

Letting Financial Economics Drive the Development of Transparent Accounting and Contribution Requirements

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(note: The quotations appearing in this monograph are exact, except where capitalization and punctuation were changed in keeping with modern style and grammar guidelines.)

The calculations of pension expense done by pension actuaries have come under increasing criticism. Originally, actuarial cost methods were developed to help employers develop a controllable and stable funding policy. There was not much concern over the fact that the methods used to produce controllable stable contributions also resulted in a controllable pension accounting cost.

The control over pension accounting cost provided to employers inhibited inter-company comparisons and was recognized as a flaw. This eventually led the Financial Accounting Standards Board (FASB) to promulgate Statement of Financial Accounting Standards No. 87 (FAS 87). However, even the writers of FAS 87 realized that the statement did not remove all problems. They wrote: "The most relevant and reliable information available about that liability or asset is based on the fair value of plan assets and a measure of the present value of the obligation using current, explicit assumptions. The Board concluded, however, that recognition in financial statements of those amounts in their entirety would be too great a change from the past practice. ... The delayed recognition included in this Statement results in excluding the most current and most relevant information from the statement of financial position."

It's time to remove these problems. A truly transparent pension accounting expense could be developed to produce superior reporting that reflects experience as it occurs. Contributions could also be based on same asset and liability information about the pension plan, but with flexibility to allow for more controllable and stable contributions.

1. History

The calculation of pension expense has come under increasing criticism. This criticism centers on the assertion that the methods used are not transparent and do not reflect the financial economics of the pension contract in a timely manner. This problem is directly related to the history of development of current pension accounting rules.

Originally, actuarial cost methods were developed to help employers construct a funding policy. Employers generally wanted controllable and stable contributions, so these cost methods were developed to deliver that objective. Smoothing techniques and amortization were used to dampen volatility. At one time pension plan costs were small, compared to the cost of other operations of the company, so the accounting was basically under Auditing Practices Board (APB) 8 set to expense the contributions actually made to the plan. There was not

much concern over the fact that the methods used to produce controllable stable contributions also resulted in a controllable pension accounting cost.

As time passed, pension plan costs became a larger component of the operating costs of most companies. The control over pension accounting cost provided to employers inhibited inter-company comparisons and was perceived as a flaw. Also, the idea evolved that the funded position of the pension plan should be brought onto the sponsoring corporation's books as an asset (if positive) or liability (if negative). These impressions eventually led the Financial Accounting Standards Board (FASB) to promulgate Statement of Financial Accounting Standards No. 87 (FAS 87) in an attempt to address some of these issues. A single standard actuarial cost method was prescribed and pension liabilities were required to be approximately marked to market, based on the use of current bond rates. However, the common practice of deferring and amortizing unexpected changes in liabilities and the option of smoothing asset volatility were continued.

Pension actuaries in the United States trained during recent times have studied the permitted smoothing and amortization methods to the point that they seem like the only normal and natural course. Failing to remember that these approaches are "man-made," many of us have given little thought to alternative techniques, inasmuch as they are not permitted under IRS regulations or under FAS 87. Therefore, to develop a true transparent pension accounting expense, let us first cleanse our minds of preconceived ideas, based on how things are done now, and think through alternative techniques from basic principles.

2. Investors are Harmed by the Current Pension Accounting Rules

Because we are conditioned by years of experience with current methodologies, it may be difficult to see compelling reasons for change. However, even the writers of FAS 87 realized that the statement was not perfect. They wrote:

"The Board believes that an employer with an unfunded pension obligation has a liability and an employer with an over-funded pension obligation has an asset. The most relevant and reliable information available about that liability or asset is based on the fair value of plan assets and a measure of the present value of the obligation

using current, explicit assumptions. The Board concluded, however, that recognition in financial statements of those amounts in their entirety would be too great a change from the past practice. ... The delayed recognition included in this Statement results in excluding the most current and most relevant information from the statement of financial position” (FASB 1985, Opening Summary Statements: Statement of Financial Position).

More recently, on March 12, 2003, FASB Chairman Robert Herz called FAS 87 one of the prime examples of bad accounting (Burkholder 2003).

A hypothetical example will serve to illustrate the problem with the current approach. There are several individuals in this example: a company president, a pension actuary, a defined benefit (DB) plan participant, a professional investor and a small investor who is investing both inside and outside a 401(k) plan at another company. This small investor does his own research and relies on the earnings and shareholders’ equity reported in the company’s financial statements. Some of the company’s pension plan financial information is shown in Table 1.

Table 1

Company Values and Stock Price

Year	Pension Assets	PBO (Assumed to Be ABO x 1.2)	Funded Status (Unfunded PBO)	Unrecognized Unfunded PBO
2000	\$1,000,000	\$1,000,000	\$0	\$0
2001	950,000	1,000,000	(50,000)	(50,000)
2002	950,000	1,000,000	(50,000)	(50,000)
2003	950,000	1,000,000	(50,000)	0

Table 2

Company Financial Information

Year	Balance Sheet Assets	Liabilities	Shareholders' Equity	Stock Price	Shares Owned by President	Shares Owned by Professional Investor	Shares Owned by Small Investor
2000	\$100,000	\$0	\$100,000	\$100	100	100	100
2001	125,000	0	125,000	125	100	0	200
2002	125,000	0	125,000	125	0	0	300
2003	125,000	50,000	75,000	75	0	0	300

The company's financial information is shown in Table 2. For simplicity, let's assume that the book value and the market value are the same: \$100,000. The stock price of \$100 can be calculated by dividing the market value of \$100,000 by the outstanding shares of 1,000.

In 2000, the president of the company owned 100 shares, the professional investor bought 100 shares at \$100 each and the small investor bought 100 shares at \$100 each. In 2001, the company ran a successful business bringing the assets of the company, excluding the pension plan, up by 25 percent. However, \$50,000 of pension plan assets was lost through bad investments. The management and actuary were able to leave this as "unrecognized" under the current accounting rules. Shareholders' equity reflected a 25 percent increase in normal business operations, but not the loss of pension assets. Each share appeared to be worth \$125 (at least to the small investor) and the market price was \$125. The small investor bought 100 more shares. The professional investor was willing to sell 100 shares at \$125 because he speculated that the company might be worth less than \$125 given the "unrecognized" loss in the pension plan.

In 2002, the president retired and sold his 100 shares. The small investor, continuing to save for retirement, bought another 100 shares.

In 2003, a competing company offered to buy the entire company. Purchase accounting was used to determine a fair price and the previously unrecognized \$50,000 loss became recognized. This new \$50,000 accrued pension expense reduced shareholders' equity. This was immediately reflected in the purchase price, which became \$75 per share. The small shareholder received \$75 for each of his 300 shares. He had invested \$35,000 but ended up with only \$22,500.

Looking back on these events, these individuals had the following thoughts.

- Pension actuary: Thank goodness for those smoothing rules; it helped me save the company from having to report that investment loss back in 2001.
- Company president: I was able to retire early because of my DB plan pension and the money I made on my savvy stock investments in the company.
- DB plan participant: I'm so glad my benefit is secure. I have heard about others who lost much of their retirement savings in 401(k) plans.
- Professional investor: I made a killing by seeing through the smoke screen that actuaries and accountants use to hide and defer gains and losses in pension plans.
- Small investor/401(k) participant: I lost money because of the actuaries and accountants cooking the books. The regulators should have stopped this.

If you feel that the small investor got what he deserved by working for a company with a 401(k) plan; the small investor got what he deserved by doing his own investing; the company president's and other DB plan participant's benefits were protected so there seems to be no problem; or the pension actuary is a smart guy and protecting his livelihood should be his only concern, you can stop reading now. However, if you feel that the situation for the small investor could be improved by transparent pension accounting, please read on.

3. Standard & Poor's Core Earnings Pension Cost

In 2002, Standard & Poor's (S&P) announced that it was no longer blindly accepting a firm's unadjusted FAS 87 *net pension cost* and introduced the S&P Core Earnings, in which pension expense is one of two significant factors differentiating reported earnings from core earnings (*Business Week Online* 2002).

The S&P Core Earnings Pension Cost is made up of the FAS 87 *service cost* plus the *interest cost* offset for *actual* investment earnings. The offset for investment earnings is restricted to just the interest cost. There is no benefit in the current year, or later years, from high investment returns above the current year's interest cost.

I believe that “core” earnings pension cost should consider only the service cost. If you wish is to show only the income and expense of running the core business, excluding the income or expense of running a pension plan, you should include only the expense of paying employees, including the current year’s benefits earned by employees. The earnings of the core business should reflect neither the positive investment returns that generate extra earnings, as suggested by the S&P, nor the poor investment returns that do not cover the interest cost.

Stated another way, the issues related to interest cost and earnings on the assets could be avoided by transferring the liabilities to an insurer, rather than self-insuring and retaining the liabilities and assets.

