April 2012 Global Financial Stability Report

The Financial Impact of Longevity Risk

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April IMF GFSR Chapter 4: The Financial Impact of Longevity Risk

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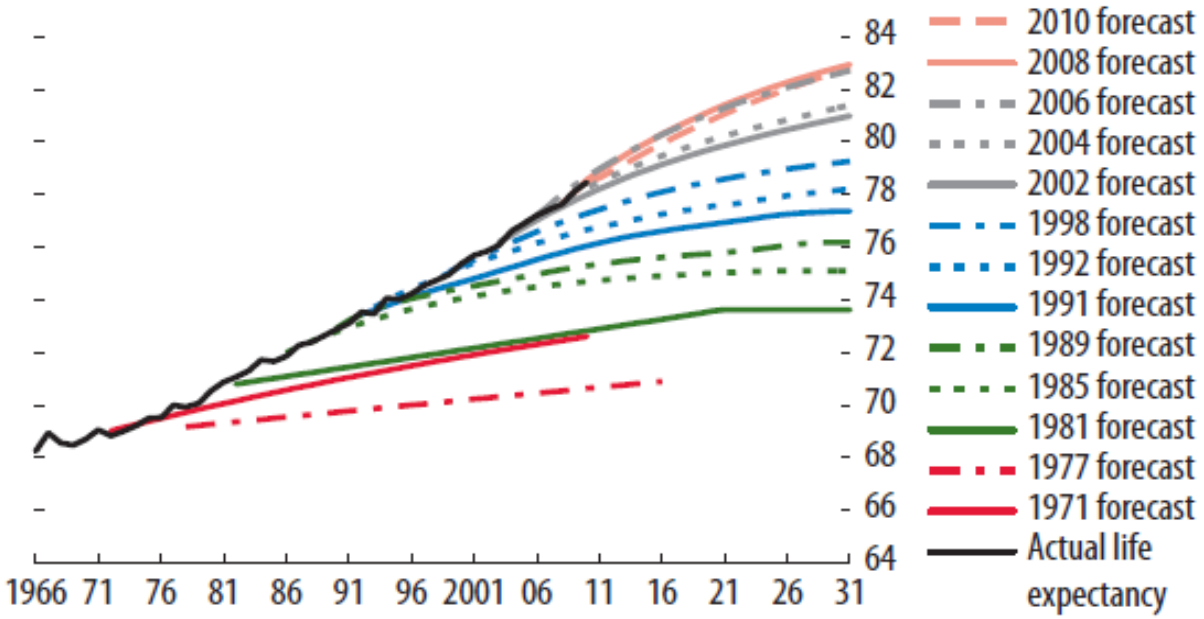
Overview

- Living longer is a good thing but…
- Unexpected increases in longevity have important financial impacts such as…
- People outliving their financial resources, which has knock-on effects on
- Private and public pension schemes, life insurers, and governments,
- Which is a long term problem requiring immediate risk mitigation.

Longevity has been consistently <u>underestimated</u>, implying significant longevity risk

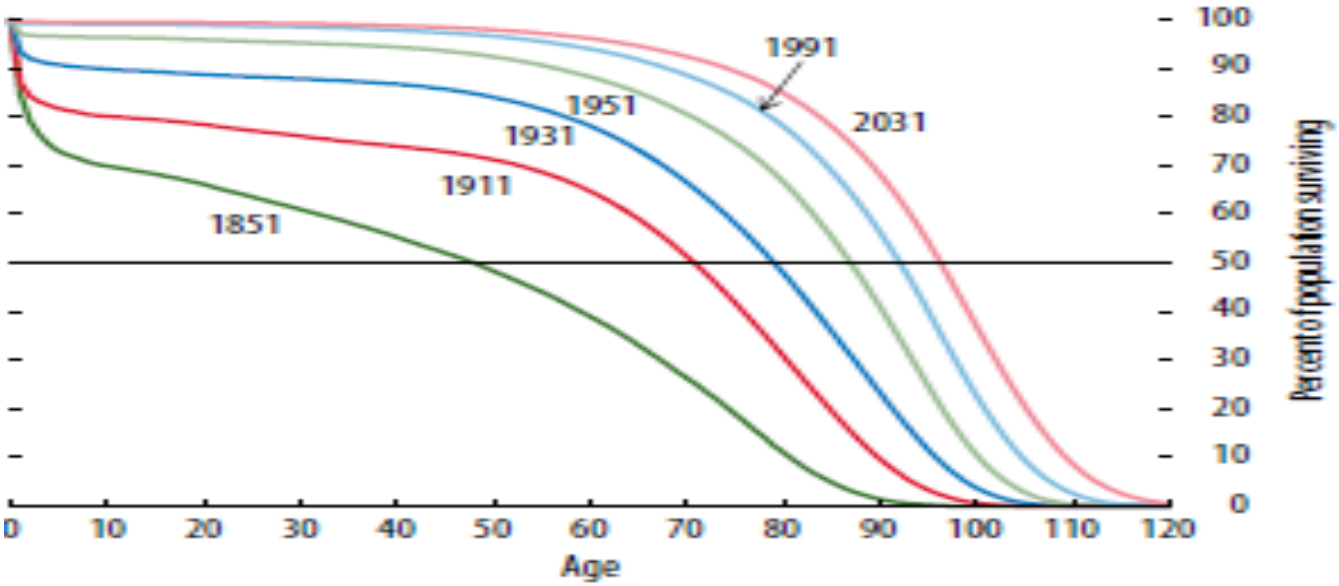
Figure 4.1. United Kingdom: Projected Life Expectancy at Birth, for Males, 1966–2031
(In years)



Source: Office of National Statistics.

