

Pension Accounting Research Series

# 2017 UPDATE

## FOR 2016 DISCLOSURES

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After another challenging year for corporate defined benefit plan sponsors, year-end 2016 will likely look more similar to 2015 than anticipated earlier this year. A Brexit meltdown and fears that Trump's victory might end what is the second-longest bull market in U.S. history have not materialized. Treasury bond yields spiked higher following the election, and they could continue to rise. Based on campaign promises from the president-elect, we can expect more fiscal stimulus, tax relief, deregulation and less free trade. And as a result, we can expect more inflation and interest-rate hikes from the Fed.

From a discount rate perspective, 2016 has been a tale of two halves. Discount rates reached a record low in July, but have almost fully recovered losses, climbing 71 basis points through November to help boost funded status. After several months of funded status improvement, all eyes are on interest rates at the year-end measurement date. Adoption of new mortality tables may also affect the year-end results for plans.

SEI's Pension Liability Index declined by only 17 basis points through November 30, 2016. Based on this analysis—and assuming there isn't a change during December 2016—plans with a December 31 measurement date may experience only a slight decrease in rates and slight increase in liability determination due to changes in market yield curves.

The average funded status of the 100 largest corporate pension plans grew 3 percentage points to 80.3% in November, which is still below the year-end average of 81.7% in 2015. If the 100 largest U.S. corporate pension funds achieve a median 7.2% asset return and the discount rate remains at 3.98%, the funding ratio would increase to an aggregate 82.2% by the end of 2017 and 84.4% by the end of 2018, Milliman predicted.<sup>1</sup>

Now in its 15th year, SEI's Pension Accounting Research Series (updated for 2016 year-end disclosures) is designed to educate plan sponsors and officers on accounting methods for the liabilities of their pensions, as well as address issues regarding FASB ASC 715.

<sup>1</sup> Milliman: <http://us.milliman.com/uploadedFiles/insight/Periodicals/pension-funding-index/pfi-december-2015.pdf>

# What discount rate should plan sponsors use for year-end 2016?

At the end of each fiscal year, plan sponsors must select a yield curve and/or discount rate to use in valuing the liabilities of their pension plans for corporate accounting purposes. The liability must be valued at the then-current market conditions and will be disclosed in the footnotes to the financial statements.

In addition to determining the accounting liability at year-end 2016, the basis for the liability measurement (e.g., the yield curve or the single discount rate) will be used in determining the plan's pension expense/income for the 2017 fiscal year. The measurement of the liability requires a close review by plan sponsors of the specific indices and yield curve matching used to select the liability discount rate, which is more than what was required years ago.

Liability measurement also has changed significantly over the last several years. In the past, the discount rate for the current fiscal measurement date may have been determined by reviewing the change in various fixed-income indices and applying observed changes to the rate in use by the plan sponsor for the prior year. For example, if rates in general had fallen by 50 bps from the beginning to the end of the fiscal year then the pension discount rate will be reduced by 50 bps.

Methodology for the liability measurement then moved to the use of a full yield curve to be matched against the projected liability payout stream, determining the resulting liability, and then calculating the single discount rate that produced the equivalent liability amount. The result from this exercise was the disclosed discount rate. This disclosed discount rate was then used to determine the pension expense for the following year: the liability amount, the interest cost on the liability and the service cost (or value of benefits accruing during the fiscal year). The underlying yield curve was generally representative of the fixed-income universe appropriate for measurement of the liability. However, it was not used after the single effective discount rate was determined at year-end. The single discount rate, the yield curve matching as well as other methods for liability determination are all still used for year-end liability measurement.

There's been more attention focused on the determination of service cost and interest cost with the introduction of new methodologies being used. The new methodology for the service cost will measure the cost against the same yield curve used for the liability—which will often produce a different effective single discount rate from what is used for the liability and a different service cost from the one produced with the liability rate. For the interest cost, the newer method applies the year-end yield curve to the discounted liability cash flows to produce an interest accrual for the liability. This interest cost may be significantly different from what was produced previously by multiplying the total liability by the liability rate. While we will not be discussing the implications of these new methodologies in detail, we will note here that it continues to be important for plan sponsors to understand the direction and magnitude of the changes in discount proxies, and the general change in the shape of the yield curve. Here we will focus on the U.S. high-quality corporate bond market.

In general, the 2016 disclosure will show discount rates (whether single rates or determined via yield curve matching) set relative to the 2015 disclosure while incorporating the change in the high-quality bond yields and curve shape over the past year. Plan sponsors with calendar fiscal years will typically need to wait until year-end before they can finalize their discount rates. Plans with a fiscal year-end of November 30 or earlier have enough information now to determine the discount rates for the 2016 disclosure.

