

Degrees of Longitude

As life expectancy increases so does the need to hedge longevity risk. Can capital markets provide a solution?

BY RHEA WESSEL

Advances in technology and medicine have contributed to a significant rise in life expectancy during the past few decades, and the implications for pension liabilities are profound as an increasing number of companies and organizations are beginning to seek solutions.

Longevity risk is the risk of unanticipated increases in life expectancy (see Figure 1). For individuals preparing for retirement, managing longevity risk involves proper planning, saving, investing, and, in many cases, purchasing a life annuity. For organizations that are on the line for pensions or annuities, however, longevity risk is more complex. These organizations—annuity-providing insurance companies, corporate pension providers, and local and national governments—face a risk that is vast yet undefined. In the United Kingdom, for example, every additional year of life expectancy beyond age 65 adds 3 percent to pension liabilities, equivalent to about £30 billion for private-sector companies.

Until recently, longevity risk was mostly an abstract concept. When the WEF (World Economic Forum) defined the 26 core global risks, longevity was not among them. Now, however, the topic has begun to hit the radar. The WEF addressed longevity risk in a 2009 report, and respected author Roger Lowenstein says pension debts—which have ruined General Motors, stopped the New York City subways, and bankrupted San Diego—loom as the next financial crisis. Indeed, global pension plan liabilities are estimated at US\$25 trillion.

Organizations faced with longevity risk use a wide variety of methods to quantify it. There is no transparent way to price longevity risk, and until recently, there were few options for effectively hedging it.

To limit their risk, many companies have stopped signing defined-benefit contracts and have switched to defined-contribution plans instead—thus passing the risk back to their employees. Some companies turn to buyout companies that remove pension liabilities from the books—for a price. The buyout company tries to manage the pension liabilities better than the company that ceded them.

Some companies choose a buy-in deal with an insurance company. They buy sufficient immediate annuities to match the pensions they have to pay retirees and retain

the liabilities on their own books while the insurer assumes the longevity risk. The first FTSE 100 company to strike a buy-in deal was an insurer—Friends Provident in Salisbury, England. In 2008, Norwich Union insured £350 million of the pension liabilities of Friends Provident.

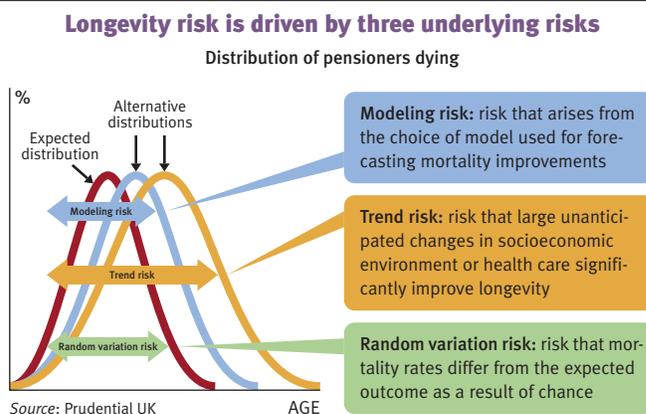
Longevity Swaps

Recently, another instrument has been gaining traction: the longevity swap. It differs from a buyout or buy-in (which are solutions offered by insurers) because neither the pension assets nor the pension liabilities are transferred. In a buyout, both the assets and the liabilities are transferred to the insurer. In a buy-in, existing assets are exchanged for annuities provided by the insurer.

Longevity swaps are similar to interest rate swaps, which trade floating interest rates for fixed ones. Companies forecast the mortality of their groups and enter into a counterparty agreement with an investment bank. If more people survive than predicted (i.e., the forecast is the “fixed rate” agreed to in the swap), the company will receive payments from the investment bank. If more people die than anticipated, the company will make a payment to the investment bank.

Once the swap is in place, investment banks pass the longevity risk on to investors, such as endowments or hedge funds. These investors—who make the “floating rate” payments in the swap based on subsequently realized

FIGURE 1



mortality rates—are interested in earning a longevity risk premium in an asset class that is uncorrelated with traditional assets classes, according to David Blake, director of the Pensions Institute at the Cass Business School at City University in London.

