PENSION MATHEMATICS
with Numerical Illustrations

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Howard E. Winklevoss, Ph.D., MAAA, EA
President
Winklevoss Consultants, Inc.

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Chapter 16

Funding and Accounting for Retiree Health Benefits

The funding and accounting for retiree health benefits is an important subject for many corporations. Although the focus of this book is on defined benefit pension plans, retiree health benefits is an ideal application of the actuarial concepts and mathematics presented in previous chapters.

Many corporations provide health benefits and, sometimes, life insurance benefits to employees in retirement. Unlike pension plans, where advance funding and accrual accounting have been required for decades, retiree health benefits have been funded and accounted for on a pay-as-you-go basis by nearly all employers. The increase in the number and percentage of retired employees, plus the persistent increases in health care costs, ranging from 10 to 25 percent per year, have created a financial burden for many companies. The cost associated with recovering from decades of funding and accounting on a pay-as-you-go basis will create an even more substantial financial burden in future years.

Unlike qualified pension plans, there is no legal requirement to prefund retiree health benefits. Moreover, the ability to advance fund retiree health liabilities with tax deductible contributions and tax-deferred interest earnings on plan assets was significantly curtailed by the passage of the Deficit Reduction Act (DEFRA) in 1984. Even with this constraint, however, employers can fund a substantial portion of this liability, yet there has been little movement in this direction. The one exception to this practice is employers that can pass the cost of prefunding on to their customers (e.g., utilities and government contractors).

In December of 1990, the FASB promulgated SFAS 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions*, generally effective for fiscal years beginning after December 15, 1992. This accounting standard, whose form is similar to SFAS 87 for defined benefit pension plans, requires that employers adopt accrual accounting for retiree life and health benefits, as well as other non-pension benefits. The required adoption of SFAS 106 has caused many employers to rethink both the types and amounts of health benefits provided in retirement and the feasibility of prefunding.

This chapter covers both the funding and accounting aspects of retiree health benefits. First, however, the economic liability and cost of these benefits are set forth as background for the funding and accounting discussions.

ECONOMIC LIABILITIES AND COSTS

Health Benefits Cost Function

The starting point in formulating the economic liabilities and costs of retiree health benefits is to determine the total expected cost of such benefits at age x, which can be represented by the following:

$$^{Total}C_x = {}^{Hosp}C_x + {}^{Phy}C_x + {}^{Lab}C_x + {}^{Drgs}C_x + {}^{Other}C_x \qquad (16.1)$$

where

$^{Total}C_x$ = total expected health benefit costs at age x

$^{Hosp}C_x$ = expected hospital costs

$^{Phy}C_x$ = expected physician costs

$^{Lab}C_x$ = expected laboratory costs

$^{Drgs}C_x$ = expected prescription drug costs

$^{Other}C_x$ = expected other charges (e.g., nursing home costs).

It is assumed that the health benefits cost associated with any spouse or other dependent coverage is included in (16.1) even though the equation is expressed in terms of an individual age x.

The employer's cost is reduced by: (1) payments made by the employee under the provisions of the plan (e.g., deductibles, co-payments, annual maximums, lifetime maximums, and/or employee contributions), (2) Medicare reimbursements (Part A provides funds related to hospital charges; Part B provides funds related to physician and other costs), (3) Medicaid reimbursements (which provides funds for long-term nursing care as opposed to acute care), and (4) reimbursements through coordination with other insurance carriers. Thus, the employer's cost of health benefits is as follows:

$$^{ER}C_x = {}^{Total}C_x - {}^{EE}C_x - {}^{MC}R_x - {}^{Other}R_x \qquad (16.2)$$

where

$^{ER}C_x$ = employer's expected health benefits cost for employee age x (minimum of 0)

$^{EE}C_x$ = employee's expected cost and/or contributions at age x

$^{MC}R_x$ = expected reimbursements from Medicare

$^{Other}R_x$ = expected reimbursements from other governmental programs and/or other private insurance programs.

There are three basic methods used to integrate Medicare reimbursements under a health care plan. The employer's cost for each method is given below.[1]

Carve-Out Method:

$$^{ER}C_x = {}^{ER}(CP)_t\left[{}^{Total}C_x - D_t\right] - {}^{MC}R_x - {}^{Other}R_x \qquad (16.3a)$$

Exclusion Method:

$$^{ER}C_x = {}^{ER}(CP)_t\left[{}^{Total}C_x - D_t - {}^{MC}R_x\right] - {}^{Other}R_x \qquad (16.3b)$$

[1]These formulas assume the underlying benefit plan is a simple comprehensive type plan with an up front deductible, constant coinsurance percentage paid after the deductible and no employee contributions. Although not explicitly stated, the minimum value in each case is zero.

Coordination Method:

$$ {}^{ER}C_x = Min \left\{ \begin{array}{c} {}^{ER}(CP)_t \left[{}^{Total}C_x - D_t \right] \\ {}^{Total}C_x - {}^{MC}R_x \end{array} \right\} - {}^{Other}R_x \qquad (16.3c) $$

where

D_t = employee deductible in year t

${}^{ER}(CP)_t$ = employer copayment fraction (e.g., 80%).

Of these three methods, the carve-out method produces the lowest employer costs, while the coordination method produces the highest costs.

Actuarial Assumptions

All of the actuarial assumptions defined previously for pension plans are applicable to valuing retiree health benefits, except for any assumptions used in projecting Social Security benefits for integrated formulas. The financial impact of the various actuarial assumptions for retiree health benefits, however, may be different from the impact on pension plans, and there are a number of assumptions associated with projecting retiree health benefits that are not applicable to pension plans.

Decrement Assumptions. The four decrement assumptions are mortality, termination, disability, and retirement rates. Mortality rates for pension plans prior to retirement reduce retirement related liabilities but increase the liability associated with any lump-sum or survivor income benefits. Death benefits for active employees are not applicable in valuing health benefits; hence, pre-retirement mortality affects such liabilities more directly. On the other hand, if the plan provides health benefits to surviving spouses, then the liability reduction due to mortality would not be as great.

After retirement, mortality rates at older ages (e.g., beyond age 75) become relatively insignificant for pension liabilities because the value of the fixed (non-inflation adjusted) benefit is reduced substantially by the interest assumption. The interest factor for health benefits, however, is offset in part, or more than offset, by the increase in such benefits; hence, the benefits payable at older ages are more significant in the present value calculation than is the case for pension benefits. This implies

that mortality rates at older ages are more important in valuing retiree health benefits than pension benefits.

Termination rates reduce retirement-related liabilities for pension plan valuations; however, vested termination benefits offset a portion of this reduction. Most retiree health benefit plans do not provide benefits to vested terminated employees after they reach retirement age; hence, termination rates affect health benefit liabilities more directly than pension liabilities.