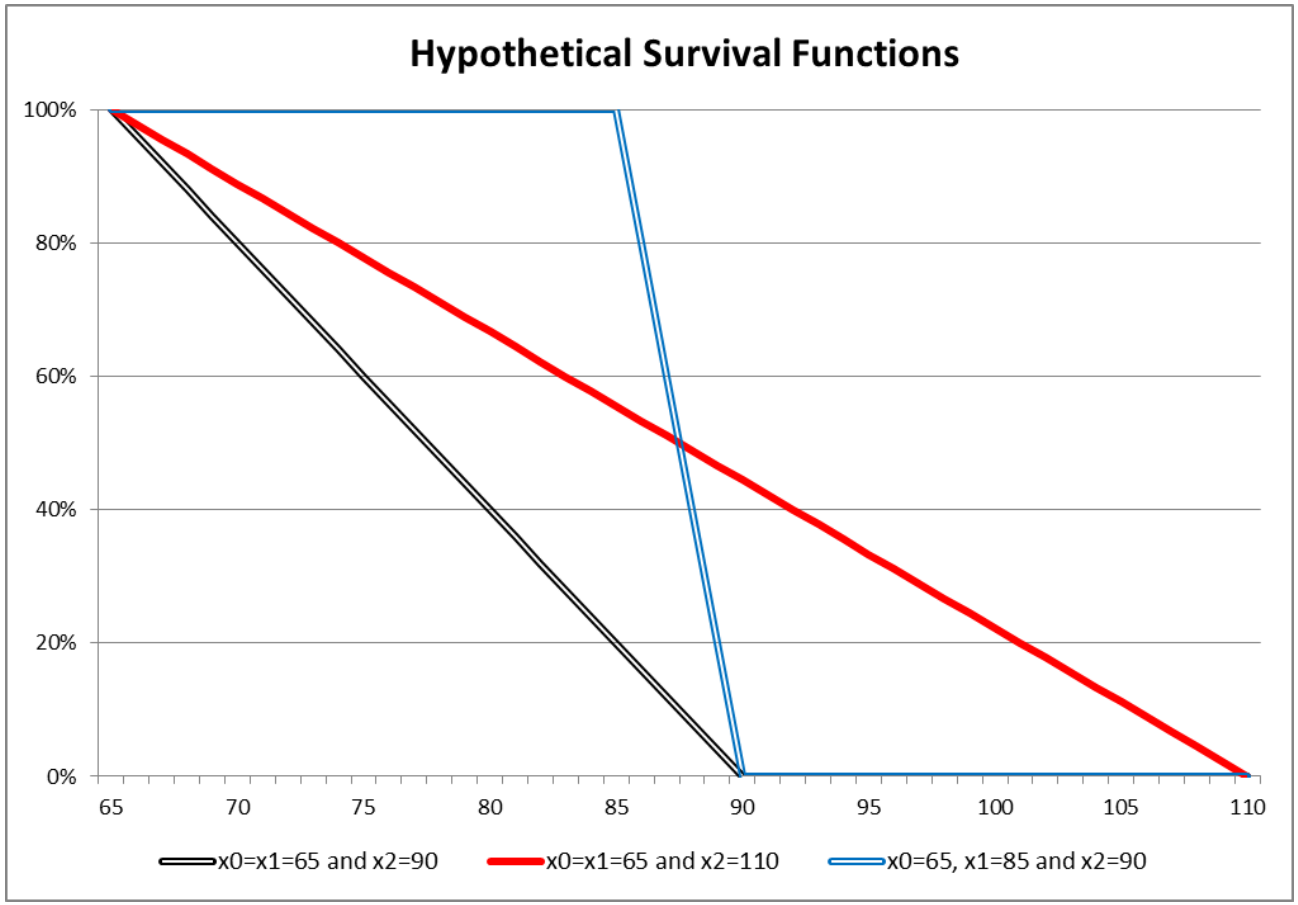
Life curves and the shape of longevity improvements (rectangularization versus expansion)

