons are usually at best slightly misleading, and at worst very misleading. For example, just because one TDF has outperformed another TDF (ignoring MAs for the moment) does not mean that it is better. It could be that the outperforming TDF took on considerably more risk to achieve the higher performance, and actually underperformed on a risk-adjusted basis. Understanding the drivers of the performance of multi-asset portfolios is complex, and generally requires looking across at least three dimensions: the overall portfolio equity allocation (i.e., glide path), the sub-asset class allocations (i.e., style exposures), and the investment implementation vehicles (e.g., active versus passive).

This performance question becomes even more difficult when attempting to contrast TDFs and MAs. For example, there are significantly more potential portfolio options in MAs that vary not only across plans (e.g., based on different core menus) but also across participants (i.e., it's possible a participant with the same equity allocation target may have a different portfolio based on his/her age or other characteristics). Therefore, while comparing TDFs is already a difficult exercise, comparing TDFs to MAs is even more complex, and not likely to yield meaningful results.

With the disclaimer in mind that historical performance is not a valid metric of the respective benefits of MAs and TDFs, research does suggest MAs have outperformed, even after accounting for higher fees. Exhibit 2 includes a historical five-year annualized performance comparison for TDF users, MA users, and participants self-directing their accounts by group, based on an analysis by Advised Asset Group (2016a and 2016b). All performance numbers are net of all fees, which means the MA performance includes the additional costs associated with the service.

Exhibit 2 Performance Differences Versus Self-Directed Participants, by Age Group

Source: Advised Assets Group.

The most important takeaway from Exhibit 2 is that both MA and TDF investors have outperformed participants who are self-directing, especially for younger participants. In other words, getting participants into some type of professionally managed solution is incredibly important. This difference was especially notable from younger participants, who likely had considerably more conservative portfolios when self-directing. Overall, the weighted average⁶ outperformance of MA was 48 bps versus participants who are self-directing and 24 bps versus participants investing in a TDF.

The performance differences noted by Advised Asset Group (2016a and 2016b) are similar to past findings noted by Financial Engines (2014), where both MA and TDF investors significantly outperformed investors who were self-directing. MA participants were also noted to outperform TDF investors by approximately 50 bps, on average. Overall, though, professionally managed investment solutions (TDFs and MAs) resulted in higher returns, which speaks to the importance of getting participants to go with the respective default solution and to stay in it (i.e., the “stickiness” of the respective solution), something that will be covered in the next section.

6. The weighting is by number of participants within each age group.

Stickiness

Acceptance and continued use of the default investment (i.e., “stickiness”) is an important consideration among plan sponsors, as we’ve just seen that self-directed participants suffer worse performance than that of professionally managed solutions.

Participants who use professionally managed investment options (i.e., defaults) tend to be much more passive investors. For example, Vanguard (2016) notes that while 9% of participants traded in their accounts in 2015, only 2% of participants holding a single TDF traded in their accounts. Fidelity⁷ notes similar statistics, where only 1% of participants with all their assets in a TDF or MA made an investment change over the past 12 months versus 13% of all 401(k) investors.

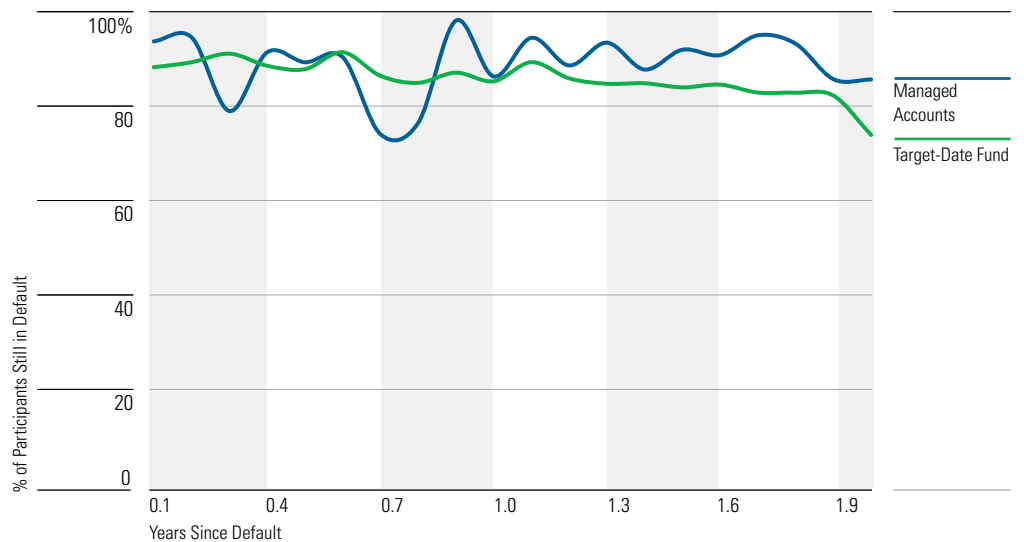
Research paints a mixed picture regarding the stickiness of defaults. Research by Financial Engines (2014) suggests that MAs are significantly stickier than TDFs, with five-year retention rates of 87.0% versus 56.8%, respectively. It is not clear to what extent these differences are based on defaulted users, though, versus those who actively selected the default option. In contrast, Young (2016)⁸ notes an 87% retention rate over five years for TDFs versus 90% for MAs using data from Vanguard participants. Again, though, the comparison is somewhat apples-to-oranges, since only approximately half of TDF participants were defaulted while the vast majority of MA users were (i.e., those values are not really describing default stickiness, rather general investment stickiness).

To determine how the stickiness of the respective solutions varied for defaulted participants, we analyzed participant data from DC plans recordkept by Charles Schwab. Two datasets were created, one for plans that use TDFs as the default and the other for plans that use MAs. For each dataset, only participants coded as actively participating with a deferral greater than or equal to 1% of salary with a balance greater than \$1 are included. The TDF dataset includes 60 plans and 37,329 participants, while the MA dataset includes 43 plans and 22,187 participants. All data is as of December 31, 2015.

For the MA dataset, the time from when the participant was defaulted into the solution is compared to the date of the data extract. The default date would be either the initial enrollment date or when the plan went through a conversion. For the TDF dataset, stickiness is based solely on the time the participant has been enrolled in the plan. Therefore, the method of analysis is slightly different. Years since being defaulted is grouped in 0.1-year increments. The results for the stickiness of the respective solutions are included in Exhibit 3.

7. <https://www.fidelity.com/about-fidelity/employer-services/2016-q2-retirement-analysis>

8. <https://vanguardinstitutionalblog.com/2016/04/12/target-date-funds-made-to-stick/>

Exhibit 3 Stickiness of Default Solutions by Participants

Source: Author's calculations.

Both MAs and TDFs have an initial acceptance of approximately 85% among participants, which slips to approximately 80% (continued usage) after two years. The results of this analysis are closer to the results noted by Young (2016), using Vanguard data, versus Financial Engines (2014), where most participants in either default appear to remain in them over time. MAs appear to have a slightly higher initial acceptance rate and ongoing stickiness rate, although the differences are not that economically significant (i.e., not near to the extent noted in Financial Engine's research). Also, approximately 3% of participants in the plans that offered TDFs as the default moved to managed accounts after two years, which narrows the respective gap when comparing the two options from a self-direction perspective (note, MAs may not have been available in all the plans offering TDFs in the respective dataset).