Although not everyone has accepted S&P Core Earnings, the S&P announcement of Core Earnings has made individuals realize that the current FAS 87 net pension cost is not perfect. In fact, the authors of FAS 87 recognized that further changes were probably needed when they wrote, “This Statement continues the evolutionary search for more meaningful and more useful pension accounting” (FASB 1985, p. 2).

4. Transparent Pension Cost

In addition to the service cost, which represents the pension plan’s affect on core earnings, shareholders and other interested parties should also be provided with the total cost (or profits) of self-insuring the plan. They have the right to transparent pension accounting. Without transparent accounting, companies and investors with knowledge of the abnormalities in accounting could take advantage of investors without such information.

Two companies that have identical balance sheets and income statements with identical FAS 87 net pension costs would appear as equal investment options to the uninformed investor. However, a sophisticated investor who is able to see through the masked gains or losses that are deferred and currently unrecognized, would be able to take advantage of this lack of transparency recognizing that one company might have either lower or higher future earnings due to past events.

I propose that a truly transparent pension cost should consider the following. An employer’s promised benefits to plan participants create a liability. At any point in time we can determine the current accrued benefits. We can also obtain a cost for transferring this liability to an insurance company. An insurance

company would develop a quote reflecting its investment mostly in debt instruments, like bonds, and reflecting an appropriate margin load. Therefore, it behooves us to use bond rates when calculating the present value of this liability. This approach is also consistent with the fact that the nature of the pension liabilities is a debt to the participants, similar to a bond, with amount of payment untied from profits of the company.

Plan sponsors contribute to a trust fund and these assets are invested. In calculating a transparent pension cost, we should not use a smoothed asset value that does not fully recognize the actual return. We should use the market value of assets.

Let the difference between this market asset and market liability be called the net asset value. The company's transparent pension cost for any year would be the contribution to the trust plus the change in the net asset value during the year, recognizing everything. Actual investment earnings would be recognized in the current year rather than smoothed over later years.

Figure 1 shows a sample case of how these different expense options compare under a stochastic simulation based on a sample plan and a "typical" capital market simulation and asset allocation.

Figure 1

Expense Options

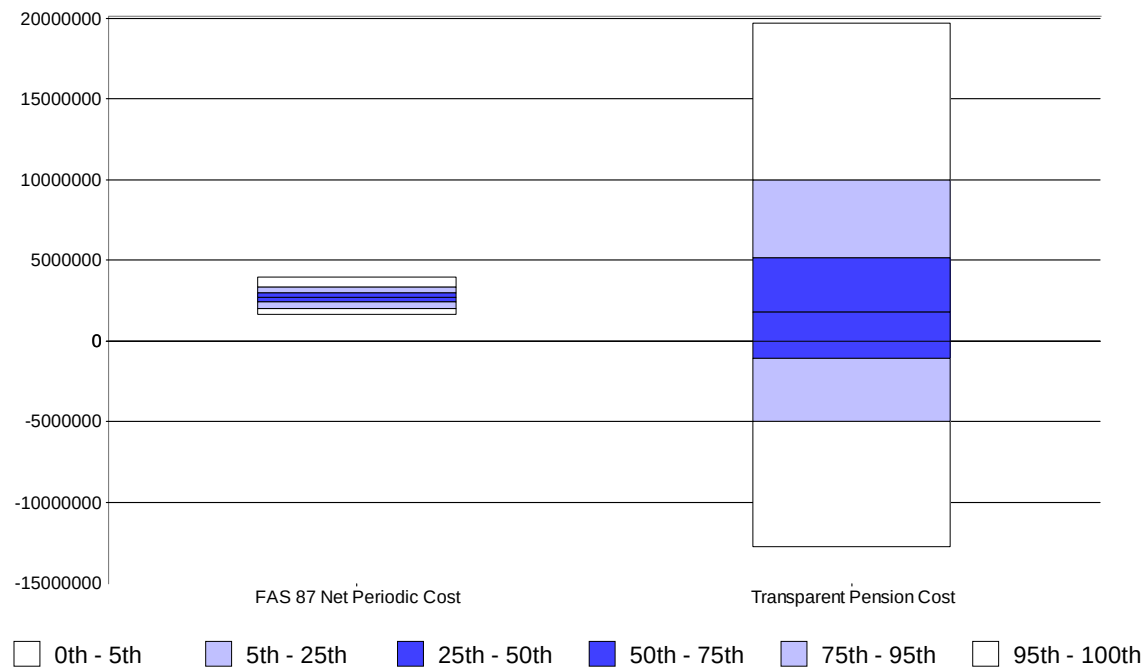


Figure 1 juxtaposes expense developed separately under FAS 87 and under this proposal. The volatility of each is shown by randomly generating a return for the assets and then showing the resulting expense under each method. The *transparent pension cost* includes all asset gains and losses with no smoothing. As you can see, the volatility of the investment return is reduced dramatically under the FAS 87 rules which allow asset smoothing, deferral and amortization of gains and losses.

To better inform readers of financial statements, this transparent pension cost should be separated into two components. It should be separated into the service cost component, which some would consider a core expense of running the business, and the remainder, which is the income or expense of self insuring the pension plan.

5. Reporting of Net Asset Value on the Balance Sheet

The net asset value, defined as the pension assets less pension liabilities, should also be reported on the balance sheet. Pension liabilities in excess of assets produce a claim on other corporate assets and would, therefore, show up as a debt in the financial statements, just as if participants had been given a promissory note.

Pension assets in excess of current pension liabilities are useful to the employer. These excess assets can be used to cover the core expense of the service cost of future benefits earned by the employees. As the employer is heavily restricted in being able to tap these assets, they should be reported as restricted assets.

Rather than recording just one net asset value, a separate pension asset and pension liability could be used instead, or disclosed in footnote, to better inform shareholders about the size and potential leveraging.

6. Possible Concerns

Let me discuss some concerns I had when considering this proposed transparent pension cost.

6.1 Volatility Will Shock Analysts

I first thought that the volatility in the transparent pension expense might cause a negative reaction and end up with the termination of many DB plans. However, after several discussions with analysts, I realized that the oblique current accounting for pensions is not fooling most sophisticated analysts now. Analysts already know the risks of a DB pension plan and the ways those risks are hidden. They have ways of seeing through the smoothing methods used by actuaries and are already discounting the value of a company with a DB plan. They either discount it based on what they measure as the true risk or they discount it because of the oblique nature of the DB pension plan financial information.

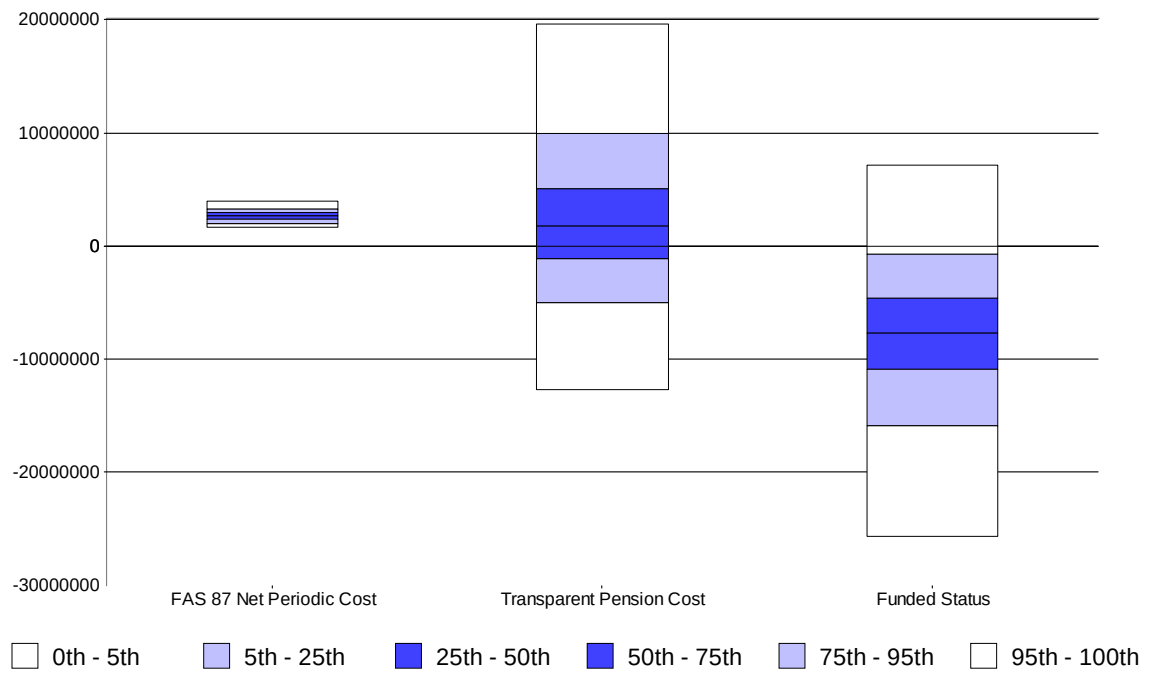
The writers of FAS 87 noted: "The delayed recognition included in this Statement results in excluding the most current and most relevant information from the statement of financial position" (FASB 1985, Opening Summary Statements, Statement of Financial Position). But they went on to write, "That information, however, is included in the required disclosures."

