IR+M INCOME RESEARCH + MANAGEMENT

LDI MONITOR

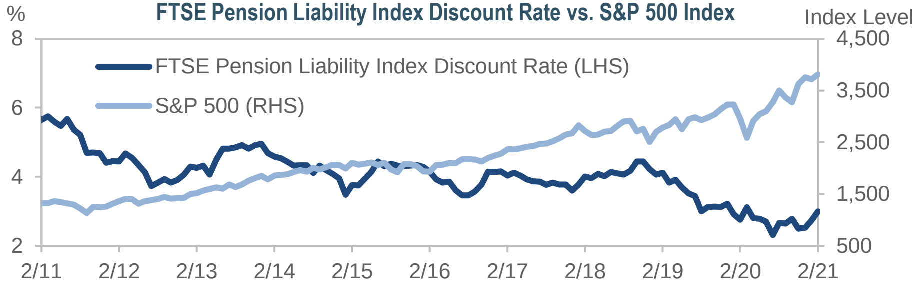
February 28, 2021

LDI Market Updates

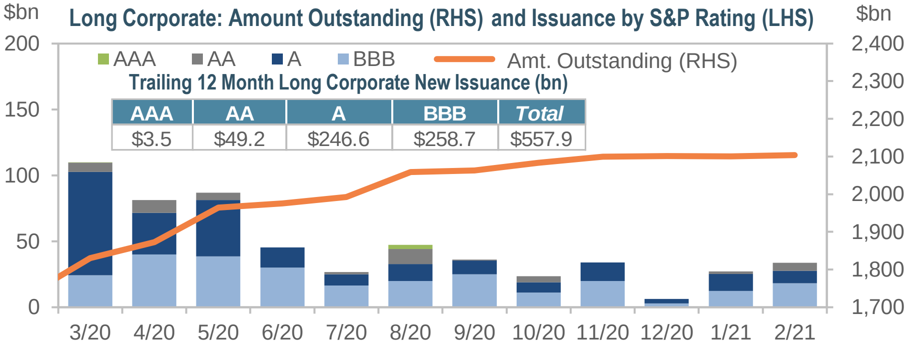
- Discount rates increased by 0.27%, from 2.42% to 2.69%.
- Inflation concerns pushed longer-maturity yields higher, with the long corporate yield surpassing 3%, an increase of over 40bps since December 2020.
- Optimism around the economic recovery helped lift risk assets, with the S&P 500 Index returning over 2% and reaching a new all-time high.
- Supply of long corporate bonds totaled roughly $34 billion in February; year-to-date issuance of $61 billion is 3% ahead of last year's pace.

Rates Monitor	02/21	01/21	MoM Change	12/20	YTD Change
IR+M Average Plan Discount Rate (%)	2.69	2.42	0.27	2.22	0.47
Bloom Barc Long Corp Yield (%)	3.22	2.98	0.24	2.78	0.44
Bloom Barc Long Corp A+ Yield (%)	2.96	2.70	0.26	2.49	0.47
Bloom Barc Long Corp BBB Yield (%)	3.48	3.26	0.22	3.07	0.41
Long Corp Spreads (bps)	131	140	(9)	140	(9)
Curve (Long Corp - Int Corp) (bps)	66	70	(4)	72	(6)

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



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

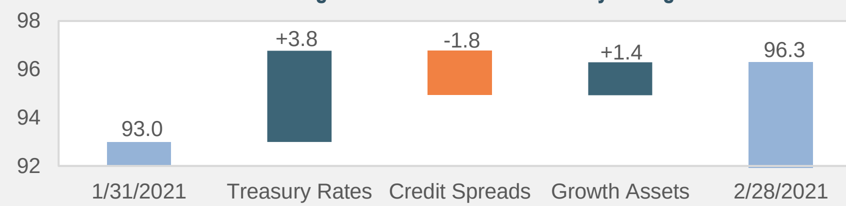


IR+M Funded Status Monitor

- Our sample Average Plan funded status increased by 3.3% during February, closing at 96.3%; higher discount rates and positive growth asset returns pushed its funded status higher month-over-month.

Funded Status (%)	02/21	01/21	MoM Change	12/20	YTD Change
Average Plan	96.3	93.0	3.3	91.8	4.5
End Stage Plan	104.8	103.5	1.3	102.8	2.0
Young Plan	88.3	83.8	4.5	80.0	8.3

Average Plan Funded Status Monthly Change



IR+M LDI Corner: Concentrating on the Concentration

- Most corporate pension plans calculate their liabilities using discount rates based on high-quality (generally AA-rated) corporate bonds. Holding bonds in LDI portfolios outside of this universe may lead to asset-liability tracking error. Although liabilities are immune to downgrade and default risk, assets are not.
- The AA-rated corporate universe is highly concentrated with only 64 issuers, and the top five issuers represent 50% of the index. Expanding the investable universe to include BBBs may generate outperformance and a more diversified portfolio at the expense of creating basis risk relative to the plan's liabilities.
- Rating agencies are increasingly emphasizing ESG considerations in their credit rating process which may further amplify concentration concerns. S&P recently downgraded several energy companies due to the increasing risks related to climate change. The energy sector is roughly 23% of the Long AA Index and only four issuers.
- At IR+M, we incorporate ESG factors into our bottom-up research by selectively owning bonds we feel are attractively priced based on associated risks, such as climate change. We believe this approach provides downside protection and mitigates funded status volatility, which is critical for an LDI portfolio.

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Milliman, FTSE Russell (formerly Citigroup), Bloomberg Barclays, Bloomberg, and JPMorgan. All data in the above commentary is as of 2/28/21. 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. This report is for informational purposes only and is not intended to provide specific advice, recommendations for, or projected returns of 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® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg"). BARCLAYS® is a trademark and service mark of Barclays Bank Plc (collectively with its affiliates, "Barclays"), used under license. Bloomberg or Bloomberg's licensors, including Barclays, own all proprietary rights in the Bloomberg Barclays Indices. Neither Bloomberg nor Barclays approves or endorses this material, or guarantees the accuracy or completeness of any information herein, or makes any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, neither shall have any liability or responsibility for injury or damages arising in connection therewith.

IR+M Funded Status Monitor Assumptions:

Detailed methodology and assumptions for the IR+M Funded Status Monitor can be found at: http://www.incomeresearch.com/wp-content/uploads/2021/01/IRM-Funded-Status-Monitor-2021.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 Equity	12%	27%	38%
International Equity	3%	17%	22%
US REITS	0%	2%	5%
Private Equity	0%	4%	5%
Growth Assets Allocation	15%	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	45%	10%	5%
Fixed Income Allocation	85%	50%	30%