

# TAKING PENSION FUNDING INTO ACCOUNT

---

A Luncheon Briefing Sponsored By

The American Academy of Actuaries



# TAKING PENSION FUNDING INTO ACCOUNT

---

Ron Gebhardtsbauer, F.S.A., M.A.A.A

Senior Pension Fellow, American Academy of Actuaries

Mark Beilke, A.S.A., M.A.A.A

Vice Chair, Pension Accounting Committee,  
American Academy of Actuaries



# TAKING PENSION FUNDING INTO ACCOUNT

---

Ron Gebhardtsbauer, F.S.A., M.A.A.A

Senior Pension Fellow, American Academy of Actuaries



# Outline

- Reasons for Funding Pension Plans\*
- Minimum Funding Rules
- Problems with Underfunded Plans
- Alternative discount rates for 30-yr Treasury
- Other Ideas For Rules

\* We will just be discussing US Private Sector Defined Benefit (DB) Plans, unless we specifically say government, foreign, or church plans.



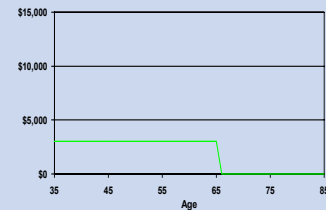
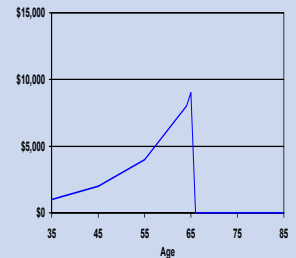
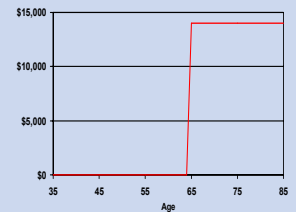
# Reasons for Pension Funding

- Advance Fund: pay more now instead of later
  - Investment income reduces future contributions
  - But note tension with using money productively in business
  - Increases National Savings
- **Improves Benefit Security**
  - Assets  $\geq$  Termination Liability preferred by employees
  - **But note tension with Benefit Adequacy**
  - Assets cover guaranteed benefits preferred by PBGC
- Smooths contributions (company's cash flow)
  - Constant % of payroll generally preferred
  - But allows flexibility: Less in bad years & more in good years
- Allocates contributions over period worked (sort of)
  - Pension Accounting rules allocate costs; generally a different amt
  - Discussed later

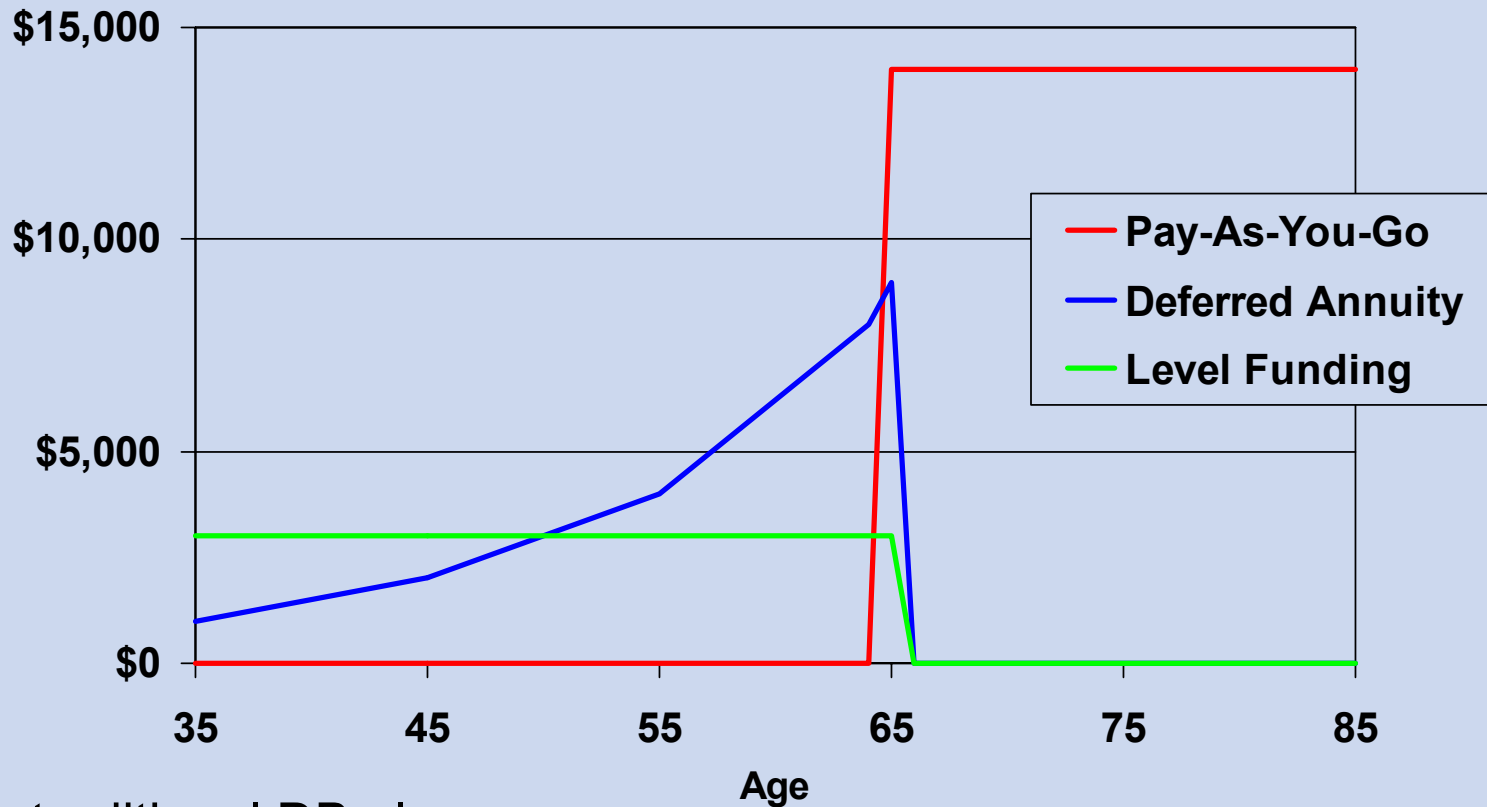


# Various Funding Methods

- Pay-As-You-Go
  - No funding in advance → no investment income
  - Benefits not secure (post-retirement medical, some Exec Ben)
  - Not permitted for ERISA pension plans
  - Hidden costs overstate profits in early years
- Contribute cost of benefit accrued in year
  - EG: Buy deferred annuity each year, matching bond payments
  - Funds pension plan to Termination Liability (TL), unless losses, ...
  - Contributions generally increase as employee ages
    - \$1,000 pension costs ~\$10,000 at age 65 and ~\$1,000 at age 25
  - Not permitted for salary-related pension plans (must project salaries)
- Smooth contributions from hire to separation
  - More at young ages (than deferred annuity cost) & less at older ages
  - Faster funding creates **surplus** over TL (unless asset loss, ...)
  - But note tension with excise tax on reversion



# Annual Normal Cost\*



\*In a traditional DB plan



# Unfunded Liabilities

- Unfunded Liability (UL) = Liabilities – Assets\*
  - How can underfunding happen?
    - Pre-ERISA funding did not contribute enough (amortize over 40 years)
    - Plan started with benefits from past service (30 years)
    - Benefit improvements (30 years)
    - Experience losses (e.g., poor returns) (5 years)
    - Change in actuarial assumptions (10 years)
    - Waived Contributions (5 years)
- Minimum Contributions toward UL
  - Interest on Unfunded: never eliminates UL; ERISA said not enough
  - Amortization payments over n years (like home mortgage)
  - Multi-Employer plans have longer amortization periods They can't change contribution easily, less likely to terminate, smaller PBGC deficit, smaller PBGC guarantees

\* Liabilities under funding method (often smoothed) & Assets at market, 5-year smoothing, amortized bond, etc.





# Contribution

## IRC §412 Minimum Contribution:

Normal Cost + Minimum Cont. towards UL\* – credit balance

Credit balance = excess contributions from prior years (encourages contributions > minimum)

## IRC §404 Maximum Contribution = greater of:

Normal Cost + 10 year amortization

Minimum Contribution

Fund all benefits over working lifetime\*\*

Unfunded Current Liability (Not limited by Full Funding Limit)

Neither Minimum nor maximum may exceed the **Full Funding Limit\*\*\***

\* Negative for gains, benefit decreases, etc.