Therefore, although some might think they are masking the volatility in the pension plan by producing a smoothed FAS 87 *net periodic cost*, knowledgeable analysts can see the funded status disclosed in the footnotes.

As you can see from Figure 2, the funded status has volatility similar to my proposed transparent pension cost.

Figure 2

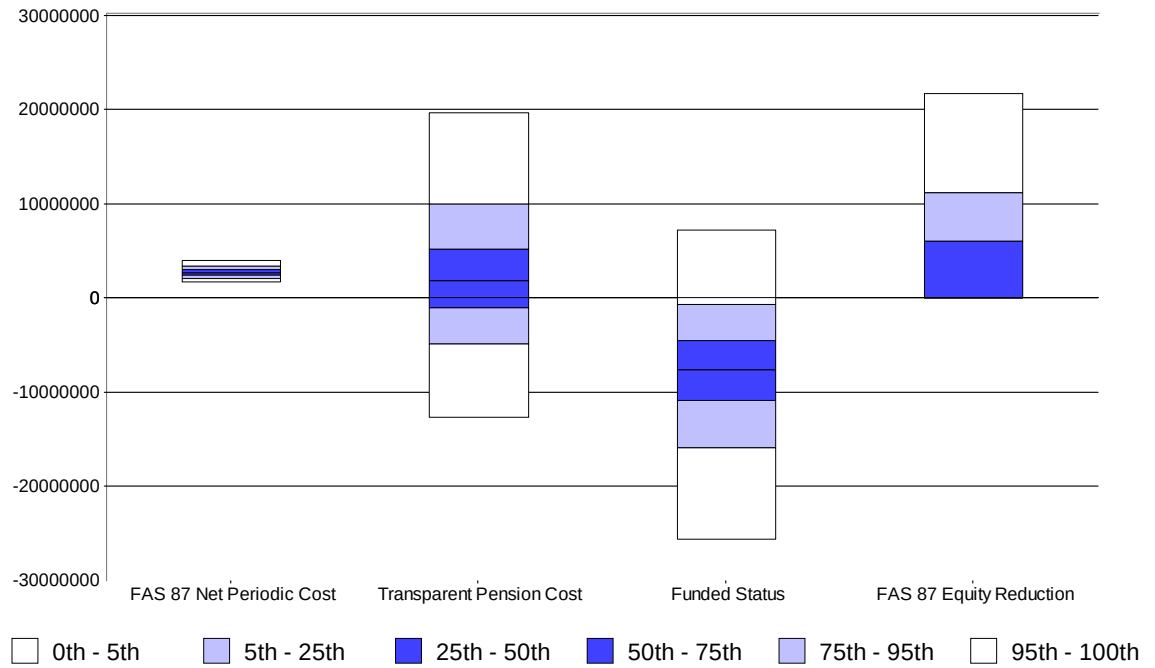
Expense and Disclosure



There are actually times under FAS 87 rules when the smoothing of asset values and amortization and deferral of costs can no longer be hidden in a footnote to the financial statements. When the market value of assets is less than the accumulated benefit obligation (ABO), FAS 87 requires this to impact the financial statements through an additional minimum liability and, potentially, a reduction to shareholders' equity. Figure 3 includes the reduction to shareholders' equity in my sample plan. The volatility is similar to my proposed transparent pension expense and the funded status, except that only the downside, when assets are less than the ABO, is shown.

Figure 3

Expense and Disclosure



The problem with the inclusion of this equity reduction in the financial statement is not that it is included, but rather that it is reported only in some situations and can come as a surprise to those not familiar with the workings of FAS 87. Reporting a transparent pension cost will help plan sponsors, less sophisticated analysts and the general public to see the risks involved in self-insuring a DB pension plan.

6.2 Termination of DB Plans

Like almost all pension actuaries, I feel that public policy, including pension accounting rules, should support the creation and maintenance of DB plans. While creation and maintenance of ongoing DB plans are things that should be supported by public policy, having plans formed or kept because the risks were hidden from the plan sponsors, shareholders and the public is not something I support.

We saw from Figure 1 how asset smoothing, deferred recognition and amortization ends up smoothing pension expense. Smoothing the calculated figures is not a true offsetting of the risk. Instead, it is just a deferral, with the hope that future gains will offset any past losses. In many cases, stock markets do “bounce back” and the approach of deferring recognition of a drop pays off. However, this closing of one’s eyes to past-experienced market drops has one serious flaw. When the market does not quickly bounce back or, worse yet, when the decline continues, the losses that build up for several years will effect financial statements for many years in the future.

A better approach would be to recognize the risk and offset it in an economic sense. Rather than hiding risks, plan sponsors and their advisors should be seeking ways of reducing risk by better investment decisions, by transferring risk to insurers and/or by better plan design.

6.3 Domestic Companies Will Be at a Disadvantage

I imagined that domestic companies would be at a disadvantage if this type of new accounting is adopted. However, transparent accounting should be recognized by investors and rewarded. It should then actually help companies raise capital. Besides, other countries will be adopting similar standards. FRS 17 from the U.K. Accounting Standards Board contains a more transparent accounting standard. Some expect these types of standards to be adopted by the International Accounting Standards Board.

The following are some statements contained in FRS 17 (ASB 2000):

- “An asset is recognized to the extent that an employer can recover a surplus in a DB scheme through reduced contributions and refunds. A liability is recognized to the extent that the deficit reflects the employer’s legal or constructive obligation” (p. 3).
- “Actuarial gains and losses are recognized immediately in the statement of total recognized gains and losses. They are not recycled into the profit and loss account in subsequent periods” (p. 4.)
- “Past service costs are recognized in the profit and loss account over the period until the benefits vest. If the benefits vest immediately, the past service cost is recognized immediately” (p. 5).
- “Gains and losses arising on settlements and curtailments are recognized immediately in the profit and loss account” (p. 5).
- “The objective of this FRS is to ensure that: ... The operating costs of providing retirement benefits to employees are recognized in the accounting period(s) in which the benefits are earned by the employees, and the related finance costs and any other changes in the value of assets and liabilities are recognized in the accounting periods in which they arise” (p. 6).

6.4 Mass Selling of Companies With DB Plans

I thought that the volatility in pension expense might cause stockholders to sell shares of companies that sponsor DB plans. However, members of the public have already been getting 401(k) statements that have volatility in them. If they are smart, which most have been, they realize that they are investing for the long term and will hold on to their investments.

If a 401(k) provider decided that its 401(k) participants are not that smart, the provider might decide not to report the actual market value of assets (if it were legal) and instead report a smoothed asset value on the participants’ statements, to prevent them from making any “unwise” decision.

I think it would be inappropriate for a 401(k) provider to hide the true asset value from the 401(k) participant. It is also inappropriate for us to smooth out volatility by reporting something other than the market value of assets and liabilities of the company, thereby preventing investors from

acting in a way which we think would be “unwise.” One would hope that stock investors, who are investing for the long term, would be as wise as 401(k) participants.

7. Gain and Losses Should Be Reflected in the Current Accounting Period

While FAS 87 uses expected return and reflects gains and losses in later periods, I suggest that asset gains and losses be reflected in the period in which they occur. This would not be a calculation burden because the value of the assets and the investment gains and losses are readily available.

Besides asset gains and losses, changes in the value of the liabilities due to economic conditions can also be calculated quickly. For example, the movement in the value of liabilities due to interest rate changes can be readily determined with today's software.

Therefore, the gains or losses due to asset changes and interest rate movements can be calculated and recorded as income or expense in the current year's financial statements.

8. The Measurement of a Pension Plan's Liability Should Not Reflect Its Investment Portfolio or Funded Status

A pension plan is an obligation of the employer to the plan participants. The value of that obligation should reflect the current market cost of transferring that liability. From the employer's point of view, the cost of transferring the obligation is the same no matter how the assets are invested. Simply changing the type of investments cannot reduce the market cost of this obligation. Therefore, the pension plan's liability should not use a discount assumption based on the asset allocation.

Imagine an employer with \$30 in a “risk-free” asset returning 0 percent and a pension obligation due a year from now worth \$30. If the employer liquidates this asset and buys an asset with an expected return of 100 percent, we should not reduce the liability to \$15 in anticipation of future gains. This, unfortunately, is what is done in most actuarial funding (although not accounting) calculations currently.

