Improving longevity is clearly a problem on the liabilities side of the balance sheet. **Martin Steward** looks at it as an opportunity on the assets side, both to generate return and offset risk.

When I'm 64, asks the Beatles song, will you still be sending me a Valentine, birthday greetings, bottle of wine? Well, I've looked at the actuarial tables. Birthday greetings and the Valentine I can do. But the bottle of wine? Forget about it. It's not when we're 64 that's the problem – it's when we're 94. With every year that goes by my savings are forced to last another year, too.

It is not news that pension funds are sensitive to improvements in longevity, but very few choose to do anything about it. In some ways this makes sense. The rule of thumb is that a fund with 60% in equities and 40% in bonds will see the same negative effect on its funding level from a five-year increase in life expectancy, a 30% fall in equity markets or a 0.7% shift in either long-term rates or inflation expectations. Clearly, those last two sensitivities are the most acute and tackling them should be the priority.

Of course, as you do de-risk, the more prominent longevity becomes. If five years more life is equivalent to a 30% fall in equities for a 60/40 fund, it becomes the equivalent of a 45% crash at 60/40. Moreover, it is dangerous to underestimate the scale of unexpected changes in longevity. The range of probabilities is widening dramatically: even as many anticipate a tailing-off of life expectancy as our sedentary lifestyles and unhealthy diets take their toll, a recent Time magazine cover proclaimed 2045 as the "The Year Man Becomes Immortal" thanks to exponential advances in technology. A 2010 paper by Leslie Mayhew and David Smith, 'Human survival at older ages and the implications for longevity bond pricing', finds that life expectancy in England and Wales is increasing at a faster rate than ever before, with no evidence of any upper age limit, and concludes that longevity bonds are an effective hedge against this risk.

Long mortality, short longevity

If life expectancy is constantly being revised upwards, in market terms longevity risk is (probably) high and the longevity risk premium, which you get paid if people live longer than expected, is (probably) low. Longevity as an asset class is over-priced and you should short it. Conversely, the mortality risk premium paid for taking the risk that people die sooner than expected is high – and you should go long mortality as an asset class.

This is the strategy of insurance-linked securities (ILS) specialist Securis Investment Partners in the two-thirds of its portfolio dedicated to life risk. Andrea Cavalleri, who sources the fund's life risk, points out that for all the medical arguments that longevity improvements will tail off, statistical analysis of the 'golden cohort' of UK citizens born in the 1930s and 40s reveals nothing of the sort.

"We ended up favouring mortality risk because we think that life settlements and UK longevity swaps, as examples, are mispriced," he says. "Life settlements are mispriced because they are working from the wrong mortality assumptions. The swaps are priced based on uncertain projections of mortality rate improvements." In other words, Securis won't write a longevity swap for your pension fund – but it will buy one alongside you. "If longevity is mispriced, the protection buyer is getting out at a very good level," as Cavalleri puts it. "It's a great business."

Pension funds are waking up to this long mortality/short longevity opportunity in the context of their hedging programmes. Michalis Ioannides and Mattias Eng at BNP Paribas reckon that about £25bn (€29bn) of longevity liabilities have been transferred, mainly from UK schemes but with Denmark, the Netherlands and Sweden following that lead.

There are various ways of doing this. The most 'complete' solution is a buyout, which involves transferring the assets and liabilities associated with some or all of a scheme's members to an insurance company or specialist buyout provider. A 'buy-in' is a similar solution that involves exchanging scheme assets for annuities (which remain a part of the scheme's portfolio). These are expensive, which is why we see many schemes with buyout ambitions trying to 'tidy-up' liabilities with LDI and other de-risking programmes. But that begs the question: if the scheme is going to immunise so much risk itself anyway, why not try to deal with all of it in-house? That way, the scheme retains the upside potential of its assets – and remember, in terms of life risk, the upside from mortality assets could be considerable.

This is the so-called 'DIY' solution: LDI to cover rates and inflation risk, plus an indemnity insurance contract, also held as an asset, to cover unexpected longevity risk. An indemnity solution makes a lot of sense if your object is truly to hedge your longevity risk, because it remains the only way to transfer basis risk as part of the package. If you try to hedge the longevity of your scheme members with a swap based on an index of national life tables, there are bound to be discrepancies.

"In extreme scenarios – a cure for cancer, say – the match will be there, but for incremental changes in longevity the basis risk can be quite unpredictable," says Costas Yiasoumi, head of longevity solutions at Swiss Re. Insurers and re-insurers reduce that basis risk for themselves with every new pension scheme client they take on: as their pool of longevity risk grows, the more it mirrors the pool of mortality risk in their life insurance books.

