

LDI Market Updates

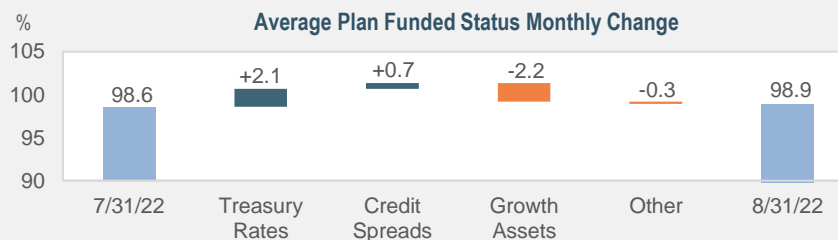
- Discount rates increased by 0.42% in August, from 3.90% to 4.32%.
- Risk and fixed income assets posted negative total returns, with the S&P 500 and Bloomberg Long Corporate Index returning -4.2% and -4.5%, respectively.
- Long corporate issuance surpassed \$30 billion and accounted for over 30% of all investment-grade supply during the month.
- Heavy supply and a weak tone pushed spreads 1bp wider to 176bps; spreads are slightly above the 10-year average of 172bps.

IR+M Funded Status Monitor

- Our sample Average Plan funded status increased by 0.3% during August, closing at 98.9%; despite negative growth asset returns, higher discount rates increased the funded status.

| Funded Status (%) | 08/22 | 07/22 | MoM Change | 12/21 | YTD Change |
|-------------------|-------|-------|------------|-------|------------|
| Average Plan | 98.9 | 98.6 | 0.3 | 101.9 | (3.0) |
| End Stage Plan | 104.9 | 104.5 | 0.4 | 106.8 | (1.9) |
| Young Plan | 90.3 | 89.7 | 0.6 | 92.2 | (1.9) |

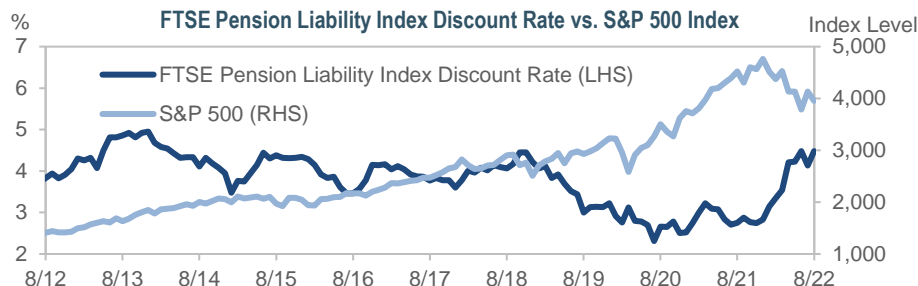
Average Plan Funded Status Monthly Change



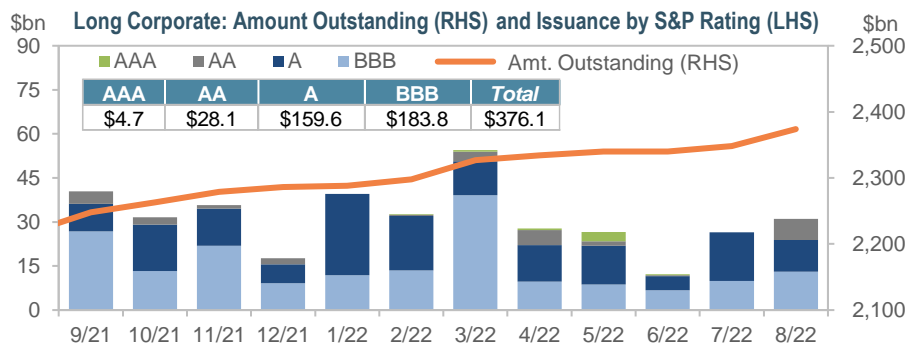
Other includes contributions, expenses, benefit accruals, and liability profile changes.

| Rates Monitor | 08/22 | 07/22 | MoM Change | 12/21 | YTD Change |
|-------------------------------------|-------|-------|------------|-------|------------|
| IR+M Average Plan Discount Rate (%) | 4.32 | 3.90 | 0.42 | 2.61 | 1.71 |
| Bloomberg Long Corp Yield (%) | 5.17 | 4.78 | 0.39 | 3.10 | 2.07 |
| Bloomberg Long Corp A+ Yield (%) | 4.78 | 4.41 | 0.37 | 2.87 | 1.91 |
| Bloomberg Long Corp BBB Yield (%) | 5.56 | 5.17 | 0.39 | 3.32 | 2.24 |
| Long Corp Spreads (bps) | 176 | 175 | 1 | 130 | 46 |
| Curve (Long Corp - Int Corp) (bps) | 55 | 49 | 6 | 61 | (6) |