Unlike some others' opinions in this area, I do not think the risk of failure to make the benefit payments should be considered either. In the marketplace, the amount of perceived risk in an investment is correlated with potential and expected returns. If the liability is calculated in a way that does not reflect anticipated investment gains, then, to be consistent, it should also not reflect anticipated losses or the possible inability of the employer to meet its obligations.

In the previous example, one should not reflect the probability of a 50 percent chance that this new asset will have a complete loss, thereby reducing the pension liability to \$15 because no assets would be available to provide the benefits. This should hold true whether or not the assets are in the plan trust.

Similarly, the measurement of the pension liabilities for financial reporting purposes should not consider the funded status. The liability should not be reduced just because no assets are currently available in the trust to cover the liability.

However, the employee who is anticipating a benefit should be able to tell, with perhaps proper guidance, that the assets are invested in such a way that his benefits are at risk. If they are at risk, the employee might wish to discount his, not the company's, expected value of benefits to reflect this.

9. Hedging the Risk

The best way to handle the risk is to recognize it, rather than mask it, and to offset it in an economic sense.

The traditional asset-only efficient frontier, a sample of which is shown in Figure 4, does not consider the pension liability. The asset allocation for this efficient frontier is represented in Figure 5. At the far left of both charts is the low-return, low-risk allocation while the far right represents the high-return, high-risk allocation. Figure 5 represents the allocation to four different asset classes in this sample. At the far left of Figure 5 is the low-return, low-risk allocation with 100 percent being allocated to fixed income investments, almost 100 percent in T-bills (or cash). This asset only approach results in consideration of a large allocation to T-bills (or cash) as a low-risk investment.

Figure 4

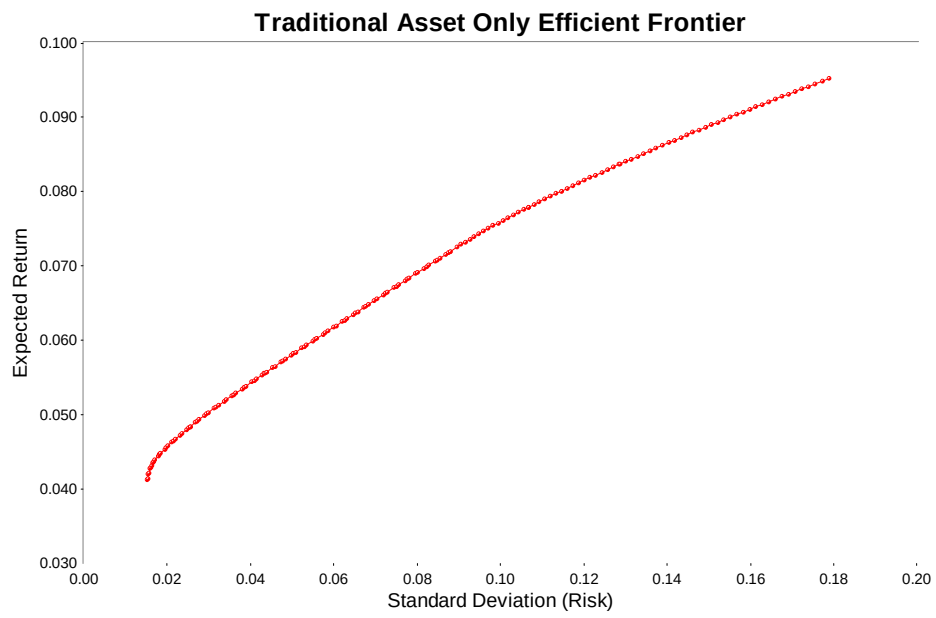
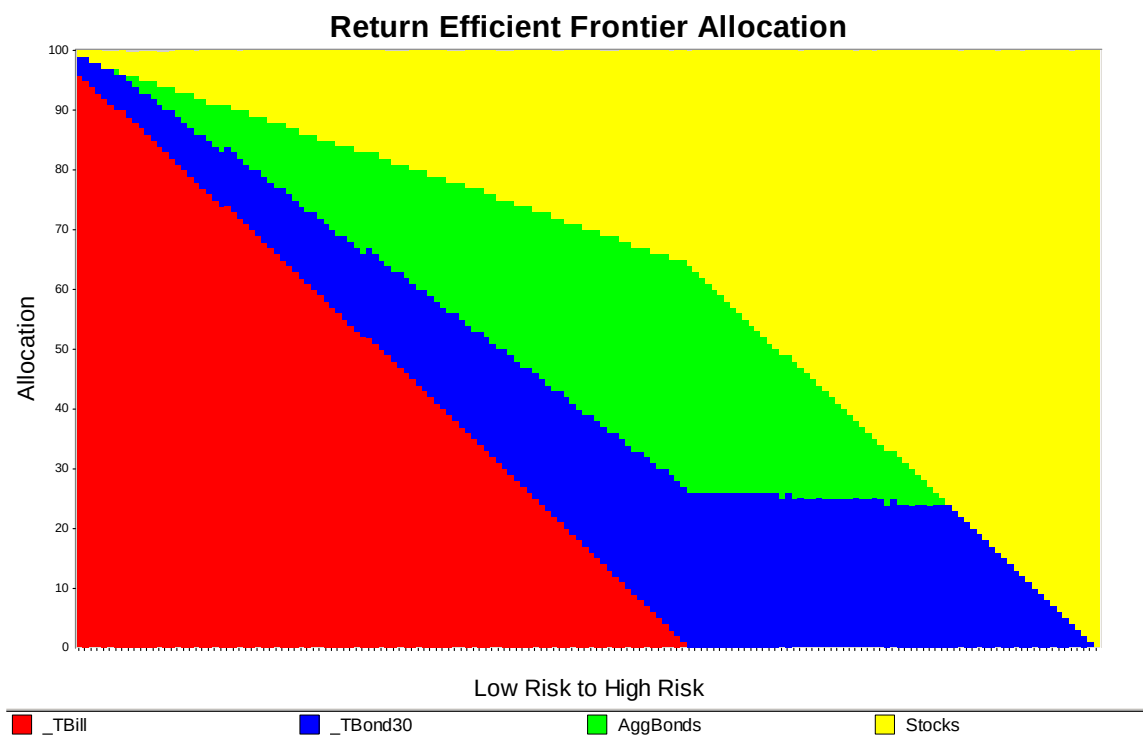


Figure 5

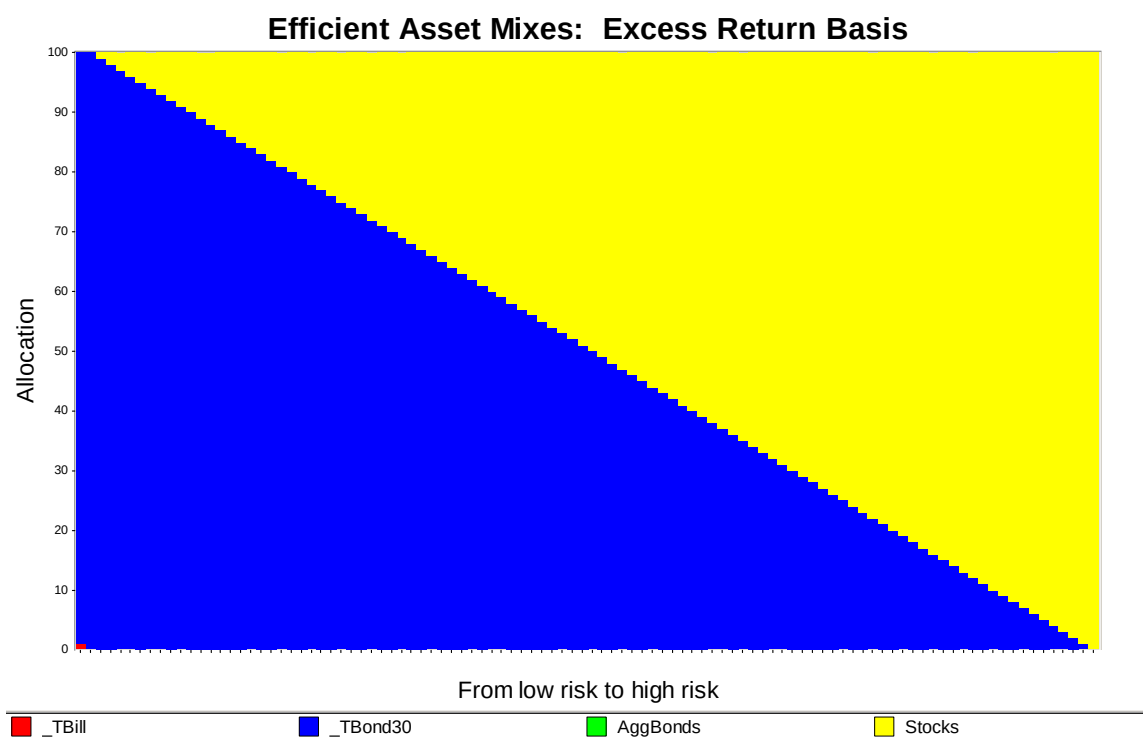


In deriving a true economic offset to the pension liabilities, we first have to change our definition of risk and reward from one based on simply looking at the assets to one based on looking at the assets compared to the liabilities, the surplus.

