



Ryan ALM

Asset/Liability Management

Pension Discount Rates: ASC 715 (formerly FAS 158)

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Executive Summary

At the end of each fiscal year, pension plan sponsors must select a discount rate to use in valuing the liabilities of their pension plan for GAAP accounting purposes. As a result, the choice of discount rates will affect the balance sheet and credit rating.

When FAS 158 became effective December 15, 2006, Ryan ALM created a series of discount rates in conformity to then FAS 158 (now ASC 715). Ryan ALM provides *four distinct discount rate yield curves that best conform to GAAP requirements*.

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We believe our discount rates consistently provide higher rates that are in conformity with ASC 715, well documented, and validated by auditors. Because our ASC 715 rates are usually higher than other discount rates, it should enhance financial statements and credit ratings.



Pension Discount Rates: ASC 715 (formerly FAS 158)

Ryan ALM's mission is to solve liability driven problems through low cost, low risk solutions.

At the end of each fiscal year, pension plan sponsors must select a discount rate to use in valuing the liabilities of their pension plan for GAAP accounting purposes. As a result, the choice of discount rates will affect the balance sheet and credit rating. In addition, the disclosed discount rate will be used to determine pension expense/income for the fiscal year as it affects service cost (present value of benefits attributed to service to be rendered), interest cost (increase in the PBO liability due to the passage of time: one more fiscal year) and amortization of unrecognized gains/losses (difference between actual experience and projections). Under FASB ASC 715, this discount rate should be based on the current market rates for high quality (AAA – AA) corporate bonds as zero-coupon bonds and will be discussed in the footnotes to the financial statement. The problem is there are few zero-coupon bonds in the marketplace today. As a result, the ASC 715 discount rates have to be a manufactured AA corporate zero-coupon yield curve.

ASC 715-30-35-44 Accounting Rule on Discount Rates

Same as: FAS 158 paragraph 44A; FAS 87 (Amended) and FAS 106, paragraph 186:

“Pursuant to paragraph 44, an employer may look to rates of return on high-quality fixed income investments in determining assumed discount rates. The objective of selecting assumed discount rates using that method is to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments, would provide the necessary future cash flows to pay the pension benefits when due. Notionally, that



*single amount, the projected benefit obligation would **equal the current market value of a portfolio of high-quality zero-coupon bonds whose maturity dates and amounts would be the same as the timing and amount of the expected future benefit payments.** Because cash inflows would equal cash outflows in timing and amount, there would be no reinvestment risk in the yields to maturity of the portfolio.”*

When FAS 158 became effective December 15, 2006, Ryan ALM created a series of discount rates in conformity to then FAS 158 (now ASC 715). Our initial and continuous client has been a BIG 4 accounting firm, which hopefully testifies to the integrity of our data. We now have several actuarial firms and corporations using our discount rates today. We believe our discount rates consistently provide high interest rates that are in conformity with ASC 715, well documented, and validated by auditors. Because our ASC 715 rates are usually higher than other discount rates, it should enhance financial statements and credit ratings. **Ryan ALM provides four distinct zero-coupon discount rate yield curves plus a cash flow matching discount rate yield curve.**

Moody’s Approach to Public Pensions

On April 7, 2013 Moody’s Investors Service released “Adjustments to US State and Local Government Reported Pension Data” which describes their approach to credit analysis for Public pensions. Moody’s announced four principal adjustments to reported pension data:

1. Accrued actuarial liabilities will be adjusted based on a high-grade long-term taxable bond index discount rate as of the date of valuation. This promotes better comparability among governments whereas using the ROA as the discount rate results in different present value estimates for otherwise identical future benefits.
2. Asset smoothing will be replaced with reported market or fair value as of the actuarial reporting date.
3. The resulting net pension liability will be amortized over 20 years using a level-dollar method.



4. Multiple-employer cost-sharing plan liabilities will be allocated to employers on a proportionate share of total plan contributions.

As a result, Public pensions need to be cognizant of ASC 715 discount rates since it will directly affect their credit rating by Moody's.

AA Corporate Zero-Coupon Discount Rates (ASC 715)

Ryan ALM provides *four distinct discount rate yield curves* that best conform to GAAP requirements. Each curve is comprised of hypothetical AA corporate zero-coupon bonds from 0.5 - 30+ years to maturity:

High End Select	(top 10% yielding bonds)
Top 1/3 Curve	(top 33% yielding bonds)
Above Median Curve	(top 50% yielding bonds)
Full Curve	(all 100% yielding bonds)

Each yield curve is derived from actual AAA and AA corporate bonds placed into eight maturity bands (except High End Select that uses 10 maturity bands):

Parameters of Eight (8) Maturity Bands:

Ratings	AA+
Min. Issue Size	\$100 million
Currency	U.S. Dollar Denominated
Coupon	Non zero, fixed coupon bonds
Maturity Type	Option Free (No putable or callable bonds)
Issue Type	Publicly traded U.S. Corporate bonds Private placements with 6 months seasoning No Foreign Agencies, Govt., Supranationals
Pricing	Excludes bonds priced outside \$55 - \$145 range
Yields	Excludes YTM > 2.0 standard deviations from avg YTM



Par Curve:

Given the yield curve parameters, a universe of bonds is selected. Using vendor bid/ask mid-point prices and a proprietary system developed by Ryan ALM, total market value (price + accrued interest), YTM and TERM values are calculated for each qualifying bond and placed into eight (8) maturity bands. For each of the maturity bands, the market weighted average TERM and yield to maturity (YTM) is calculated. A **5th order polynomial least squares curve fit** technique is used to create a semi-annual yield curve (60 points from 0.5 to 30.0 years. The least squares option of the 5th order curve fit is where the summation of the squares of the residuals of all the data points has the smallest value or deviation. As a result, this technique produces a **best fit** yield curve providing a smooth and continuous yield curve between 8 points (maturity bands).

Spot Rate Yield Curve:

By using a **Bootstrapping** technique from the par curve a zero-coupon spot rate yield curve is developed. Bootstrapping is a process of building up discount rates, which equate the cash flows of a yield curve of semi-annual coupon bonds to a hypothetical yield curve of zero-coupon bonds derived from the Par Curve. This hypothetical zero-coupon yield curve is referred to as the "Spot Rate Curve". The spot rate curve is then converted to annualized yields or APR (Annual Percentage Rate).

ASC 715 Discount Rates Comparisons

The Ryan ALM ASC 715 discount rates consistently demonstrate a higher yield than most other discount rates. Historically, the yield difference is as follows:

Top 1/3 = 21 to 84 basis points
Above Median = 11 to 62 basis points
Full Curve = -1 to 27 basis points

Based on Above Median discount rates, for every \$1 billion in projected liability benefit payments the reduction in present value could be \$11 to \$62 million.

To subscribe to our discount rates, please contact us at Contact@RyanALM.com or call us at 561-656-2014.



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