

# THE ASPPA Journal

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## Interest Rate Assumptions in Defined Benefit Plans

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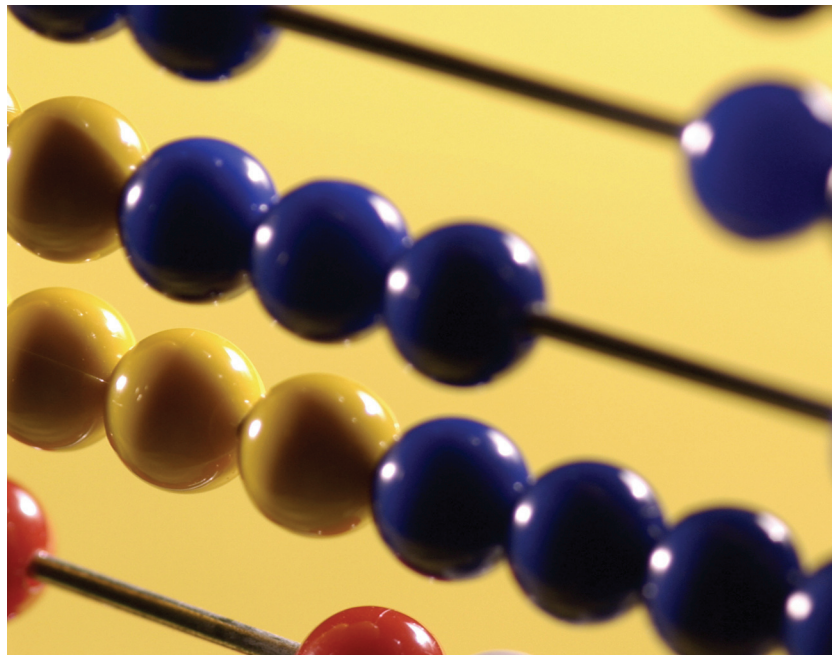
Among the many assumptions used in defined benefit plan funding and other computations, pension professionals and actuaries tend to wrestle routinely with interest rate assumptions. Interest rate assumptions shape the funding and operation of defined benefit plans. As retirement plan professionals, we need to understand how they work and how they are applied so we can explain their implications.

**T**he Pension Protection Act of 2006 (PPA) reformed funding and other rules for defined benefit pension plans. These rules are generally effective in years beginning in 2008. Before PPA, actuaries were provided with more, albeit controlled, freedom in selecting interest rate assumptions for funding defined benefit pension plans. In addition to clamping down on interest rates, PPA required plan sponsors to approve certain characteristics of interest rate assumptions as they relate to plan funding, lump sum calculations and payments to the Pension Benefit Guaranty Corporation (PBGC).

### Plan Funding

The Funding Target is the liability or obligation of a pension plan. It is determined using three Segment Rates, or interest rates, that apply to benefits paid during three time periods:

- Segment 1: Payments expected to be due within five years;
- Segment 2: Payments expected to be due within five to 20 years; and
- Segment 3: Payments expected to be due after 20 years.



The three Segment Rates are based on an underlying Corporate Bond Yield Curve, which is developed from a 24-month average of yields on investment grade corporate bonds of varying maturities in the top three quality levels. Each Segment Rate is the single rate of interest determined by the Treasury for any given month on the basis of the applicable Corporate

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Bond Yield Curve for that month, taking into account only that portion of the yield curve applicable to that particular segment.

As for the Treasury, it publishes interest rate information after the end of each month. Also, any elections made with regard to the yield curve cannot be changed without Treasury approval.

Transition is available for the Segment Rates at the election of the plan sponsor. Transition rules allow the pre-PPA four-year weighted average corporate bond rate approach to be blended with the new three-segment rate approach. Depending on plan demographics this approach could possibly lower funding requirements until Segment Rates are fully phased in. New plans established after 2007 cannot use the Segment Rate phase-in. Unless the pension plan is very mature and has an older population, employing the transition rules usually generates a higher Funding Target.

There is a second aspect to the “three segment” approach that a plan sponsor may elect. A plan can use the yield curve for the month that includes the valuation date, or for any of the four months that precede the valuation date. One advantage of choosing an earlier date is that funding projections and other calculations do not have to wait for the Treasury to issue rates.

Alternatively, a plan sponsor can elect to use the full yield curve without the 24-month averaging, as opposed to the “three segment” approach. The option to use the full yield curve without averaging could help minimize contribution volatility for those plan sponsors who have made an effort to more closely match the duration of plan assets to the underlying plan liabilities.