\*\* Contribution every year (unless assets > PVB) and doesn't compare MVA with TL today, so less volatile

\*\*\* FFL = Actuarial Accrued Liability using projected pay. **Hourly plans can not project future benefit increases until enacted.**

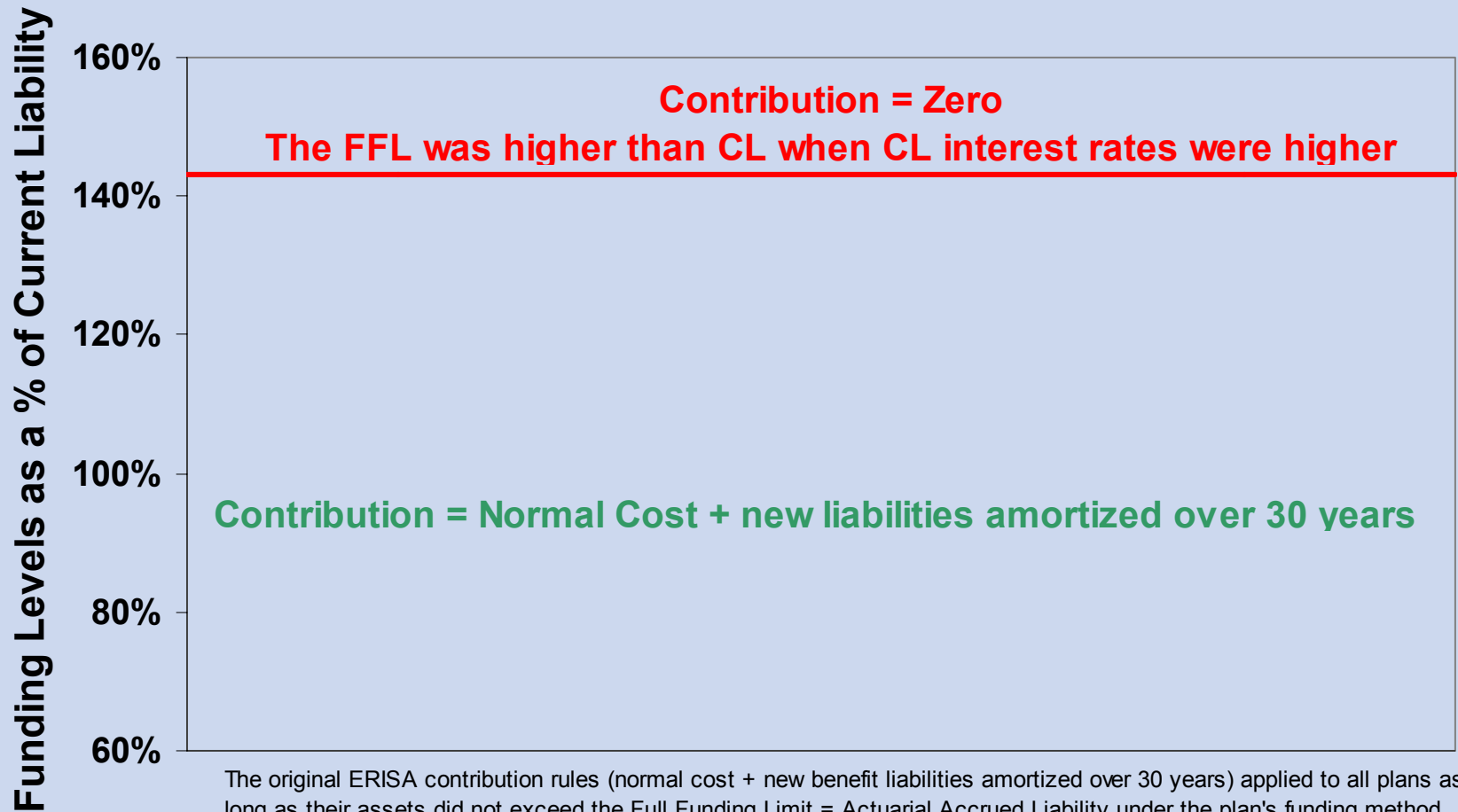


# Underfunded Plans

- Problems with funding rules
  - Plans terminated underfunded even though they followed all the rules
  - PBGC liabilities increased
  - 30-year amortization too slow, especially for retiree benefit increases
- OBRA '87 and RPA '94
  - Minimum funding rules strengthened for underfunded plans
    - Definition: plan is < 80% funded OR consistently < 90% funded
  - Unfunded Current Liability (UCL) paid off over 3 to 7 years
    - CL determined using accrued benefits (not projected)
      - CL is a proxy for TL, but assets & liabilities can be smoothed to reduce volatility
    - Discount rate = 105% of 4-year weighted average of 30-year Treasury rates
    - 1983 Group Annuity Mortality table specified currently



## Original Contribution Rules

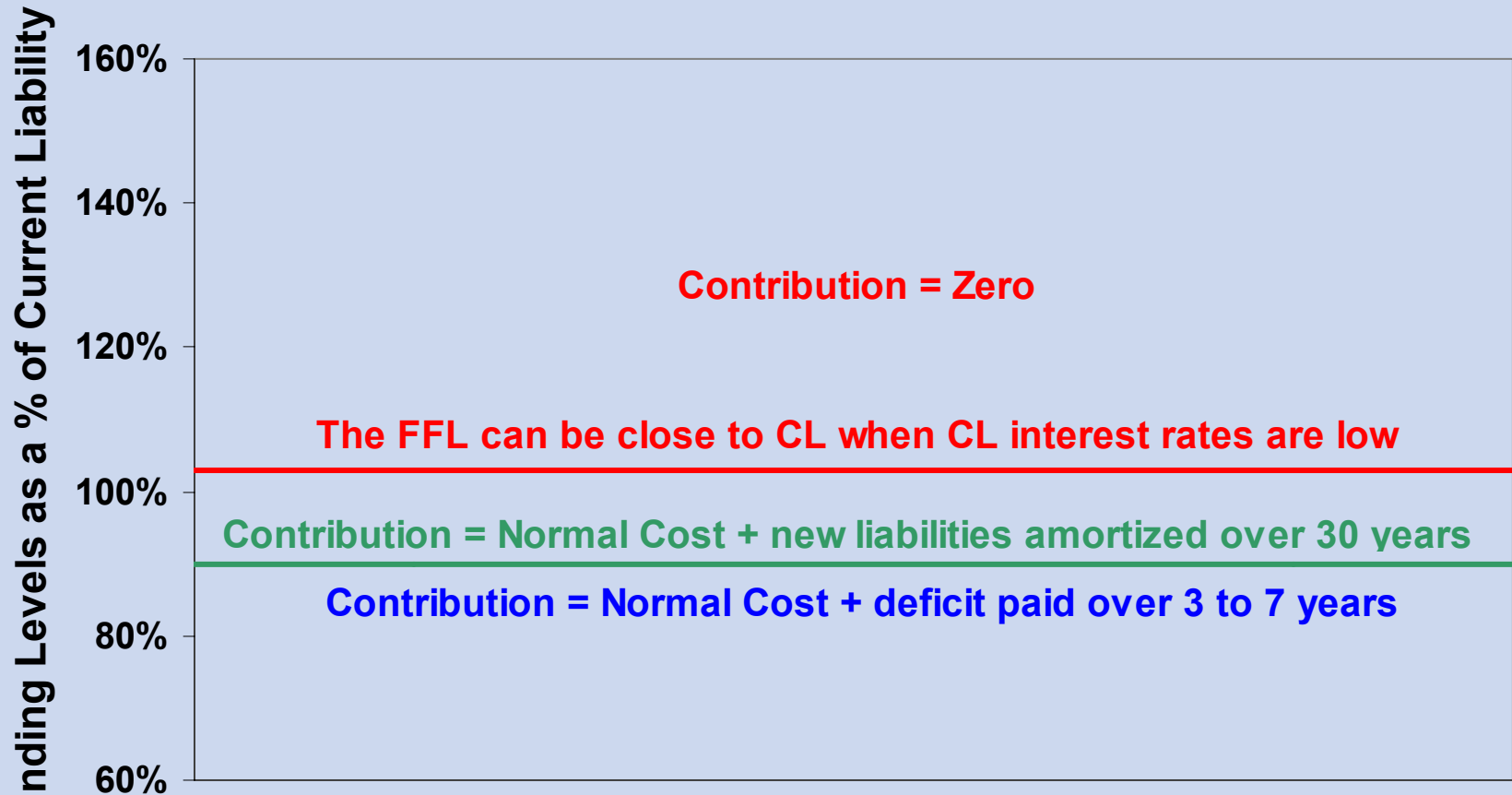


The original ERISA contribution rules (normal cost + new benefit liabilities amortized over 30 years) applied to all plans as long as their assets did not exceed the Full Funding Limit = Actuarial Accrued Liability under the plan's funding method.

