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WHITE PAPER

Right on Target?
Plan Sponsors May Not Always Consider Participants' Behavior or Needs When Selecting Target-Date Glide Paths

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Key Takeaways

Off-the-shelf target-date funds, or TDFs, are the most prevalent investment type in defined-contribution plans, such as 401(k)s. TDFs adjust investments based on a participant's age or projected retirement date, usually shifting from more equities to more bonds as participants get closer to retirement. Off-the-shelf TDFs are not customized but are offered with the same glide path to multiple plans. In contrast, some plans sponsors choose customized glide paths for their plan participants.

Drawing on a database linking plan filings with the Department of Labor to Morningstar Inc.'s investment databases, we find that 58% of defined-contribution plan assets are invested in off-the-shelf TDFs. We also find a mixed story on the degree to which plan sponsors select TDFs based on their participants' behaviors and needs.

We find that most plans offer TDFs designed for participants staying in the retirement plan through their retirement even in cases when a plan's participants are more likely than average to roll their money out of their plans. This mismatch is important because these "through" glide paths typically take on more risk than "to" retirement glide paths, leaving participants with more equity exposure than they would have if their glide path accounted for their propensity to take money out of the plan at retirement or separation from employment.

We examined the glide paths that plan sponsors use in different sectors and found that, despite large differences in salaries and likely retirement ages, plan sponsors tend to use similar glide paths. This mismatch could lead to workers with less-than-ideal asset allocations in some cases. Nonetheless, we see clear evidence that some plan sponsors are adjusting their glide paths based on their participants' characteristics, particularly their propensity to stay in a plan after retirement.

Plan sponsors that still offer a traditional pension were the most likely to adjust their glide paths. We find that plan sponsors associated with a traditional pension plan were more likely to offer "through" TDFs and choose TDF glide paths with more equity exposure, both of which make sense for worker populations that will enjoy a stream of formula-based pension income in retirement.

We offer recommendations to the Department of Labor to help align TDF selection with participants' needs more consistently.

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Background

TDFs Have Come to Dominate Retirement Plan Assets in the Years Since They Were Permitted as Qualified Default Investment Alternatives

In 2007, the Department of Labor Employee Benefits Security Administration implemented a key part of the Pension Protection Act by finalizing rules for qualified default investment alternatives, or QDIAs, which made it easier for plan sponsors to automatically enroll workers in a retirement plan. By following the QDIA rules, plan sponsors enjoy less fiduciary risk then they would otherwise face.

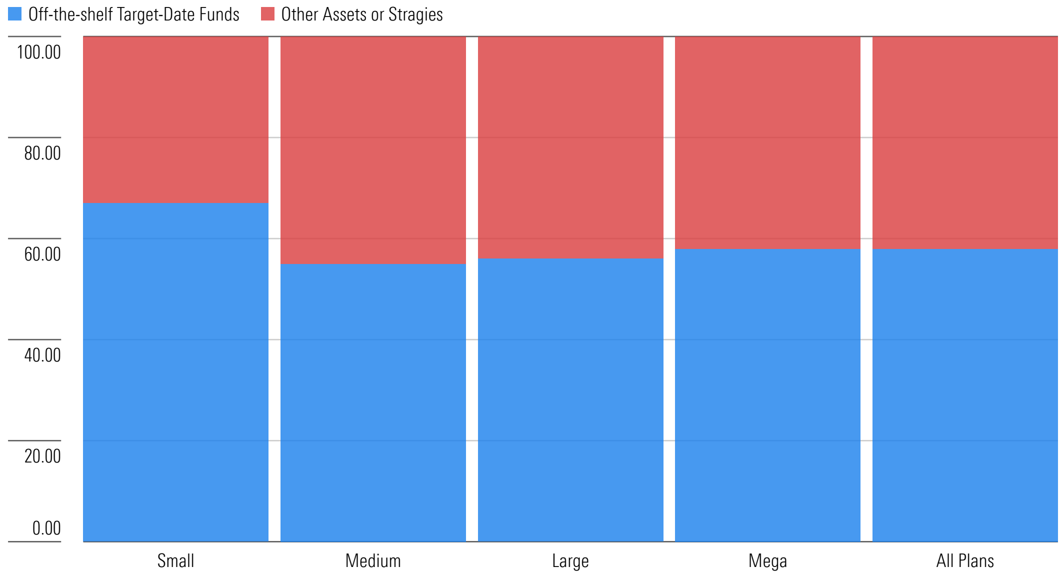
The regulations allowed plan sponsors to choose between managed accounts, balanced funds, and target-date funds as the QDIA.[1] Managed accounts automatically allocate contributions across a plan's designated investment alternatives and rebalance them based on a participant's goals, age, and nonplan assets, among other inputs. Balanced funds simply invest in a static mix of asset classes. TDFs adjust investments based on a participant's age or projected retirement date, usually shifting from more equities to more bonds as participants get closer to retirement.

Of the three investment options that plan sponsors could choose as QDIAs—managed accounts, balanced funds, and TDFs—TDFs have become by far the most prevalent. Across all plans, we find that 58% of defined-contribution plan assets are invested in off-the-shelf TDFs. Off-the-shelf TDFs are not customized but are offered with the same glide path to multiple plans. Unfortunately, there is no reliable data on the use of custom glide paths built from the funds in the plan's lineup or in custom pooled vehicles, such as separately managed accounts.