Figure 4.1.2. Life Curves for the United Kingdom, by Year of Birth, 1851–2031



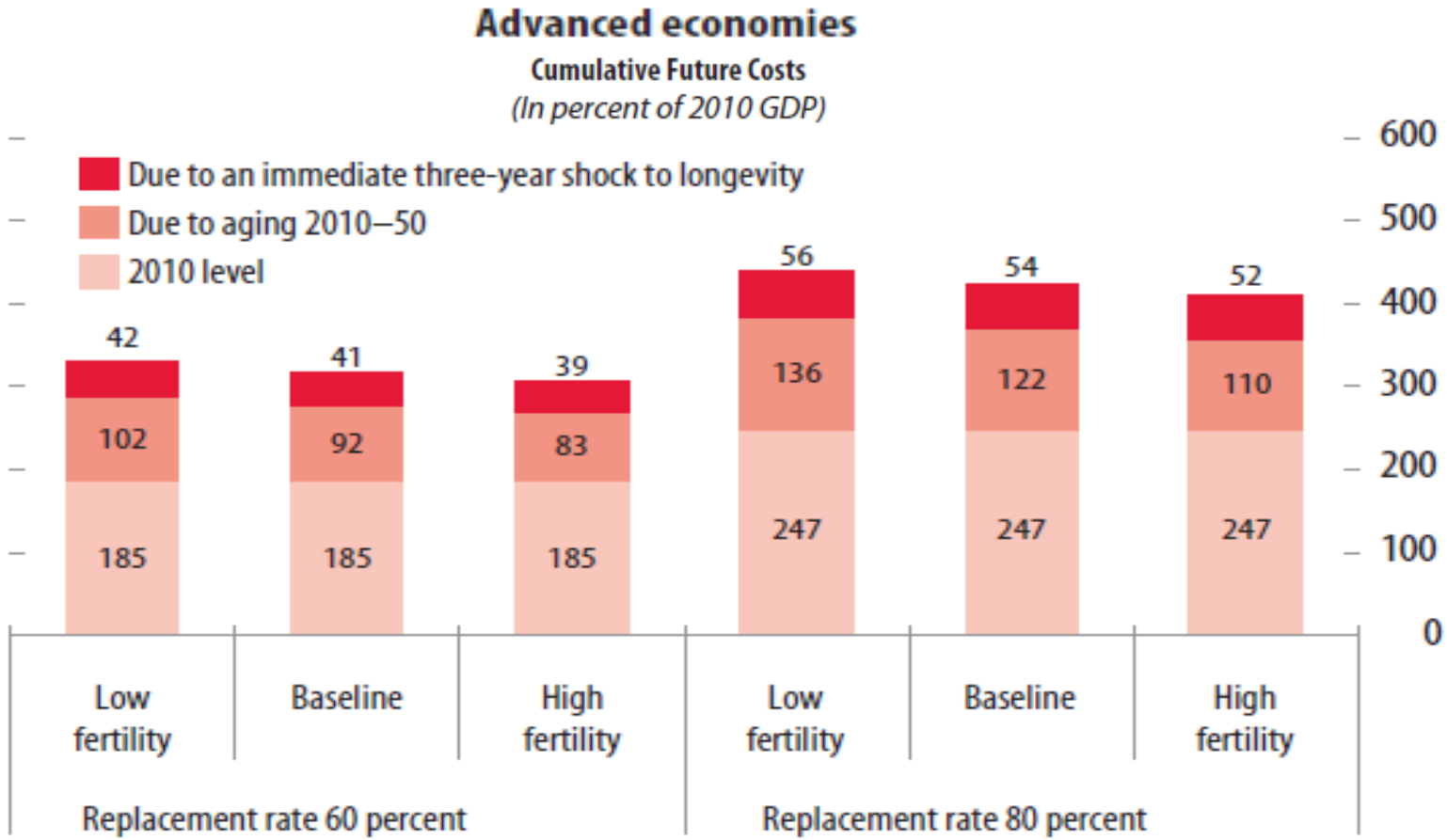
Source: Office of National Statistics.
Note: Proportion of persons born in a given year surviving to successive ages. For example, of people born in 1851, 50 percent survived to about age 47.

Simple example: Same life extension (10 years) but PV increases very different (+57.2% v +40.4%)



On a global scale, longevity risk is large

Figure 4.2. Increases in Costs of Maintaining Retirement Living Standards due to Aging and to Longevity Shock



The private sector is under-saving for retirement even before considering longevity improvements

Table 4.2. Longevity Risk and Fiscal Challenges in Selected Countries
(In percent of 2010 nominal GDP)

