Research Report
Defined Benefit

October 2021

The Right Approach

STATE STREET GLOBAL ADVISORS

Contents

Pension Scheme Destinations and Endgame Pathways

Few are more adept at handling multiple functions and contending with a wide array of moving pieces than those managing pension schemes. In a weighty exercise akin to air traffic control, sponsors and trustees must survey the many routes available to them and determine the optimal approach to their destination.

In our new survey of United Kingdom and Ireland defined benefit (DB) schemes,[1] we focused on the long-term goals of these schemes and the various paths available to them as they seek their endgames. The availability and use of each path is largely tied to the current regulatory and market backdrop.

We surveyed 100 pension schemes from the United Kingdom and Ireland. Our survey included pension staff members, investment professionals, and finance/treasury team members from schemes across a broad swath of industries (see Appendix for complete participant demographics). The survey was performed in August 2021 and implemented through computer-assisted telephone interviews.

For their long-term aims, schemes desired to either (1) reach low dependency, or a position where they can continue to run until the last payment has been made, without requiring further contributions from the sponsor, or (2) transfer assets/liabilities of the scheme to a third party such as an insurance company or other consolidator. Our survey participants were relatively evenly split regarding which goal they were seeking (Figures 1 and 2). However, the planned strategies to reach these goals and the estimated arrival time to their destinations varied, depending on each scheme's funded status, covenant strength, governance, assets under management (AUM), and risk tolerance.

Figure 1
Long-Term Goals Are Evenly Distributed

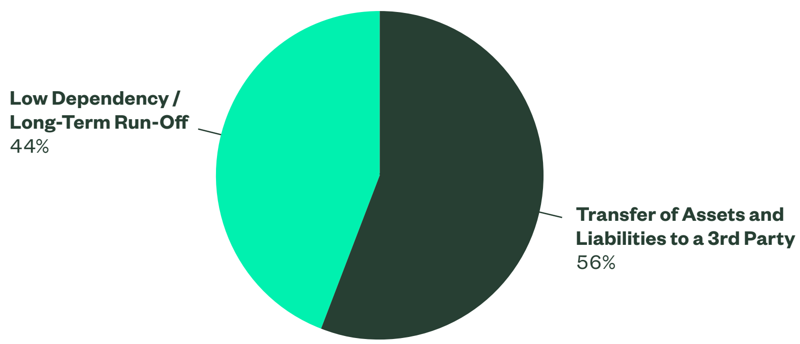
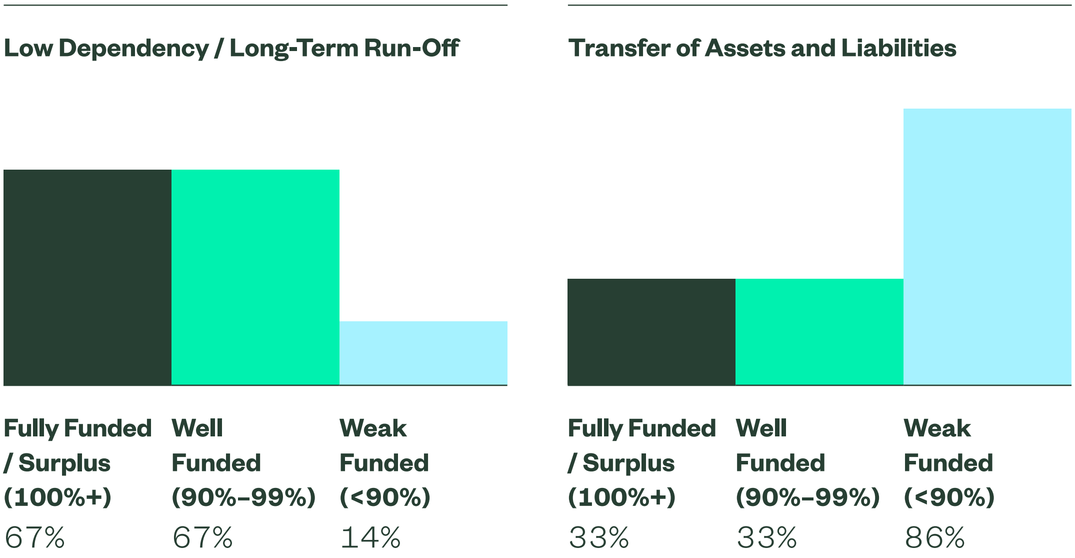


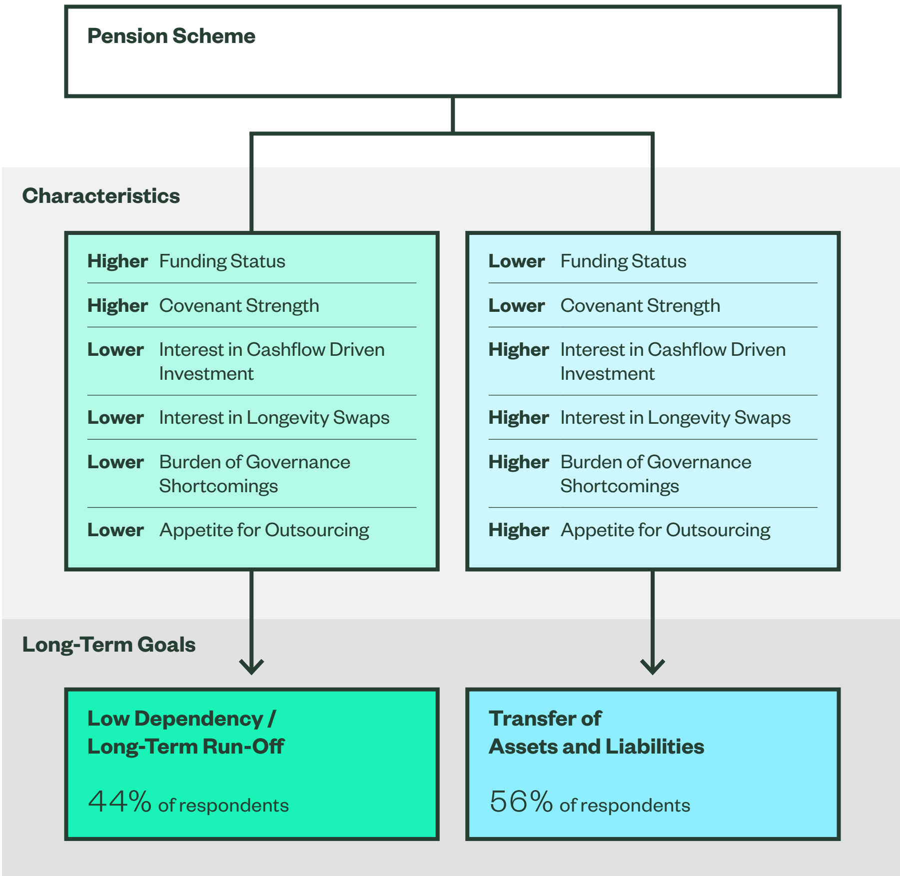
Figure 2
Better-Funded Schemes Are More Likely to Seek Low Dependency



Source: State Street Global Advisors. Respondents asked to choose one goal. Weak funded schemes (<90%): N = 43; Well funded schemes (90%-99%): N = 33; Full/surplus funding (100%+): N = 24.

Overall, we discovered that pension funds have different characteristics depending on their long-term goals. Figure 3 summarizes various criteria that could inform the path that schemes will take.

