A PUBLIC POLICY PRACTICE NOTE

Alternatives for Pension Cost Recognition: Implementation Issues

September 2018

American Academy of Actuaries
Pension Committee

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Developed by the Pension Committee
of the American Academy of Actuaries

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2018 Pension Committee

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Introduction

This practice note is not a promulgation of the Actuarial Standards Board (ASB), is not an actuarial standard of practice (ASOP), is not binding upon any actuary, and is not a definitive statement as to what constitutes generally accepted practice in the area under discussion. Events occurring subsequent to the publication of this practice note may make the practices described in the practice note irrelevant or obsolete.

This practice note was prepared by the Pension Committee of the American Academy of Actuaries to extend the discussion of concepts originally presented in the issue brief *Alternatives for Pension Cost Recognition—Issues and Implications*[1] published in August 2015. It reviews a number of issues that may arise when implementing a granular approach to calculating pension cost, particularly the application of individual spot rates (commonly referred to as the "spot rate approach"). Note that many of the valuation-related issues discussed in this practice note may also have applicability under the traditional aggregated pension costing approach.

This information is provided to educate actuaries regarding the issues involved and to inform their practice in this area. Because it is not an ASOP promulgated by the ASB, this practice note is not a definitive statement as to what constitutes generally accepted practice in the area under discussion. Actuaries are not bound to adhere to the conclusions that may be identified in practice notes or to conform their work to the practices described therein. Because this paper addresses emerging issues, there is likely to be future discussion, professional dialogue, and potential regulatory guidance that could either confirm, negate, or modify the appropriateness of proposed methodologies.

Topics covered

This practice note covers the following topics related to the implementation of the spot rate approach to determining benefit obligations, service cost, and interest cost under accounting standards and other granular approaches:

- Implications of common simplifications to pension cost methodology;
- Adjusting interest calculations to reflect assumed timing of benefit payments;
- Roll-forward of benefit obligations vs. adjusting cash flows;
- Understanding the gain/loss related to changes in the yield curve; and
- Projecting service cost.

Another important topic that affects the application of the spot rate approach is the treatment of interest-sensitive lump sums. This topic is intended to be addressed in a separate, planned-for publication because these concepts are also relevant to the traditional aggregated pension costing approach. This document only considers situations in which payment amounts do not vary with prevailing interest rates.

Although many of the topics discussed below apply to any of the more granular expensing methodologies, the discussion focuses on the spot rate approach because this is the only granular approach that has been widely adopted at the time this practice note was released.

[1] Posted on the Academy website at actuary.org/files/Pension_Cost_Recognition_08142015.pdf.

Common simplifications to traditional aggregated pension cost methodology

Some plan sponsors have adopted conventions in applying the traditional aggregated pension cost methodology, such as rounding the discount rate to the nearest 10 basis points or applying a single aggregate rate across all pension plans.[2] The resulting discount rate is applied to develop the benefit obligation, interest cost, and service cost.

In contrast, under the spot rate approach, the full yield curve is used in the calculations. Typically, a unique single equivalent discount rate (i.e., the rate that, if substituted for the yield curve, would produce the same calculated value) is derived for the benefit obligation, service cost, and interest cost. The equivalent rate for service cost may be further separated into the rate that equates to the beginning-of-year service cost and the effective rate for crediting interest to year-end.

Under the spot rate approach, these single equivalent discount rates are calculated only as byproducts of the pension cost calculations, and generally serve only as disclosure items rather than direct elements of the cost calculations. Rounding or aggregating the rates has no effect on the calculated results and disclosure of a rounded rate that reflects a different level of rounding from the spot rates might be considered misleading.

Adjusting interest calculations to reflect assumed timing of benefit payments

Interest cost under the spot rate approach is calculated by applying the appropriate spot rate to the present value of each future year's expected cash flow (benefits expected to be paid from the plan). Both the present value and interest calculations for a given year's payout are determined using the spot rate that corresponds to that payment year. In calculating interest cost, interest is applied for a full year or to the expected payment date, if earlier.