[1] There is also an option for a capital preservation strategy but only for the first 120 days of participation, as detailed in 29 CFR § 2550.404c-5.

We do not see big differences between medium, large, and mega plans, but participants at smaller plans have two thirds of their assets in TDFs. The greater usage of TDFs in small plans is probably due to the fact that these plans are most likely to use an off-the-shelf TDF as their default investment, while some larger plans may use a custom TDF or managed accounts.

Exhibit 1 Percentage of Defined-Contribution Plan Assets in Off-the-Shelf TDFs by Plan Size



Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: Mega plans have more than $500 million in assets; large plans have $500 million or less in assets, but more than $100 million; medium plans have $100 million or less in assets, but more than $25 million; and small plans have $25 million or less in assets.

In 2013, the Department of Labor published tips for plan fiduciaries using TDFs, which include suggestions that plan sponsors determine whether the characteristics of TDFs align well with the plan participant population. In particular, the DOL identified the importance of considering salary levels, the availability of a defined-benefit plan, turnover rates, and employees' likely retirement dates and ages. The DOL also opined that plan fiduciaries focus on the "to" and "through" decision because some "funds continue to invest in stock" and "employees' retirement savings may continue to have some investment risk after they retire." The DOL noted that "if the employees don't understand the fund's glide path assumptions when they invest, they may be surprised later if it turns out not to be a good fit for them."[2]

In this paper, we examine the extent to which plan sponsors select TDFs for their participant populations that align with these criteria. We address three researchable questions in this paper. The first is the extent to which plan sponsors consider the likelihood of participants staying in a selected TDF through retirement. The second is the extent to which plan sponsors in different sectors, which have different salary curves and salaries, vary in their TDF selection. The third is the extent to which defined-contribution plan sponsors also offering a defined-benefit plan adjust their TDF offering.

For the methodology that we use to match plan assets to their public Form 5500 filings, see *The Morningstar Retirement Plan Landscape Report* [3] and note that this paper relies on 2019 plan data, which is the most complete set at the time of this writing.[4]

[2]U.S. Department of Labor. "Target Date Retirement Funds–Tips for ERISA Plan Fiduciaries." https://www.dol.gov/sites/dolgov/files/EBSA/about-ebsa/our-activities/resource-center/fact-sheets/target-date-retirement-funds.pdf
[3]Mitchell, L. & Szapiro, A. 2022. "Retirement Plan Landscape Report: An In-Depth Look at the Trends and Forces Reshaping U.S. Retirement Plans." https://www.morningstar.com/lp/retirement-plan-landscape
[4]Data on the glide paths used by strategies found in plans is current as of May 11, 2022.

Most Plans Offer TDFs Designed for Participants to Invest in Through Retirement Even When the Evidence Suggests Participants Typically Leave Their Plans

TDF structures vary significantly depending on whether the fund assumes investors will use it “through” retirement or “to” retirement. Managers build a “through” retirement glide path to account for a participant taking regular distributions in retirement from the fund, while they construct “to” glide paths using the assumption that an investor will take the money out at retirement. Plan sponsors overwhelmingly select “through” glide paths, which account for 86% of TDF assets. This implies that plan sponsors anticipate that their participants will draw down using these strategies in retirement. Other Morningstar researchers have similarly found that nearly four fifths of new target-date funds use “through” glide paths, as do the largest providers by assets under management.[5] (Of course, the lower availability of “to” glide paths could push sponsors to select “through” glide paths.)

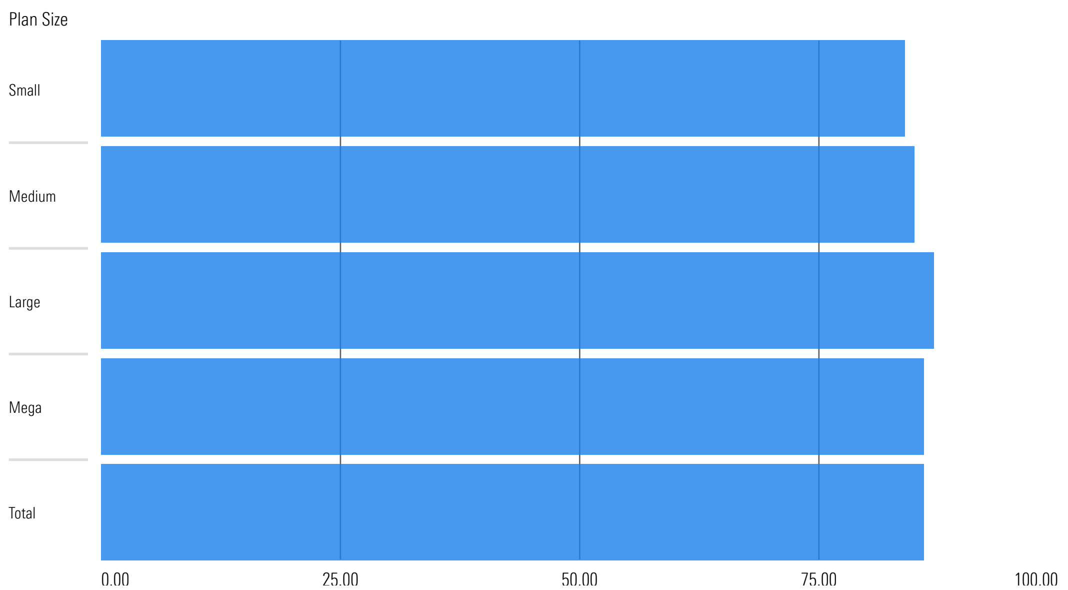
“Through” glide paths tend to hold more equity than “to” glide paths at the target-retirement date and, therefore, expose retirement plan participants to more risk at retirement than “to” glide paths. In fact, investors in funds following a “through” glide path will hold around 13 percentage points more in equity at age 65 than their peers invested in “to” glide paths, as the average “through” series holds 46% in stocks versus just 33% for the average “to” series.[6] During down markets, near retirees in “to” glide paths have done better than those in “through” glide paths because of the differences in equity exposure: Designed for people retiring in 2020, 2020 vintage TDFs in “through” glide paths experienced losses that were 40% greater than those in “to” glide paths during the first-quarter selloff of 2020.[7]