Figure 3
Scheme Characteristics Help to Determine Endgames

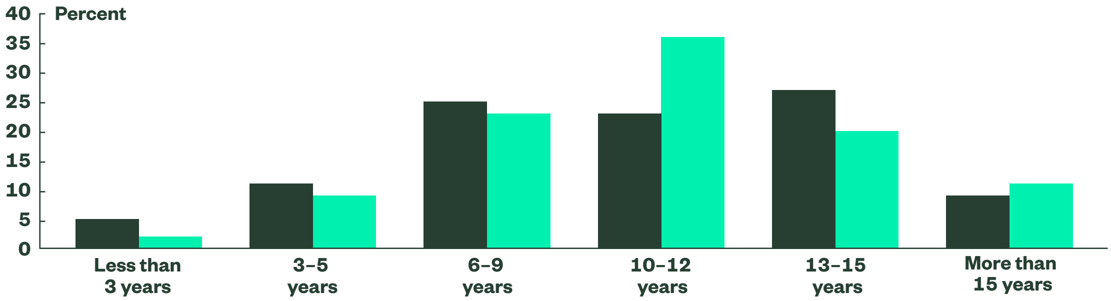


Percentage of survey participants with stated goal.

As for timing, most survey participants expected to achieve their long-term goals within 12 years, but this varied among schemes (Figure 4). Our data showed that for schemes striving for low dependency, bigger schemes (greater than $1 billion AUM) had longer time horizons than smaller schemes, most likely because the larger schemes will probably take more time to wind down.

Figure 4
Expected Timeframes to Reach Long-Term Goals Vary Widely

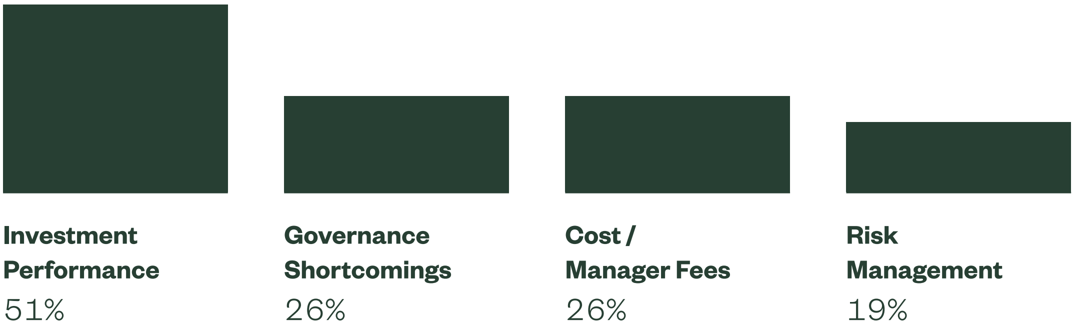
Low Dependency
Transferring Assets and Liabilities



Source: State Street Global Advisors. Respondents asked to choose one timeframe. Low dependency goal schemes, N=44; transferring assets and liabilities goal schemes, N=56.

As expected, investment performance was seen as the biggest challenge for schemes to achieve their long-term goals within their desired time frames. Looking more granularly, investment performance was potentially a bigger concern for schemes looking to transfer their assets and/or liabilities to a third party. Furthermore, schemes with strong covenants were less worried about governance risk (Figures 5 and 6).

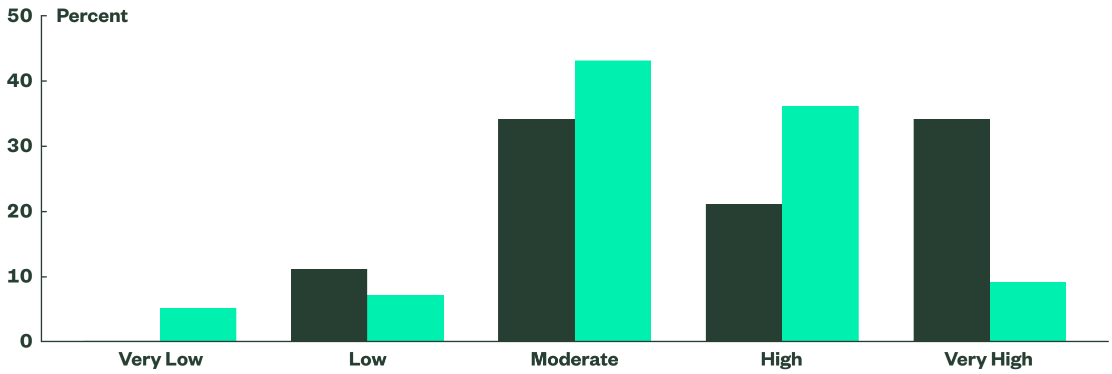
Figure 5
Investment Performance Identified as Key Risk



Source: State Street Global Advisors. Respondents asked to label the potency of each risk, via one answer for each. These percentages reflect respondents who called each risk "High/Very High." N=100.

Figure 6
Investment Performance Risk Perceived Is Tied to Fund Goals

Schemes Seeking to Transfer Assets and Liabilities
Schemes Seeking Low Dependency



Source: State Street Global Advisors. Respondents asked to label the potency of the investment performance risk, via one answer. For schemes seeking to Transfer Assets and Liabilities, N=56; For schemes seeking to achieve low dependency, N=44.

Insights into the Future of DB

We identified several key trends that help us understand how the DB landscape will look in the coming decades given the strategies that are becoming more prominent and the risks that schemes are trying to avoid. Our primary findings include:

CDI Interest Expected to Expand	While liability-driven investing (LDI) is heavily in use, schemes — especially those with adequate funding status — are turning to cashflow driven investment (CDI) strategies to manage cash needs.
Weaker-Covenant Schemes More Apt to Seek Transfer	Our data shows that schemes with weaker covenants are also the schemes that are less funded, which is consistent with our findings that lower-funded schemes are more commonly seeking to transfer their assets and liabilities over the long term.
Schemes Apprehensive Toward Illiquid Credit	Schemes, even those with longer endgame horizons, are not displaying an overwhelming appetite for the inclusion of illiquid assets in CDI strategies. Our survey moreover unveiled that appetite relates to funding status and current fiduciary responsibility.
Outsourcing a Response to Regulatory Burdens and Market Themes	Schemes are driven to outsource fiduciary responsibilities in response to a wide range of challenges in the DB space, including governance shortcomings and rising demand for environmental, social and governance (ESG) integration.

> **“Schemes really have two primary things that they’re thinking about: one is getting to fully funded on their technical provisions, at which point the sponsor doesn’t have to contribute cash in order to be comfortable with where the scheme is. Beyond that, the expectation now is that you should have a long-term target. This is all in the context of a general stepping up of requirements from The Pensions Regulator (TPR) around long-term funding plans for schemes.”**
>
> — Simeon Willis, Chief Investment Officer, XPS Pensions Group

CDI Interest Expected to Expand

LDI in Place at Majority of Schemes

Our survey confirmed that LDI is already heavily in use for DB schemes, which is consistent with the market and regulatory backdrop. Changes in accounting standards and a regulatory push for better risk management have encouraged the United Kingdom and Ireland pension industry to adopt an LDI approach aimed at matching assets to liabilities. Under International Financial Reporting Standards — a requirement for the EU since 2005 — any volatility in a scheme's funding position directly impacts its sponsor's balance sheet. This has encouraged schemes to increasingly turn to an LDI investment approach, using long-duration bonds and other instruments to match movements in liabilities.

Funding status has also increased across the global DB space in 2021 due to higher discount rates and strong equity markets, encouraging schemes to de-risk using long-dated fixed income to try to lock in funding status gains. Our survey data on the use of LDI is consistent with flows into European DB schemes, per data from Goldman Sachs. Goldman noted that since 1999, almost all of the flows into European pensions and insurance companies have been fixed income assets, with almost no flows into equities.[2] Most schemes have largely already implemented LDI.

