Cass Business School
CITY UNIVERSITY LONDON

Pensions Institute

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Government urged to issue longevity bonds to help the private sector hedge aggregate longevity risk and to help meet the Government's enormous borrowing requirement

Given the size of the UK Government's borrowing requirement – £703bn over the next five years as announced in the recent Budget – and also the growing need for pension funds and annuity providers to hedge against people living longer, a team from the Pensions Institute at Cass Business School[1] are calling on the Government to issue longevity bonds.

Dramatic increases in life expectancy have left private sector pension funds and annuity providers with a massive longevity exposure, and unlike other risks such as credit or interest rate risk, there are few options currently available to hedge this risk on any significant scale within the private sector itself. In addition, there are a number of factors driving demand for annuities. Defined contribution (DC) plans are growing in both number and size and the members reaching retirement are beginning to increase dramatically as the baby boomers retire. There is also an increased demand from defined benefit (DB) schemes to use annuities to back pensions in payment and for total scheme buy-outs.

The Pensions Institute team argue that there are four main reasons why the Government should agree to share longevity risk with the private sector:

1. **The expected cost of Government funding could be reduced by issuing longevity bonds.**
   Longevity bonds are bonds where payments are linked to the future survival rate of a specified cohort of the population, say 65-year-old males in 2010. If the UK Government issued longevity bonds, it would gain access to a new source of long-term funding which by widening the investor base should lower the cost of government issuance. In addition, the longevity risk premium attached to such issues will further reduce the expected cost of the long-term national debt. The Government would also be able to issue bonds with a deferred payment structure to help their current funding programme.

2. **The Government has an interest in ensuring that there is an orderly transfer of DB pension promises to the insurance and capital markets.**
   Insurance companies will inevitably need to play a big role in aggregating longevity risk and providing DB pension schemes with indemnity solutions. However, to counter the danger of an unhealthy concentration of risk amongst a small number of insurance companies, and insufficient capital in the insurance/reinsurance industry to deal with total private sector longevity risk (which in the UK alone amounts to £1 trillion with DB plans and £125 billion with insurance companies), some of the risk must be passed onto the capital markets. By issuing longevity bonds and producing a longevity index (which measures the survival rate of the relevant cohort), the Government can help establish price points along a mortality term structure to facilitate the growth of a private-sector longevity derivatives market in a similar way to the role that it played by issuing inflation-linked bonds which led to the establishment of an inflation term structure and the development of inflation swaps.

[1]Professor David Blake, Director of the Pensions Institute (Cass Business School); Tom Boardman (Director of Retirement Strategy and Innovation, Prudential UK; Professor Andrew Cairns (Heriot Watt University) and Professor Kevin Dowd (Nottingham University Business School).

3. **The Government has an interest in ensuring there is an efficient annuity market, given its desire to encourage retirement savings in DC pension plans that rely on annuities to turn savings into guaranteed lifetime retirement income.**
   Helping to establish a mortality term structure will help ensure that insurers can hold optimal capital in a Solvency II world as they would not have to treat longevity as an unhedgeable risk.

4. **The Government is one of the few agencies in society that can engage in intergenerational risk sharing on a large scale and enforce intergenerational contracts.**
   This is important, given that longevity risk is a risk that crosses a number of generations. There is an ongoing role for Government to provide deferred longevity bonds to allow insurance companies and pension schemes to hedge aggregate longevity risk that can arise from unanticipated changes in longevity due to, say, medical advances.

Professor David Blake, Director of the Pensions Institute at Cass, says: "The Government is one of the few agencies in society that can help the private sector hedge longevity risk on any significant scale. We strongly recommend that the Government issues longevity bonds as soon as is practically feasible. An ideal introduction date would be 2010, as this would give the market a couple of years to settle before Solvency II comes into effect in 2012."

"The capital markets would be able to establish a liquid longevity derivatives market once the cash market in Government-issued longevity bonds had established key price points along the mortality term structure" says Professor Andrew Cairns from Heriot Watt University and a Fellow of the Pensions Institute. "At the same time, regulators would be able to use the mortality term structure to help validate insurers' economic capital, thereby making regulation more robust."

Tom Boardman, Director of Retirement Strategy and Innovation, Prudential UK, and a Visiting Professor at the Pensions Institute argues: "Longevity bonds will help insurers to meet the increasing demand for annuities from defined contribution and defined benefit pension schemes through being able to pass on a proportion of the longevity risk to the Government and the capital markets. This would reduce insurers' longevity concentration risk by distributing it around global capital markets."