(Note that if we include funding liabilities calculated at one fixed assumed rate, then a surplus efficient frontier allocation shows little change from the asset-only efficient frontier. This does not make sense, as most would agree that the low-risk investment to cover a liability would be an immunized portfolio. Why then does this show mostly cash as the low-risk investment? It is because the liabilities are not being marked to market. If there is no assumed movement in the liabilities due to yield curve movements, then there is no need to invest in an asset class that moves with yield curve movements. Also note that, to properly arrive at an asset allocation with an economic offset to the liabilities, the liabilities should be measured using the entire yield curve.)

When we mark our liabilities to market, the liabilities will move with yield curve movements. Once we do that, as shown in Figure 6, the low-risk investment shows large allocations to long bonds, as they have duration closer to the long pension liability duration.

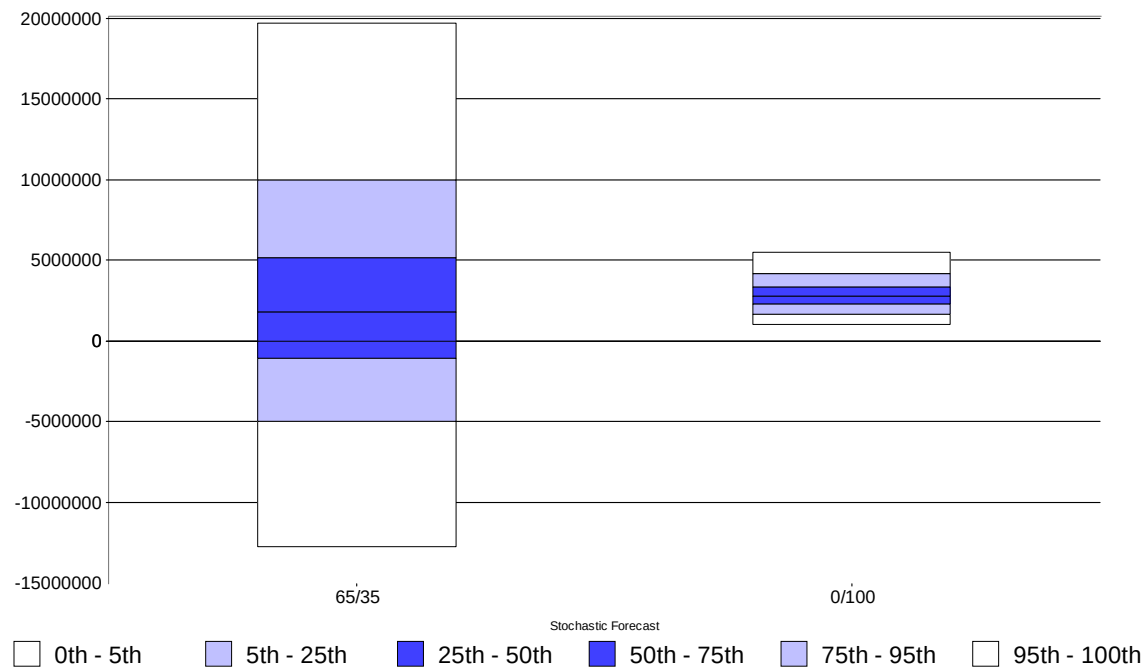
Figure 6



If we look at our transparent pension cost, with a typical 65 percent stock/35 percent bond allocation and compare that to a 100 percent long bond allocation, we can see how the risk is impacted in Figure 7.

Figure 7

**Transparent Pension Cost
2001**



10. Equities Are Expected to Produce Higher Returns

Simply increasing the allocation to stocks should not improve the current funded status of the plan. A million dollars worth of bonds is worth a million dollars worth of stocks. However, stocks are commonly expected to produce higher long term returns in the future and therefore higher asset values in the future. Part of this risk premium is to compensate for companies who go broke, part is compensation just for taking the risk but having the companies actually survive, and part is compensation for having more volatile asset returns.

I do not suggest that large allocations to equities should produce *immediate* gains by resulting in a lower discounted present value of future benefits. However, depending on assumptions, forecasts with larger equity allocations may show more anticipated *future* gains. (They may also show more volatility.)

In the past, larger allocations to stocks had an immediate effect on the funded status of the plan if the liabilities were calculated at a higher discount rate. Aside from this bias toward stocks, there may have been other biases. Past asset allocation studies that have focused on contributions have shown that larger allocations to stocks can produce lower contributions in the long term. The downside to large allocations to stock is that there is more volatility. However, if that volatility is masked by actuarial smoothing of assets and by deferral through amortization of gains and losses, then the risk is hidden.

I suggest that asset allocation studies need to consider the true economic volatility by also looking at results without the actuarial smoothing. Also, one needs to not overlook the items that cannot be smoothed, like the additional minimum liability and, when FAS 87 requires, the reduction in shareholders' equity.

11. The Measurement of a Pension Plan's Liability Should Reflect Timing of Future Benefits

An article in the March 31, 2003, issue of *Pensions & Investments* stated, "SEC officials in recent months have been increasingly concerned that many companies overstated their pension assets using artificially high return assumptions. Now, they also are worried that companies are understating their pension liabilities, using inappropriately high interest rates to calculate the present value of their obligations" (*Pensions & Investments* 2003).

The issue of artificially high return assumptions is addressed in this proposal by requiring reporting of actual returns rather than assumed returns. The use of inappropriately high interest rates needs also to be addressed. I propose that current market spot rates based on investment grade bonds be used to calculate the present value of liabilities. The Moody's Aa Index is made up of only 16 bonds and most of them are callable; therefore, this is not an appropriate index. I would suggest using the Salomon Brothers Pension Liability Index and Discount Curve.

We still should remove much of the temptation to pick a rate that is biased or a rate that just causes a miscalculation. We should require using the entire discount curve. This would remove much of the judgment used in picking a rate.

Using a flat rate in place of the curve can only lead to unintentional or intentional misstatements of the liabilities. For example, using the entire 2/28/2003 spot rate curve on a sample case produced a liability of \$39.9M. Using the liability index flat rate of 5.88 percent produced a liability of \$40.2M. This is only about a 1 percent difference in the liability. However, we have to remember that the effects on the surplus are leveraged. If the assets are within 10 percent of the liability, the difference in the surplus is 10 percent or more.

Also imagine that a company calculates its liabilities based solely on the 30-year rate arguing that most of its liabilities are due 30 years or more from now. Using the 30-year spot rate of 6.33 percent produces a liability of \$37.3M. This understates the liability by 6.5 percent. Again, this would have a compound effect on the surplus. The chance for miscalculation and misrepresentation could easily be eliminated by simply requiring the use of the spot rate curve.

12. The Measurement of a Pension Plan's Liability Should Reflect Current Market Conditions

Interested parties should be concerned about the risk that the plan sponsor might not be able to support the plan in the future. If the liabilities need to be transferred, interested parties should have an idea of the amount of funds needed to effectuate such a transfer. Therefore, current market spot rates should be used in calculating the present value of benefits.

In arriving at the appropriate discount rates to use, the actuary should first forecast future accrued benefit payments taking into consideration the expected payment options. These payments should then be discounted to the

present using high quality spot bond rates as noted previously. The actuary must use good judgment in selecting rates to be used for periods past the longest available period of long term bonds. One alternative is to use the longest available high quality bond rate.

Expectations of future inflation should be derived based on market conditions rather than being selected by the actuary. One way that this can be derived is by looking at bond rates for bonds with built-in protection against inflation and bonds that just have a fixed yield rate without inflation protection.

The assumed merit increases, mortality, turnover and retirement rates should be the actuary's best estimate based on the specifics of the case. Note that because we are using accrued benefits and the upcoming year's accrual, merit and inflation assumptions will have little impact, affecting only the expected growth in accrued benefits during the upcoming year.

13. Who is Harmed by the Current Funding Rules? The PBGC, the Taxpayers and the Plan Participants

As the accounting rules need to be changed, the funding rules should also be changed. Current funding rules may be adequate if the DB plan is an ongoing plan, going on indefinitely. Where the current rules come up short is when the plan is terminated or otherwise ended.

Actuaries should be able to realize that there is a risk that the plan might come to an end. Even public sector plans might come to an end, as plan sponsors may prefer to adopt a new type of plan. In the case where the DB plan comes to an end, the assumptions based on an ongoing plan invested in equities and/or with a smoothed asset value have the potential to cause a shortfall in the assets needed to purchase annuities.

