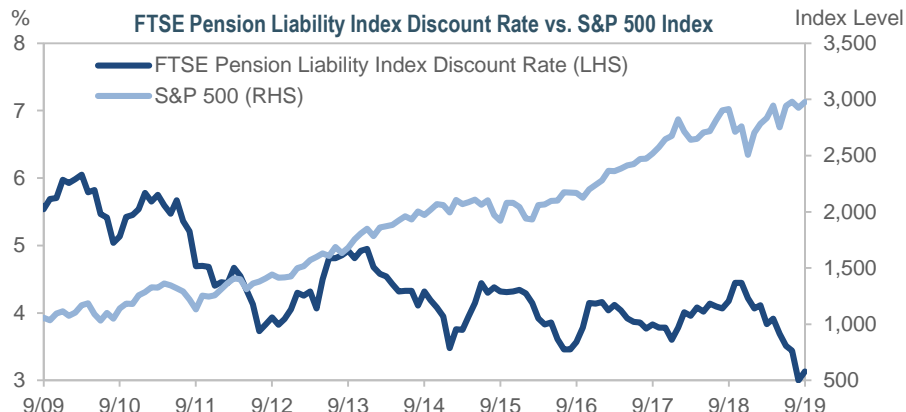


LDI Highlights

- Corporate pension funded status improved by 1.6% during September, closing the month at 85.4%.
 - The primary driver was an increase in discount rates, which rose by 13bps, as long Treasury yields increased from 1.96% to 2.11%.
 - Rising equity prices also contributed to funded-status improvement, as the S&P 500 Index returned 1.7%.
- Long duration supply of \$42 billion was the heaviest month of issuance on record; May 2015 was the previous high when \$40 billion priced.
- Solid demand for yield pushed long corporate spreads 4bps tighter to 166bps; spreads are 14bps tighter than the five-year average of 180bps.
- The difference between long- and intermediate-spreads leaked 1bp wider to 78bps; 2bps away from the steepest year-to-date level from mid-March.

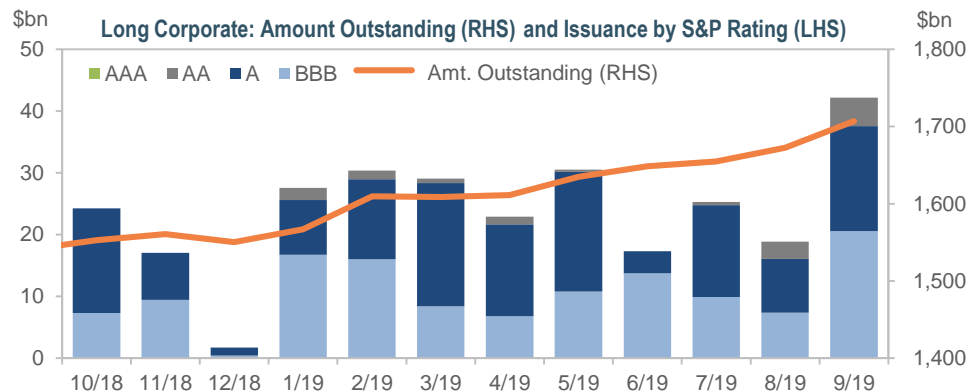
Rates Monitor	9/30/19	8/31/19	12/31/18
FTSE Pension Liability Discount Rate (%)	3.13	3.00	4.22
Bloom Barc Long Corporate Yield (%)	3.63	3.52	4.91
Bloom Barc Long Corporate A+ Yield (%)	3.23	3.09	4.40
Bloom Barc Long Corporate BBB Yield (%)	4.01	3.91	5.36
30 Year Swap Spread (bps)	-41	-42	-17



IR+M LDI Corner: Know Your Benchmarks

- The composition of market-based benchmarks change over time, which can sometimes lead to unanticipated impacts on pension plan assets. Below we outlined a few observations of changes that took place over the last five years with three of the most common long duration Bloomberg Barclays benchmarks.
- Long Credit:** The non-corporate credit sector fell from 21% of the index to 13%, led by a decrease in municipals and sovereigns. Issuance of Build America Bonds diminished causing the muni allocation to fall, while downgrades impacted sovereigns.
- Long Corporate:** Consumer non-cyclical and technology make up nearly 25% of the index compared to 16% five years ago, as companies increased issuance on the back of M&A activity and repatriation of overseas cash.
- Long Government/Credit:** Unsurprisingly and likely to continue, the US Treasury allocation grew from 33% to 43% of the index, at the expense of the non-corporate credit sector, which decreased from 16% to 8%.

