

# FRBSF ECONOMIC LETTER

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## Pension Accounting and Reported Earnings

The bursting of the stock market bubble has left many private defined benefit pension plans underfunded, raising some concerns about the effects on cash flows and, for a few firms, on financial soundness (see, for example, Kwan 2003). However, even as the asset value of corporate pension funds has eroded, firms sponsoring defined benefit plans have continued to report unusually low pension costs, because pension earnings have not fallen as much under the accounting rules for pension funds. Since the reported earnings and their sources are inputs to stock valuation, the complexity of pension accounting could blur the transparency of financial reporting and hinder investors' ability to perform valuation correctly. This *Economic Letter* discusses the accounting rules governing pension reporting and their impact on reported earnings.

### **Pension accounting**

The accounting of pension plans must conform to standards established by the Financial Accounting Standards Board (FASB). Specifically, FASB statement 87 establishes standards of financial reporting and accounting for an employer that offers defined benefit pension plans to its employees. The standards cover such areas as pension cost measurement, reporting of liabilities, and financial disclosures.

In recognizing the pension cost in the income statement, firms sponsoring defined benefit pension plans do not record the cash contribution to the pension plan as an expense. Rather, the FASB requires the sponsoring firm to expense what is called the net periodic pension cost (NPPC) in its income statement. The NPPC is equal to the annual accrued costs of the pension plan minus the expected return on plan assets. The annual accrued costs include the service cost, the interest cost, and other costs. The first element, the service cost, refers to the present value of pension benefits earned by employees during the fiscal year, which in essence can be viewed as deferred compensation. The second element, the interest cost, is the annual accrued interest on

previously incurred pension benefit obligations and reflects the increase in the projected benefit obligation due to the passage of time as employees are getting closer to receiving their pension benefits. The third element, other costs, stems from changes in pension coverage, such as plan amendments or changes in actuarial assumptions.

The accrued pension costs, i.e., the sum of service cost, interest cost, and other costs, are netted against the expected return on plan assets in calculating the NPPC. The dollar value of the expected return on plan assets is determined by multiplying the expected rate of return on plan assets and the market-related value of plan assets. The expected rate of return is determined by the sponsoring firm, and, under FASB statement 87, it should be based on the expected long-term rate of return on plan assets. The expected rate of return is an assumption and could depart significantly from the realized rate of return; that is, if the pension plan assumes a 10% rate of return, but in reality experienced a loss in asset value, the assumed 10% gain still is used to compute the NPPC.

Moreover, in determining the market-related value of plan assets, plan assets are not marked to market immediately. Rather, changes in the market value of plan assets are amortized over five years. Hence, a one-time gain or loss will be spread out over five years in determining the accounting value of plan assets that is used to calculate the expected return. The combination of using the expected rate of return and the market-related value, rather than the realized return and the marked-to-market value, in computing the dollar return on pension assets has the effect of smoothing pension earnings over time and, hence, the reported earnings.

### **Measuring recent pension costs**

As in Kwan (2003), I focus on firms in the S&P 500—353 of those companies have defined benefit pension plans, and 327 firms have released their

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2002 pension information so far. Of these 327 firms, 252 have complete pension data back to 1991, so these will be the subject of the empirical analysis.

Figure 1 shows that aggregate NPPC from 1991 to 2002 for these firms began to decline in 1994, turned negative in 1999, and plummeted in 2000. It stayed negative in 2001, even when stock prices were retreating and became only mildly positive in 2002. The unusually low pension costs, and, in particular, the negative pension costs between 1999 and 2001, effectively boosted reported earnings in those years.

Figure 2 breaks the NPPC for the sample into its components: the aggregate service cost, interest cost, and the expected return on plan assets net of other costs. (Both the expected return and the other costs series are quite volatile but tend to have offsetting effects, so combining them produces a rather smooth series.) Both service costs and interest costs rose steadily between 1991 and 2002, reflecting increases in sponsoring firms' employee compensation. While the net expected return series tracked the other two cost series fairly closely until 1996, it rose at a much faster clip between 1997 and 2000, effectively driving down the NPPC.