Small and medium plans are the most likely to terminate, meaning there is higher likelihood the plan will not exist through the participants’ entire retirements, raising questions about their sponsor’s similar preference for selecting “through” glide paths. Morningstar’s Center for Retirement & Policy Studies has previously found that approximately 380,000 plans terminated between 2011 and 2020—nearly 97% of which had fewer than 100 participants and were in the small and medium categories—that is, they had less than $100 million in assets. Despite this fact, small plans were just about as likely to use “through” glide paths as the largest plans.

[5]Pacholok, M. & Zaya, K. 2022. “Morningstar’s Annual Target-Date Strategy Landscape.” https://www.morningstar.com/lp/tdf-landscape
[6]Ibid.
[7]Ibid.

The percentage of distributions coming from plans with "through" glide paths is almost identical to the proportion of plans with these glide paths, indicating that participants are not generally using "through" glide paths through retirement, as shown in Exhibit 2.[8] In other words, participants with access to a "through" glide path are pulling just as much money out as those with a "to" glide path, which is inconsistent with the intent of glide paths to take smaller structured withdrawals. Of course, it is possible that some people are taking all their money out pre-retirement and many people are using the "through" TDFs as intended. However, we also see that approximately the same number of assets are left in TDFs after the target date is attained in both "to" and "through" glide paths, at 11% and 14%, respectively.[9] Between these two pieces of data, we think it is unlikely that many participants use "through" glide paths in retirement for structured withdrawals. This result makes sense: Participants are often defaulted into TDFs or choose them because they do not want to think about all the intricacies of investing; in both cases, it is likely they are not aware that the investment strategy has specific expectations for their withdrawal plans.

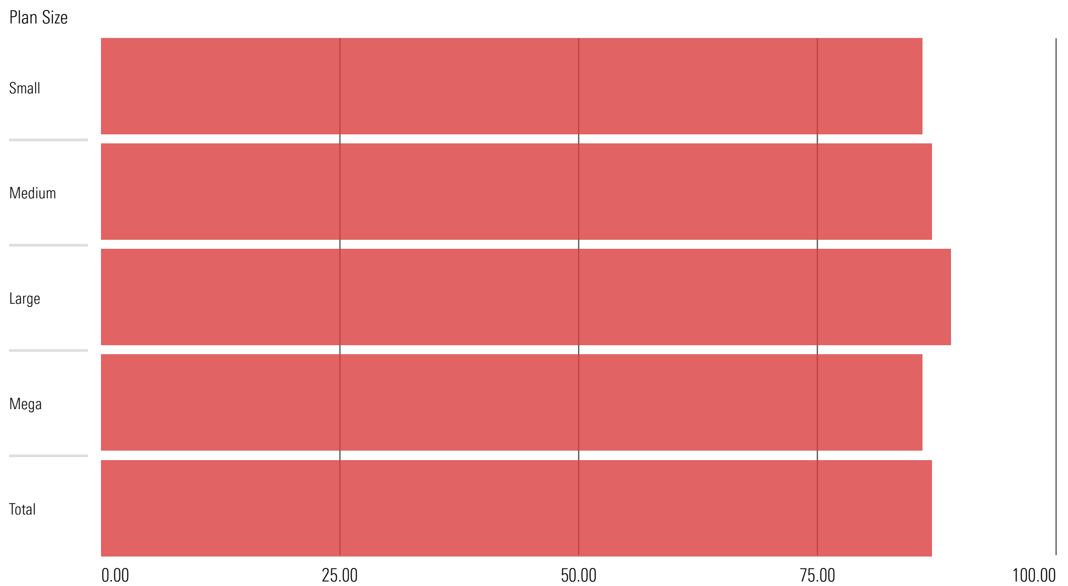
Exhibit 2-1 Percentage of TDF Assets in "Through" Glide Paths



Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: Mega plans have more than $500 million in assets; large plans have $500 million or less in assets but more than $100 million; medium plans have $100 million or less in assets but more than $25 million; and small plans have $25 million or less.

[8]Please note that we cannot distinguish whether distributions are for rollovers, lump sums, or even structured withdrawals. We can control for the percentage of participants who are still in the plan after retirement or separation.
[9]Pacholok, M. & Zaya, K. 2022. "Morningstar's Annual Target-Date Strategy Landscape."