Glidepath Monitor	9/30/19	8/31/19	12/31/18	12/31/15
Funded Status (%)	85.4	83.8	89.4	81.7
Long Corporate Spreads (bps)	166	170	200	227
Curve (Long Corp - Int. Corp) (bps)	78	77	69	88



Trailing 12 Month Long Corporate New Issuance (bn)				
AAA	AA	A	BBB	Total
\$0.0	\$17.6	\$153.6	\$144.3	\$315.5

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 9/30/19. 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.

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

- Issuance was more opportunistic than M&A-related, as borrowers took advantage of low rates and tight spreads to term out upcoming debt maturities
 - Long-duration supply totaled over \$85 billion during 3Q19, well ahead of the 3Q18 total of \$55 billion
 - Net issuance of deals with maturities less than 5 years totaled almost -\$20 billion
- The funding environment was issuer-friendly, as new deals had minimal concessions and order books were multiple times oversubscribed

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
UNH	UnitedHealth Group Inc	20	7/25/2019	A-	1.3	3.57	95	-5	6.4	5.1
		30	7/25/2019	A-	1.3	3.72	110	-5	5.4	4.3
		40	7/25/2019	A-	1.3	3.92	130	0	4.8	3.8
BA	Boeing Co	16	7/31/2019	A	0.8	3.26	120	7	1.7	2.3
		31	7/31/2019	A	1.3	3.80	120	7	2.6	2.1
		40	7/31/2019	A	1.0	4.00	140	7	2.0	2.0
CBAAU	Commonwealth Bank of Australia	15NC10	9/12/2019	BBB+	1.3	3.61	205	7	6.0	4.8
		20	9/12/2019	BBB+	1.3	3.74	170	8	5.7	4.6
WSTP	Westpac Banking Corp	15NC10	7/24/2019	BBB+	1.3	4.11	200	N/A	6.0	4.8
		20	7/24/2019	BBB+	1.0	4.42	180	N/A	8.8	8.8
XOM	Exxon Mobil Corp	20	8/16/2019	AA+	0.8	3.00	85	5	2.1	2.8
		30	8/16/2019	AA+	1.5	3.10	95	5	3.0	2.0
DIS	The Walt Disney Co	30	9/6/2019	A	2.0	2.91	95	3	5.2	2.6
KHC	Kraft Heinz Foods Co	20	9/25/2019	BBB-	0.5	4.72	250	-3	3.6	7.2
		30	9/25/2019	BBB-	1.5	4.97	275	-3	6.2	4.1
CATMED	CommonSpirit Health	30	8/21/2019	A	0.7	3.82	163	N/A	N/A	N/A
		30	8/21/2019	BBB+	0.9	4.19	200	N/A	N/A	N/A
OXY	Occidental Petroleum Corp	20	8/8/2019	BBB	0.8	4.34	210	15	8.9	11.9
		30	8/8/2019	BBB	0.8	4.49	225	20	10.1	13.5
AAPL	Apple Inc	30	9/11/2019	AA+	1.5	2.99	103	-2	3.7	2.5
NAB	National Australia Bank Ltd	15	8/2/2019	BBB+	1.5	3.93	188	3	8.6	5.7
PRU	Prudential Financial Inc	31	9/13/2019	A-	1.5	3.74	155	10	2.6	1.7
MUFG	Mitsubishi UFJ Financial Group	20	7/18/2019	A	1.5	3.75	108	8	4.2	2.6
VOD	Vodafone Group PLC	31	9/17/2019	BBB	1.5	4.27	210	10	4.6	3.1
SPG	Simon Property Group LP	30	9/13/2019	A	1.3	3.27	130	5	3.3	2.6

Source: Bloomberg and JPMorgan

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