



The recent stock market roller coaster ride has drawn attention to the impact of defined benefit (DB) pension plans on corporate finances and financial reporting. Under FAS 87 rules, swings in the market prices of equities and yields on bonds can cause the bottom line contribution of DB plans to fluctuate, and these fluctuations can significantly affect a company's reported financial performance.

This issue is not new: In the 1980s, many companies significantly increased their reported earnings simply by adopting FAS 87, only to see these increases ebb away as market interest rates declined and pension expense increased.

Both actuaries and non-actuaries are currently giving much thought to how corporate financial statements should reflect DB plans. Opinions tend to divide between those who would uphold long-standing practices and those who would change the actuarial/accounting model to reflect the principles of financial economics.

In the accompanying articles we present these two contrasting views of this issue. We hope our exchange will stimulate a lively debate among actuaries and other readers, as the result will affect the future of both DB pension plans and the securities markets generally. We encourage actuaries to make their voices heard in this important debate.

—LARRY BADER AND ERIC KLIEBER



VALUING COMPANIES, VALUING PENSION PLANS

By Lawrence N. Bader •

Failure to value pension plans properly can dramatically overvalue companies when pension assets are outgrowing liabilities and undervalue them when the reverse is true.

DECIDING WHAT A COMPANY IS WORTH IS FUNDAMENTAL to the work of executives, investors, and lenders. Corporate valuations are needed for mergers, acquisitions, sales, spin-offs, initial public offerings, leveraged buyouts, bankruptcies, and investment and lending decisions. For a publicly traded company, a market valuation is readily available, but even then an interested party may want an independent judgment of value.

Corporate valuations commonly take no specific notice of pension plans, relying on Statement of Financial Accounting Standards Number 87 (FAS 87) to capture the effect of such plans. Relying on FAS 87, though, can distort the valuation of companies whose defined benefit pension plans are significant in relation to their overall business. (Although this article addresses only defined benefit pension plans and FAS 87, the same concerns apply to other retirement benefits reported under FAS 106.)

Reliance on reported pension costs, however, can produce errors. Although FAS 87 has drawn much controversy and criticism, its real or alleged defects aren't the problem here. Rather, folding a conventional pension cost into corporate earnings hinders rather than helps in understanding corporate value. The danger lies in conflating two very different types of earning or expenses—those generated by conventional business operations and those arising from financial assets and liabilities.

Using Price/Earnings Ratios

As an exercise, let's value Company A, a private company with a single line of business that generates \$100 million of annual earnings. The company is entirely equity-financed, with no debt or similar obligations.

We can value such a business in many ways. Summing the prices at which all the individual assets could be sold is usually impractical and would understate the worth of most ongoing businesses. Instead, we might discount the expected cash flow of the company, or apply a multiple to its projected earnings. The price-earnings (P/E) multiple is the most familiar valuation tool, and we'll use a simplified P/E model, ignoring taxes, to focus ultimately on our main concern—the handling of pension plans.

Using the P/E approach, we look for benchmark companies that are comparable in industry, size, and growth pattern. We limit our search to companies with a known market price; they may be publicly traded companies or private companies involved in recent transactions.

Fortunately, we identify a similar Company B (benchmark), with the same single line of business and no debt. Its annual earnings are \$300 million, and its equity is worth \$7.5 billion, for a P/E multiple of 25. Judging that neither B's greater size nor other differences justify a materially different P/E multiple, we apply B's multiple of 25 to A's \$100 million annual earnings. We arrive at a \$2.5 billion value for Company A, as shown in Table 1.

TABLE 1. Valuation by Earnings

	COMPANY A	COMPANY B
Earnings	\$100 million	\$300 million
Equity value		\$7.5 billion
P/E		25
Implied P/E	25	
Implied equity value	\$2.5 billion	

Using EBIT to Adjust for Capital Structure

Unfortunately, differences in tax status, capital structure, and accounting practices can distort the comparison of P/E multiples. For example, suppose we want to value Company AL, a leveraged version of Company A. Company AL had been identical to Company A, until it leveraged itself through a stock buy-back. It issued \$1 billion of debt, carrying annual interest expense of \$80 million, to repurchase \$1 billion of equity. Table 2 repeats the valuation of unleveraged Company A and applies the same method to leveraged Company AL.