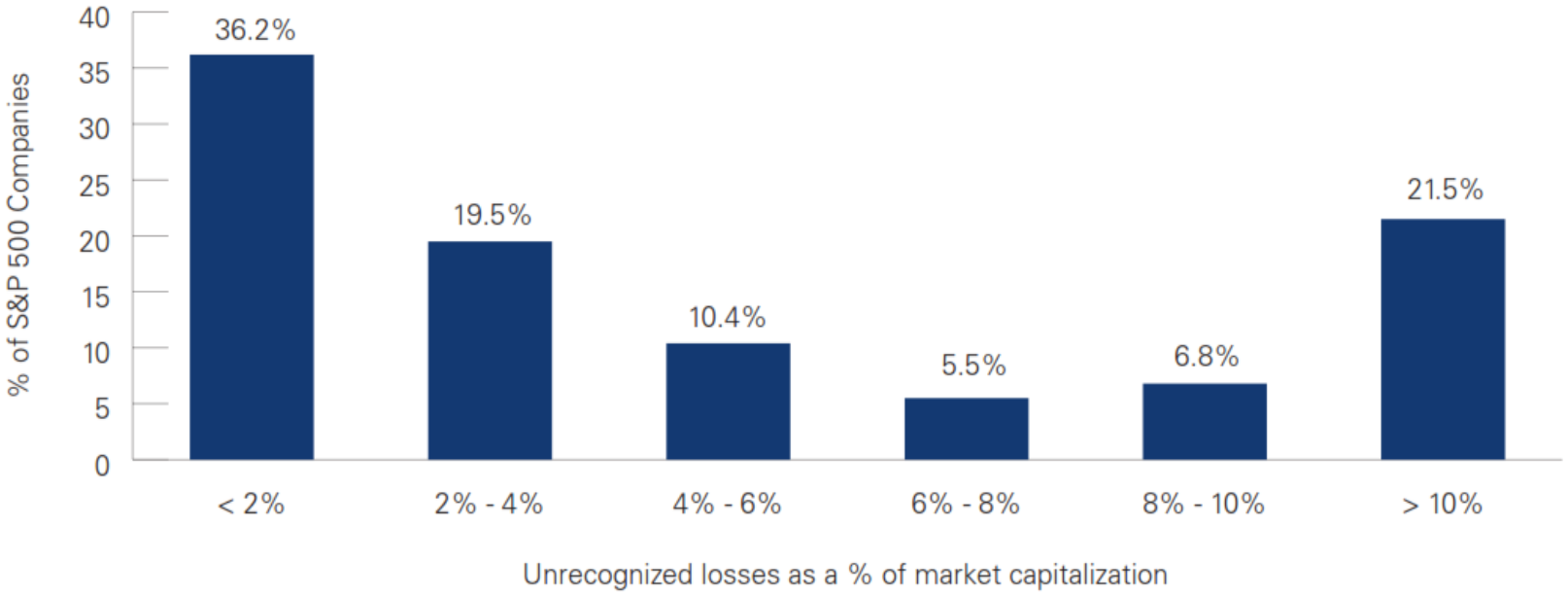
	(1)	(2)	(3)	(4)
	Household Total Financial Assets (2010)[1]	Net Present Values of Needed Retirement Income	General Government Gross Debt (2010)	Increase in Net Present Values Given Three-Year Increase in Longevity
United States	339	272 – 363	94	40 – 53
Japan	309	499 – 665	220	65 – 87
United Kingdom	296	293 – 391	76	44 – 59
Canada	268	295 – 393	84	42 – 56
Italy	234	242 – 322	119	34 – 45
France	197	295 – 393	82	40 – 54
Australia	190	263 – 350	21	36 – 49
Germany	189	375 – 500	84	55 – 74
Korea	186	267 – 357	33	39 – 52
China	178	197 – 263	34	34 – 45
Spain	165	277 – 370	60	39 – 52
Hungary	108	190 – 254	80	34 – 45
Czech Republic	89	216 – 289	39	36 – 48
Poland	88	160 – 213	55	27 – 35
Lithuania	80	189 – 252	39	34 – 45

Sources: National flow of funds accounts; national accounts; IMF (2011c); and IMF staff estimates.

Note: Range of values in columns 2 and 3 cover, at low end, a replacement rate of 60 percent of preretirement income and, at high end, an 80 percent replacement rate for retirees aged 65 or older to maintain preretirement standard of living during 2010–2050 period.

[1]For China, 2009.

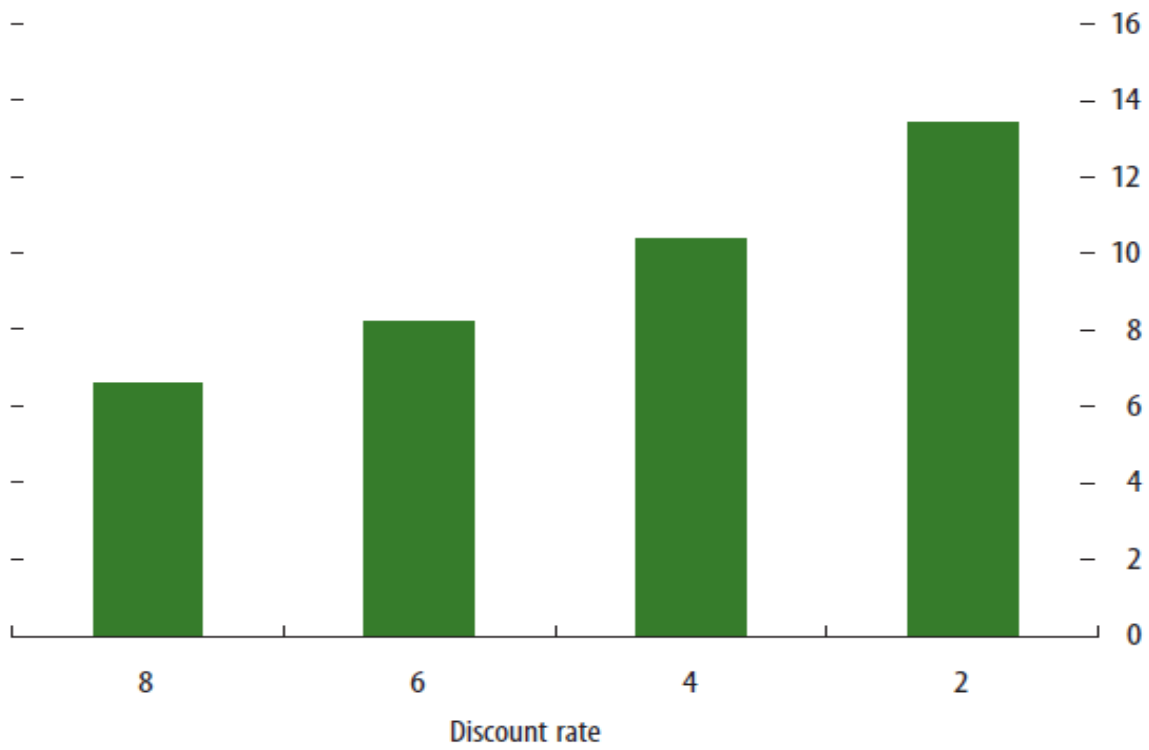
Unrecognized actuarial losses are material for some pension plan sponsors



Source: Goldman Sachs Asset Management; company reports, as of December 31, 2011.

