LDI MONITOR

May 31, 2023

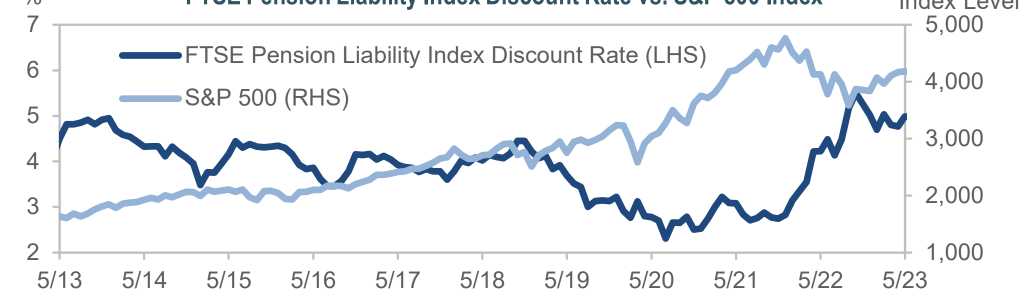
INCOME RESEARCH + MANAGEMENT

LDI Market Updates

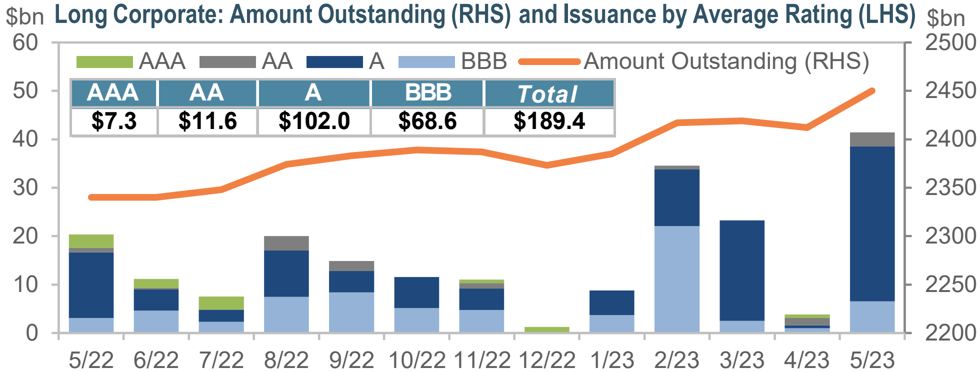
- Discount rates[1] increased by 0.23% in May, from 4.60% to 4.83%.
- Fixed income assets posted negative returns with the Bloomberg Long Corporate Index returning -2.8%; risk asset performance was mixed, with domestic equities marginally outperforming but international equities underperforming.
- Investment-grade supply came back to life in May following a slow April with $149 billion pricing, exceeding investor expectations of $135 billion for the month. Issuance in the long-end also picked up with $42 billion of new long bonds issued.

Rates Monitor	05/23	04/23	MoM Change	12/22	YTD Change
IR+M Average Plan Discount Rate (%)	4.83	4.60	0.23	4.89	(0.06)
Bloomberg Long Corp Yield (%)	5.52	5.27	0.25	5.60	(0.08)
Bloomberg Long Corp A+ Yield (%)	5.19	4.94	0.25	5.26	(0.07)
Bloomberg Long Corp BBB Yield (%)	5.89	5.63	0.26	5.95	(0.06)
Long Corp Spreads (bps)	163	159	4	158	5
Curve (Long Corp - Int Corp) (bps)	38	35	3	42	(4)

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



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

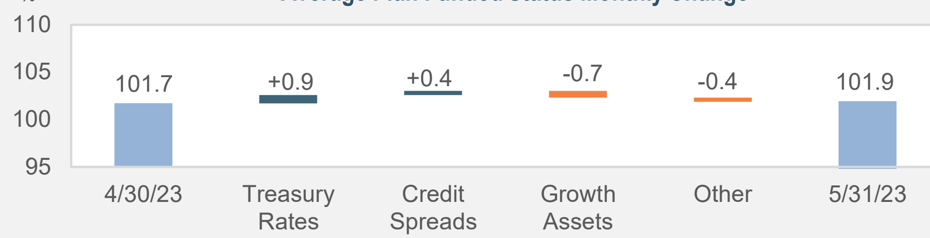


IR+M Funded Status Monitor

- Our sample Average Plan funded status increased by 0.2% during May, closing at 101.9%, primarily due to increase in discount rates and credit spreads.

Funded Status (%)	05/23	04/23	MoM Change	12/22	YTD Change
Average Plan	101.9	101.7	0.2	100.4	1.5
End Stage Plan	106.3	106.3	0.0	105.2	1.1
Young Plan	92.8	92.5	0.3	92.1	0.7

Average Plan Funded Status Monthly Change



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

IR+M LDI Corner – Use LDI to Put a Ceiling on Risks

- The protracted debt ceiling negotiations this May exacerbated volatility and uncertainty in the market. We believe that this instance of the debt ceiling "standoff" highlighted some key risks to pension plans.
- **Treasury yields** increased more in the front-end than the long-end of the curve. The 1-month Treasury ended the month up 75bps while the 30-year Treasury rose by just 5bps. The disproportionate impact on the front-end of the curve could potentially expose plans to curve mismatch risk.
- **Risk assets** were most impacted by debt ceiling talks, as the VIX index (which tracks the volatility in the S&P 500 index) saw its highest levels since March. Plans with higher equity exposure could face higher funded status volatility.
- **US Treasury downgrade risk** remains (but is unlikely). Fitch placed the Government on negative watch in May, citing the sluggish pace of negotiations. In 2011, following a similar debt ceiling debate, S&P downgraded the US government after Congress voted to raise the ceiling. LDI strategies which focus on credit risk could be more impacted because AAA-rated Treasuries are often used to improve the quality of portfolios to better align with the AA-rated based liabilities (i.e., "quality barbell").
- Given the potential impacts from heightened market volatility, we recommend taking an active approach to LDI to mitigate asset-liability tracking error.

[1]The single effective discount rate shown is for the IR+M Sample Average Plan, calculated from the FTSE Pension Discount Curve. Long corporate 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 5/31/2023 in USD billions. Totals may not sum due to rounding.

IR+M DISCLOSURE STATEMENT

Disclosures:

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%