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Addressing the Challenge of Global Ageing—Funding Issues and Insurance Solutions

edited by Patrick M. Liedtke and Kai-Uwe Schanz

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The Geneva Association **(The International Association for the Study of Insurance Economics)**

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Addressing the Challenge of Global Ageing—Funding Issues and Insurance Solutions

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edited by Patrick M. Liedtke and Kai-Uwe Schanz

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Foreword

John R. Strangfeld

Ageing is one of the most significant issues facing societies around the world. Populations are ageing as people live longer and birth rates decline. Although much of the focus on the impact of these demographic changes has been on specific countries, populations are ageing rapidly around the globe.

While the demographic shifts taking place in the world are not new, there is heightened recognition of their global impact. With policymakers, regulators and companies increasingly focused on this issue, this report could not be more timely.

Governments, corporations and individuals around the world are already feeling the financial strain of ageing populations. In the U.S., for example, the Social Security Trust Fund was recently forecast to run out of money in 2033. Pension systems around the world are grappling with the impact of increased longevity on pension liabilities.

Because of this strain, much of the responsibility for retirement security has been shifting from government and employers to individuals, who will need to save more, work longer and look for new ways to manage the risk they now shoulder.

The losses many people experienced during the financial crisis have highlighted risks that have been transferred to individuals and that they are not well prepared to manage. With the backdrop of a challenging global economy, low interest rate environment and inadequate retirement savings, the risk that current or future generations will not be able to achieve a secure retirement is growing.

With its long-term perspective, institutional investment and actuarial experience expertise as well as its financial strength, the insurance industry is well-positioned to be part of the solution to meeting the financial needs of an ageing global population. The new generation of retirement products, including guaranteed lifetime income annuities, is just one of the many ways the industry is leveraging its capabilities to help companies and individuals manage the challenges associated with ageing.

Similarly, through pension risk transfer solutions as well as liability driven investment strategies, the industry is helping companies manage pension risk and better match liabilities with investments.

The insurance industry has a key role to play in meeting the changing needs of ageing populations. Addressing the impact of these demographic shifts will require a comprehensive broad-based response from both the public and private sectors.

This report serves as a valuable starting point for what will need to be an ongoing dialogue. It not only highlights the challenges ahead, but also, importantly, outlines potential solutions that will help address this global issue.

*John R. Strangfeld,
Chairman & Chief Executive Officer,
Prudential Financial*

Editorial and Executive Summary

Patrick M. Liedtke and Kai-Uwe Schanz

The notion of formal retirement is relatively young. In 1881 Chancellor Otto von Bismarck introduced the world's first pension scheme in Germany. Prior to that, people generally worked "until they dropped". However, when von Bismarck introduced his revolutionary scheme of protecting workers in their old age, it was only a very small minority of the population that ever reached the official retirement age of 65 years—then a full 20 years higher than the average life expectancy of a German worker. The scheme was never meant to become a social achievement that would allow almost all of its contributors to spend an increasing period of their lives in (relatively) good health while drawing a pension. Nevertheless, due to the extraordinary increase in life expectancy during the 20th century, it became one of the key components of the social contract and is often regarded as one of the great achievements of modern civilisation.

Following the Second World War, pension schemes in the developed world became ever more generous on the back of economic prosperity and relatively contained dependency ratios, i.e. the ratio of beneficiaries of the system to its contributors (usually approximated by the ratio of the over 65-year-olds to the 15-64-year-olds). From the 1990s, however, the awareness of a massive demographic shift has started to grow with the retirement of the post-war baby boomers looming. Average dependency ratios in the developed world have halved from their post-war high of around seven people. Governments in advanced economies generally acknowledge that their pension and healthcare schemes are becoming increasingly unaffordable and unsustainable. Some have started responding by raising retirement ages, lowering payouts and encouraging more private old-age provisioning through higher savings. The need for individuals to take their post-retirement destiny in their own hands has also been heightened by an inexorable shift from defined corporate pension benefits to defined contributions.

The current debate about sustainable pension systems is all about spreading the burden over several pillars. There should be (1) a state pension to meet basic needs in old age and avoid people falling into poverty, (2) a private occupational pillar, funded by employers and employees that tops up the first to keep living standards on a higher level, (3) a voluntary individual savings pillar that contributes additional income and risk diversity and (4), as conceptualised by The Geneva Association as early as 1987, a fourth pillar based on part-time post-retirement work. But it is also clear that the balance between the various pillars is set to change: state pensions are being reined back and occupational schemes are getting not only less generous but also less predictable. In order to offset the accelerating erosion of Pillars I and II, the two remaining pillars, i.e. private savings

and insurance solutions as well as working beyond formal retirement ages, will need to be strengthened markedly. And this is precisely where insurers have a much bigger role to play going forward. They are in a unique position to enhance Pillar III savings by a transfer of longevity risk, the risk of pensioners outliving their savings, as well as the assumption of a sizeable part of associated asset risks. Insurers also have the skills and experience to design (innovative) products specifically catering to those who opt to work beyond the formal retirement age.

The current environment makes this crucial contribution from the insurance industry both socially more desirable and economically more challenging: in the wake of the financial crisis, the fiscal positions of rich-world governments have deteriorated dramatically within just a few years, leaving even less room for coping with the inevitable long-term challenges of spiralling public pension and healthcare expenditures. At the same time, employers are confronted with the prospect of protracted subdued economic growth in their core markets. As a consequence, they face an uninspiring outlook for revenue and profitability while the pension obligations to their (former) employees continue to grow. These developments are set to accelerate governments' and employers' gradual withdrawal from their traditional role as major and predictable sources of retirement income. Helping to fill this gap is not simply a business opportunity for the insurance industry. It arguably is also its most relevant long-term contribution to economic and social stability. A simple example: a key social benefit of annuities is that those who have bought them are much less likely to fall back on state benefits or suffer the fate of old age poverty.

Having said this, insurers face unprecedented challenges in their quest to capture these business opportunities and to meet the accompanying social obligations: returns on investments, a core pillar of life insurers' business model, have reached record-lows. Government efforts to boost ailing economies and prop up struggling banks have left interest rates at rock-bottom levels, making it challenging for insurers to help strengthen the third pillar of retirement.

Against this multi-faceted and intriguing backdrop, The Geneva Association has initiated a comprehensive research effort focusing on the future of retirement systems and insurers' contribution to their long-term sustainability. This effort builds on The Geneva Association's multi-decade record of researching into and publishing on the subject matter.

With the following collection of 14 articles from leading industry professionals and Geneva Association researchers, we intend to make a meaningful contribution to a debate which has assumed heightened urgency and significance in the wake of the financial crisis, and sharply reduced fiscal latitude. This volume's collection of articles provides a concise yet authoritative overview of all aspects relevant to the phenomenon of global ageing, the resulting funding issues as well as challenges and opportunities for the insurance industry. We first set out the analytical foundations of the current ageing debate before pointing out specific insurance-based solutions and the prerequisites that need to be in place for these solutions to realise their full potential. The final part of the report looks at specific effects of greying populations on key stakeholders such as governments, employers and individuals.

The chapter from *Richard Jackson*, Senior Fellow, Center for Strategic and International Studies, sets the scene. He describes the dramatic dimensions of the ongoing demographic transformation, with the elderly (aged 60 and over) projected to account for about 40

per cent of the total population in 2040 in countries such as Germany, Italy, Japan and South Korea. Jackson also analyses the daunting fiscal implications of ageing: based on current retirement ages and replacement rates state pension benefits would eat up 17-23 per cent of GDP by 2040 in Germany, France, Italy, Spain and Japan—dramatically up from the current level of 8-12 per cent. *“The challenge for most developed countries is how to reduce the rising burden that existing retirement systems threaten to place on the young without at the same time undermining the security they now provide to the old,”* Jackson says. This is a particularly tricky task in countries such as Germany, Italy, Poland and Spain where government benefits account for more than 75 per cent of people’s retirement income.

In his contribution Jackson also discusses the longer-term socio-economic ramifications of ageing. *“The expectation that global ageing will lead to slower growth is largely a matter of arithmetic. Growth in real GDP equals the growth in employment, or more precisely hours worked, times the growth in output per worker hour, or productivity. By the 2020s and 2030s, the growth rate of the working-age population will have fallen to near zero or turned negative in every major developed country other than the United States. In Japan and the faster-aging European countries, the working-age population will by then be contracting by between roughly 0.5 and 1.5 percent per year,”* he points out and warns that, *“Unless labour-force participation rates surge or economic performance improves dramatically, some developed countries could face a future of secular economic stagnation—in other words, of zero real GDP growth from peak to peak of the business cycle.”* Furthermore, Jackson argues that household savings rates will decline as a larger share of the population moves into the retirement years, potentially dampening economic growth. He also highlights the frequently neglected social and behavioural implications of ageing, such as worker productivity, typically declining at older ages and greying workforces potentially being less entrepreneurial. Jackson concludes by outlining six especially critical policy choices: (1) reduce pay-as-you-go benefits, (2) strengthen old-age safety nets, especially in developing countries, (3) increase funded retirement savings, (4) encourage longer work lives, (5) encourage higher birth rates and (6) increase immigration.

In their contribution, *Christophe Courbage*, Research Director, and *Patrick M. Liedtke*, Secretary General and Managing Director of The Geneva Association, address the root causes and key stakeholder implications of global ageing. The authors point out that populations throughout the world are ageing due to two basic demographic trends: increasing life expectancy and declining fertility rates. While the increase in life expectancy is largely due to lifestyle improvements, rising wealth and medical advances, the decrease in fertility rates is generally explained by birth control, higher female educational attainment and participation in the labour force, and changes in life style and societal values.

As a large part of pensions is financed through a pay-as-you-go system, i.e. providing a monthly fixed benefit to retired citizens from taxes or contributions paid by the current working population, ageing will impose a major burden on public finances. As an illustration of the challenge at hand, Courbage and Liedtke present the trend of average life expectancy after pensionable age in the OECD which has increased sharply: from 1950 to 2040 the respective after-retirement life expectancy for women and men has increased from 17 and 13 years to more than 24 and 20 years, respectively. The authors

also argue that employers will not just be affected by the increasing cost of (defined-benefit) occupational pension schemes but, longer-term, an aggravating shortage of skilled labour—a threat which is arguably much harder to defuse. As far as insurers are concerned the main and most direct impact of ageing is on their pension liabilities in the form of annuity products. In this context, the authors discuss ways of mitigating the various forms of mortality risk involved as well as innovative, capital markets-based longevity risk solutions.

Milka Kirova, Vice President, Economic Research & Consulting, Swiss Re, assesses the track record of insurance in the area of old age and longevity protection. She first makes the fundamental case for insurance as a key potential contributor to managing old-age risks. The limited nature of government-run and employer-based retirement plans means that people should undertake supplementary saving and investment for retirement. “*But saving and investing are generally not enough since they require longevity and investment risk management at the individual level that can most effectively and efficiently be addressed through insurance,*” Kirova emphasises. In her view the insurance sector is well-positioned to help governments, employers and individuals address the challenges of retirement funding and manage the risks associated with old-age protection. She advocates drawing on the industry’s risk and asset management expertise, insurers’ ability to diversify and balance risks, their pricing expertise and interest in longevity risk as well as their risk bearing capacity, with global life insurance premiums amounting to US\$2.4tn in 2010, or close to 4 per cent of global GDP. Based on this broad portfolio of competences, insurers can offer a wide spectrum of services to individuals and employers, comprising longevity protection, asset protection, liquidity and flexibility, healthcare and inflation protection. Kirova concludes that “*(...) the insurance industry can play a pivotal role in financing retirement by offering products that meet customer needs and by helping the public make sound investment and insurance decisions*”.

In his contribution *Krzysztof M. Ostaszewski*, Research Director, Life and Pensions, The Geneva Association, discusses the impact of the most recent financial crisis on the four pillars of old age protection. His starting point is the 25-year-old Four Pillar Programme of The Geneva Association, the simple yet powerful key idea of which is that retirement systems worldwide should be supported by the four pillars of (1) social security, (2) occupational pensions and private insurance, (3) savings, where individuals save and invest for their own retirement using financial intermediaries, including private insurance companies, which can provide increased security of their benefits and mitigate longevity risk and (4) continued employment, with barriers to partial employment that have existed worldwide, either from governments or from employers, reduced or even removed.

He points out in great detail how, in the wake of the financial crisis, social spending in many countries went up dramatically, significantly curtailing governments’ long-term ability to sustain public pension systems. The post-crisis world is also characterised by record-low rates of investment return and the prospect of a protracted economic stagnation in the advanced countries, severely challenging the other three pillars of the system. Ostaszewski points out that even before the current crisis, employers have been under increasing stress because of the competitive pressures of globalisation and increased longevity of current and future benefits recipients. “*The financial crisis has accelerated this trend,*” Ostaszewski notes. It has also adversely affected people’s ability to supplement their retirement income with private savings and continued employment,

the two additional pillars of the Four Pillars framework. Rising unemployment and the “demise of yield” are putting significant pressure on individuals. The author argues that in this environment of heightened uncertainty insurers’ role as an anchor of stability has become more pronounced, in particular their ability to mitigate longevity risk. Also, the financial crisis resulted in more workers wanting to delay retirement, but the labour market limited their ability to do so. As a consequence of the financial crisis, the share of 60- to 64-year-olds in the U.S. who are employed has been flat between 2006 and 2011, at around 51 per cent.

In his section, *David Parsons*, Vice President and Senior Actuary, MetLife, provides a detailed overview of the broad spectrum of insurance solutions designed to shift the retirement planning and financing responsibility. Based on the most relevant risks to retirement income, such as outliving one’s assets, a value loss from premature death, financial hardship, inflation and poor asset performance, he discusses the most prevalent (annuity-based) insurance solutions and product-specific pros, such as a guaranteed income for life time, or cons such as limited death benefits and inflation protection.

Parsons points out that insurance products make effective use of a “pool” of large numbers of insured individuals to take advantage of “pooling of risks”. The products can also provide an avenue to risk-managed investment choices, which might not otherwise be available to individual investors. Thus, insurance products can help play an important part of a portfolio of risk solutions in a well-managed and well-planned retirement. Parsons concludes that “(...) *the insurance industry has created some products that respond to consumer concerns about generating retirement income. Going forward, insurers will continue to innovate and create new products to handle retirement income risks. These products allow individuals to derisk their retirement income strategies and create a stable income stream appropriate to the individual’s needs.*”

In his second contribution, *Christophe Courbage* discusses the role of insurance as a solution to cover long-term care (LTC) needs, a particularly pressing issue as the number of very old people is growing rapidly in most industrialised countries. By 2050, the proportion of over 80-year-olds as a percentage of population is projected at around 17 per cent in Japan, 14 per cent in South Korea and 12 per cent in the European Union. “*In the face of the lack of public coverage and increasing budgetary constraints, there is now a move towards developing insurance solutions to cover the financial consequences of dependency and the use of LTC*”, Courbage observes.

Courbage presents data for the two main markets for LTC insurance. The largest market worldwide is the U.S. with over seven million policyholders and nearly 30 years of operating experience. About 10 per cent of the population aged 60 and over have private LTC insurance. The second largest market is France, with approximately three million policyholders representing about 24 per cent of the population aged 60 and over, and with 20 years of experience. In the U.S., LTC insurance policies include individual, group association, and employer-sponsored products. They provide for the reimbursement of care and services costs up to a certain limit. In France, LTC insurance products can be individual or collective, and provide for cash benefit payment, mostly monthly, which is usually proportional to the degree of dependency. These products are derived from disability annuity products.

Courbage concludes that the market seems relatively small in comparison to the importance of LTC risk and the aversion of individuals to this risk. A common explanation

for the lack of LTC insurance purchasing is that individuals are inadequately informed about the products available and that they ignore low-frequency, high-severity events that have not occurred recently. Another explanation for the limited development of LTC insurance markets includes the phenomenon of adverse selection, i.e. the fact there is an over-representation of high risks in the insured population.

To address the relatively low development of the market for LTC insurance, Courbage discusses a number of proposals such as combining LTC insurance and life insurance, reverse mortgages or private savings. “*The insurance mechanism seems well adapted to apply to this risk,*” Courbage suggests.

Greg Becker, Product Development Actuary at Reinsurance Group of America (RGA), offers an in-depth analysis of the opportunities and limitations associated with the insurance industry’s role in addressing longevity funding issues, with an emphasis on the U.K. Becker argues that the need for longevity protection has risen as retirement ages in public and private pension arrangements have not kept pace with increased life expectancy. While there is no doubt that the need for longevity derisking solutions is large, estimates vary, according to Becker. He presents a recent estimate of pension assets which provides a guide to the size of the longevity market: there was more than US\$27.5tn invested in pension fund assets at the end of 2011.

An individual’s projected retirement income can be seen as a proxy for an individual’s longevity risk, as captured by the pension replacement ratio (PPR). The difference between countries is enormous, with the PPR ranging from slightly more than 40 per cent in Australia to about 90 per cent of the final salary in Italy. Equally different are the specific contributions by the three main pillars of the retirement system. Becker elaborates on the reasons for this heterogeneous picture and provides a concise overview of the various insurance products that have been designed to mitigate longevity risk, both from an employer’s and an individual’s point of view. He believes that reinsurers have a particular competitive edge in providing such solutions due to their global perspective, their superior diversification and their existing liability portfolio which offers a certain degree of mortality risk as a natural offset. “*Thanks to their multi-national exposure, and since different countries and markets are exposed to different mortality and longevity drivers—whether they be social, economic or catastrophic in nature—increasing one’s geographic diversity lowers the volatility of the portfolio in aggregate,*” the author points out.

However, Becker stresses that “*(...) the need for solutions exceeds capacity, and some non-traditional and alternative approaches need to be considered.*” He specifically elaborates on capital market-based solutions such as a traded longevity index as pioneered by the The Life and Longevity Markets Association, a U.K.-based body. Investors (like hedge funds) might be enticed by the additional diversification offered by this new asset class.

Krzysztof M. Ostaszewski explains in his second contribution why all four pillars of old-age protection need to work in concert to enable a holistic and sustainable set of solutions. The author focuses on the four pillars as a key component of modern economies’ financial infrastructure and the need to ensure positive “real economy” implications—in light of the lessons from the recent financial crisis, which saw large parts of the financial system develop into a major liability and drag on real economies.

Referring to the design of public and private retirement systems, Ostaszewski proposes that “*the problems of Greece in early 2012 are not unlike the problems that even the*

most developed economies might encounter in the future, and represent an example of the destructive impact of bad financial design on the real economy.” He continues: “What happened in Greece, as we see it, was an unbalanced expansion of the Pillar I of retirement systems, which removed incentives for the building of other Pillars, and for entrepreneurial activity. (...) The balance of the four pillars needs to be restored.”

Ostaszewski discusses the specific role of all four pillars under favourable and adverse economic conditions and the need to constantly review and adjust the balance of all four pillars to safeguard the overall stability of the retirement system even in times of financial and economic stress. He concludes that in the debates about technical and financial issues concerning retirement systems, one should never lose sight of the fact that the financial world is a form of a shadow of the real economic world. *“The retirement system exists for the purpose of serving the needs and dreams of retirees, and is a part of the overall economy. We argue that the system should fully utilise all four pillars in that function, because in a well-designed retirement system the four pillars work in harmony to support the real economy.”*

Kai-Uwe Schanz, Special Advisor Strategic Research, The Geneva Association, adopts a comprehensive stakeholder view for discussing the key prerequisites for establishing a stable and sustainable retirement system. Governments, first of all, need to accept that their role in providing old-age security is set to diminish. Avoiding action is no longer an option as public deficits threaten to spiral out of control. Therefore, governments should consider raising the retirement age, reducing pension benefits, increasing pension contributions and taxes, offer incentives for part-time work beyond the official retirement age, provide a more conducive institutional framework for increased private sector participation, increase labour force participation and encourage a higher fertility and/or facilitate immigration.

Employers are another crucial stakeholder: in a number of countries such as the U.S., Australia and Switzerland, occupational pension schemes form the most important pillar of old-age security. They are advised to consider reviewing their risk-bearing capacity, considering risk transfer/insurance options for the continuation of defined benefit (DB) schemes, making retirement and pension issues a cornerstone of employee communication and communicating firmly and openly on what the company can afford or not and, last but not least, capturing the potential of “silver workers”.