Table 2 indicates that Company AL has equity of \$500 million, together with its \$1 billion of debt, for a total corporate value of \$1.5 billion. Assume, however, that the conditions for Miller-Modigliani's Proposition 1 (MM) prevail (mainly, market efficiency and an absence of tax effects and bankruptcy risk). MM states: "The market value of any firm is independent of its capital structure."

Under MM, the Table 2 difference between the total values of Companies A and AL couldn't exist. If it did, a buyer could purchase Company AL's equity for \$500 million and its debt for another \$1 billion. For \$1.5 billion, the buyer would then own all the cash flows of a business identical to that of Company A and therefore worth \$2.5 billion.

To adjust for capital structure differences between the companies, the valuation should ignore net earnings and rely instead on earnings before interest and taxes (EBIT). (See Table 3.)

TABLE 2. Valuation by Earnings

	COMPANY A	COMPANY B	COMPANY AL
Gross earnings	\$100 million	\$300 million	\$100 million
Interest charges	—	—	\$ 80 million
Net earnings	\$100 million	\$300 million	\$20 million
Equity value		\$7.5 billion	
P/E		25	
Implied P/E	25		25
Implied equity Value	\$2.5 billion		\$500 million

TABLE 3. Valuation by EBIT

	COMPANY A	COMPANY B	COMPANY AL
Gross earnings	\$100 million	\$300 million	\$100 million
Interest charges	—	—	\$ 80 million
Net earnings (EBIT)	\$100 million	\$300 million	\$20 million
Corporate value		\$7.5 billion	
P/EBIT		25	
Implied P/EBIT	25		25
Implied corp. value	\$2.5 billion		\$2.5 billion
Debt	—	—	\$1 billion
Implied equity value	\$2.5 billion		\$1.5 billion

Under the MM conditions, two similar businesses should have *total corporate values* (equity plus debt) that are similar multiples of their EBIT. Because Company B has no debt, its corporate value equals its \$7.5 billion equity value and its EBIT equals its \$300 million earnings. Its price/EBIT ratio is the same 25 we used previously. Applying that 25 multiple to the \$100 million EBIT of Companies A and AL gives them both *corporate values* of \$2.5 billion. Subtracting Company AL's \$1 billion of debt leaves it with \$1.5 billion of equity, giving a consistent, arbitrage-free relationship between the values of Company A and Company AL.

Separating Nonbusiness Assets

A corporate valuation can be more precise if we value each line of business separately. Different lines of business may call for different P/E multiples, and we can more easily identify benchmark multiples for the individual lines of business than for a particular mix of businesses. Similarly, we should value separately any financial assets that aren't an integral part of the operating businesses and could be sold without disturbing them, such as an investment portfolio.

We value separable financial assets at their market prices, with appropriate estimates for nonmarketed assets. Valuing those assets indirectly by letting business multiples apply to their earnings can produce egregious errors.

For example, suppose an unleveraged company has a business identical to Company A's, earning \$100 million. This company also owns an investment portfolio, so we label it Company AI. The investment portfolio consists of marketable securities, now worth \$100 million, that generated earnings of \$20 million last year. Table 4 illustrates the danger of simply folding in the investment return with the business earnings.

This difference between Company A's \$2.5 billion equity value and AI's \$3 billion value makes no sense. Companies A and AI are identical, except for AI's \$100 million portfolio. A potential buyer who could buy Company A for \$2.5 billion would not pay \$3 billion for Company AI. Why pay an extra \$0.5 billion for AI's portfolio, which you can duplicate for \$100 million?