Disability rates operate in the same manner as mortality and termination rates for pension valuations if the pension plan provides disability benefits. Such rates can either reduce or increase the plan's liabilities, depending on the nature of the disability benefit. Whereas the disability benefit is equal to or less than the retirement benefit for pension plans, this is not the case for health benefits. Such benefits are typically substantial for disabled employees. If such employees, prior to retirement, are considered members of the retiree health benefits plan, as opposed to members of the plan for active employees, then the disability assumption can be significant. For employers with significant retiree health benefits for disabled participants, the use of a disabled life mortality table that includes recovery from disability can be an extremely important assumption.

Retirement rates are much more critical for health benefit valuations than for retirement benefit valuations. Pension benefits are generally reduced for early retirement because of the service-related formula used by most plans and because benefits are often additionally reduced (by formula or actuarially) for retirement prior to the plan's defined normal retirement age. This is not the case for health benefits and, in fact, health benefit liabilities are substantially higher at retirement ages below 65 since Medicare reimbursements do not commence until that age.

Economic Assumptions. The primary economic assumptions for pension plans are the salary and interest rates. A salary assumption is not required in determining health benefit liabilities; however, it may be required for allocating such liabilities throughout the employee's active working lifetime in determining the plan's economic liability and, depending on the actuarial cost method used, it may be required in determining the statutory limits on tax deductible contributions.

The interest rate assumption for valuing pension plans will vary, depending on whether the economic, statutory, or account-

ing liabilities and costs are being calculated. The same is true for retiree health benefit liabilities; however, for economic and statutory calculations, an after-tax rate may be the appropriate assumption if investment returns on prefunding are taxed.

Inflation and Utilization. Each element of (16.1) must be projected for inflation and utilization in estimating the future health benefit costs applicable throughout retirement. Generally, the inflation assumption will decrease over a period of 10 to 20 years, beginning with a rate in the 10 to 15 percent range and ultimately reaching a level in the 5 percent range. This is an extremely important assumption and is generally based more on judgment than historical trends.

The utilization factor is three-dimensional: it includes gender, age, and time. Males in retirement tend to have higher health care utilization than females at the same age, and health care utilization increases with age for both males and females. The time dimension itself is two-dimensional: it includes technological changes and behavioral changes. Utilization may change in future years, increasing or decreasing, because of technological advances. The behavioral dimension reflects future changes in the propensity of retired employees to access health care services. Again, this assumption can be used to project either increases or decreases in utilization, and it is not necessarily independent of technological changes.

Employee Costs. Turning to equation (16.2), assumptions are required regarding any employee costs that reduce the employer costs of health benefits. For example, if the plan provides for employee contributions, then an assumption may be required to project future contributions, unless contributions are expressed as a percent of the employer's aggregate costs, in which case a separate assumption may not be required. If the plan currently provides for fixed contributions that are expected to be increased on an *ad hoc* basis, then it is appropriate to make such an assumption for determining the plan's economic liability and costs. Since contributory retiree health plans are elective on the part of retirees, some employees will not elect coverage, especially if they have benefits under a spouse's program. Consequently, a participation rate must be assumed with such plan designs. The participation rate may vary over time if the retiree's share of total plan costs is expected to change.

Similarly, if the plan provides for a fixed-dollar deductible that is expected to be increased periodically, then such an increase assumption is relevant. The same can be said for annual or lifetime maximums and, for that matter, copayment percentages, although the latter generally remains fixed (typically in the 80 percent range).

Medicare Reimbursements. The projection of future Medicare reimbursements in (16.2), or other governmental programs, also requires assumptions. While the relevant component increases in (16.1) represent the basis for projecting future cost reimbursements, an additional assumption reflecting a shift in costs from government programs to private employers (or vice versa) should be made. Typically, the Medicare reimbursements assumption will be somewhat less than the trend in health benefit costs, at least for a number of years. However, for Medicare eligible retirees, a large portion of their costs are controlled by Medicare through limits placed on physician and hospital billing. Therefore, this portion of plan costs can be expected to increase at the same rate as Medicare. If the employer pays the employee's Part B premium, then a premium increase assumption is required. This would typically equal the Medicare trend assumption, less any expected cost shifting from government programs to retirees.

If the plan provides for surviving spouse coverage or dependent coverage, additional assumptions are required. For example, the probability of having a spouse, and the probability that coverage under a contributory plan will be elected, must be estimated. In the case of dependent coverage, the probability of having dependents and the duration of such coverage (generally limited to a specified age) must be estimated.

Naturally, there may be other assumptions needed, depending on the nature of the health benefit program. The point, however, is that each component affecting the employer's cost of future retiree health benefits must have a corresponding assumption if the liabilities and costs of the program are to be properly valued.

Economic Liabilities

Assuming that the health benefit cost function is defined and projected with the appropriate assumptions, determining the economic liability is a straightforward application of the actuar-

ial mathematics presented previously. The economic liability for an employee in retirement at age x is given by (16.4), where benefits are adjusted with interest to the end of the year:

$$ {}^{HB}a_x = \sum_{t=0}^{\infty} {}^{ER}_{t}C_x \; {}_tp_x^{(m)} \; v^{t+1} \qquad (16.4) $$

where

$ {}^{ER}_{t}C_x $ = employer's expected health benefits cost at age $x + t$ for a retiree currently age x.

The economic liability for an active employee is found by prorating the present value of future benefits to the age in question. This PVFB function for an employee age x is given by

$$ {}^{HB}(PVFB)_x = \sum_{k=m}^{r''} {}_{k-x}{}^{r}p_x^{(T)} \; q_k^{(r)} \; v^{k-x} \; {}_{k-x|}{}^{HB}a_x \qquad (16.5) $$

where

m = the greater of r' or x

${}_{k-x|}{}^{HB}a_x$ = deferred health benefits annuity, as defined in (16.4) at the point of retirement, with the deferral period reflecting increases in the employer's health benefits cost from age x to each specific retirement age, but not reflecting decrements and interest, which are explicit in (16.5).

The economic liability is equal to (16.5) with a salary proration factor included:

$$ {}^{HB}(EL)_x = \sum_{k=m}^{r''} {}_{k-x}{}^{r}p_x^{(T)} \; q_k^{(r)} \; v^{k-x} \; \frac{S_x}{S_k} \; {}_{k-x|}{}^{HB}a_x . \qquad (16.6) $$

As noted previously in discussing the economic liability of pension benefits, the salary-based proration is a logical choice if benefits in retirement, whether pension or health, are viewed as deferred wages. Nevertheless, some employers may wish to define the economic liability as a service proration, in which case the salary fraction in (16.6) would be replaced by $(x - y)/(k - y)$.