For example, if benefit payments are assumed to occur at midyear, the benefit obligation for fifth-year benefit payments—that is, benefit payments to be made in the year beginning five years after the measurement date—would be calculated as $P_5*(1+i_5)^{-5.5}$, where P_x is the benefit payment in year x and i_x is the spot rate for year x. The corresponding interest cost for that portion of the benefit obligation would be $P_5*(1+i_5)^{-5.5}*i_5$. Similarly, the benefit obligation for initial-year payments would be $P_0*(1+i_0)^{-0.5}$. As the initial-year benefit payments are expected to be made prior to the close of the year, the interest cost for this portion of the obligation would reflect that earlier payment date: $P_0*(1+i_0)^{-0.5}*[(1+i_0)^{0.5}-1]$.

[2] In some cases these conventions might be justified based on the guidance in Accounting Standards Codification (ASC) 715-30-35-1, which provides that, "If estimates, averages, or computational shortcuts can reduce the cost of applying this Subtopic, their use is appropriate, provided the results are reasonably expected not to be materially different from the results of a detailed application." The reader should not assume that these conventions are appropriate in all circumstances, but rather that the reporting entity would be expected to demonstrate their appropriateness.

Adjusting cash flows to reflect experience different from assumed

A common practice for measuring benefit obligations at a year-end measurement date is to appropriately roll forward results derived at an earlier valuation date to the measurement date.[3] A typical roll-forward approach under the traditional aggregated methodology derives a discount rate based on conditions as of the year-end measurement date, and then uses this discount rate to revalue benefit obligations and service cost as of the beginning-of-year valuation date. These values are then added together with accumulated interest, and adjusted for the liability released by benefit payments and other material events.

Under the spot rate approach, the full set of cash flows starting at the measurement date are generally required to calculate results one year forward.[4] In the simplest case, assuming demographic experience that follows the assumptions, the benefit obligation and service cost cash flows can simply be added together, dropping off the initial year of cash flows that are now presumed to have been paid. The resulting cash flows can then be discounted using the yield curve as of the measurement date.

Just as under the traditional approach, the actuary will normally reflect deviations from expectations when using the spot rate approach. As an example, adjusting for actual benefit payments that exceed expected benefit payments by $1,000,000 would result in adjusting cash flows by approximately $1,030,000 assuming midyear payments and a 6% discount rate.[5]

Possible approaches to making this adjustment are:

- Adjust first-year cash flows (may be an appropriate simplification if the mismatch is relatively small);
- Adjust all future cash flows proportionately; or
- Adjust future cash flows in a more refined way, reflecting the characteristics of the participants whose benefit payments are presumed to have caused the mismatch.

If the difference is due to payments of lump sums sooner than expected, such that lump sums are expected to be lower in the following years, an adjustment to cash flows in just those

[3] This approach is addressed in ASC715-30-35-64, which states, "much of the information can be prepared as of an earlier date and projected forward to account for subsequent events."

[4] Projected cash flows may also be used under the traditional aggregated method.

[5] When rolling forward benefit obligations, the partial-year interest adjustment is typically done using the discount rate. From a technical standpoint, circularity arises in the calculation if the rolled-forward cash flows are a function of a discount rate that is itself dependent on the rolled-forward cash flows. The actual period for which the actuary makes the interest adjustment is the period preceding the measurement date, so arguably the partial-year interest adjustment need not depend on a yield curve as of the measurement date. The difference in results between the various choices for the partial-year interest adjustment is usually relatively small and likely does not warrant significant refinement. Possible candidates for the interest adjustment rate include the prior-year discount rate, the first-year spot rate, the discount rate for the upcoming year, or an effective lump sum rate for the prior year.

immediately following years may be appropriate.[6] If the adjustment is due to more participants than expected electing a lump sum, then the future stream of annuity payments might be reduced. If the adjustment is due to participants retiring earlier than anticipated, then the future stream of all benefit payments would be affected. Often in these situations a constant percentage adjustment applied to all future cash flows is adequate. If the impact is significant, an adjustment that more accurately reflects the timing of payouts in advance of expected retirement dates can be made.