Although this shortfall might be covered by shareholders through the plan sponsor, there is at least a risk that it will not be. In those cases, participants might not get their full benefits. The PBGC may be called in to cover some of the shortfall as well. The government, through the PBGC, taxes other plan sponsors, or may even tax general taxpayers, to cover this obligation. The net losers are the plan participants, other plan sponsors and the taxpayers.

14. Funding Guidelines

In years past, accounting net pension cost was determined by pension contributions. I now suggest that the contribution be driven by the transparent pension cost liability discussed earlier.

The minimum contribution level should be selected to protect participant benefits. Therefore, it is appropriate to set the minimum to be the difference between the present value of accrued benefits, including the upcoming year's benefit accrual, and the plan assets. This would be similar to the minimum contribution, including the *additional funding charge*, currently in place in the United States.

The calculations would reflect marking the assets and liabilities to market. This is different from the current practice, which allows the use of smoothed asset values.

There would be no need for a *credit balance*, as prior extra contributions in excess of the minimum would have a direct impact on asset values, which, in turn, directly impact the current minimum.

This suggestion could lead to a large jump in contribution levels during a year when the liabilities grow rapidly and there are asset losses. However, the plan sponsor has tools to prevent this disaster from striking its plan. One option would be to invest less aggressively and manage the risk between assets and liabilities. Another option would be to purchase insurance to cover this risk. Yet another option available to the plan sponsor would be to prefund above the present value of accrued benefits to provide a cushion.

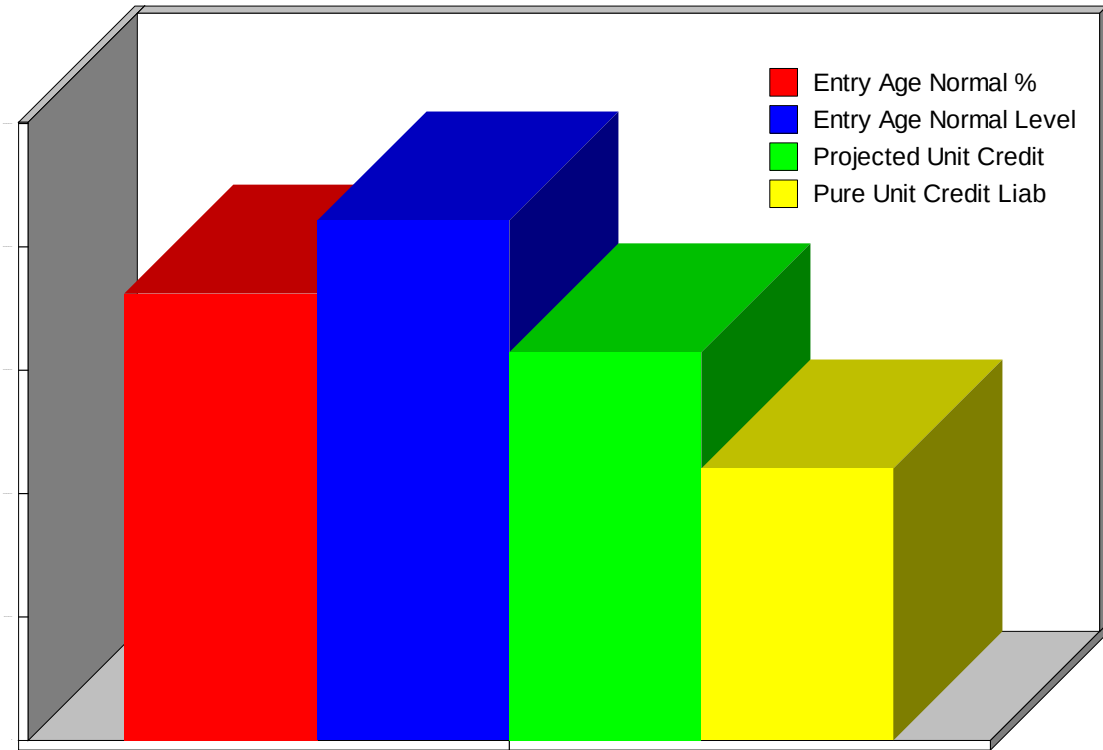
To build up a cushion, employers must be permitted to build up enough excess assets to cover most market downturns. For example, if an employer wanted to invest aggressively but build up excess assets, approximately 200 percent of the present value of accrued benefits would be needed to cover three consecutive years of 20 percent losses.

The primary force that should drive employers not to over contribute to a plan should be the limitation on retrieving excess assets. Strong tax penalties for retrieving the excess assets could be kept in place. This should permit some loosening of other limits directly related to the tax-deductibility of contributions.

The maximum contribution should be set based on some percentage of the present value of accrued benefits. This percentage should be high enough to allow employers to build up a sufficient cushion, perhaps 200 percent, should there be several years of bad market conditions. The development of this percentage level should take into consideration other actuarial cost methods. For example, the level should be high enough that an employer with a “typical” plan and population could fund the benefits by contributing under an Entry Age Normal Cost method without running into a problem with the maximum contribution limit.

I suspect that 200 percent would be sufficient. Taking a quick look at a sample case in Figure 8, it looks like the Entry Age Normal Level Dollar Liability is about double that of the Pure Unit Credit Liability. Therefore, 200 percent of the accrued liability (under the Pure Unit Credit method), would just permit Entry Age Normal Level Dollar funding for a plan with only active employees. Considering that most cases also have inactive participants and liabilities, this should allow sufficient flexibility.

Figure 8
Comparison of Normal
Cost



Although there would be more volatility in the minimum contribution, the flexibility in the maximum contribution would permit a cushion to be built up. That, combined with increased attention to asset liability management in the asset allocation selection, could actually reduce volatility and increase flexibility for selecting the amount of the actual employer contribution in any particular year.

15. Measurement of Funding Adequacy

The funding target should be at or in excess of the present value of accrued benefits. This would protect the participants and the PBGC should the plan sponsor not be able to support an ongoing plan. The liabilities should be calculated at current market rates for transferring the liability.

Liabilities in excess of assets would be reported as a debt on the balance sheet. Funding levels less than the present value of accrued benefits pose risks to plan participants and the PBGC. Therefore, plans at this level should pay a higher PBGC premium for coverage of this risk.

One possibility I considered but discarded was to have the level of PBGC premiums take into consideration the risk involved in a mismatch of investments to the liabilities. When the assets are in excess of, but close to, the liability, an aggressive asset allocation could require a larger PBGC premium, while less aggressive allocations, to control the underfunding, could require less of a premium.

However, I am not in favor of this approach, as it might cause employers to sell equities and buy bonds at a time when equity markets are already depressed. This would not be good for the economy nor would it be wise market timing. Therefore, I suggest that the only PBGC premium penalty for aggressive allocations should be in the years when the liabilities are greater than the assets, which might occur because of past aggressive allocations and the associated volatility.

An alternative would be to charge a larger PBGC premium for more aggressive asset allocations no matter what the funded ratio.

16. Sensitivity Analysis

The sensitivity of the liabilities to interest rate movements and the sensitivity of the assets to market returns should be measured and disclosed. This should preferably be done using stochastic analysis but may be done using several alternatives utilizing deterministic analysis.

17. A Funding Policy That Protects Interested Parties and Incorporates the Asset Allocation

The “Target Cost” method is one approach to funding that could incorporate the goal of funding the plan so that there are sufficient assets to cover the accrued liabilities. This approach has the added advantage that it can consider the asset allocation with stochastic forecasting. The idea of *target cost* funding is that, rather than working with just the current valuation date and a closed group forecast, one could instead determine by what date the accrued liability (or any other liability) is to be funded. They could fund 100 percent of the liability, or maybe even more. Stochastic forecasting adds the ability to incorporate the probability of reaching the goal. Therefore, one could adopt a combination asset allocation and funding policy that could be expected, with x-percent probability, to achieve a 100 percent funded present value of accrued benefit goal.

For example, take a case where the plan currently has enough assets to cover 120 percent of the present value of accrued benefits. One goal the plan sponsor might have is to have at least 100 percent of the present value of accrued benefits funded over the next 10 years. We could produce a stochastic set of results of the level funding as a percentage of pay needed to meet this goal.

Figures 9-12 demonstrate the results of stochastic forecasting.