Economic Costs

Economic costs can be estimated either deterministically or stochastically, as described in the Target Cost Methodology section of Chapter 14 for pension plans. The plan sponsor selects a funding period, such as 20 years, and a cost pattern, such as a level percent of payroll. With these objectives established, the deterministic approach involves the calculation of a level percentage of payroll that will accumulate assets (either "hard" assets or accounting assets) to the economic liability by the end of the planning horizon.

The stochastic approach involves a distribution of level cost percentages that will accumulate assets to a distribution of economic liabilities by the end of the planning horizon. The employer can then select the target cost corresponding to a desired confidence level that assets will equal or exceed the economic liability by the end of the planning horizon.

Numerical Illustrations

Figures 16–1 and 16–2 show a sensitivity analysis of the economic liability and costs, respectively, for retiree health benefits. The plan design and actuarial assumptions used in the base case are set forth in Table 16–1. The health benefit costs and Medicare reimbursements are shown in Table 16–2, with all values expressed as a percent of the gross costs for females in the 55 to 59 age bracket.

Figure 16–1 indicates that a uniform 2 percentage point change in health benefits and Medicare trends has a dramatic impact on the economic liabilities, and Figure 16–2 shows that the percentage effect on economic costs is even greater. If only the health benefits trend is changed while holding the Medicare trend constant, the impact on liabilities and costs is somewhat larger. On the other hand, a 2 percentage point change in the Medicare trend itself has a reasonably modest impact, falling in the 10 to 20 percent range.

A 2 percentage point change in the interest rate assumption is, of course, significant and similar to the impact that such a change would have on pension plan costs and liabilities. Al-

TABLE 16–1

Retiree Health Benefit Plan and Assumptions

Plan Design	
Coverage:	Retirees and surviving spouses
Eligibility:	Age 55 and 10 years of service
Employee Contributions:	None
Employee Deductible:	$200 per year
Employee Copayment:	20%
Employee Maximums:	None
Medicare Integration:	Carve-out method
Decrement Rates	Same as those used with model pension plan
Economic Rates	
Salary Rate:	5% plus Merit (Table 2–10)
Interest Rate:	8%
Health Benefit Inflation:	10% grading down to 6% over 10 years
Medicare Inflation:	7% grading down to 5% over 10 years
Utilization:	5% grading down to 1% over 10 years
Demographic Assumptions:	80% married; females 3 years younger than males
Participation Rate	100%

TABLE 16–2

Health Benefits Cost Function
(As Percent of Gross Costs for Age 55 to Age 59 Females)

Age	*Gross Costs*		*Medicare Offsets*	
Range	*Male*	*Female*	*Male*	*Female*
55 to 59	105	100	0	0
60 to 64	130	120	0	0
65 to 69	145	130	55	55
70 to 74	155	140	65	65
75 to 79	165	150	75	75
80 to 84	175	160	85	85
85 to 89	185	170	95	95
90 & Over	195	180	95	95

though the effect on the economic liability is about the same as an equal, but opposite, change in the health benefits trend, economic costs are less sensitive to interest rate changes than to health benefits trend changes. The three plan design changes analyzed in Figures 16–1 and 16–2 have a comparatively small impact on liabilities and costs, falling in the 10 to 15 percent range.

FIGURE 16–1
Economic Liability Sensitivity Analysis

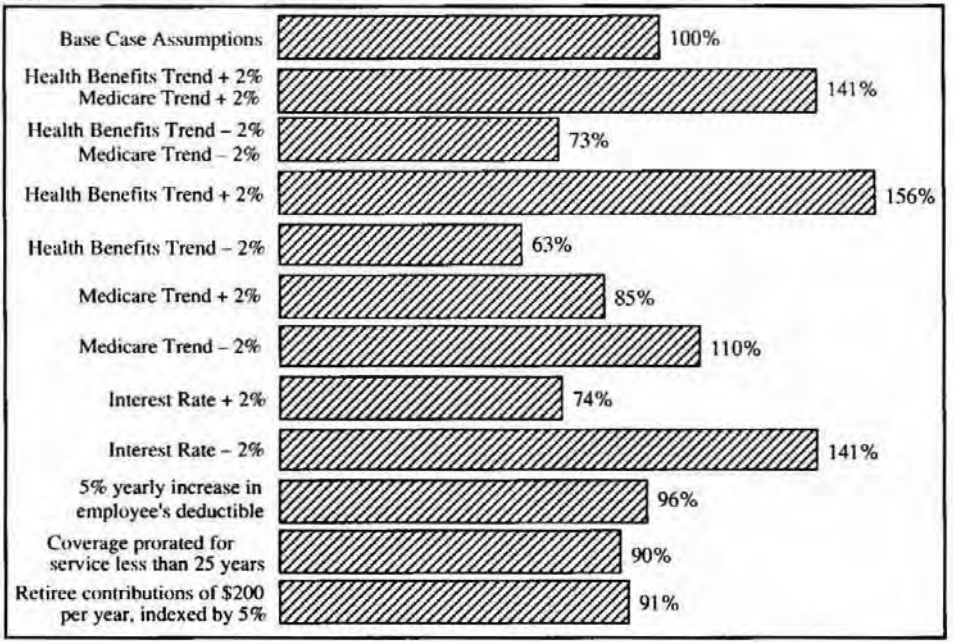
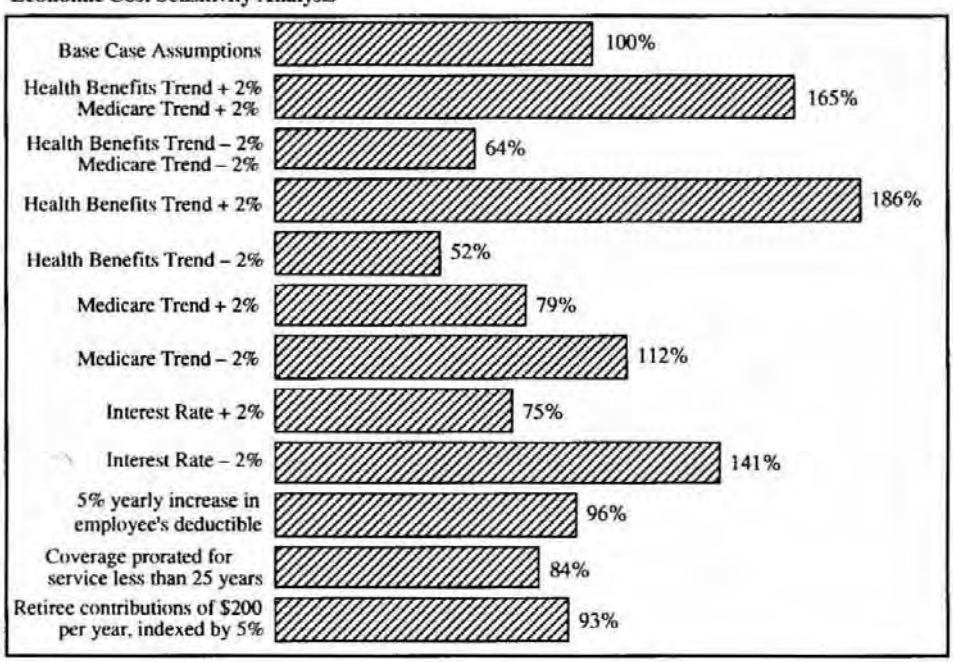