While approximately 80% of participants stayed with the default investment option after two years, only approximately 50% of balances ended up in each option. This suggests there are some important differences in the attributes of participants who accept the default (e.g., default investors tend to have smaller balances). To determine the attributes associated with default acceptance (and continued acceptance), some logistic regressions were performed, the results of which are included in Appendix 1. The regression coefficients were relatively similar for both defaults, which suggests that attributes of participants who use them are relatively similar. For example, participants who use either default investment tended to be younger, had been defaulted more recently, had lower savings rates, lower salaries, and lower balances. Females also appeared to select the default at a rate that was higher than males.

Overall, the analysis conducted for this section suggests that if the objective is to keep participants in a professionally managed investment solution, both TDFs and MAs appear to do a relatively good job.

Risk Appropriateness

Ensuring the portfolio is consistent with the actual risk-aversion level of the investor, i.e., is risk appropriate, is a key consideration when selecting a default. TDFs are usually built targeting the demographics of some type of average, representative investor, which may be based on a national average for an off-the-shelf TDF or on specific plan data in a custom TDF arrangement. Even if the allocation is appropriate for the average participant in a respective plan, though, there is likely to be considerable differences in the appropriate allocation for investors within each age cohort.

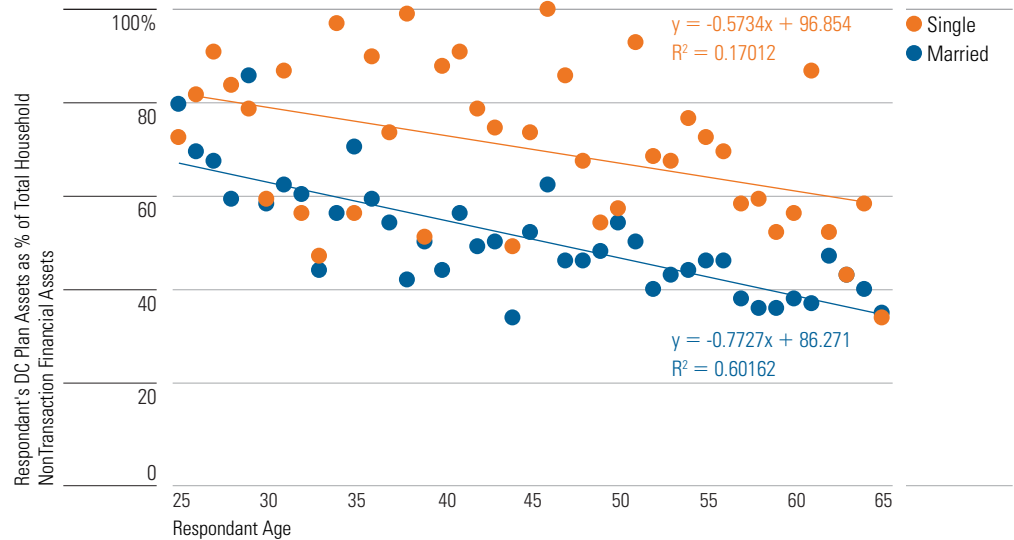
In contrast to TDFs, MAs can incorporate information about each individual participant when determining the optimal portfolio allocation beyond age. One concern when using MAs as the default, though, whether complete information is available on the participants. For example, while plan sponsors are going to have basic data on each participant on things such as age, gender, plan balance, annual salary, company tenure, as well as any kind of company pension benefit, etc., they won't know about the other aspects of the participant that could materially affect the portfolio allocation recommendation (e.g., outside assets, spousal wages, etc.).

It is not clear to what extent the incomplete information used to determine portfolio allocations in a default setting affects the efficacy of MAs. It may be that determining the MA allocation using incomplete information the plan already has (e.g., only age, gender, plan balance, annual salary, company tenure, etc) results in an allocation that is no better or even worse, on average, than that of a TDF (i.e., is directionally incorrect). In contrast, it's possible the outside information may not significantly affect the recommended allocation. This potential is worth exploring further and is covered in-depth in this section.

To better understand how incomplete information impacts the potential value of MAs as a default, an analysis was conducted using data from the 2013 Survey of Consumer Finances (SCF).⁹ For the purposes of the analysis, the survey respondent was assumed to be the DC participant. Therefore, only respondents who were coded as actively participating in an employer-sponsored DC plan were included in the dataset. Additionally, the respondent had to be aged 25 to 65, have a DC plan balance greater than \$1, earn between \$10,000 and \$300,000 annually, and not be receiving Social Security retirement benefits. Applying these constraints resulted in a dataset of 983 households. While weights were available, they were ignored for the purposes of the analysis.

We can use this dataset to understand how "complete" the in-plan information is for DC participants on average. For example, Exhibit 4 provides information about what percentage the DC plan balance represents of the total household financial assets (ignoring transaction accounts) for single and married households.

9. Note, this is latest SCF available, the 2016 version has not been released yet.

Exhibit 4 Incomplete Information for DC Participants

Source: 2013 Survey of Consumer Finances, Author's calculations.

Exhibit 4 demonstrates that DC balances are a significant component of the total financial wealth of households. They are generally more than 50% of non-transaction financial assets (e.g., those held in a checking account), although the relative weight of DC assets declines as participants age, especially for married households.

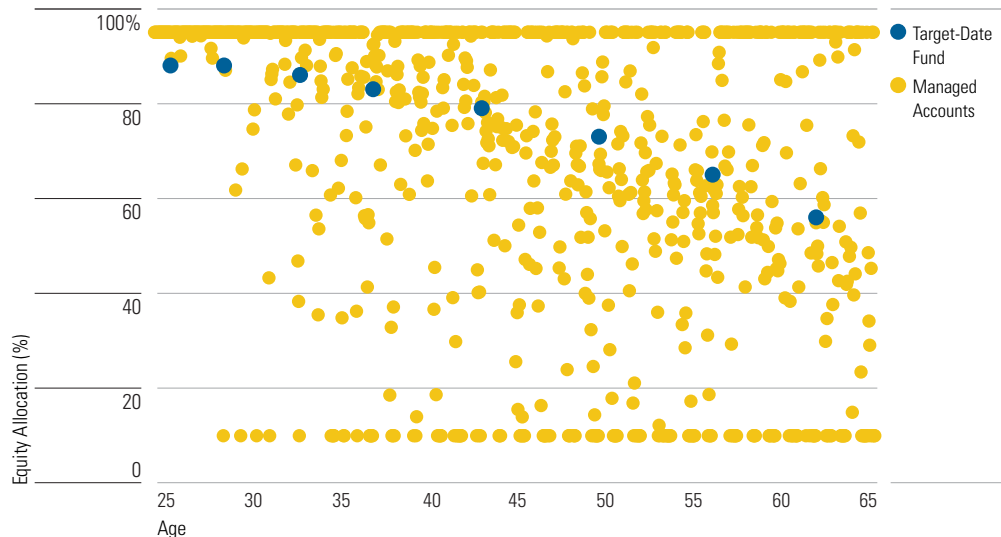
Next, we estimate how the portfolio decision is affected by having incomplete information. The model used to determine the appropriate portfolio allocation for the investor (i.e., the SCF respondent) is based on the model Morningstar Investment Management uses to determine portfolios for its retirement MA and advice solutions. Key to the methodology is the treatment of the DC plan balance as a "completion portfolio" that is invested so as to balance the investor's holistic wealth, which includes not only financial assets but also assets like human capital and pension wealth. In other words, if the participant's accounts outside the DC plan are invested very aggressively (i.e., the participant has an IRA that is invested entirely in equities), the DC monies may be allocated more conservatively (i.e., to mostly bonds) to make the risk of investor's total wealth more balanced. Alternatively, if the participant is likely to receive a significant amount of guaranteed income in retirement, the DC monies are likely to be invested more aggressively to account for the bond-like nature of guaranteed income. The portfolio assignment methodology is described in greater detail in Appendix 2, and Blanchett and Straehl (2015) provide a conceptual overview of this total wealth approach.