Demand for Longevity Hedges

According to Jerome Melcer at the actuarial firm Lane Clark & Peacock in London, longevity hedges are attractive when a company wants to retain investment control and gain exposure to future returns on the underlying assets. They are also used to reduce counterparty risk with a single insurance company. The approach is also attractive for companies that would have difficulty executing a buy-in or buyout, or when an organization wants to deal separately with longevity and investment risk within its pension plan.

A few swap deals have been done to date, even in the absence of a highly liquid, transparent, and efficient market for the instruments, according to Blake. Many of the publicly announced deals put together in 2008 and 2009 were arranged with insurance companies in the form of insurance indemnification contracts and thus are not actually capital market transactions. Others were so-called index swaps, which are capital market transactions based on a mortality index. Indices on the market include J.P. Morgan's LifeMetrics, Credit Suisse's Longevity Index, and Deutsche Börse's Xpect Indices. No one knows exactly how many nonpublic swap deals have been done.

In July 2009, RSA Insurance Group signed an insurance contract with Rothesay Life and combined a longevity swap with inflation and interest rate swaps to hedge £1.9 billion in liabilities until the last annuitant has died. This deal was facilitated by Goldman Sachs, the owner of Rothesay Life.

A month before that, Babcock International Group, the British engineering support services company, used a longevity swap to hedge the longevity risk for its £500 million in pension liabilities. Using Credit Suisse as an intermediary, the company agreed to a 50-year insurance contract with Pacific Life Re. In a conference call with analysts, the company disclosed that it chose longevity swaps because annuity buy-in prices weren't to its liking at the time.

Indeed, some analysts, Melcer included, say that insurers looking for higher risk premiums because of overall market volatility have pushed up the prices for buy-ins, causing the holders of longevity risk to take a greater interest in longevity swaps. If so, the situation may be evidence that healthy competition between insurance and capital market providers of longevity solutions is driving further innovation and possibly affecting pricing, as Melcer wrote in an analysis for the online publication InsuranceERM in July 2009.

Another possible capital market solution for hedging longevity risk involves a bond-based approach, such as a

longevity bond. In 2004, BNP Paribas attempted to sell a bond based on an official U.K. government mortality index with backing from the European Investment Bank (EIB). Despite the fanfare surrounding its launch, the product did not take off because it apparently required too much upfront capital in return for the degree of protection it offered. In addition, Blake says, the bond did not cover longevity tail risk after age 90.

The Market for Longevity Hedging

For now, it seems the market is more interested in swap arrangements.

In 2007, J.P. Morgan launched LifeMetrics, a nonproprietary, open-source, free-of-charge platform for measuring and managing longevity risk that includes the longevity index as its primary component. The platform also offers analytical tools and software for modeling current exposure and forecasting future exposure and incorporates historical and current statistics on mortality rates and life expectancy according to gender, age, and nationality (for the United States, England and Wales, the Netherlands, and Germany).

Guy Coughlan, a managing director at J.P. Morgan and the global head of LifeMetrics, says the idea behind the index is to make data accessible and transparent, standardize how data are presented, and provide a reference for longevity risk.

J.P. Morgan is also working to develop a market for trading longevity risk as a complement to the insurance industry by using the index to create securities, derivatives, and other structured products. In fact, Coughlan led the issue of the first longevity swap based on an index for the U.K. pensions buyout insurer Lucida in January 2008.

As part of its efforts to develop a market, J.P. Morgan has begun providing education for a wide range of stakeholders interested in trading longevity risk, such as pension plan insurers, sponsors of pension plans, insurance companies, consultants, and investment banks. "All of these groups had different ways of thinking about longevity risk," says Coughlan. "There was no common language, and there wasn't a high level of understanding about what longevity is. The expertise tends to be concentrated among a few individuals."

Coughlan isn't worried about slow take-up in the market because the pensions sector has long decision cycles.

Still, many participants would like to move more quickly to address the problem of longevity risk with a wide variety of capital market solutions.

Why Governments Should Issue Longevity Bonds

Blake is among those who would like to see the market for hedging longevity risk develop more quickly. He believes the pension time bomb is so serious that significant longevity gains could lead to a collapse of private-sector annuity markets, which are worth roughly US\$400 billion worldwide.