Insurers emerge as another increasingly relevant stakeholder: longevity risk presents the industry with massive opportunities—each year of increased life expectancy adds trillions of dollars to governments’ and employers’ retirement liabilities. Biometric risk being a core business of life insurers, the industry clearly has the expertise, skills, data and diversification power (e.g. the natural offset between longevity and mortality exposures) to address longevity risk. In order to enhance their role in helping societies manage longevity risk insurers should support the development of innovative risk mitigation solutions, optimise product pricing and design, rethink existing business models (in particular if they focus on financial market risk protection) and educate the public on the cost of longevity.

Finally, individuals will become a more relevant stakeholder. Much of the burden for retirement saving is shifting from governments and employers to the shoulders of individuals. They should respond to this new paradigm of self-responsibility by

understanding the need to pursue a multi-pillar approach, save more (Pillar III) and mitigate the risk of outliving savings through the purchase of annuities.

Gordon Stewart, Liaison Officer North America, The Geneva Association, complements the global stakeholder view with a specific perspective on retirement security in the United States as a major national challenge. The author focuses on the consequences of an erosion of the old-age security system in the U.S. when a central pillar of a non-comprehensive national retirement system falls. Stewart argues that the most serious threat to the stability of the four pillars in the U.S. results from the virtual demise of the second pillar of employer-sponsored DB plans and the inability of the third pillar of individual defined contribution (DC) plans as presently structured to fully carry its own weight, especially in the current environment of record-low investment yields. He diagnoses a “*retirement crisis in slow motion, one which can be met, but only if its government, business community, and individual stakeholders find the will and the ways to overcome their increasingly bitter divisiveness and recover their historic ability to transcend political differences when the future of the nation itself is threatened.*”

Against this backdrop, the author addresses the key question of how the deteriorating outlook for retirement security can be halted and altered. In Stewart’s view, individual stakeholders cannot do so—whatever their size, importance, and intentions. He argues that insurers are near the top of the list of concerned stakeholders, given that pensions, annuities and tax-advantaged asset growth are among their core competencies and reasons for being. Stewart stresses that insurance concepts and mechanisms will be indispensable to any comprehensive national solution. “*And it should not be beyond the financial capability of insurers and the political competence of government to develop or revise public policies that will enable insurance concepts and mechanisms to greatly strengthen Pillar III private savings as a foundation of the retirement security of those workers who have access to them and sufficient income to accumulate significant savings,*” Stewart concludes.

The *International Monetary Fund (IMF)* analyses the implications of global ageing and increasing longevity from a public finance and fiscal policy perspective, focusing on advanced economies. The authors argue that public pension reform and a major rationalisation of public spending will be a key policy challenge in advanced economies over coming decades, not least as many countries will need to achieve meaningful fiscal consolidation over that period. The economic and financial crisis has significantly exacerbated the fiscal challenges ahead. At the same time, “*it is important that pension reforms do not undermine the ability of public pension systems to alleviate poverty among the elderly,*” the authors emphasise.

According to the IMF, in advanced economies, public pension spending increased from 5 per cent of GDP in 1970 to 8.5 per cent in 2010. The four drivers behind the change in public pension spending as a share of GDP are ageing, eligibility rates (the number of pensioners as a proportion of the population 65 and older), replacement rates (the ratio of average pension to average wages) and labour force participation rates.

The authors share their outlook for public pension spending and expect it to increase by about 1 percentage point of GDP over the next two decades. In addition to these projected increases in public pension spending, governments face other fiscal challenges, most notably from their healthcare systems. In advanced economies, public health spending is projected to rise in these countries on average by 3 percentage points of GDP over the

next 20 years. Around one-third of the increase would be due to the effects of population ageing. The authors also point out that the projected public pension spending increases would be significantly higher had reforms not already been enacted over the past two decades to deal with the challenge arising from population ageing.

The authors also discuss a number of considerations that should guide pension reform, a potentially important contributor to meeting the imperative of fiscal consolidation. Firstly, the basic objective of public pensions must be to provide retirement income security within the context of a sustainable fiscal framework. Secondly, the importance of providing income security, especially for low-income groups, suggests that equity should be a key concern of pension reforms. Thirdly, the design of public pensions could potentially have an impact on economic growth through its impact on the functioning of labour markets and national savings.

In their contribution, *Christine Marcks*, President, and *Margaret McDonald*, Senior Vice President and Actuary, Prudential Retirement, adopt the employer's perspective and address longevity risk and insurance solutions for U.S. corporate pension plans. They start from the broad consensus that the risk position of U.S. corporate pension plans is not sustainable. *"Yet, despite this recognition, U.S. plan sponsors lack an awareness of the impact of improved life expectancy on their pension liabilities, and focus almost exclusively on investment risk,"* the authors point out, arguing that transferring pension risk through an insurance solution offers a sponsor the opportunity to remove these risks from their balance sheet and focus on their core business, rather than arguably *"running a large life insurance operation alongside their stated business"*. The size of the problem is illustrated by the fact that, as of year-end 2011, the average ratio of plan assets to liabilities for the 100 largest U.S. pension plans stood at a mere 73 per cent.

The authors believe that the insurance industry is well suited to offer solutions to defined benefit plan sponsors who want to eliminate longevity and/or investment risk. *"Multi-line insurers have broadly diversified risks reflecting diverse sources of business risks and earnings across products, markets, and geographies. Managing the risk of longevity through retirement annuities is a desirable complement to mortality risk, providing a valuable source of diversification. Additionally, the insurance industry has a long history of managing assets on the basis of matching liabilities, and is therefore well-equipped to manage pension risk,"* the authors summarise. They urge plan sponsors to derisk in order to safeguard their companies' competitiveness. Encouragingly, the authors also note that momentum is building in the U.S. for insurance solutions and cite a *CFO Magazine* survey conducted in 2011 which found that among the financial executives surveyed, 45 per cent were considering DB risk transfer or have initiated discussions regarding DB risk transfer solutions with their Board of Directors. *"Buy-outs and buy-ins for defined benefit plans and lifetime income products for defined contribution plans offer the certainty of outcomes that the market needs,"* the authors conclude and call upon employers to use such mechanisms for the purpose of ensuring that *"workers can retire with confidence"*.

Patrick M. Liedtke and *Philippe Trainar*, Chief Risk Officer of SCOR SE, adopt in their contribution a broader view and analyse insurers' fundamental role in the economy, a role which is particularly relevant and visible in old-age security. From this angle, the authors perform a detailed analysis of the role of insurance mechanisms generally, the incentives generated through insurance for market players and individuals to behave in certain ways,

the impact of insurance products and services (or their absence) and the significance of insurers in the capital markets.

Liedtke and Trainar point out that insurance contributes close to 7 per cent to global GDP and is a major employer, for example in Germany and the U.S. where the sector accounts for 3.4 per cent and 1.6 per cent of all jobs, respectively. They also elaborate in detail on insurers' role as major institutional investors and "*financial intermediaries, converting policyholder payments into longer term investments, often without generating the liquidity constraints facing most deposit taking institutions.*" The authors argue that insurance has a double positive impact on aggregate savings: firstly, it increases the general savings rate, especially through the existence of life insurance products but also by creating pools of assets that are meant to cover potential future claims. It thus creates deeper markets and allows for more investments. "*The investment portfolio of insurance companies in the OECD countries has grown steadily over the past decade (...). From 2001 through 2008 total investments more than doubled from US\$8.6tn to US\$17.8tn in 2008 (a compounded annual rate of almost 11 per cent)*", the authors explain. Secondly, Liedtke and Trainar argue, insurance decreases the level of unnecessary (individual) precautionary savings, often unavailable to capital markets. This stimulates investment and consumption by reducing bound (and therefore unproductive or less productive) capital.

The authors conclude by urging all relevant stakeholders, governments and regulators in particular, to fully appreciate the "*constructive and helpful effects*" arising from insurance in the context of old-age security. "*Especially the complementary interaction between social security systems and the private market solutions offered by insurance companies are disregarded and the special role that insurers can play for financial and social stability is often underestimated.*"

The series of contributions concludes with a piece from *Mark Twigg*, Executive Director, Cicero Consulting, and author of a major independent global research study commissioned by HSBC. Based on The Future of Retirement series of surveys he discusses the implications of global ageing from the individual's and his or her financial position's perspective.

Twigg points out that the cost of mitigating the risks of longer life expectancy can be expected to fall increasingly on households, for the reasons explored at great length in other chapters of this report. In this context he believes that "*(...) the social utility of insurance in helping households to manage and mitigate the long-term financial risks posed by high inflation, volatile investment returns and increasing life expectancies places the insurance industry in a prime position to help households deal effectively with the changing demographics, as well as prepare them for the likelihood of less generous state and employer pensions.*"

Twigg reveals that when it comes to establishing a more balanced approach, 64 per cent of The Future of Retirement respondents preferred options which involved having to save more, compared to 23 per cent who preferred to work longer and just 13 per cent preferred to pay more tax. It is important to note, however, that when considering the challenge of building greater pensions assets, not all households or countries start from the same position. Current pension wealth is distributed very unequally. Those countries in which governments have historically spent less have also seen households and employers save more through private pensions. For example, the U.K. and Irish governments currently spend around 6 per cent of GDP on pensions, compared to 15 per cent in Italy. Against

this backdrop, it is obvious that there will not be an equal role for the insurance industry in all countries as the scope of longevity and investment risks faced by individuals differs widely.

Twigg concludes that “(...) *The continuing retrenchment from employers and the state necessitates the further development of the insurance and wealth management industry in helping households to achieve their growing needs for asset accumulation, asset protection and income generation in retirement.*” For the industry to fulfill this potential it needs to design more cost-effective customer solutions, offer better investor protection and promote customer education.

The Geneva Association is confident that this comprehensive compilation of multi-faceted expert pieces will go a long way in helping governments, employers and individuals better understand the insurance industry’s significant potential contribution to stable and sustainable retirement systems equipped to withstand the inexorable onslaught of global ageing.

We are highly indebted to all experts who have contributed to this effort.

Patrick M. Liedtke
Secretary General and Managing Director

Kai-Uwe Schanz
Special Advisor, Strategic Research

Part 1

Analytics

1. How demography is reshaping the economic and social landscape of the 21st century

Richard Jackson

Ten or fifteen years ago, global ageing barely registered as a policy issue. Today, with large age waves looming just over the horizon in most of the world's leading economies, it has become the focus of growing concern.

Much of the concern, especially in the developed world, is focused on reducing the rising fiscal burden of pay-as-you-go state retirement programmes that were put in place back in the early postwar decades when workers were abundant and retirees were scarce, but which are now being rendered unsustainable by the collapse in birthrates and the steady rise in life expectancy. Meanwhile, in the developing world, countries are waking up to the prospect that they may grow old before they grow rich. While today's fully developed economies were all affluent societies with mature welfare states by the time they became ageing societies, many of today's emerging markets are ageing before they have had time to put in place adequate government and market substitutes for informal family support networks. If the challenge for most developed countries is how to ameliorate the growing burden on the young, the challenge for most emerging markets is how to ameliorate the growing vulnerability of the old.

Beyond this old-age dependency challenge, countries are also beginning to worry about how global ageing will affect the dynamism of their economies, the mood of their societies and even their place in the world order. Demographic trends, after all, can play a central role in determining everything from rates of savings and investment to rates of employment and productivity growth. As populations age—and grow more slowly or contract—what are the implications for growth in the standard of living, business psychology and electoral behaviour? Most fundamentally, will ageing societies be able to meet the needs of the old while maintaining opportunity for the young?

Despite the growing concern about global ageing, the full implications are not well understood by policymakers, corporate decision-makers or the public. The purpose of this chapter is to help raise awareness of this challenge and promote constructive policy responses. The first section briefly reviews the scope and causes of the unprecedented demographic transformation now sweeping the world. The second section focuses on the central old-age dependency dimension of the global ageing challenge—that is, the challenge of balancing fiscal sustainability and income adequacy. Here the analysis draws on the results of the Center for Strategic and International Studies' (CSIS) Global Aging Preparedness Index (or GAP Index), a unique new tool for assessing “ageing preparedness” on a comparable basis across countries. The third section expands the

chapter's horizons and considers the broader economic and social implications of global ageing. The final section identifies and discusses six critical policy strategies.

1. The demographic transformation

The world stands on the threshold of a stunning demographic transformation. For most of history, the elderly—defined throughout this chapter as adults aged 60 and over—only comprised a tiny fraction of the population, never more than 5 per cent in any country. That share first began to rise in what we now call the developed world during the Industrial Revolution of the 19th century. In the developed world today, the elderly comprise a little over 20 per cent of the population. By 2040, the share will reach 30 per cent—and this is just the average. In Japan and some faster-ageing European countries, it could be approaching or even passing 40 per cent¹ (see Figure 1).

Most developed countries will not only have ageing populations, but also stagnant or contracting ones. The working-age population has already begun to contract in several large developed countries, including Germany, Italy and Japan. By 2030, it will be contracting in nearly all developed countries, the only major exception being the United States. In a growing number of countries, the population as a whole will decline as well.

Although it is today's developed countries that are leading the way into humanity's graying future, global ageing, as the name implies, is a global phenomenon. The developing world as a whole is still much younger, but it too is ageing—with some emerging markets traversing the entire demographic distance from young and growing to old and stagnant or declining at a breathtaking pace. By 2040, Brazil and Indonesia will be nearly as old as the United States and China will be older. Meanwhile, South Korea will be vying with Germany, Italy and Japan for the title of oldest country on earth.

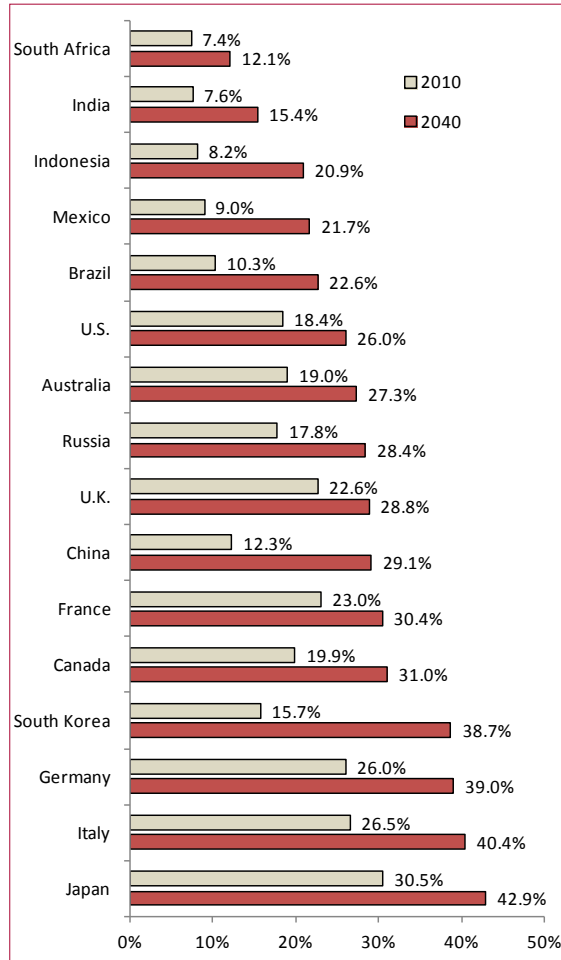
There are two forces behind the demographic transformation. The first and quantitatively more important force is falling fertility. People are having fewer babies, and this decreases the relative number of young in the population. As recently as the mid-1960s, every developed country was at or above the so-called 2.1 replacement rate needed to maintain a stable population from one generation to the next. Today, every developed country is at or below it—and most are far below it. In Germany and Italy, the fertility rate is just 1.4 and in Japan it is just 1.3. Although the trend toward lower birthrates began in the developed world, it has now overtaken most of the developing world as well. Fertility has fallen well beneath the replacement rate in all of East Asia. It is also well beneath replacement throughout Central and Eastern Europe, and it is near, at or beneath replacement in most of Latin America's leading economies. Although higher, fertility rates are also falling rapidly in South Asia and much of the Muslim world. The only region largely bypassed by the trend is sub-Saharan Africa.

The second force is rising life expectancy. People are living longer, and this increases the relative number of elderly in the population. Worldwide, life expectancy at birth has increased by roughly 20 years since 1950, a larger gain over the past 60 years than humanity had achieved over the previous six thousand. In the developed world, life expectancy has now risen into the late seventies or early eighties in every country, and

¹ Most of the demographic data cited in this chapter come from the United Nations Population Division (United Nations, 2011). For countries whose current (2005-2010 average) fertility rate is 2.1 or lower, the projections refer to the UN's "constant fertility" variant; for countries whose current fertility rate is above 2.1, they refer to the UN's "medium variant".

it has reached the same level, or nearly the same level, in some emerging markets. Life expectancy in China today is 73 (up from 45 in 1950), in Mexico it is 76 (up from 51 in 1950) and in South Korea it is 80 (up from 48 in 1950).

Figure 1: Elderly (aged 60 and over), as a percentage of the population in 2010 and 2040



Source: United Nations (2011).

The timing of the demographic transformation, though not its ultimate extent, is also affected by the ageing of postwar baby boom generations, which were particularly large in the United States and other English-speaking countries. As they have moved through youth and middle age, they have temporarily slowed the rise in old-age dependency burdens—but when they arrive in old age, they will accelerate it. Some emerging markets, notably China, also have unusually large baby boom generations approaching old age. But in contrast to the developed world, whose baby booms were due to a temporary spike

in fertility rates, the developing world baby booms are simply the last large generations born before fertility rates began to decline.

Non-demographers may suppose that population projections two or three decades into the future must be highly speculative. But in fact, global ageing is perhaps the most certain prediction that social science can make about the future. Falling fertility is the result of many well-established social and economic trends, from increasing affluence to increasing female educational attainment. Rising life expectancy is the result of ongoing improvements in nutrition, public health and medical technology. Few experts believe that any of these trends will be reversed in the near future. And even if the experts are proved wrong, “demographic momentum” still ensures that the world will age dramatically over the next few decades. Even a new baby boom would have no appreciable impact on the size of the working-age population or the ratio of workers to retirees over the next 20 years and only a modest impact over the next 30 years.

Demography is like an ocean liner: once it is steaming full speed ahead, it can only change course slowly. For better or worse, governments, businesses and families will have to cope with the challenges that global ageing poses.

2. The old-age dependency challenge

The most obvious challenge, at least for the developed countries, is containing the rising fiscal burden of government benefit programmes. Graying means paying—more for pensions, more for healthcare and more for long-term care for the frail elderly. Falling fertility and rising longevity translate directly into a falling support ratio of taxpaying workers to retired beneficiaries, and a falling support ratio in turn translates into a rising cost rate for pay-as-you-go social insurance, which is now the dominant pillar of old-age support in the great majority of developed countries.

To gauge the potential fiscal burden, CSIS has projected the cost of government benefit spending on the elderly under a “current deal” scenario that assumes the present generosity of benefit systems remains unchanged in the future.² In the 12 largest developed economies, state pension spending on the elderly would, on average, nearly double as a share of GDP, from 7.4 per cent in 2007 to 13.1 per cent in 2040. The cost would be lower in Australia, Canada and the United States, which both spend less per capita on pensions than the developed-world average and are due to age less. It would be higher in Japan and the countries of continental Europe, most of which have more generous pension systems and faster-ageing populations. In France, Germany, Japan and Spain, state pension spending on the elderly would approach 20 per cent of GDP by 2040 and in Italy it would approach 25 per cent. Adding in spending on healthcare and other benefits, the total cost of the current deal would, on average, rise from 12.9 per cent of GDP in 2007 to 23.0 per cent in 2040. In France, Germany and Japan it would exceed 25 per cent and in Italy it would exceed 30 per cent.