The optimal portfolio for each participant (i.e., survey respondent) is first determined using the complete household information. This not only includes the base information the plan sponsor would

know about, such as age, gender, plan balance, annual salary, company tenure, etc., which we call “incomplete” information, but also other important household considerations such as whether the participant is married, the spouse’s income, outside assets, risk levels of outside assets (e.g., IRAs), etc.

The recommended portfolio allocation for each hypothetical participant (i.e., SCF respondent) is included in Exhibit 5. Consistent with Morningstar Investment Management’s methodology, all equity allocations are constrained between 97% equities and 10% equities. A hypothetical target-date fund is also included in Exhibit 5 for comparison purposes. The equity allocation for the TDF is based on the asset-weighted equity allocations for all target-date mutual funds, as of December 2016, with data obtained from Morningstar DirectSM.

Exhibit 5 Target Participant Equity Allocation with Complete Household Information



Source: 2013 Survey of Consumer Finances, Morningstar DirectSM, Author’s calculations.

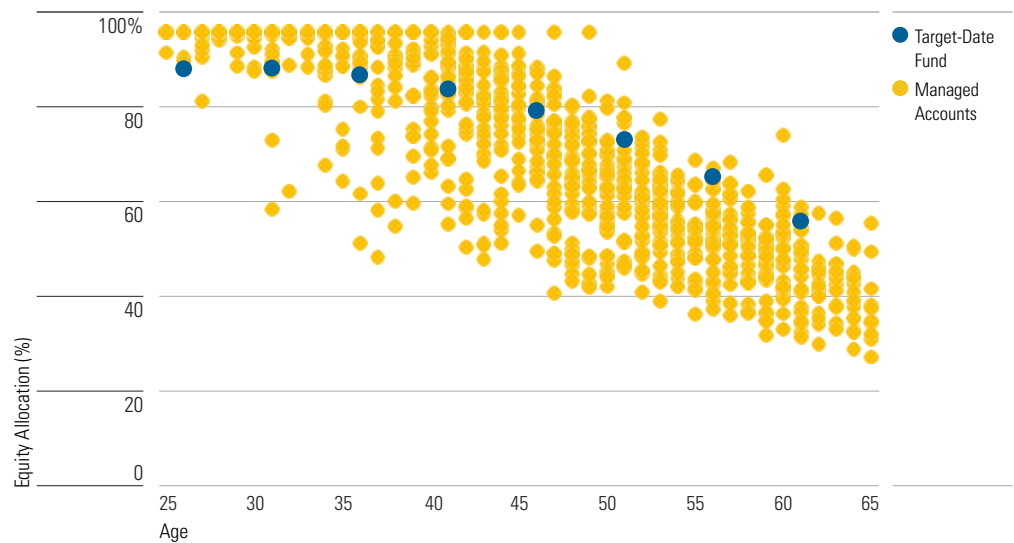
While the reader may question why a 30-year-old should have a DC allocation that is 10% equities, this is due to the “completion portfolio” aspect of Morningstar Investment Management’s approach. For example, that 30-year old participant with a 10% DC portfolio allocation in Exhibit 5 has non-DC assets that are relatively large (in this case, roughly 10 times the size of the DC plan balance) and are invested very aggressively (100% in equities). Therefore, the target for the DC portfolio is relatively conservative to balance the participant’s total risk across all portfolios. To summarize, relatively conservative allocations for younger investors and very aggressive allocations for older investors are driven primarily by outside assets.

There are some important takeaways from Exhibit 5. First, there is a considerable dispersion in the optimal DC equity allocations across participants (i.e., households), and this dispersion tends

to increase with age. Second, the TDF appears to be a reasonably good fit for many participants. While there is certainly considerable dispersion around the TDF glide path, it does appear to do a decent job targeting the “average” recommendation. This ballpark effectiveness and simplicity of implementation makes the TDF appealing to many plan sponsors.

It is not clear to what extent determining the portfolio based entirely on the known, in-plan (i.e., incomplete) information results in a better or worse recommendation than using a TDF. For example, it could be that determining a participant allocation based solely on in-plan data results in an allocation that is worse than the investor would receive from a TDF. To determine whether this is the case, we calculated the equity allocation using only incomplete information. For simplicity purposes (and since they are relatively rare) employer pension benefits were ignored, although they would obviously have a material impact on the recommendation. The results of the analysis are included in Exhibit 6.

Exhibit 6 Target Participant Equity Allocations with Incomplete Household Information



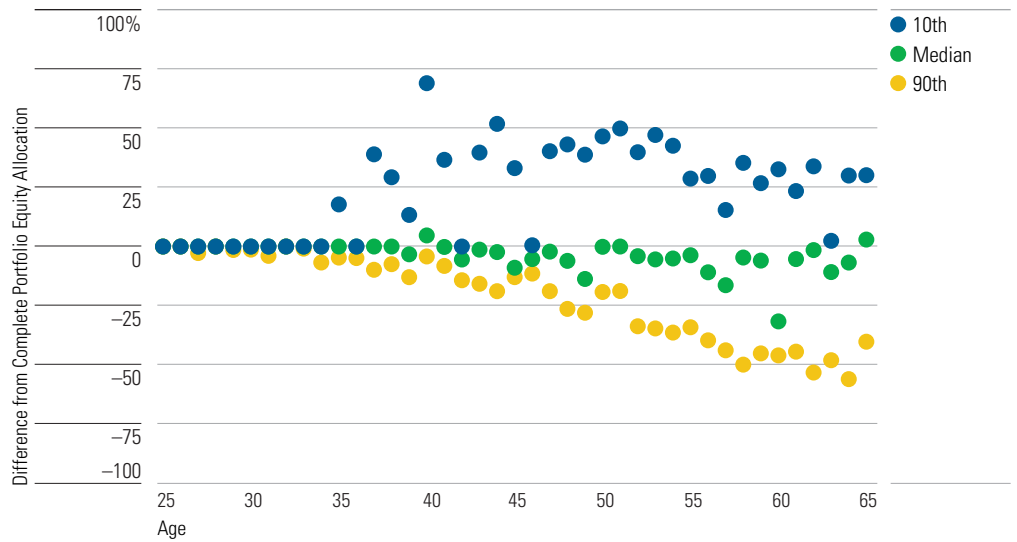
Source: 2013 Survey of Consumer Finances, Author's calculations.

The MA equity allocations in Exhibit 6 are much more condensed than those in Exhibit 5. This is not surprising and is due to the fact less information is available for each participant using MA as a default versus when complete information is available.