Blake and his associates are developing an idea to jump-start the burgeoning capital market for longevity instruments.

Here's the premise: Governments should pump quick life into the market for longevity instruments by issuing longevity bonds in the same way they developed and created a market for inflation-linked bonds. The United States and the United Kingdom have valuable experience. The launch of TIPS (Treasury Inflation-Protected Securities) in 1997 and index-linked gilts in 1981 essentially allowed inflation rate forecasts to be determined by the market—via pricing differences between nominal and index-linked bonds—instead of projections from a model.

The same would eventually happen with projections of mortality rates for different ages and different future dates, Blake argues.

Blake and Tom Boardman, the director of retirement strategy and innovation at Prudential in London, have noted growing interest in the idea. The duo regularly advocate for such a market at conferences. They have also held informal talks with government officials in the United Kingdom and more recently with Treasury officials in the United States about how and why such a market should be built.

Long-Term Funding and Systemic Risk Reduction

For governments, the potential benefits of kick-starting a market for trading longevity-linked instruments are compelling. Governments are also subject to longevity risk because of social security pension obligations and the pension liabilities of government workers. Issuing longevity bonds would enable governments to tap a new source of long-term funding from private-sector pension funds and annuity providers and earn a longevity risk premium, thereby reducing the cost of their national debts. According to the plan Blake proposes, governments could reduce any additional longevity risk that arises from issuing these bonds by increasing the state pension age in line with increases in life expectancy—a move a number of governments are beginning to make anyway.

Coughlan, who worked with Blake to establish and co-found the LifeMetrics Index, points out that the private sector also stands to gain from a government kick-start.

The securities are interesting for investors—such as endowments, hedge funds, and insurance-linked securities (ILS) funds—that want to diversify with instruments that are uncorrelated with interest rates, inflation, and equities.

“If a government would issue a longevity bond to kick-start a market, it would be extremely helpful,” says Coughlan. “It would help provide the basis for pricing longevity. It would give people comfort and help them start thinking about managing longevity risk in the same way as interest rate risk or inflation risk.”

“Governments could do this without issuing a large-sized bond,” he adds. “Even a moderate size would help get the market going.”

For instance, if the U.K. government launched a bond, the move could be part of a solid macroeconomic and social policy. The government would then have a hand in keeping too few companies from carrying too much longevity risk, a problem that could lead to systemic risk. At present, the buyout market is beginning to concentrate longevity risk in a small number of insurance companies. Total private sector longevity risk in the United Kingdom amounts to £1 trillion in defined-benefit plans and about £125 billion in insurance companies.

In addition, a government-issued longevity bond would help promote liquidity in the longevity market. This would be particularly useful to European insurers who will be required to hold more capital to cover their liabilities under Solvency II, unless they can find liquid matching assets for their liabilities. Solvency II, due to come into effect in 2012 and often described as Basel II for insurers, updates capital requirement regulations for insurance companies in the European Union. If holders of longevity risk could pass along some of that risk via capital markets, they could potentially hold lower reserves. Further, insurers could profit from price transparency—the market's assessment of the price of longevity risk—which would help insurers offer more fairly valued annuities to consumers.

These benefits are more important than ever in the United Kingdom, in light of the government's pension reform efforts and the impact on the market for annuities. Boardman's company is a leading annuity provider in the United Kingdom with more than £30 billion of annuity liabilities. Prudential has a 20 percent share of the annuity market, which is worth £15 billion annually. (It is unaffiliated with Prudential Financial in the United States.)

Already the largest annuity market in the world because of rules that effectively make purchasing an annuity mandatory for most retirees in defined-contribution plans, the U.K. annuity market is set to grow even larger because more people will become defined-contribution plan members than in the past. The government will soon introduce personal pension accounts in which people will be automatically enrolled if they don't already have a company pension plan; it is setting up the plan because 9 million people in the United Kingdom have no access to private pension plans (usually because they work for small employers). Beginning in 2012, an estimated 6 million people are likely to be enrolled in the accounts. Blake expects this development to lead to a huge increase in the demand for longevity risk hedging instruments.