Exhibit 2-2 Percentage of Total Distributions Coming From Plans With "Through" Glide Paths



Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: Mega plans have more than $500 million in assets; large plans have $500 million or less in assets but more than $100 million; medium plans have $100 million or less in assets but more than $25 million; and small plans have $25 million or less.

In fact, there is only a slight association between the percentage of assets distributed every year and the use of "through" glide paths, as shown in Exhibit 3. Holding all else constant, we would expect that plans with more distributions would be less likely to use "through" glide paths. After all, participants in these plans appear to be withdrawing all their money at once given the large distributions from these plans, rather than taking smaller structured withdrawals. Instead, we see that plans in which participants pulled 15% or more of their assets out every year still used "through" glide paths 88% of the time compared with plans in which participants pulled out 3% or less of their assets, which used "through" glide paths 93% of the time.

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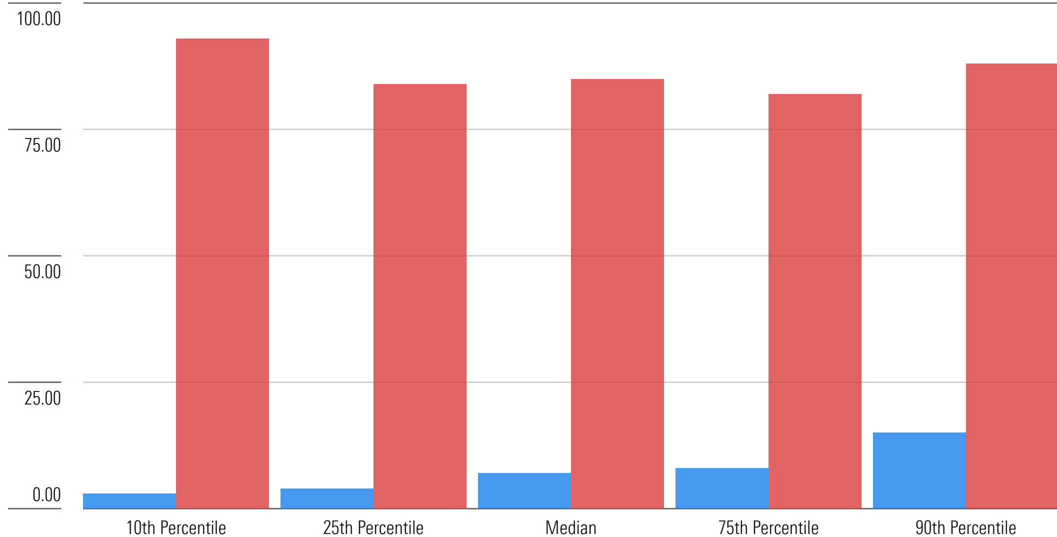
Exhibit 3 Percentage of TDF Assets in "Through" Glide Paths by Plans' Percentage of Assets Distributed



Source: Morningstar investment data matched with Form 5500 data for 2019.
Note: 10th percentile bucket includes plans at the 10th percentile. 25th percentile bucket includes plans at the 25th percentile but not at the 10th percentile. Median bucket does not include plans at the 25th nor 75th percentile. 75th percentile bucket includes plans at the 75th percentile but not at the 90th percentile. 90th percentile bucket includes plans at the 90th percentile.

Retirement plan sponsors also do not appear to be selecting "to" or "through" glide paths based on their experiences with participants staying in the plan after retirement. Regression 1 in the Appendix adds further evidence that there is no statically significant association between the percentage of participants who are retired or separated from employment and the plan sponsor choosing to use a "through" glide path.[10] This result supports the argument that many plan sponsors do not account for the probability their workers will actually properly use a "through" glide path when selecting it. Exhibit 4 illustrates this point with summary statistics. Intuitively, the plans in the higher percentiles should be the most likely to offer a glide path through retirement because more of their participants are those staying in their plans after separation from service. On the other hand, plans with higher average account balances are more likely to use "through" glide paths, which suggests that plans base their decisions about offering a "through" glide path on if their plan population features workers saving more or with longer tenures; this allows them to attain these balances. Nonetheless, we do not see an association with workers' actual decisions to stay in the plan and sponsors' choice of a "through" glide path.

[10]Consistent with our approach in previous work with the Form 5500 database, we do not include participants without an account balance in any of our regressions.

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Exhibit 4: Percentage of TDF Assets in "Through" Glide Paths by Plans' Percentage of Participants That Are Retired or Separated

	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile
Percentage of Plan Participants Who Are Retired or Separated at Percentile	11%	16%	24%	27%	48%
Asset-Weighted Average of TDF Assets in "Through" Glide Paths in Bucket	89%	87%	85%	85%	83%

Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: The percentage is on an asset-weighted basis. 10th percentile bucket includes plans at the 10th percentile. 25th percentile bucket includes plans at the 25th percentile but not at the 10th percentile. Median bucket does not include plans at the 25th nor 75th percentile. 75th percentile bucket includes plans at the 75th percentile but not at the 90th percentile. 90th percentile bucket includes plans at the 90th percentile.