"In the UK, despite the recent rapid expansion in the number of pension buyout companies, the buy-out market still only has a turnover of around £5 billion per annum – well short of the £1 trillion of pension plan liabilities in the country. As individuals and companies switch to defined contribution plans, an efficient annuity market backed by longevity bonds becomes more important than ever", argues Professor Kevin Dowd from Nottingham University Business School and a Fellow of the Pensions Institute. "At the same time, governments are looking to broaden their sources of funding in a time of economic uncertainty and large fiscal deficits."

David Blake adds: "Everyone benefits from the optimal sharing of longevity risk and insurers in particular will be able to hold optimal levels of capital in a Solvency II world thereby maximising the value of annuities to individuals in both DC and DB pension plans."

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Notes to editors

Cass Business School, City University, delivers innovative, relevant and forward-looking education, training, consultancy and research. Located on the doorstep of one of the world's leading financial centres, Cass is perfectly positioned to be the intellectual hub of the City of London. Our dialogue with business shapes the structure and content of all our programmes of study, our executive education programmes and our research. Our MBA, specialist Masters and undergraduate programmes have a reputation for excellence in professional education. Our Executive MBA is ranked 13th in the world by the *Financial Times*.

The school undertakes research of national and international significance and supports almost 100 PhD students. Cass has the largest Finance Faculty and the largest Actuarial Science and Insurance Faculty in Europe. Our finance research is ranked 2nd in Europe and 4th in the world outside the US by *Financial Management Magazine* and our insurance and risk research is ranked 2nd in the world by the *Journal of Risk and Insurance*.

Cass is a place where students, academics, industry experts, business leaders and policy makers can enrich each other's thinking. For further information visit: www.cass.city.ac.uk

The Pensions Institute's mission is to undertake high quality research in all fields related to pensions, to communicate the results of that research to both the academic and practitioner community, to establish an international network of pensions researchers from a variety of disciplines, and to provide expert advice to the pensions industry and to government.

Established in 1996, the Pensions Institute was one of the world's first academic research centres to focus entirely on pensions. We are also one of the first to take a fully multidisciplinary approach. For the first time disciplines such as economics, finance, insurance and actuarial science, through to accounting, corporate governance, law and regulation have been brought together in order to enhance strategic thinking, research and teaching in pensions. The Pensions Institute unites some of the world's leading experts in these fields with a view to resolving many of the problems caused by the disparate elements making up the pensions mix.

The Pensions Institute has been at Cass Business School since 2004.

Nottingham University Business School is one of the UK's leading centres for management education and ranks among the world's leading business schools in the 2009 Financial Times Global Top 100 MBA and Global Masters in Management ranking, and the Economist Intelligence Unit Which MBA. In the 2008 Research Assessment Exercise (RAE), 70% of the School's research was rated as either 'internationally excellent' or 'world-leading,' ranking it 6th in the UK.

The School also ranks 1st in the UK and 28th globally in the Aspen Institute's 'Beyond Grey Pinstripes' ranking of the world's most innovative MBA programmes that lead the way in integrating social, environmental, and ethical issues into management education and research.

The Business School has pioneered entrepreneurship teaching and research at Nottingham and The University won the 2008 Times Higher Entrepreneurial University of the Year award. The University provides innovative and top quality teaching, undertakes world-changing research, and attracts talented staff and students from 150 nations. Described by *The Times* as Britain's "only truly global university," it has invested continuously in award-winning campuses in the United Kingdom, China and Malaysia.

The Department of Actuarial Mathematics and Statistics at **Heriot-Watt University** is world renowned for its teaching and research in actuarial and financial mathematics.

The key themes of Heriot-Watt University's new centre for Financial Risk and Actuarial Modelling, Edinburgh (FRAME) are applied research, knowledge transfer, and innovative developments in postgraduate education in quantitative finance and insurance. FRAME's

primary goal is to become the pre-eminent centre in the UK for applied quantitative financial research, with a special focus on insurance and actuarial modelling. This will be achieved by capitalizing on HWU's world-class reputation in research and teaching in this field to build a unique relationship with the Scottish and UK financial services industry.

FRAME is also developing a range of innovative knowledge transfer and high-level continuing professional education events to satisfy the demand for improved quantitative skills in industry. The aim of such events will be to provide a vibrant atmosphere within the Scottish financial community, as well as a valuable resource for the UK, that will help to address some of the more-quantitative problems that have arisen during the recent financial crisis. Many of these events will provide a forum for a two-way dialogue between academics and practitioners and help provide direction for FRAME's applied research programme.