Figure 9

Target Cost Range

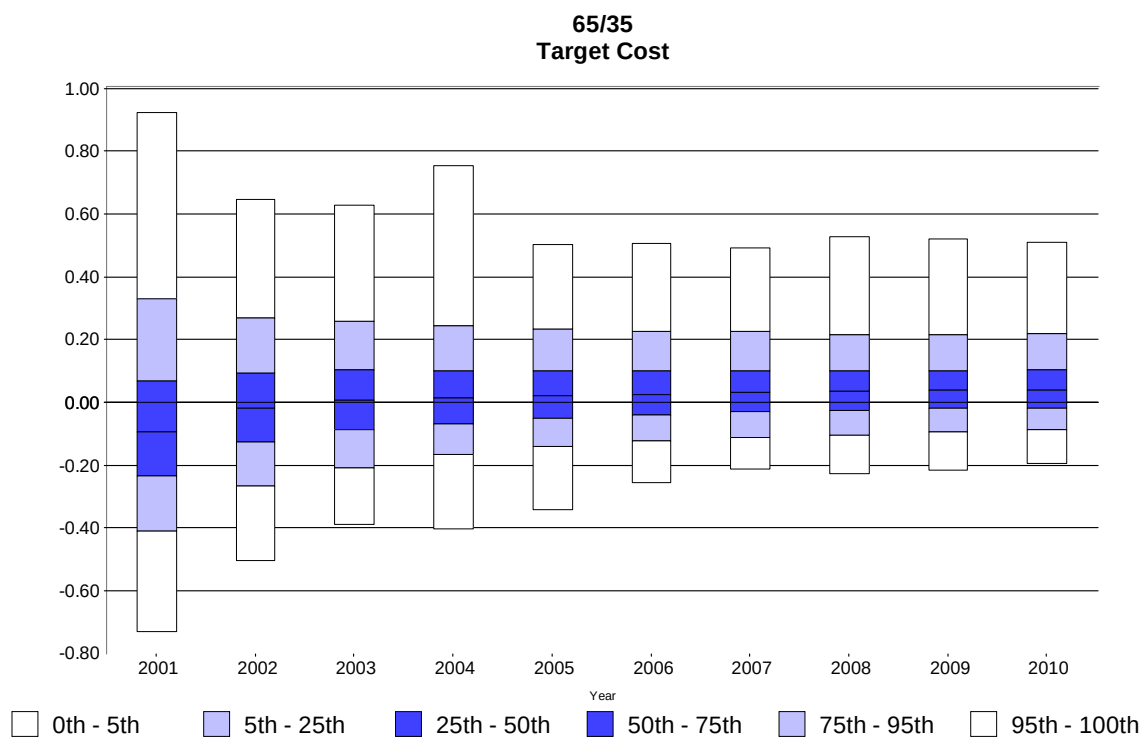
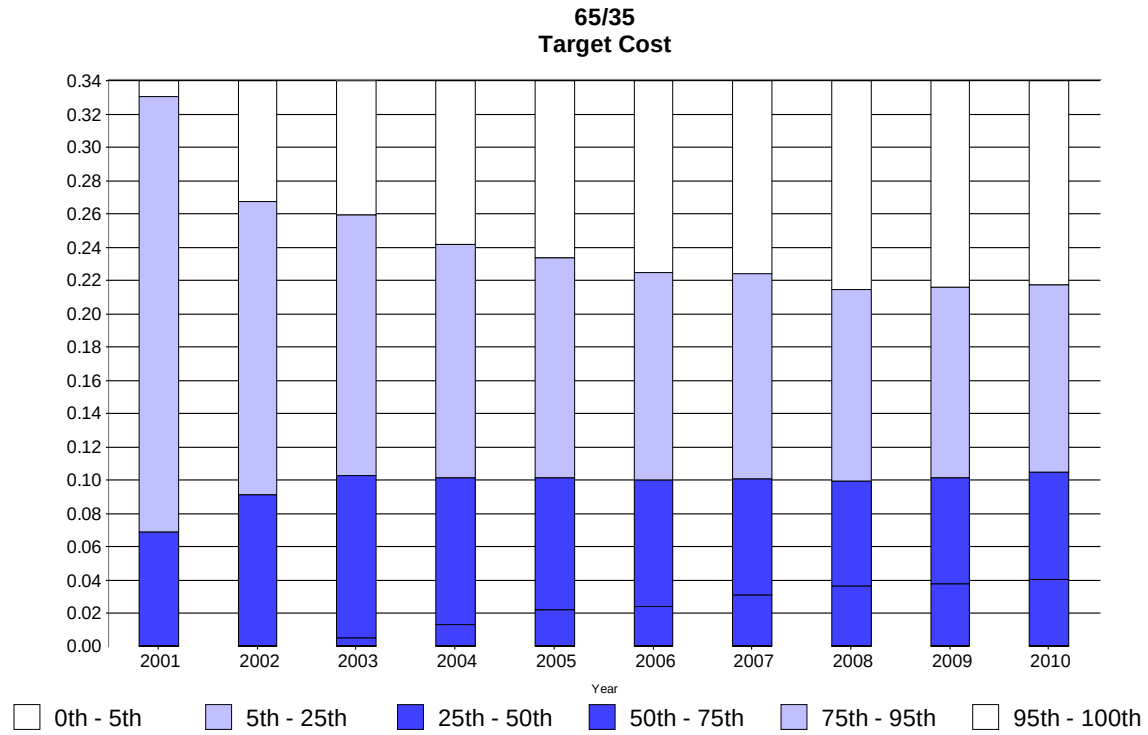


Figure 9 displays the different contribution levels as a percent of payroll that would be needed to have a given percentile of trials reach the funded ratio goal by a particular year. The median results are represented by the line in the center. The median result for the first year is less than zero. Therefore, in 50 percent of the trials, the goal is expected to be met in the first year without any contribution at all. However, the median result for the 10th year shows that to maintain that goal for 10 years in 50 percent of the trials, the plan sponsor needs to contribute about 4 percent of pay.

Figure 10 focuses on a more refined contribution level so that we can see more of the details.

Figure 10

Target Cost Detail



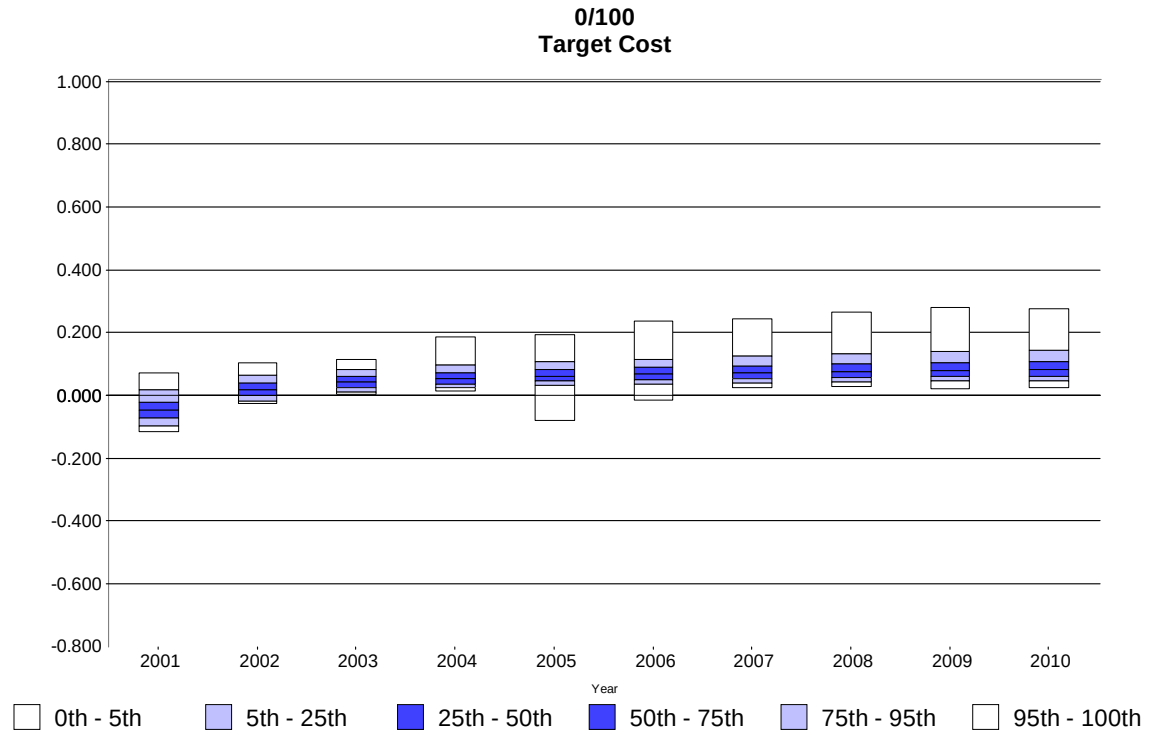
The median line rises from the first year to the 10th year, with the highest level reached at the 10th year. Therefore, to meet the stated goal for every year including the 10th year, the plan sponsor should contribute the highest level, 4 percent, shown in the 10th year.