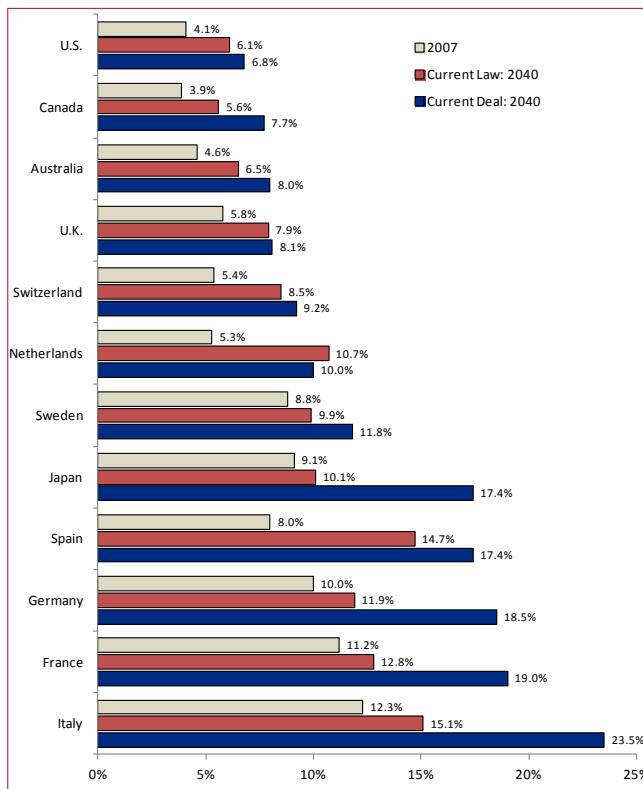
Faced with this daunting fiscal arithmetic, many developed countries are introducing reforms that are scheduled to reduce the future generosity of government old-age support and especially state pensions. Some countries are phasing out “no penalty” early retirement options, while others are raising their “normal” retirement ages. Several have also enacted major overhauls of their state pension systems designed to lower future

² The data and projections for government old-age benefits cited in this section come from Jackson, Howe and Nakashima (2010).

replacement rates—that is, the share of preretirement wages that benefits replace. Sweden and Italy are transforming their traditional defined benefit systems into notional defined contribution systems in which benefit payouts are effectively indexed to the growth in the payroll tax base. France has re-indexed its second-tier state pensions from wages to prices, which will also cause average benefit payouts to decline as share of average wages. Meanwhile, Germany and Japan have introduced “demographic stabilisers” that achieve much the same result by automatically adjusting benefit payments to partially or fully offset the annual change in the dependency ratio of retired beneficiaries to contributing workers.

The impact of some of these reforms promises to be quite large. Under current law projections that reflect scheduled changes in the future generosity of state pension systems, benefits to the elderly would, by 2040, be cut by roughly one-third beneath current deal benefit levels in France, Germany and Italy. In Japan, they would be cut by roughly two-fifths (see Figure 2).

Figure 2: State pension benefits to the elderly (aged 60 and over), as a percentage of GDP in 2007 and 2040: current law versus CSIS “current deal” projection*



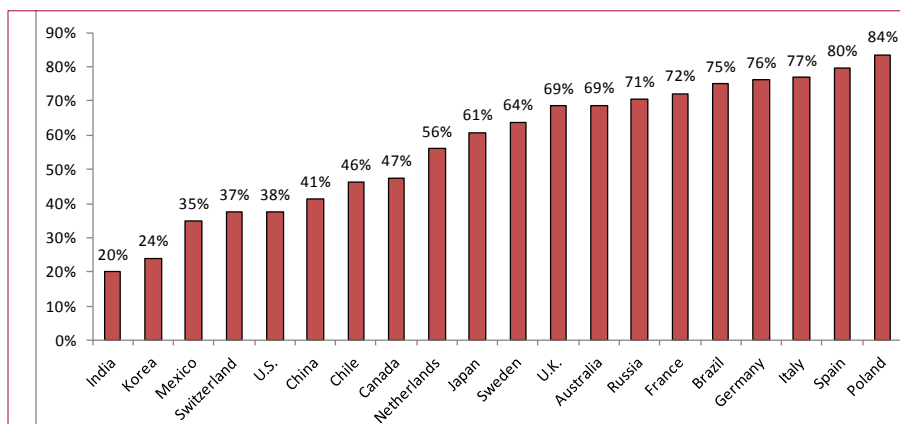
* The CSIS “current deal” projection assumes that current retirement ages and replacement rates will remain unchanged in the future.

Source: Jackson, Howe and Nakashima (CSIS, 2010).

There are two ways to look at the difference between the current law and current deal projections. One is that some countries have already made a lot of progress in reducing the fiscal cost of their ageing populations. The other is that these countries have a lot of benefit-cutting to do over the next few decades just to keep costs from rising even higher than official government projections now indicate they will.

It is an open question whether some governments will be able to stay the course. The elderly in most developed countries, after all, are highly dependent on government benefits. Even in the United States, with its traditions of limited government and financial self-reliance, nearly 40 per cent of the cash income of the typical elderly household in the middle of the income distribution comes in the form of a government check. In every other developed country except Canada, the Netherlands and Switzerland, the share is over 60 per cent. In France, Germany, Italy and Spain, it is over 70 per cent (see Figure 3). Unless reductions in state pension benefits are accompanied by reforms that increase alternative sources of elderly income support, some countries are likely to face a backlash from their ageing electorates, more than half of whom will be over age 50 by the 2030s in Japan and most European countries.

Figure 3. Government benefits in 2007, as a percentage of the income of the “median income” elderly (aged 60 and over)*



* Benefits and income exclude in-kind benefits; “median income” elderly are the elderly in the third quintile of the income distribution.

Source: Jackson, Howe and Nakashima (CSIS, 2010).

If the challenge for most developed countries is how to reduce the rising burden that existing retirement systems threaten to place on the young without at the same time undermining the security they now provide to the old, the challenge for most emerging markets is precisely the opposite: how to guarantee a measure of security to the old that does not now exist without at the same time placing a large new burden on the young. Compared with the developed countries, most emerging markets have relatively low government old-age benefit burdens today, both because they still have relatively young populations and because coverage under their state pension and healthcare systems is usually far from universal. To be sure, this burden will grow rapidly as their populations age. According to CSIS projections, government benefits to the elderly will nearly double

as a share of GDP in India and Russia between 2007 and 2040, nearly triple in China and quadruple in South Korea. Even so, very few emerging markets are on track to acquire fiscal burdens as large as those in the developed world. The striking exception is Brazil, which already spends lavishly on state pensions today despite its youthful age structure.

The relatively low government benefit burden in most emerging markets would be an unambiguous advantage if alternative sources of retirement income were adequate and secure. Unfortunately, with only a few exceptions, this is not the case. In India, barely one in ten workers earns a formal pension benefit of any kind, public or private. In China and Mexico, just one in three do. Even in high-income South Korea, the figure is just two in three. The result is that the per capita income of the elderly in many emerging markets is very low compared with the income of the non-elderly, poverty rates are very high and dependence on the extended family remains widespread.

Robust family support networks can constitute an important asset in managing the costs of population ageing. But as societies industrialise and modernise—and as average family size declines—overreliance on these networks can also become a liability. In China, the average number of children that the typical elder can turn to for support will decline by 1.6 between 2007 and 2040. In Brazil it will decline by 1.7, in Korea by 1.8 and in Mexico by 2.5. As this demographic shift unfolds, developing adequate and affordable government, employer and market substitutes for informal family support will become evermore crucial to old-age security. Indeed, if the emerging markets fail to develop these substitutes, some may face a humanitarian ageing catastrophe. Imagine tens of millions of today's vast floating population of rural migrants in China's cities ageing by the 2020s and 2030s into tens of millions of indigent elders without pensions, without health care, and without nearby family to support them. Or imagine, in China's countryside, entire villages of demographically stranded elders.

Is there any way to gauge which countries are best prepared to meet the old-age dependency challenge and which are worst prepared? The GAP Index, developed by CSIS, provides the first comprehensive quantitative assessment of where countries around the world now stand. The GAP Index covers 20 countries, including both developed economies and emerging markets. It consists of two separate subindices: a fiscal sustainability index and an income adequacy index.

On the fiscal side, the GAP Index takes into account the magnitude of each country's projected government old-age benefit burden, the fiscal room that countries have to accommodate the growth in that burden and the dependence of the elderly on government benefits—a crucial indicator of how politically difficult it may be to enact cost-cutting reforms or, indeed, to follow through on reforms that have already been enacted but not yet phased in. On the adequacy side, it takes into account the level of and trend in the income of the elderly relative to the non-elderly in each country, the extent of elderly poverty and the strength of informal family support networks.

What is most striking about the results is that very few countries score well on both dimensions of the old-age dependency challenge (see Table 1). Those that do generally have modest pay-as-you-go government benefit systems, large funded pension systems and high rates of elderly labour-force participation. Australia, which combines a low-cost, means-tested floor of government old-age income support with a large, mandatory and fully funded private pension system, ranks well into the top half of both subindices. So does Chile, which has a similar mix of retirement policies. Canada and the United States,

with their relatively inexpensive state pension systems, well-developed private pension systems and large numbers of working elderly, also do a better job of balancing fiscal sustainability and income adequacy than most countries—though the extraordinarily rapid rate of growth in healthcare costs in the United States cancels out some of the advantage it gains from relatively low state pension spending.

Although the outlook is more problematic in other countries, several are moving in a positive direction. The GAP Index projections reveal that Germany and Sweden are on track to offset the scheduled reductions in the generosity of their state pension systems by increasing funded retirement savings and extending work lives. Their projected fiscal burdens remain high, but have been cut well beneath what they would otherwise be without undermining adequacy. Meanwhile Japan, despite its massive age wave, ranks in the middle of both subindices. It is making deep cuts in state pension benefits, which helps to minimise its fiscal burden, but it also has higher rates of elderly labour-force participation and multigenerational living than any other developed country, which helps to blunt the impact of those cuts on elderly living standards.

Table 1: GAP Index Country Rankings

Fiscal Sustainability Index		Income Adequacy Index	
1	India	1	Netherlands
2	Mexico	2	Brazil
3	Chile	3	U.S.
4	China	4	Germany
5	Russia	5	U.K.
6	Poland	6	Australia
7	Australia	7	Sweden
8	Japan	8	Chile
9	Canada	9	Spain
10	Sweden	10	India
11	U.S.	11	Canada
12	Korea	12	Japan
13	Switzerland	13	Poland
14	Germany	14	Switzerland
15	U.K.	15	Russia
16	Italy	16	France
17	France	17	Italy
18	Brazil	18	China
19	Netherlands	19	Korea
20	Spain	20	Mexico

Source: Jackson, Howe and Nakashima (CSIS, 2010).

Most countries, however, score much better on one dimension of the old-age dependency challenge than the other—and two, France and Italy, score near the bottom of both subindices. Like Germany and Sweden, France and Italy have scheduled deep prospective reductions in the generosity of their state pension systems. But unlike Germany and Sweden, they are failing to fill in the resulting gap in elderly income. At the same time, even after the reductions in state pensions, their government benefit systems remain so expensive—and levels of elderly benefit dependence so high—that the systems may not be fiscally sustainable. In short, both countries risk moving toward retirement systems that are at once inadequate and unaffordable.

This contrast points to a crucial lesson. Most of the world’s developed countries—as well as a few of its emerging markets—will have to make large reductions in the generosity of state retirement provision in order to avoid a fiscal meltdown. But unless the reforms they enact also ensure income adequacy for the old, the reductions are unlikely to be socially and politically sustainable.

The experience of the U.K. should be a warning to other countries. In the 1980s, it switched the indexation of its basic state pension from wages to prices, flattening the projected growth in benefits as a share of GDP. However, as price indexing caused benefits to decline as a share of wages, concerns about the reform grew. In 2007, amid an emerging consensus that current policy would impoverish the elderly, the government re-indexed benefits to wages. The U.K. now scores much better on income adequacy than it would have 10 years ago, but it also scores much worse on fiscal sustainability.

3. The broader economic and social challenge

The impact of global ageing will reach far beyond retirement policy. Over the next few decades, the rapid ageing of the developed world’s populations promises to profoundly alter the shape of its economies and societies, ushering in a new era of slower economic growth and, perhaps, of declining global influence.

Table 2: Average annual growth rate in the working-age population (aged 20-59), by decade, 1980s-2040s

	1980s	1990s	2000s	2010s	2020s	2030s	2040s
Developed countries							
Canada	1.7%	1.2%	1.0%	0.2%	-0.1%	0.3%	0.1%
France	0.7%	0.5%	0.4%	-0.1%	0.0%	0.1%	0.1%
Germany	0.8%	0.0%	0.0%	-0.8%	-1.5%	-0.7%	-1.0%
Italy	0.6%	0.2%	0.3%	-0.3%	-1.0%	-1.2%	-0.7%
Japan	0.5%	0.3%	-0.8%	-0.7%	-0.9%	-1.6%	-1.3%
U.K.	0.7%	0.4%	0.4%	0.3%	-0.1%	0.1%	-0.2%
U.S.	1.4%	1.2%	0.8%	0.2%	0.3%	0.5%	0.4%
Emerging markets							
Brazil	2.8%	2.3%	1.9%	1.0%	0.4%	0.0%	-0.4%
China	2.8%	1.8%	1.3%	0.3%	-0.7%	-0.7%	-1.2%
India	2.6%	2.4%	2.3%	1.7%	1.2%	0.7%	0.2%
Korea	2.9%	1.3%	0.6%	-0.2%	-1.3%	-1.5%	-1.4%
Russia	0.2%	0.1%	0.8%	-1.1%	-0.7%	-0.9%	-2.0%

Source: United Nations (2011).

The expectation that global ageing will lead to slower growth is largely a matter of arithmetic. Growth in real GDP equals the growth in employment, or more precisely hours worked, times the growth in output per worker hour, or productivity. By the 2020s and 2030s, the growth rate of the working-age population will have fallen to near zero or turned negative in every major developed country other than the United States. In Japan and the faster-ageing European countries, the working-age population will by then

be contracting by between roughly 0.5 and 1.5 per cent per year (see Table 2). Even at full employment, the growth in real GDP could stagnate or decline, because the number of workers may be falling as fast or faster than productivity is rising. Unless labour-force participation rates surge or economic performance improves dramatically, some developed countries could face a future of secular economic stagnation—in other words, of zero real GDP growth from peak to peak of the business cycle.

It is possible that higher labour-force participation will offset some of the economic drag created by more slowly growing or contracting working-age populations. Participation rates now vary greatly across the developed countries, implying that most have room to raise them. This is especially true at older ages. In France, just 20 per cent of men aged 60–64 and 2 per cent of men aged 65 and over were still on the job in 2009. In Japan, the shares were 76 per cent and 29 per cent. While many countries, including France, have begun to raise retirement ages, changes in retirement behaviour large enough to have a substantial impact on the macro outlook would require much larger changes in current policy than most countries now contemplate.

While improvements in economic performance are also possible, they will be difficult to achieve. Indeed, the ageing of the developed world's populations is more likely to pull down economic performance than to push it up.

To begin with, household savings rates will decline as a larger share of the population moves into the retirement years. If savings fall more than investment demand, as much macroeconomic modeling suggests is likely, either businesses will be starved for investment funds or the dependence of the developed economies on capital from higher-saving emerging markets will grow.³ In the first case, the penalty will be borne in the form of lower output. In the second, it will be borne in higher debt service costs and loss of political leverage, which history teaches is always ceded to creditor nations.

At the same time, workforces in most developed countries will not only be stagnating or contracting, but also graying. While older workers are valuable assets to the economy, younger workers have their own indispensable qualities. A large literature in the social and behavioural sciences establishes that worker productivity typically declines at older ages, especially in eras of rapid technological and market change.⁴ Economies with graying workforces may also be less entrepreneurial. According to the 2007 Global Entrepreneurship Monitor, which surveyed 53 countries, new business start-ups in high-income countries are heavily tilted toward the young.⁵ Of all “new entrepreneurs” in the survey (defined as owners of businesses founded within the last three and one-half years), 40 per cent were under age 35 and 69 per cent were under age 45. Only 9 per cent were aged 55 or older.

Even as economic growth slows, developed countries will have to transfer a rising share of society's economic resources from working-age adults to non-working elders. Yet very few have the tax room to pay for more than a fraction of the projected current law growth in old-age benefit spending—and some, particularly in Europe, are already at or beyond the threshold of efficient taxation. This means that, rather than raise new revenue, higher tax rates may simply increase unemployment and drive more workers into the gray economy.

3 For a discussion of the literature on demographics and savings, see Jackson and Howe (2008) pp.97–108.

4 For a discussion of the literature on productivity and age, see Jackson and Howe (2008) pp. 108–112.

5 Autio (2007).

Faced with the choice between economically damaging tax hikes and politically difficult benefit cuts, many governments may choose a third option: cannibalise other spending on everything from education and the environment to foreign assistance and national defense. Or else they may run widening deficits that further undermine national savings and economic growth.

The impact of global ageing on the collective temperament of the developed countries is more difficult to quantify than its impact on their economies, but the consequences could be just as important—or even more so. With the size of domestic markets fixed or shrinking in many countries, businesses and unions may lobby for anticompetitive changes in the economy. We may see growing cartel behaviour to protect market share and more restrictive rules on hiring and firing to protect jobs. We may also see increasing pressure on governments to block foreign competition. Historically, eras of stagnant population and market growth—think of the 1930s—have been characterised by rising tariff barriers and beggar-thy-neighbour protectionism.

The shift in business psychology could be mirrored by a broader shift in social mood. As a growing share of the developed world's population moves towards having most of its life in the past tense and relatively little in the future tense, time horizons may shrink. Psychologically, older societies are likely to become more “small c” conservative in outlook and possibly more risk-averse in electoral and leadership behaviour. Elder-dominated electorates may tend to lock in current public spending commitments at the expense of new priorities. We know that extremely youthful societies are in some ways dysfunctional—prone to violence, instability and state failure.⁶ Extremely aged societies may also prove to be dysfunctional in some ways, favouring consumption over investment, the past over the future and the old over the young.

The extent to which global ageing affects economic growth and social mood will of course vary from one country to another depending on its institutions, culture and, of course, demographics. The impact is likely to be least in the United States, which is the youngest of the developed countries today and, thanks to its relatively high fertility rate and substantial net immigration, is destined to remain the youngest for the foreseeable future. By 2040, the U.S. median age, now 37, will rise to only 40. Meanwhile, the U.S. working-age population will continue to grow over the next three decades and beyond. The impact is likely to be greatest in countries like Germany, Italy and Japan, where fertility has fallen far beneath replacement, working-age populations are already contracting and median ages are due to rise well past 50 by 2040.

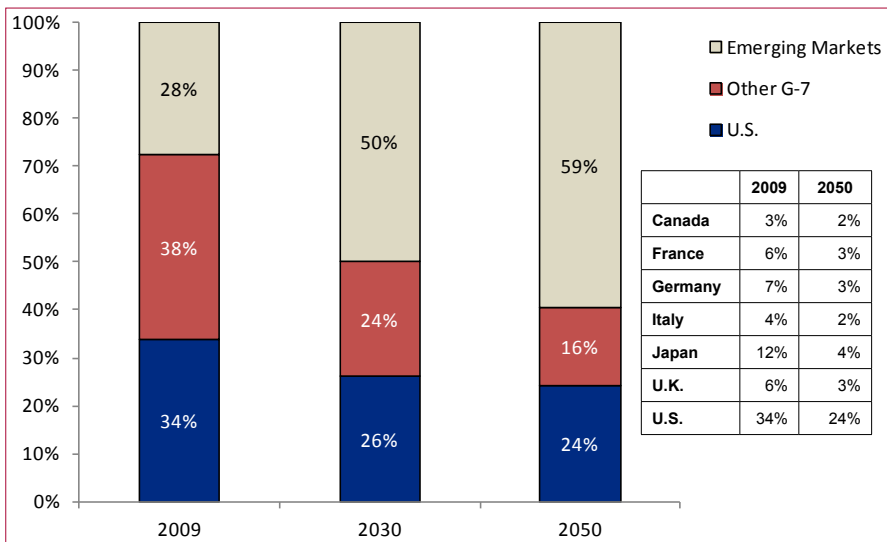
The outlook for emerging markets is even more varied. In much of the developing world, including South Asia, Latin America and some Muslim-majority countries, demographic trends are now leaning strongly with economic growth and will continue to do so over the next few decades. When a country's fertility rate first declines, it enjoys a window of opportunity for economic and social development known as the “demographic dividend”. As child dependency burdens fall and the share of the population in the working years rises, labour-force participation may increase, savings and investment may grow and economic and living standard growth may accelerate. Development economists who have studied the dynamic agree that it has given a powerful boost to the economies of emerging East Asia over the past quarter-century, underpinning the stunning rise first of the Tigers

6 See, for example, Esty *et al.* (1998); Cincotta, Engelman and Anastasion (2003); and Urdal (2006).

and then, more recently, of China.⁷ The dynamic is now also helping to propel the growth of other emerging markets around the world, from Brazil to India and Indonesia.

