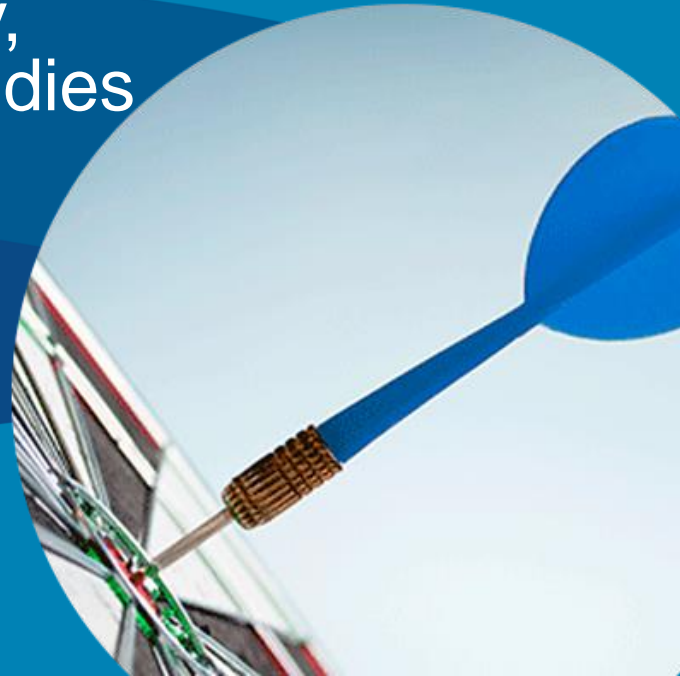


Texas Municipal Retirement System

Overview of Upcoming Asset Liability,
Asset Allocation, and Experience Studies
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Agenda

- Purpose of TMRS
- Purpose of Funding Process Review
- Components of Funding Process Review
 - Experience Study
 - Asset Allocation Study
 - Asset/Liability Study
- Prioritizing the decision making framework
- Summary

Purpose of TMRS

- TMRS' primary purpose is to pay benefits to its beneficiaries
 - Based on framework set in Statute; and
 - Specific provisions chosen by Plan Sponsor; and eventually
 - Payment forms and beneficiaries chosen by the member

How will TMRS meet this Purpose:

- There are two main questions to answer:
 - Where will the money come from to pay the benefits?
 - What procedures will TMRS follow to physically pay those benefits?

Policies to Accomplish this Purpose

- There are two sources of monies to pay the benefits: **contributions** and **investment earnings**
 - Thus the Investment Policy manages the strategies employed to generate investment earnings, and
 - The Funding Policy manages the strategies employed to collect revenue from the Plan Sponsors (and perhaps members)
- Then, administrative polices dictate how the organization will physically pay the benefits, communicate with stakeholders, manage day-to-day activities, perform calculations, etc, etc, etc

Questions to set any Policy or Procedure

- What is this policy trying to accomplish?
 - Or: What is its purpose?
- What are the limitations?
 - Or: What is the range of appropriate choices?
- What are the priorities of the stakeholders or governing body?
- What priorities compete against each other?
- Which choice optimizes the priorities?
- How does this policy fit into the family of policies chosen across the organization?

Operations

- The strategic plan will help with setting administrative policies, along with your ongoing management
- The main focus of this review is the other question, “Where will the money to pay the benefits come from”

2019 Overall Funding Process Review

- “Where will the money come from to pay those benefits?”
- Three studies to address this question:
 - Experience Study
 - Demographic Assumptions
 - Macro Economic Assumptions
 - Funding Policy
 - Asset Allocation Study
 - Asset/Liability Study

Inside the Actuarial Valuation:

Projecting the Liability for each Member

What is the probability
the member reaches
retirement?

How much will
the benefit be?

How long will
the benefit be paid?

Hired at age 30

Retire at age 60
with
annual benefit

Receive benefit
for remaining lifetime

- ◆ Assumptions must be made to project:
 - ▶ Future behavior and occurrences
 - Both voluntary and involuntary
 - ▶ Life expectancy
 - ▶ Economic growth

How assumptions factor in ...

- Over time, the true cost of benefits will be borne out in actual experience
 - Cost of benefits NOT affected by actuarial assumptions
 - Determined by actual participant behavior (termination, retirement), plan provisions, and actual investment returns
- But if incorrect, can lead to poor decisions and poor outcomes
 - If objective is to fund levelly over active career, and assumptions suggest cost is 10% per year, but true cost is 14%
 - Losses and unfunded liabilities will develop
 - Can't outrun or "out-assume" the true cost
 - Important to update regularly and re-chart your course
- Assumptions dictate the timing of the contributions, not the amount
 - Develop expectations for future contributions, investment returns and benefit payments
 - Important for decision making

Purpose of the Experience Study

- Assumptions are not static; they should occasionally change to reflect
 - Developing industry best practices
 - New information and changing knowledge
 - Mortality improvement
 - Changing patterns of retirements, terminations, etc.
 - Implementation of improved technology and processes
- The Experience Study is the process of examining the current assumption set
- Our analysis will address the following questions for each assumption
 - What was TMRS' actual experience?
 - How does that compare with current assumptions?
 - Is a change warranted?