Plus lower interest rates are increasing longevity risk and pension liability present values

Figure 4.4. Increase in Actuarial Liabilities from Three-Year Increase in Longevity, by Discount Rate
(In percent)



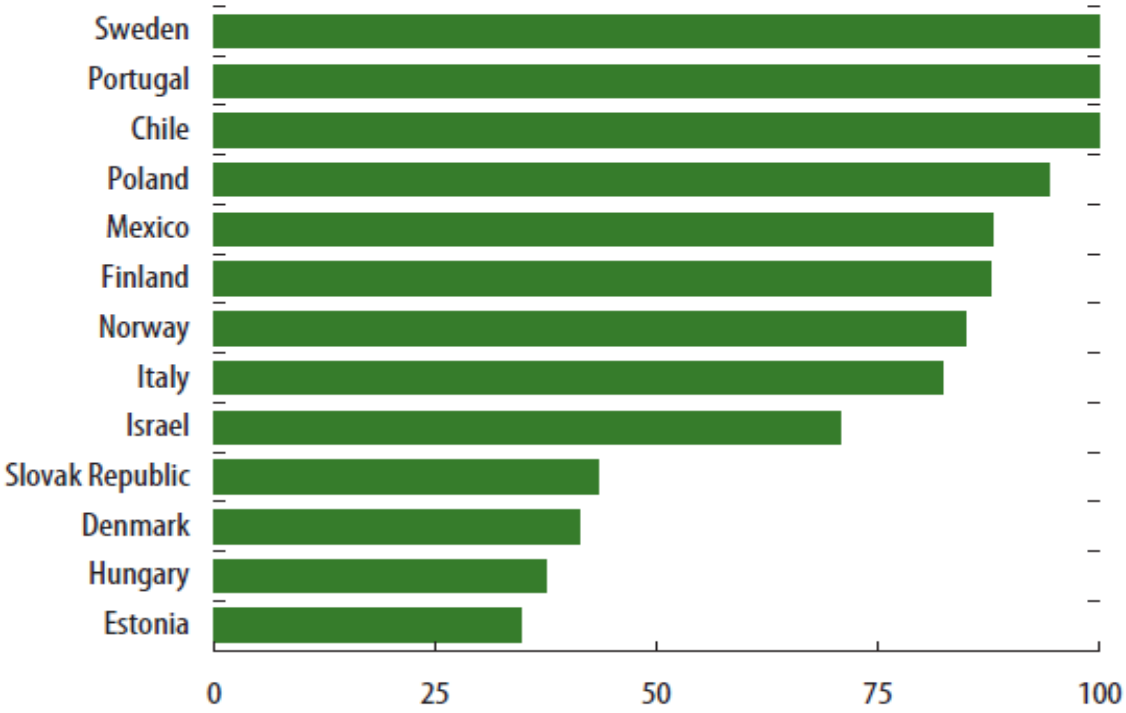
Source: IMF staff estimates.
Note: Actuarial liabilities are projected benefit obligations of a model pension plan.

Policy Recommendations

- Governments are the ultimate holders of longevity risk directly via social security and health care schemes, and indirectly via backstopping private sector shortfalls
- They need to recognize these exposures and take measures to reduce public balance sheet vulnerabilities
- Longevity risk needs to be shared across sectors
- Market-based transfer of longevity risk could help
- One major reform is to link the retirement age to expected longevity, mandated or voluntary

Some countries have started to link the retirement benefits and retirement ages to longevity

Figure 4.5. Share of Pension Entitlements Linked to Life Expectancy in Selected Countries
(In percent)



Source: OECD pension models.

Some market-based transfer of longevity risk is taking place, mainly in the United Kingdom, through buy-outs, buy-ins and longevity swaps

Figure 4.6.2. Structure of Longevity Transfers by U.K. Defined-Benefit Pension Plans, by Type of Counterparty

