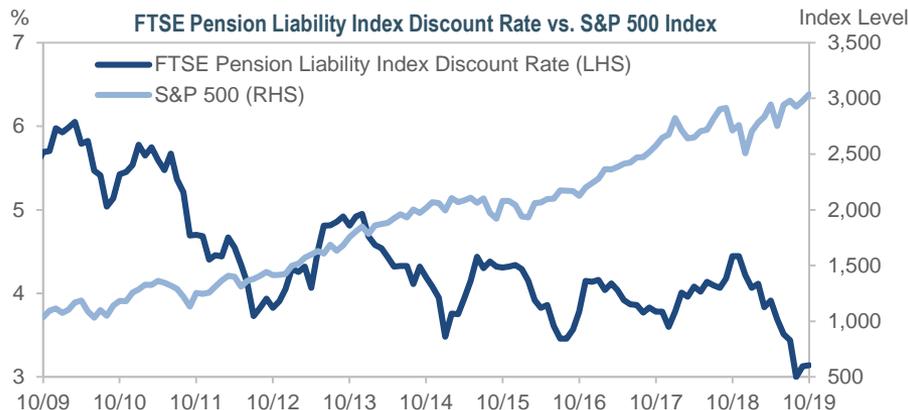


LDI Highlights

- Investment gains helped the corporate pension funded status rise 0.7% to 86.1% during October.
 - Despite strong pension plan asset returns of 8% over the last twelve months, the average funded status decreased by 7%.
 - Discount rates fell by over 130bps during that time, which was the primary driver of the decline in funded status.
- Following last month's record level of issuance, long corporate supply reverted to its three-year average monthly total of \$23 billion.
- Solid investor appetite for risk supported corporate markets and long-end spreads tightened by 7bps to 159bps.
 - Intermediate spreads tightened by just 4bps, and the difference between long- and intermediate-spreads tightened by 3bps.

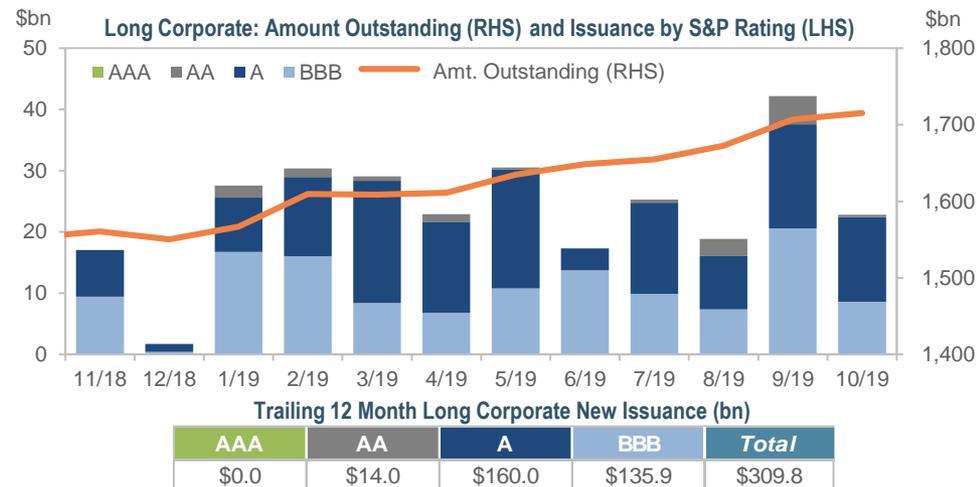
Rates Monitor	10/31/19	9/30/19	12/31/18
FTSE Pension Liability Discount Rate (%)	3.14	3.13	4.22
Bloom Barc Long Corporate Yield (%)	3.61	3.63	4.91
Bloom Barc Long Corporate A+ Yield (%)	3.21	3.23	4.40
Bloom Barc Long Corporate BBB Yield (%)	3.98	4.01	5.36
30 Year Swap Spread (bps)	-40	-41	-17



IR+M LDI Corner: Taxable Municipal Bonds

- Plans looking for ways to add incremental yield in this low rate environment, without adding to credit risk, may want to explore adding taxable muni bonds to their tool kit.
 - Municipals can be an attractive addition to a plan's hedging portfolio, given lower default rates and wider spreads compared to similarly-rated corporates, although both sectors offer spreads that are tight versus historical averages.
 - Taxable municipal bonds also have a higher five-year Sharpe Ratio relative to both AA-rated corporates and long US Treasuries.
- Year-to-date supply has been strong, totaling \$57 billion and up 50% over the same period in 2018; if low rates persist, the issuance momentum could continue into 2020.
 - Issuance of century bonds totaled roughly \$2 billion in 2019, providing an opportunity for investors to add longer-duration, highly-convex bonds. This can help reduce the duration volatility of plan assets relative to positively-convex plan liabilities.

Glidepath Monitor	10/31/19	9/30/19	12/31/18	12/31/15
Funded Status (%)	86.1	85.4	89.4	81.7
Long Corporate Spreads (bps)	159	166	200	227
Curve (Long Corp - Int. Corp) (bps)	75	78	69	88



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 10/31/19. 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.