Purpose of the Asset Allocation Study

- Asset Allocation is considered the most important investment decision the Board makes
- The “Perfect Portfolio” is not static; the portfolio should occasionally change to reflect
 - Developing industry best practices
 - New information and changing knowledge
 - Economic realities
 - New strategies
 - Implementation of improved technology and processes
- The analysis will seek to find possible improvements to the risk/return balance for the System

What is an Asset/Liability Study?

- The annual valuation takes the current data, processes, financial information, assumptions, etc and assumes assumptions are met to determine the appropriate contribution for a specific year
 - And provide accounting/disclosure information
- An asset/liability study takes the current data, processes, financial information, assumptions, etc and assumes assumptions are NOT met, looking for a range of possible outcomes and how metrics may change from year to year
 - Also looking for how these metrics might be different at different points in time (plan maturities, reaching full funding, etc)

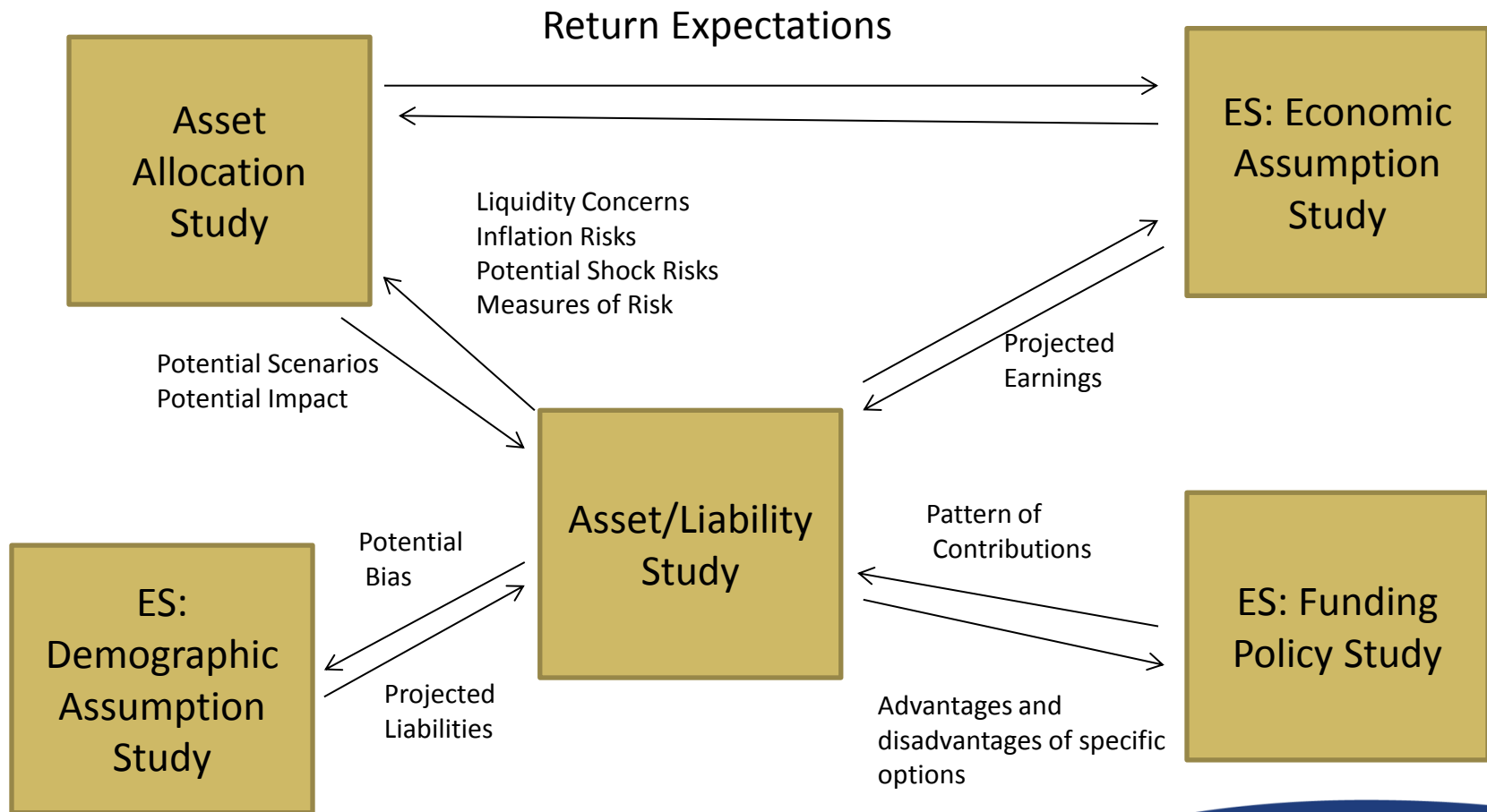
Asset/Liability Study: per Wikipedia

- “**Asset/liability modeling** is the process used to manage the business and financial objectives of a financial institution or an individual through an assessment of the portfolio **assets** and **liabilities** in an integrated manner.”
- “Asset/liability modeling goes beyond traditional, asset-only analysis of the asset allocation decision. Traditional asset-only models analyze risk and reward in terms of investment performance. Asset/liability models take a comprehensive approach to analyze risk and reward in terms of the overall pension plan impact. An actuary or investment consultant may look at expectations and downside risk measures on the present value of contributions, plan surplus, excess returns (asset return less liability return), asset returns, and any number of other variables. The model may consider measures over 5, 10 or 20 year horizons”

Purpose of the Asset/Liability Study

- This process provides input to the Asset Allocation Study about liquidity concerns, potential shock risks, and sensitivity of the liability to price and/or wage inflation
- It can also provide other, more tangible ways to define or examine risk
 - For example, use downside funded ratio or contribution rate volatility as a risk metric