93%

have implemented LDI to some degree

73%

have implemented CDI

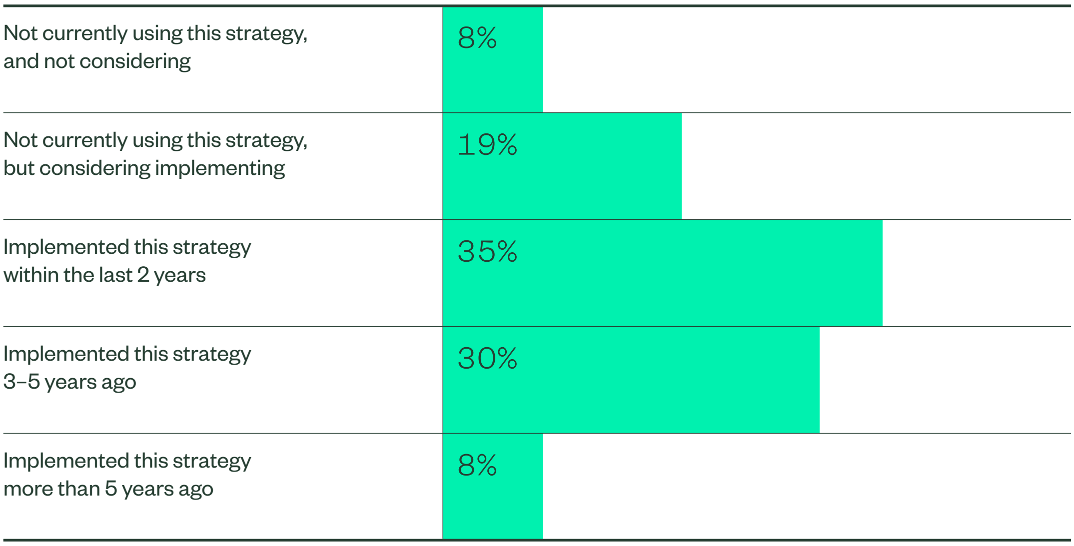
70%

are using both CDI and LDI in their portfolio

CDI Gaining Traction

Meanwhile, CDI is a newer focus for schemes. The strategy involves building cash-flow-matching portfolios by investing in higher yielding instruments. CDI has entered the mainstream more recently than LDI, with 38 percent of schemes surveyed employing CDI for at least three years, and the remaining 62 percent either not using it, or using it only within the past two years (Figure 7).

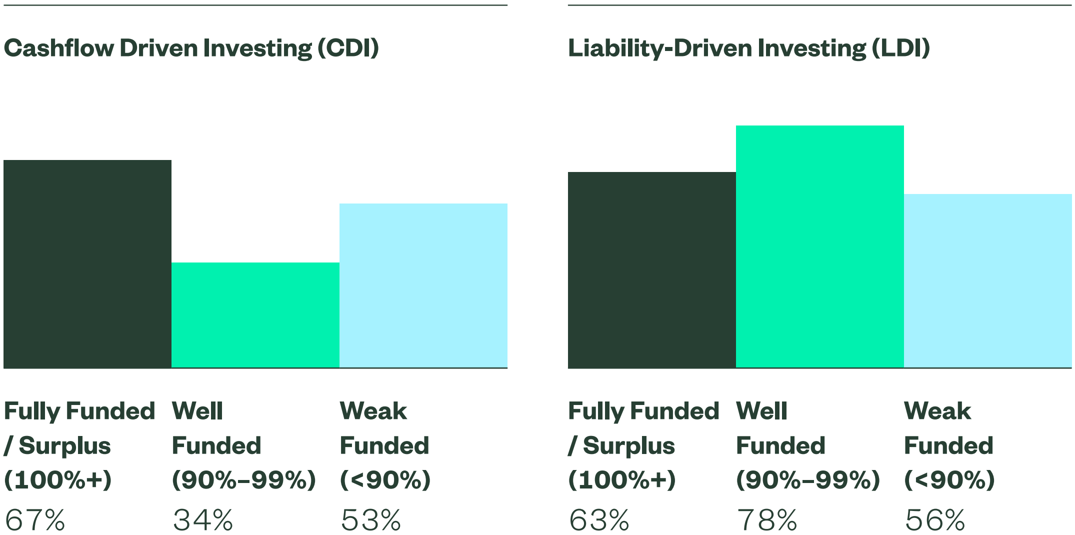
Figure 7
Less than 10 Percent of Schemes Implemented CDI More than Five Years Ago



Source: State Street Global Advisors. Respondents asked to choose one answer. N=100.

That said, CDI allocations are expected to grow, particularly among fully-funded schemes (Figure 8), given the funding requirements for CDI. Schemes searching for higher returns could accordingly take on more CDI, as CDI can take advantage of higher yields on investments such as domestic and overseas credit, illiquid debt, loans or derivatives, real assets, high-yield debt, real estate debt, direct lending, infrastructure bonds, or other high-income assets with some contractual component. Figure 9 shows that interest in CDI was higher for schemes seeking to transfer assets and liabilities, versus schemes aiming for low dependency.

Figure 8
Allocations to CDI Are Expected to Rise



Source: State Street Global Advisors. Respondents asked to answer “Do you expect to increase your allocations to either of the following strategies over the next three years?” For weak-funded schemes, N=43; For well-funded schemes, N=32; For fully-funded/surplus schemes, N=24.

Figure 9
Schemes Seeking to Transfer Assets and Liabilities Display More Interest in CDI

	CDI	LDI
Using Strategy Today		
Achieving low dependency	70%	93%
Transferring assets and liabilities to third party	75%	93%
Expect to Increase Allocations to Strategy Over the Next Three Years		
Achieving low dependency	44%	79%
Transferring assets and liabilities to third party	55%	54%

Source: State Street Global Advisors. For "using strategy today," N=44 for low dependency goal schemes, and N=56 for transfer assets/liabilities goal schemes. For "expect to increase allocations," N=43 for low dependency goal schemes, and N=56 for transfer assets/liabilities goal schemes. Respondents answered with all strategies that applied.

Knowledge about the benefits of CDI varied by schemes' AUM and fiduciary management setup. Larger schemes exhibited more confidence in their understanding of CDI. In addition, schemes that outsource fiduciary management tended to better comprehend how CDI and LDI complement each other, understand the integration of CDI, and value it as an important tool for their long-term goals, versus those schemes that don't outsource.

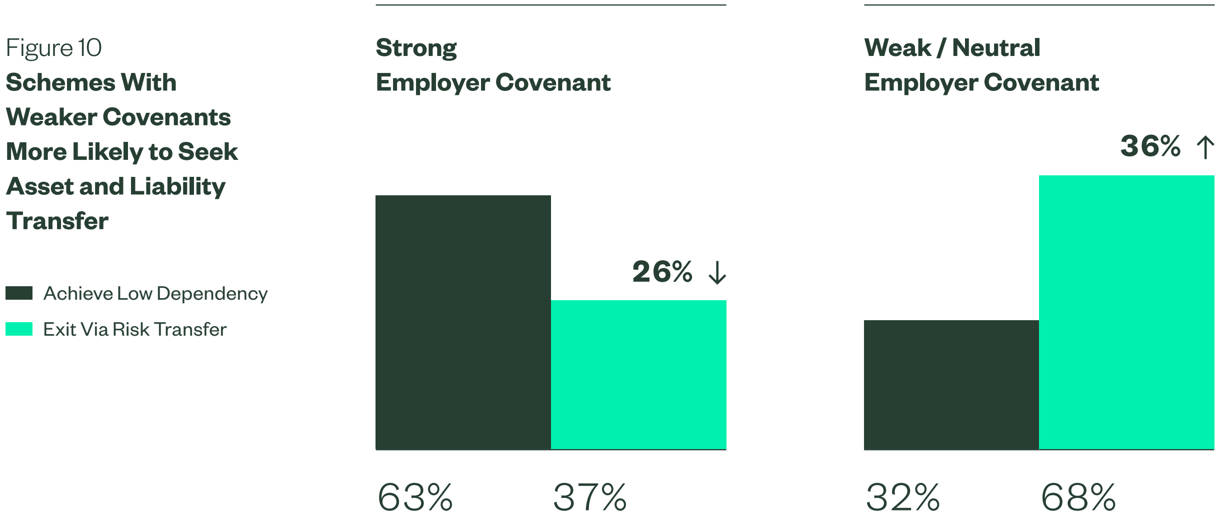
Overall, we note that schemes most prominently used "somewhat agree" to describe the importance of CDI or their understanding of CDI, implying some trepidation and the potential for more education around the strategy.

