INCOME RESEARCH + MANAGEMENT

LDI MONITOR

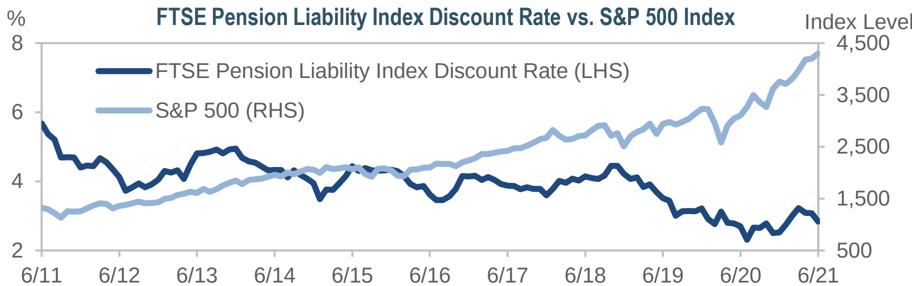
June 30, 2021

LDI Market Updates

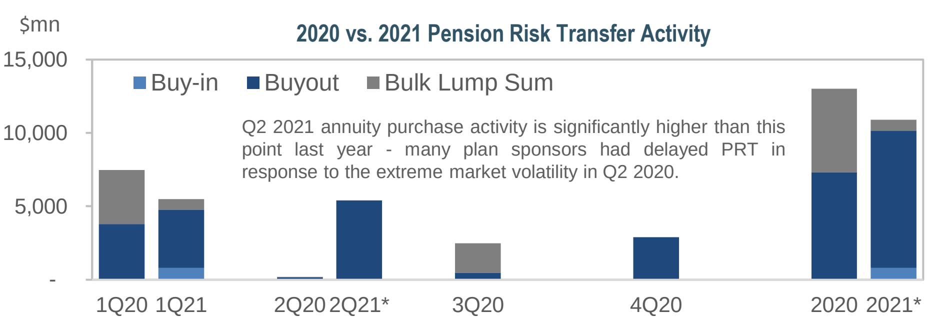
- Discount rates decreased in June by 0.20%, to 2.57% from 2.77%.
- Equity markets reached new highs, potentially pushing more plans to consider de-risking.
- Demand for long corporates persisted and spreads tightened another 4bps to 117bps, the tightest level since 2005; spreads tightened 8bps in 2Q.
- Long supply slowed to $21 billion in June, the lightest month of 2021; however, the second quarter total of $100 billion was still ahead of historical averages.

Rates Monitor	06/21	05/21	MoM Change	12/20	YTD Change
IR+M Average Plan Discount Rate (%)	2.57	2.77	(0.20)	2.22	0.35
Bloom Barc Long Corp Yield (%)	3.08	3.30	(0.22)	2.78	0.30
Bloom Barc Long Corp A+ Yield (%)	2.84	3.05	(0.21)	2.49	0.35
Bloom Barc Long Corp BBB Yield (%)	3.30	3.53	(0.23)	3.07	0.23
Long Corp Spreads (bps)	117	121	(4)	140	(23)
Curve (Long Corp - Int Corp) (bps)	59	60	(1)	72	(13)

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



2020 vs. 2021 Pension Risk Transfer Activity



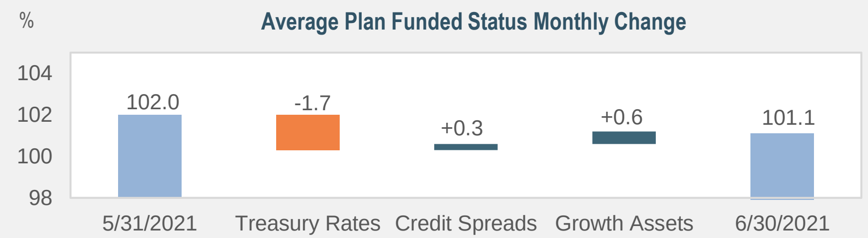
*Preliminary as of 6/30/2021

IR+M Funded Status Monitor

- Our sample Average Plan funded status decreased by 0.9% during June, closing at 102.8%; despite modest positive returns on growth assets, falling discount rates pushed its funded status lower month-over-month.