A similar calculation would entitle you to buy AI at a discount to A if the portfolio had *lost* money last year. Good luck! To get a correct value for Company AI, we should apply Com-

TABLE 4. Valuing a Company with Separable Financial Assets

	COMPANY A	COMPANY AI
Business earnings	\$100 million	\$100 million
Investment earnings		\$20 million
Total earnings	\$100 million	\$120 million
Equity value	\$2.5 billion	
P/E	25	
Implied P/E		25
Implied equity value		\$3 billion

pany As multiple to Company AI's business earnings to get a \$2.5 billion implied business value. Then add the \$100 million portfolio value, for a total Company AI value of \$2.6 billion.

Pension Plans

Thus far, we value a business by applying a benchmark multiple to reported earnings or EBIT, which reflects FAS 87 income or expense charges. We haven't adjusted explicitly for any pension surplus or deficit, because the earnings reflect the amortization of such imbalances. (In practice, analysts may make some judgmental adjustment for the worry factor associated with large pension or retiree medical deficits, or for the questionable "quality of earnings" that derive excessively from pension surplus.)

This approach values the pension plan indirectly by letting the overall corporate P/E multiple apply to the FAS 87 income or expense. This indirect valuation produces the same errors as the indirect valuation of debt or an investment portfolio that we observed earlier. Substitute pension surplus for the investment portfolio in the valuation of Company AI in Table 4, or pension deficit for the debt in Company AL in Table 2, and we find the identical problem of misvaluing the company by applying a standard business valuation multiple to recent pension fund performance. The implied value of the pension plan can vary widely, based on historical events that give little information about the company's ability to produce future income.

Note that the problem is independent of the FAS 87 methodology. We can't correctly value a pension plan by applying a corporate P/E multiple to any plausible pension cost, just as we can't value an investment portfolio by applying a corporate multiple to its actual or averaged or expected return.

We can resolve the problem by splitting the pension cost into operating cost and financing cost:

- The operating cost ("service cost") is the value of benefits earned during the reporting period.
- The financing cost includes all other pension cost elements—interest on pre-existing liabilities, earnings on plan assets, and amortization of the various deferrals allowed in FAS 87.

The service cost is part of current compensation expense and should be charged against operating earnings. The financing cost reflects the performance of previously accumulated non-operating assets and liabilities, which should be excluded from the evaluation of the business operations. After applying a P/E multiple to the operating earnings (or valuing the business in some other way), we adjust the resulting value by adding the pension assets and subtracting the liabilities.

This procedure simply extends the concept of EBIT. A standard extension is EBITDA, which removes non-cash charges (depreciation and amortization) from the adjusted earnings. Removing pension cost (apart from service cost) further purifies the earnings comparison among companies. After applying an

appropriate multiple to this "EBITDAP," we add pension assets and subtract pension liabilities and debt to arrive at the value of the firm's equity.

Actuarial Issues

We briefly consider two actuarial issues in valuing pension plans as part of a corporate valuation. What discount rate should we use to determine the pension liability—the FAS 87 discount rate, the expected long-term rate of return on plan assets, or something else? How should the liability reflect expected future pay increases?

■ *Liability discount rate.* A company's pension liabilities are similar to debt. Their fair value should be found by discounting at



WE SHOULD VALUE SEPARATELY ANY FINANCIAL ASSETS THAT AREN'T AN INTEGRAL PART OF THE OPERATING BUSINESSES.

the rates that apply to corporate debt with similar creditworthiness (factoring in the security provided by the pension fund).

Many plan sponsors and actuaries believe that the expected return on pension assets, which may reflect heavy equity exposure, is an appropriate discount rate for financial reporting. However, the expected return on risky assets held to provide for payment of a liability isn't a correct rate for valuing that liability.

An analogy may be helpful here. Suppose a company has outstanding bonds with a \$5 million market value. The company may set aside a "debt repayment fund" with \$4 million of equity that it expects will provide enough return to meet the debt service schedule. Could the company now report that the \$4 million debt repayment fund fully offsets the debt?

Of course not, more than the company could persuade its bondholders to exchange their \$5 million of bonds for \$4 million of equity. Changing the words "debt repayment fund" to "pension fund" doesn't alter the financial reality.

