

Article for The Actuary magazine

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Letter to the profession

Cognitive dissonance

This is a plea for change. Our exam syllabus has reached its sell-by date. Worryingly for our clients and, I would contend, the public interest, trainee actuaries in this country continue to be taught palpable untruths.

We have come a long way. The exam reading today bears little resemblance to what existed when I trained (now some 20 years ago). There was no “financial economics” at all in my time. My beef is that whilst it is true that modern finance theory now takes its proper place in the syllabus, we have not at the same time excised our old ways of thinking. It is no wonder that newly qualified actuaries can be confused.

Palpable untruths

Let me be specific. I will present four examples of “actuarial howlers” taken from the current course reading. First (and worst) is that actuaries are taught that it is legitimate to discount the assets and liabilities at the same rate. 404-12 says: “*If a stable discount rate is used to determine the asset value then the same approach must be taken to value the liabilities.*” This misses a central tenet of finance – riskier cashflows should be discounted at a higher rate to reflect their greater risk.

Second, we are taught that the quantum of the liabilities depends on what investments are bought. Again from 404-12: “*The cost of a defined benefit scheme is affected by investment returns.*” This is so egregious it is embarrassing. We ceded thought leadership to the accountants in the development of the pension accounting standard, FRS 17. As the accountants had to point out to us: the investments have got nothing to do with it. Pension costs do not magically reduce if trustees sell their gilts and invest in (probably) higher performing junk bonds. (Yes, the expected future cash contributions do reduce, but they are riskier cashflows. There is no free lunch.)

Third, we are taught that equities get less risky the longer you hold them: “*...for most immature pension schemes equities will probably produce the best long-term return coupled with the lowest risk. This is investment heaven!*” (from Act-Ed 404-20). Actually it is neither heaven nor hell. Real life is more prosaic. Yes, the chance of equities underperforming bonds decreases over time. But this is a comment of no great insight. It is only one dimension; the other is the size of the underperformance. The employment of some simple option pricing mathematics shows that the cost of guaranteeing that equities perform at least as well as bonds increases over time. And if you do not believe this, ask an investment bank how much they would charge you for 5, 10 and 15 year put options.

Fourth and last – I could go on, but I will stop here – equities do *not* match wage-linked liabilities. The logic in the following sentence is flawed: “*UK equities are likely to produce a significant real return in the long term, which makes them broadly suitable for liabilities linked to salary and price inflation*” (404-08). A does not imply B. To be sure, it is probably true that, in the long run, equities are unaffected by inflation. But this is not the same thing at all. There is no demonstrable correlation between wage inflation and equity returns. Indeed, some studies have shown it to have the wrong sign.

These four examples are non-trivial and lie at the very root of our technical expertise – which is why I believe the profession’s situation is a matter of concern. On a less serious note, those of us who struggled with the exams can at least take some solace. We need no longer pretend that we had devised a superior study/life balance. We just took longer to brainwash.

I concede that today's course reading represents a major upgrade on that of as recent as five years ago. We have put away childish things. But we should press on – for many actuaries, reinventing their knowledge base will be pleurably therapeutic, even cathartic. This is in fact my counsel to the older generation of actuaries who today hold the country's scheme actuary appointments and who largely set their firm's technical policies and who influence Whitehall (witness the sorry mess of the minimum funding requirement). Keynes put it so well in the preface to his landmark *General Theory* back in 1936: “*The difficulty lies, not in the new ideas, but in escaping from the old ones.*”

Finance theory

According to the conventional actuarial wisdom, there is something sinister, even perverted, about someone who advocates investing the whole of a pension fund in bonds. As a profession, our inclination has been to verbally abuse such people. In the main, we have been intolerant and have not sought to understand. (Incidentally, this is not a sign of a healthy organisation.) And because of this I make no apologies for the judgmental language in this article. It may appear inflammatory but it is not meant that way. Change is often preceded by the kicking in of a rotten door – an unwarranted reputation for violence can be acquired by those who do the kicking in.

I know that I will (quite properly) be criticised by financial economists for numerous oversimplifications. Yes, there are second order effects that I have glossed over. Again, I do not apologise – we need a debate within the profession on where we are. If strong statements cause people to stop and think, then I will have achieved what I set out to do. Without dialogue, there can be no progress.

In essence, all financial economics is teaching is that equities' higher expected return is exact compensation for equities' greater risk. Put another way, £100 of bonds has the same value as £100 of equities. If they did not, there would be arbitrage opportunities in the market. We would see players raising 30 year debt, investing the proceeds in equities, and watching from a beach in the Caribbean. I put it to you that it is significant that we do not.

Financial economics is not some kinky theory or wacky counterculture. It is how investment banks make money. It carries the imprimatur of numerous Nobel prize-winners (Paul Samuelson and William Sharpe, to name but two). And it is what is taught in finance courses at business schools. To the outside world, the inhabitants of our actuarial island can look plain wrong-headed or, possibly worse, just behind the times. I was taught that £100 of equities can be worth more or less than £100 of bonds. From the vantage point of wider reading, I shall limit myself to merely noting the audacity of such a proposition.

Finance theory concludes that whilst the cash contributions to a pension fund are indeed probably lower if the trustees invest in equities, from the perspective of adding to shareholder value, juggling the investments is futile. The company's worth is unaffected by how pension fund trustees invest. The man in the street instinctively knows this to be so – he does not claim that his house's value is affected by the type of mortgage that he has. Then take exhibit B: last year, Boots forfeit the alleged free lunch of the equity risk premium, yet left its share price unchanged. And a third example: no company would ever contemplate borrowing money to invest it on the stock market. What I conclude is this: it does not matter how trustees invest. So why not go for the easy life and hedge the risks as far as possible? This is all the bond proponents are asserting – the virtues of simplicity.