FIGURE 16–2
Economic Cost Sensitivity Analysis



FUNDING LIMITS

A Voluntary Employees' Beneficiary Association (VEBA) can be created for the establishment of a §501(c)(9) trust to prefund retiree health benefits.[2] VEBAs established for health benefits created under a collective bargaining agreement can be funded in essentially the same manner as qualified pension benefits, namely, with tax deductible contributions and tax-free interest earnings on trust assets. DEFRA placed limits on the prefunding of non-collectively bargained VEBAs by not allowing health care inflation to be used in projecting future health benefits for determining the funding liability, and by requiring the employer to pay tax on investment earnings, known as Unrelated Business Income Tax (UBIT).

Section 419 of the IRC sets forth the tax deductible contributions as follows:

$$(DC)_t = (QDC)_t + (\Delta QAA)_t - (ATI)_t \qquad (16.7a)$$

where

$(DC)_t$ = tax deductible contributions in year t

$(QDC)_t$ = *qualified direct cost* in year t

$(\Delta QAA)_t$ = addition to a *qualified asset account* in year t, subject to the limitations of § 419A

$(ATI)_t$ = after-tax income in year t.

Qualified direct costs are equal to the benefits paid to plan members during the year plus related administrative expenses. A *qualified asset account* represents assets set aside to provide for the payment of health benefits. Tax deductible additions to this account are limited by §419A to (1) the amount reasonably and actuarially necessary to fund health claims incurred but unpaid as of the end of the taxable year plus related administrative expenses and (2) a reserve funded over the working lives of covered employees and actuarially determined on a level basis (using assumptions that are reasonable in the aggregate) to provide postretirement health benefits (determined on the basis of current health benefit costs). Finally, the after-tax income in (16.7a) is

[2]Alternatively, an irrevocable trust can be established to prefund postretirement medical benefits which, under some circumstances, may be preferable to a §501(c)(9) trust.

defined as realized gross income (net of related expenses) less the Unrelated Business Income Tax (UBIT): [3]

$$(ATI)_t = (NRI)_t - Tx\,(NRI)_t$$
$$= (1 - Tx)\,(NRI)_t \qquad (16.7b)$$

where

$(NRI)_t$ = net realized income in year t

Tx = UBIT, equal to 31 percent federal tax rate plus applicable state tax.

Substituting (16.7b) into (16.7a) and representing qualified direct costs by the familiar B_t function, we have

$$(DC)_t = B_t + (\Delta QAA)_t - (1 - Tx)\,(NRI)_t. \qquad (16.7c)$$

The safe harbor limit on the qualified asset account is 35 percent of the prior year's qualified direct costs, or B_{t-1}. Thus, the annual additions to the account can be defined as

$$(\Delta QAA)_t = [.35\,B_{t-1} - (Assets)_t]. \qquad (16.7d)$$

The funding of retiree health benefits, however, can be based on a reasonable and consistently applied actuarial cost method, taking into account experience gains and losses, changes in assumptions, and other similar items, but can be no more rapid than funding on a level basis over the remaining working lifetimes of the current participants (reduced on the basis of reasonable turnover and mortality assumptions).

Since health care inflation is not permitted, selecting a funding method with the largest acceptable actuarial liability would help to offset this limitation. The actuarial liability under the level dollar cost prorate method (entry age normal method), or some variation of this method, would be the logical choice. The unfunded liability under this method is determined on an employee-by-employee basis and can be amortized over each employee's future working lifetime. This approach, which uses implicit supplemental costs, is known in pension funding as the individual level premium method. This method, which requires that assets be allocated to each plan member, is perhaps the most effective means of developing a large maximum tax deductible

[3] If the plan has employee contributions, such contributions would be added to (16.7b), which in turn is used as an offset to the tax deductible contributions otherwise determined.

contribution. A variation of this method, sometimes referred to as the *individual aggregate method*, is defined as follows:

$$(\Delta QAA)_x = \frac{{}^{HB}(PVFB)_x - (Assets)_x}{\ddot{a}^{T}_{x:\overline{r-x}|}} \qquad (16.8a)$$

where

$(\Delta QAA)_x$ = addition to qualified asset account for employee age x

${}^{HB}(PVFB)_x$ = present value of future health benefits (without health care inflation) for employee age x

$(Assets)_x$ = assets allocated to employee age x, with allocation proportional to ${}^{HB}(PVFB)_x$

$\ddot{a}^{T}_{x:\overline{r-x}|}$ = temporary, employment-based, annuity running from attained age x to retirement age r.

This method not only meets the requirements of §419A but generates the largest contribution based on conventional actuarial cost methods. Annual actuarial losses associated with health care inflation, as well as other gains and losses, are amortized from the employee's attained age to retirement under this method. However, since §419A does not specify how actuarial gains and losses are to be treated, it may be possible to fund such losses immediately.

The amortization of the unfunded liability over "working lifetimes" is not well defined for non-active plan members. One interpretation is that the working lifetimes of actives are to be used for the unfunded liability of non-actives. A second possibility is that all VEBA members can be used, with zeros included in the average for the "working lifetimes" of retired members. In either case, an aggregation of the liability is required, and the corresponding contribution component would likewise involve an aggregate calculation. The frozen entry age method or the aggregate method, as defined in Chapter 10, could be used as a funding method for meeting these interpretations. However, since the §419A funding limitation does not require that the actuarial methodology combine plan members in making the calculation, a third interpretation is that the retiree liability can be funded, and deducted, in one year, since their "working

lifetimes" is zero. In fact, the use of any individual-based cost method argues for this interpretation.

When (16.8a) is substituted for the first two terms in (16.7c), the tax deductible contribution is equal to

$$(DC)_t = \left[\sum \frac{{}^{HB'}(PVFB)_x - (Assets)_x}{\ddot{a}^{T}_{x:\overline{r-x}|}} \right] - (1 - Tx)\,(NRI)_t \quad (16.8b)$$

where the summation sign indicates a summation over all plan members.