We can also build in conservatism. The plan sponsor might express that he/she wants 95 percent of the trials to reach the goal. In that case, the 95th percentile in the first year would show that just about 33 percent of pay must be contributed to meet this goal for 95 percent of the trials. (Given that most employers are not prepared to contribute 33 percent of pay, they might want to change their asset allocation, as we will see in a moment. They could also adjust their level of confidence to seek only having 75 percent of the trials reach the goal. If so the required contribution level expected to achieve this for just the first year is approximately 7 percent of pay.)

Changing the asset allocation would have an impact on the results. If the allocation is changed to a more conservative 100 percent long bond allocation, the results would be as shown in Figure 11.

Figure 11

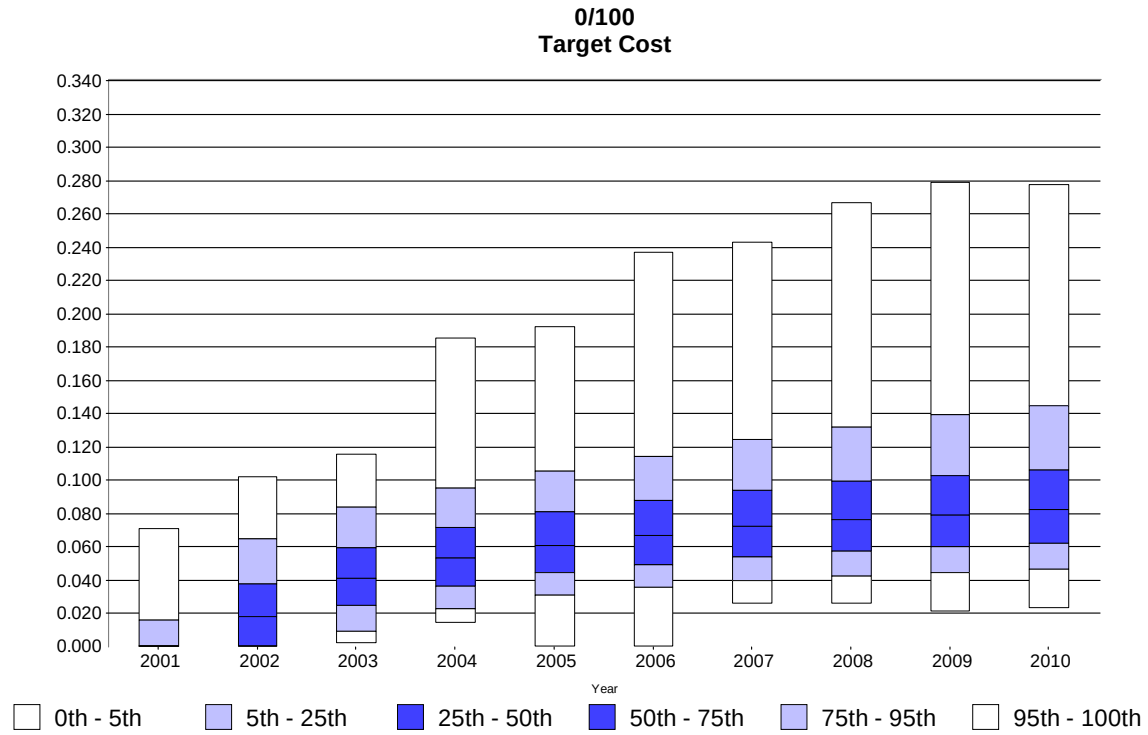
Target Cost Range for All Bond Mix



We can see that the required contributions are much less volatile in this case. Let's again focus, in Figure 12, on a more refined contribution level so that we can see more of the details.

Figure 12

Target Cost Detail for All Bond Mix



The median result from the first year shows a result that is less than zero. Therefore, in 50 percent of the trials, the goal is met for the first year without a contribution. However, the median result for the 10th year shows that to maintain that goal for 10 years in 50 percent of the trials, the plan sponsor needs to contribute about 8 percent of pay. Note that this is a higher contribution level than that attained with a larger allocation to stocks.

If the plan sponsor wanted to build in conservatism, he/she might want 95 percent of the trials to reach the goal. In that case, the 95th percentile in the 10th year would show that slightly over 14 percent of pay must be contributed to meet this goal for 95 percent of the trials.

In the case where conservatism is desired, the plan sponsor can obtain a lower required funded level, 14 percent rather than 33 percent, by switching to a more conservative asset allocation.

18. The Financial Status of the Plan Sponsor Should Not Be Incorporated Into Setting the Minimum Contribution

The minimum contribution rules should be developed considering the possibility that any plan sponsor can eventually get into financial trouble. The calculations of the liabilities cannot assume that there is an ongoing plan. The present value needs to reflect the fact that these benefits may need to be transferred under current market conditions.

Although the financial status of the plan sponsor should have no impact on minimum or maximum contributions, the decision about how much to contribute is flexible within these limits and perhaps impacted by the financial status of the plan sponsor.

19. Smoothing of Asset Values

A transparent financial picture should be presented to shareholders and other interested parties. Using a smoothed asset value that cannot be obtained by liquidating plan assets misleads the user. Therefore, smoothed asset values should not be permitted for accounting.

Smoothed asset values should not be used in the calculation of these new minimum and maximum contribution limits either. However, there is flexibility within these limits that could incorporate the use of smoothed asset values.

There is also flexibility within these contribution limits that could incorporate smoothing of other economic or demographic changes.

20. Impact on the Pension Plan's Investment Portfolio

Currently, it is common for the asset allocation to be selected so as to reduce contribution and FAS 87 expense levels. Risks of volatility are commonly “managed” by actuarial techniques to smooth results rather than by selecting a less aggressive asset allocation.

The suggested approach to transparent pension cost will no longer permit the actuary to leave costs unrecognized. Under the proposed approach, aggressive investment approaches will be fully disclosed and no longer smoothed or “unrecognized.” Therefore, future asset allocations would more likely be selected to better manage this risk.

21. Implications of the Proposed Method of Plan Liability Measurement on Plan Design

Retroactive benefit increases will have to be carefully considered, as they may have a dramatic impact on the minimum contribution. If a plan sponsor wishes to increase the accrued benefits, the surplus assets need to cover the increase or the employer needs to increase the minimum contribution to account for it. A plan sponsor will no longer be able to increase the economic benefit to the participants immediately while deferring the effect on the company's financial statements.

This is similar to FRS 17, which states: “Past service costs are recognized in the profit and loss account over the period until the benefits vest. If the benefits vest immediately, the past service cost is recognized immediately” (ASB 2000, p. 5).

22. Integrating the Needs and Desires of the Plan Sponsor, the Plan Participant and the Plan Sponsor's Shareholders

To meet the needs of participants, shareholders and other interested parties, there should be full and transparent disclosure. The plan sponsor should have no or limited flexibility in reporting and calculating the accounting pension cost. In reporting and calculating funding cost, this same information should be considered, but options for stability and control in the contribution should be

permitted. Employers also need to be able to contribute sums to build up a cushion against market drops. Some of the results of such a change would be:

- Participants and the PBGC would be better protected by having contributions and premiums related to risk.
- Computations and confusion would be reduced by reporting fewer liability figures based on different assumptions.
- The plan sponsor's desire to have contribution flexibility would be met by having a wider range between the minimum and maximum contribution levels.
- Asset allocations will be selected to reduce the economic risks.
- Plan sponsors of currently self-insured plans might consider insuring some or all of the benefits with an insurance carrier rather than accepting the risk themselves.

23. Conclusion

Although this proposed accounting approach would increase the reported volatility to shareholders and the risk of running a pension plan, it does not change the actual risk. Analysts are already well aware that these plans contain more risk than is currently disclosed. The market should not be expected to have a negative reaction to making transparent what is now oblique.

These proposed funding rules, while increasing the volatility of the minimum contribution, will have a net positive effect due to the flexibility within the minimum and maximum contribution limits. Allowing employers to build up a cushion will actually reduce the risk to the employer, the participants, and the PBGC.

This proposal will create market confidence in the information presented on DB pension plans, it will increase employers' capability to plan their pension contributions and it will increase the security of benefits for plan participants.

References

- Accounting Standards Board (ASB). 2000. Financial reporting standard 17: Retirement benefits. November. London: Accounting Standards Board.
- Burkholder, Steve. 2003. FASB adds limited-scope project on pension disclosures to agenda, *Daily Tax Report* (Bureau of National Affairs Inc.) 49 (March 13).
- Business Week Online*. 2002. 2002 S&P core earnings.
http://bwnt.businessweek.com/core_earnings/2002/index.asp.
- Financial Accounting Standards Board (FASB).1985. Statement of financial accounting standards no. 87: Employers' accounting for pensions. December. Washington, DC: Financial Accounting Standards Board.
- Pension & Investments*. 2003. SEC warns companies might have to restate financial data. March 31.