> **"One of the challenges I have is that most pension schemes have inflation-linked pensions, and it's very hard to manage that risk in CDI without having any LDI at all."**
>
> — Ian Mills BSc FIA, Partner and Head of DB Endgame Strategy, Barnett Waddingham

Schemes With Weaker Covenants More Apt to Seek Transfer

Schemes claiming to have weaker covenants were more apt to have a long-term goal to transfer their assets and liabilities, rather than to have low dependency (Figure 10). This is in line with our findings that schemes with weaker covenants were more underfunded, as underfunded schemes were more likely to target transfer, though their weak funding might make this difficult to achieve. That said, schemes with weak and strong covenants were both outsourcing fiduciary responsibility with a roughly even split.

Figure 10
Schemes With Weaker Covenants More Likely to Seek Asset and Liability Transfer

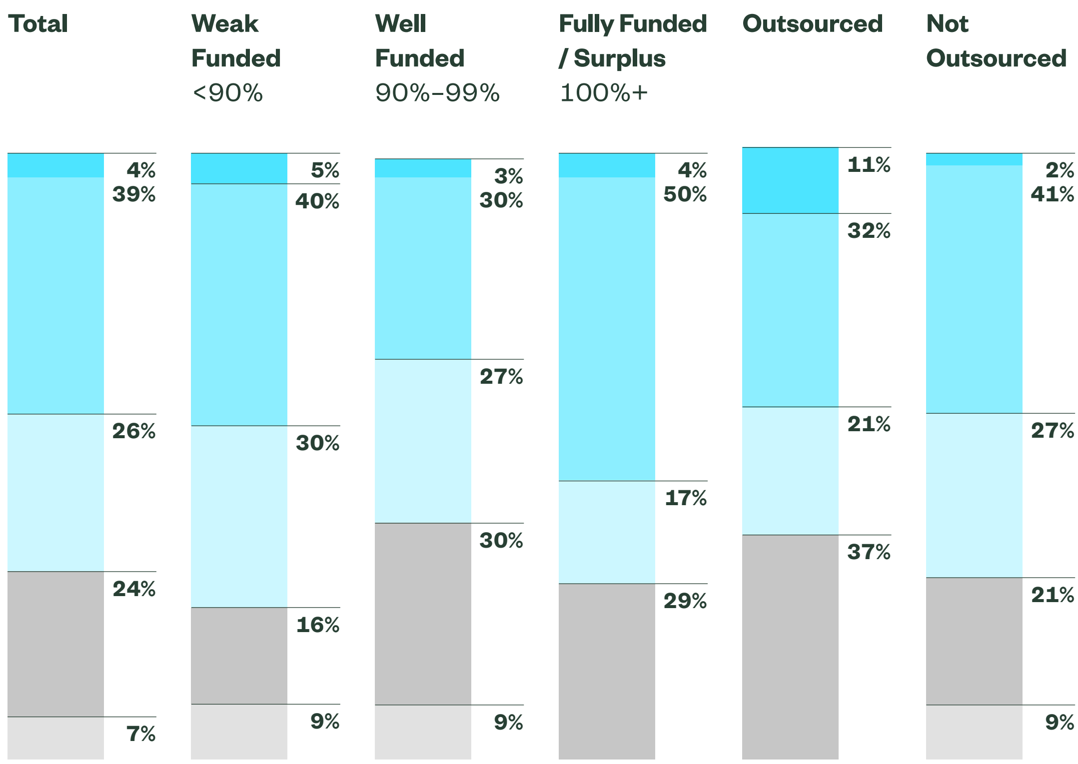


Source: State Street Global Advisors. Respondents asked to choose one goal. For weak/neutral covenant firms, N=62. For strong covenant firms, N=38.

Schemes Apprehensive Toward Illiquid Credit in CDI

Schemes exhibited some unease with employing illiquid credit in their CDI strategies. Very few firms “strongly agreed” or “strongly disagreed” with using illiquid assets. Figure 11 illustrates that the comfort level with illiquid assets relates to funding status and outsourcing policies. Well-funded schemes exhibited more readiness to use illiquid assets. In addition, schemes that are outsourcing are more likely to “strongly agree” with using illiquid assets. This could imply that outsourcing schemes are leveraging the skills of their asset manager or consultant to appropriately include these assets. Notes Willis, “When you invest in a private market asset, you’ve got to work on the basis that you’re not going to be selling this asset, because if you do sell it, you’re likely to have to sell it at a discount.”

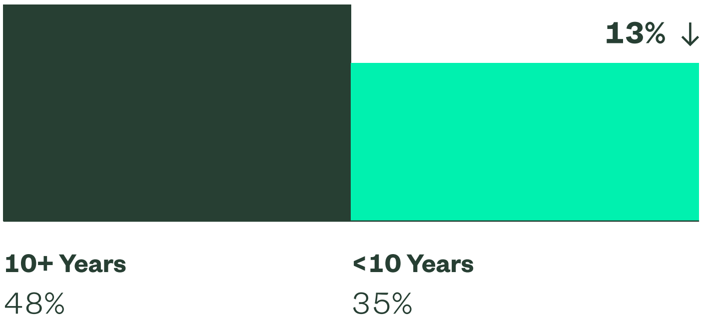
Figure 11
Fully-Funded Firms and Outsourcing Firms More Comfortable With Illiquid Assets



Source: State Street Global Advisors. Respondents asked to select one answer to “We would be comfortable with the inclusion of illiquid credit assets in a cashflow driven investing (CDI) solution.” For weak funded firms, N=43; for well funded firms, N=33; for full/surplus funded firms, N=24. Percentages may not add up to 100% due to rounding to whole numbers.

Figure 12 shows that schemes with longer time horizons to reach their goals were more inclined to allocate to illiquid assets. This is unsurprising, because schemes that invest in illiquid credit are faced with less liquidity to unwind their positions if necessary. Liquidity is a more significant concern now that DB scheme participants have more options for transferring their assets following the pension freedom reforms that came into effect in 2015, and relaxed a significant portion of rules around withdrawing monies from defined contribution holdings. These reforms make it harder for firms to determine the timing of their liquidity needs.

Figure 12
Firms With a Longer Time Horizon Are More Open to Illiquid Assets
Endgame Horizon



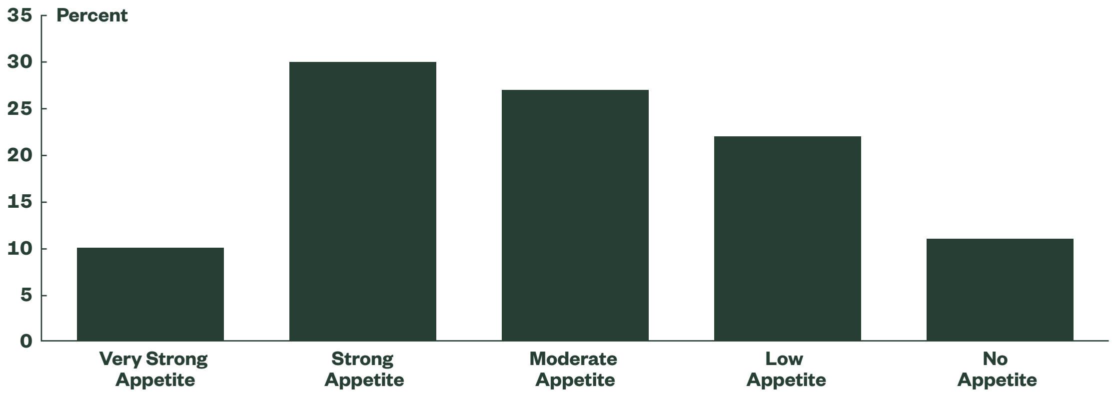
Source: State Street Global Advisors. Question asked was: "We would be comfortable with the inclusion of illiquid credit assets in a CDI solution," and percentages reflect those answering "Somewhat/Strongly Agree." For horizon of 10+ years, N=63; for horizon of <10 years, N=37.