Plan sponsors with a calendar-year fiscal year may want to look at how rates have changed from December 31, 2015 through November 30, 2016 to get a feel for how year-end liability measurement might be affected. Assumptions for the range of yield change that might be experienced in December 2016 will be needed to prepare a better picture of calendar year-end liability measure. Figure 1.1 (page 5) shows the changes in several yield metrics from December 31, 2015 through November 30, 2016.

Based on this analysis—and assuming there isn't a change during December 2016—plans with a December 31 measurement date may experience only a small decrease in rates and small increase in liability determination due to changes in market yield curves.

A review of Figures 1.1 and 1.2 on the following pages finds that the indices have decreased 17 to 26 bps—a small change. Based on this, one could be misinformed and see that the yield rate environment has been relatively calm during 2016. However, a review of Figure 1.3 shows how the SEI Pension Liability Index has changed through 2016 with a drop of 88 bps in the first seven months of the year followed by an almost full recovery through November 30. This reinforces the fact that accurate assumptions about the level and shape of the yield curve (and thus effective discount rates) cannot be made before year-end. Furthermore, we again have new mortality assumptions that will likely be adopted by many plan sponsors, decreasing liabilities slightly (under 2%).

Plan sponsors will select the discount rate using a method that matches plan cash flows to a yield curve. To do so, projections of each future year of the benefit payouts for a plan are used.

The benefit payout in a given year is then discounted by that point on the yield curve (e.g., benefits expected to be paid out seven years from now are discounted by the seven-year maturity point on the yield curve). This will make the selection of the discount rate specific for each plan due to the differing shapes of the benefit payouts in the future and the specific yield curve used.

This process, in recent history, has been performed for the Projected Benefit Obligation (PBO), defining a year-end effective discount rate that is then used for measuring that year-end PBO, as well as determining the NPPC (Net Periodic Pension Cost) for the coming year. A methodology currently emerging is to extend this process to other parts of the NPPC calculation process.

For example, the service cost could be determined in a similar manner using just the benefit payout projection for the current year's accrual. This would result in a service cost with its own effective discount rate, somewhat different from that using the PBO discount rate. This could also be extended to different tranches of the PBO (actives, retirees, etc.) to result in somewhat different interest cost determinations from that using the single PBO discount rate. While the potential rate changes outlined elsewhere in this paper will continue to be in effect, as plan sponsors adopt this or other new methodologies, we will see one-time changes in the adopted rates in addition to those outlined herein.

**FIGURE 1.1 CHANGE IN YIELDS, YEAR-END 2015 TO NOVEMBER 30, 2016**

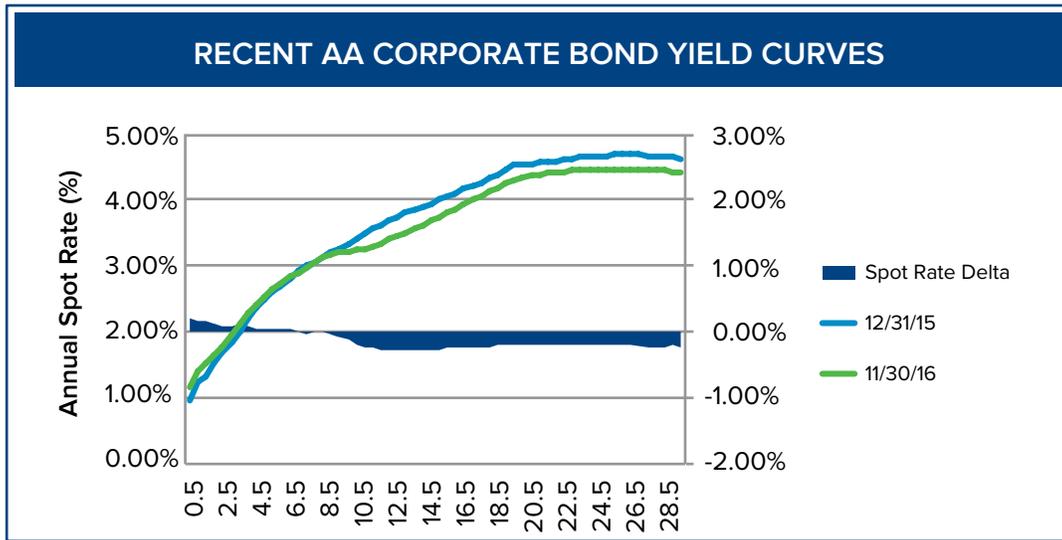
<b>BOND INDEX</b>	<b>12/2015 YIELD</b>	<b>11/2016 YIELD</b>	<b>CHANGE (BPS)</b>
<b>Barclays AA Long Credit</b>	<b>4.32</b>	<b>4.11</b>	<b>-21</b>
<b>Merrill Lynch AA 15+ Corporate</b>	<b>4.45</b>	<b>4.19</b>	<b>-26</b>
<b>Citigroup Pension Liability Index</b>	<b>4.34</b>	<b>4.15</b>	<b>-19</b>
<b>SEI Pension Liability Index*</b>	<b>4.11</b>	<b>3.94</b>	<b>-17</b>