In some of the developing world’s most successful economies, however, demographics are beginning to lean against economic growth. The initial economic impact of falling fertility may be positive, but as societies age the relative decline in the number of children is eventually overtaken by the relative growth in the number of elderly and dependency burdens once again rise. The emerging markets of East Asia, where fertility has fallen faster than elsewhere in the developing world, are now approaching this tipping point. All have rapidly ageing populations and all, including China, will have stagnant or contracting working-age populations within a decade. Demographics will also be leaning against growth throughout Central and Eastern Europe, whose fertility decline has not been as precipitous as East Asia’s but began much earlier.

Figure 4: GDP (in 2005 US\$) by country or country group, as a percentage of G-20 total, 2009-2050



Source: Dadush and Stancil (2010).

These crosscurrents notwithstanding, demographic trends will continue to drive the relative rise of today’s emerging markets—and the relative decline of the developed economies. During the era of the Industrial Revolution, the population of the developed world grew faster than the rest of the world’s population, peaking at 25 per cent around 1930. Since then, its share has declined. By 2010, it stood at just 13 per cent and it is projected to decline still further to 10 per cent by 2050. As a share of the world’s economy, the GDP of the developed countries will also be declining—and much more steeply. According to projections by the Carnegie Endowment for International Peace, the U.S. share of G-20 GDP will fall from 34 per cent in 2009 to 24 per cent in 2050. The combined share of the other G-7 countries—

⁷ See, for example, Bloom and Williamson (1998); Bloom, Canning and Malaney (1999); and Williamson (2001).

Canada, France, Germany, Italy, Japan and the U.K.—will fall from 38 to 16 per cent⁸ (see Figure 4). Driving this decline will be not just the slower growth of the developed world, but also the surging expansion of large, newly market-oriented economies in the developing world.

4. Six critical policy strategies⁹

Although global ageing clearly poses tremendous challenges, these challenges are not insurmountable. Demography shapes the overall economic and social environment facing governments, businesses and families in important ways, but it need not be destiny. Whether countries prosper as they age will depend critically on the policy choices they make. An effective response to the global ageing challenge will have to proceed on many fronts—not just retirement policy, but economic policy, social policy and even foreign policy. The following discussion does not attempt to cover the full range of possible policy choices, but instead focuses on six especially critical strategies:

- **Reduce pay-as-you-go benefit burdens.** For developed countries, any overall strategy to confront global ageing must begin with reducing the rising cost of pay-as-you-go old-age benefits. There are many possible ways to reduce state pension spending. Governments can raise eligibility ages, means-test benefits, alter indexing formulas or introduce demographic stabilisers that directly adjust benefit levels to offset changes in the old-age dependency ratio. As we have seen, several of the countries with the largest “current deal” burdens, including France, Germany, Italy and Japan have already enacted major reforms of their state pension systems. Since the benefit cuts are prospective and their pain is yet to be felt, however, the political durability of the reforms has yet to be tested.
- **Strengthen old-age safety nets.** For developing countries, any overall strategy must begin with strengthening the old-age safety net, which in many cases means constructing one where none now exists. In economies with large informal sectors, achieving anything close to universal coverage under contributory pension systems is next-to-impossible. To ensure an adequate floor of old-age poverty protection, emerging markets also need a system of tax-financed, non-contributory pensions, sometimes called social pensions. In recent years, some emerging markets have put these in place, or at least are moving in this direction. Brazil now has non-contributory “rural pensions”—and an elderly poverty rate that is just one-fifth of Mexico’s, which doesn’t. Chile has “solidarity pensions” that underpin its savings-based personal accounts, greatly improving the overall adequacy of its retirement system. Meanwhile, China is beginning to extend subsidised pension coverage to migrant and rural workers. Although strengthening old-age safety nets is most urgent in the developing world, a significant share of the elderly in some developed countries also experience economic hardship—and the problem may grow as the generosity of state pension systems is cut back and retirement ages are raised in the future. Governments would be well advised to redirect some savings from reductions in benefits to higher-income elders to improving targeted poverty protection for lower-income elders. Since poverty is much more prevalent among the “old old” aged 80

8 Dadush and Stancil (2010).

9 Chapter 9 of this report offers a more comprehensive account of potential responses by different stakeholder groups, including employers, insurers and individuals.

and over, they might even consider restructuring state pension systems themselves as “longevity backstops” that offer greater benefits at older ages.

- **Increase funded retirement savings.** As developed-country governments scale back pay-as-you-go benefits, it is not enough to provide additional protection to the poor elderly. They will also need to ensure that the gap in the income of middle-class retirees is filled in. Meanwhile, emerging markets will have to finance adequate and affordable retirement benefits for their own rapidly growing middle classes. An essential part of the solution is to increase funded retirement savings. Several countries, of course, already have well-established funded retirement systems—and others, from Germany and Spain to China and Korea, have recently jumpstarted new ones. While many models are possible, experience teaches that mandatory systems are more effective at ensuring broad coverage than voluntary systems. According to CSIS projections, there are only four countries in which funded pension savings are on track to supply at least one-quarter of elderly income by 2040—Australia, Canada, the Netherlands and Switzerland. Of the four, only Canada has a voluntary system. Beyond improving income adequacy, funded retirement systems have other potentially important advantages. Depending on their design, they may help to maintain adequate levels of national savings, which will be one of the greatest challenges facing ageing societies. Unlike pay-as-you-go systems, they also allow ageing societies to escape the tyranny of their own demography by investing in younger and faster-growing economies around the world.
- **Encourage longer work lives.** Perhaps no strategy for confronting the global ageing challenge offers more potential benefits than encouraging longer work lives. Longer work lives increase the adequacy of income for the old without putting a new burden on the young. They can help ease future labour shortages and boost economic growth in fast-ageing countries with declining populations in the traditional working ages. To the extent that eligibility ages for state pension benefits are raised, there is also a double fiscal benefit. Unlike cuts in replacement rates or indexing formulas, higher retirement ages both save on benefit costs and increase tax revenues by lengthening the number of years in which contributions are made. Remaining productively engaged, moreover, is good not only for the health of the budget and the economy, but also, according to most gerontologists, for the health of the elderly themselves. To leverage this strategy, countries will need to reduce government subsidies for early retirement, revise employment policies (like seniority pay scales) that make older workers costly to hire or retain, encourage lifelong learning and develop “flexible retirement” arrangements of all kinds.¹⁰
- **Encourage higher birthrates.** Although higher birthrates would do little to reduce the magnitude of the ageing challenge over the next two to three decades, in the longer-term nothing would do more to lower old-age dependency burdens and raise economic growth rates in today’s lowest-fertility countries. Policies that help women (and men) balance jobs and children are the lynchpin of any effective pronatal strategy. Countries that want to raise birthrates may need to reform labour-market rules that limit part-time work options, implement parental leave policies, and provide for affordable daycare. More broadly, they may need to move toward more flexible career patterns that allow parents to move in and out of employment to

¹⁰ See Chapters 4, 8 and 9 of this report for a more detailed discussion of extending work lives.

accommodate the cycles of family life. There are two different models that countries can follow. France and Sweden now have among the highest fertility rates in the developed world, thanks in part to government benefits and mandates that include generous cash benefits for families, subsidised daycare, paid maternity leave, and job guarantees. The United States also has a high fertility rate, but the explanation lies in the flexibility of its economy and especially its labour markets. Young people find it easier to launch careers and establish independent households than in most other developed countries, while working women who wish to raise families find it easier to exit and re-enter employment.

- **Increase immigration.** Higher net immigration functions much like a higher fertility rate but without the lag. Since immigrants tend to be disproportionately young adults, they immediately increase the size of the workforce and slow the ageing of the population, at least for a time. The catch, of course, is that the immigrants themselves ultimately grow old, which means that for increased immigration to permanently alter the age structure of the population the new higher immigration rate must be permanent as well. Countries that are able to rapidly and effectively integrate new immigrants into the mainstream of the economy and society can benefit enormously from the infusion of new energy and talent that they bring. But if the rate of immigration exceeds a country's capacity for assimilation, it can undermine social cohesion, triggering a backlash among the native-born population. Those countries without a long historical tradition of assimilating immigrants, including Japan and most European countries, would do well to study best practices around the world, especially in Australia, Canada and the United States.

The strategies outlined above treat global ageing as if it were simply a national challenge. To some extent, of course, that is precisely what it is. Each country has its own distinct economic, social and cultural institutions—including its own unique set of retirement policies. And each country must forge its own policy responses.

Yet policymakers around the world would do well to remember that global ageing is also a global challenge, and so requires global solutions. Due to the uneven pace of global ageing, differences in population age structures and growth rates will widen steadily over the next few decades across the different countries and regions of the world. As they do, economic growth and prosperity will come to depend even more on globalisation than they do today. The world will need global capital markets to match savers in ageing and more slowly growing developed economies with investment opportunities in younger and faster-growing emerging markets. It will also need global labour markets to match workers with jobs, whether through immigration or outsourcing.

It is thus possible to imagine a hopeful future in which global ageing brings the countries of the world closer together. But it is also possible to imagine a less hopeful one in which ageing societies turn inward, roll back globalisation and shut the door on free trade and free markets. CSIS believes that if policymakers and the public understand the full implications of the challenge before us we can make the first future more likely.

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2. Global ageing: root causes and implications for key stakeholders

Christophe Courbage and Patrick M. Liedtke

1. Introduction

The world is confronted with rapidly ageing populations. The surge of the baby boom generation and further gains in longevity are leading to an increasing proportion of older people in the world. This trend is exacerbated by fertility rates that are below the replacement rates. While increased longevity is undeniably a great achievement for societies, ageing populations present unprecedented challenges for societies, governments and private markets since many of the systems in place to deal with such dynamic developments are not robust enough to guarantee longer-term stability and affordability. Ageing has implications on both the micro- and macro-economic levels. On the micro-economic level, the ageing of the working population affects labour productivity as well as consumption and saving behaviours, with wide implications for capital and goods markets. On the macro-economic level, labour is becoming relatively scarce while capital becomes relatively more abundant, which impacts the relative price of labour and capital.

Numerous economic actors are influenced by global ageing: governments, individuals, employers and insurers. Governments face an unprecedented drain on their finances as older age cohorts start drawing more funds while providing less tax and social security contributions. Individuals face the risk of outliving their assets as their future longevity overtakes their own estimations. Employers face shortfalls in the labour force and higher occupation pension scheme liabilities. Insurers are exposed to global ageing not only through their life, health and accident insurance products, many of which have expense components in them that correlate positively with ageing populations thus driving costs, they are also exposed as employers and active parts of the economic system. At the same time, global ageing offers them huge opportunities to exploit their special expertise in providing old-age income and security to large parts of society. This is especially the case since global ageing pushes governments and employers to shift retirement risk to individuals, creating opportunities for insurance-based solutions.

This chapter reflects on the nature of global ageing in order to address the implications of ageing on society and more particularly on specific economic actors. In the next section, we will provide some insights on ageing and disability. The following sections will deal with the impact of global ageing on public finances, individual old-age income, employers and insurers. Finally some concluding remarks will be provided in the last section.

2. Global ageing

The world population has just reached a total of seven billion people in 2011. Historically there has been a long-term growth trend since the early days of the agrarian revolution that was only sporadically disrupted by wars, famine and epidemics. This trend accelerated with the advent of industrial production. Over all these centuries, fertility rates always remained well above the replacement rate (usually understood to be 2.1 children per woman). It is a rather recent phenomenon that growth rates would turn negative in certain countries despite the absence of wars, famine or epidemics. However, this declining trend seems to spread around the globe and the United Nations projects more growth rates to turn downward or remain negative in the coming decades (United Nations, 2010).

Populations throughout the world are ageing due to two basic demographic trends, namely increasing life expectancy and declining fertility rates. Various factors are usually raised to explain these phenomena. While life expectancy increase is due largely to lifestyle improvements, rising wealth and medical advances, the decrease in fertility rates is generally explained by birth control, higher female educational attainment and participation in the labour force, and changes in lifestyle and societal values.

While ageing is global, however, there are important international differences in the speed and extent of the ageing process. Among the developed countries, Europe and Japan already have much older populations than North America. Italy and Germany are ageing faster than France and Great Britain. In Asia, some countries such as China start from a relatively young population, but due to the one-child policy ageing is occurring rapidly. It is still unclear why countries differ in their ageing process and some possible explanations of fertility rates such as social security systems or female participation are not totally understood and open to some interpretation (Cigno, 1995).

Over the past century, longevity has accelerated for most countries almost linearly by two years per decade. Projections on longevity predict a gain of around 1.2 years per decade over the next 50 years (United Nations, 2010). Expectations of global ageing naturally depend on longevity and fertility forecasts. However, both fertility and longevity trends are to a certain degree controversial. For instance, concerning fertility rates, some studies support the idea of a fertility cycle, with alternative periods of boom and burst of fertility (Van Wissen, 2004). Based on this idea, the current decline in fertility would be in part explained by a shift over time of the date at which a woman has her first child. A possible increase in fertility rates could thus be expected in these countries. On the contrary, other studies tend to show that fertility rates do not follow cycles but are subject rather to sudden changes (Bonneuil, 2003). This suggests that future developments are more uncertain than often assumed.

In the same vein, longevity trends are also debatable and in particular healthy life expectancy, i.e. life expectancy in good health. Over a long period, increases in life expectancy at birth have corresponded with improvements in the health of populations. However, now that chronic diseases are progressively replacing infectious diseases, the prevalence of chronic disease in the population usually increases as a result of longer survival. Three theories have thus emerged regarding healthy life expectancy. The first anticipates an improvement in the state of health and a compression of morbidity (Fries, 1980), the second a decline in the state of health and an expansion of morbidity (Kramer, 1980), and the third, a dynamic equilibrium (Manton 1982) where, though the prevalence of morbidity increases as mortality falls, the prevalence is on average less. Many unknowns

persist such as control of chronic diseases, extended life of sick persons, better health habits and the emergence of very old and frail individuals (Michel and Robine, 2004). Depending on the relative weights of each of these factors at various times, countries can move around regimes of compressed, expanded or balanced morbidity, which makes healthy life expectancy hard to predict.

The nature of disability and in particular its link with mental ageing and especially dementia is also related to healthy ageing. The disablement process is highly multifactorial and a lot of pathologies have been identified as disabling, such as stroke, diabetes, arthritis, depression and sensory impairments. Among them, however, cognitive decline and dementia represent by far the major determinants of the process in the elderly (Pérès *et al.*, 2005). Not only are the levels of prevalence and incidence of the disease in the elderly population very high, but the period of time lived with dementia is higher than in many other age-related pathologies such as stroke, cancer and cardiovascular diseases. In addition, the consequences of the disease on autonomy in daily life are often devastating. Alzheimer's disease and related disorders represent one of the major determinants of disability. In the absence of curative treatment (only symptomatic treatments are currently available), with only few identified risk factors amenable to prevention and regarding the major burden of dementia in terms of disability and loss of autonomy, the looming epidemic of dementia as populations age represents a huge challenge for all ageing societies.

This also means that an increasing number of older citizens, with reduced physical and mental abilities or with chronic and degenerative disease, will need support in order to remain independent and “age in place”, i.e. in their homes rather than in specialised institutions. Independent living is an important target, not only because it usually represents an important wish of the older persons concerned but also because it reduces the burden on hospitals and long-term care (LTC) facilities, which represent expensive care settings. “Ageing in place” has been a policy objective for many governments recently and is an important strategy for increasing the quality of life of older people while keeping cost under control. Various technologies have been developed to support elderly people ageing in their homes. These include tele-home care services, bio-medical sensors, domotics and micro- and nano-technologies.

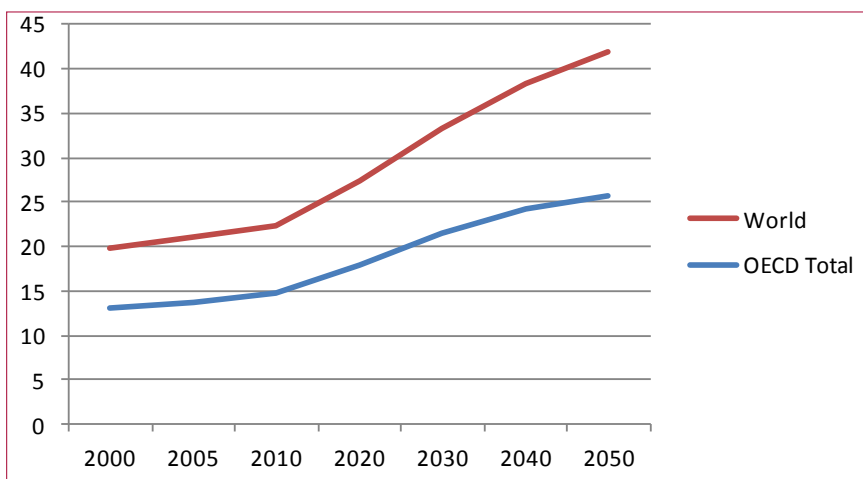
3. Ageing and public finances

Ageing populations already pose both economic and budgetary challenges to governments as they are expected to have a significant impact on growth and lead to significant pressures to increase public spending. This makes it difficult for governments to maintain sound and sustainable public finances in the long term.

In most countries, a large part of pensions is financed through a pay-as-you-go system, i.e. providing a monthly fixed benefit to retired citizens from taxes or contributions paid by the current working population. However, ageing not only increases the average age of the population, but it also leads to a decline in the size of the working population as older generations are replaced by less numerous younger workers. Hence, fewer workers have to provide benefits for a greater number of retirees. Due to fewer contributors and more beneficiaries, these systems are no longer sustainable. This implies that many countries face fiscal imbalances in their national pension systems.

A good illustration is provided by the evolution through time of the share of the dependent population (people younger than 15 or older than 65) as a percentage of the total population (see Figure 1). For any traditional social security system that has largely static variables (i.e. neither the entry age into the labour force nor the exit age tends to vary much) this indicator provides a reasonable (although somewhat imperfect) insight into the amount of people of non-working age compared to the number of those of working age. A rising share of the dependent population is a concern in many countries facing an ageing population, since it becomes difficult for pension and social security systems to provide for a significantly older, non-working population.

Figure 1: Share of the dependent population (people younger than 15 or older than 65) as a percentage of the total population, 2000-2040



Source: OECD (2011a).

It is likely that the ageing populations will lead to an increase in public spending in the next decades in many countries. For instance, according to the European Commission, the increase in public spending is forecast to be between 3 and 7 per cent of GDP in most EU Member States by 2050. Most of the projected spending increase will be on pensions, health care and long-term care and to a much lesser extent, on education and unemployment benefits.

With regards to public health care and LTC spending, the increase in the number of people living to an older age appears to be a strong driver of the growing health care consumption, even if experts still propose competing theories on what future health expenditure will look like for some areas of health utilisation. Yet, it is important to stress that demographic change has not been the main driver of the increasing level of health care expenditures in recent decades, but rather demand and supply factors have been more influential. For instance, according to recent EU projections (European Commission, 2009), the increase in health and LTC expenditures would lead on average to a level of public expenditures on health and LTC in 2050 that are around 30 to 40 per cent higher than in 2000.

