LDI MONITOR

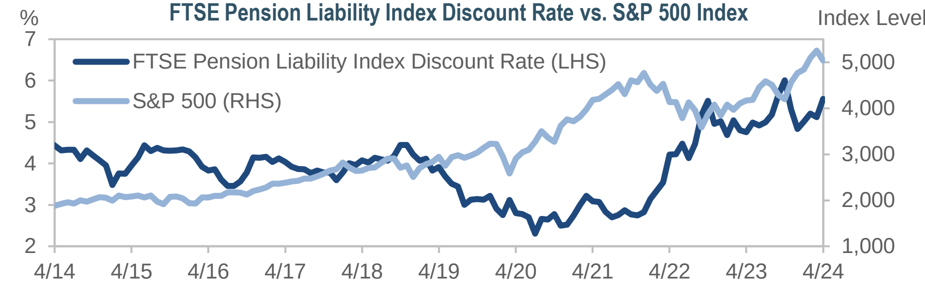
April 30, 2024

LDI Market Updates

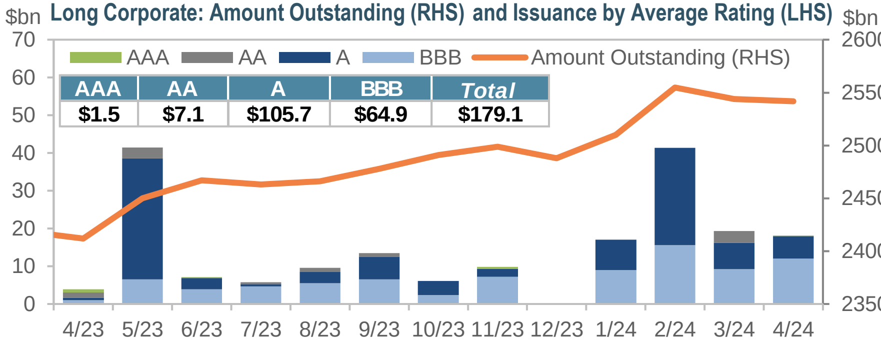
- Discount rates[1] increased by 0.46% in April, from 4.99% to 5.45%.
- The S&P 500 fell by 4.2% following five consecutive month of positive returns, and long corporate spreads tightened by 1bp to 107bps.
- In line with expectations, investment-grade issuance totaled $102 billion in April. The pace of supply has cooled relative to the first quarter, but year-to-date issuance remains 37% higher year-over-year.
  - Long corporate supply totaled $18.1 billion and accounted for about 18% of the total investment-grade issuance on the month.

Rates Monitor	04/24	03/24	MoM Change	12/23	YTD Change
IR+M Average Plan Discount Rate (%)	5.45	4.99	0.46	4.89	0.56
Bloomberg Long Corp Yield (%)	5.90	5.46	0.44	5.22	0.68
Bloomberg Long Corp A+ Yield (%)	5.68	5.24	0.44	4.98	0.70
Bloomberg Long Corp BBB Yield (%)	6.16	5.72	0.44	5.51	0.65
Long Corp Spreads (bps)	107	108	(1)	116	(9)
Curve (Long Corp - Int Corp) (bps)	29	28	1	26	3

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



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

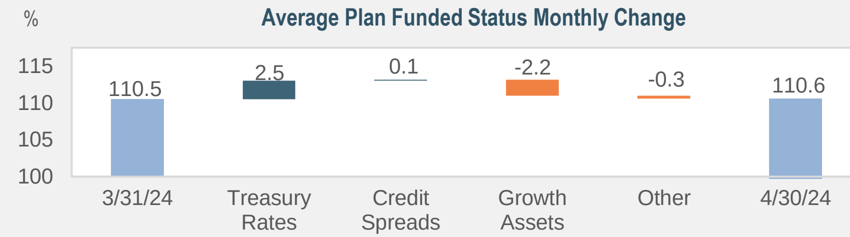


IR+M Funded Status Monitor

- The funded status of our Sample Average plan experienced a small increase of 0.1%, as selloffs in risk assets offset the rise in rates during April.

Funded Status (%)	04/24	03/24	MoM Change	12/23	YTD Change
Average Plan	110.6	110.5	0.1	105.9	4.7
End Stage Plan	109.1	109.7	-0.6	108.4	0.7
Young Plan	100.9	100.4	0.5	95.2	5.7

Average Plan Funded Status Monthly Change



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

IR+M LDI Corner – Cut, Cut…Hike?

- Entering 2024, the market and Fed were anticipating 7 and 3 rate cuts, respectively, for the year. Year-to-date, the disinflation trend seen in the latter half of 2023 has reversed and economic indicators have remained stronger than expected; market expectations have adjusted to foresee only 1-2 rate cuts by year's end. The Fed's policy rate can take one of the following paths forward:
  - \- Fed officials have reiterated that this hiking cycle has likely peaked, and inflation needs to continue approaching its 2% target before cutting rates. Weakening economic indicators or unexpected exogenous events could cause the Fed to expedite rate cuts.
  - = The base case is for the Fed to maintain rates at their current level. The last inflation mile has proven to be the hardest as CPI growth has reaccelerated this year. Impacts from last year's hiking cycle may still materialize with time given the prolonged and variable delays in their effects.
  - \+ While unlikely, a non-zero probability exists of a hike in 2024. "Supercore" inflation (i.e., Core services ex-housing) has trended upward through Q1. If this along with other economic indicators continue to show strength in the face of restrictive rates, the Fed's hand may be forced.
- Recent volatile rate activity has highlighted its susceptibility to economic news and Fed announcements. At IR+M, we have always believed interest rates are difficult, even impossible, to consistently predict. As such, we maintain a duration neutral posture both at a portfolio and key rate level.

[1]The single effective discount rate shown is for the IR+M Sample Average Plan, calculated from the FTSE Pension Discount Curve. Long issuance sourced from Bloomberg. Long issuance figures exclude 10-year bonds. The table in the long issuance chart shows the 12-month running total investment grade issuance by rating, through 4/30/24 in USD billions. Totals may not sum due to rounding.

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Moody's PFaroe, FTSE Russell (formerly Citigroup), and Bloomberg. All data in the above commentary is as of 4/30/2024. 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/2024/02/IRM-Funded-Status-Monitor-Whitepaper-2024.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%