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

Oregon Public Employees Retirement System

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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?**
- **<u>We suggest using an average of historical rates</u>**
  - 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?**

- **<u>We suggest using 30-year constant maturity Treasury bond rates</u>**
  - 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?**

- **<u>The length of averaging period could be approached in different ways</u>**
  - **<u>Possible Approach</u>:** 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
  - **<u>Possible Approach</u>:** 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

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