Most countries offer some level of income security and access to health care to those who need it, including to the elderly. However as the elderly share of the population rises,

protecting them is likely to prove a challenge for governments. For these systems to stay viable, either benefits need to be reduced or social security contributions and other taxes increased. Governments are recognising that their social security systems need reform. So far, most countries have responded with relatively minor changes to their current systems (level of contribution rates, benefit calculation, retirement age, etc.). More structural reforms involving a more comprehensive reform of pay-as-you go systems and the expansion of occupational plans (employer-sponsored) and private savings are less attractive due to high short-term transition costs, the difficulty of estimating long-term benefits and often a lack of political will to reform, and social opposition in those groups that would stand to lose existing benefits.

Concerns about the affordability of pensions and health care have also fuelled inter-generational equity debates in several countries. Various studies have compared transfers between age cohorts and showed that cohorts that are now old have been net gainers of formal transfers, while those young cohorts can expect to pay out more in taxes and contributions than they will receive in benefits (see Bengtson and Achenbaum (1993) for an in-depth discussion of the generational equity debate). This has led to concerns over the sustainability of public pensions and healthcare programmes as well as to intergenerational equity concerns.

Finally if population ageing impacts public spending, it can also impact public revenues through economic growth. Indeed the main sources of public revenue are taxes and levies such as income tax, property tax, sales tax, license fees, import and export duties, levies charged for services and social security contributions. These taxes and contributions depend on economic growth which itself can be influenced by population ageing. Population ageing influences economic growth usually in a negative way, via relatively lower labour force participation and labour productivity, decreases in the savings rate and lower consumption. However many behavioural responses can mitigate these age structure effects as stressed by Bloom *et al.* (2011) and they could be overcome by taking a different approach to ageing as postulated by Giarini and Liedtke (1996), extending the working portion of life and incentivising the elderly to remain actively productive citizens for longer periods. Indeed, individuals could work longer. Savings could increase through the working life in order to finance a continued high standard of living in retirement. More women could enter the labour force and higher human capital investment could occur. However, these trends need encouragement or, at the very least, the abolishment of disincentives.

4. Ageing and individual old-age income

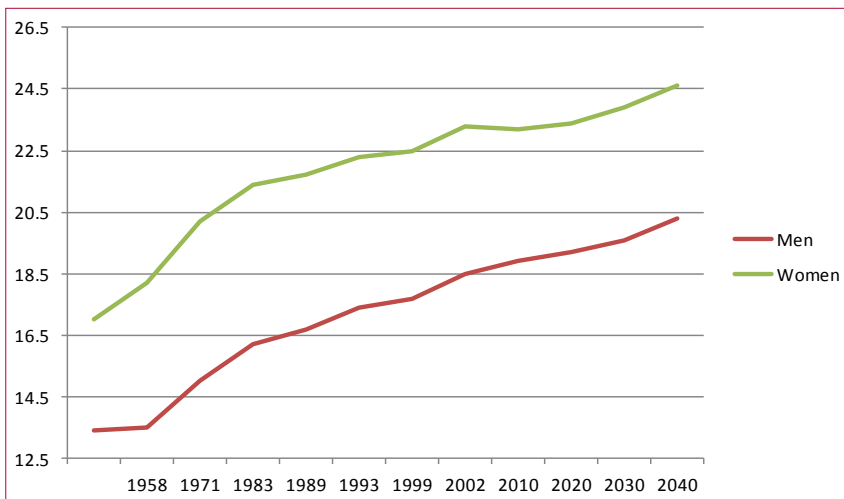
Ageing impacts individual old-age income through various channels. Firstly, ageing affects both the size of the working population as well as possibly capital markets which influence the amount of pension benefits. Secondly, as populations age, there is a greater need for savings and pension income to face a longer period of retirement. In addition, inflation and rising health care costs, which typically affect people more as they age, influence individual old-age income.

Pension benefits are also impacted by global ageing. Indeed, pension systems, whether pay-as-you-go or pre-funded, public or private, transfer wealth of today's workers to today's retirees (Barr, 2000). Contributors to a public pay-as-you-go system receive a promise from governments that their compulsory contributions will provide them with benefits

in their old-age. Yet, due to global ageing and the shrinking of working populations, tax revenue may be insufficient to meet pension promises, leading to possible distributional crises and thus shortages in old-age income. Contributors to a pre-funded pension system also obtain a claim on future benefits but in a different way. They accumulate financial assets, mainly bonds and equity, which are later sold to younger workers. A large number of retirees who want to sell and a low demand for these financial assets can cause asset prices to fall longer-term, lowering the market value of pension funds and also pension benefits, especially in the case of defined contribution schemes.

The period of retirement lengthened considerably during the 20th century, especially after 1960 when the average worker who retired could expect to have 10 or so years of retirement. Nowadays, this period has extended to 20 years or more (see Figure 2). Hence, not only individuals face the risk of having a reduced old-age income, but they also run the risk of being exposed to higher expenses since retirement periods are longer. This means that they should save even more for their retirement. However, many people fail to do so. They may lack the financial literacy necessary to plan ahead properly and the awareness of their future needs. They may also underestimate the amount they need to retire safely, often by underestimating their future longevity. They also have limited financial resources and are prone to myopic behaviour, thus prioritising current consumption over saving for future needs.

Figure 2: Average life expectancy after pensionable age in the OECD, 1960-2050



Source: OECD (2011a).

In addition, rising health care costs influence old-age income. Health spending is more and more correlated with age. As mentioned earlier, older people in general are reporting a greater number of chronic conditions and disability. Per capita health care costs of the retired are considerably higher than for the working age population (see OECD, 2011b). However there is a difference between increasing expenditure (which relates to the real increase of value added) and cost inflation. It is important to distinguish clearly between the two different mechanisms. One is health cost inflation, i.e. when the same treatment

is provided for more money. The other is the improvement in health services, i.e. when a new treatment becomes available that creates additional cost, but at the same time renders superior results. New treatments and advances in medicine and biotechnology are usually costly and will force an increase in health expenditure. Yet, they not only improve the chance of survival and thus increase life expectancy, but also the quality of living. What can be perceived as negative is, of course, that as a consequence individuals must face additional expenditures because they have the possibility of living longer and often better. Longer life spans mean that health costs are higher and incur over a longer period of time, but they also allow people to remain active for longer and in this way they can be understood as investments rather than just expenditures. However, the social and economic systems would have to permit and facilitate the integration of the elderly for this “health investment” mechanism to take hold. As long as the elderly interpret any gains in life expectancy as an extension of their inactive period at the end of their lives, health expenditures—whether they lead to longer and better lives or not—will remain just that: expenditures.

Another factor linked directly to an ageing society and which explains the increase in individual health expenditure is the need for LTC. Although loss of autonomy may occur at any age, its frequency rises with age. Living at older ages means that expenditure in LTC increases. In the past, most of the care for elderly people was regularly provided by the family or close friends. With the rise of institutional and especially hospital medicine, the decomposition of the family unit, the distancing of children from their parents, and the increase in women’s employment rates, a shift towards treatment by professional caregivers, funded either through public or private insurance, has taken place. Those services have always existed; only they were formerly provided without monetary compensation and at low or no cost to the social security system. The recent trend to outsource care for the elderly signifies an attribution of monetary value to the services rendered, i.e. what we call the “monetisation of the care for the elderly”.

5. Ageing and employers

In a modern economy, ageing populations have a direct influence on the production system itself. Employers can be impacted by global ageing through shortages in the labour force and occupational schemes liability.

As said earlier, the ageing of the population has led to a decline in the size of the working population. This demographic shift has been exacerbated by the trend of early retirement of the baby boom generation as well as fewer skilled younger workers, especially if the relative numbers of younger workers to the elderly are considered. To offset this trend, legislative changes should be made to allow older workers to continue to work or return to work without financial penalty (e.g., changes in social security, pension plans, IRS regulations). In addition, to encourage older workers to remain in the workforce, organisations must be willing to make investments in training and offer appropriate benefit options. Early-industrialised countries with ageing populations may deal with labour shortages resulting from the loss of large numbers of retiring workers by sending work to emerging economies with younger populations.

A shift towards making labour markets more attractive for the elderly should be possible and with limited cost implications, since the elderly are not completely opposed to working but their priorities are different from the young as research by Deller *et al.* (2009) shows.

With the ageing of the population, LTC—for both employers and employees—is becoming an issue of concern. As baby boomers reach age 50, many of them have to deal with older parents while working. Providing LTC is time-consuming and employees need to take time off work to deal with their dependent parents. A high proportion of them are informal caregivers. The annual cost of LTC to employers can be substantial as it can lead to absenteeism, workday interruption, costs associated with supervising caregivers and replacement costs for employees who quit annually. In addition, providing LTC can be very stressful and impact labour productivity. As an illustration, *The MetLife Caregiving Cost Study: Productivity Losses to U.S. Business* (Metlife, 2006) found that costs to U.S. employers through lost productivity based on caregivers employed full time in the workplace are high. It amounts to US\$17.1bn in lost productivity for employees with intense caregiving responsibilities and to US\$33.6bn in the total estimated costs to employers for all full-time, employed caregivers. The average cost per employee for those with intense caregiving responsibilities is US\$2,441.

A second channel through which employers are impacted by global ageing is occupational schemes. Occupational schemes are broadly classified into defined benefit (DB) schemes and defined contributions (DC) schemes. A traditional DB plan is a plan in which the benefit on retirement is determined by a set formula, rather than depending on investment returns. In a DC plan, the amount of money that has to be contributed to the fund is specified, while the benefit payout will be known only at the time of retirement. DB schemes are facing serious financial problems as a result of, among other factors, unforeseen increases in life expectancy. In addition, any asset shortfall arising from poor investment returns on pension assets becomes a liability of the schemes' sponsor. This means that the investment risk and investment rewards are typically assumed by the employer and not by the individual. Traditional defined benefit plan designs tend to exhibit a J-shaped accrual pattern of benefits, where the present value of benefits grows quite slowly early in an employee's career and accelerates significantly in mid-career. In other words, it costs more to fund the pension for older employees than for younger ones. This explains why a lot of pension schemes confronted with the ageing of their employees are moving from a DB scheme to a DC scheme. DC plans have become widespread all over the world in recent years and are now the dominant form of plan in the private sector in many countries.

6. Insurers' exposure to ageing

Ageing will have various consequences for insurers since insurance companies as a whole are an important employer and as such are confronted with both a shortage of the labour force and an occupational schemes liability, as addressed before. In the EU alone, they employ close to one million people (see Chapter 13 of this report for further details).

Insurers can also be influenced by the ageing of their clients through the risks they cover and their underlying liability. An obvious case concerns the longevity risk which is the risk that individuals live longer than anticipated. However, types of insurance contracts other than the ones linked to pensions can be impacted by ageing. This could be the case for auto insurance, as the risk of automobile accidents might be higher for people beyond a certain age. In the same vein, health care risks are higher for older people. However, if insurers are able to adjust their premiums with respect to age, premiums should cover their increased liability due to ageing.

The main and most direct impact of ageing on insurer liability is undeniably on pension liabilities. Insurers offer various products to cover old-age income, amongst which annuity products. An annuity is a financial investment that entitles the investor—the annuitant—to a series of regular payments, usually monthly, over a period defined in the annuity contract. There are many categories of annuities which differ according to the underlying investment into fixed or variable, to the primary purpose, i.e. accumulation or pay-out, and to the premium payment arrangement into single or flexible payment.

In funding annuities, life insurers face two kinds of mortality risk. The first, labeled select mortality risk, is the risk that the insurer's particular group of annuitants lives longer than the annuitant population. If the survival probability of annuitants is independent of others, this particular risk is reduced by issuing more policies, since that will pool the risks. The second, aggregate mortality risk, is the risk that the life expectancy of the population as a whole is uncertain and might be underestimated. Estimating aggregate mortality risk correctly is almost impossible since no model has thus far been developed that gives accurate predictions of the rate at which longevity is increasing.

Insurers not only provide coverage for individual old-age income, they also have developed solutions that help companies to manage risks related to their employee pension obligations. These insurers are specialised in variable annuity and deal with a complex range of risks related to longevity, asset prices and employee behaviour. This ranges from expertise in liability-driven investment to pension buy-out (transfer of asset and liability to an insurer).

Finally, new solutions to manage longevity risks are exploited by insurers via the use of capital markets. Indeed capital markets provide vehicles to hedge longevity risk effectively and transfer the risk from those unwilling or unable to handle it to those willing to speculate in such risk for increased returns, or who have a counterpoising risk that longevity risk can hedge, for example risk life insurers whose portfolios benefit from falling mortality rates. Many new investment products have been created both by the insurance and reinsurance industry and by other capital market experts. Mortality catastrophe bonds are an example of a successful insurance-linked security. In using capital markets, insurers have the potential to facilitate more efficient ways of managing longevity risk and can increase the number of parties involved in transactions thus deepening the liquidity pool (see Chapter 7 of this report).

7. Conclusion

Ageing is a great achievement for modern society. People have now the opportunity to live longer and often healthier than they did in the 20th century. At the same time, the ageing population has influence on all the economic actors and can have devastating effects on many. Indeed, ageing impacts governments through higher public expenditures, it raises the risk of outsourcing individual old-age income and impacts employers who may face a shrinking labour force and higher occupation pension scheme liabilities.

As global ageing is an important phenomenon that is set to reshape the future of society, it is important that its stakeholders anticipate this phenomenon early enough. At first sight this should not be so difficult since ageing is a long-term trend and does not occur suddenly. However, even if warnings have been raised for the last decades, few actions have been taken so far. Governments have shied away from dramatically reforming their pension systems, employers have not seriously anticipated the shortage of the labour

force and individuals have relied heavily on public pensions and often have too low savings rates to sustain ever longer periods of retirement.

Population ageing and the trend towards greater individual responsibility for retirement security open huge business opportunities for insurers. Insurers have extensive expertise in this area and have developed various tools to secure old-age income. In that sense, the insurance industry has a unique role to play on how best to help retirees accumulate assets with limited downside risk and convert those assets to income. They can also be of assistance to bridge the gap between government pension plans, employer pension plans and individual retirement plans to help capture and retain assets that will cushion off the lack of productive income once they retire.

It should not be forgotten that ageing is fundamentally a social issue. Not only should insurers be involved in the debate on how to reform the pension system, but most importantly they should raise awareness about global ageing and an efficient management of longevity risk. It will not only benefit the industry itself but also society in general.

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3. Insurance as a funding and risk transfer mechanism in old-age protection: positioning and track record

Milka Kirova

1. The case for insurance

Global population ageing poses huge funding challenges for public and private pension schemes. The changes in demographic profiles imply that there will be fewer people of working age to support the older generation's increasing demand for retirement income and public services such as healthcare. In particular, the fiscal challenges faced by the public programmes for the elderly have highlighted the importance of private savings for retirement. Both public and private occupational pension plans have come under mounting funding pressures and many defined-benefit pension schemes, which bear substantial exposure to longevity and financial market risks, have become underfunded.¹ Increased life expectancy means that these plans may not have made enough financial provision and the costs may have to be covered by employers or through younger generations paying higher contributions.

The emergence of large public and private pension funding gaps has raised major concerns about retirement benefits in the future. In many markets a pattern has surfaced that represents a shift from state and employer provisions for retirement income to an increased emphasis on the individual bearing the associated financial risk. Governments are proposing various initiatives to cut pension expenditure, such as raising retirement ages and reducing benefits to account for increased life expectancy. It is becoming increasingly common for employers to offer only defined-contribution plans, where employees' pensions depend on their accumulated funds, passing the risk associated with providing income during retirement to the individual.² The limited nature of government-run and employer-based retirement plans means that people should undertake supplementary saving and investment for retirement. But saving and investing are generally not enough since they require longevity and investment risk management at the individual level that can most effectively and efficiently be addressed through insurance.

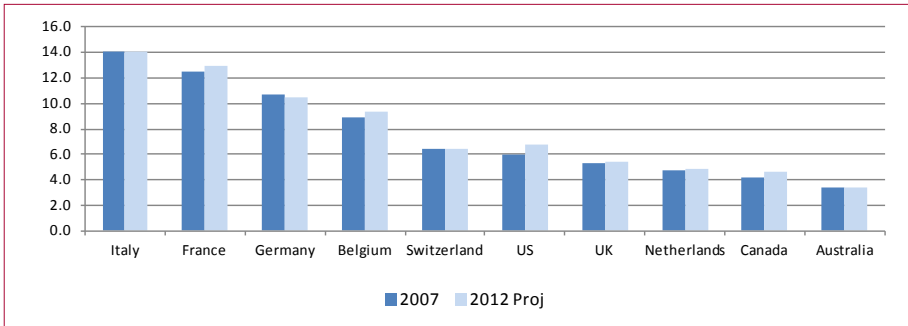
How radical the shift in responsibility is from the public and corporate sectors to individuals largely depends on the structure of existing pension systems. The picture is quite heterogeneous around the world. Countries with lower state pension provisions tend

1 According to OECD, in 2009 the median funding level of the aggregate defined-benefit obligations of 100 publicly traded companies was a deficit of 26 per cent. See OECD (2011) and Ponds (2011) for a detailed discussion.

2 In the U.S., for example, only 30 per cent of workers in medium and large private establishments had defined-benefit pension coverage in 2010, down from 36 per cent in 2005. Source: Employee Benefit Research Institute.

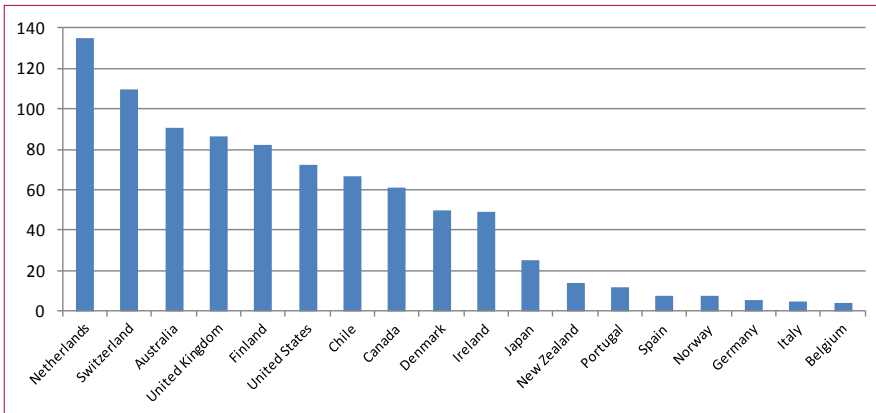
to have more developed private pensions markets, while the contrary is true of countries with more generous state provisions. Retirees in Germany, France, Italy and Belgium rely more heavily on the government pension programmes (Pillar I, see Box: The pillars of retirement funding) than retirees in other countries (Figure 1). On the other hand, the occupational and other types of private pension funds (Pillar II) are most developed in the United States, the United Kingdom, Canada, Australia, the Netherlands, Finland, Switzerland and Chile (Figure 2).

Figure 1: Public expenditures on cash benefits for old-age and survivors as per cent of GDP



Source: OECD Social Expenditures Database (SOCX).

Figure 2: Pension assets as per cent of GDP, 2010



Source: OECD Global Pension Statistics.

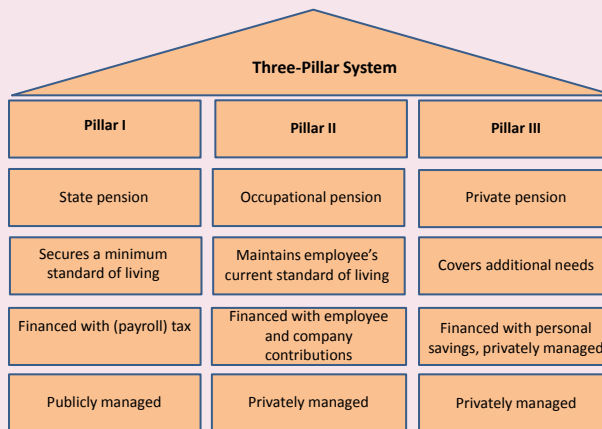
Many agree that no single party will be able to provide a solution to the retirement funding issues and that it will take broader initiatives by all public and private stakeholders to ensure that living longer remains a benefit to society rather than a financial burden. The insurance sector is well-positioned to help governments, employers and individuals in addressing the challenges of retirement funding and managing the risks associated with old-age protection.