A constraint on the application of (16.8b), or any funding method, is a full funding limit. The maximum tax deductible contribution is constrained by the qualified asset account limit:

$${}^{QAA}(FFL)_{t+1} = Max \left\{ \begin{matrix} (AL)_{t+1} - (Assets)_{t+1} \\ 0 \end{matrix} \right\} \quad (16.9)$$

where

${}^{QAA}(FFL)_{t+1}$ = full funding limit based on qualified asset account, applicable at end of year t (represented as $t+1$)

$(AL)_{t+1}$ = actuarial liability at end of year t

$(Assets)_{t+1}$ = assets at end of year t.

The actuarial liability under the cost prorate method (entry age normal method) would be used if the funding method used in determining the maximum tax deductible contribution were the individual aggregate method.

Some experts believe the DEFRA requirement that health care inflation not be used in determining tax deductible contributions does not preclude the use of a utilization assumption over and above utilization based on age and gender. If this interpretation is valid, a utilization assumption would increase the qualified funding limit and, hence, the tax deductible contributions.

Alternative VEBA Investments

The UBIT on trust earnings could be eliminated by investing trust assets in financial instruments not subject to taxation. Two choices are available: (1) tax-free municipal bonds and (2) life insurance cash values. The yields on municipal bonds, to a large

extent, are discounted in the marketplace because of their tax-free nature; hence, this choice produces low long-run expected returns.

The second choice is to invest in life insurance cash values. Investment earnings are not taxed and, if the policy is held until the death of the insured, such earnings are paid to the trust as tax-free death proceeds. Some insurance companies have developed financial instruments with the following characteristics to act as "wrappers" for VEBA assets.

- ***Separate Accounts***: VEBA assets are placed into a separate account, apart from the insurance carrier's general account. This eliminates the insurance company credit risk, since separate account assets cannot be attached by the carrier's general creditors in the event of insolvency.
- ***Asset Allocation***: A derivative of using separate accounts is that the VEBA trustee can make the asset allocation decision. Thus, plan assets can be invested in a manner similar to pension assets, with as high an equity exposure as dictated by the trustee. This is in contrast to having assets invested in the carrier's general account which consists primarily of fixed-income and real estate investments.
- ***Group Insurance Contracts***: Most carriers have developed group insurance contracts, as opposed to individual policies, for receiving VEBA assets. This allows carriers to provide differential pricing to VEBA trusts of different size, and to set the insurance company expenses at a level reflecting the purpose of the transaction. In addition, group contracts allow experience rating (i.e., if death payments during the year are less than the funds held back for this purpose, then the separate account is credited for the difference; similarly, if such holdbacks are inadequate, the separate account is charged for the shortfall in the following year).

A threshold issue for the use of this investment vehicle is whether or not the VEBA has an insurable interest in the lives of its members. The common law definition of insurable interest is that the owner of the policy must suffer a financial or emotional loss at the death of the insured. A VEBA established for funding retiree health benefits would be relieved of a financial burden at death of a member; hence, a VEBA would not have the capability of being the owner and beneficiary of insurance on its

members. However, since a substantial portion of health care costs are frequently associated with the retiree's final illness, some believe that this death-related cost constitutes sufficient insurable interest. Moreover, a number of states have passed laws codifying a VEBA's insurable interest in its members.

Since the use of trust-owned life insurance (TOLI) avoids UBIT, it is a straightforward analysis to evaluate the potential advantage of this investment vehicle over the yield on tax-free municipal bonds or the after-tax return on other investments. The insurance carrier's expense charges generally fall in the range of 50 and 100 basis points, depending on the size of the transaction. Thus, a comparison of (1) the return on tax-free municipal bonds, versus (2) the after-tax return on conventional investments, versus (3) the net return from TOLI will provide guidance on the appropriate investment vehicle.

If one of these two investment vehicles is used, the last term in equations (16.7c) and (16.8b), $(1 - Tx)\,(NRI)_t$, is eliminated. This permits a somewhat larger tax deductible contribution. Thus, the maximum tax deductible contribution, based on the individual aggregate funding method, can be defined by

$$(DC)_t = \left[\sum \frac{(PVFB)_x - (Assets)_x}{\ddot{a}^{T}_{x:\overline{r-x}|}} \right]. \tag{16.10}$$

Numerical Illustrations

Figure 16–3 shows a 20-year deterministic projection of retiree health benefits under pay-as-you-go funding, VEBA funding with contributions defined by (16.8b) with UBIT on investment earnings, VEBA funding with contributions defined by (16.10) without UBIT (i.e., VEBA funding with TOLI), and economic costs. In each case, the retiree liability (without health care inflation) is contributed on a lump sum basis. Figure 16–4 shows the corresponding funded ratios based on the economic liability. The valuation and experience assumptions used in the projection are provided in Table 16–3. In determining the maximum tax deductible contributions, the size of the actuarial liability is maximized by using (1) the individual aggregate method, (2) an interest rate that grades from a current rate of 8 percent to a long-term rate of 6 percent over 5 years, and (3) a health care utilization rate of 5 percent grading down to 1 percent over 10 years.