Note: If contributions are not deductible, they are also subject to an excise tax.



# Current Contribution Rules



For many plans, the original ERISA contribution rules (normal cost + new benefit liabilities amortized over 30 years) now only apply in a very small range (plans with current liability funding levels between 90% and 100%). The new deficit reduction contribution rule applies when the funding ratio is under 90% (unless the 2 consecutive prior years or 2nd and 3rd prior years were above 90%) and always applies when the funding ratio is under 80%. It is like converting a 30-year mortgage to a 5-year mortgage (although the bank does not have to do that because it has security for the loan).



# Underfunding “Penalties”

If FCL <	Then
125%	No §420 transfers for post-ret health Can't use prior year valuation
110%	Lump sum restrictions for top 25
100%	Pay variable premiums & quarterly contributions Bankrupts can't improve benefits PBGC liens, if over \$1M missed contributions Financial Rpt to PBGC, if UVB > \$50M Report Events that may concern PBGC
Hit to equity if ABO > MVA	
90%	Additional Funding Contributions <small>benefit increases more costly</small> PBGC Notice to employees on FCL & GB info
60%	Security for plan amendments



# Actuarial Assumptions

- Assumptions must be individually reasonable\*
  - Discount rates = Expected Return on Assets, for funding\*\*
  - Inflation
  - Salary increases
  - Mortality rates\*\*
  - Retirement Ages (and election of early commencement)
  - Quit ages
  - Disablement and Recovery
  - Election rates for lump sums, annuity options (including J&S)

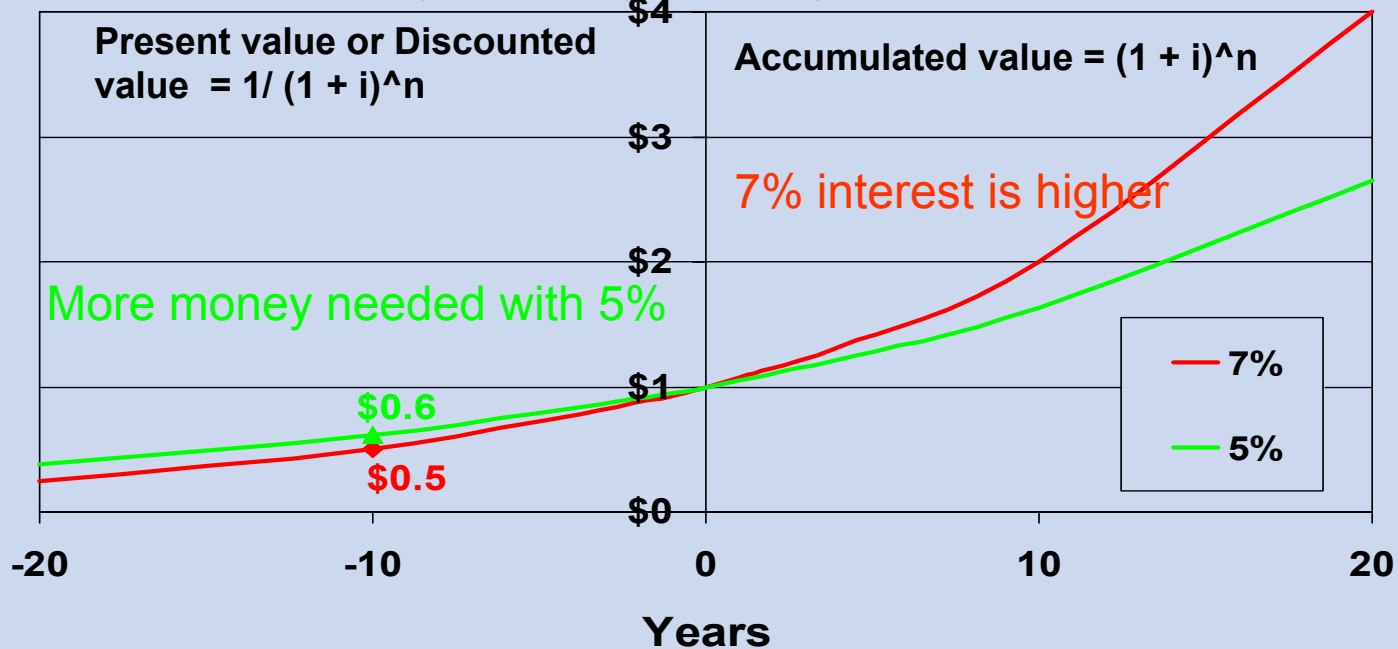
\* Multi-employer plans may still use “reasonable in the aggregate”

\*\* Unless underfunded in which case the current liability rate and 1983 Group Annuity Mortality table are required



# Discount Rate

- Discounted Value
  - \$0.50 can accumulate to ~\$1 in 10 years (if interest rate = 7%)
  - Discounted value today of \$100 payable in 10 years =  $\$100 \times 0.5 = \$50$