Now that we know what the allocation would be for the participant with complete household information, as well as what the estimated portfolio would be using incomplete information, we can further explore these differences to see whether portfolio recommendations when using MA as a default are directionally more accurate than just using a TDF. These comparisons are included in

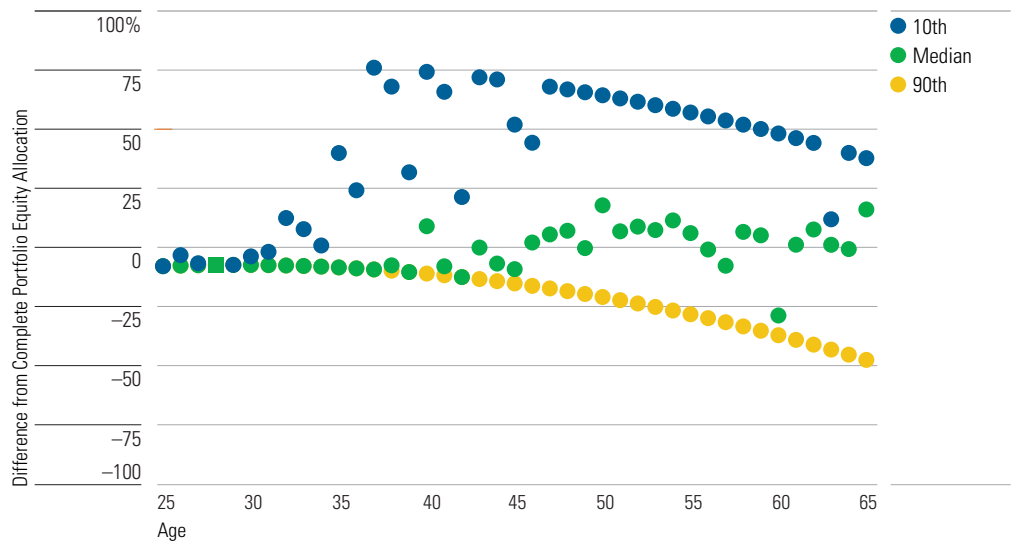
Exhibit 7, which includes the 10th, 50th (median), and 90th percentile equity difference for MAs (in Panel A) and TDFs (in Panel B) versus the MA allocation using complete information, by age.

Exhibit 7 Difference in Recommended Portfolio Versus Complete Information Portfolio
Panel A: MAs with Incomplete Information



Source: 2013 Survey of Consumer Finances, Author's calculations.

Exhibit 7 Difference in Recommended Portfolio Versus Complete Information Portfolio
Panel B: TDFs



Source: 2013 Survey of Consumer Finances, Author's calculations.

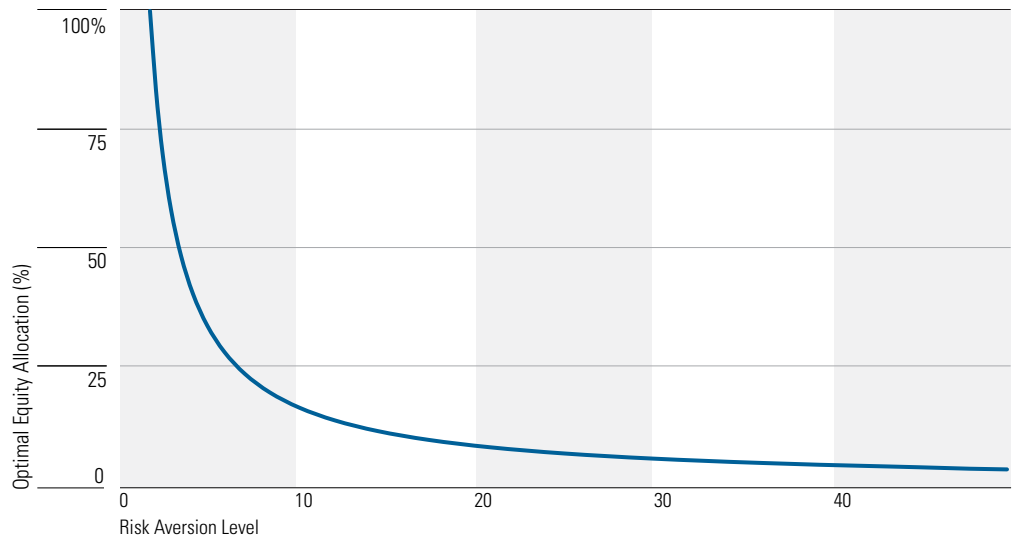
Some important points about the results in Exhibit 7: First, the median difference in the default recommendation versus what the recommendation would be with complete information is effectively zero for both solutions. In other words, both defaults tend to be right for the average (median) participant. Second, the distributions tend to diverge at older ages, especially for MAs. Third, the distribution of MA allocation differences was tighter than those for the TDF distribution. This suggests using MAs as the default results in allocation that is closer to the true optimal allocation compared to TDFs, on average. This is reflected in the higher correlation of the incomplete (in-plan) allocation versus the complete allocation at 0.50, versus a 0.35 correlation coefficient for TDFs and the complete MA allocation. Overall, this suggests even with incomplete information (i.e., no engagement) MAs can do a better job estimating the “correct” portfolio for an investor versus a TDF. The appropriateness would obviously increase if the participant engages. MA engagement will be addressed later.

Next, we attempt to estimate the “cost” of an investor being invested sub-optimally. For this analysis, we attempted to estimate the cost (from a returns or alpha perspective) associated with being invested in a portfolio that is not consistent with the true optimal portfolio for each investor. To do this, we first solved for the optimal equity allocation for a given risk aversion level, using equation 1.

$$U_{max} = \max_x M_P - \frac{\lambda}{2} S_P^2 \quad [1]$$

For equation 1, the equity allocation (x) that maximizes the utility for an investor given an expected portfolio return (M_P) and portfolio standard deviation (S_P) was determined. The portfolio was assumed to consist of two assets: a risky asset (e.g., equities) and a safe asset (i.e., cash). Return and risk assumptions were based on long-term historical averages where the risky asset had an expected return of 8.68% and a standard deviation of 20.44% and the safe asset had an expected return of 1.94% and a standard deviation of 1.90%. The correlation between the two assets was assumed to be 0. The optimal equity allocation for a given risk aversion level is illustrated in Exhibit 8.

Exhibit 8 Optimal Equity Allocation for a Given Risk Aversion Level



Source: Author’s calculations.

This model suggests, for example, that an investor with a target equity allocation of 54% has a corresponding risk aversion level of 3. The target allocation, and consequent risk aversion level, can be used to help determine the cost of being invested sub-optimally by rearranging the terms in equation 1. For example, we know the amount of utility¹⁰ the investor receives if that investor has a risk aversion level of 3 and were invested in a 54% equity allocation (0.0374). If that same investor, though, with a risk aversion level of 3, were invested in an 80% equity allocation, the resulting utility would be lower (0.0332). The annual return of the 80% equity portfolio would need to be increased by 0.42% for that investor to receive the same level of utility investing in the 80% equity allocation portfolio versus the (true optimal) 54% equity allocation portfolio. In other words, the annual cost of this investor being invested sub-optimally is 0.42%. Exhibit 9 includes additional cost examples.

Exhibit 9 The Alpha “Cost” of Being in the Wrong Portfolio

Actual Allocation	Target Allocation				
	10%	30%	50%	70%	90%
10%	0.0	-0.5	-1.1	-1.8	-2.5
30%	-1.5	0.0	-0.3	-0.8	-1.5
50%	-6.0	-0.5	0.0	-0.2	-0.7
70%	-13.5	-1.9	-0.3	0.0	-0.2
90%	-24.0	-4.2	-1.1	-0.2	0.0

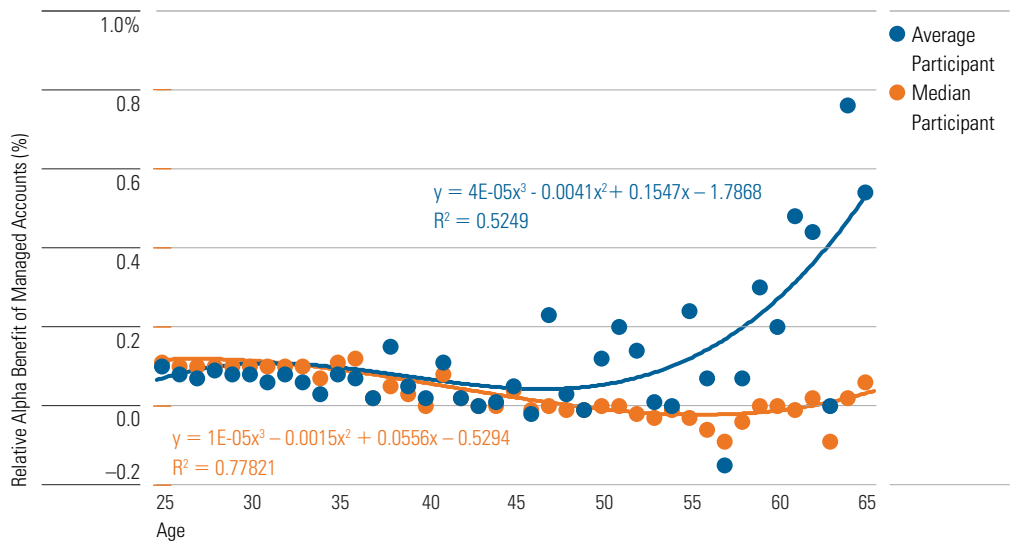
Source: Author’s calculations.

