# The Pension

# *Forum*

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## ADJUSTMENT ASSET SMOOTHING TECHNIQUE

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# An Index Adjustment Asset Smoothing Technique

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*Abstract: In this paper we will present an asset smoothing technique where the asset values are adjusted based on reasonable investment indices. Using this technique with carefully selected indices allows a plan sponsor to invest a pension portfolio aggressively, yet without concern that unexpected market shifts could cause material changes in the pension expense or contribution requirements.*

## Background

Actuaries and accountants, in consultation with plan sponsors, have often used asset-smoothing techniques in determining the market related actuarial value of a plan's assets for FAS 87 or other pension actuarial calculation purposes. The natural reason offered for using such a technique is to avoid some of the market swings which can occur if the full impact of investment gains or losses are recognized each year. Traditionally, the most common asset smoothing techniques have employed some sort of rolling average of gains or losses. This allows losses incurred in one year to be offset by gains in another, producing a less volatile asset build up. Frequently these gains or losses have been measured against a rather simplisticly determined expected asset value.

## The Basic Concept

However, some plan sponsors might want to consider a new asset smoothing technique, one which is designed to recognize the various components of asset gains or losses. For each asset class, the projected value would be determined using a reasonable index for that asset class. The difference between the projected assets and the actual market value would be smoothed over a fixed period, such as five years.

This method may provide for more effective smoothing of pension plan asset values, and may be superior to the traditional techniques because it provides for the partial recognition of the various different components of expected gains or losses on assets. Recognition of these *expected* gain or loss components will help the plan's actuarial asset value stay better aligned with the anticipated market values, smoothing out unanticipated market value swings.

## Description of the Method

The following is a more detailed general description of the asset method.

1. A preliminary expected market value of assets is determined. This result is based on the prior year's actuarial asset value, plus actual contributions, plus expected investment income less actual distributions. The expected income component would be determined using a reasonable index which reflects the various assets actually invested. For example if the funds consisted of 50% bond investments and 50% stock investments, 50% of the index could be based on the KL Bond Index change for the year, and 50% of the index could be based on the S&P 500 Index for the year. The resulting index would be used to derive the expected investment income.

2.  The unexpected gain/loss for each year is then determined by taking the difference between this expected market value and the actual market value of assets.

3.  The unexpected gain or loss is spread out over a period of years not to exceed five years. For example, the unrecognized asset gain could be set as 2/3 of the current year's unexpected gain plus 1/3 of the previous year's unexpected gain.

4.  The actuarial value of assets is then set at the actual market value of asset less the unrecognized asset gain.

5.  If desired, and in order to meet IRS requirements, the result in step 4 may then adjusted, if necessary, to be sure that it falls within a corridor of plus or minus 20% of the actual market value.

## Sample Calculation

The asset method is illustrated in the following sample calculation.

|  | **1995** | **1996** | **1997** |
|---|---|---|---|
| Actual Index Adjustment (50% KL Bond Index + 50% S&P Index changes) | N/A | 8.0% | 16.0% |
| Actual Market Value of Assets (12/31) | $1,000 | $1,000 | $1,300 |
| Contributions for Year | N/A | $75 | $75 |
| Disbursements for Year | N/A | $70 | $80 |

Determination of Actuarial Value of Assets:

|  | 1996 | 1997 |
|---|---|---|
| 1. Preliminary Expected Value | | |
| a. Last Year's Value | $1,000 | $1,057 |
| b. This Year's Index | 8.0% | 16.0% |
| c. Preliminary Expected Investment Income (a. x b.) | $80 | $169 |
| d. Actual Contributions | $75 | $75 |
| e. Actual Disbursements | $70 | $80 |
| f. Expected Asset Value (a. + c. + d. − e.) | $1,085 | $1,221 |

| | | **1996** | **1997** |
|---|---|---|---|
| 2. | Unexpected Gain (Losses) for Yr. ((Market Value)-1.) | (85) | 79 |
| 3. | Unrecognized Gain (Loss) | | |
| | a. 2/3 Current Year | (57) | 53 |
| | b. 1/3 Prior Year | N/A | (28) |
| | c. Total | (57) | 25 |
| 4. | Actuarial Value of Assets ((Market Value) - 3.) | $1,057 | $1,275 |
| 5. | Corridor Adjustment (If Desired) | | |
| | a. Low value: 80% x Market Value | 800 | 1,040 |
| | b. High value: 120% x Market Value | 1200 | 1,560 |
| | c. Adjustment necessary | -0- | -0- |

## Comments

The method appears as if it would be quite advantageous to sponsors who wish to "immunize" their pension portfolios against changes in bond yield rates. Certainly one way to immunize such a portfolio would be to actually invest the pension fund assets in bonds. While this would protect the sponsor against yield rate changes (if yield rates drop, the value of the portfolio rises), it would do so at great long-term expense. The sponsor would not be able to invest in potentially higher yielding equity investments.

Using an Index Adjusted Asset Smoothing Technique, the sponsor could fully invest the pension portfolio in equity securities, yet still be protected against bond yield rate changes. To accomplish this goal, the Index for the fund (specifically chosen because of the 100% equity nature of the fund) would be defined as the change in the KL Bond Index plus 5.4%. The 5.4% factor was determined as the difference between the 5.8% rate of return average for long-term corporate bonds (1926-1998) and the 11.2% rate of return average for large company stocks. (Both average return factors are taken from Stocks, Bonds, Bills and Inflation—*1999 Yearbook*). Using this index would allow an equity portfolio to reflect bond-yield rate changes that would be consistent with such changes in a bond portfolio.

Another possible use of the method is for sponsors who are concerned about fluctuation in the equity markets. In this case the index for the equity portfolio could be set at its long term average (11.2%), or at current bond yields plus a historical difference. Either index approach would tend to significantly dampen the effects of equity fluctuation.

## Summary

Using an index adjustment asset smoothing technique enables plan sponsors to use an actuarial value of assets which more closely tracks the plan's anticipated actual market value, adjusted for potential factors such as bond yield rate changes. While the numerical illustration presented above was completed using a 50/50 weighting of two outside market adjustment indices, it is anticipated that other reasonable weightings and other reasonable long-term indices would also be acceptable, as long as they reflected the actual assets of the investment portfolio.