Risk Management in Pension Plan Funding

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Distinguish between investment risk management (volatility) and pension funding risk management (ensuring C+I=B-E).

The Board of Trustees and TRS staff also engage outside investment consultants and actuarial consultants to advise on risk.

Executive Director also chairs a Risk Oversight Committee (ROC) that gathers senior management for Enterprise Risk Management discussions facilitated by the Director of ERM.
Quantitative and Qualitative

• Quantitative – Actuarial, Budgetary and Statistical Analyses
  • UAAL
  • ADEC (ARC)
  • Funding Ratio
  • Funding Period
  • Etc

• Qualitative – Wisdom of the Crowd
  • Key Risks
  • Impact
  • Likelihood
  • Assurance
  • Velocity
Monitoring and Mitigation

- **Annually**
  - Valuation
  - Update Key Metrics
  - Fund Enterprise Risk Assessment
  - Legislative Briefings

- **Biennially**
  - Legislative Appropriations Request
  - Mid-Year Valuation Update
  - Actuarial Impact Statements

- **Five Years**
  - Asset Allocation Study
  - Fund Experience Study
  - Actuarial Audit
TRS Fund Profile as of August 31, 2015

<table>
<thead>
<tr>
<th>Description</th>
<th>Value/Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuarial Value</td>
<td>$133.4 billion</td>
</tr>
<tr>
<td>Market Value</td>
<td>$128.5 billion</td>
</tr>
<tr>
<td>UAAL</td>
<td>$33.3 billion</td>
</tr>
<tr>
<td>Funding Ratio</td>
<td>80.2%</td>
</tr>
<tr>
<td>Funding Period</td>
<td>33 Years</td>
</tr>
<tr>
<td>State Contribution Rate</td>
<td>6.8%</td>
</tr>
<tr>
<td>Member Contribution Rate</td>
<td>As a result of legislation in FY 13, rate increased from 6.4% in FY 14 to 7.7% in FY 17</td>
</tr>
<tr>
<td>Non-Social Security School District Contribution Rate</td>
<td>1.5%</td>
</tr>
<tr>
<td>Normal-Age Retirement</td>
<td>Rule of 80 + 62 for new hires and non-vested members</td>
</tr>
<tr>
<td>Pre-62 Retirement Penalty</td>
<td>5% per year</td>
</tr>
<tr>
<td>COLA</td>
<td>Ad hoc. Authorized by legislature when plan is actuarially sound. October 2013 - 3% (capped at $100/mo) for who retired on or before 8/31/2004. First COLA in over a decade.</td>
</tr>
</tbody>
</table>
The Trust is allocated across the following groups:

- **Stable Value**: 16%
  - Treasuries 11%
  - Stable Value Hedge Funds 4%
  - Cash 1%
  - Absolute Return 0%

- **Global Equity**: 57%
  - 44% Public Equities:
    - USA 18%
    - Non-US Developed 13%
    - Emerging Markets 9%
    - Directional Hedge Funds 4%
  - 13% Private Equity

- **Real Return**: 22%
  - Global TIPS 3%
  - Real Estate & Other Real Assets 16%
  - Energy & Natural Resources 3%
  - Commodities 0%
  - REITS 0%

**Risk Parity 5%**

**Economic Conditions:**
- GDP surprises are negative
- Inflation surprisingly low with weak demand
- Negative earnings surprises
- Out of line valuations
- Flight to quality
- Positive GDP surprises
- Inflation surprises not dramatic
- Positive earnings surprises
- Reasonable valuations
- Political stability
- Real GDP growth too low
- Inflation surprises on the high side
- Real earnings too low
- Commodity-oriented demand exceeds supply by an above normal margin
# Measures of Risk Metrics As of August 31, 2015

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAAL / Payroll</td>
<td>83%</td>
</tr>
<tr>
<td>Ratio of Actives to Retirees</td>
<td>2.4</td>
</tr>
<tr>
<td>Market Value of Assets / Payroll</td>
<td>324%</td>
</tr>
<tr>
<td>Liability / Payroll</td>
<td>420%</td>
</tr>
<tr>
<td>Duration of the Liability</td>
<td>24 Years</td>
</tr>
</tbody>
</table>

On most measures of plan risk, TRS compares favorably to its peers.

Source: Gabriel, Roeder Smith & Co. for February 2014 TRS Board of Trustees Presentation as updated and modified by TRS.
Assumption Set Changes

• In September 2015, the Board adopted a new assumption set for the System, which includes the following material assumptions:
  
  Keeping the investment return assumption at 8%;
  
  Lowering the inflation assumption from 3.0% to 2.5%;
  
  Adjusting mortality to better reflect population living longer; and
  
  Lowering payroll growth from 3.5% to 2.5%.

• Increased member contribution rates beginning in FY 15. Rates were “ramped up” over a three year period. The ultimate member contribution rate will be achieved in FY 17.

• The “ramp up” and assumption set changes (e.g. increased longevity) result in the funding period and UAAL growing for a short period of time and then declining as the System moves towards full funding.
The above assumes all assumptions exactly met, including 8% annual investment returns.
Assumes no changes to benefit policy.
Assumes current statutory contribution policy remains throughout period.
Fund Enterprise Risk Assessment

• Goals/Objectives
• Risks
• Mitigations
• Assess Risk (Impact and Likelihood)
• Risk Owner
• Risk Response
• Action Items
• Monitoring Items
• Reporting Process
GOAL

Sustain a financially sound pension trust fund.

OVERALL RISK

A lack of sound funding for the plan could lead to insufficient assets to pay for long-term benefits and financial obligations.

OBJECTIVES

• To manage to an actuarially sound retirement system that maintains an amortization period of less than 31 years and achieves full funding over the long-term.
• Maintain and implement an evolving investment policy capable of achieving the trust’s actuarial assumed rate of return as measured on rolling 20-year periods.
• Develop, maintain and implement a sound, professional and systematic risk management and capital allocation system.
• Develop and maintain a highly capable and diversified external network of global investment, trading and consulting relationships.

SUMMARY

Mitigations are appropriate to address the level of risk for this risk category and the risk owner accepts most of the risks. One additional mitigation strategy related to a funding policy is planned. Key mitigations include:

• Reviewing liabilities annually and mid-year during legislative sessions to assess financial status of the fund;
• Conducting periodic experience studies;
• Reporting and monitoring investment performance on a quarterly basis;
• Performing asset allocation studies and asset liability modeling (ALM) studies at least every 5 years and positioning TRS’ portfolio accordingly; and
• Educating Texas Legislature on importance of increased contribution rates, impact of any additional Cost-of-Living Adjustments (COLAs) and any increases in benefit calculations.

Impact (I) – 5-Major, 4-Significant, 3-Moderate, 2-Minor, 1-Not Significant
Likelihood (L) – 5-Expected, 4-Highly Likely, 3-Probable, 2-Slight, 1-Not Likely
Assurance (A) – 1-Effective, 2-Good, 3-Could Be Improved, 4-Poor, 5-Ineffective
Velocity (V) – 5-Immediate, 4-Weeks, 3-Months, 2-Years (1-2), 1-Years (2+)

TRS Stoplight Report Category
Questions?

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