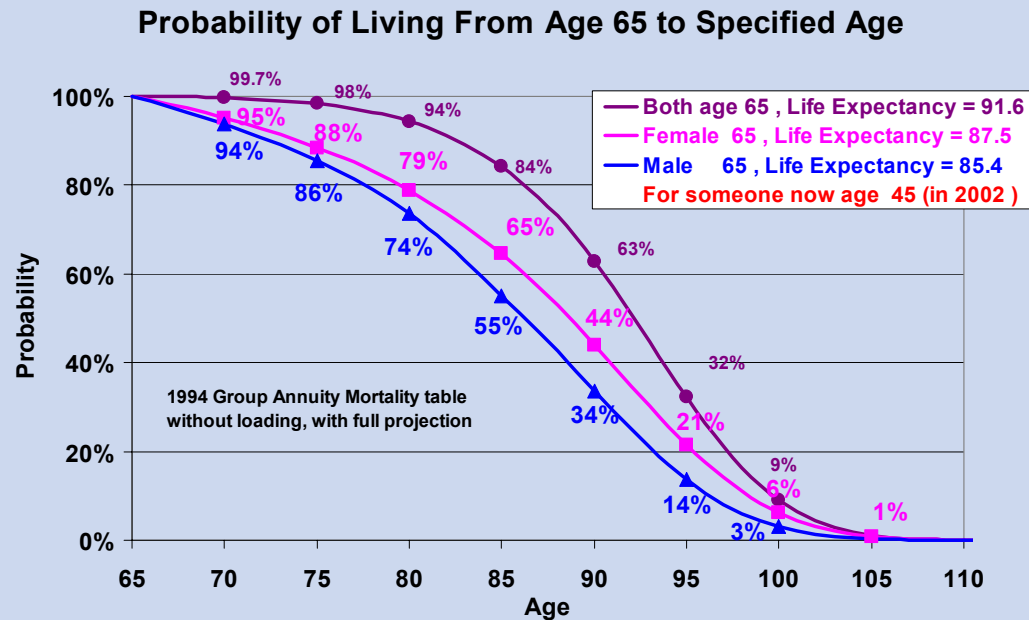


Larger contributions are required when interest rates are low



# Mortality Tables

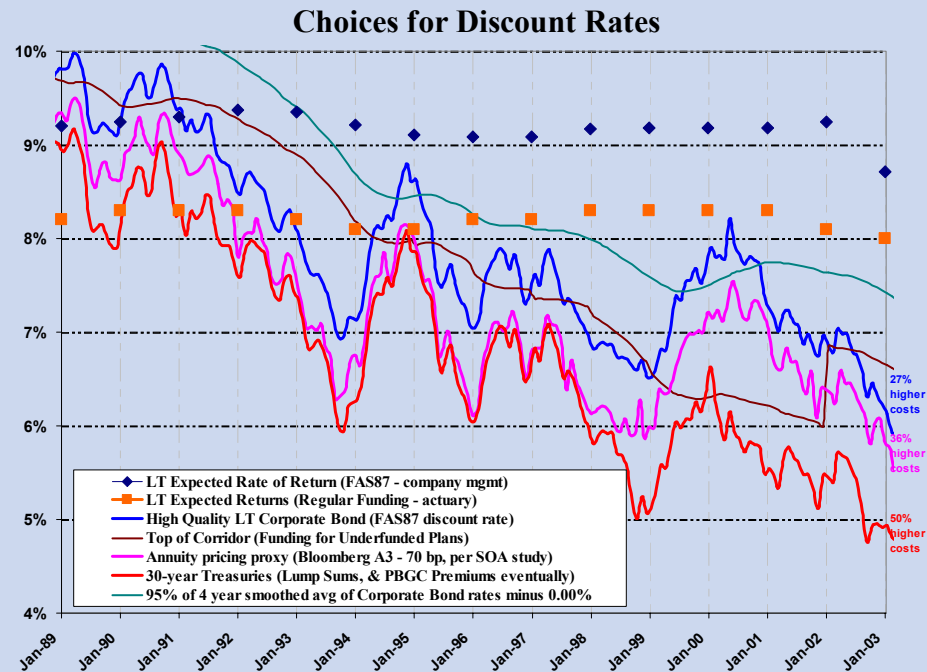
- Mortality Table helps determine probability that worker gets benefit
- Present Value = Discounted value x Probability of receiving benefit
- PV of \$100 in 10 years to 65 year old woman =  $\$100 \times 0.50 \times 88\% = \$44$





# Discount Rate

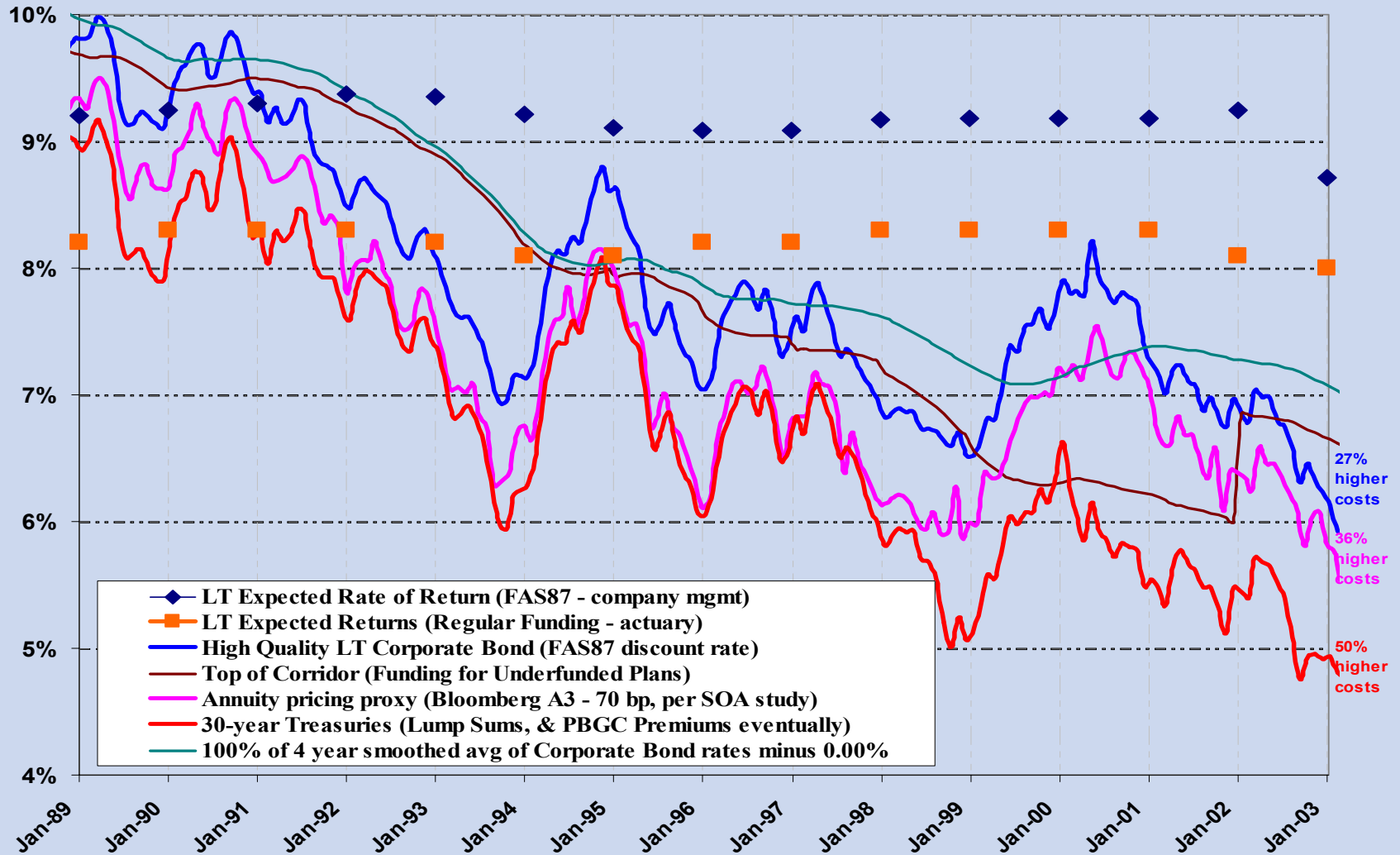
- Maximum discount rate for underfunded plans
  - Originally, close to corporate bond rate & above EA's rate
  - Then, 30-year Treasury rate dropped faster than Corporate
    - Flight (from stocks) to Treasury bonds
    - 30-year Treasuries no longer issued



Choices for discount rates in paper by American Academy of Actuaries: Long Term Expected returns, HQ Corporate Bond returns, Annuity Prices, and Treasury rates. They produce the costs indicated (relative to LT Expected Returns used for funding), assuming an average pension plan (with duration around 12). The expected returns are from Watson Wyatt surveys.



# Choices for Discount Rates



Choices for discount rates in paper by American Academy of Actuaries: Long Term Expected returns, HQ Corporate Bond returns, Annuity Prices, and Treasury rates. They produce the costs indicated (relative to LT Expected Returns used for funding), assuming an average pension plan (with duration around 12). The expected returns are from Watson Wyatt surveys.