Outsourcing a Response to Regulatory Burdens and Market Themes

According to “sterile flight deck” procedures for aircraft, crew members cannot perform nonessential duties such as unnecessary conversations, non-safety-related announcements, or other noncritical matters during certain periods of the flight. In other words, in these times, crew members need to stay focused without distraction.

Of course, avoiding distraction isn’t possible for DB scheme sponsors, given regulatory changes such as the Pension Schemes Act 2021, which requires trustees to put in place a funding and investment strategy that ensures benefits can be met over the long term. Trustees must also provide the intended funding levels and investments at set dates. As a result of regulatory burdens and market themes (such as ESG investing), many schemes that aren’t outsourcing fiduciary management today plan to do so in the future. Specifically, while less than one-fifth (19 percent) of schemes currently outsource to a consultant or asset manager, 40 percent of those yet to do so said they have strong/very strong appetite to outsource over the next three years (Figure 13). The flip side is that about one-third of survey participants said they have no or low appetite to do so in the next three years.

Figure 13
Schemes Exhibit Healthy Appetite for Future Outsourcing

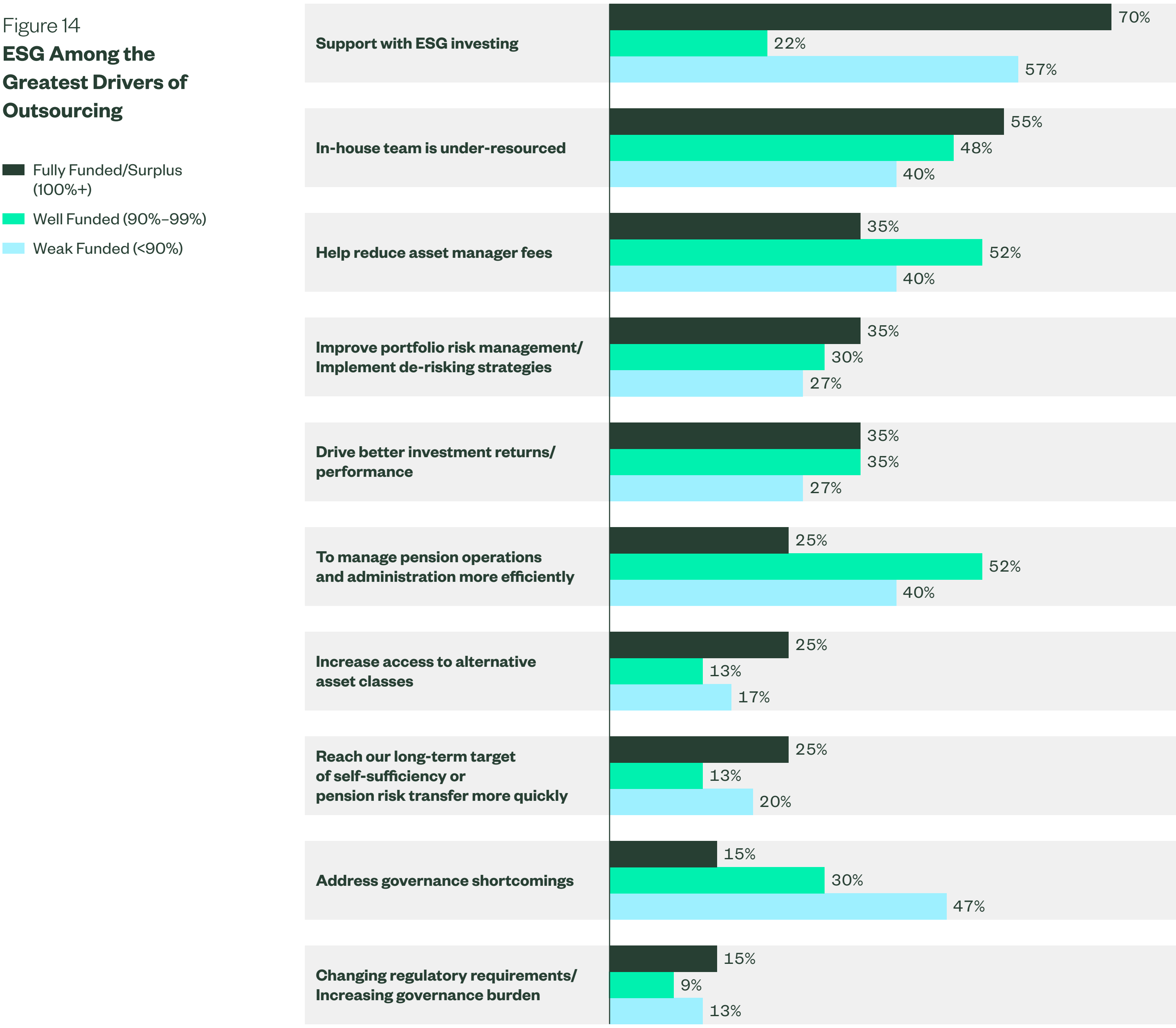


Source: State Street Global Advisors. Respondents were asked to provide their appetite for outsourcing fiduciary management over the next 3 years. N=81, based on the 81 firms who have yet to outsource currently.

ESG a Burden Driving Firms to Outsource

One of the most prominent reasons organizations are outsourcing (or considering outsourcing) is to support ESG investing (Figure 14). This is even more true among fully funded/surplus schemes. Among those, 70 percent said that ESG support is a key driver of outsourcing, while 22 percent of well-funded schemes and 57 percent of weak-funded schemes said this. This could imply that ESG plays second fiddle to funding status, but once a scheme is fully funded, then ESG becomes more of a focus.

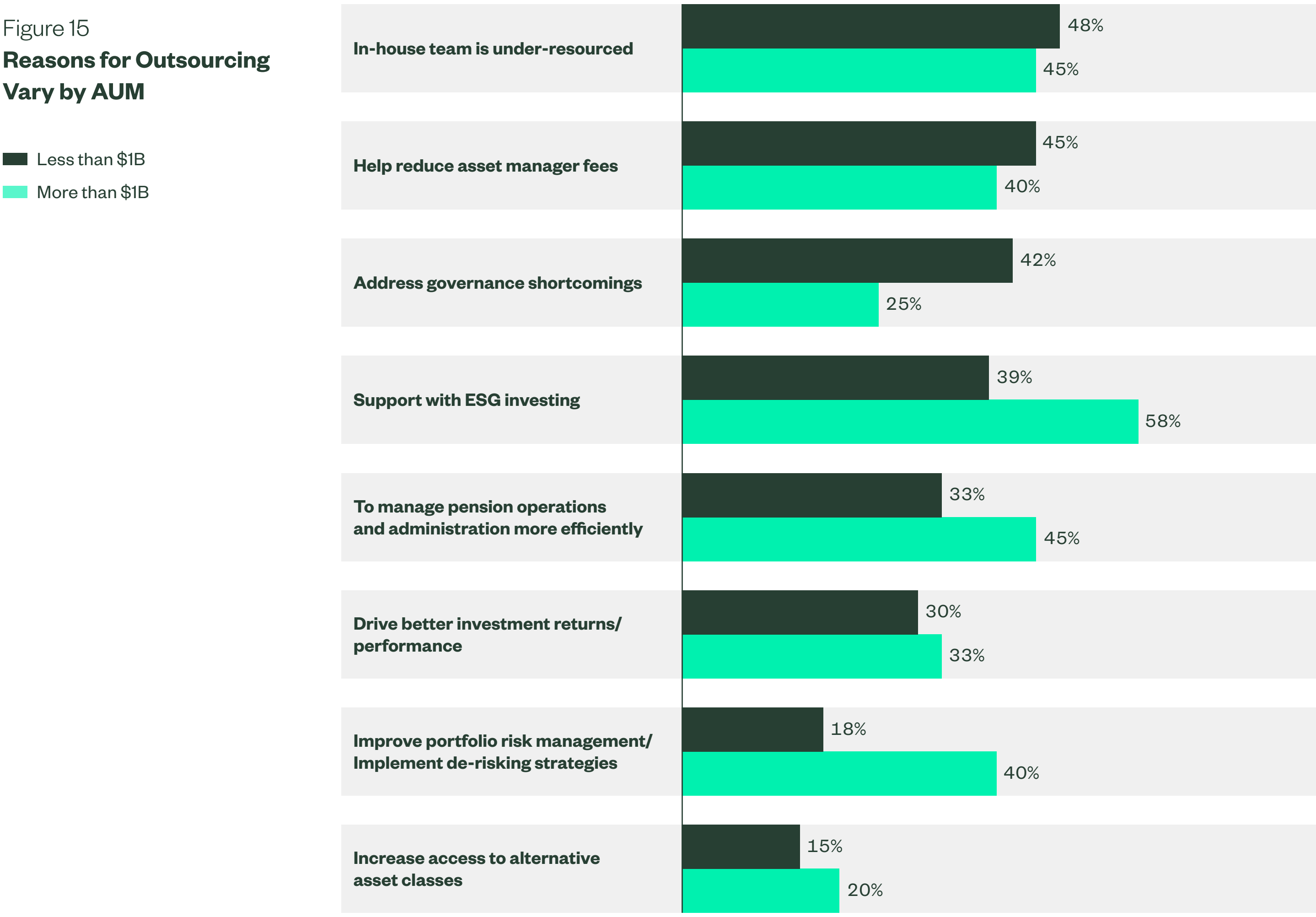
Figure 14
ESG Among the Greatest Drivers of Outsourcing