So while there have been several longevity swap deals implemented by pension schemes over the past few years – including the transfer of £3bn (€3.5bn) of liabilities for the BMW (UK) Operations Pension Scheme arranged by Deutsche Bank and Paternoster in February 2010 – it is small wonder that most longevity risk transfers have involved buyout or indemnity solutions. Indeed, there isn't even a cost advantage to taking on the basis (and counterparty) risk of an index swap. Why doesn't a bespoke solution cost more? Because the risk in the off-the-peg solution goes to exactly the same place – the insurers and re-insurers. Capital markets can't find many other counterparties with the same volume of mortality risk for sale. Whichever solution you choose, you are paying a hefty insurance premium – enabling re-insurers to build up the capital to meet their regulatory requirements with regard to the longevity risk you are selling them.

Long NAV, short NPV

Problems with cost seem to derive from the fact that pension schemes have, so far, regarded their long mortality/short longevity positions as hedges. If we take long mortality/short longevity as a pure investment view and are prepared to bet that the upside of general mortality will overwhelm any basis risk against our liabilities' longevity risk, more options for exposure open up and the cost can potentially come down.

As Marcus Mollan, head of strategy in strategic investment and risk management

at Legal & General Investment Management, suggests, one reason pension why schemes have been slower to implement longevity as opposed to interest rate hedges is that they are not generally required to mark their longevity risk to market. "At the moment, they only have to crystalise that gap in their funding if they want to do a deal, so it's not surprising that they largely choose not to," he observes.

Moreover, a cashflow hedging solution would be booked by a pension scheme at net present value, taking a horrible snapshot that severely under-values the asset while over-valuing the liability, especially if we believe that mortality is an under-valued asset. And the longer the duration, the worse this gets: actual incurred annual cost of insurance for a 70-year-old with 15 years life expectancy would be roughly the same as that for a 45-year-old with 45 years left to live — but booked as a cost at net present value (NPV) it looks three times bigger. So why not access mortality risk without a hedging structure, as a pure investment risk, and move from an NPV world to an NAV world?

There is no shortage of life insurance-linked securities funds. Most manage either traded life policies (buying policies from the insured and therefore carrying longevity rather than mortality risk) or mass-mortality bonds (whose risk, again, may point in the same direction as pension longevity risk: Yiasoumi notes that Spanish influenza, which killed a lot of young people, actually added years to older people's lives by forcing out the common seasonal virus). But some, like Securis, do work in the trend mortality space, and in 2010 Securis carved out a mortality risk-only portfolio from its diversified ILS strategy for a Japanese pension fund.

"We don't restrict what kind of lives go into the portfolio," says Cavalleri. "That depends on where we find opportunity, and it just happens that the fund has exposure to 70 to 90-year-old US citizens. That's clearly not because they fit the liability profile of the pension fund. The idea is not to have a hedge but a good investment, and if the trend points in the opposite direction as the investor's liabilities then that's all well and good."

Cavalleri concedes that public supply of this trend mortality risk is not huge — and that Solvency II may dis-incentivise insurance companies from securitising their life business. But against this he cites pro-securitisation rules in the US and Securis's own strategy of actively originating deals with counterparties. "That's the logic for paying somebody like Securis to access that risk," he argues. "It's not obvious that you can do this in size if you are only looking at the public market."

Long dentures, short toothpaste

If our starting assumption is that people will live longer than expected (long mortality/short longevity) and we are prepared to take some risk against our own longevity exposure, then perhaps we should consider this investment idea as a growth opportunity across other parts of our asset portfolios.

Improving longevity and an ageing demographic are not necessarily the same thing, but the trends in mortality and natality in the developed world over the past 70 years certainly mean that one will follow the other for at least the next generation. That leaves a decision to be made about how demographic trends might affect our initial asset allocation decisions. But there will also be growing revenues to be had from this demographic, for which we might re-position equity portfolios: in the words of an August 2010 Goldman Sachs paper, 'Demographic Dynamics: A case study for equity investors', 'as the Baby Boomers live longer, they spend more on healthcare; as they spend more on healthcare, they live longer'.

But this is not as simple as sitting on a healthcare index. There will be winners and losers in this sector, as with other sectors that we might imagine to be well-positioned for these ageing consumers.

Fund managers agree on the importance of diagnostics and preventative medicine. After all, the best way to save money on treating the seriously ill is to stop them getting seriously ill in the first place. The related area of efficiency savings in long-term care of the chronically ill could also prove important. Everyone seems to like Fresenius Medical Care, a leader in kidney dialysis, for example. "The reimbursement patterns in the US are pretty good for dialysis," notes Virginie Maisonneuve, head of multi-regional equities at Schroders.

"Governments will be very interested in companies or products that enable faster and cheaper treatment over time, utilising fewer hospital beds or maybe even enabling outsourcing," says Richard Falle, principal fund manager at LV Asset Management (LVAM). "Fresenius is a good example, as is Elekta in Sweden, whose advanced radiation oncology systems are all about innovation aimed at minimising treatment time. These businesses with more specific products are more interesting to us that the more diversified big pharma names."