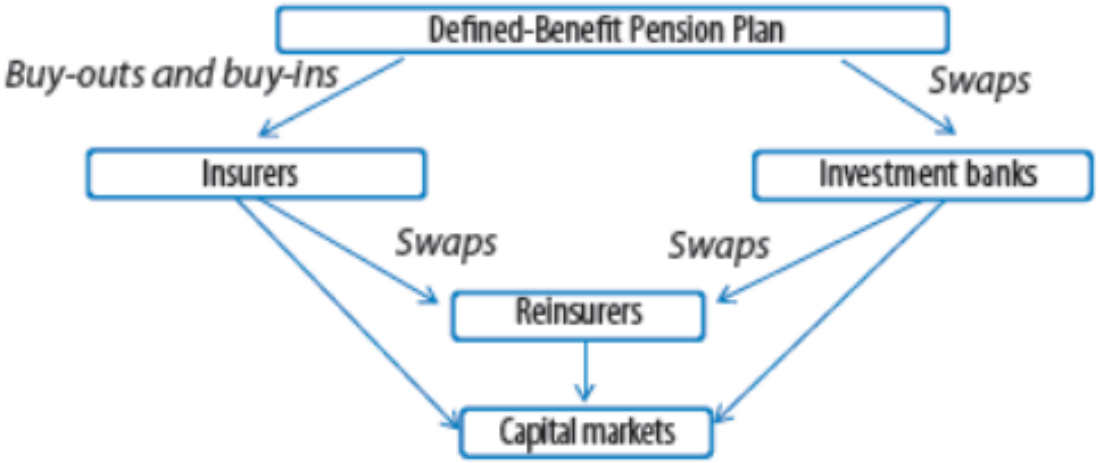


Table 4.6.1. Largest Longevity Risk Transfers by U.K. Pension Plans

Pension Plan	Provider	Deal Type	Value (In billions of pounds sterling)	Date
Rolls Royce	Deutsche Bank	Swap	3.0	November 2011
RSA Insurance	Rothesay Life[1]	Swap	1.9	July 2009
ITV	Credit Suisse	Swap	1.7	August 2011
British Airways	Rothesay Life[1]	Buy-in[2]	1.3	June 2010
British Airways	Rothesay Life[1]	Swap	1.3	December 2011
Babcock	Credit Suisse	Swap	1.2	July 2010
Thorne	Pension Corporation	Buy-out	1.1	December 2008
Turner & Newall	Legal & General	Buy-in	1.1	October 2011
Cable & Wireless	Prudential (U.K.)	Buy-in	1.0	September 2008
Pilkington	Legal & General	Swap	1.0	January 2012

Source: Hymans Robertson.

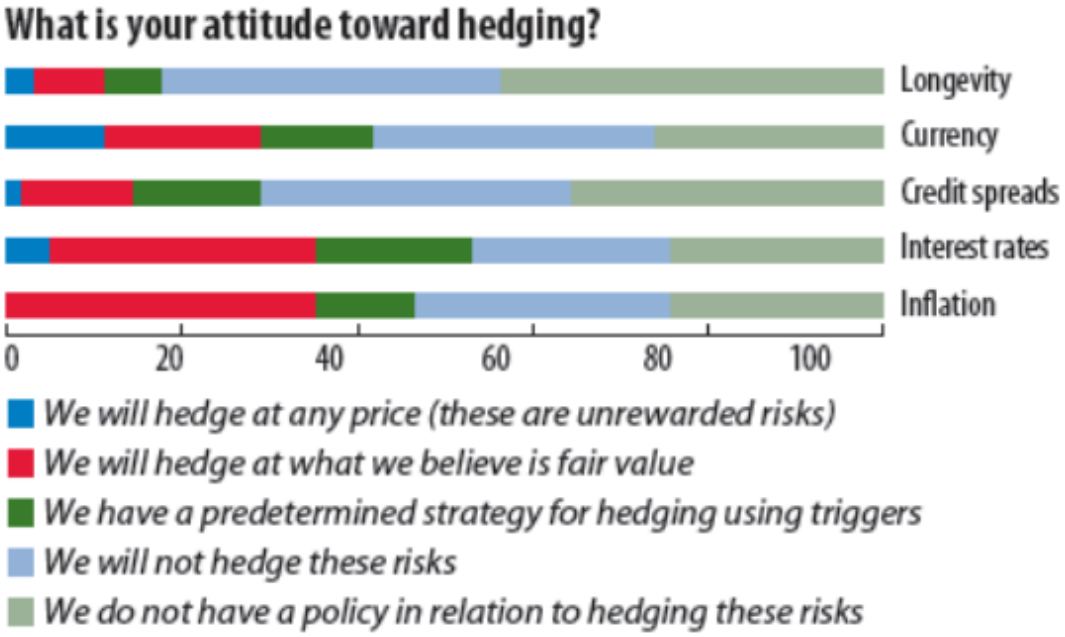
[1]An insurance subsidiary of Goldman Sachs.

[2]Synthetic buy-In (longevity swap plus asset swap).

Plus a €12 billion longevity swap between Dutch insurer Aegon and Deutsche Bank in early 2012! And a $26 billion pension buy-out between General Motors and Prudential in June 2012!

Market-based transfer of longevity risk is facing an uphill battle on the "sell" side…

Figure 4.9. Attitudes of Pension Plan Sponsors toward Hedging Pension Risk, by Type of Risk
(In percent of respondents)

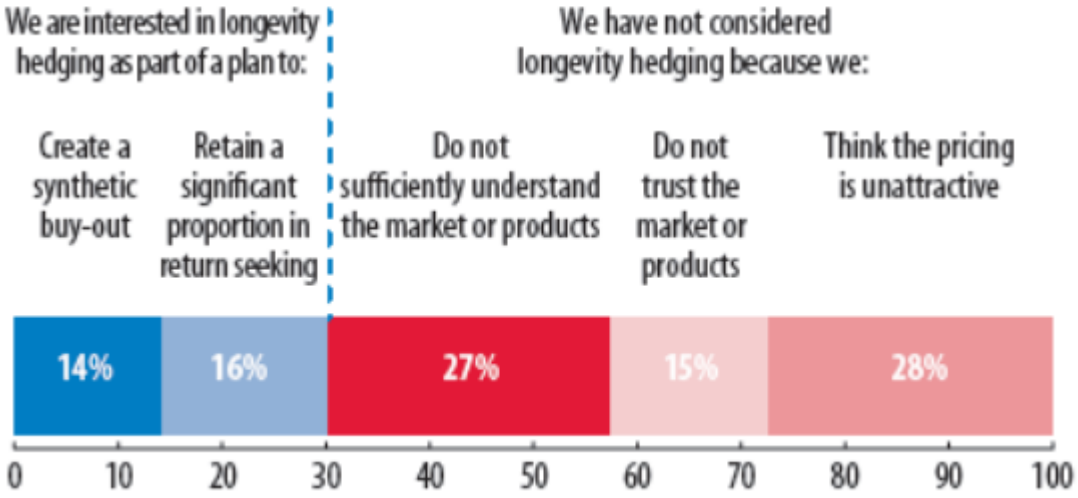


Source: Aon Hewitt (2011).

