IR+M INCOME RESEARCH + MANAGEMENT

LDI MONITOR

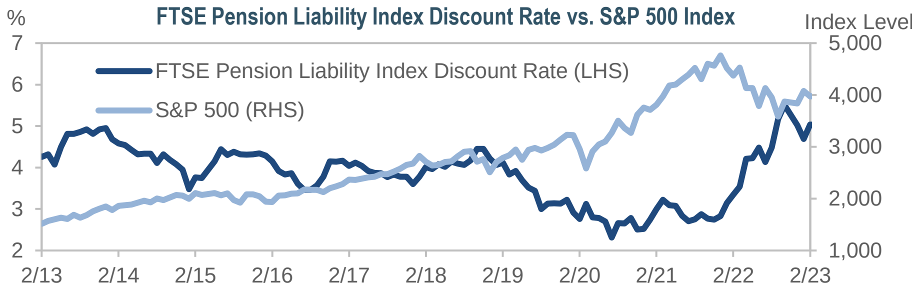
February 28, 2023

LDI Market Updates

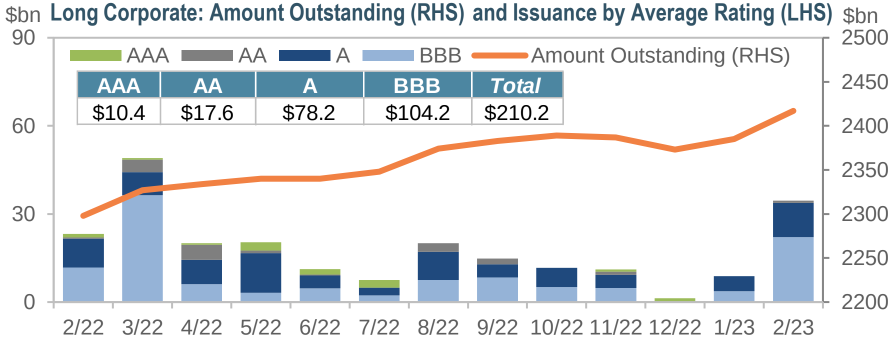
- Discount rates increased by 0.40% in January, from 4.56% to 4.96%
- Following a strong January, growth and fixed income assets felt some weakness in February; the S&P 500 dropped by 2.6% and the Bloomberg Long Corporate Index posted a -5.4% return
- Investment-grade supply remained strong with $150 billion pricing during the month, setting a record for February issuance; long-end issuance picked up with $34 billion of new long bonds issued

Rates Monitor	02/23	01/23	MoM Change	12/22	YTD Change
IR+M Average Plan Discount Rate (%)	4.96	4.56	0.40	4.89	0.07
Bloomberg Long Corp Yield (%)	5.59	5.12	0.47	5.60	(0.01)
Bloomberg Long Corp A+ Yield (%)	5.25	4.81	0.44	5.26	(0.01)
Bloomberg Long Corp BBB Yield (%)	5.93	5.44	0.49	5.95	(0.02)
Long Corp Spreads (bps)	158	145	13	158	0
Curve (Long Corp - Int Corp) (bps)	51	42	9	42	9

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



Long Corporate: Amount Outstanding (RHS) and Issuance by Average Rating (LHS)

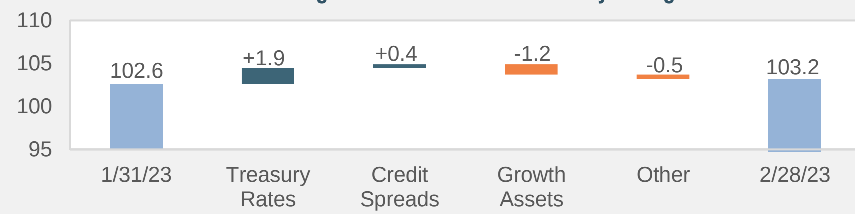


IR+M Funded Status Monitor

- Our sample Average Plan funded status increased by 0.6% during February, closing at 103.2%; an increase in discount rates resulted in a net-positive change in funded status, despite negative growth asset returns

Funded Status (%)	02/23	01/23	MoM Change	12/22	YTD Change
Average Plan	103.2	102.6	0.6	100.4	2.8
End Stage Plan	106.7	106.8	(0.1)	105.2	1.5
Young Plan	94.9	94.2	0.7	92.1	2.8

Average Plan Funded Status Monthly Change



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

IR+M LDI Corner – "Those who do not remember the past are condemned to repeat it"

- Our recent blog offers a history lesson on the evolution of corporate pension health over the past two decades:
  - Pre-GFC: Pensions rode strong equity returns and enjoyed a steady climb from about 70% in 2003 to over 100% in 2007. Plans maintained high allocations to growth assets, leaving them exposed to interest rate risk.
  - GFC: An equity crash combined with wider credit spreads and erased all funded status gains, plummeting funded statuses back below 80%.
  - Post GFC: It took 15 years, but higher rates and positive equity returns finally pushed the average pension to fully funded in 2022 where it remains today.
- History has taught us markets are volatile and hard-earned funded status gains can be quickly eliminated. In fact, this is the moment we have all been patiently waiting decades for – attractive yields and full funded statuses. We believe LDI can capitalize on this opportunity, offer discipline in making progress along LDI journeys, and protect funded statuses on the downside.
  - Fixed income allocations have been trending higher over time, and we anticipate 2023 pension demand for bonds to outpace prior years especially due to attractive yields. At greater fixed income allocations, LDI can more efficiently mitigate funded status volatility by targeting interest and curve risk.

The single effective discount rate shown is for the IR+M Average Sample Plan, calculated from the FTSE Pension Discount Curve. 2023 long corporate issuance sourced from Bloomberg. Totals may not sum due to rounding. The source for long issuance for previous months has been updated from JP Morgan to Bloomberg. Long issuance figures have also been updated to exclude 10-year bonds.

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Moody's PFaroe, FTSE Russell (formerly Citigroup), and Bloomberg. All data in the above commentary is as of 02/28/2023. Yields are represented as of the aforementioned date and are subject to change. The views contained in this report are those of Income Research & Management ("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. Investing in securities involves risk of loss that clients should be prepared to bear. More specifically, investing in the bond market is subject to certain risks including but not limited to market, interest rate, credit, call or prepayment, extension, issuer, and inflation risk. "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/2023/02/IRM-Funded-Status-Monitor-Whitepaper-2023.pdf

	End Stage	Average	Young
Target Liability Duration (Years)	7-9	10-12	13-15
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%	15%
Long Credit Fixed Income	30%	25%	15%
Intermediate Government Fixed Income	5%	5%	0%
Intermediate Credit Fixed Income	50%	10%	0%
Fixed Income Allocation	90%	50%	30%

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