TABLE 16–3

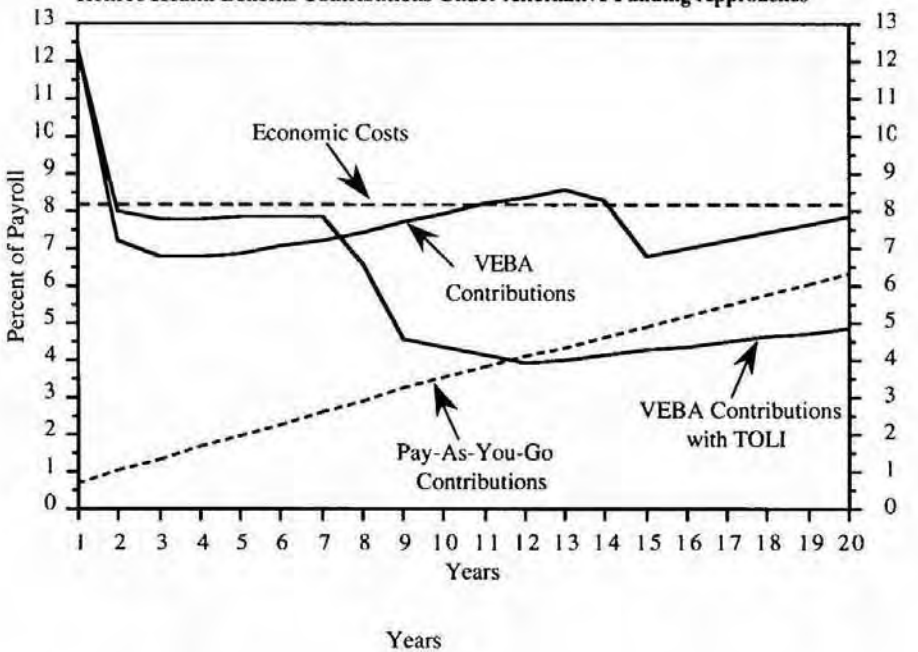
Valuation and Experience Assumptions

Valuation Assumptions for Contribution Limits:	
Decrement Rates:	See references provided in Table 16–1
Salary Increase:	Not applicable
Interest Rate:	8% grading down to 6% over 5 years
Health Care Inflation:	0%
Health Care Utilization:	5% grading down to 1% over 10 years
Medicare Inflation:	0%
Health Benefit Costs	Table 16–2
Asset Method:	Market value
Cost Method:	Individual Aggregate Method
Experience Assumptions:	
Decrement Rates:	See references provided in Table 16–1
Salary Increase:	See references provided in Table 16–1
Investment Return:	11%
TOLI Expenses	50 basis points
Trust Tax Rate:	35% (federal plus state taxes)
Health Benefits Inflation:	See Table 16–1
Utilization:	See Table 16–1
Medicare Inflation:	See Table 16–1
Health Benefit Costs	See references provided in Table 16–1

The economic costs are approximately 8 percent of payroll whereas the pay-as-you-go costs start out at .6 percent and increase to over 6 percent by the end of 20 years. The two prefunding scenarios have costs that begin at 12 percent due to the lump sum funding for retired members, then dropping to 7 and 8 percent in the next year. The VEBA funding with UBIT shows a near-term increasing contribution pattern while the VEBA funding with TOLI shows a level pattern. The full funding limit is reached in 9 years under VEBA funding with TOLI and in 15 years under VEBA funding with UBIT.

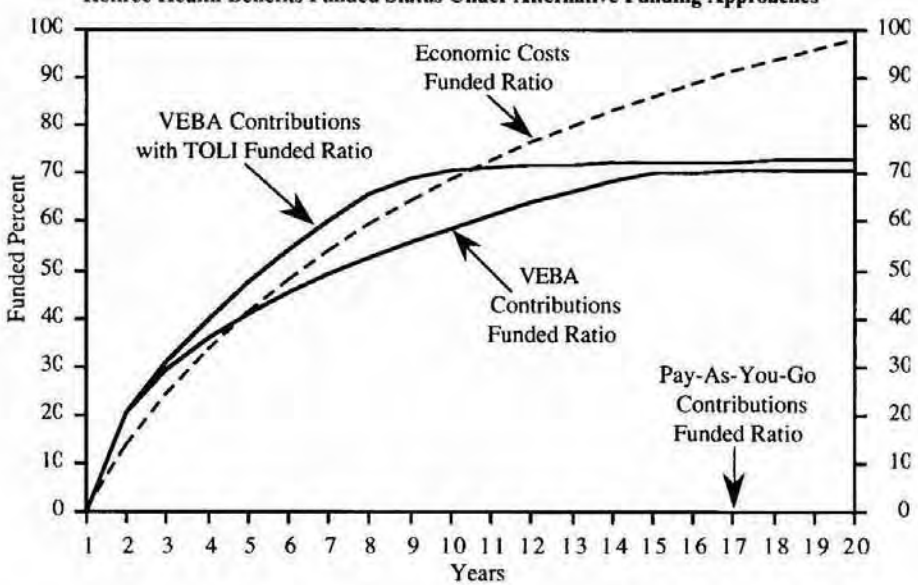
The funded status under the four funding scenarios is shown in Figure 16-4. The pay-as-you-go methodology, of course, produces no assets, whereas the economic cost methodology has assets that, by definition, accumulate to 100 percent of the economic liability by the end of the projection period. Both VEBA funding scenarios reach a funded ratio of over 70 percent; however, the VEBA with TOLI initially accumulates assets at a faster

FIGURE 16–3
Retiree Health Benefits Contributions Under Alternative Funding Approaches



Years

FIGURE 16–4
Retiree Health Benefits Funded Status Under Alternative Funding Approaches



pace. These projections indicate that a substantial portion of the post-retirement health benefit liability can be funded and that VEBA with TOLI is a much less costly approach than a VEBA with UBIT. The impact of advance funding on accounting costs is examined in the following section.

ACCOUNTING REQUIREMENTS

SFAS 106 requires employers to adopt accrual accounting for retiree health benefits and other non-pension benefits provided in retirement, such as death benefits, dental benefits, long-term care, and so forth. The methodology required in determining the *net periodic postretirement benefit cost* and the various disclosure items to be included in the footnotes of the financial statement are similar to those of SFAS 87 for pension benefits, with some notable exceptions as discussed below. It is assumed for this discussion that the reader is familiar with the material presented in Chapter 11 on SFAS 87.

Liability Values

There are two liabilities defined by SFAS 106, the *expected postretirement benefit obligation* (EPBO) and the *accumulated postretirement benefit obligation* (APBO). These liabilities, which are identical for retired employees and employees eligible to retire, are equal to the present value of future retiree health benefits as set forth in (16.4) for a retired employee at age x.

The EPBO for an active employee age x ($x < r'$) is defined by equation (16.5) given previously. This liability represents the present value of all future expected retiree health benefits. The operative SFAS 106 liability for active employees, however, is the APBO which represents a pro rata portion of the EPBO. The proration is based on a fraction, the numerator of which is the employee's service to date and the denominator of which is the employee's service to the first age at which eligibility for full retiree health benefits is applicable, generally the employee's first eligible retirement age, r'. In other words, in the determination of the APBO, the EPBO is allocated from the employee's hire date (or, if later, the date at which benefits begin to accrue) to the date of full eligibility. This is the case even if the employee is expected to retire much later than the full eligibility date.

Net Periodic Postretirement Benefit Cost

The net periodic postretirement benefit cost (net cost) consists of the same components making up the net periodic pension cost under SFAS 87, as outlined in Table 11–1 of Chapter 11. These components are presented for retiree health benefits in Table 16–4.

TABLE 16–4
Net Periodic Postretirement Benefit Cost Components

Service Cost:	Normal cost under constant dollar benefit prorate method, adjusted with interest to end of year*
+	
Interest Cost:	APBO (adjusted for expected distributions during year) times discount rate
−	
Expected Return on Assets:	Market-related value of assets (adjusted for expected distributions and contributions during year) times expected rate of return on assets
+	
Amortization Costs:	Amortization Methodology:
Transition Obligation (Asset)	Straight line over average future service of plan participants expected to receive benefits or, optionally, 20 years, if greater
+	
Prior Service Cost	Fixed schedule over future service of plan participants expected to receive benefits*
+	
Net Loss (Gain)	Rolling schedule over future service of plan participants expected to receive benefits

*Future service extends only to full eligibility age, not expected retirement age.

