IR+M INCOME RESEARCH + MANAGEMENT

# LDI MONITOR

December 31, 2015

## 2015 Review and Current LDI Environment

**Funded status improved** – Corporate pension funded status improved modestly during 2015, rising 1.2% to 82.7%[1], driven by higher discount rates.

**Discount rates were volatile** – Rates rose sharply during the first half of the year to a high of 4.44%, then retreated 0.10% to close the year at 4.34%.[2]

- Discount rates were driven higher by weakness in the industrial sector and robust long corporate issuance.

**Corporate issuance broke prior records** – For the second straight year, total corporate issuance set a record, coming in at over $1.1 trillion.[6]

- Long corporate issuance comprised roughly 20% of the total, which was 5% higher than the 15-year average.

**Equity markets underperformed** – Despite rallying 6.45% during the fourth quarter, the S&P 500 Index ended 2015 in the red, returning -0.73% on the year.[4]

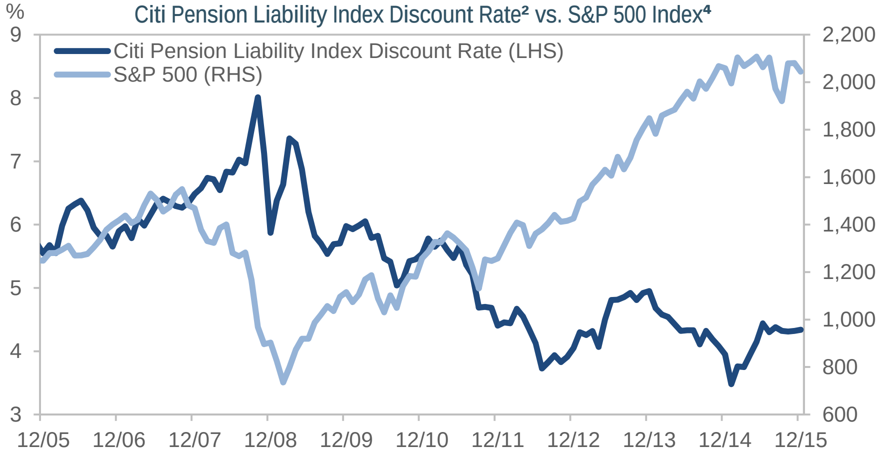
- Equity markets failed to sustain the momentum from 2014, as weak commodities, slowing world economies, and divergent central bank policies weighed on the markets.

**Long corporate spreads widened** – Driven by robust supply and weakness in the energy and basics sectors, long corporate spreads widened 41bps year-over-year, the largest 1-year widening since 2011.[3]

- The banking sector was a bright spot, widening just 13bps as bank fundamentals improved and higher rates brightened the outlook on profitability in 2016.

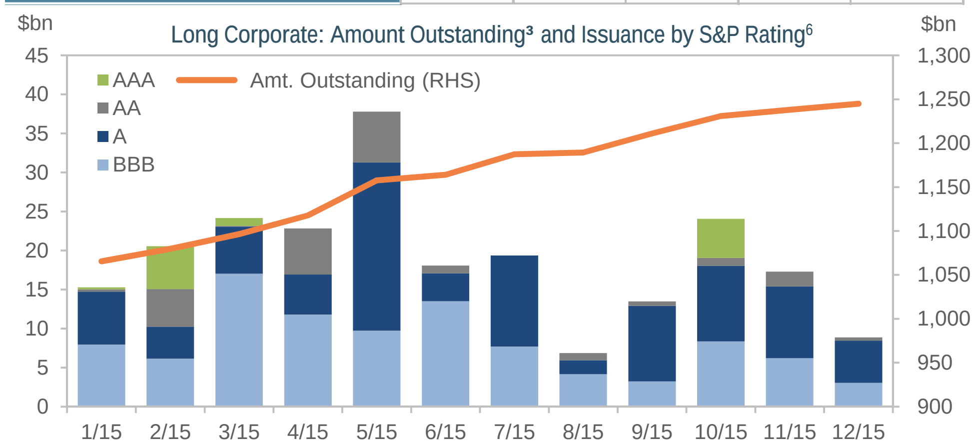
| Rates Monitor | 12/31/15 | 11/30/15 | 12/31/14 |
|---|---|---|---|
| Citigroup Pension Discount Rate[2] (%) | 4.34 | 4.32 | 3.95 |
| Barclays Long Credit Yield[3] (%) | 5.02 | 4.91 | 4.40 |
| Barclays Long Corporate Yield[3] (%) | 5.06 | 4.93 | 4.42 |
| Barclays Long BBB Corporate Yield[3] (%) | 5.60 | 5.44 | 4.80 |
| 30 Year Swap Rate[4] (%) | 2.64 | 2.53 | 2.70 |
| Long BBB Corp. Yield[3] – Citi Pension Discount Rate[2] (bps) | 126 | 112 | 85 |