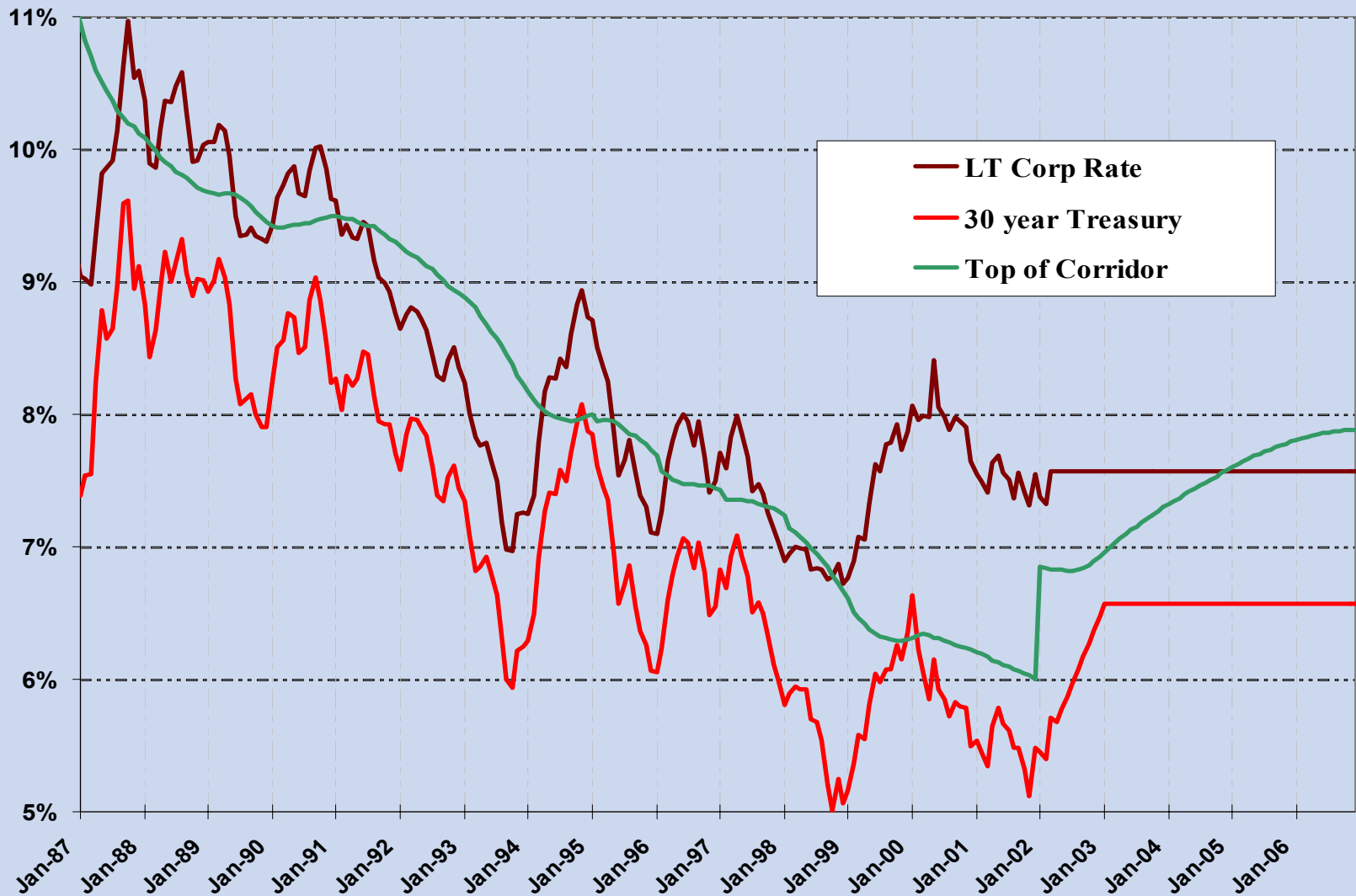


# Discount Rate

- Possible replacements of 30-year Treasury rate
  - Composite high-quality corporate bond index
  - Interest rate used in pricing annuities (about 50 to 70 bp lower)
  - Treasury rates: manipulated; lower than necessary
- Long-term rate or Yield curve?
  - Rates are lower for short durations
  - Can increase PV by up to 5% when steep for mature hourly plans
  - Hedge-ability reduced if any smoothing retained
  - Too complex (30+ rates) for lump sums & small firms?
  - Best practice for mortality (blue collar mortality table) offsets by 2 to 3%
  - Use collar mortality & yield curve, or neither?
- Eliminate Smoothing?
  - Eliminates lag, so that calculation is closer to today's pricing
  - But increases volatility of contributions. EPI suggests 30 yr smoothing.
  - Compromise? 2 or 3 year average?
- Reflect lump sums (Repeal IRS Notice 90-11)



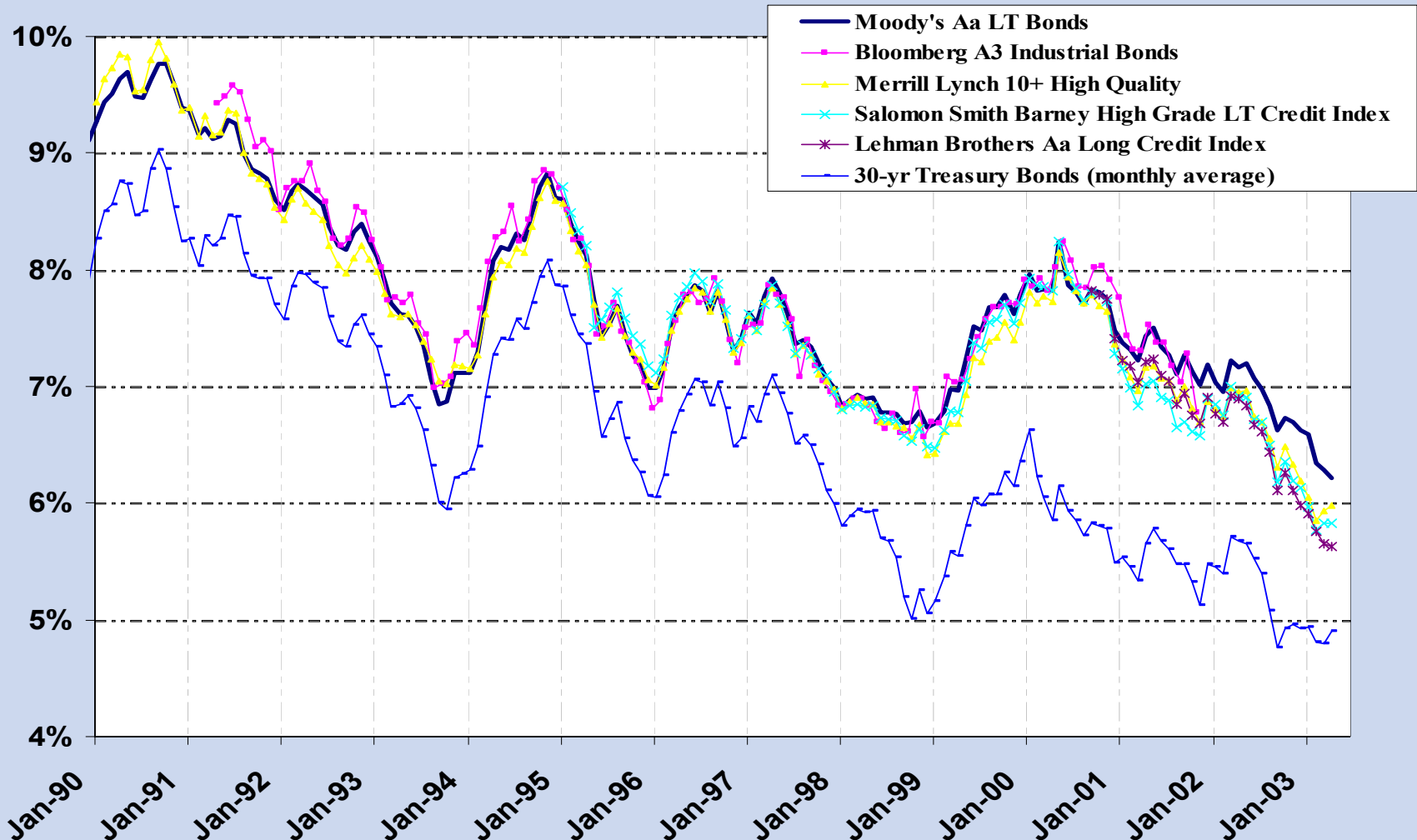
## 120% of Treasury not good for PBGC if Spread Returns to "Normal"



If the spread between Treasury and Corporate bonds returns to 100bp, then the top of corridor will exceed the Corporate bond rate. Thus, using a government rate may not be good for PBGC, when US debt increases. Determining the corridor using corporate bond rates is preferred for this reason.