The pillars of retirement funding

The structure of pension systems varies significantly across countries, but many pension systems enable people to save for retirement through three distinct “pillars”:

- Pillar I: A mandatory, state-run system (usually pay-as-you-go and financed through a payroll tax) typically designed to reduce poverty among the elderly;
- Pillar II: Occupational pension plans funded by employers or workers. These plans are either defined benefit or defined contribution; and,
- Pillar III: Voluntary personal savings through retirement accounts, annuities and insurance.

The three pillars of retirement saving



While the various pillars differ substantially in relative size and importance across countries, the coexistence of multiple pillars cushions the system to a certain degree from many shocks:

- Because a substantial share of Pillar II and III funds are invested in equities, a sharp decline in stock prices will reduce savings in these pillars but leave Pillar I largely unaffected.
- Budget deficits strain the ability of governments to fund Pillar I, while they do not affect directly Pillars II and III. However, the need for fiscal consolidation and severe austerity may affect returns on investments in Pillars II and III.
- A downturn in corporate profits will threaten some Pillar II plans, but have less of an impact on Pillars I and III.
- Some events—such as a major economic downturn or depression—can threaten all three pillars simultaneously.
- Longevity risk can also weaken all three pillars. Increases in life expectancy can have a cumulative impact that seriously erodes the strength of all three pillars.

In addition to the three retirement savings pillars, the concept of a fourth pillar for retirement funding has been developed by The Geneva Association.^a Defined by the possibility that many people will have greater ability and desire to work later in life, Pillar IV would contribute financially to the existing pension systems by providing supplementary income to people of retirement age and through substituting partial pensions for full pensions for a certain number of years.

a. See Reday-Mulvey (1993). Chapters 4 and 8 of this report offer an in-depth discussion of the current state and future prospects of the Fourth Pillar approach.

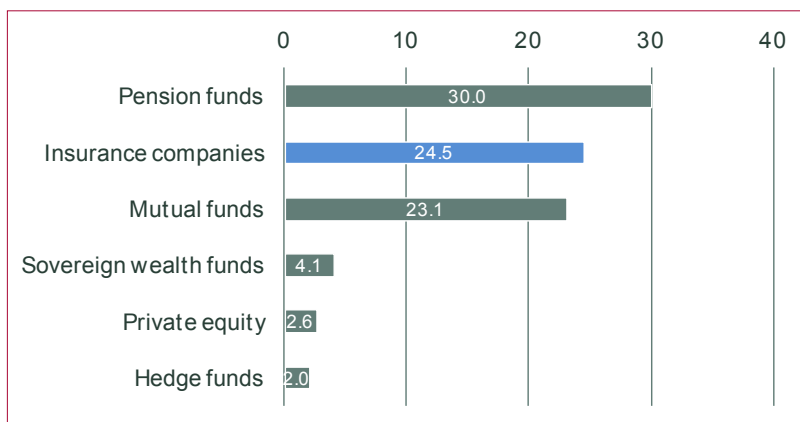
- **Risk and asset management expertise**

Risk management is the core competency of insurers. Insurers have the expertise to establish where the interdependencies between individual risks lie, ensuring that the aggregate exposure is in line with their risk-bearing capacity. The scope of risk management in life insurance has widened significantly as life insurers have developed products that protect the insured against new, more complex risks, and combinations of risks.

Once focused mainly on death protection, life insurers today offer products that cover many risks, such as the risk of losing the physical capacity to earn one’s living (disability insurance), critical illness, healthcare and long-term care costs (medical and LTC insurance). The life insurance industry is increasingly active in helping individuals finance retirement. Savings products provide a return on investment and wealth transfer to the next generation, while certain pension and annuity products provide retirement income to offset the risk that individuals outlive their wealth. In 2010, about 85 per cent of the US\$2.4tn of global in-force life premiums were directed toward savings and pension products. These products are at different stages of development in the various markets, depending on the extent to which retirement income is provided by public vs. private sources, as well as the regulatory and taxation environment.

Asset management is an integral part of insurers’ business model. Insurers collect premiums and promise to pay beneficiaries compensation if or when a pre-specified event occurs. For some types of life insurance policies, premiums are paid over decades. Insurers hold prudently invested reserves so that sufficient funds are available to meet future claims and, for some products, to ensure a separate return on investment. Insurance companies are important institutional investors, managing investments of around US\$ 24.5tn in 2011 (Figure 3).

Figure 3: Institutional investors’ assets under management, US\$tn, 2011



Source: Sanyal (2012).

- **Diversification and balancing of risks**

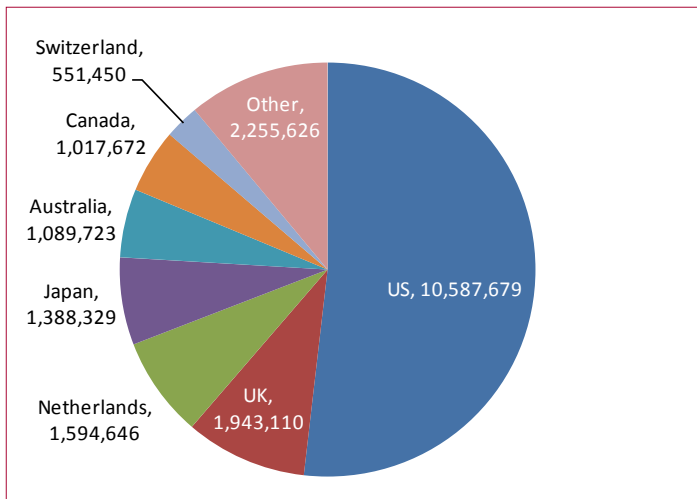
Risk diversification is a key part of insurers’ risk management process. Insurers diversify risks by operating across a wide range of different lines of business, by assuming a large

number of independent risks, and by operating across different geographical regions. Many well-diversified insurers have a combination of mortality risk—the risk that people will die sooner than expected, along with longevity risk—the risk that people will live materially longer than expected, and other non-correlated insurance perils, such as property and casualty. It is this type of diversification and balancing of opposing risks, as well as diversification across a portfolio of insurance perils, that means insurers are often seen as the “natural home” for longevity risk.

- **Pricing expertise and interest in longevity risk**

Insurers assess and price the world’s largest and most complex risks and invest significant resources to understand better existing risks and anticipate emerging developments in the risk landscape. Life insurers have an unrivaled mortality risk expertise globally based on extensive studies of mortality experience and mortality improvements. Longevity risk is a natural extension of insurers’ and reinsurers’ mortality risk expertise. Also, since at the current time insurers’ portfolios include significantly more mortality risk than longevity risk, insurers have the appetite and capacity to assume longevity risk for its diversification benefits as a natural hedge for mortality risk.

Figure 4: Pension fund assets in OECD and select non-OECD countries, 2010, US\$m



Source: OECD Global Pension Statistics.

- **Risk bearing capacity**

Life insurance today plays an important role in society and the global economy by pooling and offering protection against the financial consequences of individuals’ life and health risks. Global life premiums have grown at 5 per cent per year in real terms over the last three decades, reaching US\$2.4tn in 2010, or over 3.8 per cent of global gross domestic product. The overall exposure to longevity risk throughout the world is massive and growing rapidly—pension fund assets in OECD and selected non-OECD

countries alone reached US\$20tn in 2010 (Figure 4).³ The capacity of the insurance sector to assume longevity risk obviously is limited. Moreover, longevity is a universal, systematic risk. The systematic component of longevity risk cannot be mitigated through diversification by age groups or geography, since certain mortality improvements due to medical breakthroughs, for example, will affect the entire population. Systematic risks may not be diversifiable, but they can be hedged or transferred. Thus, alternative, non-traditional ways of transferring longevity risk are needed in order to increase capacity and scale. Transferring risks will not diminish the societal problem of providing for an ageing population, but spreading longevity risk to a wider range of market participants will allow society to more easily absorb the risk.

2. Insurers' past and current role in retirement financing

As the population ages, the pool of retirees will expand rapidly, necessitating a shift of attention in the private-sector savings market, from the present focus on asset accumulation towards development of appropriate vehicles for converting savings into income to provide means for surviving in old age. People approaching retirement today have the prospect of living longer lives than previous generations did. Their broad range of pursuits implies an incredible diversity of individual retirement needs, including:

- Longevity protection: the ability to meet the basic costs of living throughout life—however long.
- Asset protection: many seek security and wealth protection.
- Liquidity and flexibility: unexpected lifestyle changes and expenses arise during retirement, necessitating some liquidity.
- Healthcare: providing for medical and long-term care needs is a major concern.
- Inflation protection: the impact of inflation becomes more pronounced as people grow older.

Life insurers offer individuals various products that are part of a balanced retirement portfolio and protect against longevity, health and inflation risks: annuities, pensions, long-term care insurance and other innovative products. Retirees are also partially protected from longevity risk through any defined benefit pension payments to which they are entitled through employer-provided pension plans or the state-run system. Such plans pay out a fixed stream of income for the entirety of a retiree's life.

Retirement financing solutions for individuals

Annuities

An annuity is a contract that promises to make a regular series of payments over a person's lifetime or for a fixed time period. Annuities come in many varieties to meet the needs of retirees. An annuity makes certain payments over a set period of time. A life annuity makes payments throughout the life of the annuitant or can continue to provide payments as long as either one of two or more people live (joint-and-survivor annuity). An annuity may begin to pay out immediately upon purchase (immediate annuity) or at some later date (deferred annuity). It can be purchased with either a single payment or a series of payments. Its payout can be set at inception (fixed annuity), or linked to the performance

³ This figure includes autonomous pension funds only, and excludes book reserves, pension insurance contracts, and bank and investment company managed funds. Figure for Switzerland is for 2009.

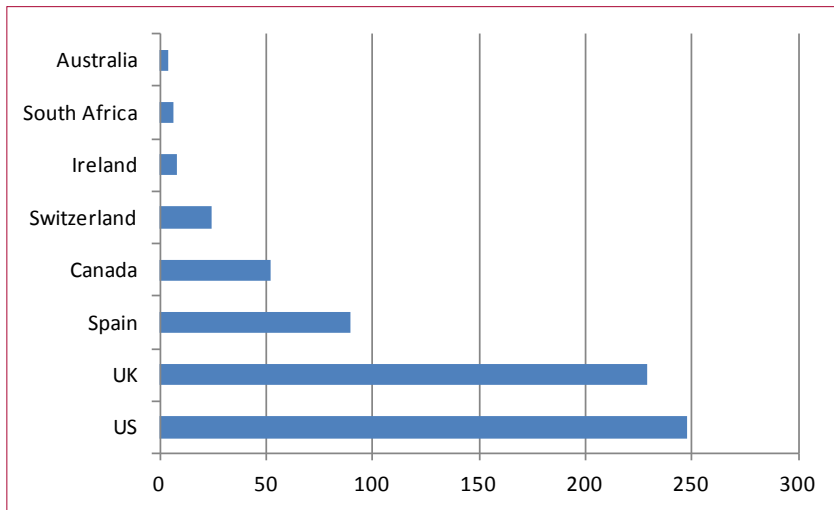
of an investment portfolio (variable annuity) or the rate of inflation (inflation-linked annuity).⁴

1) Life annuities

Life annuities offer people a simple but effective means of reducing the probability of outliving their wealth. The two largest life annuity markets are the U.K., where the product is known as a “pension annuity” and is purchased at or after retirement but before age 75, and the U.S., where the product is called an “immediate annuity”.

Both the U.K. and the U.S. had immediate annuity reserves in excess of US\$200bn in 2010. The total amount set aside for immediate annuity reserves in eight selected markets for which data was available exceeds US\$660bn (Figure 5).

Figure 5: Immediate annuity reserves in US\$bn, 2010



Sources: U.S.: ACLI, Product-Line survey data, total reserves for individual and group immediate annuity business. U.K.: SynThesys Life, from FSA returns, reserves are net. Spain: ICEA, includes life annuities which may be 70 per cent of premiums; reserves estimated assuming that they are 10x premium. Canada: CLHIA, data is for assets. Switzerland: BPV, estimates, 2007. Ireland: IIF, reserves estimated assuming that they are 10x premium. South Africa: ASSIA, reserves estimated assuming that they are 10x premium. Australia: APRA half-year bulletin Table 5a.

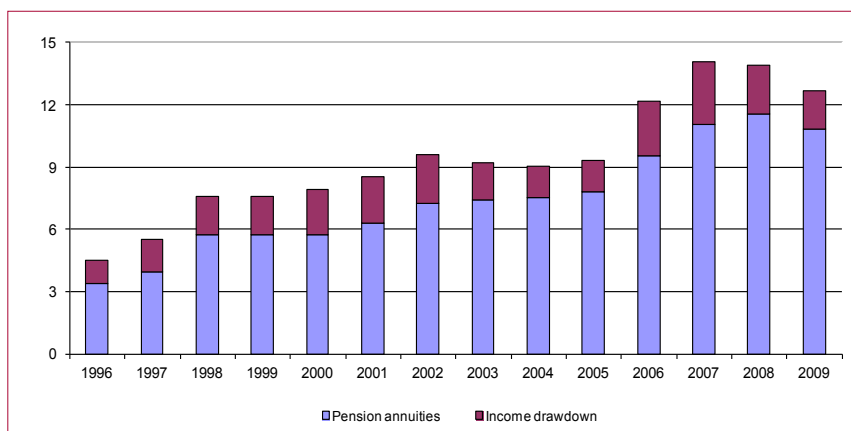
The U.K. insured retirement income market, which comprises immediate annuities and income drawdown products, has tripled since 1996 to £13bn (US\$18.9bn) in 2009 (Figure 6). In 2008-2009 sales fell as a result of the stock market decline, which had a strong impact on U.K. occupational pension fund assets due to their heavy exposure to equities. In addition, the decline in interest rates made annuitisation of assets a less attractive option for retirees. Immediate annuities comprise the bulk of the retirement income market. With new premiums amounting to £11bn (US\$16bn) in 2009, the U.K. is the largest immediate annuity market in the world, accounting for about 40 per cent of global sales.

The size of the U.K. market is largely due to the longstanding compulsory annuitisation of personal pensions and defined contribution group pension plans. U.K. retirees must

⁴ See Chapter 5 of this report for a detailed overview and comparative analysis of available solutions.

convert their tax-favoured pension savings into an income stream through the purchase of an annuity with 75-100 per cent of these savings before reaching 75 years of age. Sales of compulsory purchase pension annuity business really took off in the past decade as a result of the growth in vestings of personal pensions policies, which were launched in 1988, and the shift to defined contribution pension plans, which have grown since the late 1980s. Robust growth is expected to continue in the future, fuelled by an ageing population, a shift from defined benefit to defined contribution plans and waning support for state-funded retirement plans.

Figure 6: U.K. retirement income: single premiums, GB£bn



Source: Association of British Insurers.

In markets where annuitisation—in the sense of buying an immediate annuity or converting a deferred annuity into an immediate one—is not compulsory, immediate annuities have had limited success. In the U.S., for example, the immediate annuity market remains relatively small. By one estimate, the potential market for annuitisation exceeds US\$260bn, yet the current annual individual market (i.e. immediate annuities and payouts from deferred annuities) is only US\$13bn, or 5 per cent of market potential (Mitchel and Drinkwater, 2006). Nevertheless, sales of individual immediate annuities grew 7 per cent per year from 1997 to 2010 (Figure 7), fuelled by the ageing population’s growing demand for retirement income, extensive marketing and the introduction of new products offering inflation protection and greater flexibility.

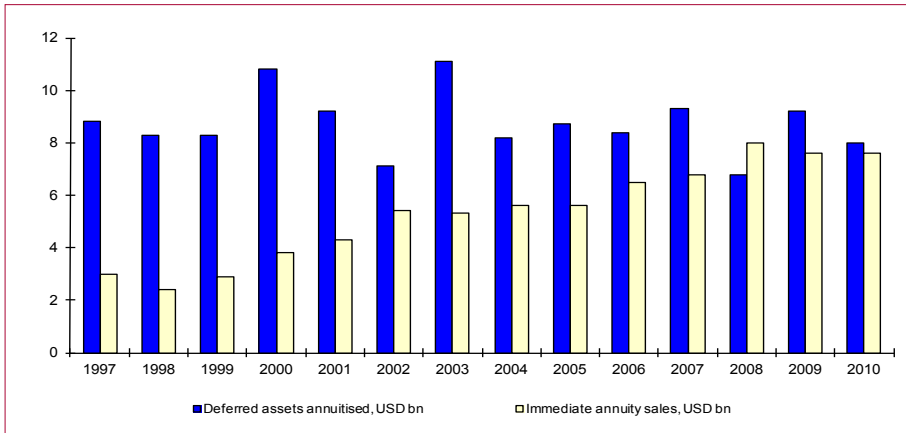
2) Enhanced and impaired annuities

Traditional life (or “pension”) annuities are not underwritten; the income stream annuitants receive is unrelated to their health status. This makes traditional life annuities unattractive to those with relatively shorter life expectancies because they may end up viewing themselves as subsidising those with longer life expectancies.

Enhanced and impaired annuities, also known as “non-standard” annuities, can provide significantly better rates for those with below-average life expectancy. For enhanced annuities, the primary factors are related to one’s lifestyle, e.g. occupation, smoking habits and the presence of chronic medical conditions such as diabetes. Impaired life annuities are suitable for people with severe medical conditions such as cancer. From 2004 to 2009, the U.K. premium volume of non-standard annuities more than doubled to

£1.1bn (US\$1.6bn) (Figure 8). The market share of these annuities, relative to the overall pension annuity market, grew from 8 per cent to 10 per cent, and is expected to continue rising.

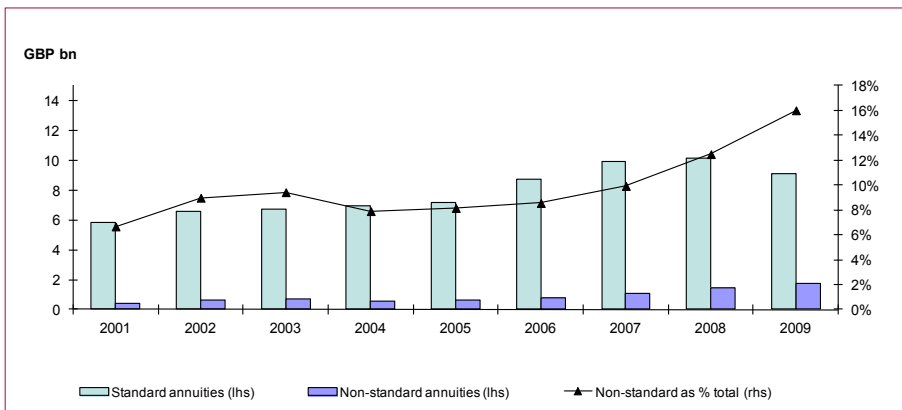
Figure 7: U.S. sales of individual immediate annuities



Source: LIMRA.

Outside the U.K., the non-standard annuity market remains relatively small due to the limited development of the immediate annuity market. In the U.S., for example, a LIMRA survey found that non-standard annuities generated a premium volume of only US\$585m in 2004, or 10 per cent of the total immediate annuity market. Nevertheless, this represented a six-fold increase compared to 2000 (LIMRA, 2006).

Figure 8: Sales of pension annuities in the U.K., single premiums



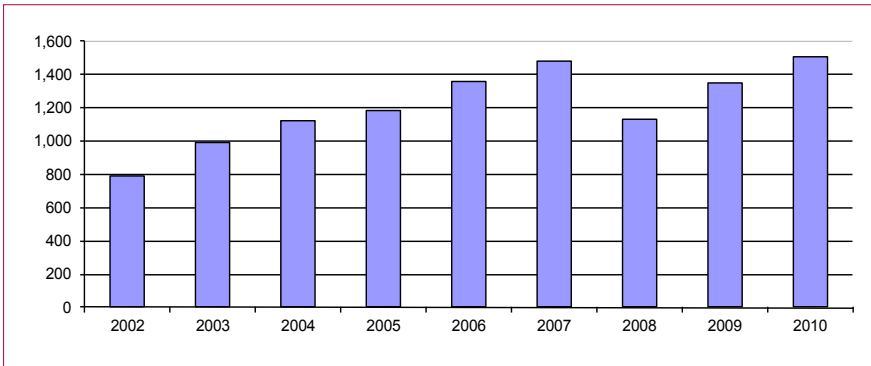
Sources: Association of British Insurers, Watson Wyatt.

