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Cognitive Dissonance

In an open letter to actuaries, John Shuttleworth argues that the profession needs to excise its old ways of thinking

by John Shuttleworth

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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. It is true that the exam reading today bears little resemblance to what existed when I trained (some 20 years ago). There was no 'financial economics' at all in my time. While 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, FRS17. 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 longterm 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 five- ten- 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. 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. But we should press on—for many actuaries, reinventing their knowledge base will be pleasantly 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 judgemental 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 shall (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 while 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 the value of his house is affected by the type of mortgage that he has. Then take exhibit B: last year, Boots forfeited the alleged free lunch of the equity risk premium, yet its share price was unaffected. And a third example: no company would ever contemplate borrowing money to invest it on the stockmarket. 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 focusing 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 common-sense 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.

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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Letter to the Editor of *The Actuary* (UK)

Dear Editor:

This writing responds to the insightful observations of Mr. John Shuttleworth in his article entitled Cognitive Dissonance appearing in *The Actuary* of June 2002. He asserts ... and we agree ... that investing its associated funds in more volatile instruments with anticipated higher returns (whether by yield or through growth) does not reduce the value of the liabilities of a pension system. The liabilities are the liabilities after all. They are the streams of obligations payable under the plan and independent of how these benefits are to be financed.

With these preliminary observations recorded so as to establish that the author does, indeed, understand the assertions presented by Mr. Shuttleworth, the following thesis is advanced (i) first to underscore the premise upon which Mr. Shuttleworth builds his case, (ii) second to challenge the irrefutability of the premise upon which he builds his case and, finally, (iii) to suggest the development of a comprehensive standard for the actuarial profession's appraisal of the cost and risks associated with financing a pension scheme which takes into account these "new ideas" while retaining the "old ones" [with all due respect to Mr. Keynes as Mr. Shuttleworth quotes him].

I. Mr. Shuttleworth's Thesis Underscored by a Simplistic Exposure-to-Ruin Analogy

1. Mr. Shuttleworth concedes that the chance of equities underperforming bonds decreases over time. He adds, however, that this is only one dimension. The other is the size of the underperformance.

2. To underscore Mr. Shuttleworth's premise, consider the blackjack gambler who bets \$1 and doubles up if he loses, and continues to double up upon each successive loss ... until he wins. With each such series he wins \$1 (leaving aside the possibility that the "win" is a blackjack, which offers up a bonus).

3. ... until he can not double up again because he has exhausted his funds.

4. ... at which point he has lost all.

5. Note that if our gambler had \$5,000 to invest, he can lose 12 times in succession and still survive.

- If the odds are 50/50 win/lose, the chance of losing it all is $(1/2)^{13}$.
- If our gambler has \$100, he can only afford to lose six times in a row with chance of losing it all being $(1/2)^7$.
- Clearly the larger the assets, the longer the survival period ... but the more devastating the loss.

II. The Analogy and the Refutation

1. If a pension system has associated assets which are sufficiently robust, inclusive of a positive cash flow or an insufficiently large negative cash flow so that the system is able to withstand a shock wave of asset revaluation

(market value falloff) of whatever duration and magnitude, such fall off to be followed by a recovery (net of the impact of any distress selling to pay benefits) and long range returns (whether by yield or through growth) which are more than that of a risk free asset mix arrangement, then the cost of the pension plan is less than the cost using risk free assets.

2. Nevertheless, to enable the opportunity for this lower cost, there must be exposure to ruin or even injury greater than that which would afflict a risk free management.

3. Sponsors of the British, U.S. and pension schemes in other countries have tacitly agreed to accept that exposure to harm without appraisal or recognition of its existence.

4. For his reflection on the subject, Mr. Shuttleworth is to be commended. Nevertheless, his thesis need not be met with a reversal of our thinking, but a reappraisal.

III. The Price ... and the Risk ... of Harm or Ruin ... and the Appropriate Role of the Actuary

1. To put the issue of exposure to harm or ruin in perspective, driving an automobile to one's office from the suburbs of a given morning has a risk of harm or fatality, a risk of loss or injury greater than if we were to walk a half-mile and take the subway and, from our subway, walk to the office.

2. And yet we take the additional risk because it is seemingly routine to do so.

3. To complete the analogy, some of us might be motorcycling to the office, enabling avoidance of traffic tangles.

4. consider the three to be 30/70, 60/40 and 90/10 equity/bond asset mixes.

5. The problem is our failure to evaluate the respective risks of harm or ruin.

6. In fact, the actuarial profession hasn't even attempted to evaluate the difference between 50/50 and 70/30 or other mixes but simply accepted one as "conservative" and the other as "aggressive"

7. As actuaries we have a job to do in the development of standards respecting appraisal of cost/risk of a particular investment program in the financing of a pension scheme ... utilizing

- Cash outflow and inflow considerations,
- Conjectures as to the probability and depth of adverse and favorable financial events and
- Stochastic analysis

8. We must begin sooner than later. **♣**

Respectfully submitted,

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