Citi Pension Liability Index Discount Rate[2] vs. S&P 500 Index[4]




| Glidepath Monitor | 12/31/15 | 11/30/15 | 12/31/14 | 12/31/13 | 12/31/12 |
|---|---|---|---|---|---|
| Funded Status[1] (%) | 82.7 | 83.3 | 81.5 | 88.3 | 77.2 |
| Long Credit Rates[5] (%) | 5.02 | 4.91 | 4.40 | 5.23 | 4.32 |
| Long Credit Spreads[5] (bps) | 225 | 217 | 185 | 158 | 180 |
| Curve[3] (Long Cred - Int. Cred) (bps) | 210 | 218 | 199 | 283 | 245 |
| Curve[3] (Long G/C - Agg) (bps) | 161 | 165 | 151 | 226 | 192 |

Long Corporate: Amount Outstanding[3] and Issuance by S&P Rating[6]




Trailing 12 Month Long Corporate New Issuance[6] (bn)

| AAA | AA | A | BBB | *Total* |
|---|---|---|---|---|
| $11.8 | $23.4 | $94.6 | $98.8 | *$228.6* |

[1]Milliman; [2]Citigroup; [3]Barclays; [4]Bloomberg; [5]Long rates and long spreads represented by Barclays Long Credit Index yield and spread; [6]JP Morgan

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## LDI in 2015

**Funded status improved** – In 2015, many plan sponsors gained back some of the funded status losses of 2014.

- Although some plan sponsors chose to lock in their modest gains by taking further steps to de-risk, funded status improvements were generally not large enough to trigger widespread de-risking.

**Pension smoothing continued** – In November, President Obama signed into law the Bipartisan Budget Act of 2015 (the "BBA").

- The BBA extended the funding relief for plan sponsors provided under MAP-21, resulting in lower minimum required contributions for many sponsors.

**Pension Benefit Guaranty Corporation (PBGC) premiums increased** – Both fixed and variable rate premiums increased further than expected under the BBA.

- Higher premiums increase the overall costs associated with maintaining defined benefit pension plans and further incentivize risk transfer activities such as insurer buy-outs and lump sum programs that remove liabilities from plan sponsor balance sheets.

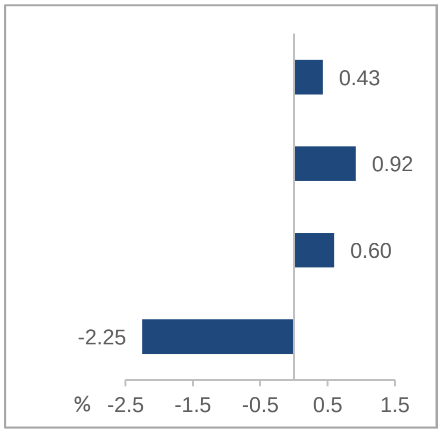
**Future mortality expectations changed** – At the end of 2015, the Society of Actuaries released an update to the mortality tables published in 2014.

- The data supported a lower improvement in mortality than previously expected, likely leading to smaller plan liabilities for sponsors who adopt the updated tables.

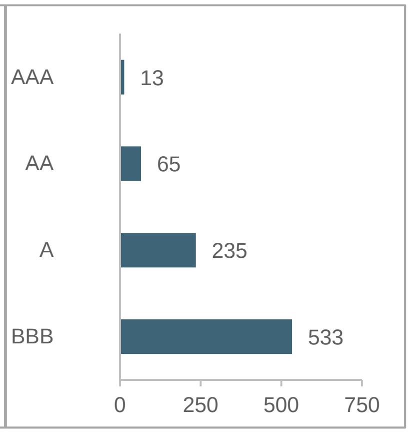
**The Federal Reserve (Fed) took action** – In December, the Fed increased the federal funds rate for the first time in almost 10 years, to a range of 0.25% to 0.50%.

- The rate rise, was in-line with market expectations and could signal the beginning of a new interest rate environment for liability driven investors.

Corporate 2015 Returns by Quality[1]




Corporate Issuers by Quality[1]




## Selectivity Remains Key to Hedging Strategies

**AA-rated corporates broadly outperformed lower quality bonds**

- AA-rated corporate bonds were the highest performing quality segment of the corporate market in 2015. Outperformance was driven by a risk-off market, caused by falling energy and commodity prices.

**Scarcity of higher-rated issuers compels LDI investors to look to lower-rated bonds**

- AA-rated issuers comprise only ~9% of the full corporate index with 65 issuers.
- For plan sponsors hedging corporate liabilities valued using AA-discount curves, the AA-rated opportunity set is too narrow to construct well diversified hedging portfolios.