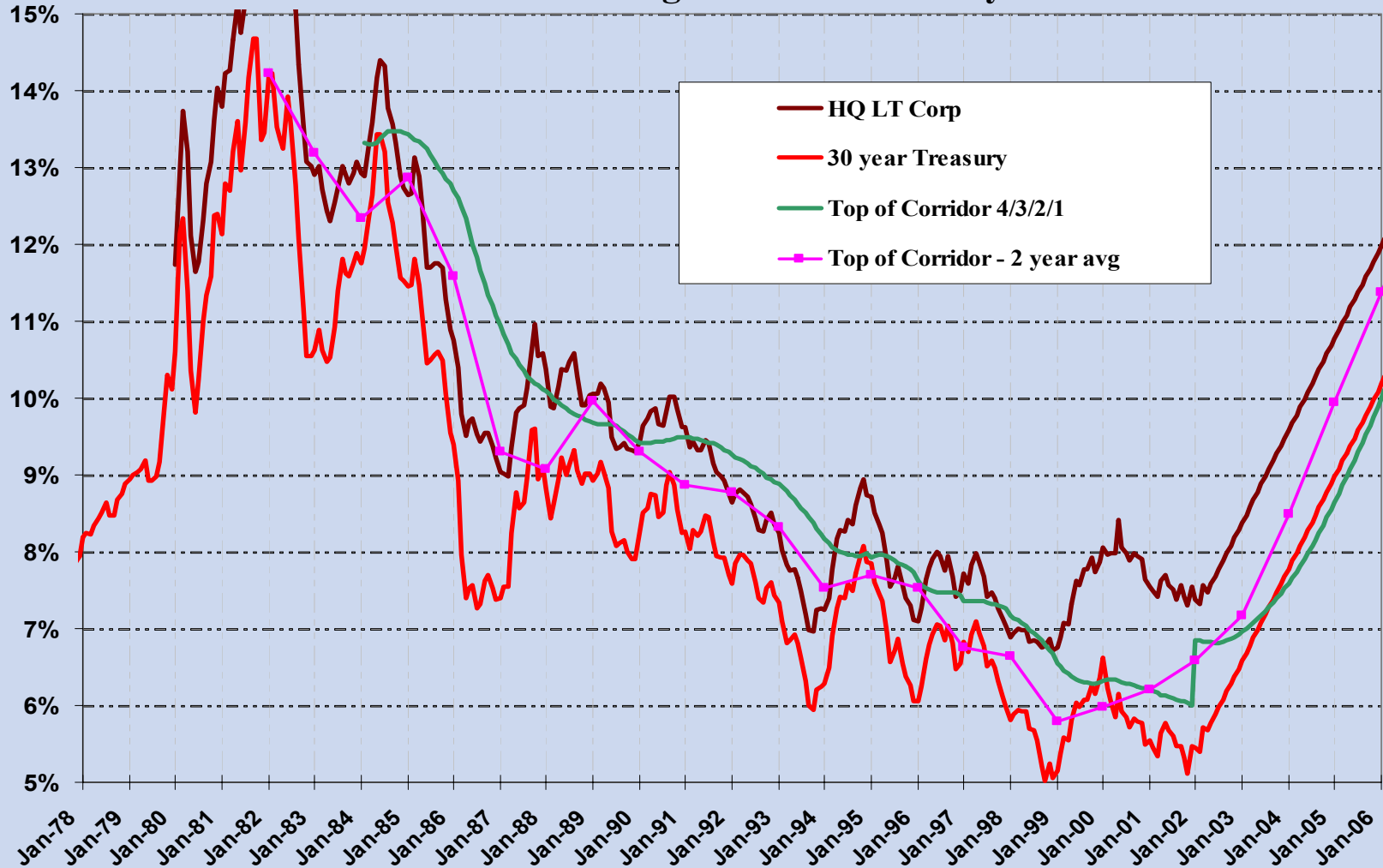
# High Quality Corp Rates & 30-Year Treasury Rate



An SOA study suggested that annuity prices could be estimated using Bloomberg A3 less 70bp. Other ideas would be to use a composite of similar high-quality long-term corporate bond rates. Bloomberg A3 Industrials are option-adjusted (e.g., they pull out call provisions) which is why they are close to other higher quality yields. Moody's Composite LT Corporate Bond rate is already cited in IRC 264(e) and Moody's Aa were close to Bloomberg's A3, but lately have separated from other indices.



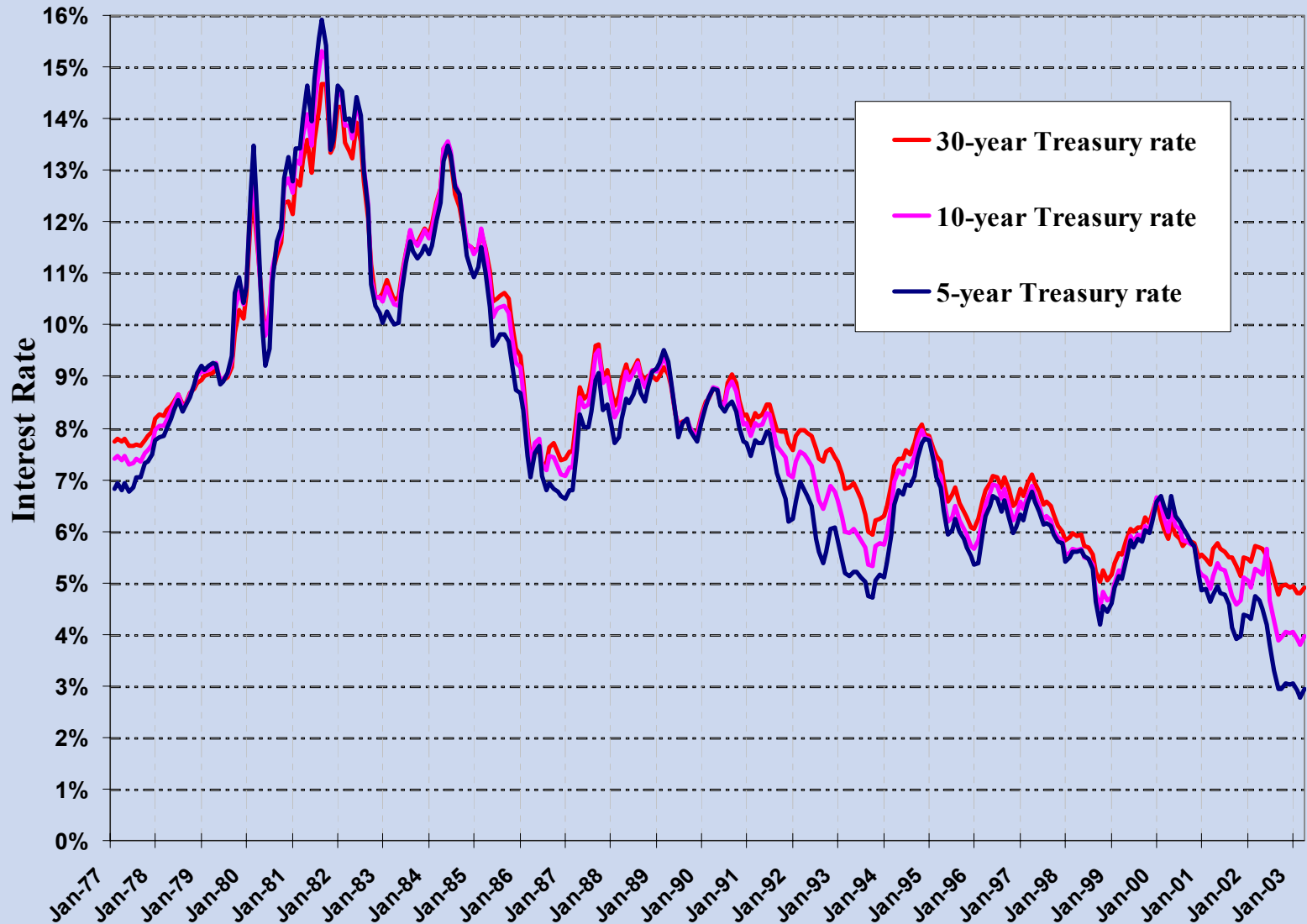
## Problems With Smoothing If Rates Increase Maximum Rate goes below Treasury Rate



If Treasuries & Corporates both go up by 0.1% each month for say 4 years (it's happened before in late 70's early 80's), the top of the corridor will be below Treasury rates. Thus, even though pension plans will be able to buy annuities for everyone's accrued liability, the smoothing of the Current Liability rate will force sponsors to make Additional Required Contributions. Less smoothing would help (e.g., just use average of rates at current and prior valuation dates)



