

LDI Market Updates

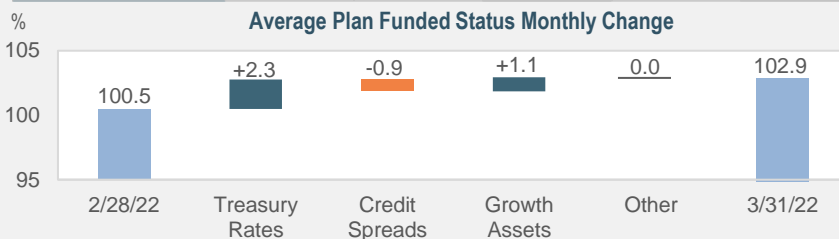
- Discount rates increased by 0.27% in March, from 3.15% to 3.42%.
- Continued concerns over inflation, tightening monetary policy, and soaring commodity prices drove heightened volatility in March.
- Long corporate issuance totaled almost \$54 billion, the highest monthly total since mid-2020. Despite continued volatility, several issuers brought new supply, including multiple jumbo deals. Heavy supply was met with strong demand, and spreads tightened 9bps, from 164bps to 155bps.

Rates Monitor	03/22	02/22	MoM Change	12/21	YTD Change
IR+M Average Plan Discount Rate (%)	3.42	3.15	0.27	2.61	0.81
Bloomberg Long Corp Yield (%)	4.03	3.78	0.25	3.10	0.93
Bloomberg Long Corp A+ Yield (%)	3.72	3.50	0.22	2.87	0.85
Bloomberg Long Corp BBB Yield (%)	4.33	4.05	0.28	3.32	1.01
Long Corp Spreads (bps)	155	164	(9)	130	25
Curve (Long Corp - Int Corp) (bps)	63	68	(5)	61	2

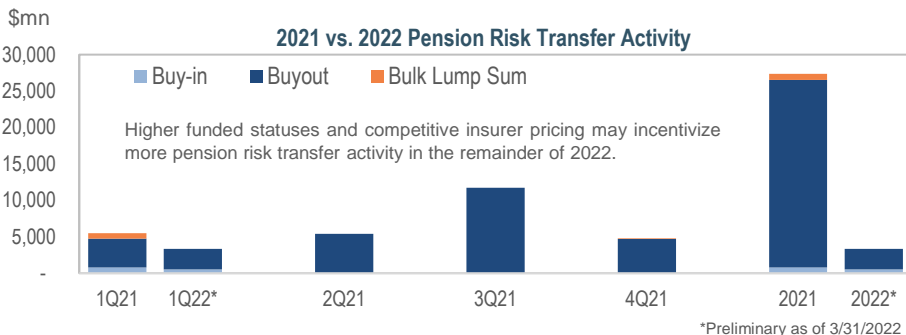
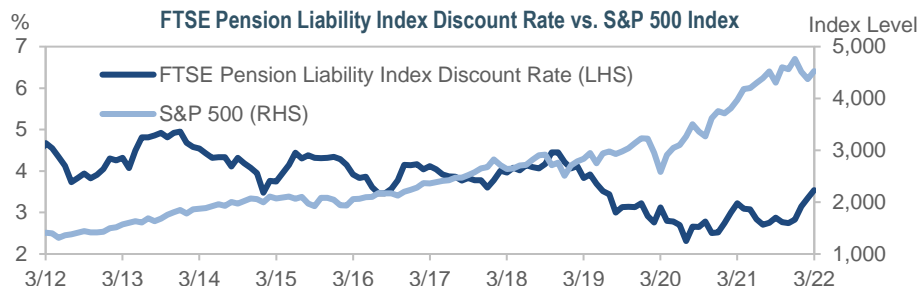
IR+M Funded Status Monitor

- Our sample Average Plan funded status increased by 2.4% during March, closing at 102.9%; higher discount rates and positive growth asset returns pushed the funded status higher.

Funded Status (%)	03/22	02/22	MoM Change	12/21	YTD Change
Average Plan	102.9	100.5	2.4	101.9	1.0
End Stage Plan	106.3	105.8	0.5	106.8	(0.5)
Young Plan	94.9	91.5	3.4	92.2	2.7