Interest rates are not only used in the calculation of the Funding Target. The actuary uses interest rates in determining the Target Normal Cost and amortizing any plan shortfall over a seven-year period. The Target Normal Cost is best defined as the one-year cost of accruing benefits under the plan. The shortfall is the difference between the Funding Target and plan assets.

PPA also required an “effective interest rate” to be developed. The effective interest rate is formulaically calculated as the single interest rate that would yield the Funding Target under the interest rate method selected. The effective interest rate is reported on IRS Form 5500 – Schedule SB.

Pension plan assets are also affected by interest rates. Assets typically include plan contributions deposited after the end of the plan year on behalf of the prior plan year. These are counted as

contributions receivable in the current plan year asset value. Contributions are discounted back to the valuation date based on the prior plan year’s effective interest rate.

### Lump Sum Benefits

Similar to funding, lump sum benefits are determined using a yield curve consisting of three interest rates that apply to benefit payments during three time periods: fewer than five years, between five and 20 years, and more than 20 years. However, the rates are not as smoothed as they are for funding. For lump sum calculations the underlying curve reflects a one-month average of corporate bond yields for the month preceding the distribution. The change in interest rate is phased in over five years beginning in 2008 at 20% per year. Under the phase-in, the rates used to determine present values will be a blend of the 30-year Treasury rate and the rates from the yield curve.

Interest rates are selected depending on the “stability period” timing specified in the plan document. Unlike funding interest rates, there are no opportunities for a plan sponsor to elect another set of interest rates to calculate lump sums.

In most cases the PPA change in lump sum interest rates from the 30-year Treasury to the Segment Rates decreased lump sum benefits payable to many participants. The five-year phase-in is intended to mitigate the change. The new interest rates will be phased in gradually starting with lump sums paid in 2008 and implemented fully for lump sums paid in 2012.

The impact of the PPA lump sum interest rate on participant distributions is based on several factors: (a) the age of the participant; (b) the “shape” of the yield curve; (c) the yield spread between corporate and 30-year Treasury bonds; and (d) whether lump sums are based on immediate or deferred benefits. Older participants, a flat yield curve, a large spread between bond rates and deferred lump sums generally produce smaller reductions in lump sum amounts.

### IRS Maximum Benefits

Section 415 of the Internal Revenue Code imposes maximum benefit limitations on pension plan benefits. The interest rate used to normalize lump sums back to straight life annuities is the greater of 5.5% or the rate specified by the plan. In some cases the rate specified by the plan is based on the 30-year Treasury bond rate.

These provisions pose challenges for some plan sponsors, especially those of smaller plans. IRS funding rules may allow a plan sponsor to fund the plan at a faster rate than is allowed to be paid out. Or, favorable asset returns may place the plan in an excess funding position.

As an example, if the Funding Target must be determined using an effective interest rate that is lower than 5.5%, and the largest lump sum benefit must be calculated using 5.5%, then the assets in the plan could exceed the allowable distributions.

### PBGC Premiums


PBGC requires that plan sponsors pay premiums based on the funding shortfalls in defined benefit plans. In determining a plan's unfunded vested liability for PBGC variable-rate premium purposes, the three-segment interest rate structure published each month by PBGC is used to develop the vested portion of the plan liability. Alternatively, a plan sponsor may elect to use the vested portion of the plan's Funding Target instead of determining the liability using PBGC interest rates. An election to use the Alternative Funding Target approach may not be revoked for five years.

### Cash Balance and Other Hybrid Plans

Cash balance plans state a rate of interest credit on hypothetical account balances for participants. In order to pass anti-age discrimination rules, interest

credit rates must not exceed a market rate of return to be defined in Treasury regulations. Also, interest credits may not decrease the account balance below the aggregate amount of contribution credits. This restriction eliminates prospectively the litigation risk for hybrid plans relating to "whipsaw" issues. Another nice feature of using an acceptable interest rate is that the hypothetical account balance may be paid out to a participant, making the plan much simpler to administer.

### Conclusion

As the interest rate environment and IRS plan funding philosophy change, we need to be ready to adapt. It is very important that plan sponsors, actuaries and other pension professionals realize and understand the implications of interest rate assumptions. This foundation allows us to effectively communicate the impact on funding results to financial professionals and to explain benefits to plan participants. 



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