- The same structure can also provide similar information about the funding policy, which determines how contributions will be calculated at a given time. The A/L can help support the current funding policy or provide options for improvement. In addition, a different funding policy will produce different results in the A/L study, and perhaps a different perception of risk in the asset allocation study.

Flow of Information



Understand your limitations

- “It is difficult to make predictions, especially about the future”
 - Danish proverb

Funding Process: The Right Focus

- There is a future reality that we will have to live with; but there are limitations in our ability to predict it
- Effort should be given to narrow the range of possible outcomes by:
 - Getting right what we can get right
 - Developing defensive, unbiased starting points
- And then implementing strategies that will provide an appropriate and sustainable path to the eventual outcome(s)

Funding Equation

- This equation will balance over time:
- $C + I = B + E$
 - Where:
 - C = Contributions
 - I = Investment Earnings
 - B = Benefit Payments
 - E = Expenses

At any given valuation:

- $C_{\text{now}} = B_{\text{assumed}} + E_{\text{known}} - I_{\text{assumed}} - C_{\text{futureassumed}} - \text{Risk}_I - \text{Risk}_B - \text{Risk}_C$

– Where:

- Risk_I = Risk that investment earnings are different than expected in the future
- Risk_B = Risk that benefits are different than expected in the future
- $C_{\text{futureassumed}}$ = Assumed pattern of C over time
- Risk_C = Risk that contributions are different than expected in the future

Investment Risk

- Risk that investment earnings (dollars, not rates of return) are different than expected
- Mostly concerned with generating less earnings over time than assumed
 - $C + I = B$
 - If I is lower, C must be higher to pay same B
- However, can also entail pattern of returns
 - (managing good times)

Benefit Risk

- Risk that benefit payments (in dollars) are different than expected
- Mostly concerned with inflation creating higher COLAs than assumed or pay increases generating more USC credits
 - If B is higher, C must be higher if generate same I
- However, can also produce gains
 - Recent low inflation environment has produced liability gains
 - Some Systems have contingent liabilities that automatically adjust with experience
- Mortality, Turnover, etc will also play a role

Contributions: Future Assumed

- Most pension plans assume contributions will grow over time, thus there is a rate of growth already embedded in the current contribution rate
- Also, there is likely an amortization policy that has predetermined a specific pattern