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

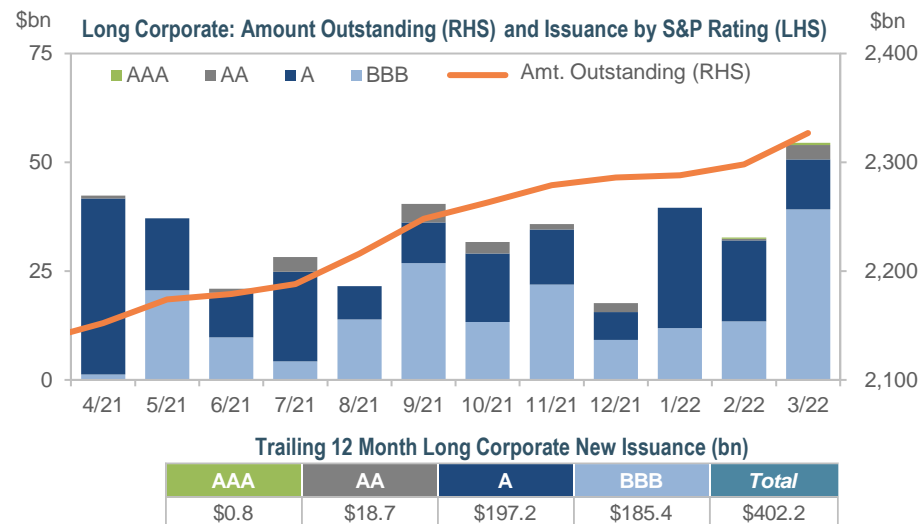


IR+M LDI Corner – The Future(s) Is Now

- Strong equity returns and rising discount rates pushed funded statuses significantly higher since the end of 2020. These funded status gains may put termination costs within reach and prompt sponsors to annuitize with an insurer.
- When advising clients approaching termination, we may recommend key rate duration (“KRD”) matching to hedge curve risk and minimize the volatility of any final cash required to terminate. Given the better-established depth of the 20-year investable universe and recent launch of 20-year Treasury futures, we have more arrows in our quiver to manage specifically against the 20-year KRD.
- Depth in the 20-year space has been driven by better price transparency due to the reintroduction of the 20-year Treasury, leading to rising 20-year corporate issuance. The most recent 20-year Treasury auction set records for non-dealer demand and oversubscription levels. 20-year corporate issuance grew from \$76B in 2020 to \$85B 2021, with \$13B already this year.
- The CME Group established a 20-year Treasury futures product in March, which may provide a more efficient way to directly hedge 20-year exposure. Prior to this, targeting this KRD with futures entailed going long one contract and short another. This potentially costly approach required margin on both the long and short positions, resulting in increased cash drag on performance.

First Quarter 2022 Corporate Issuance

- Long corporate supply totaled over \$126 billion in the first quarter, the third-highest quarterly total of long-issuance on record
 - 1Q20 and 2Q20 are the only quarters with higher amounts, tallying \$170 billion and \$214 billion, respectively
- Supply was highlighted by \$30 billion of debt issued across the curve by Magallanes, Inc., the fourth largest transaction on record; \$14.5 billion had a maturity of greater than 10 years
 - Magallanes, Inc. is a wholly-owned subsidiary of AT&T and came to market to fund the merger of Discovery and WarnerMedia
- Despite periods of softer risk sentiment leading to elevated new issue concessions, demand for corporate bonds remained robust with orders averaging 2.9x more than deal sizes



Largest Long-Dated USD Investment Grade Deals

Ticker	Issuer Name	Maturity	Issue Date	Average Rating	Amount Issued (\$bn)	Yield at Issue (%)	Spread at Issue (bps)	Concession to Outstanding (bps)	Order Book (\$bn)	Oversubscription Level (times)
MGLNS	Magallanes Inc	20	3/9/2022	BBB-	4.5	5.05	265	N/A	17.7	3.9
		30	3/9/2022	BBB-	7.0	5.14	280	N/A	21.1	3.0
		40	3/9/2022	BBB-	3.0	5.39	305	N/A	14.1	4.7
BMY	Bristol-Myers Squibb Co	20	2/15/2022	A	1.3	3.57	115	0	5.8	4.6
		30	2/15/2022	A	2.0	3.72	135	3	6.1	3.1
		40	2/15/2022	A	1.0	3.92	155	5	3.9	3.9
RCICN	Rogers Communications Inc	20	3/7/2022	BBB+	0.8	4.58	230	18	2.7	3.6
		30	3/7/2022	BBB+	2.0	4.62	245	18	3.4	1.7
LOW	Lowe's Cos Inc	30	3/22/2022	BBB+	1.5	4.25	163	-2	7.5	5.0
		40	3/22/2022	BBB+	1.3	4.45	183	-2	6.0	4.8
BRK	Berkshire Hathaway Finance Corp	30	3/7/2022	AA	2.8	3.87	165	20	N/A	N/A
HCA	HCA Inc	20	3/2/2022	BBB-	0.5	4.50	215	15	6.0	12.0
		30	3/2/2022	BBB-	2.0	4.63	235	20	8.0	4.0

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Moody's PFaroe, Milliman, FTSE Russell (formerly Citigroup), Bloomberg, JPMorgan and Pension & Investments. All data in the above commentary is as of 3/31/22. 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%