10. Utility is framework economists use to measure preferences. The higher the utility the happier the investor.

The cost associated with being invested sub-optimally (i.e., in a portfolio that is not consistent with your risk aversion level) increases the further you move away from the target. This outcome should be relatively intuitive. The largest differences are for those investors who should be invested very conservatively, but are invested in a very aggressive portfolio. For these investors, the costs associated with the higher levels of risk can be significant and lead to significant disutility.

To use this framework to determine the cost of using MAs or TDFs as the default compared to the full-information equity allocation, we assumed the portfolio allocation based on complete information is the optimal (target) portfolio and compared it to the recommended portfolio from either the TDF or MA as the default. To simplify the reporting of the impact, we first estimate the cost associated with each default individually. We then subtract the TDF difference from the MA difference. This provides insight into how much better (or worse) MAs do than TDFs. The maximum potential cost of being invested in the incorrect portfolio is assumed to be 5% (to limit the impact of a few outliers). The median and average benefits of MAs over TDFs, by age, are included in Exhibit 10.

Exhibit 10 Median and Average Value of Utilizing Base Participant Data for Portfolio Assignment (No Engagement)



Source: 2013 Survey of Consumer Finances, Author's calculations.

The results in Exhibit 10 are conceptually similar when contrasting Panels A and B in Exhibit 7. For example, the benefit of MAs as a default over TDFs in Exhibit 10 is effectively zero for the median participant. This is consistent with the findings in Exhibit 7, since the median allocation for MAs and TDFs versus the complete information target portfolio allocation is also (effectively) zero. In other

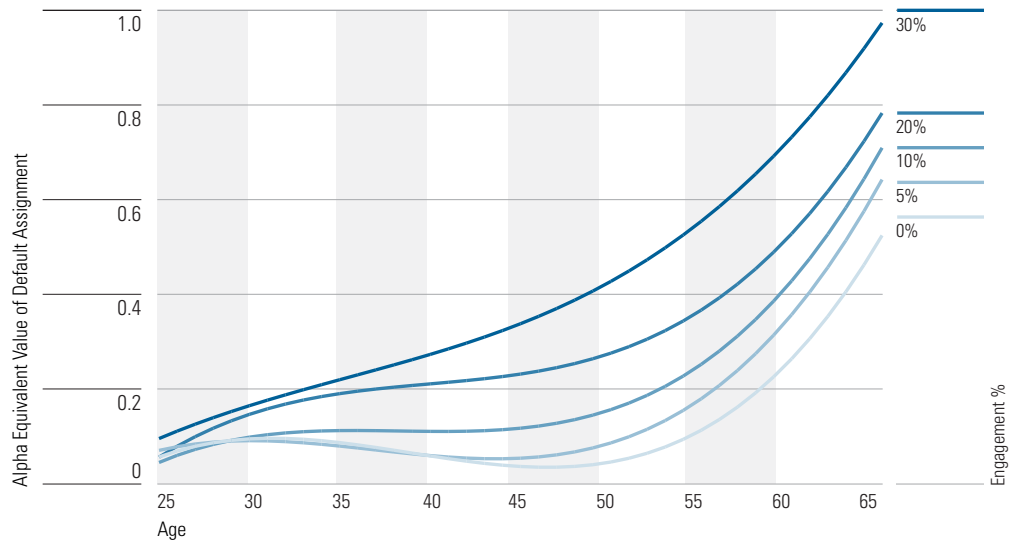
words, both solutions result in an equity allocation that is very similar to that of the portfolio that would be estimated if complete information were available for the median participant.

The efficacy of the solutions begins to diverge when the entire distribution of participants is considered (i.e., focusing on the average). This is because there are some participants who have much more appropriate portfolios using MAs as the default versus TDFs. This is especially true for older participants who are closer to retirement, where the average benefit of MAs over TDFs is approximately 50 bps. To put this 50 bps value into context, if the marginal cost of MAs was 50 bps (i.e., its fees were 50 bps more than those of TDFs) the risk appropriateness of using MAs would cover the cost, on average, ignoring any other potential benefits associated with the solution.

The analysis to this point has not assumed any of participant engagement—that the only information used to determine the allocation for MAs is the default participant information. In reality, some participants will engage with their MA provider and supply information about outside assets which can be used to determine a more appropriate portfolio. It's worth exploring how this potentially affects the value of MA as a default.

To model the potential impact of engagement, we ran scenarios where respondents (i.e., DC participants) were assumed to be either incomplete or complete information MA investors. The percentage of respondents who provide the additional complete information was the assumed engagement rate. We randomly assigned engagement to respondents. Engagement rates of 5%, 10%, and 20% were considered. The previous analysis effectively assumed an engagement rate of 0% (e.g., Exhibit 10), which is also included for comparison purposes, but it is not consistent with actual MA engagement rates (which will be covered later). Opposed to including the results for each age, a third-order polynomial is estimated for each level of engagement based on the average relative value of MAs versus TDFs for each respondent. The results of the analysis are included in Exhibit 11.

Exhibit 11 Impact of Engagement Level on Average Relative Value of Managed Accounts from a Risk Appropriateness Perspective



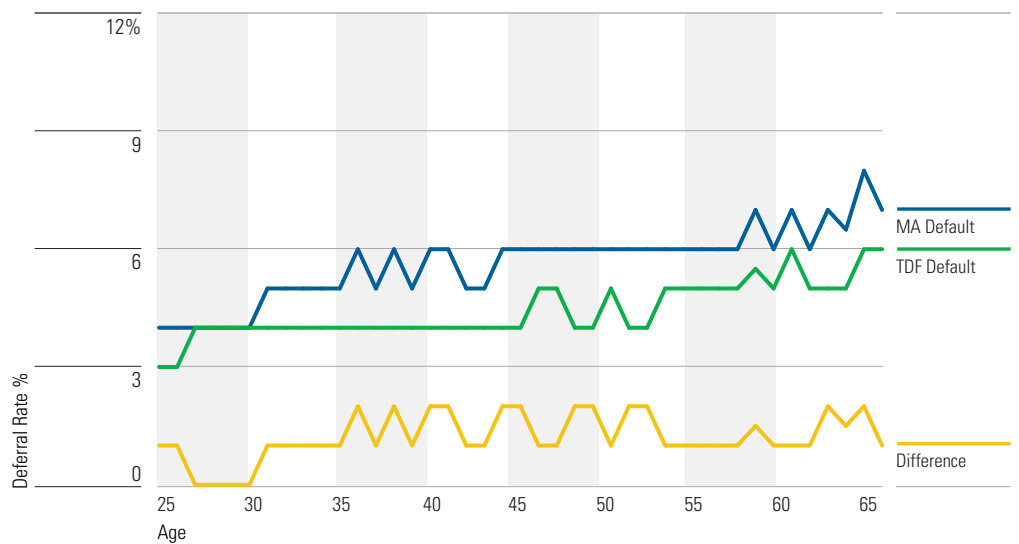
Source: 2013 Survey of Consumer Finances, Author's calculations.