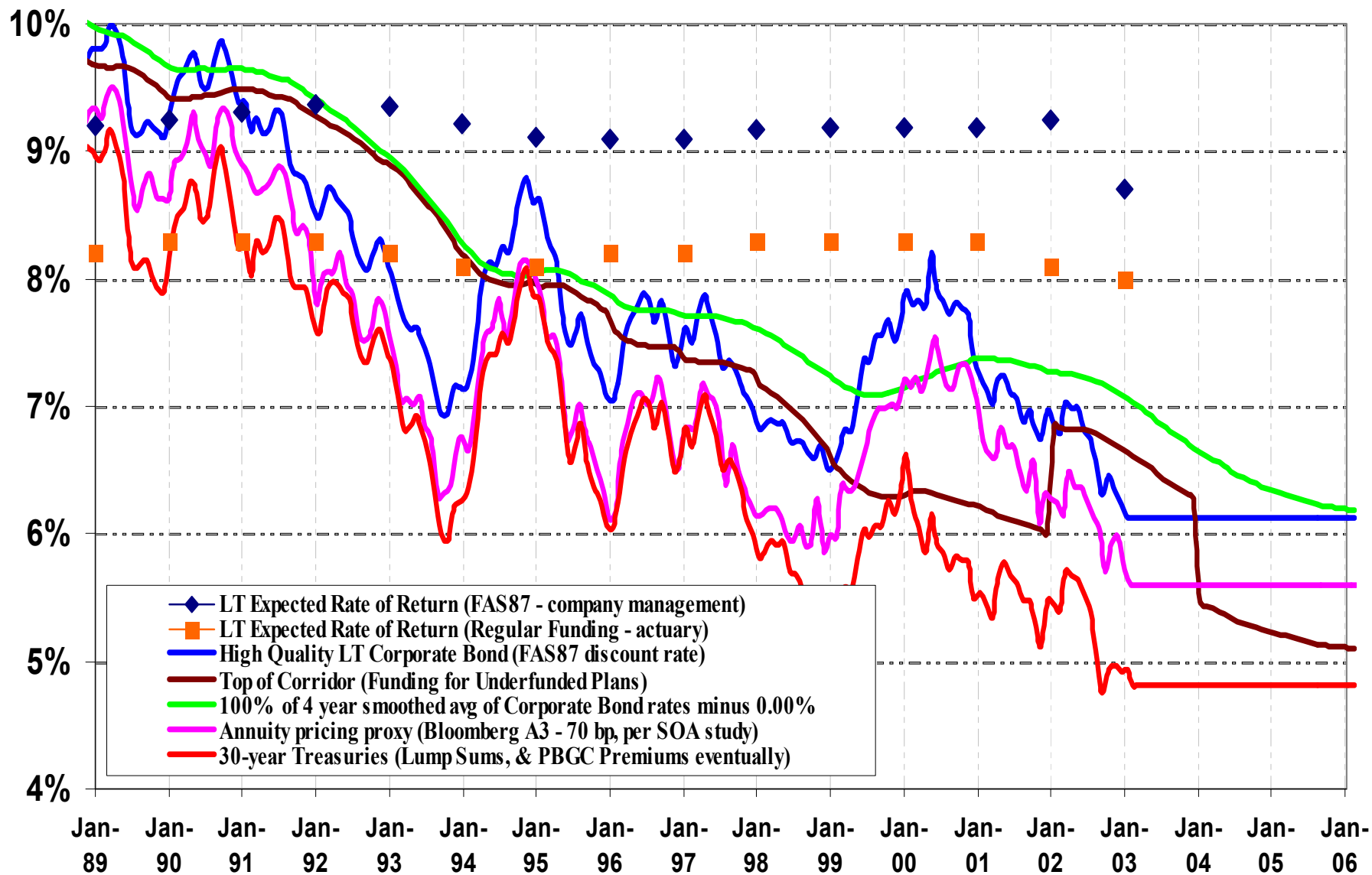
## Should we use Yield Curves?



If no smoothing is used, there are many periods when even the 5-year T-bill rates are quite close to the other rates. Note in the early 1980s, that the yield curve is inverted, and thus, retiree-heavy plans would have had smaller liabilities if yield curves were used. Use of collar mortality can offset use of yield curves.



# Choices for Discount Rates





# Deductible Contributions

- Many sponsors did not contribute in late 1990's
  - Not deductible for some when assets high
  - Must also pay excise tax
- Sponsors got accustomed to not contributing
  - No line in budget for years for pension contribution
  - Plans would be in better shape now if they contributed
- Sponsors understand risk better now & may be willing to contribute more in good years



# Deductible Contributions

- Law could:
  - Allow margin over current liability (e.g., 130% of CL)\*
  - Require/Allow deductible contribution every year = Normal Cost\*
  - Ignore first 6% of contribution to DC plan (if DB contribution >25%)
  - Allow use of assets at end of year (FAS87 unfunded ABO uses that)
  - Allow withdrawals
    - Otherwise, employers still might not contribute, because they would never be able to use \$ if assets do well
    - Only if **very** overfunded
    - Only to other employee benefit plans?
    - If pay excise tax that offsets tax advantage
  - Allow projection of future benefit increases in hourly plans' FFL\*
  - Allow projection of increases in limits

\*Would help multi-employer plans with deduction problems



# Ideas Being Discussed

- Simplify rules
- Reduce contribution volatility
- Restore actuarial judgment (one size fits all isn't always best)
- Preserve underlying objectives of current rules
  - Reduce amortization periods to 15 years maximum
  - Raise thresholds for security from 60% to 70% for increasing benefits
  - No accruals if very underfunded
  - Suspend use of Credit Balance if very underfunded
- Respond to:
  - Underfunding in hourly plans
  - Lump sums defunding pension plans (none if underfunded)
  - Effects of shutdown benefits (none if underfunded)



# TAKING PENSION FUNDING INTO ACCOUNT

---

Mark Beilke, A.S.A., M.A.A.A  
Vice Chair, Pension Accounting Committee,  
American Academy of Actuaries



# Generally Accepted Accounting Principles (GAAP)

- Transparency
- Comparability between companies
- Consistency from period to period
- Matching costs to revenues
- Recognition versus disclosure
- Other rules (e.g., tax accounting) are not prescriptive for GAAP rules
- Promulgated by FASB (independent entity from the government)



# Other Accounting

- SEC requires registrants (i.e., publicly traded firms) to use GAAP
- Non-SEC registrants may need to use GAAP for their bankers, lenders, etc.
- Insurance companies must also follow Statutory Accounting Principles
- Government contractors must also follow Cost Accounting Standards (federal gov.)
- Registrations in other countries must follow that country's "GAAP"



# Pension Accounting History

- (1966) Accounting Principles Board Opinion 8
  - Generally required that the expense equals the contribution; footnote showed present value of accrued benefits and assets (no guidance on assumptions)
- (1981) FASB project on post-employment benefits
  - Did not want to tie expense to contribution; wanted more information in footnotes
- (1984) Split project between pension and other
- (1985) Statement of Financial Accounting Standards Number 87 (SFAS 87)
- (Future) Convergence with international accounting standards



# SFAS 87 & Accounting Principles

- Transparency: Everything is “on the table”
  - But, it may be so arcane that it is not understandable
- Comparability: One methodology required
  - But, assumptions allowed to vary based on individual company environments
- Consistency: Anti-volatility mechanisms
  - Berated as not congruent with transparency and some of them are optionally available (comparability issue)
- Matching: Costs allocated to years of work
  - Major issue being raised by those that feel “marked to market” is more appropriate than matching principle





# SFAS 87 & Accounting Principles

(Cont'd)

- Recognition versus disclosure: Vast amounts of information disclosed in footnotes
  - Additional information being requested by financial statement users (FASB examining currently)
- Tax accounting and cash flow (contributions) have no effect on determination of current cost
  - This is the most misunderstood issue by the press and public. Statements that “they contributed X, and therefore their bottom line is affected by X” and “the expense for the year is Y, therefore their cashflow will need to generate Y contribution this year” are totally false. There is no immediate relationship.