At Lombard Odier Nicholas Batrell, portfolio manager on its Golden Age fund, specifically designed to exploit this demographic trend, notes that he is really only interested in about 10% of the global healthcare universe. He also picks out the preventative treatment trend. "We think that governments will start backing healthier foods and 'nutraceuticals' for this reason," he says. The fund's six-strong scientific advisory board, drawn from academia, medicine and industry has, among other things, helped to identify opportunities in this area of food products that confer medical benefits.

All of which underlines the prominence of political risk. Obesity is set to emerge as a major cause of chronic ill-health for the coming generation of retirees, but how likely are governments to subsidise manufacturers of gastric bands?

The pension scheme that wants to maintain sector weights close to its benchmark might prefer some kind of ageing demographic overlay rather than one of the available demographics-led thematic strategies. Despite their managers' claims of diversification they tend to take predictable sector bets. Lombard Odier's Golden Age fund is not atypical, with 45% in healthcare, 35% in pharmaceuticals, biotech and life sciences and 20% in financials and consumer stocks. Schroders' Demographic Opportunities portfolio has big overweights in healthcare and consumer stocks, and its biggest underweight is IT, an attractive sector in its own right at the moment, but also a key potential beneficiary of the productivity drive.

Long time horizon — long ageing risk?

But even if we think we can isolate the ageing demographic risk from sector risk, if we try to get it via equities we certainly expose ourselves to all sorts of other risks — chiefly equity risk, of course. "Let's say you set off on this strategy in 1999," says Antony Barker, managing director with JLT's Pension Capital Strategies. "You get the 2001 census, new life tables, smoking banned in English pubs and Parisian cafés — but you make a loss in your equity portfolio regardless of the revenues it's tilted towards."

As BlackRock's head of strategic advice, Robert Hayes, observes, we know what equity or property beta is, but defining ageing and making it a part of a principal components analysis is a long way off. "The one area where our analysts did find some correlation [to ageing population growth] was marinas — the berth holders tend to be pensioners," he says. "But we could

easily find that, say, taxation going up to fund growing pension liabilities, reveals that those marinas were just massively exposed to top-end discretionary spending and perform terribly."

Indeed, this is why, despite passionately believing in the long mortality/short longevity position, Cavalleri at Securis buys Swiss Re's life books rather than its equity. Still, ultimately that equity must be a claim on Swiss Re's revenues — why else would anyone buy them? It might take a long time for the long-mortality risk premium to come through in the price, but it must happen eventually. That should be no more controversial than to claim that the equity risk premium will be paid, eventually. If our starting assumption is correct and the mortality risk premium is under-valued, we should be paid that premium over and above any (positive or negative) equity risk premium we receive.

But the key word is 'eventually': over what time horizon will this premium come to us? This is undeniably a growth opportunity, and like all growth the risk is that it appears in the price all at once thanks to an onrush of capital. This will determine the size of the ageing demographic risk premium at any point in time — and, for any kind of offsetting of liability-related risk the more its delivery matches the pace of change in unexpected longevity improvements, the better. In this context, this particular form of growth investment might, indeed, have some appealing characteristics.

"When you start to see all sorts of company reports from analysts talking about the impact of demographics then you know that a large part is going to be in the price — but we are not there yet," notes Maisonneuve. "And in any case, it's a path: you don't get to 2050 with nine billion people on the planet overnight."

This is a point made by a number of thematic equity managers. This growth should "come through in stages rather than in bubbles", suggests Frances Hudson, global thematic strategist at Standard Life Investments, "because demographics change very slowly". Schneider at RCM notes that analysts outside those covering life insurance are not focused on this theme because they simply cannot take such a long-term view. "For that reason I hope to see fairly regular, constant upside surprises for these companies, and don't expect to get this growth in great periodic bubbles," he says. Batrell at Lombard Odier says that the Golden Age fund's companies do not show higher valuation multiples than comparable sector peers. "We don't pay any particular premium for this potential growth," he insists. "We are confident in the potential earnings growth of our portfolio because we like the top-line drivers — and we expect relative re-rating and de-rating of companies around this theme. If the market re-rates tomorrow we will still benefit from the superior growth of our companies, but we would like to see this play out over time."

This takes us back to our starting assumption once again. If life expectancy continues to be revised upwards, the longevity risk premium will continue to be low and the mortality risk premium high. If this is true in the pure life risk market, it will be true in the equity market too, even when its analysts begin seriously to price in demographic risks. How could it be any other way, if the market's only sources on longevity assumptions are the experts who continually undershoot? The long mortality/short longevity spread might be arbitraged away, but only until the next tables appear to open it up again: this grand periodical re-rating of life risk could only stopped by the market taking a wholesale decision to bet hard against the actuarial profession.

Of course, in the short term equity cash flows will not look like longevity-hedge cash flows. But over the long term the risks ought to converge, and there may be reason to believe re-rating of stocks should come as upside surprises that exhibit some correlation with periodic revisions to longevity projections — assuming that the demographic risk premium can be identified and optimised. That is a big assumption, but one worth investigating, certainly as a potential source of superior returns — and possibly as a source of risk reduction. ■

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