Brief History of Pension Discount Rates

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Introduction

- **We will discuss the discount used for Pension Benefit Guarantee Program (PBCG) adequacy levels, not FASB standards used in GAAP**
- **History of discount rates used in pension liabilities**
- **Advantages/disadvantage to the various discount rates**
- **Broadly, the material is based on the Center on Federal Financial Institution's (COFFI) "**PBGC: A Yield Curve Primer"

Pension Benefits

- **Pension payments are based on years of service and salary level**
- **Result in a stream of fixed monthly payments, typically with a death benefit at a pensioners death**
- **Resemble a long tail Workers Comp claim**

Calculation of Liability

- **Historically, pension actuaries have been responsible for calculation of value of liabilities**
- **Estimates of future cash flows are discounted to an equivalent value in the present via a factor based on:**
  - **Time until cash flow**
  - **Interest (or discount) rate**
- **Adequacy of funding is determined by comparing assets held in pension plan with PV of its liabilities**

Choice of Discount Rate

- **Historically, the choice of discount rate has fallen into three buckets:**
  - **Expected rate of return of pension plan assets**
  - **Risk-free rate (Treasury)**
  - **Rates on high quality corporate bonds**
- **Choice must be made whether to reflect yield curve, i.e. to use different values for different maturities**

Expected Rate of Return of Plan Assets

- **This amount is determined by assets held by the pension plan**
- **Uses historical average returns for asset classes**
- **Historically, the same rate was used for all maturities**
- **Example:**

Asset Class	% of Plan's Assets	Historical Return
Stocks	60%	10%
Bonds	40%	6%
	Wt-ed Average:	8.4%

- **Same discount rate is used for all maturities**

Data provided is illustrative, only

Expected Rate of Return of Plan Assets

- **Uses the same discount rate for different maturities, which does not take into account the term structure of interest rates**
- **Allows a wide dispersion of discount rates across pension plans**
- **Doesn't recognize variability of returns from risky assets**

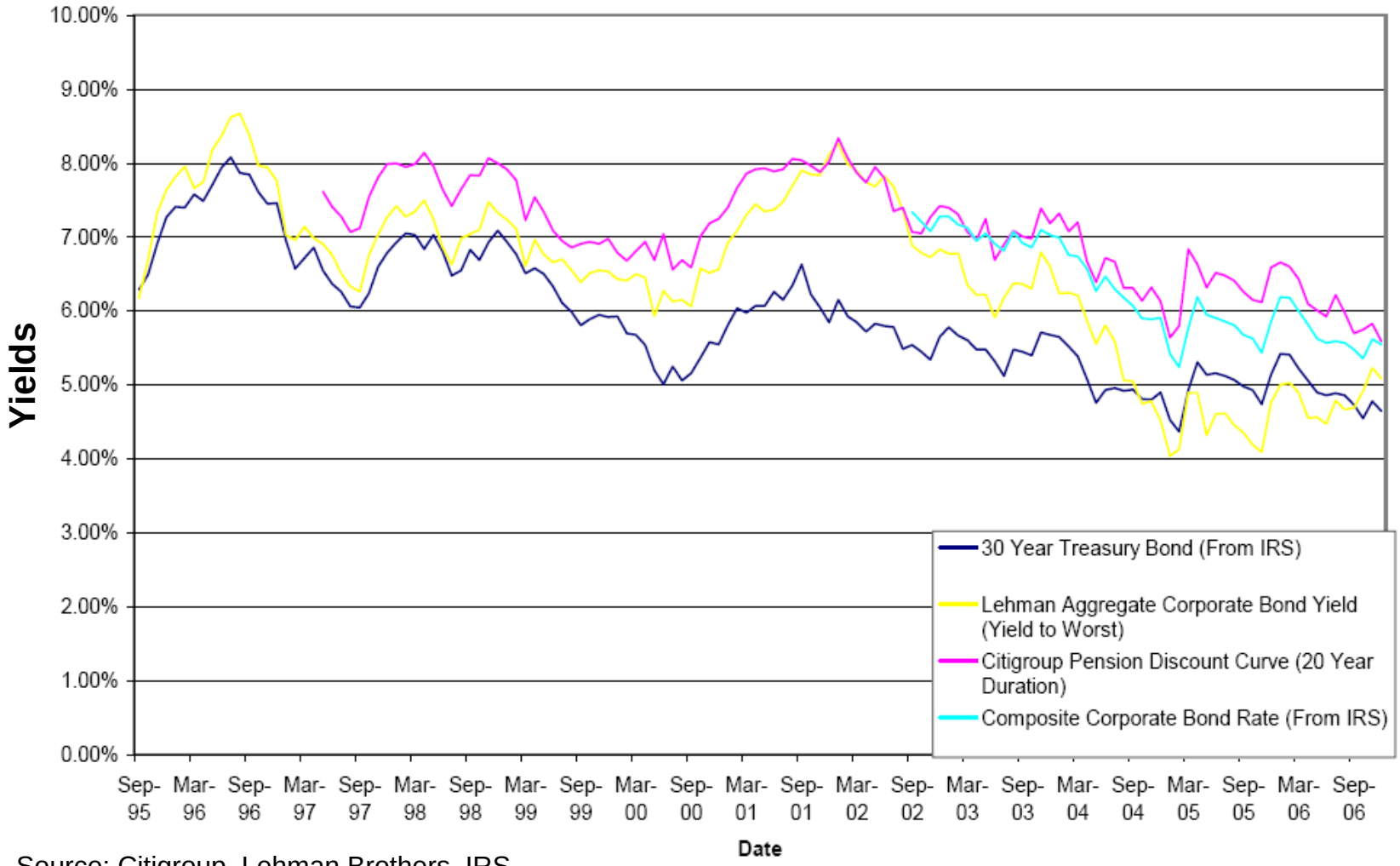
Risk Free Rates

- **Advent of the PBGC mandated discount rates for evaluating adequacy of plan assets**
- **The discount rate was set to be a weighted average of 30-year Treasuries**
- **The pension plan was allowed to choose a discount rate in a narrow band around this weighted average**

Risk Free Rates

- **Uses the same discount rate for different maturities, which does not take into account the term structure of interest rates**
- **Narrowed dispersion of discount rate across plans**
- **Increased calculated liabilities, compared to prior method**

Comparison of Yields



Source: Citigroup, Lehman Brothers, IRS

Rates on High-Quality Bond

- Government changed discount rate in 2004, while re-examining entire pension evaluation regime
- Based on 4-year average of high quality corporate bonds
- Three justifications
  - Compromise between risk-free rate intellect and expected rate of return intuition
  - Similar to discount rates used by insurers when pricing the takeover of pension liabilities
  - Political compromise
- Still no term structure reflected

Pension Protection Act of 2006

- **Starting in 2009, pension liabilities will be discounted using the following yield curve:**
  - **Short Term (0 - 5 years)**
  - **Medium Term (6 - 20 years)**
  - **Long Term (over 20 years)**
- **Each portion of curve will be represented by a single rate, based on investment grade corporates**
- **Cash flows will be discounted using the rate corresponding to its maturity, i.e. a cash flow occurring in year 3 will use the "Short Term" rate**

What Can Be Taken Away

- **Discount rate should be similar across different liability holders**
- **Discount rates should mimic what independent parties would use to price liabilities**
- **Matching flows with discount rates is important, i.e. need to reflect term structure**

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