3) Variable annuities with guarantees

Insurers have developed products that can capture upside market potential and this flexibility can be an important consideration for some retirees. Variable annuities (VA) are unit-linked products commonly sold with a guarantee. Initially, a guaranteed minimum death benefit (GMDB) was offered. If the policyholder died, a pre-defined death benefit or the fund value was paid out, whichever was higher.

Since the late 1990s, insurers operating in the competitive U.S. market began enhancing their VA products by offering guaranteed living benefits (GLB).⁵ The market crash of 2008-2009 caused companies offering VA to re-price the guarantees and derisk their products by providing less generous guarantees. Nonetheless, the guarantees remain attractive to many consumers. The U.S. is by far the largest and most developed VA market, with US\$1.5tn in assets at the end of 2010 (Figure 9).

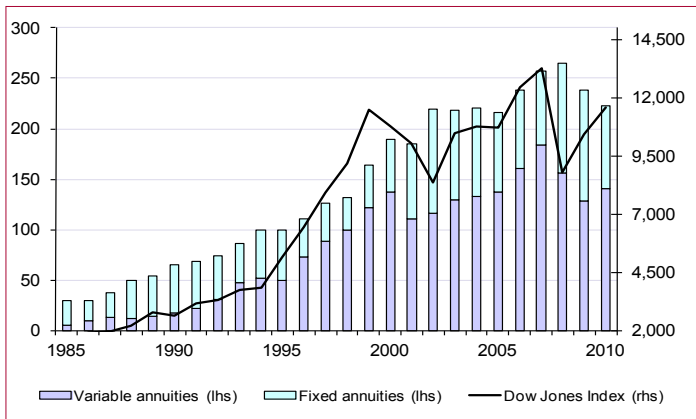
Figure 9: U.S. variable annuity assets, US\$bn



Source: VARDS.

Gross sales of VAs grew 14 per cent per year from 1985-2010, reaching US\$140bn in 2010 (Figure 10). Fixed annuity sales, by contrast, grew only 5 per cent per year to US\$82bn over the same period. Buyer appetite for VAs has historically been highly correlated with the performance of equity markets.

Figure 10: Variable and fixed annuity sales in the U.S., US\$bn

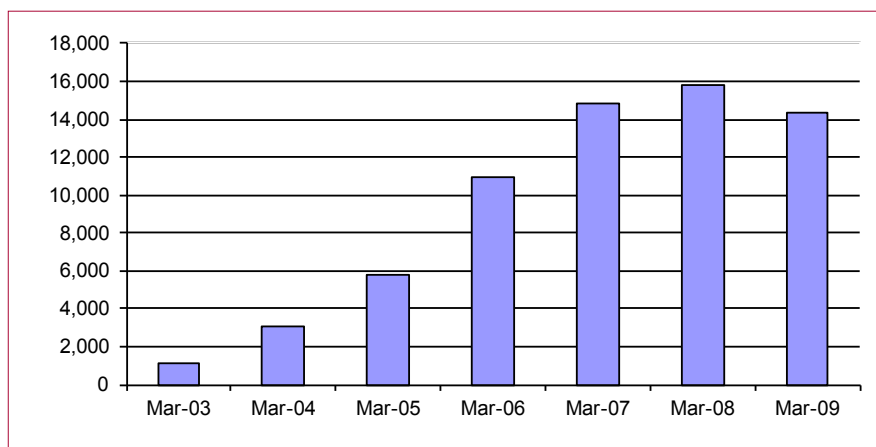


Source: LIMRA.

54 5 See Chapter 5 of this report for a detailed overview of GLB.

VAs have also been successful in the Japanese market since their debut in 1999. VA assets grew from ¥1.1bn (US\$10bn) in 2003 to ¥14.4bn (US\$147bn) in 2009, a compound annual growth rate of 53 per cent (Figure 11). All products provide a GMDB; most also provide various GLB.

Figure 11: Japanese variable annuity assets, ¥bn



Source: Hokken Mainichi.

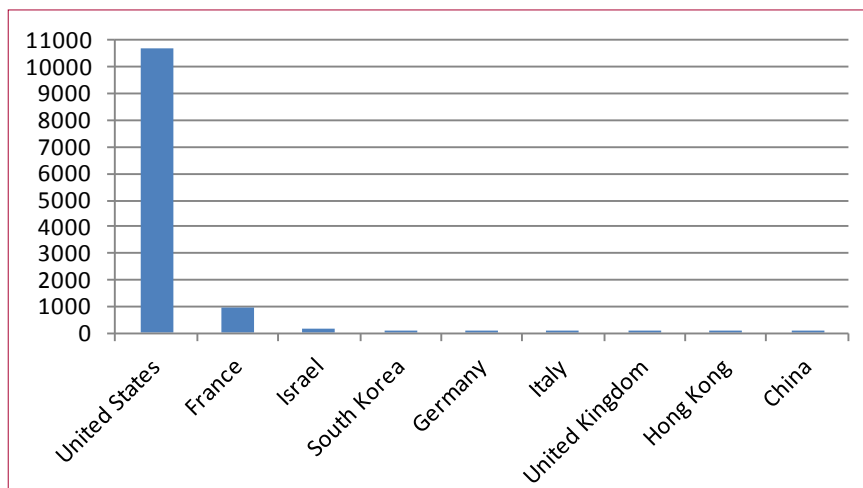
Long-term care insurance

Funding of long-term care (LTC) needs is an important part of old-age security since many people incur increased health care costs as they grow older. While social and private medical insurance cover many of these costs, they typically do not cover expenses related to LTC. The expenses of a retiree who needs LTC can be several times those of one who does not. In many countries, access to government-funded LTC is means-tested and therefore limited to the poorer members of society. According to research by Partnership Assurance, a provider of retirement and healthcare solutions, nearly one in five people in the U.K. has to sell their assets, including the family home, to fund LTC expenses.

Insurance represents a promising funding source for LTC. Nonetheless, the LTC insurance (LTCI) market is still in its early stages, even in the U.S., the world's most developed LTCI market (Figure 12). Relatively few people have coverage and LTCI and private health insurance pay for just 7 per cent of LTC expenditures (Georgetown University, 2007). Research indicates that challenges on both the supply side and the demand side have impeded the market's development (Brown and Finkelstein, 2007). Additionally, in many countries the taxation framework or public awareness of the growing need for LTC are lacking to allow such a market to develop.⁶

⁶ See Chapter 6 of this report for an in-depth examination of LTC.

Figure 12: Long-term care insurance in-force premiums, US\$m, 2010



Source: Swiss Re Economic Research and Consulting.

3. Longevity risk transfer solutions

Over the past decade, employers have grown increasingly concerned about the risks associated with managing their defined benefit plans. These concerns have been fuelled by increases in longevity, new accounting rules that move pension assets and liabilities onto the corporate balance sheet and make pension risks more transparent to investors, the large size of pension liabilities relative to the size of corporate entities, tightened funding rules that compel plan sponsors to reduce deficits and uncertainties about future pension legislation, such as the imposition of risk-based fees on pension benefit guarantee schemes. In reaction to these developments, employers have pursued a variety of approaches to managing their pension-related risks.

Insurers and reinsurers offer solutions that help employers transfer longevity risk and tackle the challenges of retirement financing.⁷ There are several options that pension funds can pursue to protect themselves from longevity risk, the most common of which are a pension buy-out, a pension buy-in, longevity re/insurance and longevity swaps:

- In a buy-out, the pension scheme transfers its entire relationship with plan members over to an insurance company, in return for the payment of an upfront premium to the insurer. Thereafter, each member will have an individual annuity with the insurer. All risks, not only longevity, are transferred away from the pension fund. Typically the pension scheme is wound up after a full buy-out and the sponsoring company is free from any further liability with respect to the pensions.
- With a buy-in, the pension scheme purchases a bulk annuity as an investment. The annuity is held by the pension trustee, and they still pay the pensions of scheme members. Thus, unlike a buy-out, the liabilities and assets remain in the pension plan.
- Longevity re/insurance indemnifies the holder of longevity risk by exchanging a fixed sequence of payments (the premium) for a “floating” one (claims paid).

⁷ See Chapter 12 of this report for a detailed analysis.

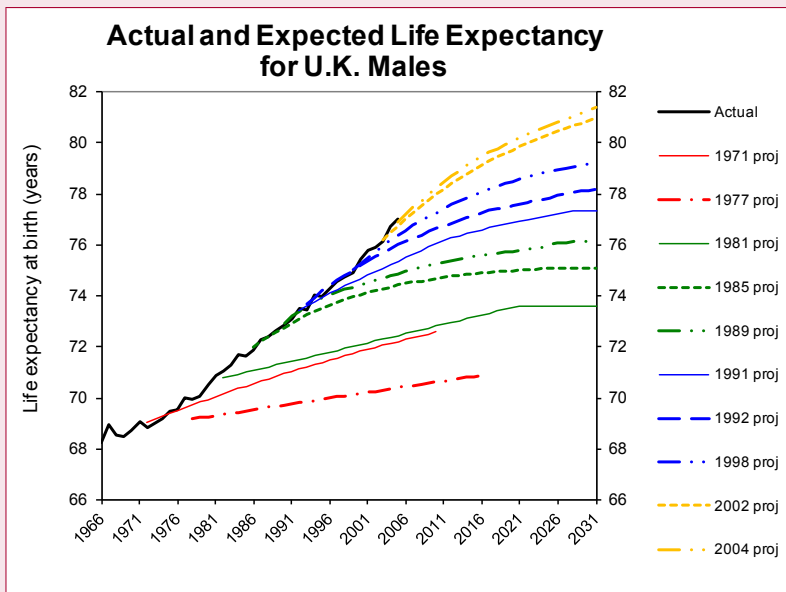
Pension funds make pre-agreed fixed premiums to a re/insurer or other counterparty based on forecasted fund liabilities, and receive payments based on actual longevity experience. In practice, only the net difference is exchanged.

- A longevity swap also transfers only longevity risk, similarly to longevity re/insurance, but in a derivative format.

Longevity risk

Longevity risk has two components—the “individual” and the “aggregate”. Individual longevity risk arises because it is impossible to know when a particular individual will die. Individual longevity risk can be managed through risk pooling, which is performed by government, occupational pension funds and insurers that sell annuities. Economies of scale and diversification by having a higher number of policies in a portfolio and rating according to socio-demographic risk factors are essential to insuring these contracts. Demand for longevity products is concentrated around those aged over 60, thus cohort effects can be only partially mitigated by writing a balanced portfolio across a wide range of ages. The annuitants who die earlier create a “mortality profit” that funds the annuities of those who live longer than average.

Aggregate longevity risk reflects the uncertainty of how long an entire population cohort will live. Aggregate longevity risk is substantial. Historically, experts have consistently underestimated life expectancy. For example, in 1975 the life expectancy of a male born in the U.K. was projected to be 71 by 2005, whereas the actual life expectancy in that year turned out to be around 77 years (see Figure below). Aggregate longevity risk remains a concern for the future. If a pension plan underestimates life expectancy by just one year, its liabilities can increase by up to 5 per cent (see Singleton, Thomsen and Yiasoumi, 2010). A plan with US\$1bn of pension assets would require an extra US\$50m to be funded.



Source: U.K. Office of National Statistics, 2007.

Table 1: Longevity reinsurance and swaps, 2008-2012

	Date	Liabilities transferred, USD bn	Longevity risk cedent	Longevity risk transferred to
1	Feb.	0.1	Lucida	J.P. Morgan
2	Oct.	0.8	Canada Life (UK)	J.P. Morgan
3	Dec.	0.4	Australian insurer	Swiss Re
	Total 2008	1.3		
4	Feb.	2.2	Abbey Life	Pacific Life Re & RGA
5	Mar.	0.7	Norwich Union	RBS
6	May, Sep., Dec.	1.8	Babcock International	Credit Suisse
7	Jul.	3.1	RSA pension fund	Rothsay Life (Goldman Sachs)
8	Oct.	0.4	Australian insurer	Swiss Re
9	Dec.	1.6	Royal County of Berkshire pension fund	Swiss Re
	Total 2009	9.8		
10	Feb.	4.6	BMW pension fund	Abbey Life
11	Jul.	2.0	British Airways pension scheme	Rothsay Life (Goldman Sachs)
12	Q3	2.4	Industrial Alliance: annuity block	Not disclosed
	Total 2010	9.0		
13	Jan.	0.8	Pension Insurance Corporation	Not disclosed
14	Jan.	0.1	Pall: non-retired members of UK DB scheme	J.P. Morgan
15	Jun.	0.2	Rothsay Life (Goldman Sachs)	Prudential Financial
16	Jul.	1.8	Rothsay Life (Goldman Sachs)	RGA
17	Aug.	2.8	ITV pension scheme	Credit Suisse
18	Oct.	0.6	L&G: bulk annuitant longevity risk	RGA
19	Nov.	0.7	Rothsay Life/Paternoster (Goldman Sachs)	Prudential Financial
20	Nov.	4.7	Rolls-Royce pension fund	Deutsche Bank
21	Dec.	2.0	British Airways pension scheme	Rothsay Life (Goldman Sachs)
	Total 2011	13.7		
22	Jan.	1.5	Pilkington pension fund	L&G
23	Feb.	15.7	Aegon	Deutsche Bank
	Total 2012 YTD	17.2		

Sources: Swiss Re Economic Research and Consulting and for the various transactions, respectively:

1. Total Derivatives, "U.K. longevity swap market takes first steps," 20 February 2008;
2. Reuters News, "Canada Life insurer in JP Morgan longevity deal," 30 September 2008, Life & Pension Risk, "Canada Life hedges Equitable longevity with JP Morgan Swap," 1 October 2008;
3. *Insider Quarterly*, Spring 2011, Issue 37, p. 45;
4. Best's News, "Pacific Life Re completes longevity-only transaction," 10 February 2009, Abbey Life's 2009 FSA return;
5. Reuters News, "Norwich Union completes 475 mln pound longevity swap," 24 March 2009;
6. *Financial Times*, "Babcock pension to hedge risk of longevity," 12 May 2009, Business Wire, "Pacific Life Re completes longevity reinsurance transaction," 30 June 2009, Lane, Clark & Peacock, "Pensions buyouts 2010," May 2010, CRO Forum, "Longevity.CRO Briefing on Emerging Risks Initiative – Position Paper," Nov. 2010;
7. Business Wire, "Pacific Life Re acts as reinsurer to Rothesay Life in biggest ever pension buy-in deal," 15 July 2009; RSA Press Release, "RSA announces next stage of U.K. defined benefit pension schemes derisking", 14 July 2009;
8. Life Insurance International News Digest/Pensions, 14 January 2010;
9. European Pensions, "Swiss Re agrees first longevity swap," 15 December 2009, Pensions Management, "Berkshire fund confirms GBP 1 billion longevity swap deal," 15 December 2009;
10. Reuters, "BMW lays off U.K. pension liabilities with Deutsche Bank," 22 February 2010; Life & Pensions Risk, "Solvency management provides reinsurance opportunity," 26 April 2010;
11. FT.com, "BA strikes deal to offload pension risk," 2 July 2010;
12. Industrial Alliance interim report 2010 Q3 news release; RGA 2010 Annual report p. III, and p. 46;
13. Pension Insurance Corporation press release, 20 January 2011;
14. Professional Pensions, "Pall scheme completes world's first longevity hedge for non-retired members," 1 February 2011;
15. Business Wire, "Prudential completes first longevity reinsurance transaction," 1 June 2011;
16. RGA press release, "Rothesay Life Partners with RGA U.K. For Longevity Risk Mitigation," 13 July 2011;
17. Professional Pensions, "ITV completes GBP1.7bn longevity swap with Credit Suisse," 22 August 2011, *Financial Times*, "ITV agrees pensions 'longevity swap' deal," 22 August 2011;
18. L&G press release, 25 October 2011;
19. Prudential Financial press release, "Prudential completes its largest longevity reinsurance transaction to date," 9 November 2011;
20. Dow Jones News, 28 November 2011; Scor press release, 28 November 2011;
21. Rothesay Life press release, 16 December 2011;
22. Reuters, "L&G, Hannover seal \$1.5 bn pension deal," 9 January 2011;
23. *Financial News*, "Deutsche agrees record longevity swap deal," 17 February 2012.

The U.K. is the market leader in pure longevity risk transfer thus far due to its mature pensions market with many DB plans and shrinking active members, since most plans are closed to new entry. Table 1 lists longevity transactions that have been publicised by a counterparty to date. The notional value of publicly-disclosed swaps rose from US\$1.3bn in 2008 to US\$13.7bn in 2011. The deals have primarily been in the U.K., but there have also been two deals with Australian insurers and one recent deal with a Canadian insurer. Potential demand for longevity reinsurance is huge, particularly by pension funds. In the U.K., for example, only 2 per cent of the defined benefit scheme liabilities of £1.4tn (US\$2.2bn) have been transferred. However, the development of capital market solutions is needed to fully tap market potential. It is estimated that (re)insurers in the U.K. currently only have capacity for around £20bn (US\$31bn) of deals.

4. Conclusion

The insurance industry can play a pivotal role in financing retirement by offering products that meet customer needs and by helping the public make sound investment and insurance decisions. Life insurers have a solid track record in providing innovative solutions for individuals that protect against longevity, health and inflation risks, such as

various types of annuities, pensions and long-term care insurance. Insurers and reinsurers also offer solutions that help employers transfer longevity risk and tackle the challenges of retirement financing. Longevity risk presents a huge challenge to society since it is massive, ongoing and universal. Life insurers have the skills, expertise, experience and data to address longevity risk and help develop ways for transferring the risk to a wider range of market participants that will allow society to more easily absorb the risk.

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4. The financial crisis: impact on the four pillars of old age protection

Krzysztof Ostaszewski

1. The Four Pillars framework

2012 marks the 25th anniversary of the Four Pillars Programme of The Geneva Association. The programme was set up in 1987, with the aim of studying the key importance in the new service economy of Social Security, Insurance, Savings and Employment—the four key components of retirement systems.

The main key drivers for this Programme are:

- changing demography and its financing impact;
- complementarity between social security and insurance;
- the changing perspective of the welfare state, employment and life cycles.

The related research activities have had four main objectives:

- analysis of the key elements in organising old-age security systems;
- research of conditions for multi-pillar systems of pension financing;
- encouragement of multiple and complementary solutions to the challenges of ageing;
- understanding of the role of insurance in the provision of old-age security systems.

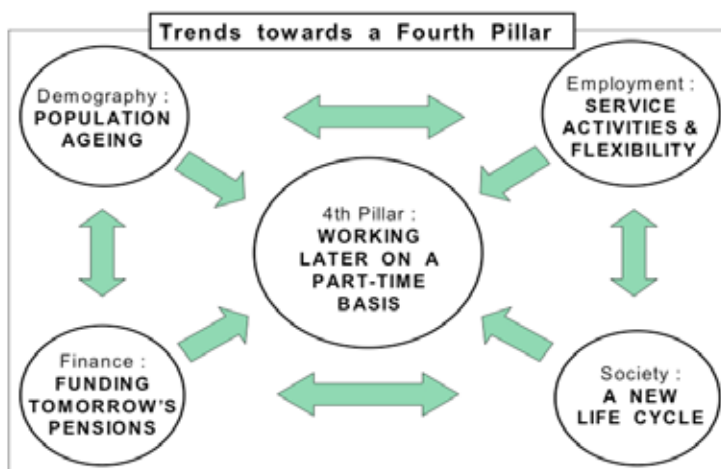
The key idea of the Four Pillars Programme is relatively simple yet powerful and states that the retirement systems worldwide should be supported by four pillars:

- Social security, i.e. a universal public system or pensions or pension-like benefits, created as a social insurance system, or a welfare benefits system delivering results similar to social insurance.
- Occupational pensions and private insurance, where delivery of pension benefits for individuals is provided, supported and guaranteed by employers and/or private insurance companies, under government financial supervision.
- Savings, where individuals save and invest for their own retirement, of course using financial intermediaries, including private insurance companies, which can provide increased security of their benefits and mitigate longevity risk.
- Continued employment, with barriers to partial employment that have existed worldwide, either from governments or from employers, reduced or even removed.