Plans in all sectors were much more likely to use "through" versus "to" glide paths, and the largely small differences in usage across sectors do not appear to be associated with differences in behavior by plan participants. Exhibit 5 shows the differences we observe across sectors in the use of "to" versus "through" glide paths. We ran regression 1 with and without sector controls, and in both cases, we saw no differences in whether we observed a statistically significant relationship between the use of "to" versus "through" and the percentage of participants with account balances that are separated and retired workers. The percentage of assets distributed from the plan was not significant with sector controls but was weakly significant without them.[11]

[11]We also ran the regressions with and without the log transformation and found similar results.

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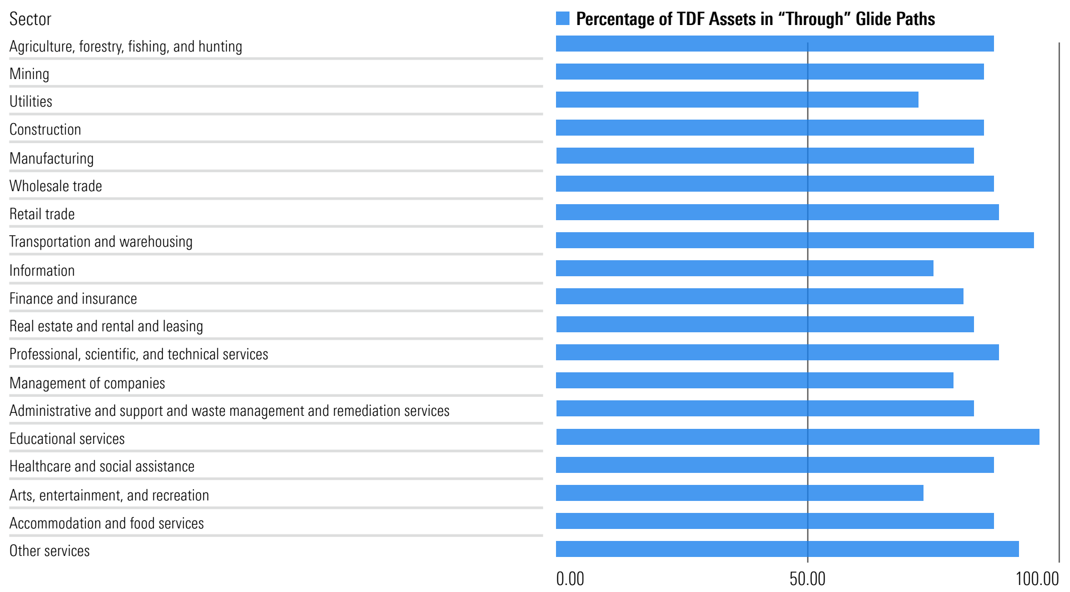
Exhibit 5 Percentage of Assets in "Through" Glide Paths by Sector



Source: Morningstar investment data matched with Form 5500 data for 2019.

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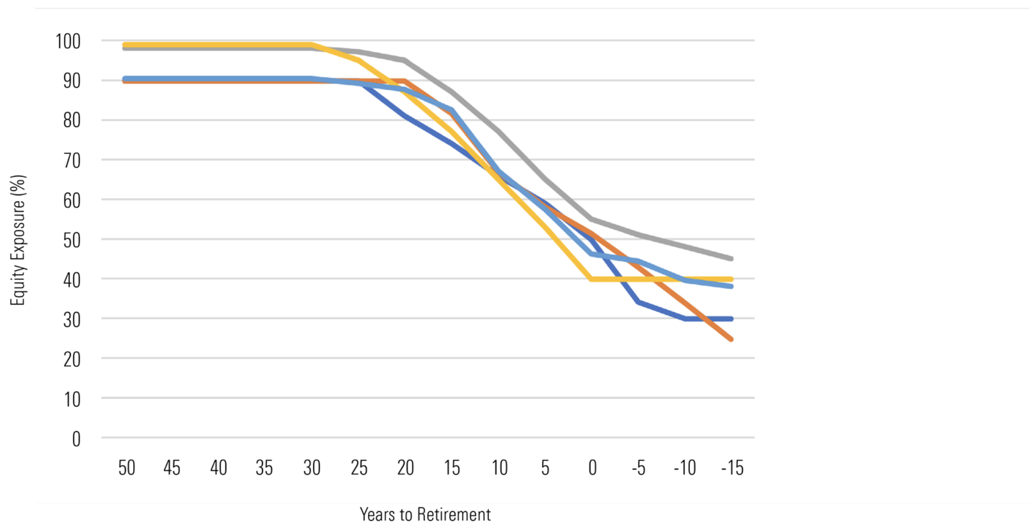
We See Little Differences in the Glide Paths That Sponsors Choose by Sector, Despite Large Differences in Salaries and Likely Retirement Ages

Most plans use one of a handful of glide paths. In fact, just five asset managers—American Funds, BlackRock, Fidelity, T. Rowe Price, and Vanguard—dominate the TDF market, with nearly 80% of the market share according to Morningstar data across all TDFs.[12] The glide paths for these providers' largest offerings vary in some important ways, so despite the high levels of market concentration, we might still expect some variance across sectors. Exhibit 6 shows the glide paths across these popular asset managers. As shown in Exhibit 7, these glide paths have a dominant position in every major sector, ranging from 86% of plan glide paths in some sectors to 50% in one case.