\*The SEI Pension Liability Index is made of the SEI benefit payment stream, which is an equally weighted average of our clients' benefit payment streams, discounted by Citigroup Pension Discount Curve. The Citigroup Pension Discount Curve is a spot curve derived from investment grade bonds.

The change in the shape of the current yield curve (see Figure 1.2) indicates the potential for a relatively small range of variation of changes—even smaller than expected a year ago.

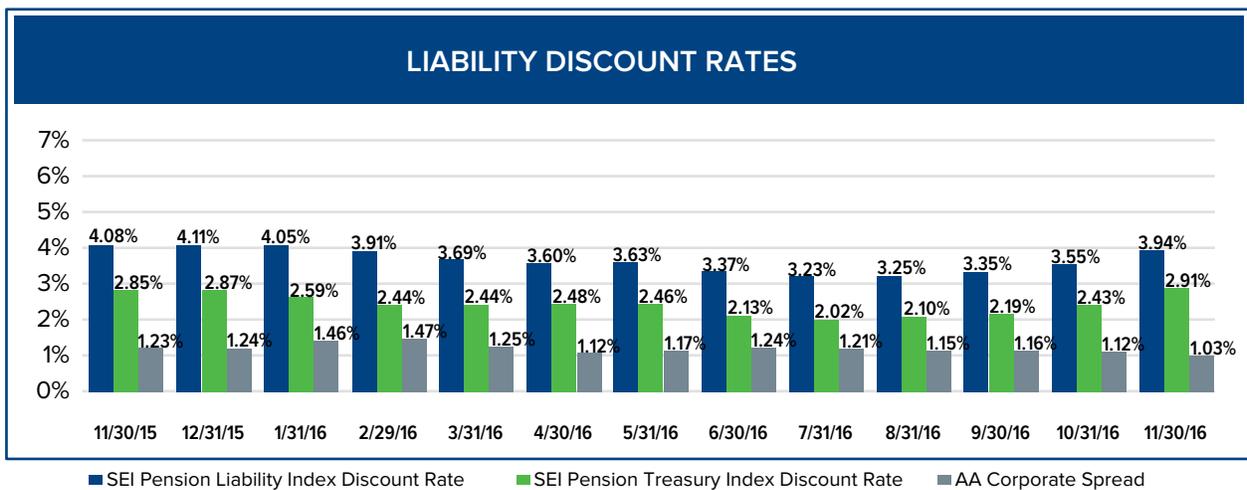
Figure 1.2 below shows that the yield curve, as of November 30, 2016, has decreased slightly relative to last year at most maturity points with slight increases up until year 7 as defined by the Citigroup Pension Liability Curve. As a result, any change in effective discount rate will be very dependent on the structure of the benefit payout projection to be discounted.

**FIGURE 1.2 RECENT AA CORPORATE BOND YIELD CURVES**



Source: Citigroup Pension Liability Curve.

**FIGURE 1.3 LIABILITY DISCOUNT RATES**



Source: SEC Filings, CapIQ. The SEI Pension Liability Index Discount Rate is a proxy for the discount rates actuaries use to calculate accounting pension liabilities. It is the single rate that when used to discount the SEI Benefit Payment stream results in the same present value as discounting the SEI Benefit Payment Stream by the Citigroup Pension Discount Curve. The Citigroup Pension Discount Curve is a spot curve derived from investment grade bonds. The SEI Pension Treasury Discount Rate is a proxy for the treasury component of the discount rate actuaries use to calculate accounting pension liabilities. It is the single rate that when used to discount the SEI Benefit Payment Stream results in the same present value as discounting the SEI Benefit Payment Stream by U.S. STRIP yield to maturities.

# Impact on 2017 pension expense

The yield curve used for liability measurement that is selected for the 2016 disclosure is generally the same as will be used in the calculation of the 2017 pension expense. This yield curve will affect three of the five components of pension expense:

1. **Service cost** or the present value of benefits attributed to service to be rendered in 2017
2. **Interest cost** or the increase in PBO liability due to the passage of time
3. **Amortization** of unrecognized gains/losses, which arise when actual experience deviates from what was assumed, including assumption changes

The other two components, **expected return on assets** and **amortization of prior service cost** (value of unamortized plan amendments) are relatively independent of the yield curve.