As a profession, we have mischievously extrapolated this proposition to the quite false one that bond investment is being advocated for every person who has money to save. Not so; individual investors are in the main quite properly prepared to accept some risk, and so they buy equities, perchance to gain. Shareholders are different; they do not want their risk tolerance second-guessed by pension fund trustees whom they never meet. And widget companies are unlikely to have competitive advantage in asset management. Risk-taking unaccompanied by competitive advantage inevitably destroys shareholder value (luck aside).

The Treasury has exhorted trustees to raise their game and refocus their time on where they can make a difference. We actuaries should take note too. It may be going too far to say that we have led trustees and company management up the garden path, but we have certainly not told them it straight – which is that shareholders are indifferent to how trustees invest. This is unfortunate since most trustees do try very hard to keep all the many stakeholders happy.

And by focussing on cashflows and largely ignoring risk, we have endorsed the existence of a wholly spurious wedge between shareholders (who want the business’s risks managed) and company management (who want low cashflows). How has it come to pass that the trustees of the Boots pension fund are almost alone in the UK in having a commonsense objective – to always have enough money to pay all pensions, regardless of movements in financial markets? Somewhere along the way the plot got lost, and we were there to guide our clients.

Modernising pension fund valuations

Modern finance theory has important implications for how we advise pension fund trustees and finance directors. We need to change what we do. We need to look at the whole – by bringing together the assets and the liabilities, and thereby give our clients insight into how they can manage their risks (which is their job, not ours). What we call *certum ex incertis*.

Equities’ inherent volatility cannot safely be smoothed. If we do this, we keep reality from our clients. Our job is to produce transparent financial information for the various stakeholders, and so give management the data to make informed decisions about how best to manage the uncertainty. Yes, marking to market does mean volatility, but that is how it is. (It is also why equities outperform bonds on average – the reward for the risk-taking.) This is a quite separate point from the smoothing of the cash contributions to a pension fund. To do so could well be a legitimate management decision, but only so long as the various stakeholders understand the financial reality.

In conceptual terms, the financial statements of a pension fund are quite different from those we are taught – see box. (I am indebted for this presentation to Boston University’s finance and economics professor, Zvi Bodie.) The surplus, S , represents equities’ upside, and λ is the members’ part of it.

Pension fund’s balance sheet			
Physical assets	A	Pension liabilities (calculated using the bond yield curve)	L
Company’s underwriting of pension fund’s assets’ performance	G	Discretionary benefit increases paid for out of surplus	λS
		Employer’s share of surplus	$(1 - \lambda)S$
	X		X

As actuaries, we talk loosely about the importance to the pension fund’s viability of the “financial strength of the sponsor” – the G in my balance sheet. Yet we do not quantify this crucial amount. This, financial economics can help us do[†]. If the pension fund’s liabilities are hedged, i.e., the assets are entirely long bonds, G has no value and the balance sheet collapses to the one we are familiar with. Actuarial convention is to advise our clients that they have a surplus of $A - L$. Not so; the true surplus is $A + G - L$.

The size of the company’s underwriting of the pension liabilities (G) is, in most cases in this country, significant. In effect, the company guarantees that the return on the physical assets will be at least that on a portfolio of the lowest risk investment, that is long bonds. For a pension fund in actuarial balance and 75% invested in equities, this guarantee has a value equivalent to perhaps 25% of the physical assets (exactly how much depends on what you assume for equities’ volatility relative to long bonds).

[†] In mathematical terms, G can be regarded as a put option; strike price L and spot price A . S is the converse – a call option; strike price L and spot price A . The put/call parity is $S + L = G + A$.

This is plainly self-investment on a grand scale. I think of it as the “iceberg effect” – the size of the self-investment is the part that you cannot see (or choose not to see). It can sneak up and sink you. Remember: equity prices do not move in a straight line. It is not therefore surprising that the pension funds of this country’s insolvent companies are almost always themselves found to be insolvent. But did the trustees know about the degree of the risk-taking and the consequent double jeopardy? Did we tell them?

Privilege entails obligation

I suggest that there are wider lessons for the profession from its failure to keep up with academic thinking (“modern” finance theory was largely developed as long ago as the 1960s). The grandees have resisted change and stifled debate. I find it odd that we have little culture of intellectual inquiry post-qualification. Doctors, damaged by recent scandals, are in future to be “*revalidated*” every five years to ensure that they “*remain up to date*”. It would perhaps be no bad thing if practising actuaries were retested too.

There are also baser reasons for getting it right. It would improve our own business risk management. The failure of a very large pension fund could well be swiftly followed by litigation. And unless we change, we could see a drift of work that we currently do to others – risk managers at banks being just one example.

We could do so much more to break the chronic gridlock that has for so long beset retirement savings in this country. We have a public duty as well as a debt to our own profession.

With our Royal Charter, we enjoy a privileged position. We have been entrusted by Parliament with the policing of the pensions of this country’s population. We are unlikely to lose this privilege, at least in the near future. But nonetheless we have an obligation to the next generation of actuaries.

If we do not change, we will have surely failed to make financial sense of our own future, let alone that of our clients.

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