In addition, the government is forcing firms to separate the cost of advice from the cost of retail financial products, including insurance products. (See “Miscellaneous Items: Reformers in Europe are seeking solutions for mis-selling,” in the Nov/Dec 2009 issue.) According to Boardman, this separation means that in the future fewer advisers than today may be in business to help people plan for retirement.

For Boardman, all these reforms and changes add up to a compelling case for the government to issue longevity bonds and create a longevity index. Only governments can facilitate intergenerational risk sharing on a large scale and enforce intergenerational contracts.

Objections and Support

When policy makers do actually consider the idea of developing a market, they focus their objections on the high value of pensions liabilities that governments already carry.

Blake says this issue is precisely the point: By kick-starting the market, governments could price their own risk rather than carry a risk that they have not even tried to quantify.

Another argument against a government kick-start is that it would create a conflict of interest. Because governments pursue health and health care agendas and some even provide health care, they may be working against themselves by promoting longevity and carrying tail-end longevity risk. Boardman says the predicament could essentially turn into a wash, with more tax revenues from people who live longer and a reduction in the need to pay means-tested benefits to pensioners. And the government could always raise the official retirement age if necessary.

“My sense is that governments are not taking on a huge amount of risk by issuing these longevity bonds,” Boardman says. “But I think human nature has them worried about things they don’t know. At the moment, governments have so much debt to issue that they are focused on finding buyers for their current debt, so there’s reluctance to move into something new.”

In an Organization for Economic Cooperation and Development (OECD) working paper written in 2007, the authors acknowledge the benefit that governments could create by issuing longevity indexed bonds, but they stopped short of calling for that move. Instead, they say governments could boost the market by developing an index based on national mortality data to be used as a benchmark in markets for longevity bonds and annuities.

“[Governments] could also calculate the index for different population subgroups according to socioeconomic characteristics (e.g., gender, income, and educational level),” the report states. “Having indices for different population subgroups would help pension funds and insurance companies calculate weighted average indices according to their specific membership structure.”

Blake estimates that if a government were serious about setting up a market, preparations, such as testing and analysis, would take roughly 18 months.

Next Steps

Advocates acknowledge the complexity of setting up a new market.

“Unlike the market for gilts, the buyers of longevity bonds, such as insurance companies, will buy and hold,” says Boardman. “Longevity bonds won’t work for

governments in the same way as traditional gilts. There are people in the government who believe they need to think this through carefully before they move into a bond class that is slightly different from the current one.”

That’s why Boardman and Blake regularly suggest that governments establish working groups to discuss such issues as building a reference index, pricing, demand, liquidity, and the design of the longevity bond.

In the meantime, as governments work through the idea, the private sector will continue to engineer financial products without the advantage of price points set by government-backed bonds.

Coughlan says three things need to happen before the private-sector market gets off the ground: Players need wider cross-industry standardization of documentation for the instruments, more broadly accepted indices, and more standardization of the actual instruments.

The International Swaps and Derivatives Association (ISDA) develops standardized documents for derivatives and is already discussing matters of documentation for longevity hedges with members of the market. For example, documentation may include standardized contracts for longevity swaps and information regarding collateral.

“It makes sense to broaden what is going on within ISDA with discussions around longevity instruments,” says Coughlan. “But clearly, input needs to come from a broad set of industry participants. Here, we are unique because we are seeking input from the banking, insurance, and pension sectors, whereas derivatives in the past have been mainly the territory of the banking community.”

Regarding indices, Coughlan believes the market needs indices that are owned and supported by the wider market rather than branded by a particular organization.

“From the beginning of LifeMetrics, we made it clear that LifeMetrics or another index like it should be developed with the industry and the industry standard should be an index that is owned and operated by an independent organization,” says Coughlan.

Finally, standardization of instruments must take place so that market participants can focus on pricing and product differentiation rather than the details of standardization.

From a regulatory point of view, standardized products are desirable because they can be cleared centrally. In addition, standardization would help increase liquidity and tradability in the market as well as reduce costs.

“Standardized products—something in the order of 8 to 10—would become the building blocks for the market. They could be put together in different combinations to create a hedge for an organization,” Coughlan says.

So, what is everyone waiting on before turning to capital markets to address longevity risk?

“People want to see a handful of first movers before they take the plunge,” says Coughlan. “They want to feel safe to follow.”

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