■ *PBO or ABO?* Under FAS 87, plan sponsors must disclose the accumulated benefit obligation (ABO), the value of benefits that plan participants have earned based on their service and pay history. But the pension expense calculation usually depends on a different and larger liability, the projected benefit obligation (PBO). The PBO adds to the ABO the effect of expected future pay increases, if the plan benefits depend on pay.

For example, suppose a plan bases its pension on the employee's average pay during his final five years of service. The ABO would reflect the employee's service to date and the average pay for the past five years—roughly the benefit the employee would receive at retirement if he left the company now and were vested. The PBO would also reflect the service to date

but would replace the employee's current five-year average pay with his expected final five-year average pay. Under FAS 87, the service cost for benefits earned during the reporting period also recognizes expected future pay increases.

When valuing the corporate sponsor of a pension plan, we should recognize a pension liability only to the extent of accrued benefits, based on service and pay to date. The service cost, reflected in current company earnings as part of compensation, should cover the increase in accrued benefits.

The ABO-type accrued benefit is the only liability to which the participants have established a right and for which the company is liable. Future pay increases aren't part of a current liability but are discretionary future transactions. The pension liability resulting from those increases arises only when the increases occur.

So Why Don't Financial Analysts Do It This Way?

Besides a lack of the specialized knowledge needed to understand pension accounting, several reasons might justify the failure of financial analysts to separate the pension cost from operating earnings and value the pension plan directly.

■ **Materiality.** The valuation of a complex business involves many factors that are difficult to pin down. For all but a few companies in a few industries, the overall uncertainties of such an exercise swamp the inaccuracies in valuing the pension plans. Pension errors are a problem only for companies whose pen-

sion numbers are material—or for valuations that rely on intercompany comparisons, companies whose pension numbers differ materially from their benchmark group.

■ **Availability of information.** An old story tells of a drunk who lost his keys a block away but who looks for them under the lamppost because it's easier to see there. The FAS 87 information is under the lamppost, but the data needed for our methodology are harder for outsiders to locate.

They're not, however, difficult to estimate. The pension footnote discloses the market value of assets. It also shows the ABO, discounted under FAS 87 at about a double-A rate. Because the correct discount rate should reflect the security provided by plan assets and the sponsor's creditworthiness, the FAS 87 rate may be reasonably close to the correct rate for the well-funded pension plans of strong companies.

An adjustment to a higher discount rate for less secure plans wouldn't be difficult to estimate by rule of thumb. A service cost that excludes future pay increases isn't readily available, but this cost is a small enough component of corporate expense that it shouldn't cause difficulty.

■ **The markets don't do it this way.** If everyone else accepts the FAS 87 pension costs, an investor who tries to do it differently will be out of synch with the market. Many analysts are less interested in finding absolute Truth than in finding what the market will regard as truth in a few days, weeks, or months. Because of the FAS 87's lack of transparency, it can take many years for the majority who rely on FAS 87 to see the truth emerge in reported earnings.

This argument may be valid in some circumstances, such as near-term stock picking, or for an acquisition the buyer intends to flip. But one needn't be a strong believer in efficient markets to recognize that markets aren't entirely mechanical: Companies don't all trade at the same P/E, even in the same industry.

Unusually large pension income or pension or retiree medical deficits attract attention and affect market prices, perhaps in a very imprecise way. Parties in transactions involving these situations should—and sometimes do—recognize the need to substitute a separate valuation of the retirement plan for the distortions of prevailing practice.

We've discussed how P/E multiples or similar intercompany comparisons must be adjusted for debt or for financial assets that are separable from the business operations. Because a pension plan is simply a combination of debt-like liabilities and non-operating financial assets, we must similarly remove it from P/E comparisons. Failure to do so can dramatically overvalue companies when pension assets are outgrowing liabilities and undervalue them when the reverse is true.

New pension accounting rules could bring transparency to pension plan reporting but wouldn't necessarily eliminate the corporate valuation problem. They could do so only by divorcing the pension financing cost from the company's operating income. Until such a revision occurs, we must value pension assets and liabilities separately from the operating businesses, using the principles of financial economics rather than standard actuarial or accounting practice. ●

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