Exhibit 6 Glide Paths Across the Five Largest Target-Date Series



Source: Morningstar data as of May 11, 2022.

[12]Pacholok, M. & Zaya, K. 2022. "Morningstar's Annual Target-Date Strategy Landscape." This dominance has been true for some time as these five companies had 78% of the market share in 2012, according to the 2013 Landscape report found here: https://news.morningstar.com/pdfs/2013TargetDate.pdf. However, at the time, BlackRock and American Funds were not among the top five asset managers of TDFs.

Exhibit 7: Equity Exposure in TDFs, the Percentage of Assets in the Top Five Glide Paths, Mean Wages, and the Percentage of Workers Working After Age 65 by Sector

Sector	Average Equity Exposure at Age 55	Average Equity Exposure at Age 65	Mean Wages	Percentage Working After Age 65	Percentage of TDF Assets in Top Five Glide Paths
Agriculture, forestry, fishing, and hunting	66%	47%	$37,210	18.68%	79%
Mining	66%	47%	$71,540	4.64%	75%
Utilities	66%	47%	$89,060	4.64%	86%
Construction	66%	46%	$61,010	5.70%	64%
Manufacturing	67%	47%	$57,620	5.30%	71%
Wholesale Trade	67%	48%	$63,100	7.08%	80%
Retail Trade	66%	46%	$37,590	7.07%	69%
Transportation and warehousing	66%	47%	$53,030	5.99%	77%
Information	66%	48%	$91,930	6.95%	69%
Finance and insurance	66%	47%	$81,420	7.62%	72%
Real Estate and rental and leasing	66%	47%	$54,400	12.82%	67%
Professional, scientific, and technical services	66%	47%	$91,150	6.87%	70%
Management of companies	67%	47%	$93,220	6.25%	50%
Administrative and support and waste management and remediation services	66%	47%	$45,260	6.77%	75%
Educational services	66%	48%	$61,620	6.66%	74%
Healthcare and social assistance	66%	47%	$60,070	6.61%	67%
Arts, entertainment, and recreation	66%	47%	$42,630	9.12%	67%
Accommodation and food services	66%	47%	$30,850	3.36%	67%

Source: Bureau of Labor Statistics sector information for wages and percent working after the age of 65. Morningstar investment data matched with Form 5500 data for 2019.

Exhibit 7 shows that the average equity exposure at both ages 55 and 65 is similar across sectors, despite wide differences in salary and the percentage of people retired by age 65. This finding seems to indicate that plan sponsors may not be consistently considering the specific needs of their worker population when selecting a glide path. Given that lower-income workers will replace significantly larger percentages of their pre-retirement income from Social Security, they should likely have higher levels of equity exposure to account for the high levels (relative to income) of bondlike, inflation-adjusted Social Security payments they will enjoy. Similarly, plans in sectors in which workers tend to work past age 65 might want to take more equity risk at age 65, all else equal, than plans in sectors in which workers tend to retire earlier. (Of course, depending on a worker's savings, their bequest motives, and their desire to eschew risk, it is possible that these workers would want to take less risk. However, in our experience, most asset-allocation decisions consider pension income, work income, and Social Security like a bond.)

Regression analysis tells a more mixed story, and we can clearly detect that at least some plan sponsors are making adjustments based on their participant populations' characteristics. Nonetheless, many plan sponsors do not seem to be adjusting their glide paths based on their participant population because of the overwhelming similarities we see across sectors in Exhibit 7 and because the marginal effects we can detect are fairly small. In regressions 2 and 3, we use equity allocations as the dependent variable and hold the log of average account balances, percentage of assets distributed annually from the plan, whether the employer sponsor also offers a defined-benefit plan, and the percentage of plan participants who are retired or separated constant. As with regression 1, we report findings with sector controls and without sector controls.

Plan sponsors in some sectors are more likely to adjust the amount of equity in their glide paths at age 65, holding all else equal, as shown in regression 2. Still, in general, the evidence suggests that many plan sponsors are not making major adjustments given the averages we see in Exhibit 7 and the low magnitudes of adjustments to the glide paths we detect in our regression analysis. Plan sponsors in two of the 18 sectors we examined were strongly statistically significantly less likely to take equity risk at retirement than plan sponsors in other sectors we did not control for with a dummy variable at the 0.001 level of significance. We see a weaker statistically significant effect among sponsors in five other sectors, who were also less likely to take equity risk at the 0.05 level of significance. Although some employers are clearly making adjustments, these sector dummies were only associated with modest changes in overall equity exposure, typically of less than 1 percentage point.

We find evidence that some plan sponsors adjust their selection of TDF glide paths based on whether their participants have typically stayed in the plan after leaving employment. We see a statistically significant association between the percentage of participants who are separated or retired and an increase in the equity percentage in a plan's glide path at age 65, as shown in regression 2. Similarly, we see a statistically significant association between the percentage of participants who are separated or retired and the equity percentage in a glide path at age 55, as shown in regression 3. We do not have a position on whether this increase in equity allocation necessarily meets the needs of all participants, but it appears consistent with most "through" glide paths, which increase equity exposure as people stay through retirement.

