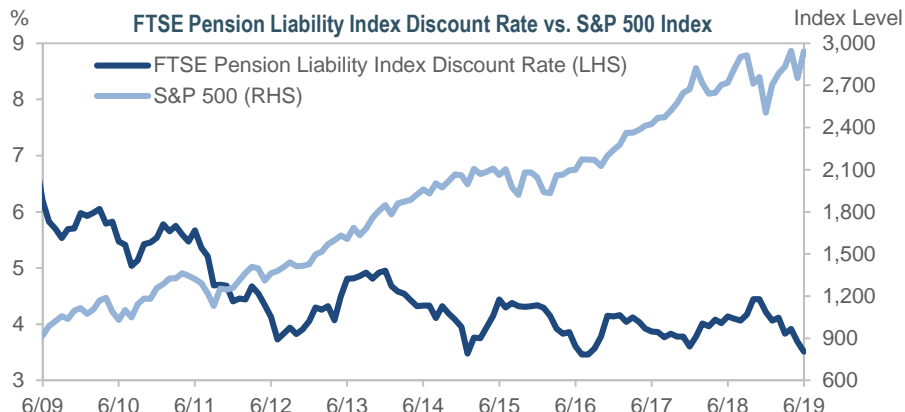


LDI Highlights

- Investment gains led to a 0.3% improvement in funded status, which reached 88.0% despite another month of lower discount rates
 - Strong equity-market performance offset the negative impact of lower rates, and the S&P 500 Index returned approximately 7%.
 - Discount rates continued to fall, and declined by 18bps to 3.51%, the lowest level since 2016.
- Long-duration supply slowed during the month, as investment-grade issuers priced just over \$17 billion, nearly 80% of which was rated BBB.
- Risk-market strength supported long corporate spreads, which tightened by 20bps to close the month at 160bps.
- Spread curves flattened by 8bps as demand for risk resurfaced and the long end of the Treasury curve steepened.

Rates Monitor	6/30/19	5/31/19	12/31/18
FTSE Pension Liability Discount Rate (%)	3.51	3.69	4.22
Bloom Barc Long Corporate Yield (%)	3.96	4.23	4.91
Bloom Barc Long Corporate A+ Yield (%)	3.56	3.79	4.40
Bloom Barc Long Corporate BBB Yield (%)	4.33	4.64	5.36
30 Year Swap Spread (bps)	-31	-27	-17



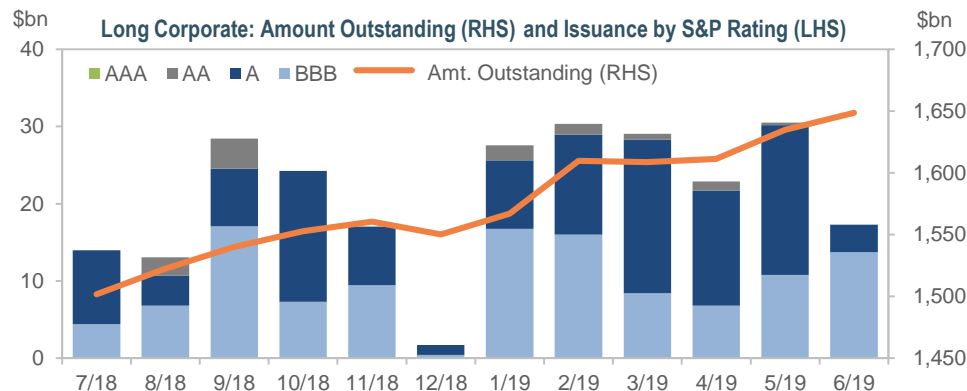
IR+M LDI Corner: History May Rhyme, But Rarely Repeats Itself

- Long credit yields fell below 4% for the first time since 2016; and in isolation, this move could tempt investors to postpone de-risking activity or to even consider re-risking.