FTSE Pension Liability Index Discount Rate vs. S&P 500 Index



Long Corporate: Amount Outstanding (RHS) and Issuance by S&P Rating (LHS)



IR+M LDI Corner –The Belly of the Curve is Grumbling with Opportunity

- The yields of the 6-month through 7-year Treasuries surpass the 30-year rate of 3.29% at 8/31. The curve inversion has created attractive value in intermediate duration bonds, as spreads are almost 20bps wide to historical averages.
- The addition of Intermediate Credit, either as a strategic or tactical allocation, may also benefit a plan's LDI strategy:
 - Many plan sponsors have shorter duration needs given higher funded statuses and increased fixed income allocations. Introducing intermediate credit can **avoid an overhedged state** which would negatively affect funded statuses if interest rates rose (i.e., market consensus on the future long-term path of rates).
 - Gaining broader exposure across the curve may help LDI managers to more efficiently target liability key rate durations and diversify credit with high quality **securitized bonds**.
 - The overall LDI hedge could maintain duration targets by barbellizing intermediate credit with a long duration strategy, such as STRIPS.
- Given these factors, we have recently seen an increased interest in our Intermediate Credit strategy. We would welcome the opportunity to discuss the suitability of our strategy for your LDI needs.

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Moody's PFaroe, Milliman, FTSE Russell (formerly Citigroup), Bloomberg, and JPMorgan. All data in the above commentary is as of 8/31/22. Yields are represented as of the aforementioned date and are subject to change. The views contained in this report are those of IR+M and are based on information obtained by IR+M from sources that are believed to be reliable but IR+M makes no guarantee as to the accuracy or completeness of the underlying third-party data used to form IR+M's views and opinions. This report is for informational purposes only and is not intended to provide specific advice, recommendations, or projected returns for any particular IR+M product. No part of this material may be reproduced in any form, or referred to in any other publication, without express written permission from Income Research + Management. "Bloomberg®" and Bloomberg Indices are service marks of Bloomberg Finance L.P. and its affiliates, including Bloomberg Index Services Limited ("BISL"), the administrator of the index (collectively, "Bloomberg") and have been licensed for use for certain purposes by IR+M. Bloomberg is not affiliated with IR+M, and Bloomberg does not approve, endorse, review, or recommend the products described herein. Bloomberg does not guarantee the timeliness, accurateness, or completeness of any data or information relating to any IR+M product. Moody's Analytics PFaroe® product used by IR+M includes market data and other information sourced from third parties under license. Certain licensors require Moody's Analytics to make disclosures to, or to obtain acknowledgements or agreements from, IR+M and parties receiving the information from IR+M, which is effected by the disclosures and disclaimers available at <https://static.pfaroe.com/DisclosuresAndDisclaimers/index.html>.

IR+M Funded Status Monitor Assumptions:

Detailed methodology and assumptions for the IR+M Funded Status Monitor can be found at:

<https://www.incomeresearch.com/wp-content/uploads/2022/02/IRM-Funded-Status-Monitor-Whitepaper-2022.pdf>.

| | End Stage | Average | Young |
|---|------------------|----------------|--------------|
| Target Liability Duration (Years) | 8-10 | 12-14 | 15-17 |
| Funded Ratio at Inception (i.e., 12/31/2019) | 100.0% | 89.8% | 80.0% |
| Asset Allocations | End Stage | Average | Young |
| US All Cap Equity | 8% | 27% | 38% |
| International Equity | 2% | 17% | 22% |
| US REITS | 0% | 2% | 5% |
| Private Equity | 0% | 4% | 5% |
| Growth Assets Allocation | 10% | 50% | 70% |
| Long Government Fixed Income | 5% | 10% | 10% |
| Long Credit Fixed Income | 30% | 25% | 10% |
| Intermediate Government Fixed Income | 5% | 5% | 5% |
| Intermediate Credit Fixed Income | 50% | 10% | 5% |
| Fixed Income Allocation | 90% | 50% | 30% |