In contrast, we see no statistically significant association between plans distributing a higher percentage of their assets and a more aggressive glide path, holding all else constant. We would expect that plans in which participants withdraw the most money—holding the percentage of participants who are retired or separated and average account balance constant—would be more likely to offer less aggressive glide paths, knowing that their participants would likely take their money out before retirement or take larger sums all at once. While it is possible that these larger distributions are associated with structured withdrawals, we think that is unlikely given that we hold the percentage of participants who are retired or separated constant. There is no data available on the percentage of participants taking a structured withdrawal for each plan.

As we found when examining the "to" and "through" decision, the average account balance is strongly associated with higher equity allocations. There are two explanations we see for this association. First, sponsors with participants who have accumulated more money in their plans are more likely to assume their participants can take on additional equity risk. The other possibility is that these participants saw their TDFs performed well in the bull market through 2019, which is the most recent year for which we have data, and chose to leave their money in their retirement plans.

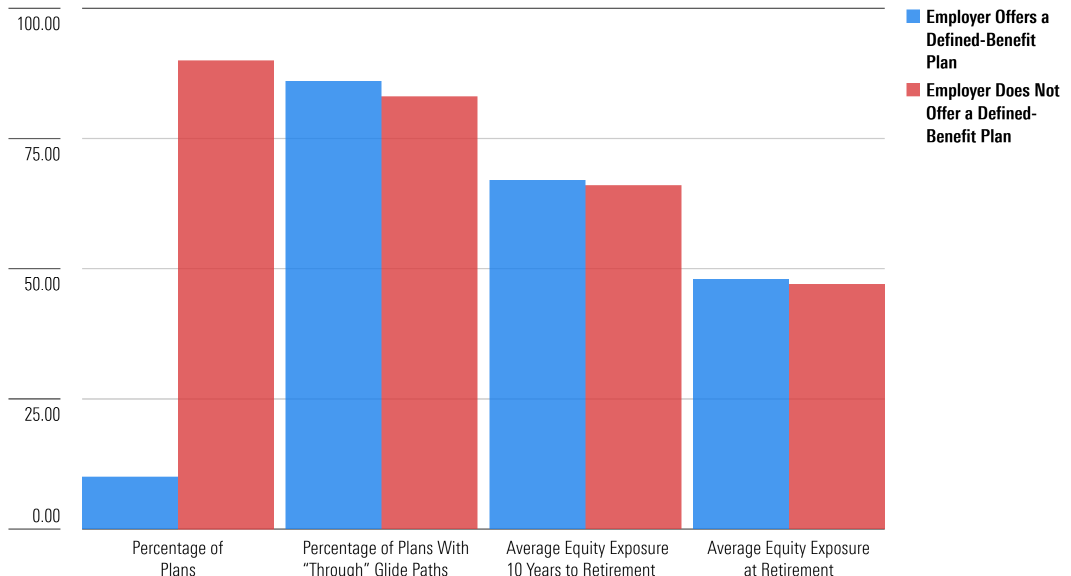
Defined-Contribution Plan Sponsors Who Also Offer a Traditional Pension Pick Slightly Riskier Glide Paths

About 10% of the employers in our database offer traditional defined-benefit pension plans alongside their defined-contribution plans, and we would expect to see these plans offer different equity glide paths. After all, at least some of their participants, depending on if or when their plans froze, will enjoy a stream of payments in retirement from their defined-benefit plan. As with our assumption about Social Security, we would expect these plans to take more equity risk compared with plans that do not offer a defined-benefit plan to their participants.

We see a statistically significant association between higher equity exposure at age 65 and age 55 for employers that offer a defined-benefit plan as shown in regressions 2 and 3. The effects do not depend on controlling for sectors. Nonetheless, even with the statistically significant result, the marginal association between an employer with a defined-benefit plan and their TDF glide path was a fraction of a percent. Another way of looking at the data is shown in Exhibit 8, where we see little difference in the average glide path between plans associated with an employer with a defined-benefit plan and those that are not.

Employers that offer a defined-benefit plan were also more likely to offer TDFs deploying "through" glide paths, as shown in regression 1. These plan sponsors know that their participants will likely stay through retirement in the pension plan, so the assumption that they would continue to use their defined-contribution plan makes some sense. Of course, these plan participants could still roll their defined-contribution account balances out of the employer's plan or even take a lump-sum distribution if one were offered. Still, we do not find this result surprising.

Exhibit 8 Summary of TDF Glide Paths by Plans Associated With a Defined-Benefit Offering



Source: Morningstar investment data matched with Form 5500 data for 2019.

Conclusion

Some Employers Consider Their Participants' Needs When Selecting Glide Paths, but More Can Be Done

Although there are limitations to the data sources we have, it is clear that there is too much homogeneity in off-the-shelf glide paths that employers use given the heterogeneity of their workers' needs. We make three recommendations:

1. Plan sponsors and advisors should regularly consider the key assumptions in their glide paths and their actual experience with participant behavior as the Department of Labor suggested in its guidance in 2013.
2. The Department of Labor should consider if more guidance could help clarify the role that sponsors need to play, particularly in their review of and evaluation of glide paths, given the differences we see across sectors. The department could also recommend that plan sponsors consider TDFs alongside other QDIA options.
3. The Department of Labor should consider promulgating additional guidance or even amending the safe harbor on the use of customized glide paths and perhaps even dynamic allocations between QDIA options based on a participant's needs.