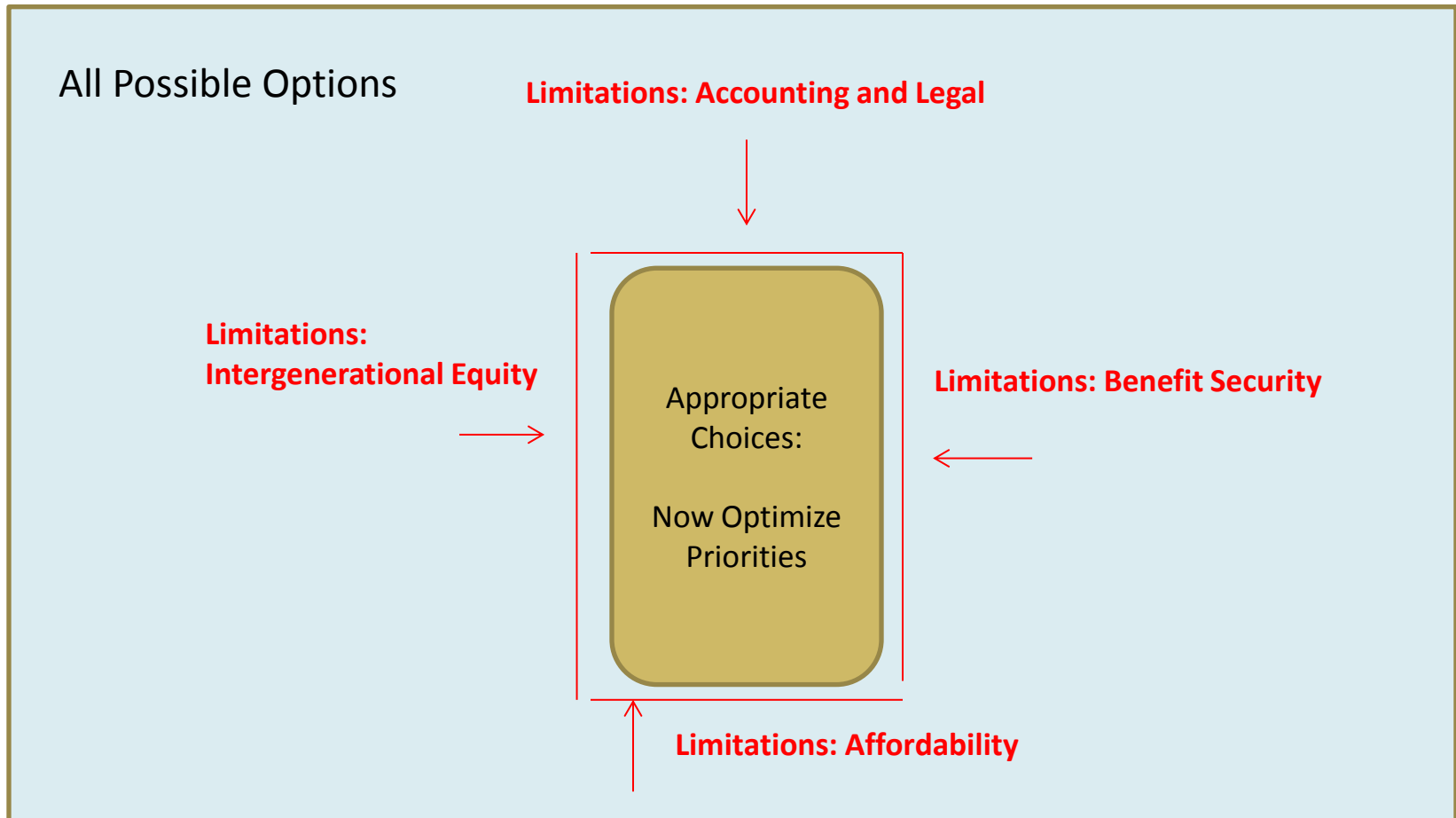
Contribution Risk

- Risk that contributions are different than expected
 - The current TMRS communication practices place emphasis on contribution rates of payroll. Do employers see it this way, or do they think in terms of budgets?
- Concern is typically in the overall affordability of the contributions
- Can also be in the annual volatility of the contributions
 - Either in dollars or rates
- Can also be a limitation on the amount of increase the employer can absorb over a short to medium term
- Can also take the form of counter-party risk (the employer doesn't contribute enough or no longer exists)

Limitations

- Not all possible choices are appropriate
- For efficiency, and to protect against ending up with an inappropriate strategy, it is important to define/understand limitations first
 - Can then focus resources on actionable options

Limitations



Priorities

- Then, once the inappropriate options have been ruled out, it is very likely there will be more than one option that
 - Is acceptable
 - Meets the appropriate purpose
- A “Priority” will be defined as a (or the) preferred outcome
- When choosing the single strategy for action, should consider the priorities of the stakeholders
- Some priorities will oppose one another. Some will balance one another. Having a good understanding of the priorities (preferred outcomes) will many times make a given option, or small group of options, stand out over the others.
 - Example: Risk vs Return

Potential Opposing Priorities

- Investment Returns vs Investment Risk
- Investment Risk vs Affordability
- Intergenerational Equity vs Affordability
- Contribution Stability vs Minimizing Contributions at a Specific Time
- Minimizing Contributions over all time vs Minimizing Contributions at a Specific Time

Vantage Point

- This is why we view all of this as one large review of the overall funding process.
- Just like the previous asset allocation project, most changes that come out of the project do not have to occur over night. Many times an implementation timeline would be developed that provides a target for future deployment.

Summary

- There are a lot of the current policies and procedures under review this summer into fall
- We should not have a mindset opposed to change, and we should not have a mindset looking for change
- The mindset should be to come to the best conclusions, defend our positions, and improve the sustainability of the System