Source: State Street Global Advisors. Question asked was: "What are the main reasons why your organisation is considering — or has already undertaken — the outsourcing of fiduciary management to a third-party provider?" For weak funded schemes, N=30; For well funded schemes, N=23; For Fully funded/surplus schemes, N=20.

Similarly, while bigger schemes had a higher proportion of respondents report "no appetite" for fiduciary outsourcing, larger schemes more prominently pointed to ESG support as an outsourcing driver. Schemes with less than $1 billion in AUM desired more support with governance, compared with larger schemes (Figure 15).

Figure 15
Reasons for Outsourcing Vary by AUM



Source: State Street Global Advisors. Question asked was: "What are the main reasons why your organisation is considering — or has already undertaken — the outsourcing of fiduciary management to a third-party provider?" For AUM <$1Bln, N=33; for AUM >$1Bln, N=40.

> **"With the funding code and new regulation, it's a much more collaborative approach, and there are grown-up conversations going on between trustees and companies about, 'Where are we going?' 'What's the best way of getting there?' 'How do we balance risk and take it in the right places?' With schemes maturing and with COVID, it all creates headwinds, and for trustees and companies that haven't already done so, they have to have that big-picture conversation."**
>
> — Leonard Bowman, Partner and Head of Corporate DB Endgame Strategy, London, Hymans Robertson

The Updated Atlas

As schemes head toward their endgames, many firms are exploring routes toward transfer or low dependency that have become more prominent in recent years — though many have had a longstanding place in the DB space. There are a wide range of options for pension funds seeking help with managing or transferring risk, though some strategies are gaining more traction than others (Figures 16a and 16b):

Figure 16a
Percent of Low Dependency Goal Schemes Likely to Use Strategy

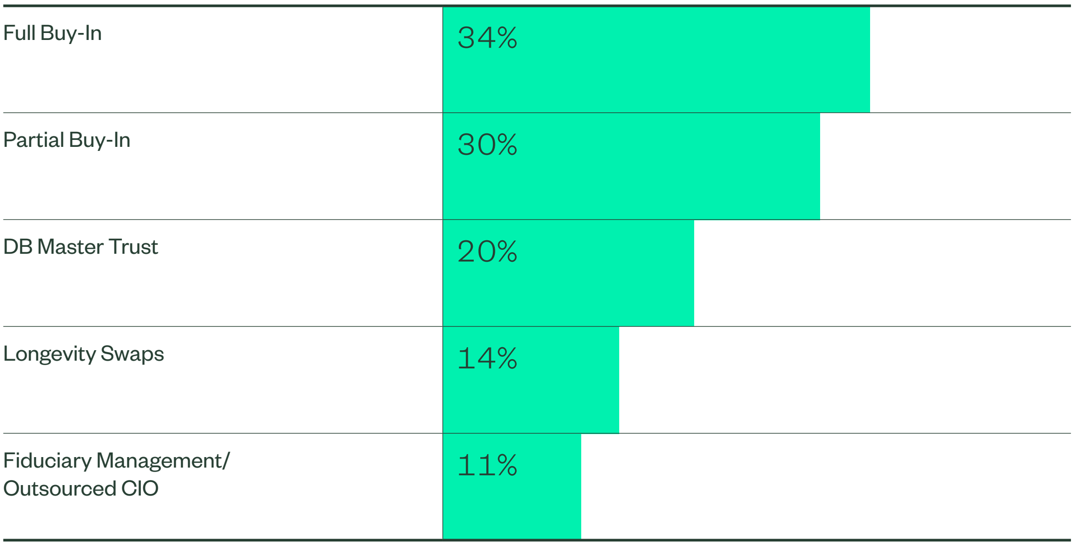
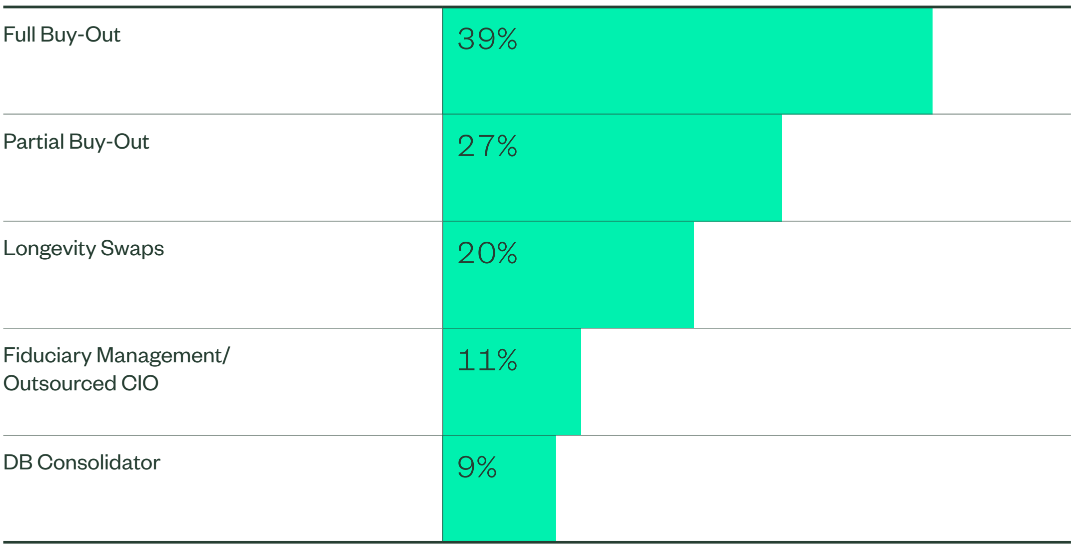


Figure 16b
Percent of Asset and Liability Transfer Goal Schemes Likely to Use Strategy



Source: State Street Global Advisors. Respondents asked to note all strategies that apply. For low dependency goal, N=44. For asset and liability transfer goal, N=56. Question asked was: “Is your company likely to undertake any of the following strategies in future, to help achieve its target?”