Not surprisingly, the relative value of MAs increases as engagement increases. In other words, the more participants who provide information about their financial situation, the more appropriate the portfolio recommendation for MAs will be, on average. Again, the primary benefits of engagement from a risk-appropriateness perspective accrue to older participants. This is due to the increasingly complex situation of households closer to retirement. There are other benefits of engagement that exist, which while not explored here, will be touched on later.

Savings

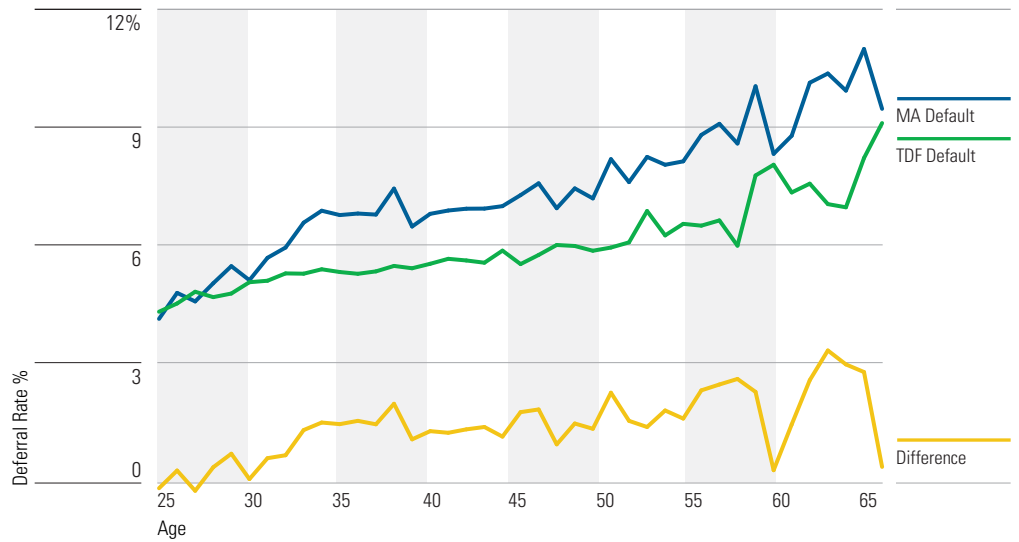
In theory, the savings rates for using MAs and TDFs as the default would be identical, since the choice of the default investment should not affect saving savings decisions. This would be consistent with previous tests exploring default investment acceptance, which was relatively similar between MAs and TDFs. However, research by Blanchett, Bruns, and Voris (2016) noted that participants defaulted in MAs tend to have higher savings rates than participants defaulted into TDFs, an effect demonstrated in Exhibit 12 for the median (Panel A) and the average (Panel B) savings levels from Blanchett, Bruns, and Voris (2016).

Exhibit 12 Deferral Rates by Age—**Panel A: Median Deferral Rates**



Source: Blanchett, Bruns, and Voris (2016).

Exhibit 12 Deferral Rates by Age—**Panel B: Average Deferral Rates**



Source: Blanchett, Bruns, and Voris (2016).

While participants defaulted into MAs saved at higher rates than those in TDFs, a significant portion of the difference can be explained by participant demographics and plan features. For example, plans that offer managed accounts tend to have older participants with higher salaries. Both of these attributes are positively correlated to higher savings rates. After running various regressions to control for plan-level features like automatic enrollment, as well as participant-level demographics like age, income, plan tenure, etc., the savings benefit of MAs over TDFs decreases to approximately 0.5%, which can still result in a significant increase in accumulated savings at retirement.¹¹ This suggests that while participants defaulted into MAs do tend to save more for the retirement, most of the impact is based on plan-level features and participant attributes, not the default decision. Regardless, there does appear to be a potential savings benefit to using MA that is likely worth exploring further.

11. The actual reduction varies significantly by model.

Annuities

Another benefit of managed accounts may be in the area of providing guaranteed income at retirement—making a DC plan look more like a defined benefit plan. Academics largely agree that higher levels of annuitization may create better outcomes for many retirees. Annuities are relatively rare today in DC plans, especially 401(k)s, although interest among plan sponsors has been increasing. DC consultants and plan sponsors have considered including an annuity as part of the default investment to provide partial guaranteed retirement income from DC plan savings. While participants could obviously opt out of a default investment that contains an annuity, most research suggests that participants are likely to accept defaults without much question. So, incorporating annuities into the default investment option would likely be an effective way for plan sponsors to provide guaranteed income in a DC plan.

However, there are many drawbacks to using annuities in the default investment option, such as the fact that the benefits of annuitization vary considerably by individual (see Blanchett, 2016, who explores this at some depth). Participants who have longer life expectancies and less existing guaranteed income will more likely benefit more from annuitization, while annuities might not benefit those with shorter life expectancies or who want to leave a sizable bequest to heirs.

Plan sponsors can calibrate the annuity decision at the plan-level, e.g., to incorporate the existence of pension or other plan/participant characteristics, but there will still likely be considerable differences among participants within a given age cohort, especially if there has been a structural change in pension benefits (e.g., it has been frozen).

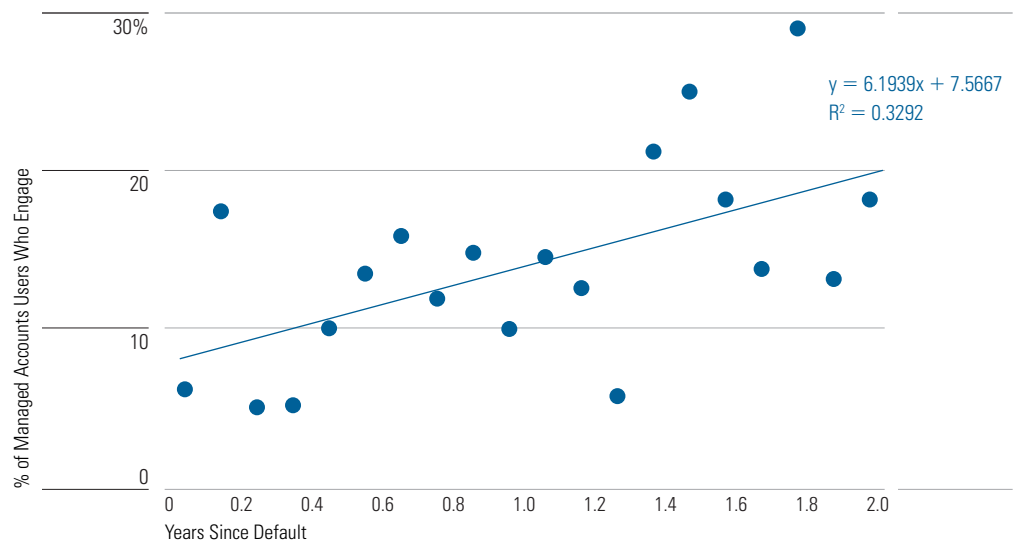
Similar to how MAs allow for more-appropriate portfolio recommendations, they also allow for a more-personalized annuity recommendation, if additional information is shared with the MA provider. Blanchett (2016) explored this topic at some length and notes that the potential utility benefits associated with introducing annuities as part of the default are significantly greater in a MA framework versus a TDF framework, even if the TDF allocation is well-calibrated to the plan.

