MERCER

Consulting. Outsourcing. Investments.

MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

January 29, 2010

Equal to or Better (ETOB) Testing - Risk-Free Rate Assumption

Oregon Public Employees Retirement System

Matt Larrabee

Introduction

- New ETOB testing is being conducted to comply with 2007 statutory changes
  - Employers that have an exemption from participating in PERS for their police and fire personnel must test their plans against PERS to confirm compliance with the updated ETOB requirement
- The Oregon Administrative Rule (OAR) governing the test requires the PERS actuary to value benefits using a "risk-free" rate
  - A risk-free rate is consistent with valuing benefits on a "value to the employee" basis
- PERB must determine if employers satisfy the ETOB test
  - As such, we are providing information to PERB to help determine a risk-free rate for ETOB test purposes
    - We ask PERB to establish the risk-free rate basis at today's meeting
- More detail on testing requirements can be found in our February and November 2009 PERB presentations

Introduction
Status Update

- At the November Board meeting, PERB
  - Established the ETOB valuation date as December 31, 2008
  - Endorsed the concept of a Preliminary Determination approach as the initial testing step for plans that qualify
- Since then, we have:
  - Contacted all employers subject to the ETOB test
    - Described the required test and differences compared to prior ETOB testing requirements
    - Requested the plan information needed to commence testing
  - Performed background work to help develop key parameters of the test
    - Of these, the risk-free rate is the most notable example
- Once the risk-free rate is established, we will:
  - Gather the remaining information needed from employers
  - Begin actual testing, including performing Preliminary Determinations

Guiding Principles

- As an outcome of a stakeholder input process on the OAR, PERS Staff established the following principles to guide ETOB testing:
  - ***Comparability – the test should make an "apples to apples" comparison***
  - ***Durability – test results should be consistent over time barring a change to provisions***
  - ***Cost Effectiveness – an appropriate low cost method that does not compromise the validity of results should be used***
- These principles are used to help guide decision making on selection of a risk-free rate

Sources of Risk-Free Rates

- Possible sources for determining risk-free rates include:
  - Yields on US Treasuries
    - Liquid market with essentially zero risk of default
  - Annuity rates from insurers
    - Very low default probability
  - Yields on corporate bond issues of very high quality
    - Higher default probability than Treasuries or insurers, but still very low
- **We suggest using Treasury yields**
  - Widely recognized risk-free standard
  - Liquid market with transparent pricing
    - Yields on annuities and corporate bonds vary from issuer to issuer, and the annuity marketplace can be quite inefficient
      - Reasonable parties can disagree on:
        - The appropriate annuity index to use
        - The "probability of default" adjustment needed to convert a corporate bond rate to a risk-free rate

Deriving a Risk-Free Rate from Treasury Yields

- If Treasuries are used for testing, two main questions must be addressed:
  - **Should a single interest rate be used, or a full yield curve?**
- **We suggest using a single rate approach**
  - A single rate is expected to achieve a substantially similar result to a full yield curve, and involves less costly testing
    - Given the risk-free rate will be used to accumulate account balances in defined contribution plans, using a yield curve would be difficult to apply in practice
  - A single rate is more understandable

Deriving a Risk-Free Rate from Treasury Yields

- If Treasuries are used for testing, two main questions must be addressed:
  - **Should the rate or rates used be an average of historical rates, long-term estimates of forward-looking rates, or a blend of the two approaches?**
- **We suggest using an average of historical rates**
  - Forward-looking rate models depend on subjective capital market expectations
    - The subjective nature of those expectations makes choosing a rate more difficult and increases the possibility of a disagreement about the appropriateness of the rate chosen
  - Using a historical averaging period increases durability compared to using expectations from a single point in time
    - Reduces volatility in the risk-free rate as determined from one period to the next
    - The longer the averaging period, the greater the potential durability, but also the higher the likelihood of significant differences between the average rate and the current one

Deriving a Risk-Free Rate from Treasury Yields

- In developing an average of historical rates, there are two issues to decide:
  - **What maturity of Treasury bond should be used?**
- **We suggest using 30-year constant maturity Treasury bond rates**
  - Using the longest published Treasury rate is in keeping with the very long-duration nature of benefits
    - Benefits are earned over the course of working lifetime
    - Benefits are paid for life beginning at retirement

Deriving a Risk-Free Rate from Treasury Yields

- In developing an average of historical rates, there are two issues to decide:
  - **What length averaging period should be used?**
- **The length of averaging period could be approached in different ways**
  - **Possible Approach**: Develop a smoothed assessment of recent Treasury rates
    - A 3 or 5 year average of yield rates could be used, for example
    - This approach reflects the market's recent assessment of the risk-free rate, but adds durability due to the smoothing period
  - **Possible Approach**: Determine a rate corresponding to the prevailing Treasury rates over the service to date of employees affected by the test
    - Risk-free rate would be determined over a similar period to the period over which currently accrued benefits were earned
      - The average police and fire member's service to date in the December 31, 2008 PERS valuation was 11 years
    - The longer averaging period would be expected to produce a more durable test but may produce a rate that differs further from current rates

Deriving a Risk-Free Rate from Treasury Yields

- To illustrate, we calculated the average yield on 30-year Treasury bonds over the 3 year, 5 year, and 11 year period prior to the ETOB valuation date
  - Calculated as the average of the end-of-month Treasury yields during the averaging period
- As of the ETOB valuation date of December 31, 2008, this methodology produces the following risk-free rates:
  - 3 year averaging: 4.6%
  - 5 year averaging: 4.7%
  - 11 year averaging: 5.1%
- In comparison, current yields on 30-year constant maturity Treasury bonds are about 4.6% (rate as of 12/31/2009)
- Based on our understanding of the testing objectives and principles, **we suggest using the 5 year averaging period**
  - Consistent with approach of determining smoothed recent rates
  - Enhances durability compared to using current rates or 3 year averaging, without significantly differing from current market conditions

Summary and Board Action

- Based on our understanding of the principles and objectives underlying the ETOB test, we suggest the following basis for determining the risk-free rate:
  - **Use a single interest rate determined as the average of yields on 30-year constant maturity Treasury bonds over a 5 year averaging period**
- At this point, we look to the Board for a decision to either:
  - Adopt this approach, or
  - Put forth any alternative considerations that would revise this direction
- Once the Board has authorized an approach for developing the risk-free rate, we can proceed with the ETOB test

Next Steps

- Assuming we receive Board direction today on the risk-free rate, our anticipated testing timeline is as follows:
  - At the March Board meeting
    - Report back on the results of all Preliminary Determination tests
    - Present recommendations for any other assumptions needed to complete testing
  - At the May Board meeting
    - Present test results for all employers requiring a full ETOB test
- The schedule described here is contingent on continued timely cooperation from the employers being tested

MERCER

MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

The information contained in this document is not intended by Mercer to be used, and it cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code that may be imposed on the taxpayer.