…And on the "buy" side

Figure 4.10. Attitudes of Potential Sellers of Longevity Risk toward Hedging
(In percent of respondents)

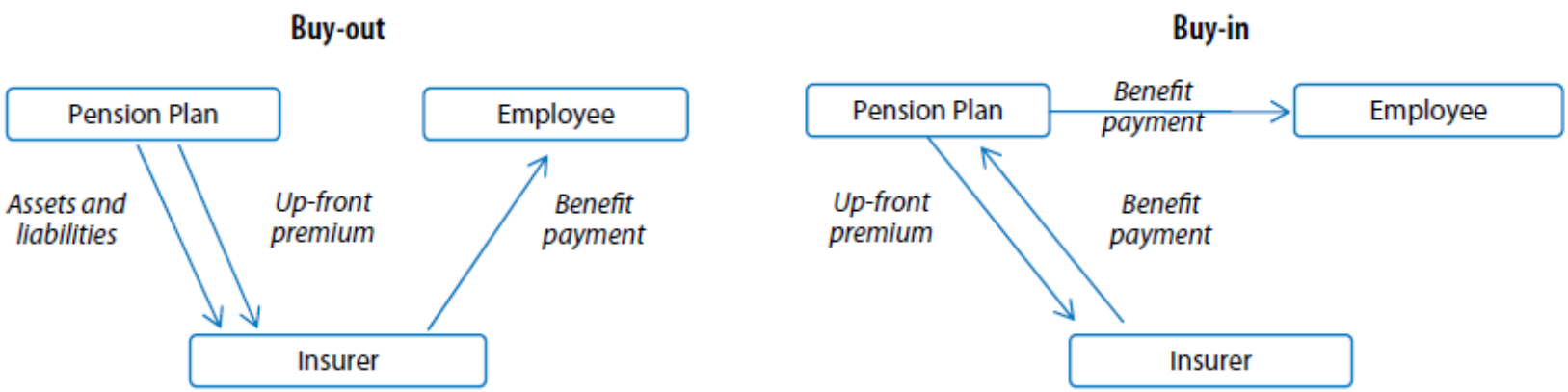
How would you describe your attitude toward hedging longevity risk?



Source: Aon Hewitt (2011).

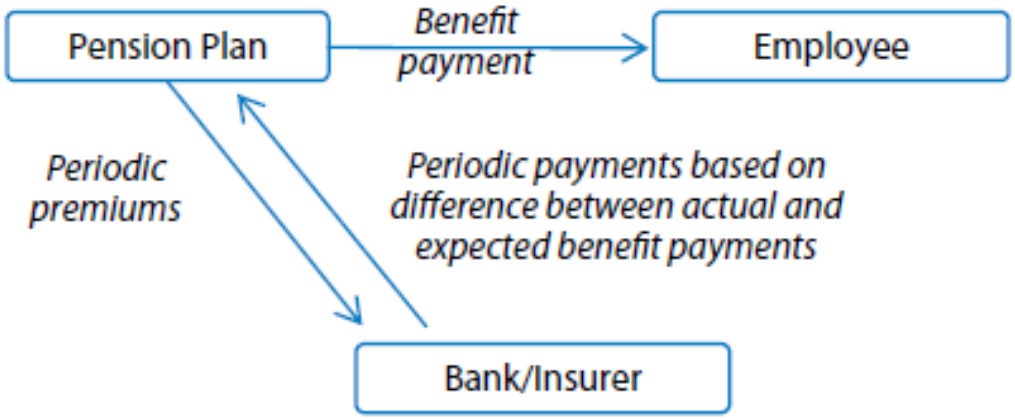
Buy-Outs transfer all the pension fund risk, but buy-ins can transfer more surgically – e.g., only longevity risk

Figure 4.6. Structure of Pension Buy-Out and Buy-In Transactions



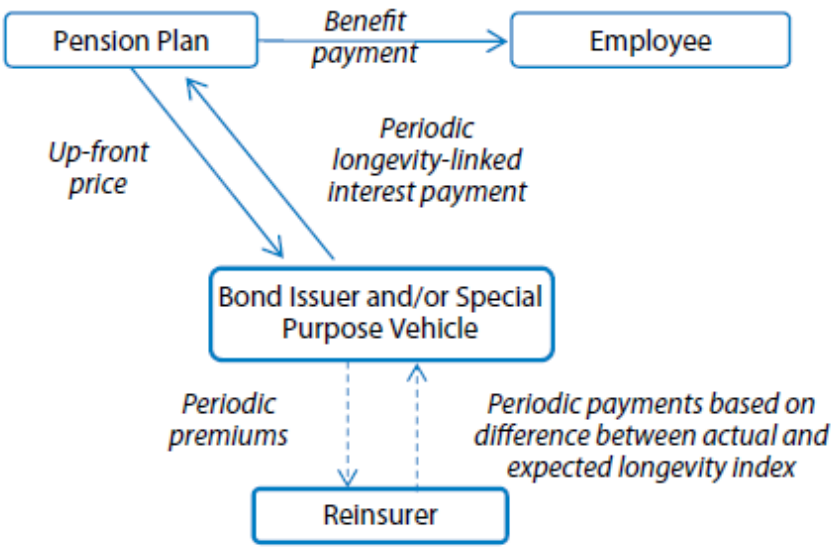
Longevity swaps are in effect synthetic buy-ins, that can also be used for "surgical" transfer…

Figure 4.7. Structure of Longevity Swap Transactions



But there has yet to be a successful longevity bond transaction…

Figure 4.8. Structure of Longevity Bond Transaction



Source: Goldman Sachs Asset Management. For Illustrative Purposes Only.