Although the benefits paid rarely correspond precisely with a dollar-for-dollar release of benefit obligations, assuming for simplicity that they do generally provides a reasonable outcome. The concept of fine-tuning the adjustment is not new but is getting more attention because of the direct use of the cash flow stream under the spot rate approach.

On the other hand, the actuary may conclude that the release from benefit obligations does not closely correspond to the amount of benefit payments made during the year. For example, if a plan pays lump sums but the interest rate used to determine lump sum payments during the year was lower than that assumed in the valuation, the lump sum payments may overstate the true benefit obligation release. Similarly, for a retiree medical plan the actuary may conclude that higher-than-expected benefit payments (e.g., claim costs) reflects an unanticipated increase in service pricing or utilization, not a release of the previously measured benefit obligation.

Even when actual and expected benefit payments are relatively close, it will likely be the result of a combination of offsetting experience factors rather than an indication that assumptions have been precisely borne out. Any adjustment from a prior valuation date will incorporate some simplifying assumptions, which may need to be evaluated for appropriateness, even if the effect is small. Often differences in benefit obligation between the various approaches under consideration are not significant from an actuarial standpoint. Whether such a difference is material from an audit perspective may require a separate evaluation.

Gain/loss related to changes in yield curve

A no gain/loss outcome associated with the spot rate approach applied as described in this practice note would generally be consistent with a one-year shift in the spot rate curve (if experience in all other regards is in line with assumptions). In other words, the year-end obligation will equal the beginning-of-year obligation plus interest cost and service cost, reduced by initial-year benefit payments, should the same discount rate continue to be applied to each payment. If we consider the fifth-year payments from the earlier discussion on interest timing, the expected obligation at year-end (ignoring new accruals) would be:

$$P_5*(1+i_5)^{-5.5} + P_5*(1+i_5)^{-5.5}*i_5$$

which is equal to $P_5*(1+i_5)^{-5.5}*(1+i_5)$, or $P_5*(1+i_5)^{-4.5}$. This is the expected amount to match the actual year-end obligation if the fifth-year spot rate at the beginning of the year becomes the fourth-year spot rate at the end of the year—in other words, if the spot rate curve shifts forward

[6] This discussion assumes that expected payments reflect the lump sum form of payment. If liabilities are calculated using an annuity substitution approach, then the argument for adjusting payments for just the immediately following years would not apply.

one year. With a typical upward-sloping yield curve, this shift implies an increase in the effective single discount rate. Other interest rate scenarios may produce a gain or loss.

For budget projections, the actuary may want to consider the gains or losses that would result from anticipated future yield curves. For example, in a baseline projection where the effective single equivalent discount rate, or the yield curve, remains unchanged, the benefit obligation would exceed the amount that results from the service cost and interest cost recognized—i.e., this approach produces a loss.[7]

Projecting service cost

Some sponsors base the expense on a roll-forward of prior-year results, rather than a remeasurement reflecting a new census. Although in some years new information, such as a census update, may potentially be significant enough to warrant a remeasurement, in other years no update is needed. For these situations, service cost for the year following the measurement date is often adjusted for factors, such as:

- Compensation increases;
- Changes in participant count; and/or
- Population aging.

For a pay-based formula where the population is assumed to be stable, the actuary might increase the service cost from the prior valuation date for assumed increases in overall population payroll. For a closed plan, the actuary may adjust for the smaller size of the active plan population along with a shift in the demographics of those covered participants.

A pure application of the spot rate approach would adjust the cash flow relating to service cost as of the measurement date.[8] If it is reasonable to assume that there is no shift in population demographics between the valuation date and the measurement date, the actuary might consider simplification, such as adjusting each cash flow by a constant factor.

Conclusion

The above discussion covers some of the common practical considerations involved in implementing the spot rate approach and other granular approaches to developing pension cost. As more plans move to implement the spot rate approach, practice may evolve further and may warrant updates to these discussions.

[7] The loss arises because the assumed yield curve differs from the one-year shift in spot rates required to avoid a loss under the spot rate method.

[8] This assumes that the actuary is not remeasuring the obligation and service cost based on an updated census.