Engagement

Engagement can considerably increase the potential value of MAs since it allows for more personalized recommendations and guidance. This includes financial advice beyond the portfolio, such as how much to save for retirement, when to retire, etc. MA engagement has been generally noted to be low, even in an opt-in framework (when participants have to actively select the option). While statistics vary, individuals in a PLANSponsor¹² article suggest engagement rates are between 20% and 30% (or as high as 50%). These estimates are for MA as an opt-in arrangement, though, so it's not clear how these apply to MA as a default.

To estimate engagement when MA is used as the default, we analyzed the dataset we used to estimate the stickiness of MA over time (the results of which are in Exhibit 3), which is based on 43 plans and 22,187 participants. An available participant data field is whether or not the participant had engaged with MA at all (note, the extent of engagement is not known). The percentage of users who engage, based on the length of time since they were defaulted into an MA, is included in Exhibit 13. Note, this analysis only includes participants who were in were still using an MA for each period (i.e., those who opt-out of MAs are not included in the analysis).

Exhibit 13 Percentage of Managed Accounts Participants Who Engage



Source: Author's calculations.

The results of the analysis suggest that approximately 10% of participants engage with the MA program at or shortly after enrollment, and that the level of engagement increases to over 20% after being in the solution after two years. These numbers are roughly consistent with other estimates of participant engagement (although lower).

12. <http://www.plansponsor.com/Participants-in-Managed-Account-Miss-Out-on-Personalization/?fullstory=true>

To better understand which types of participants are more likely to engage with MA, two logistic regressions are performed. Additional details regarding the regressions and the results are included in Appendix 3. Overall, the regressions suggest that older participants, who have been in an MA longer, with higher deferral rates, higher balances, and higher income, are more likely to engage. It seems participants who are actively preparing for retirement and using an MA as a solution engage with the provider to help understand their overall retirement situation (e.g., to answer the question, “Am I on track to retire at age 65?”). One important consideration about MAs for older investors, is that while it can provide savings and investment guidance for a participant’s entire wealth, the fee is assessed only on the assets invested in the MA in the DC plan. Therefore, the true effective cost of the service (from a holistic financial planning perspective) could be much lower than the actual fee if viewed within the scope of the total assets it could be provide guidance on.

There are a variety of other potential benefits participants can receive when engaging with MAs, beyond just portfolio appropriateness. For example, Blanchett (2017) finds that approximately 90% of participants who received savings guidance increased savings rates with an average change of 2 percentage points (i.e., go from saving 6% of income to 8%, on average). This suggests having some type of in-plan advice solution can help get participants to save more for retirement.

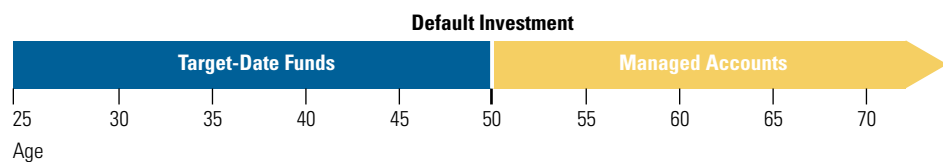
While MAs are often viewed primarily as an investment solution, they, like financial advisors, can provide a suite of services that extend well beyond just investments. Financial planning activities have been noted to result in a significant potential value-add for investors. For example, Blanchett and Kaplan (2013) find that providing guidance on five financial planning activities can result in an equivalent annual alpha of 1.6%. Similarly, Vanguard (2014) notes the value of providing a slightly different set of financial planning activities that result in an increase in net returns of approximately 3% for clients. Overall, while engagement does not appear to be necessary for MA participants to benefit from the solution, the benefits are significantly higher when participants do engage with MA.

Implications

The results of the analysis suggest that MAs deliver outcomes that are at least as good as TDFs for each of the factors considered. For example, when used as a default, MAs have had higher investment performance, resulted in a more-appropriate portfolio allocation, and improved savings rates. Also, MAs are likely to result in more-appropriate annuity allocations (if annuities are included in the default), and engagement can significantly increase the value of MAs across a number of variables.

The potential benefits of MAs as a default investment option are likely to accrue differently across participants, and the impact isn't always obvious. For example, while MAs and TDFs tend to deliver similar equity recommendations for younger participants (e.g., age 30), younger participants may receive a significantly greater (long-term) benefit from higher savings rates. In contrast, portfolio benefits from a risk-appropriateness perspective appear to accrue mainly to older participants. While the default investment option is typically viewed as a single decision, it is technically possible to select multiple default investments for a plan (i.e., have two or more QDIAs for the plan) based on guidance from Saxon and Wilson (2016). Under such an arrangement, the plan sponsor could default participants into different default options based on certain criteria. For example, the plan sponsor may decide to default participants beyond some given age (e.g., age 50) into MAs and younger participants into TDFs. This idea of a dynamic default, where the default decision varies by age, is illustrated in Exhibit 14.

Exhibit 14 A Dynamic Default Investment Approach



Source: Author.

The dynamic default concept in Exhibit 16 would be when participants who were initially defaulted in TDFs would move into MAs when they reach the transition point (which is age 50 for this example). Of course, a variety of potential attributes could be used to sort participants, such as age, income, balance, etc. (or some combination of these).

Cost is a key consideration when determining the right default option for a participant. If the additional cost of MAs is relatively low, that would favor wider use of MAs. As the cost for MAs increases, the alternative default option (e.g., a TDF) becomes more attractive. Therefore, the transition decision should be based not only on participant demographics and plan information, but also the cost of the different options as well.

There are relatively few providers offering a “dynamic default” solution today, with Empower being the first to announce a product and Fidelity also making an announcement shortly thereafter. We expect both interest and availability of these types of dynamic default solutions to increase in the future.

Conclusions

TDFs have jumped way ahead of other options in terms of popularity since the introduction of “qualified” default options about a decade ago—their low costs and easy implementation have helped make them an easy sell. But TDFs fall short when it comes to personalization. MAs, which offer much greater personalization and additional advice over target-date funds, have gained in popularity recently. However, MAs usually cost more than TDFs, which has given plan sponsors and participants pause before adopting them as the default.

While MA fees have fallen, the higher fees may be justify for some participants, especially those whose profile is similar to national averages for income, savings, and other measures. That said, MAs often can easily prove their worth for many participants over TDFs. By boosting savings, building appropriate investment portfolios, and calibrating risk, MAs can potentially result in better outcomes than TDFs, even after considering their higher fees.

Plan sponsors may find that the right default investment option is one that aims to both lower costs and provide personalization for participants. One potential solution is a dynamic default offering—one that automatically moves participants from a low-cost option such as a target-date fund to a managed account if and when they will likely benefit from greater personalization.

Overall, the default investment decision is an important one for a DC plan. There are a variety of factors that should be considered, beyond historical performance, and it’s important for plan sponsors and DC consultants to be able to put these factor in the right context to select the truly optimal default for a plan.

References

Advised Asset Group. 2016a. "Participant Return Annual Report: Defined Contribution Plans." White Paper.

Advised Asset Group. 2016b. "Participant Return Annual Report: Government Plans." White Paper.

Blanchett, David. 2016. "Defaulting Participants in Defined Contribution Plans into Annuities: Are the Potential Benefits Worth the Costs?" *The Journal of Retirement*, vol. 4, no. 1: 54-76.