Life (re)insurers may be natural longevity risk buyers but their capacity is limited

- For life (re)insurers longevity risk provides a partial hedge for their insurance exposure
- But the hedge is not perfect because life policy cohorts are younger than the populations that pension schemes are seeking to hedge
- Swiss Re's Kortis Capital "longevity" bond is a possible prototype hedge of this basis risk
- But in any case, potential (re)insurer longevity risk appetite is a small fraction of potential supply.

Developing a broader longevity risk investor base

- Some asset managers may be attracted by low correlations with traditional assets
- But hedge funds may be put off by long durations
- Investors prefer standardized contracts and indices
- But sellers want to minimize basis risk
- Insufficiently granular high frequency mortality data
- **Governments can help on the data front**

Summary

- Why worry about longevity risk now?
- As with other pension issues, the longer you wait, the more difficult the solutions become
- Also, markets could respond to vulnerabilities
- The good news is that if tackled now, effective measures could avoid hardship and disruption
- Much more difficult measures would be needed in the future

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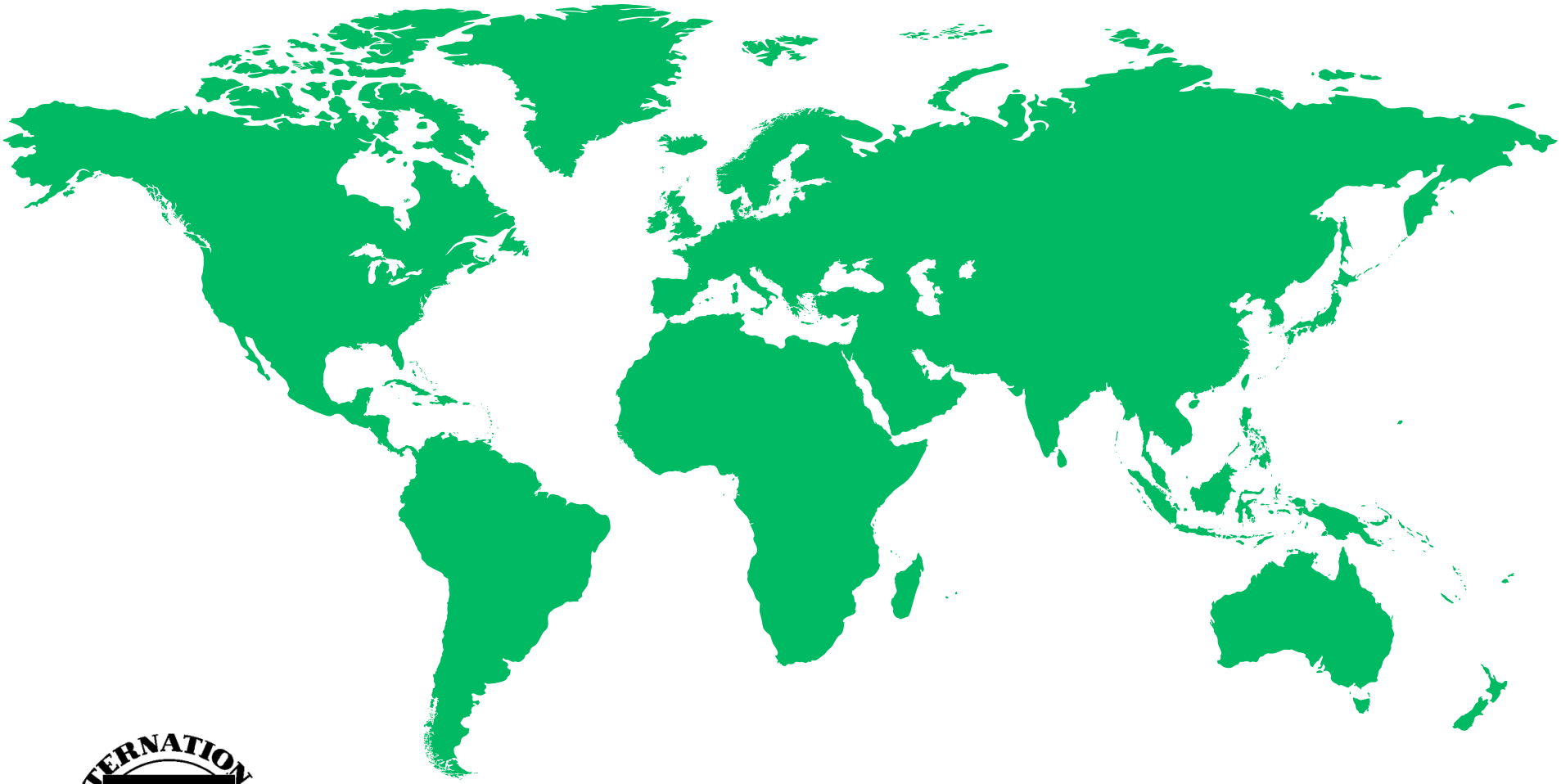

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