An Alternative Full Yield-Curve-Based Approach for Pension Cost Measurement

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BACKGROUND

Many single-employer, defined-benefit pension plans determine their liability or projected benefit obligation (PBO). The Financial Accounting Standards Board’s Accounting Standards Codification (ASC) 715 governs the methodology for calculating a firm’s PBO by discounting expected benefit payouts using full yield curves based on high-quality corporate bonds.

Once the PBO is calculated as the present value of liability cash flow, a so-called single weighted-average discount rate is solved for in such a way that, if it is used to discount future benefit payouts, would result in exactly the same PBO as one based on the full yield curve.

Subsequently, this single weighted-average discount rate is used to calculate a pension expense, as outlined in ASC 715, with three main components that are directly influenced by the levels of the discount rate:

- **Year-End Service Cost:** The present value of future benefit payouts associated with the current fiscal year’s amount of benefit accruals, as measured at the end of the fiscal year.
- **Interest Cost:** The interest on the PBO associated with the passage of time during the entire fiscal year time period.
- **Amortization of Gains and Losses:** This results when actual experiences do not coincide with what has been anticipated at the beginning of the fiscal year.

A CHANGE IN APPROACH

In its 2014 10-K filing, AT&T implemented a change in its method for measuring service cost and interest cost as part of its pension expense calculations by applying a so-called full yield-curve approach (discussed below). The pension community was intrigued by the change, which led to numerous discussions among consulting firms, accounting firms, and government regulators.

OVERVIEW OF THE NEW APPROACH

According to the new full yield-curve approach, instead of using the single weighted-average discount rate to determine the year-end service cost and the interest cost, the full yield curve is used by applying individual spot rates from appropriate maturities to each of the future expected benefit payouts.

This approach is illustrated by Figures 1 and 2 as follows:

- Figure 1 summarizes undiscounted PBO cash flows as future payouts from the pension plan, as well as the present values of the respective PBO cash flows, which are discounted using the single weighted-average discount rate and the full yield curve.
• Figure 1 also illustrates the traditional upward-sloping full yield curve compared to the single weighted-average discount rate. Spot rates from the full yield curve are below the discount rate for earlier maturities and above the discount rate for later maturities.

• Since the full yield curve is upward sloping, the present value of PBO cash flows is smaller at earlier maturities using the discount rate and greater at later maturities using the discount rate. As a result, using the full yield curve could result in lower costs.

• Figure 2 illustrates the calculations of the interest cost using the traditional single weighted-average discount rate approach and the new full yield-curve approach.

  • **Traditional Approach:** For each PBO cash-flow maturity, interest cost is the product of the discount rate and the present value of each respective PBO cash flow.

  • **New Approach:** For each PBO cash-flow maturity, interest cost is the product of each individual spot rate from the full yield-curve maturities and the present value of the respective PBO cash flows.

• As can be seen very clearly from Figure 2, the interest cost is generally expected to be substantially smaller for earlier maturities using the full yield-curve method than it is using the discount rate method. This is mainly due to the fact that the full yield curve is upward sloping and for shorter maturities the spot rates are much smaller than the single weighted-average discount rate.

MARKET REACTION

According to data from Aon Hewitt, many companies are now using this new full yield-curve approach:

  • As of June 30, 2016, about 200 companies had announced implementation of this new approach and more announcements are expected in the near future.

  • As of December 31, 2015, about one-third of companies reporting under U.S. Generally Accepted Accounting Principles had implemented this new approach.

According to a Credit Suisse analyst, reported pension expenses may decrease in the near future. However, this is not free money and lower costs today could mean greater costs in the future.

SOME PROS AND CONS OF THE NEW “FULL YIELD CURVE” APPROACH

The advantages of using the new approach potentially include a better economic alignment of the discounting mechanism used for PBO calculations (the full yield curve) and the pension expense calculations. In addition, the service cost calculation tends to be more precise using the full yield curve. That’s because the interest cost calculation can be based on spot rates that are appropriate to each PBO cash flow. However, it’s also worth noting that the total pension expense over the life of the pension plan
would be unchanged, even though the pension expense may be smaller in earlier years during periods of upward-sloping yield curves.

But there are also disadvantages to using the new approach. For one thing, it makes all of the calculations for pension expenses more complicated, since it is much easier to operate with a single discount rate than with a full yield curve. The pension expense becomes less transparent since it would depend on many spot rates instead of a single discount rate. Also, projections of future pension expenses become less straightforward and must be analyzed together with forecasts for the calculation of the entire interest rate term structure. In addition, future pension expenses may become more volatile since the pension benefit obligation is not only affected by the level of interest rates (as is the case with discount rate), but also by the slope and curvature of the full yield curve.

CONSIDERATIONS BEFORE IMPLEMENTING NEW FULL YIELD-CURVE APPROACH

Before implementation of the new full yield-curve approach for determining a firm’s pension expense, each company needs to carefully evaluate all of the unique characteristics of its pension plan that may result in different impacts on profits and losses. Such considerations may include, but are not limited to, the following:

- The impact is different for various pension-expense components. As shown in the asset-liability management analysis presented in Figure 3, the new approach has very different impacts on different pension-expense components. While service cost and interest may decline in early years, the amortization of gains and losses is likely to increase in early years.

- Figure 3 also shows that among all pension-expense components interest cost is affected the most, especially in the early years of implementation of the new approach.

- The shape of the liability cash flows and the duration levels of the pension plan may have substantial effects on the pension expense under the new approach. As shown in the asset-liability management analysis presented in Figure 4, the impact of the new approach is expected to be much greater for plans with shorter durations than for plans with longer durations.

- Dynamic asset allocation, de-risking strategies, and liability hedging have impacts on the new approach. As shown in the asset-liability management analysis in Figure 4, the outcomes of the new approach are quite different for plans with traditional 60/40 portfolios than for plans with dynamic asset allocations and liability hedging strategies.

- In general, the investment strategy that is in place must be taken into account when considering the new approach because of the potential for the resulting asset-liability mismatch.

- After implementation of the new full yield-curve approach, those pension plans that implemented liability-driven investing strategies based on duration matching only, may need to consider implementation of key rate durations and other more advanced yield-curve-based strategies, since the new approach is explicitly based on full yield curves and their hedging may be beneficial in connection with the approach.

- Lump-sum offerings will change the shape of liability cash flows and the duration of pension obligations, and therefore will have an impact on the new approach.

- Additional considerations apply to pension plans when valuing interest-sensitive lump sums.

- The current shape of the full yield curve and expectations of the future yield-curve level, slope, and curvature are important considerations when implementing the new approach.

- The potentially greater volatility of pension expenses under the new approach can be reduced by a liability-driven investing strategy as shown in Figure 4.

- All of the conditions stipulated by Securities and Exchange Commission must be met before applying this method.

- The PBO must be measured using the full yield curve in order for the new method to be used.
• It is not clear at this time whether companies that measure PBO using a so-called bond/cash-flow matching method can use this new approach.

• The new approach is irrevocable and must be accompanied by robust disclosures, which are also important considerations.

• In general, every pension plan sponsor must consult with their actuary, auditors, and/or attorneys before implementation of the new approach.
An Alternative Full Yield-Curve-Based Approach for Pension Cost Measurement

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