The service cost is equal to the portion of the EPBO attributed to the employee's service during the current accounting period. The interest rate used in determining the interest cost must be based on the rates of return on high quality fixed income securities available at the measurement date (i.e., the date of the sponsor's financial statements or within three months prior to that date). This interest rate may be somewhat higher than the SFAS 87 rate, the latter representing the rate at which pension

benefits could be settled through the purchase of insurance company annuities. The expected return on assets is based on the long-run expected investment return for the assets held in the trust. If assets are held in a taxable trust, then an *after-tax* expected return on assets must be used.

The transition obligation is defined in Chapter 11 by equation (11.10), with the APBO being used instead of the PBO. In many cases, the plan will not have assets or any prepaid or accrued expense; hence, the transition obligation is simply the APBO. The entire obligation can be recognized immediately or amortized on a straight line basis over the longer of 20 years or the remaining service (to date of expected retirement) of active employees expected to receive benefits under the plan. The future service for pension accounting was defined in Chapter 11 by (11.8), equal to (11.6d) divided by (11.7). The absence of vesting, disability, and death benefits may cause the future service to be somewhat longer for SFAS 106 purposes.

The prior service cost, equal to the obligation (or asset) attributed to plan changes, is to be amortized over the expected future service to the *full eligibility* date of active employees expected to receive benefits under the plan. This, of course, is a shorter period than "service to retirement." This period is defined in Chapter 11 by (11.11), with the previously noted adjustments for the absence of ancillary benefits.

Gains and losses are defined in the same manner as for SFAS 87, as set forth by equations (11.12) and (11.13), but with the PBO being replaced by the APBO. The amortization period is also the same, namely, the average remaining service to the date of expected retirement under the plan, again with the adjustment due to the lack of ancillary benefits.

Balance Sheet

Unlike SFAS 87 for pensions, there is no minimum liability that must be recognized on the balance sheet for retiree health benefit liabilities. Unless the plan is prefunded, the entire APBO will eventually be recorded on the balance sheet as an accrued expense. On the other hand, if cumulative contributions exceed cumulative expense, then the balance sheet will show a prepaid expense asset.

Footnote Disclosure

Table 16–5 outlines the various footnote disclosure items for retiree health benefits, with Tables 16–6 and 16–7 being referenced in Table 16–5.

TABLE 16–5

SFAS 106 Footnote Disclosure Items

- Plan Description: A description of the *substantive plan*, i.e., the legal plan plus expected changes in future benefits, employee cost sharing, and so forth, that are understood by the employer and employees.
- Net Periodic Postretirement Benefit Cost: The disclosure of net cost components, as shown in Table 16–6. As with pension cost disclosure, the actual return on assets is shown explicitly and then backed out as a component of net amortization and deferrals.
- Funded Status Reconciliation: This is similar to the SFAS 87 reconciliation, as shown in Table 16–7.
- Health Benefits Trend Rate: The first year's rate, along with a description of the rate used in future years.
- Interest Rate Assumption: The discount rate and the assumed rate of return on plan assets, along with the effective tax rate if such assets are subject to taxation.
- Health Care Benefit Sensitivity: The financial impact of a one percent increase in the health benefits trend rate on both the APBO and the sum of service costs plus interest costs.
- Plan Assets: The amount and types of employer securities, if any, included in plan assets.
- Alternative Amortization Methods: A description of any alternative amortization methods used.
- Settlement or Curtailments: The gain or loss recognized on any settlements or curtailments during the period.
- Special Termination Benefits: A description of any special health care related termination benefits provided (e.g., early retirement incentives) and related costs.

TABLE 16–6
Disclosure of Net Periodic Postretirement Benefit Cost

1. Service Cost	
2. Interest Cost	
3. Actual Return on Assets	Expected Return on Assets – Asset-Based Loss (Gain)
4. Net Amortization and Deferrals	Transition Obligation + Prior Service Cost + Loss (Gain) + Asset-Based Loss (Gain)
5. Net Periodic PB Cost	(1) + (2) – (3) + (4)

TABLE 16–7
Reconciliation of Funded Status

1. APBO	Year-end value (or projected year-end value)
2. Market Assets	Year-end value
3. Funded Status	(1) – (2)
4. Unrecognized Transition Obligation	Beginning of year value less current year's amortization amount
5. Unrecognized Prior Service Cost	Beginning of year value less current year's amortization amount
6. Unrecognized Net Loss (Gain)	(3) – (4) – (5) + {Prepaid (Accrued) Expense at B.O.Y. – Net Periodic PB Cost + Contributions}
7. Prepaid (Accrued) PB Cost	(3) + (4) + (5) + (6)

Numerical Illustrations

Figure 16–5 shows the results of a 20-year projection of SFAS 106 costs under three of the funding scenarios studied previously: (1) pay-as-you-go funding; (2) VEBA trust funding with UBIT; and (3) VEBA funding with TOLI. Figure 16–6 shows the APBO funded status.