Appendix

Regressions

In this section, we display the regressions we cite in the body of the paper. For all regressions, we opted to use the log transformed average account balance as an independent variable. This decision did not affect results, and we think the log transformation is easier to interpret: An approximately 1% increase in average account balance leads to a 1-percentage-point increase in the likelihood of offering a TDF with a "through" glide path multiplied by the coefficient in regression 1 and to a 1-percentage-point increase in the equity allocation multiplied by the coefficient in regressions 2 and 3.

Regressions 2 and 3 include all the TDF glide paths. Please note that we also ran regressions 2 and 3 only for plans that offer "to" and "through" glide paths, and we obtain similar results, at least for the "through" glide path plans. The coefficients stay the same direction and the same significance for the average account balance (log transformation), the defined-benefit indicator, and the percentage of plan participants who are retired or separated. The percentage of assets distributed retains the same direction, but we can detect significance when only analyzing the "through" glide path, a result that is similarly counterintuitive as we found in the combined regression. We can no longer detect significance restricting regressions 2 and 3 to the plans that offer a "to" glide path, because there is insufficient variation in the smaller population. We only report the regressions as combined, but we ran the bifurcated regressions to clarify that our findings depend on combining glide paths across TDF types. We think that this approach is sensible to investigate whether plan and participant characteristics are associated with different equity glide paths.

Regression 1: Probit Regression on Plans' Use of a "Through" TDF

	With Sector Controls		Without Sector Controls	
Variable	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**
Intercept	-0.18751		-0.22375	
Log of Average Account Balance	0.119452	<0.001***	0.112589	<0.001***
Percentage of Assets Distributed Annually	-0.09275	0.356	-0.21423	0.031*
Employer Offers DB	0.084364	<0.001***	0.072968	0.002**
Percent of Plan Participants Who are Retired or Separated	-0.0751	0.105	0.034984	0.429

Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: *** Statistically significant at the <=0.001 level ** Statistically significant at the <=0.01 level * Statistically significant at the <=0.05 level.

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Regression 2: Regression on Plan's Equity Allocations at Age 65

	With Sector Controls		Without Sector Controls	
Variable	**Coefficient**	**P-Value**	**Coefficient**	**P-Value**
Intercept	39.0427		38.73481	
Log of Average Account Balance	0.7701	<0.001***	0.767176	<0.001***
Percentage of Assets Distributed Annually	0.710612	0.147	0.685001	0.157
Employer Offers DB Plan	0.608367	<0.001***	0.652275	<0.001***
Percent of Plan Participants Who are Retired or Separated	0.721615	<0.001***	0.862563	<0.001***
Agriculture, forestry, fishing, and hunting	-0.85618	0.016*		
Mining	-0.4865	0.188		
Utilities	-1.05744	0.019*		
Construction	-1.02216	<0.001***		
Manufacturing	-0.19367	0.266		
Wholesale Trade	-0.0306	0.883		
Retail Trade	-0.73655	<0.001***		
Transportation and warehousing	-0.59682	0.013*		
Information	0.269876	0.278		
Finance and insurance	-0.50647	0.013*		
Real Estate and rental and leasing	-0.12082	0.632		
Professional, scientific, and technical services	-0.25765	0.150		
Management of companies	-0.51968	0.146		
Administrative and support and waste management and remediation services	-0.5584	0.023*		
Educational services	-0.23996	0.272		
Healthcare and social assistance	-0.10674	0.547		
Arts, entertainment, and recreation	0.203565	0.480		
Accommodation and food services	-0.28132	0.267		

Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: ***Statistically significant at the <=0.001 level. **Statistically significant at the <=0.01 level. *Statistically significant at the <=0.05 level.

Regression 3: Regression on Plan's Equity Allocations at Age 55

	With Sector Controls		Without Sector Controls	
Variable	Coefficient	P-Value	Coefficient	P-Value
Intercept	61.71567		61.91541	
Log of Average Account Balance	0.423666	<0.001***	0.390802	<0.001***
Percentage of Assets Distributed Annually	0.149022	0.714	0.393336	0.328
Employer Offers DB Plan	0.616671	<0.001***	0.678701	<0.001***
Percent of Plan Participants Who are Retired or Separated	0.799552	<0.001***	0.580725	<0.001***
Agriculture, forestry, fishing, and hunting	-0.36857	0.210		
Mining	-0.24368	0.427		
Utilities	-0.79699	0.034*		
Construction	-0.79263	<0.001***		
Manufacturing	-0.05213	0.719		
Wholesale Trade	0.021446	0.901		
Retail Trade	-0.12944	0.435		
Transportation and warehousing	-0.05561	0.780		
Information	-0.194	0.348		
Finance and insurance	-0.31974	0.059		
Real Estate and rental and leasing	-0.03138	0.881		
Professional, scientific, and technical services	-0.32021	0.031*		
Management of companies	-0.10003	0.736		
Administrative and support and waste management and remediation services	-0.43672	0.032*		
Educational services	-0.73097	<0.001***		
Healthcare and social assistance	0.064845	0.659		
Arts, entertainment, and recreation	-0.17286	0.470		
Accommodation and food services	-0.02907	0.890		

Source: Morningstar investment data matched with Form 5500 data for 2019.
Notes: ***Statistically significant at the <=0.001 level. **Statistically significant at the <=0.01 level. *Statistically significant at the <=0.05 level.

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