	Long Credit Yield	Long Credit OAS	S&P 500	Funded Status
Aug 2016	3.96%	196bps	2170	76%
June 2019	3.96%	161bps	2744	88%

- However, the investment landscape today is much different than it was in 2016:
 - If funded status is below average and the allocation to return-seeking investments is high, sponsors should verify that they are appropriately hedged.
 - If funded status is above average, sponsors should review their key-rate exposures to ensure adequate allocations to the intermediate credit sector.
- With the average funded status much higher, we recommend plan sponsors stay the course and stick to their glide-paths, while also keeping in mind their unique situations:

Glidepath Monitor	6/30/19	5/31/19	12/31/18	12/31/15
Funded Status (%)	88.0	87.7	89.4	81.7
Long Corporate Spreads (bps)	160	180	200	227
Curve (Long Corp - Int. Corp) (bps)	70	78	69	88



Trailing 12 Month Long Corporate New Issuance (bn)				
AAA	AA	A	BBB	Total
\$0.0	\$11.9	\$126.4	\$117.8	\$256.1

Sources: Milliman (Historical numbers revised as of 3/31/19), FTSE Russell (formerly Citigroup), Bloomberg Barclays, Bloomberg, and JPMorgan. All data in the above commentary is as of 6/30/19. 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.

Second Quarter 2019 Corporate Issuance: Largest Long-Dated USD Investment Grade Deals

- Long-duration supply of approximately \$70 billion during 2Q19 was in line with 2Q18, though the proportion of issuance from BBB-rated companies declined from 54% to 44% year-over-year.
- The funding environment became more issuer-friendly during the quarter, as yields dropped significantly and spreads remained relatively tight; new issue concessions remained subdued despite large M&A-related deals from BMY and IBM and a sizable inaugural deal from ARAMCO.

Ticker	Issuer Name	Maturity (yrs)	Issue Date	Average Rating	Amount Issued (\$bn)	Yield at Issue	Spread at Issue	Concession to Outstanding	Order Book	Oversubscription Level
ARAMCO	Saudi Arabian Oil Co	30	4/9/2019	A+	3.0	4.46	155	N/A	27.0	9.0x
		20	4/9/2019	A+	3.0	4.31	140	N/A	20.0	6.7x
BMY	Bristol-Myers Squibb Co	30	5/7/2019	A	3.8	4.30	145	-5	17.5	4.7x
		20	5/7/2019	A	2.0	4.15	130	-10	12.5	6.3x
IBM	International Business Machines Corp	30	5/8/2019	A	3.0	4.34	145	5	6.1	2.0x
		20	5/8/2019	A	2.0	4.19	130	5	4.2	2.1x
VOD	Vodafone Group	30	6/12/2019	BBB	1.8	4.99	237.5	12.5	3.6	2.1x
		40	6/12/2019	BBB	0.5	5.21	260	15	1.2	2.4x
FISV	Fiserv Inc	30	6/10/2019	BBB	2.0	4.44	182	-3	8.0	4.0x
BA	Boeing Co	15	5/2/2019	A	0.9	3.63	112	2	1.8	2.1x
		30	5/2/2019	A	0.8	4.00	107	7	1.8	2.3x
BAC	Bank of America Corp	21NC20	4/17/2019	A	1.5	4.08	110	5	3.3	2.2x
WM	Waste Management Inc	30	5/14/2019	BBB+	1.0	4.16	130	15	2.7	2.7x
		20	5/14/2019	BBB+	0.5	4.01	115	10	2.6	5.2x
LOW	Lowe's Cos Inc	30	4/3/2019	BBB+	1.5	4.58	165	-5	6.2	4.1x
RCICN	Rogers Communications Inc	30	4/23/2019	BBB+	1.3	4.37	140	5	3.3	2.6x
EPD	Enterprise Products Operating LLC	30	6/24/2019	BBB+	1.3	4.21	165	5	5.2	4.2x
AMXLMM	America Movil SAB de CV	30	4/15/2019	A-	1.3	4.41	145	3	3.7	2.9x
NYLIFE	New York Life Insurance Co	50	4/1/2019	AA-	1.0	4.49	160	-5	3.2	3.2x
SBUX	Starbucks Corp	30	5/2/2019	BBB+	1.0	4.46	153	0	2.1	2.1x
MA	Mastercard Inc	30	5/28/2019	A+	1.0	3.66	95	5	3.0	3.0x
PH	Parker-Hannifin Corp	30	6/5/2019	A-	0.8	4.09	145	3	N/A	N/A
DISCA	Discovery Communications LLC	30	5/16/2019	BBB-	0.8	5.34	250	-5	5.5	7.3x
DOW	Dow Chemical Co	30	5/16/2019	BBB	0.8	4.84	200	5	4.0	5.3x

Source: Bloomberg and JPMorgan

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