**Service cost component:** Service cost is the portion of the present value of participants' accrued benefits that is attributable to having worked during the year. With no change in the discount rate, service cost will generally increase 2% to 10% from year to year due to the methods used to value the plan (the funding method) and the aging of the population. Increases in any expense assumption added into the service cost accrual should be considered separately as that increase will generally not be the same as for benefit accrual.

The impact of a change in the discount rate depends on the duration of the service cost. For plans with a service cost, most have a service cost duration that ranges between 12 and 18 years. A 25-basis-point drop in discount rates is expected to increase service cost by an additional 3% to 5%, and a 25-basis-point increase in discount rates is expected to decrease service cost by 3% to 5%, all beyond the "natural" increase of 2% to 10%.

**Interest cost component:** Interest cost is the cost of the plan due to the passage of time. It is determined by applying the full yield curve to the discounted benefit payouts (as discussed earlier). Without changing the yield curve, interest cost will generally increase with time. However, the year-to-year changes in interest cost will be highly plan dependent considering the application of the full yield curve methodology as well as even small changes in the shape of the curve. Given the number of closed- and frozen-pension plans, in addition to the effects of the benefit payout projection rolling down the yield curve and the impacts of changing curves, generalities about the change in interest cost from year to year cannot be readily made.

**Amortization of unrecognized gain/loss:** When assumptions are not met regarding liability experience and asset returns, the differences are accumulated with prior-year gains and losses, and are recognized as an amortization credit or charge. The minimum recognized amount is based on the excess of the gain/loss over 10% of the greater of assets, or PBO and divided by the plan's future working lifetime or future lifetime. Faster recognition may also be used.

Amortization of gain/loss will vary dramatically from plan to plan based on several factors, including:

- › Recognition method used (e.g., 10% corridor method)
- › Amount of gain or loss on the balance sheet as of December 31, 2016
- › Relative size of gain or loss to the PBO and asset amounts
- › Demographic changes during 2016
- › Assumption changes under consideration
- › Asset smoothing method used
- › Impact of the yield curve method on the interest rate component of pension expense versus the liability increase during 2016 (losses or gains may accrue at various rates based on the structure of the benefit payout projection and the shape of the yield curve)

Therefore, no generalized effect of a yield curve change on the gain/loss recognition can be made. However, a few rules of thumb may be used in an analysis:

- › If already amortizing a loss (gain) for 2017 and the yield curve declines (rises), the full amount of the PBO increase (decrease) will be subject to amortization into expense
- › If amortizing a loss (gain) for 2017 and the yield curve rises (declines), the loss (gain) amortization will decrease (increase) and could be eliminated
- › If no gain or loss amortization is occurring for 2017, a closer examination of the specifics of the plan should be made

In summary, plan expense will typically increase from year to year due to the required funding method used and the passage of time. In addition to this "natural" growth, if the yield curve declines, plan expense can be expected to increase and vice versa; if the yield curve rises, expense will likely fall (relative to no change). A close analysis of your plan's specific situation will be required to focus on how it will impact your 2017 pension expense.

### **Accounting standards other than U.S. GAAP**

Many organizations report financial results under accounting standards other than ASC 715. While discount rates and yield curves for U.S. pension plans might be set in a manner similar to that for ASC 715 filers, note that the impact of a change in rates or curves on 2017 pension expense may be quite different from what's outlined here.

### **Addendum information**

In January 2017, SEI will be issuing an addendum to this study that will update this research with year-end numbers relative to December 31, 2016. If you are interested in receiving a copy of the addendum, please visit [seic.com/ASC2016](http://seic.com/ASC2016) to request it.



## About the author

Jon Waite, F.S.A., E.A., director of Investment Management Advice and chief actuary for the SEI Institutional Group, is responsible for providing advice regarding defined benefit plan design, actuarial methods and assumptions, and funding policies for our institutional relationships. With more than 450 institutional clients worldwide, SEI is a recognized pioneer in developing first-to-market retirement solutions that integrate investment management strategies with overall business goals.

To learn more about the FASB assumptions discussed in this paper, contact Jon at **610-676-3493** or **[jbwaite@seic.com](mailto:jbwaite@seic.com)**

The SEI logo is displayed in a large, white, sans-serif font. To its right, the tagline "New ways. New answers.®" is written in a smaller, white, sans-serif font. The background consists of a large green triangle on the left and a large blue triangle on the right, meeting at a point at the top right.

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