Blanchett, David. 2017. "Save More Today: Improving Retirement Savings Rates with Carrots, Sticks, and Nudges." Morningstar White Paper.

Blanchett, David, Daniel Bruns, and Nathan Voris. 2016. "The Impact of the Default Investment Decision on Participant Deferral Rates: Managed Accounts vs Target-Date Funds." Morningstar White Paper.

Blanchett, David and Paul Kaplan. 2013. "Alpha, Beta, and Now... Gamma." *Journal of Retirement*, Vol. 1, No. 2, P. 29.

Blanchett, David M., and Philip U. Straehl. 2015. "No Portfolio is an Island." *Financial Analysts Journal*, vol. 71, no. 3: 15-33.

Callan. 2015. "2015 Defined Contribution Trends." White Paper.

Cerulli Associates. 2014. Retirement Edition. White Paper.

Chetty, Raj, Michael Stepner, Sarah Abraham, Shelby Lin, Benjamin Scuderi, Nicholas Turner, Augustin Bergeron, and David Cutler. 2016. "The Association Between Income and Life Expectancy in the United States, 2001-2014." *Jama*, vol. 315, no. 16: 1750-1766.

Financial Engines. 2014. "Help in Defined Contribution Plans: 2006 through 2012." Financial Engines White Paper.

Saxon, Stephen M. and Jeanne Klinefelter Wilson. 2016. "Fiduciary Considerations of the Dynamic QDIA." Groom Law Group White Paper.

Towers Watson. 2014. "Unbundled Target-Date Funds: Improving Participant Outcomes Through a Customized Approach." White Paper.

Vanguard. 2014. "Unbundled Target-Date Funds: Improving Participant Outcomes Through a Customized Approach." White Paper.

Vanguard. 2016. "How America Saves." Vanguard White Paper.

Young, Jean. 2016. "Target-date Funds: Made to Stick." Vanguard White Paper.

Appendix 1: Logistic Regressions on Continued Default Acceptance

The dependent variable for the logistic regression was whether the participant was still in the default investment solution for that plan. Independent variables included in the regression include age, years since the participant was defaulted, total deferral rate, salary, balance, and gender. Note, there were three potential gender states available in the datasets: male, female, and unknown. Therefore, male and female gender were each treated as dummy variables where the omitted gender variable was unknown.

Exhibit A1 Logistic Regressions on Continued Default Acceptance

	Managed Accounts Default				Target-Date Default			
	Participant Wt		Plan Wt		Participant Wt		Plan Wt	
	Coeff	Odds Ratio	Coeff	Odds Ratio	Coeff	Odds Ratio	Coeff	Odds Ratio
Intercept	7.125**	—	7.150**	—	8.063**	—	8.370**	—
Age	-0.010**	0.990	-0.017**	0.983	-0.003*	0.997	-0.003**	0.997
Years Since Default	-0.669**	0.512	-0.443**	0.642	-0.063**	0.939	0.198**	1.219
Total Deferral Rate	-0.033**	0.968	-0.037**	0.964	-0.076**	0.927	-0.081**	0.922
ln(Salary)	-0.278**	0.757	-0.260**	0.771	-0.175**	0.840	-0.242**	0.785
ln(Balance)	-0.176**	0.839	-0.164**	0.849	-0.494**	0.610	-0.481**	0.618
Male?	0.188	1.207	-0.101	0.904	0.156**	1.169	0.101**	1.106
Female?	0.662**	1.940	0.320	1.377	0.398**	1.488	0.206**	1.228

Source: Author's calculations. * significant at 5% level, ** significant at 1% level.

Appendix 2: Portfolio Assignment Approach

The approach to determining the appropriate risk level for an investor's portfolio (i.e., portfolio assignment) is based on taking a holistic view of an investor's assets. We incorporate the total value and risk attributes of assets that are often overlooked, such as human capital and pension wealth, and use the financial assets (e.g., a 401(k) plan balance) as a "completion portfolio" to ensure diversification of the individual's total wealth.

A fundamental part of the total wealth process is modeling and understanding how an individual's (or really household's) wealth changes over the lifecycle. For younger individuals, human capital is typically the dominant household asset. Human capital can be thought of as the mortality-weighted net present value of an individual's future wage income. As individuals age, they tend to save money for retirement, thereby accumulating financial assets (e.g., a 401(k) balance), as well as accruing benefits in pension plans (such as Social Security). In other words, over time investors convert a portion of their salary (i.e., human capital) into financial capital by saving and accruing pension benefits, both of which can be used to fund retirement.

Research by Blanchett and Straehl (2015), among others, has noted that human capital is generally a relatively bond-like asset—it usually pays a steady "coupon" in the form of a paycheck, but its risk varies considerably across business cycles, by job skills, as well as the specific occupation and industry of the worker. Because human capital is bond-like and untradeable, a younger investor's financial assets should be invested more aggressively to achieve a more balanced risk level from a total wealth perspective. As the relative value of human capital (as a percentage of total wealth) declines as the individual ages, financial capital should be invested more conservatively to ensure the risk of the total wealth remains balanced throughout the lifecycle. This is the economic rationale underpinning the shape of many glide paths today.

There are two final considerations when determining the optimal risk level for a participant's portfolio. The first is how "on track" that individual/household is for retirement. Within the portfolio assignment process, individuals who are better funded (i.e., have higher funded ratios) can potentially take on more risk in their portfolio based on their target risk level using the total wealth approach. Second, other nonadvisable portfolios (e.g., an IRA or really any monies outside the DC plan) must be considered. For example, if an investor has a large IRA that is invested very aggressively, yet the overall total wealth target risk level is more balanced, the monies in DC plan should be invested more conservatively (and vice versa).

Appendix 3: Logistic Regressions on Managed Account Engagement

The dependent variable for the logistic regression is whether the participant decided to engage with managed accounts. The independent variables are age, years since defaulted, total deferral rate, salary, balance, and gender. There were three potential gender states available in the datasets: male, female, and unknown. Therefore, male and female gender were each treated as dummy variables where the omitted gender variable was unknown.

Exhibit A3 Logistic Regressions on Managed Account Engagement

	Participant Wt		Plan Wt	
	Coeff	Odds Ratio	Coeff	Odds Ratio
Intercept	-5.628**	—	-4.113**	—
Age	0.009**	1.009	0.013**	1.013
Years Since Default	0.832**	2.299	0.631**	1.880
Total Deferral Rate	0.022**	1.023	0.026**	1.027
ln(Salary)	0.085	1.088	-0.092*	0.912
ln(Balance)	0.083**	1.086	0.048**	1.050
Male?	0.680	1.974	1.371**	3.938
Female?	0.401	1.494	1.183*	3.263

Source: Author's calculations. * significant at 5% level, ** significant at 1% level.

Disclosures

© 2017 Morningstar Investment Management LLC. All Rights Reserved. The Morningstar name and logo are registered marks of Morningstar. These materials are for information and/or illustrative purposes only. This presentation includes proprietary materials of Morningstar Investment Management. Reproduction, transcription or other use, by any means, in whole or in part, without the prior, written consent of Morningstar Investment Management is prohibited.

The information, data, analyses, and opinions presented herein do not constitute investment advice; are provided as of the date written and solely for informational purposes only and therefore are not an offer to buy or sell a security; and are not warranted to be correct, complete or accurate. Past performance is not indicative and not a guarantee of future results.

This white paper contains certain forward-looking statements. We use words such as “expects”, “anticipates”, “believes”, “estimates”, “forecasts”, and similar expressions to identify forward looking statements. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results to differ materially and/ or substantially from any future results, performance or achievements expressed or implied by those projected in the forward-looking statements for any reason.