

Hands up if you don't know

In the April 2002 issue Simon Carne challenged actuarial economists over their use of the word 'cost'. This month he focuses on their use of the words 'pension promise'.

IT IS BEING SAID THAT THERE ARE TWO camps in the profession: financial economists and traditionalists. In fact, there are three camps: financial economists, confused economists, and traditionalists. As someone who has been using financial economics for 20 years, has taught it for three years, and has been advising economic regulators for nearly a decade, I am becoming increasingly alarmed at the fallacies currently advanced by actuaries in the name of financial economics.

A frequent example of the confused economist is someone who starts off (quite correctly) with the proposition that the value of an asset is not affected by the source of the funds used to finance it and then adds, as if it were a logical sequitur, that the discount rate for valuing pension fund liabilities is unaffected by the assets held in the scheme.

The second observation is not the same as the first. It may look like a mirror image of the first, with assets and liabilities reversed, but it most assuredly isn't.

Back to basics

The confused economists point out (quite rightly) that the expected return on equities is higher than that on bonds and that the volatility of equities is correspondingly higher. But they infer from this (quite wrongly) that pension funding cannot be made cheaper by investing in equities.

If nothing could be gained by investing in equities, the equity market would have died out long ago. It persists, because investors who can withstand the volatility can also expect to gain from the higher returns. In other words, financial economics does not teach us that the volatility cancels out the extra return. It teaches those who want the extra return to ask themselves the question: 'Can I withstand the volatility?'

In order to test the underlying economics of that position, consider a typical company pension scheme before the Pensions Act 1995 introduced the minimum funding requirement. The pension scheme promise was effectively as follows.

The company wants the employees to have a pension based on service and final salary. It is setting aside money in a fund. So long as the fund remains solvent, the trustees will pay a pension in accordance with the formula. But if the fund becomes insolvent, members will simply get a share of what's there. There is no enforceable promise by the company to top it up.

Rightly, or wrongly (we'll see which shortly), most pension funds invested substantially in equities. The contribution rate was calculated on the assumption

that the expected return was higher than it would have been for a bond-only investment strategy.

From time to time, the stockmarket took a dive. Those funds that were able to ride out the storm for long enough found that, historically, the equity markets did turn back up. Those funds that couldn't wait that long – for example, because the employer failed – found that they couldn't always meet the pension expectations, and some members lost out.

In both scenarios, the employing company had contributed less to the pension fund as a result of anticipating equity returns, rather than bond returns. In other words, the company saved money. In the second scenario – and only in the second scenario – the scheme members lost out as a result. That loss of pension rights may

not have been an acceptable outcome, but let's not deny the economic reality that the company saved money. If there was a flaw in the system, it wasn't the actuaries who said: 'Contribute less; invest in equities.' It was the law that allowed employees to bear the insolvency risk.

If this were an article on ethics, I'd explore whether that arrangement was better or worse than putting the investment risk onto employees' shoulders by operating a money-purchase scheme. I might also develop the theme that many actuaries who have been troubled by the level of risk to which employees are exposed in defined benefit schemes have used conservative funding methods in an attempt to build in safety margins. One of those margins was secured by taking the assets into account at less than the full market value. Nought out of ten, perhaps, for openness and transparency, but not quite the lunacy that the confused economists bang on about. But I digress...

Valuing a retirement benefit

What about the question I started with: is the value of pension liabilities independent of the assets held in the scheme?



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what a pension is...

Let's look at two companies, neither of which yet has a pension scheme. The first, GizmoCo, makes only gizmos; the second, WidgetInc, makes only widgets.

History shows that the gizmo business is more volatile than the widget business. When the economy is doing well, companies like GizmoCo see a greater improvement in profit than companies like WidgetInc, and conversely when the economy is doing badly. Almost

certainly, that translates into job opportunities being correspondingly greater at GizmoCo, and employee salaries increasing by more. In contrast, when the market turns down, the cutbacks at GizmoCo will be greater than at WidgetInc.

Financial economics teaches us that investors will require a higher return from GizmoCo or they won't invest. In other words, the value of each business must be assessed by discounting the cashflows of GizmoCo (including employees' salaries) at a higher rate than used in valuing WidgetInc's cashflows.

Now factor in a lump-sum retirement benefit at each company of, say, one times final salary, financed on a pay-as-you-go basis. For valuation purposes, the cost to the company must be discounted at the rate applicable to that company. And the same applies if we increase the benefit to twice, three times, or even $a \cdot n/60$ times final salary, where a is the expected cost of an annuity at retirement and n is the employee's years of service.

Next, consider what happens if the company decides to pre-finance the retirement benefit by holding investments inside the company. As GizmoCo builds up a pot of investments, it is no longer simply a gizmo-making company: it makes gizmos and runs an investment fund. Financial economics tells us that we can no longer discount all the company's cashflows at the rate for a gizmo business. We need to take into account the second business in which it has engaged.

If GizmoCo has invested its retirement fund entirely in, say, WidgetInc, the discount rate for the investment part of the business would be the lower discount rate for widget businesses. Of course, if WidgetInc is a quoted company, the stockmarket will tell us its value, saving us the need for any calculations. If GizmoCo has invested its retirement fund in bonds, it should use the

discount rate applicable to bonds to value the investment business (or it can look up the market price if the bonds are quoted). And so on for any investment or portfolio of investments.

So much for the assets. What about the retirement liabilities? Should GizmoCo treat them as part of the gizmo business and discount the cashflows at the gizmo discount rate, or as part of the investment business and discount at the investment rate?

The answer depends on the nature of the retirement scheme. If the promise is to pay retirement benefits regardless of the well-being of the accumulated investment fund, the promise would, indeed, be part of the gizmo business and should be valued accordingly.

But if the promise is no different from a pre-1995-style UK pension fund, in which the employees of GizmoCo (not the shareholders) take the risk that the investment fund doesn't perform, the economics are different. We've already seen that, in the pre-1995 scenario, employer contributions depend ultimately on the performance of the investments. The contribution rate should be determined accordingly and so too the value of the liabilities.

Back to reality

Does the introduction of a legally separate pension trust make any difference to the economic analysis? It all depends on whether the terms of the trust deed affect the underlying economics!

The trust deed will restrict the behaviour of the trustees, for example by imposing a requirement to invest prudently, but the employer may have been equally prudent when the fund was held internally. The trust deed will also specify what is to happen if the funds are inadequate to pay the scheme benefits. But if the discontinuance rule is written so as to be no different from discontinuance options open to the employer with an internal fund, the creation of the trust will have no economic effect.

Finally, what effect did the Pensions Act 1995 have? The Act imposed a minimum funding requirement based not upon the final salary of employees, but on their salaries at each MFR valuation. It also built in a market value adjustment, so far as current employees are concerned, to reflect equity market conditions.

So, while the MFR creates a potential liability on the employer, the volatility of that liability is clearly linked directly to the equity market and only indirectly, if at all, to the volatility of the employer's business. By investing (the active member's portion of) the fund in equities, the employer can not only reduce the contribution rate, for the reasons already explained, it can reduce the likelihood that it will be called upon to top up the fund under current MFR rules. □