**Selectivity key to success**

- The need to keep pace with downgrade-immune liabilities, that will typically outperform a portfolio of similar credit quality, necessitates managers investing in lower-rated bonds outside of AA-rated corporates.
- The large diversity in lower-rated bonds magnifies the need for selective, active management and strong credit research to keep pace with plan liabilities.

*In 2015, IR+M worked with our LDI clients to help them better understand and mitigate the interest rate risk in their pension plans. In a challenging market environment, we continued to help clients hedge their plan liabilities through our practical approach to LDI. We worked with plan sponsors across the LDI spectrum; guiding some through their first steps into liability hedging and others into the final stages of liability transfer or full de-risking.*

[1]Source: Barclays

# LDI in 2016 – An Unclear Path Ahead

**Potential for rising rates** – With Fed policy likely to continue to tighten and market sentiment predicting further rises in interest rates, plan sponsors will be paying close attention to rates across the entire curve.

**Hedging demand on the horizon** – Glide-path strategies that migrate from risk assets to hedging assets have increasingly become the norm for plan sponsors.

- With many sponsors including formal de-risking plans in their investment guidelines, the demand for hedging assets has become a "when" rather than an "if" proposition.

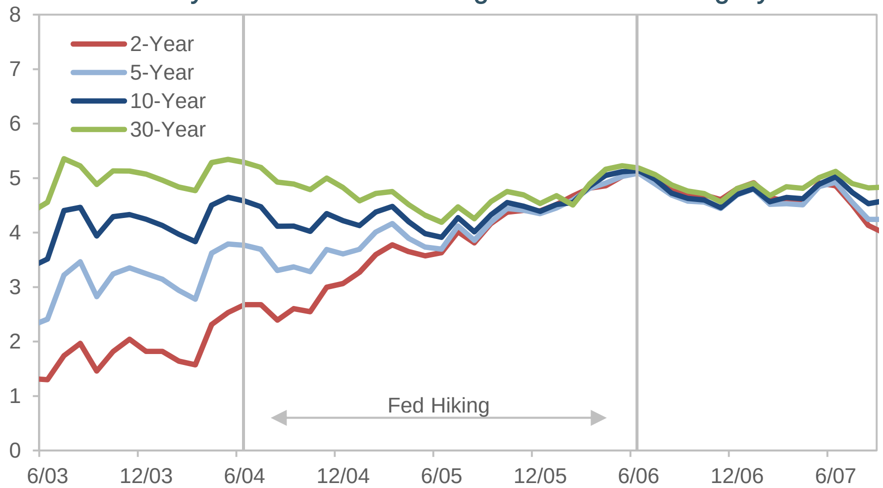
**Mortality volatility** – The prospect of continued annual updates to mortality improvement scales could potentially lead to funded status volatility.

- Reflecting updates on an annual basis should reduce the impact of changes from the next full blown mortality study but will introduce more annual volatility. Determining the appropriate process for adopting updates will be an important consideration for plan sponsors in 2016.

**Contrasting themes in 2016** – As we move into 2016 there are many opposing forces at play in the LDI marketplace:

- Increased PBGC premiums incentivize additional funding, while extended pension relief under the BBA reduces the requirement to contribute.
- Competitive buyout markets make risk transfer attractive, while the potential for rising rates may persuade plan sponsors to retain their liabilities for longer.
- Rising rates could reduce pension liabilities, while any accompanying spread contraction could mean liabilities outperform Treasury-heavy LDI portfolios.
- With so many potential sources of volatility, 2016 will likely be a year when the timing of allocation decisions , such as adding to hedging portfolios or adjusting credit exposure, will be even more impactful than normal.

## Treasury Yield Curve Flattening in Prior Fed Hiking Cycle[1]




## Impact of Rising Rate Environment on LDI

**Long rates less influenced by Fed policy –** The chart (left) shows the path of Treasury rates during the last Fed hiking cycle.

- Throughout this period, the 30-year yield remained relatively stable with the curve flattening significantly. This is not unusual in environments where rates are rising and inflation expectations remain low, as long-end buyers remain in the market place anchoring the 30-year yield.

**2016 long-end buyers –** Looking to 2016, we may see a pattern emerge that is similar to the prior rate-hiking environment.

- Market expectations call for three hikes during 2016, although long-end demand is likely to remain strong as plan sponsors seek to add hedging assets if funded status improves.

**Credit spread compression –** Historically, credit spreads exhibit a negative correlation with Treasury rates.

- As rates rise, we often see corporate spreads compress, which may lead LDI portfolios without sufficient credit exposure to underperform liabilities. Sponsors may benefit from opportunistically adding credit exposure in 2016, ahead of rising rates.

*IR+M provides practical solutions to LDI portfolio management. We partner with our clients to develop action plans for the different stages of their unique LDI journeys, and help them to take advantage of funded status improvements. In 2016, we look forward to supporting our clients as they prepare for their ultimate goals.*

[1]Source: Bloomberg