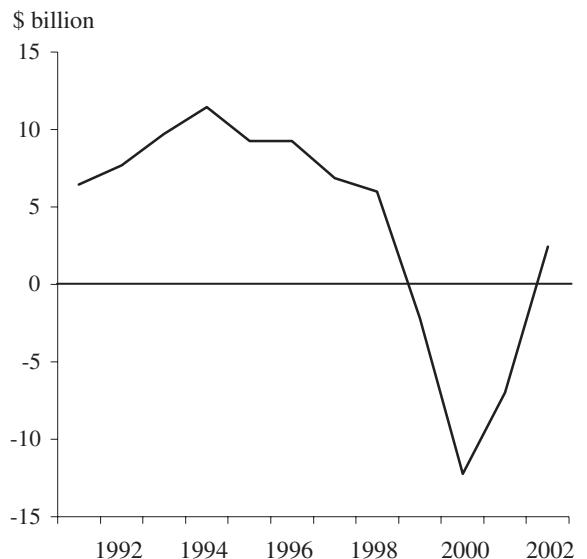
Why has the expected return on plan assets remained elevated since 2000, despite the general fall in stock prices? Recall that, for the purpose of computing NPPC, the expected dollar return on plan assets equals the expected rate of return chosen by the sponsoring company multiplied by the accounting value of plan assets. As shown in Figure 3, the expected rates of return that sponsoring companies used did not change much between 1991 and 2001 and dropped only slightly in 2002. Thus, even though the realized returns have been negative since 2000, a positive rate of return has continued to be used to compute the expected dollar return on plan assets.

Moreover, the accounting value of plan assets used in computing the expected return is marked-to-market only gradually, because FASB 87 requires asset gains and losses to be amortized over five years. Thus, the run-up in stock prices during the late 1990s continued to affect the accounting value of plan assets and hence the dollar expected return for up to five years. The delay in recognition of some of the past gains in plan assets offset some of the recent losses.

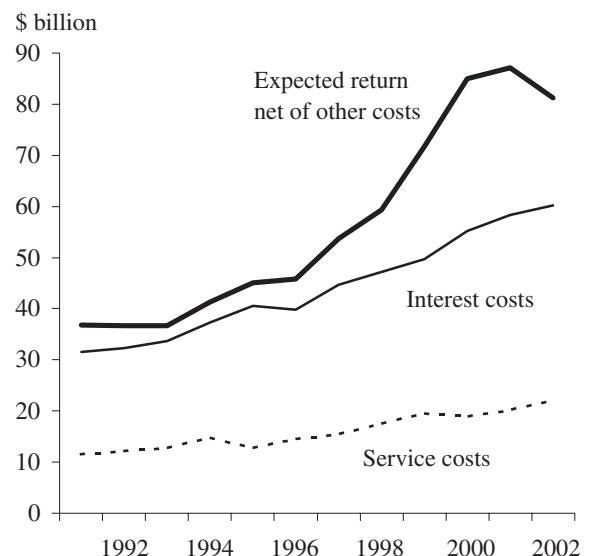
### Implications for reported earnings

The accounting rules governing NPPC, then, are designed to smooth the impact of changes in the