Funded Status (%)	06/21	05/21	MoM Change	12/20	YTD Change
Average Plan	101.1	102.0	(0.9)	91.8	9.3
End Stage Plan	108.9	108.3	0.6	102.8	6.1
Young Plan	92.8	95.0	(2.2)	80.0	12.8

Average Plan Funded Status Monthly Change

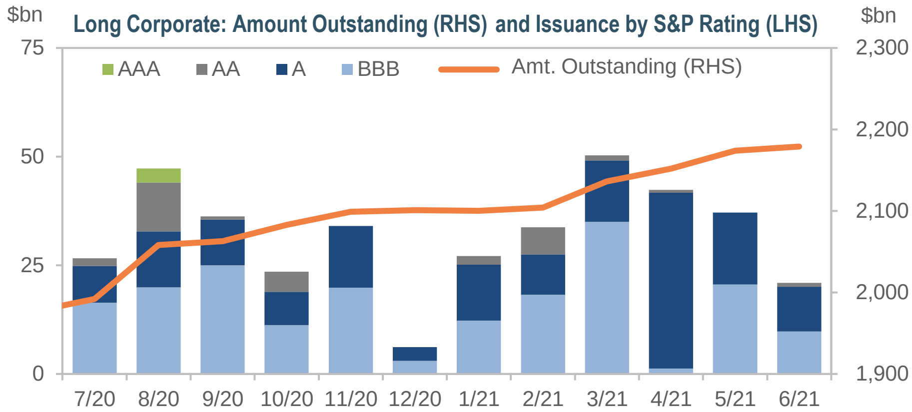


IR+M LDI Corner: LDI Can Deflate Rising Inflation Fears

- While inflation is still below historical averages, recent Consumer Price Index (CPI) reports have escalated concerns of sustained inflation for corporate plan sponsors. A review of plan investment strategies is timely if sponsors believe higher inflation will persist and will not be "transitory".
- For retirees and participants with frozen benefits, higher inflation will lead to reduced purchasing power. Higher rates will cause lower liabilities for this cohort. However, inflation will produce richer benefits for cash balance and accruing benefits (if linked to salaries and cost-of-living) and will drive liabilities higher.
- Overall inflation risks are elevated, but predicting the magnitude and timing of rising inflation is very challenging. We recommend embracing liability driven investing (LDI) to counteract these uncertain times ahead. Regardless of how inflation evolves, a plan's fixed income assets and liabilities move in tandem when LDI is employed. Within our LDI portfolios, we are focused on reducing sectors with higher inflation risks through our bottom-up security selection.
- Multiemployer and public plans largely discount liabilities at their expected rate of asset return and tend to have a total return emphasis. Fixed income may be retained for diversification and liquidity advantages (especially on the short end).

Second Quarter 2021 Corporate Issuance: Largest Long-Dated USD Investment Grade Deals

- Issuance of long-duration corporate bonds slowed as we approached the summer months, totaling just over $100 billion.
    - The second quarter was the 5th highest quarterly total on record.
    - Five of the last six quarters made up the five heaviest quarters of long-corporate supply on record.
- The majority of supply came from higher-quality issuers, with A-rated companies accounting for over 60% of long supply, more than double 1Q.
    - Orders for Amazon's $7 billion of long bonds totaled almost $20 billion, with investors paying a 5bps concession to outstanding debt.
    - Moody's upgraded Amazon's credit rating by one notch after the deal was announced, and S&P and Fitch followed suit in June.



Trailing 12 Month Long Corporate New Issuance (bn)

AAA	AA	A	BBB	*Total*
$3.3	$29.3	$160.4	$192.3	$385.2

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)
AMZN	Amazon.com Inc	20	5/10/2021	AA-	2.0	2.90	70	5	5.0	2.5
		30	5/10/2021	AA-	3.3	3.14	80	5	6.0	1.8
		40	5/10/2021	AA-	1.8	3.29	95	5	4.4	2.5
JPM	JPMorgan Chase & Co	21	4/15/2021	A	2.0	3.04	100	10	3.7	1.9
		31	4/15/2021	A	3.5	3.33	107	12	6.3	1.8
CRM	salesforce.com Inc	20	6/29/2021	A	1.3	2.74	70	0	4.8	3.8
		30	6/29/2021	A	2.0	2.91	80	0	5.7	2.9
		40	6/29/2021	A	1.3	3.06	95	0	4.9	3.9
TENCNT	Tencent Holdings Ltd	20	4/15/2021	A+	0.9	3.68	150	20	4.2	4.7
		30	4/15/2021	A+	1.8	3.84	155	20	4.8	2.7
		40	4/15/2021	A+	1.0	3.94	165	25	3.0	3.0
BAC	Bank of America Corp	21	4/16/2021	A	3.5	3.31	115	12	5.9	1.7
UNH	UnitedHealth Group Inc	20	5/17/2021	A	1.5	3.08	80	0	5.1	3.4
		30	5/17/2021	A	2.0	3.28	90	0	6.7	3.4

IR+M DISCLOSURE STATEMENT

Disclosures:

Sources: Milliman, FTSE Russell (formerly Citigroup), Bloomberg Barclays, Bloomberg, JPMorgan, and Pension & Investments. All data in the above commentary is as of 6/30/21. 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%