DB Consolidation DB consolidation is one newer avenue for schemes seeking to transfer assets and liabilities in the future. This involves transferring all of a scheme's assets and liabilities to a non-insurance third party, such as the Pension SuperFund or Clara-Pensions, that will provide and administer pension payments, or manage the scheme to a position where a bulk annuity purchase can take place. Through DB consolidation, schemes sever the sponsor covenant and replace it with external capital. The structure of the consolidation provides a capital buffer and improves the likelihood of members' benefits being paid in full.

According to our survey, only 9 percent of schemes targeting transfer planned to take the DB consolidator route, an option that is new to market and still awaiting regulatory clarity. On October 21, 2020, TPR issued detailed guidance setting out its expectations of trustees and sponsors considering transferring their scheme to a superfund.

Longevity Swaps These instruments serve as insurance policies for DB funding requirements. With these instruments, schemes remove longevity risk by making fixed payments to a swap provider, who will then pay trustees variable amounts for as long as each scheme member lives. The first longevity swaps were written by defined benefit pension schemes in 2009. The swaps are being used and considered by schemes that are targeting both low dependency and transfer. In general, longevity swaps are in greater demand for those going down the transfer route.

Buy-ins For schemes targeting low dependency, buy-ins have gained more traction than longevity swaps. With buy-ins, if participants outlive projections, insurers provide the surplus required payments, allowing schemes to have a known and certain benefit obligation. Over 40 percent of schemes targeting low dependency have undertaken a partial buy-in as part of their endgame strategy, while only 20 percent have used longevity swaps.

According to Andrew Udale-Smith, a Partner at Hymans Robertson and Fellow of the Institute and Faculty of Actuaries, "If you're very comfortable with your investment piece, which could be because you're very well hedged, longevity can be a bit of an outlier in that it doesn't neatly fit into that comfortable 'we're on top of this' box like the investment piece. But if you don't want to hand the scheme over to an insurer via a buy-in, then a longevity hedging solution can be quite attractive."

DB Master Trust This is one strategic option for schemes seeking low dependency. With DB master trusts, a third-party provider takes on the legal responsibility for all aspects of running the pension scheme, and the provider is simultaneously managing the schemes of other employers. The scheme essentially becomes professionally run and the scheme's sponsors no longer have to manage certain processes or logistics. The third-party provider also communicates with and advises participants. Meanwhile, the company continues to pay the contributions and have high-level oversight for the scheme. DB master trusts are growing in interest as schemes combat increased regulatory oversight.

In addition, pension schemes can benefit from the economies of scale of the master trust structure and take advantage of investment opportunities that may not be accessible outside of the trust. According to our survey, a small 5 percent of schemes that were targeting low dependency have adopted DB master trusts as part of their strategy, but 20 percent said that they are likely to undertake DB master trusts in the future.

The Long Haul

Figure 1 shows that 44 out of our 100 survey participants were aiming for low dependency. Our data also illustrates that schemes that are either well funded, fully funded, or have a surplus were more likely to have this goal. However, our demographics showed that more than 60 percent of schemes surveyed were closed to both new members and future accruals. Some may argue that as schemes get smaller, they are all going to eventually desire a full buyout of their assets and liabilities.

> **“One of the key arguments for a buy-out comes about when it becomes uneconomic to continue to run the scheme. If you’re very well-funded and your scheme’s getting smaller, there comes a point where paying for somebody to take it off your hands and manage it really efficiently and extinguish the risk is very attractive. And I think that point will come for the vast majority of schemes—apart from those that are very large and those that are still open.”**
>
> — Simeon Willis, Chief Investment Officer, XPS Pensions Group

Notably, the data suggests some “phasing in” approaches for both stated endgames. Most schemes pursuing a transfer were considering a phased approach to buyout (the transfer of the payment liabilities to an insurance company), with 57 percent of those schemes already adopting partial buyouts, and 39 percent planning to undertake a full buyout and 27 percent likely to undertake a partial buyout in the future.

For schemes aspiring to low dependency, there is also a phased approach to buy-ins that could occur. Within our survey, 41 percent of those schemes had already adopted a partial buy-in strategy, while 25 percent have already done a full buy-in. Meanwhile, 34 percent of those schemes said they are likely to do a full buy-in in the future, and 30 percent said they are likely to undertake a partial buy-in.

Conclusion

Our survey validates four major trends in the United Kingdom and Ireland DB landscape:

1. CDI interest is expected to expand.
2. Weaker-covenant schemes are more apt to seek transfer.
3. Schemes are apprehensive toward illiquid credit.
4. Outsourcing is a response to regulatory burdens and market themes.

New regulatory actions such as the Pension Schemes Act 2021 and the more stringent requirements from TPR are leading schemes to look closely at their end goals and articulate them to their key stakeholders. Our data shows that schemes are likely to use a wide range of strategies to reach their goals. Many of these strategies have been less popular with United Kingdom and Ireland pension schemes in the past, but are now growing in consideration.

In other observations, fully-funded and larger schemes are more apt to take risks in their investing strategies, and are more likely to see ESG as one of the significant burdens driving outsourcing, versus weak-funded and smaller schemes. De-risking will most likely continue to be a focus as well, given our data on funding status and the ongoing use of LDI.

In general, we believe that the new requirements placed on United Kingdom and Ireland pension schemes will put pressure on pension fund sponsors as they try to manage additional disclosure while staving off what they identify as key risks to their endgames (in particular, a decline in investment performance). However, by having a firmer handle on their long-term goals, sponsors can more easily phase in the most appropriate approach, and determine how their corporation can best manage the responsibilities of servicing their remaining participants.

Appendix

Survey Methodology

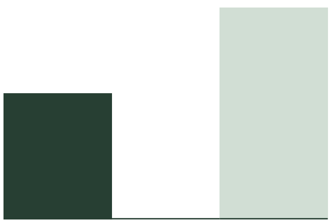
This survey was conducted in August of 2021 via computer assisted telephone interviews (N=100). Respondents were limited to senior leaders who are directly involved in pension fund management for United Kingdom and Ireland schemes.

Figure 17
Participant Demographic Highlights

Region

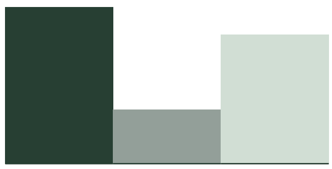
UK 75%
Ireland 25%

Scheme Type



DB 38%
DC 0%
DB + DC 62%

Employee Covenant



Weak 46%
Neutral 16%
Strong 38%

Scheme Status

Open to New Members 0%
Closed to New Members / Open to Future Accruals 37%
Closed to New Members / Closed to Future Accruals 37%
In the Wind-Up Process 0%

Figure 18
Total Assets Under Management*

Figure 19
Funding Level

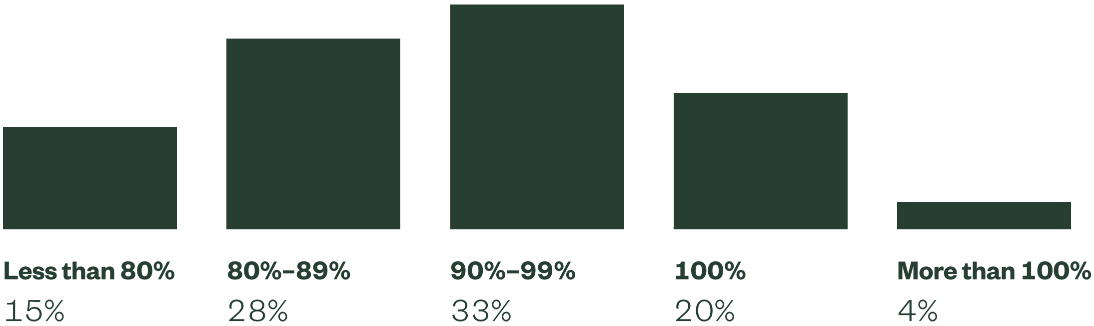


Figure 20
Industry

Financial Services	12%
Retail	10%
Healthcare	8%
Oil and Gas	8%
Utilities	8%
Consumer Goods	7%
Construction and Materials	6%
TMT	6%
Transport and Logistics	6%
Aerospace and Defence	5%
Chemicals	5%
Electronic and Electrical Equipment	5%
Industrial engineering	5%
Travel and Leisure	5%
Mining	4%

* Ireland schemes were captured in euros and UK schemes were captured in GBP, but data combined for ease of reference.