**Figure 1**  
Net pension costs for S&P 500 sample

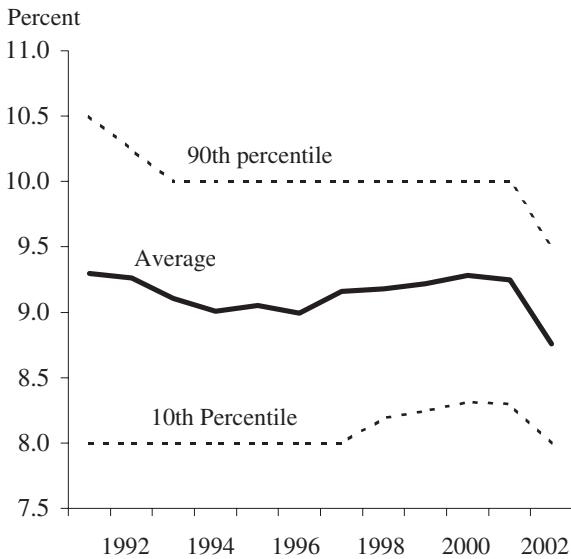


**Figure 2**  
Pension cost components



cost of defined benefit pension plans on the reported earnings of corporations. Pension earnings are calculated using the relatively stationary long-term expected rate of return, and the gains on plan assets are amortized over five years. Without the smoothing effect, using the realized rates of return on pension assets and the marked-to-market asset values would have driven down the pension costs and driven up reported earnings even further during the last stock market boom. By dampening the volatility in pension costs and, hence, reported earnings, the smoothing mechanism has had its most pronounced effect on corporate earnings since the stock market decline.

**Figure 3**  
**Expected rate of return**



With significant losses in pension asset value, using the actual pension earnings would have resulted in much higher pension costs that would have further depressed the already low corporate earnings since 2000. The smoothing effect cushioned the sharp fall in pension earnings and held down pension costs, giving a lift to reported earnings even into 2002.

It is unclear what effect the accounting treatment of pension fund earnings and costs has had on the valuation of corporate stocks. This is especially true given that the actual economic value of the pension plans is disclosed only in footnotes of the sponsoring firms' financial statements. In an efficient capital market, investors would be able to see through sponsoring firms' financial statements and discount their reported earnings correctly. That is, in theory, rather than discounting the smoothed pension earnings or losses on income statements, the value of a pension fund to the sponsoring firm's shareholders should reflect the marked-to-market value of pension plan assets net of the fund's projected benefit obligations. However, there is some evidence that the complexity in pension cost measurement, and the relegation of the net pension asset value to a footnote, could compromise financial transparency and lead to misvaluations (see Coronado and Sharpe 2003).

With that in mind, it is quite likely that reported net pension costs will rise in coming years, holding back growth in reported earnings of firms that sponsor defined benefit pension plans. In addition to the continuing rise in service and interest costs, the expected return on pension plan assets is poised for a fall on two accounts. First, as shown in Figure 3, the expected rate of return already fell a bit in 2002. This trend is likely to continue, as several firms recently indicated that their assumed long-term expected rate of return on pension plan assets may have been too optimistic, and they announced plans to use a lower expected rate of return to calculate pension earnings in figuring the NPPC. Doing so certainly will drive down pension earnings and drive up pension costs. Second, due to the amortization of losses in pension assets incurred in the past three years, absent any significant advance in stock prices in the near future, the accounting value of plan assets used to calculate the NPPC would decline from its current level. Multiplying a lower pension asset value by a lower expected rate of return will result in lower pension earnings and, thus, in a smaller offset to the service costs, interest costs, and other pension costs.

### Conclusions

The accounting standards for defined benefit pension funds are quite complex, and understanding them is crucial in interpreting sponsoring firms' reported earnings and financial soundness. In conforming to those standards, firms sponsoring defined benefit pension plans enjoyed a lift on reported earnings in recent years, despite the fall in the stock market. This tailwind to reported earnings would likely turn to headwind in coming years as some of the positive factors affecting pension cost measurement reverse course.

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### References

- Coronado, J.L., and S.A. Sharpe. 2003. "Did Pension Plan Accounting Contribute to a Stock Market Bubble?" *Brookings Papers on Economic Activity* 1 (forthcoming).
- Kwan, S.H. 2003. "Underfunding of Private Pension Plans." *FRBSF Economic Letter* 03-16 (June 13).

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