# SFAS 87 Terminology

- Present Value (PV)
  - Expected future payments are discounted with interest and other contingencies (mortality, turnover, etc.) to a current value (also called Actuarial Present Value)
- Projected Unit Credit Method (PUC)
  - Attribution method that assigns PV of benefit accrual (adjusted\* for future contingencies such as retroactive salary effects, but not for future service) to the same year that the benefit is accrued (i.e., no spreading)
    - \* Same adjustments simply described as “adjusted” later
- Service Cost (SC)
  - Amount under PUC assigned to this year; PV of current benefit accrual (adjusted)



# SFAS 87 Terminology (Cont'd)

- Projected Benefit Obligation (PBO)
  - The PV of the benefit accrued (adjusted) to date
- Accumulated Benefit Obligation (ABO)
  - The PV of the benefit accrued (NOT adjusted) to date; akin to the “termination liability”
- Market-related Value of Assets (also known as the “actuarial value of assets”) (MRVA)
  - Market value of assets adjusted to phase-in gains and losses (as compared to the expected rate of return) in prior years (up to five); purely an anti-volatility mechanism to offset short-term fluctuations in markets



# SFAS 87 Terminology (Cont'd)

- Assumptions
  - Contingencies of future events, including the discount rate, expected return on assets, salary projections, mortality, retirement ages, termination rates, disability rates, marriage rates, choice of payout options, lump sum factors in future, CPI, etc.
- Discount Rate (also known as interest rate)
  - The rate that is inherent in an insurance company's valuation of a contract to currently satisfy the liabilities of the plan; specifically allows high-quality (Aa or better) corporate bond rates as a proxy because information on annuity rates is scarce



# SFAS 87 Terminology (Cont'd)

- Expected Long-Term Rate of Return on Assets
  - Given the asset mix and investment philosophy, the expected annual return on assets over the long term; current actual yields on investments irrelevant
- Substantive Plan
  - The structure of the benefits being valued; need not be in a legal document yet, just the decision to provide the benefits determine the substantive plan; expected future law changes may not be recognized, for example, all plans must project that the law reverts back to pre-EGTRRA lower limitations after 2010 because of the sunset provision in the current law



# SFAS 87 Terminology (Cont'd)

- Unrecognized Gain and Loss (G/L)
  - The difference each year of the newly calculated numbers reconciled with the prior numbers (PBO, SC and MRVA) rolled forward using the discount rate and expected return on asset assumptions
- Amortizations
  - (A misnomer in that interest is not recognized.) The allocation to years in the future of an unrecognized amount as a level amount; most amortizations are over average future active service
- G/L 10% Corridor
  - Unrecognized G/L that is less than 10% of the greater of PBO or MRVA may be ignored for amortizations; purely an anti-volatility mechanism and is optional



# SFAS 87 Terminology (Cont'd)

- **Prior Service Cost (PSC)**
  - Changes to the PBO associated with a plan amendment; as it is amortized over future service, the remaining amount at any time is the “unrecognized PSC”
- **Curtailment**
  - A significant reduction of future accruals or plan participants (e.g., layoffs); causes some unrecognized amounts to be recognized immediately (no future service to continue amortizing over)
- **Settlement**
  - The complete satisfaction of an obligation by paying a lump sum or purchasing an annuity contract; causes some unrecognized amounts to be recognized



# SFAS 87 Terminology (Cont'd)

- Additional Minimum Liability (AML)
  - A balance sheet entry at the end of the year if the accrued pension cost (the sum of prior pension costs minus contributions) is not sufficient to cover the ABO minus market value of assets; does not affect annual income statement except in nonprofit organizations
- Intangible Asset
  - A balance sheet entry at the end of the year equal to the portion of the AML attributable to unrecognized PSC
- Other Comprehensive Income
  - The net effect on equity of the AML minus the intangible asset recorded in the balance sheet





# Annual Expense

- NOT equal to the contribution
  - There may be no contribution, but an expense is still calculated
- May be negative (“pension income”)
  - If MRVA exceeds PBO, this is a likely result
- Normally is the annual “Net Periodic Pension Cost” (NPPC)
  - May be different under long-term contracts or other long-term projects that capitalize compensation costs
- Additional annual expense may be due to settlements and curtailments
  - Often reported as part of “extraordinary income” as a part of company restructurings



# Net Periodic Pension Cost (NPPC)

Sum of:

Service cost

Interest cost (discount rate times PBO)

Amortizations of:

- Prior service cost
- Unrecognized G/L (may be positive or negative)
- Transition obligation (PBO when SFAS 87 first applied; typically in 1987 or 1989)

Minus:

Expected return on assets (long-term rate of return on assets times the market-related value of assets)



# Balance Sheet Entries

- Accrued/Prepaid Pension Expense
  - Each year, the NPPC is credited to this account and then debited with contributions to the plan. If accumulated result is positive, it is an Accrued Pension Expense (a liability); if negative, it is a Prepaid Pension Expense (an asset)
- Additional Minimum Liability (AML)
  - If the ABO > market value of assets, the total liability in the balance sheet must reflect this difference; some may already be covered by an Accrued Pension Expense and the AML is the difference; however, if there is a Prepaid Pension Expense, the AML is the sum of the Prepaid and the difference in ABO and MV



# Example From 12/31 News

- Prepaid Pension Expense = \$7 Billion
- ABO minus MV of assets = \$3 Billion
- If nothing is done, the AML is \$10 billion, which would be a “noncash” charge to equity (which represented a majority of the firm’s equity)
- Instead, the company contributed \$3 billion to avoid having a balance sheet adjustment of AML
  - The \$3 billion contribution is only a shift between cash and prepaid pension expense; no effect on equity (unless some of it is contributed in stock instead of cash) and no effect on annual expense
- There was no requirement to contribute anything



# Other Newsworthy Issues

- At the end of 2002, many large charges to equity
  - What is never described in these stories is that these charges will be reversed once assets  $>$  ABO, either through contributions, better experience (particularly asset returns) and/or higher interest rates
- At the end of 2002, some large contributions
  - Most of these were not required contributions; they were only trying to manage the AML charges to equity
- Pension income generated in 2002 even though some were underfunded
  - A result of the five-year smoothing of MRVA, still recognizing excess asset gains in previous years that had not been recognized yet



# Other Newsworthy Issues (Cont'd)

- Pension income generated in recent years even though funds had negative returns on assets
  - The NPPC is determined based on expected return, not actual return; the difference with actual return is a G/L amortized over future working lifetimes
- “Marked-to-market”
  - Two levels of marked-to-market at issue; first is the five-year smoothing of assets to arrive at MRVA along with the 10% G/L corridor, both of which are purely anti-volatility mechanisms; second is more serious issue of recognizing all changes immediately, example:



# Marked-to-Market Accounting Versus Matching Principle

- Assume PBO = 100 and assets = 55 with the difference allocated to 15 future years of service, or 3 per year
- The following year, the difference between PBO and assets is 28 (instead of the expected 42), by unexpected changes in either the PBO or assets
- Should the allocation be 2 per year over the remaining 14 future years of service?
  - Matching principle
- Or, should we recognize a 14 gain immediately and continue to allocate 3 per year in the future?
  - Marked-to-market approach



# Alternative Descriptions

- Recognizing costs over the time period that the services from the employee are rendered versus recognizing all changes immediately is also known as a “long-term view” versus a “current view” of pension accounting.
- Note that no matter what the accounting approach is used, the total expense recognized by the time the benefit is paid is the same – all of this discussion is purely an issue of timing...do we recognize it sooner or later? The FASB’s view has been to allocate the recognition over the period that the services are rendered by the employee.





# Future

- At the FASB, there is a current project to look at whether additional information should be disclosed in the footnote; but no project to change the allocation of costs
  - Issues include: contribution projections, asset mix, investment philosophy, sensitivity to assumptions, etc.
- Numerous other countries are moving towards adopting International Accounting Standards
  - The EU is expected to converge by 2005
  - The FASB is expected to converge soon thereafter



# International Accounting Standards

- IAS 19 (pensions) is very similar to SFAS 87
- However, it is expected that the IASB will, within the next few years, change IAS 19 to look more like FRS 17, Great Britain's future standard
  - FRS 17 is a complete marked-to-market approach
  - However, the overall accounting structure is different: there are different portions of annual earnings, split into operating earnings, financing costs, and all other.
  - In order to apply a FRS 17 approach in this country, the structure of reporting earnings would need to change
    - The FASB is looking at making this change, known as a change to reporting “comprehensive income” rather than net income



# TAKING PENSION FUNDING INTO ACCOUNT

For Additional Information/Questions:

Heather Jerbi

Pension Policy Analyst

American Academy of Actuaries

1100 17<sup>th</sup> Street, N.W. Suite 700

Washington, D.C. 20036

202-223-8196

[www.actuary.org](http://www.actuary.org)