Figure 21
Job Role

Head of Finance	24%
Investment Director	19%
Chief Financial Officer	10%
Pensions Director	9%
Head/Director of Fixed Income	8%
Investment Strategist	7%
Chief Investment Officer	7%
Head of Corp. Treasury	5%
Head/Director of Public Equities	3%
Group Treasurer	3%
Chairman of Board/Committee	3%
Trustee/Trustee Director	2%

Contributors

We appreciate the following contributors who gave us their time and expertise and provided valuable on-the-ground perspective for this report.

Ian Mills
Partner and Head of DB Endgame Strategy, Barnett Waddingham LLP

Simeon Willis
Chief Investment Officer, XPS Pensions Group

Andrew Udale-Smith
Partner, Hymans Robertson
Fellow of the Institute and Faculty of Actuaries

Leonard Bowman
Partner and Head of Corporate DB Endgame Strategy, London, Hymans Robertson

Endnotes

1 Survey performed in partnership with Longitude Research, a Financial Times company. The research also included in-depth telephone interviews with 1 Chief Investment Officer and three consultants.

2 Bell, Sharon; Oppenheimer, Peter; Peytavin, Lilia; Jaisson, Guillaume; and Ferrario, Andrea. "Strategy Matters: Europe in vogue — who is buying what and can it last?" Goldman Sachs, June 28, 2021.

Learn More

State Street Global Advisors is a proven market leader that can help investors capitalize on the latest DB trends with our insights and expertise. We look forward to continuing to partner with our clients. More of our content on the European DB space can be found at **ssga.com/db-research-the-right-approach**.

About State Street Global Advisors

State Street Global Advisors serves governments, institutions and financial advisors with a rigorous approach, breadth of capabilities and belief that good stewardship is good investing for the long term. Pioneers in index, ETF, and ESG investing and the world's fourth-largest asset manager*, we are always inventing new ways to invest.

* Pensions & Investments Research Center, as of December 31, 2020.

ssga.com

Marketing Communication

State Street Global Advisors Worldwide Entities

Abu Dhabi: State Street Global Advisors Limited, ADGM Branch, Al Khatem Tower, Suite 42801, Level 28, ADGM Square, Al Maryah Island, P.O Box 76404, Abu Dhabi, United Arab Emirates. Regulated by the ADGM Financial Services Regulatory Authority. T: +971 2 245 9000. **Australia:** State Street Global Advisors, Australia, Limited (ABN 42 003 914 225) is the holder of an Australian Financial Services License (AFSL Number 238276). Registered office: Level 14, 420 George Street, Sydney, NSW 2000, Australia. T: +612 9240-7600 F: +612 9240-7611. **Belgium:** State Street Global Advisors Belgium, Chaussée de La Hulpe 185, 1170 Brussels, Belgium. T: +32 2 663 2036. State Street Global Advisors Belgium is a branch office of State Street Global Advisors Europe Limited, registered in Ireland with company number 49934, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson's Quay, Dublin 2. **Canada:** State Street Global Advisors, Ltd., 1981 McGill College Avenue, Suite 500, Montreal, Qc, H3A 3A8, T: +514 282 2400 and 30 Adelaide Street East Suite 800, Toronto, Ontario M5C 3G6. T: +647 775 5900. **France:** State Street Global Advisors Europe Limited, France Branch ("State Street Global Advisors France") is a branch of State Street Global Advisors Europe Limited, registered in Ireland with company number 49934, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson's Quay, Dublin 2. State Street Global Advisors France is registered in France with company number RCS Nanterre 899 183 289, and its office is located at Coeur Défense - Tour A - La Défense 4, 33e étage, 100, Esplanade du Général de Gaulle, 92 932 Paris La Défense Cedex, France. T: +33 1 44 45 40 00. F: +33 1 44 45 41 92. **Germany:** State Street Global Advisors Europe Limited, Branch in Germany, Brienner Strasse 59, D-80333 Munich, Germany ("State Street Global Advisors Germany"). T +49 (0)89 55878 400. State Street Global Advisors Germany is a branch of State Street Global Advisors Europe Limited, registered in Ireland with company number 49934, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson's Quay, Dublin 2. **Hong Kong:** State Street Global Advisors Asia Limited, 68/F, Two International Finance Centre, 8 Finance Street, Central, Hong Kong. T: +852 2103-0288. F: +852 2103-0200. **Ireland:** State Street Global Advisors Europe Limited is regulated by the Central Bank of Ireland. Registered office address 78 Sir John Rogerson's Quay, Dublin 2. Registered Number: 49934. T: +353 (0)1 776 3000. F: +353 (0)1 776 3300. **Italy:** State Street Global Advisors Europe Limited, Italy Branch ("State Street Global Advisors Italy") is a branch of State Street Global Advisors Europe Limited, registered in Ireland with company number 49934, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson's Quay, Dublin 2. State Street Global Advisors Italy is registered in Italy with company number 11871450968 - REA: 2628603 and VAT number 11871450968, and its office is located at Via Ferrante Aporti, 10 - 20125 Milan, Italy. T: +39 02 32066 100. F: +39 02 32066 155. **Japan:** State Street Global Advisors (Japan) Co., Ltd., Toranomon Hills Mori Tower 25F 1-23-1 Toranomon, Minato-ku, Tokyo 105-6325 Japan. T: +81-3-4530-7380. Financial Instruments Business Operator, Kanto Local Financial Bureau (Kinsho #345), Membership: Japan Investment Advisers Association, The Investment Trust Association, Japan, Japan Securities Dealers' Association. **Netherlands:** State Street Global Advisors Netherlands, Apollo Building 7th floor, Herikerbergweg 29, 1101 CN Amsterdam, Netherlands. T: +31 20 7181 000. State Street Global Advisors Netherlands is a branch office of State Street Global Advisors Europe Limited, registered in Ireland with company number 49934, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson's Quay, Dublin 2. **Singapore:** State Street Global Advisors Singapore Limited, 168, Robinson Road, #33-01 Capital Tower, Singapore 068912 (Company Reg. No: 200002719D, regulated by the Monetary Authority of Singapore). T: +65 6826-7555. F: +65 6826-7501. **Switzerland:** State Street Global Advisors AG, Beethovenstr. 19, CH-8027 Zurich. Registered with the Register of Commerce Zurich CHE-105.078.458. T: +41 (0)44 245 70 00. F: +41 (0)44 245 70 16. **United Kingdom:** State Street Global Advisors Limited. Authorised and regulated by the Financial Conduct Authority. Registered in England. Registered No. 2509928. VAT No. 5776591 81. Registered office: 20 Churchill Place, Canary Wharf, London, E14 5HJ. T: 020 3395 6000. F: 020 3395 6350. **United States:** State Street Global Advisors, 1 Iron Street, Boston, MA 02210-1641. T: +1 617 786 3000.

Important Risk Information

The information provided does not constitute investment advice and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell a security. It does not take into account any investor's particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor.

All information has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information.

The whole or any part of this work may not be reproduced, copied or transmitted or any of its contents disclosed to third parties without SSGA's express written consent. All information is from SSGA unless otherwise noted and has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information and it should not be relied on as such.

Investing involves risk including the risk of loss of principal.

The information contained in this communication is not a research recommendation or 'investment research' and is classified as a 'Marketing Communication' in accordance with the Markets in Financial Instruments Directive (2014/65/EU) or applicable Swiss regulation. This means that this marketing communication (a) has not been prepared in accordance with legal requirements designed to promote the independence of investment research (b) is not subject to any prohibition on dealing ahead of the dissemination of investment research.

ID753266-3874060.1.1.EMEA.INST 1021
Exp. Date: 10/31/2022