FIGURE 16–5
SFAS 106 Expense Under Alternative Funding Scenarios

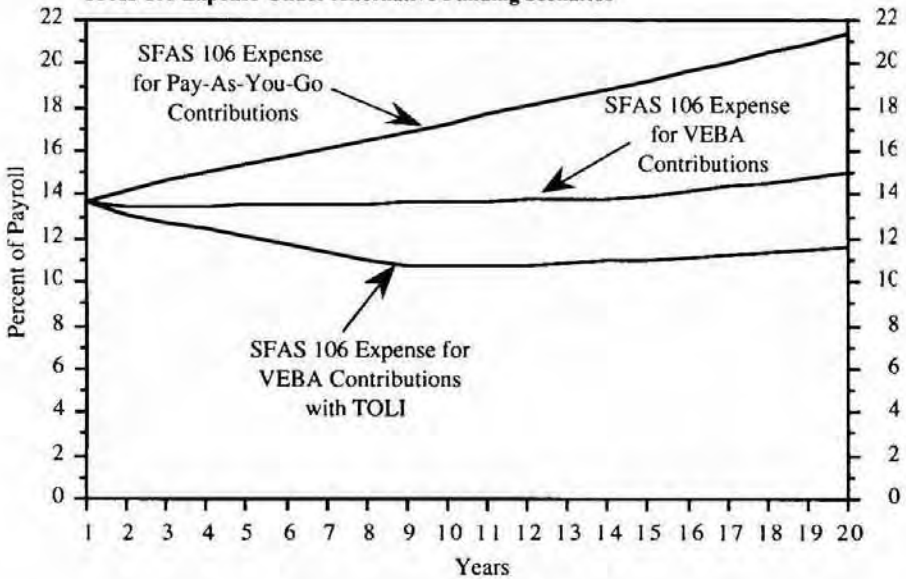
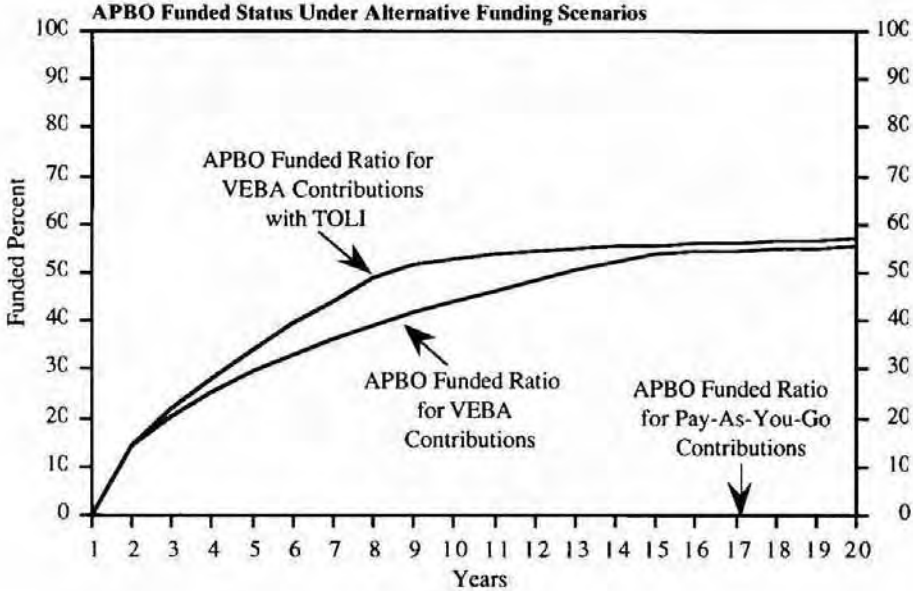


FIGURE 16–6
APBO Funded Status Under Alternative Funding Scenarios



Accounting expense under pay-as-you-go funding starts out at 14 percent of salary and escalates to over 21 percent by the end of the 20-year projection period. If the plan advance funds to the maximum extent using a VEBA with UBIT, the initial expense of 14 percent is maintained during the 20-year period. VEBA funding with TOLI reduces the expense to about 11 percent of payroll. The APBO funded ratio is, of course, zero under pay-as-you-go funding and reaches about 55 percent under either of the two VEBA funding scenarios.

CRITIQUE OF SFAS 106

The most significant aspect of SFAS 106 is that it requires employers to adopt accrual accounting for retiree health benefits, a long overdue change. As is the case for SFAS 87, there are deficiencies in the promulgation that, if changed, would result in an improved set of accounting procedures. These are briefly discussed in the order of their importance.

Salary vs. Benefit Proration

The service proration methodology used for the service cost and APBO should be changed to a proration based on salary, since this is consistent with the view that these benefits, like pension benefits, are deferred wages.

Proration Pattern and Period

The SFAS 87 promulgation was criticized in Chapter 11 for not using a linear proration to each potential retirement age, since prorating according to the benefit formula can produce inappropriate results for some formulas. This same proration is required for SFAS 106; however, since the benefits under most retiree health plans are not formula based, the default proration is, in fact, linear. If plans are amended in the future to provide service-related benefits, which is a growing trend, then this deficiency could emerge, hence, SFAS 106 should be changed to require linear proration.

A more serious problem with the retiree health benefit proration is the use of the *full eligibility* age instead of the expected retirement age. To give only one example of the absurdity of this

requirement, consider a plan that permits early retirement after 20 years of service with a full actuarial reduction in pension benefits. Even though only a small fraction of employees will elect to retire prior to ages 55 or 60, the retiree health benefits liability must be fully accounted for by the end of 20 years of service for each employee. FASB's position of having the benefit fully accounted for at the point it is first available is neither sensible nor actuarially necessary. For a group of employees expected to retire at various ages, it is eminently reasonable to account for the expected benefits on a best-estimate basis of when such benefits will commence. The artificial requirement that it be accounted for at the first eligibility age will lead to unnatural contortions on the part of plan sponsors in changing their plan design to avoid this overly rapid accounting practice. The proration in SFAS 106 should be changed to be a linear proration to each expected retirement age.

Interest Cost

SFAS 87 was criticized for basing the interest rate on a so-called settlement rate, reflective of the cost of annuities, since annuity rates include insurance company risk, expense, and profit charges, which should not be part of the interest rate determination. The recommendation was that, if FASB wanted a market value rate, then the interest assumption should be keyed to the spot rate on investment-grade, long-term corporate bonds as of the measurement date. SFAS 106 does, in fact, require that this methodology be used; however, the author still believes that the discount assumption overemphasizes the termination or "wind up" contingency, and the use of a long-run, best-estimate assumption reflecting the plan's asset allocation would be preferable. In other words, the discount rate and the long-term expected return on assets would be identical.

Gain (Loss) Amount

It would be useful to show the effect of interest rate changes, as well as other actuarial assumption changes, separate from the effects of experience differing from the underlying assumptions. This is particularly important in light of the continually changing discount rate. This should be done whether or not the amortiza-

tion of these two items is treated the same or differently. This is the same comment made in regard to SFAS 87.

Gain (Loss) Amortization

The 10 percent corridor around the larger of the APBO or market-related assets implies that, for those plans that begin to prefund their retiree health benefits liabilities, assets can fluctuate substantially without any amortization of the gains and losses. This is not a sensible result.

Again, as with pension expense, the shortcoming in the gain (loss) corridor is that it focuses on the wrong item. Since the ultimate objective is to adjust *costs* if gains and losses become too significant, on the one hand, without being overly sensitive, on the other, the corridor might be based on the service cost. For example, the amortization amount associated with the full unrecognized gain (loss) might be determined and, then, the portion of the amortization payment outside a 10 percent corridor, for example, of the service cost might be recognized.

Amortization Periods

SFAS 87 was criticized for not simply using "the future service of employees" instead of the future service of employees *expected to receive benefits*. Since retiree health benefit programs do not have ancillary benefits, the default calculation for SFAS 106 is, in fact, "the future service of employees." Nevertheless, SFAS 106 still errs in the selection of the amortization period for past service cost by requiring the use of the full eligibility age instead of expected retirement ages.

Terminology

As with SFAS 87, past service cost should be "past service obligation (asset)." Similarly, the transition obligation should be "transition obligation (asset)." Loss (gain) should be "experience loss (gain)," and changes in assumptions should be labeled "assumption change obligation (asset)." While these are only cosmetic changes, they would nevertheless facilitate the understanding of SFAS 106.