A system based on four pillars should provide greater security and stability, as any slack in the benefits provided by one of the pillars can be made up by the other pillars. Furthermore, each of the pillars makes, at least theoretically, its own specific contribution to the stability of retirement systems:

- The social security pillar acts as the anchor of long-term stability by providing intergenerational as well as intrageneration redistribution, as deemed necessary by the policy decision-makers, especially for the purpose of creating a floor of minimum income for poorer retirees.
- Citizens spend the largest part of their lives in employment and that time is most appropriate for planning and funding for their retirement. If the employment relationship comes with a sound long-term retirement plan, this greatly enhances the value of that relationship to the employee and improves the stability and performance of retirement systems.
- Workers also need to assume individual responsibility for their retirement, however, and well-functioning private markets provide important market signals about the true cost of retirement, hence the vital role of the third pillar.
- Continued employment not only can supplement income of retirees, as needed, but it also helps the society in utilising the valuable human capital of the retirees.

While the first three pillars have generally been a part of retirement system design in most countries, many obstacles used to be put in place for continued employment of retirees. We have now arrived at a time when not only financial problems of the first three pillars but also significant societal changes and increased longevity require that we acknowledge the significant economic and societal role that the fourth pillar will play in the near future. Reday-Mulvey and London (2007) illustrate with the following chart the changing societal environment that places the fourth pillar in the new greater role:



As we enter the second quarter-century of this Programme, the world looks dramatically different than at its onset. In 1987, world politics was still viewed through the prism of the Cold War, while the world economy experienced the shock of the largest one-day global stock market crash in the recorded history on 19 October 1987. But that one-day stock market debacle did not prompt any significant action from the governments and no significant real economy effects appeared subsequently. In the world we see today, the stock market plunge of 2008 and 2009 (resulting from the credit crisis) was followed by very painful real economy dislocations and the response of governments since 2008 has been massive. James Bianco (2012) points out that the combined monetary and fiscal “stimulus” in the United States, which in response to the crisis started around of

the summer of 2007 and manifested itself fully in the fall of 2008, was of comparable magnitude, as a percentage of GDP, to all of such policy responses to crises between 1929 and 2002 combined. Let us note that this is a comparison not of nominal dollar amounts but of the total stimulus as a percentage of GDP. According to Bianco's research, the combined monetary stimulus responses to crises between 1929 and 2002 was about 6.1 per cent of GDP and the combined fiscal stimulus was about 33.2 per cent of GDP. For the decade of 1930s alone, by far the most devastating economic crisis in the modern history of the United States, the monetary stimulus was 3.4 per cent of GDP and the fiscal stimulus was 7.1 per cent of GDP. The response to the current crisis amounted to 18 per cent of GDP in monetary stimulus and 11.5 per cent in fiscal stimulus, and further stimulus in both areas is still being considered.

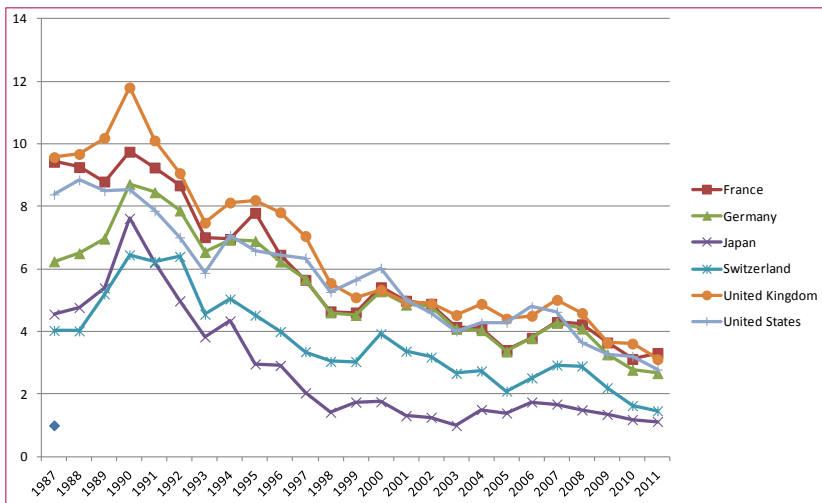
Yet the results have been disappointing. As of early 2012, the United States economy is showing signs of growth, but unemployment remains at levels not seen since 1983. The European economies are struggling with the sovereign debt crisis and the future of the common European currency, the euro, is uncertain.

The world has also changed in ways that profoundly affect retirement systems. Let us look at a more general picture of that change, over time and now. The costs of retirement systems are affected by a variety of factors, but the most important ones are:

- levels of interest rates and rates of return available from investment portfolios, for private systems, or growth rates of underlying economies for public systems;
- length of retirement period, affected by the timing of retirement, as well as longevity of retirees; and,
- level of benefits and whether they are affected by increasing cost of living in retirement.

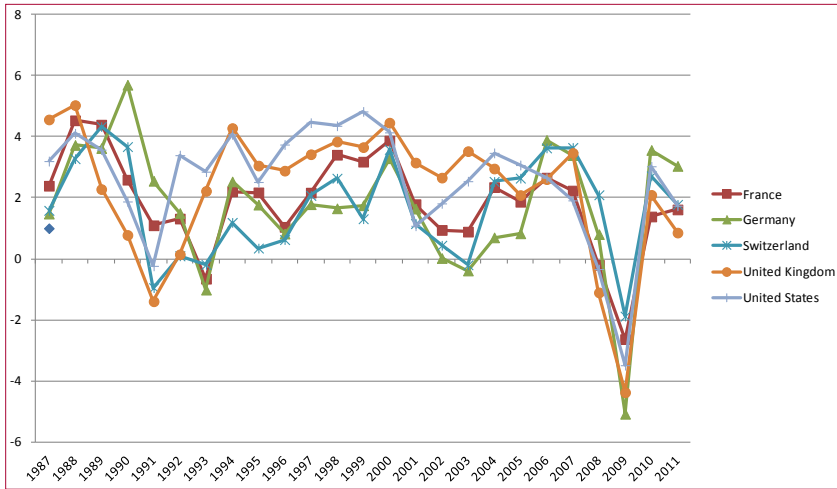
Let us have a look at the way these variables have changed over time.

In the graph below we show the history of yields on long-term (10-year) government bonds in six key global economies of the United Kingdom, France, the United States, Germany, Japan and Switzerland in the last 25 years.



Sources: Oliver Wyman and Oxford Economics.

We see a pronounced downward trend in interest rates in all of these countries over the last quarter-century. In fact, after the 2008 crisis they declined in the United States and Japan (as represented by rates on long-term government bonds shown in the graph) to levels not seen even during the bottom of rates in the late 19th century and, for some types of financial instruments, they came down to levels not seen ever. Lower interest rates mean higher cost of private retirement systems—but there is more. In the chart below, we show the levels of real economic growth (year-to-year percentage change of real GDP) in the same countries over the same period, based also on the same data source.



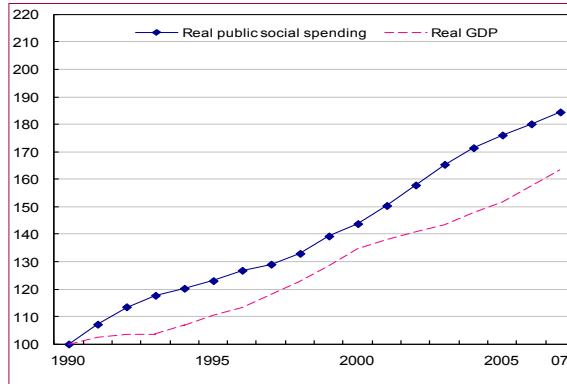
Sources: Oliver Wyman and Oxford Economics.

We also see a downward trend in rates of economic growth and an outright collapse in them in 2009. Low interest rates and low economic growth mean that rates of return in private retirement systems and the revenues they collect in private retirement systems go down significantly. Low interest rates also mean a higher present value of future benefits. But the challenges do not end here. The last 25 years have also been marked by two more phenomena significantly impacting retirement systems:

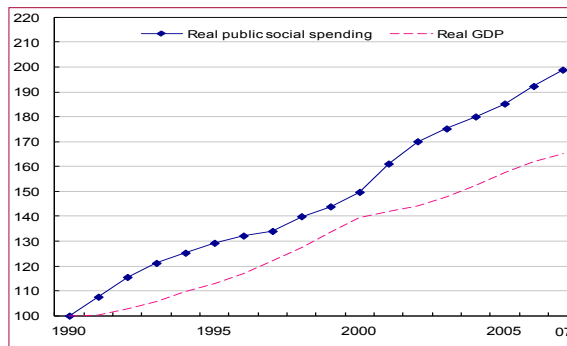
- increased social spending even before the crisis of 2008, resulting most likely from the sense of economic security created by increased standards of living and relatively stable economic growth (in other words, developed countries felt they could afford those additional expenditures and considered them socially desirable); and,
- increased longevity.

According to the data available from OECD Social Expenditure Database, growth in real social spending has largely outpaced real economic growth, as illustrated in the graphs showing the two since 1990 in selected economies:

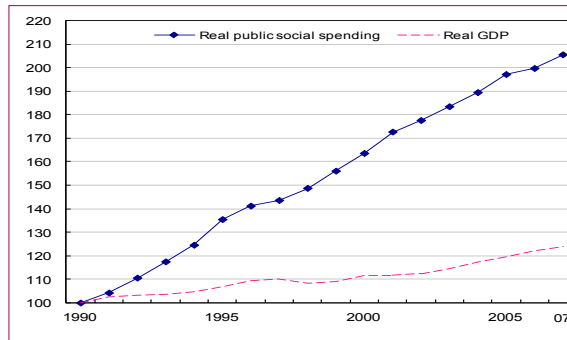
European Union 15



United States



Japan

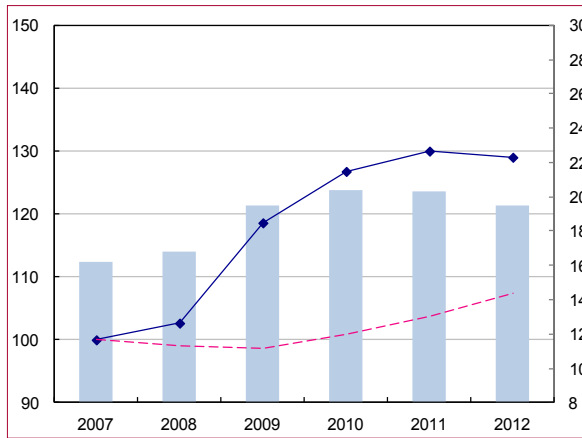


Source: OECD Social Expenditure Database (SOCX, www.oecd.org/els/social/expenditure).

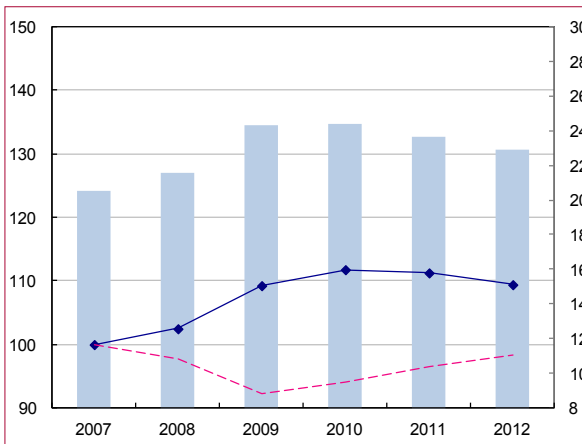
This phenomenon is especially pronounced in Japan and we should think about this with care, because Japan since 1989 could be in many ways a laboratory for what is awaiting the developed economies over the next quarter of a century. Why? Because what has distinguished Japan was low economic growth and a resulting automatic need for greater social spending. This may be the future for the developed world now.

Let us note that the increase in public social spending described above happened before the crisis, during a period of generally declining poverty and relative prosperity. In fact, the period from the end of the 1983 recession until the current crisis has been dubbed “The Great Moderation” by economists, indicating the perceived success of economic policies in promoting growth, prosperity and stability. After the major economic crisis of 2008, public social spending was no longer a matter of desire or increased social goals, but rather a necessity not seen for a long time.

Let us look at the change in public social spending in some economies since the crisis of 2008, also from the same OECD database. The data for the United States looks quite dramatic:



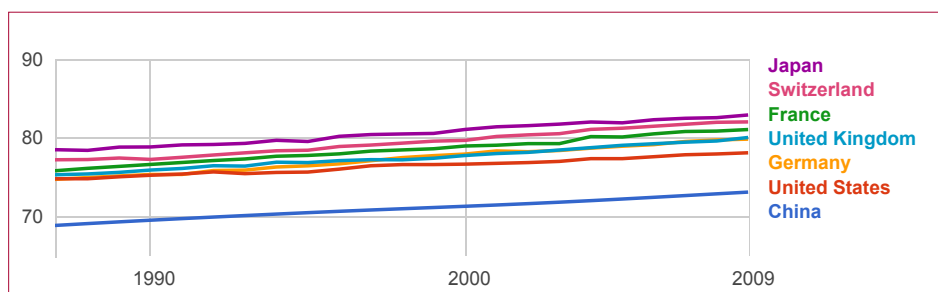
Following the crisis, public social spending in the United States increased from about 17 per cent of GDP to close to 23 per cent and growth of public social spending outpaced economic growth very strongly. We see a similar pattern in the data from the United Kingdom, below.



This means that the trend of increased social spending from the period when its objective was greater social welfare, before the crisis, was forcefully redirected to new social needs

resulting from the crisis. But we also know that as a result of this new increased spending, numerous European Union members are struggling with financing their public debt and many countries worldwide have increased their public debts to levels that have not existed before in developed economies. In fact, some developed economies known previously as the soundest borrowers globally have been downgraded.

During this period of declining rates of return, declining rates of growth and, as it turned out, increasing risks, the cost of funding of retirement has also risen due to increased longevity. According to the World Bank's World Development Indicators, life expectancy at birth since 1987 in the countries we looked at before and also in China has changed in the manner illustrated in the graph below:



Source: Google Public Data, World Bank, World Development Indicators.

Longevity is relentlessly marching forward everywhere, increasing the cost of retirement. We have included China in this comparison to point out that while China has a lower life expectancy, its trends in longevity improvements over the last 25 years have matched those of developed economies. There are, of course, some countries where longevity is not improving, but with the sole rare case of Russia, they are a relatively smaller part of the global economy and shortenings of lifespans are usually an indication of societal problems such as increased crime or public health issues (see, for example, Gavrilova *et al.*, 2005).

All of the developments indicated above highlight the significance of the challenges ahead. The next 25 years will be very difficult for the four pillars to sustain retirement systems. The current crisis has arguably undermined the stability of global retirement systems by sabotaging all of the four pillars. Let us look at this issue in some more detail.

Social security

Public social security systems are currently under significant pressure due to lower revenue and increased current social spending for needs such as unemployment benefits or retraining of workers displaced by rapid dislocations occurring in the global economy. In the countries most affected by the crisis, steps being undertaken include reductions in social security pension benefits. For example, the austerity measures passed into law in Greece in early 2012 include pension cuts worth €300m in 2012 (but that amount represents only slightly more than 1 per cent of the amount of pension expenditures of Greece, which has among the highest pension government spending in the European Union).

In the United States, Old-Age, Survivors and Disability Insurance (OASDI), known commonly as Social Security—the dominant social insurance system for retirement

in the U.S.— collected \$637.30bn in payroll tax contributions in 2010 and paid out US\$701.60bn in benefits. The shortfall was covered by interest on its Trust Fund assets but those assets exist because payroll tax contributions exceeded benefit payouts every year since the 1983 reform of the system recommended by the Greenspan Commission until 2009, and the excess was invested in special issue United States Government bonds. In 2009, payroll tax contributions amounted to US\$667.30bn and benefits payouts were US\$675.50bn, also resulting in a shortfall that was covered with interest generated by the Trust Fund assets.

These were the first two years of such a situation since the reform of 1983 and, notably, the payroll tax contributions in 2010 were actually lower than in 2009, indicating increasing funding pressure. We should also note that the payment of interest by the Trust Fund Assets is a payment of interest by the U.S. Federal Government into the Social Security Trust Fund, i.e. a current expenditure of the U.S. Federal Government at the time when, at 14.9 per cent of GDP, its 2009 and 2010 tax collections were the lowest level of the past 50 years, while the 2009 expenditures represented 25 per cent of GDP and the 2010 expenditures represented 23.8 per cent of GDP.

The situation in the United States is not unique. Many developed economies are experiencing equally difficult fiscal imbalances. In some countries, notably Japan and the United Kingdom, they have been at unprecedented levels, financed by purchases of public debt by central banks. In fact, Bianco (2012) points out that as of February 2012, the combined assets balances at the four major central banks—Bank of Japan, European Central Bank, Federal Reserve and Bank of England (listed here in order of the size of their balance sheets)—have reached 30 per cent of world stock markets' capitalisation, up from 5.9 per cent in the middle of 2007. Bianco attributes recent great performance of U.S. government's long-term bonds and very low interest rates partly to this phenomenon. But this situation should also make us think about its effects on the real economy.

Greatly increased public spending requires governments to seek funding from central banks, but the resulting record-low interest rates increase uncertainty about future monetary overhang, causing many economic agents to hold short-term debt instruments and inflation hedges, instead of committing to funding long-term projects. We should not forget that in the long run, governments need real economic growth to generate tax revenues to pay for their spending, including social security spending. The example of Greece mentioned above is an important warning. A key reason why governments seek help from central banks is because they believe the funding problems to be temporary and that once growth returns they will be able to restore the natural balance. If that belief in the restoration of natural order is shattered, governments may be forced to seek sharp reductions in spending not as a matter of policy but as a matter of necessity or even “survival”, the way things have become in Greece. This crisis has brought us to the point when such a situation is a distinct possibility in the future of many countries.

Occupational pensions and private insurance

Even before the current crisis, and without consideration for pension costs, employers have been under stress because of competing in the global economy and seeking ways to cut their costs. They have been less willing to provide pension benefits or pension guarantees. This problem with pensions is made worse by rising costs due to the increased longevity of current and future benefits recipients. The financial crisis has exacerbated

the problem. In the United States, private defined benefit plans generally reached near full funding around 2007, after years of working their way out of the hole caused by a prolonged bear market in equities between 2000 and 2002. This progress, however, was then erased by the dramatic collapse of global stock markets in the fall of 2008. One could ask if they are in much better shape now that the stock markets have generally recovered from the disaster of 2008. However, the markets recovered under very different circumstances. Yes, equities are up but long-term risk-free cash flows have increased even more in value. Bianco (2012) points out the unprecedented outperformance of the stock market by the long-term U.S. government bond in the U.S. since 1994. At the same time, high uncertainty of future inflation levels has most likely contributed to a very strong performance by gold in the market recovery following 2008.

Let us suggest, however, that there is one financial instrument that has increased in value, or at least perceived value, the most. It was identified over 100 years ago by Oscar Wilde when he said: “*It is better to have a permanent income than to be fascinating.*” Given the reality of global ageing, it should come as no surprise that the goods and services demanded by the aging population increase in value relative to other goods and services. But the item most desired by the elderly is, after all, a steady, permanent income—and that item has been increasing in value relentlessly. Steady and permanent income also offers great advantages over other speculative instruments that have been highly sought after recently, such as long-term risk-free bonds and gold, since it is less volatile in its value. A stream of income paid for the remaining life of a person obviously increases in value when interest rates fall. But increasing longevity means that it increases in value at an increasing rate. And the great dispersion of its payments implies that, in comparison to other fixed income instruments of the same duration, it has higher convexity, and hence is less sensitive to bond market volatility.¹

In this new economic reality, while funded defined benefit plans have experienced appreciation of their assets, their liabilities have increased in their true market value even more. This painful truth affects both occupational pension schemes as well as life annuities provided by private insurers. Unfunded pensions depend on income produced by the businesses or governments providing them, and that income is not increasing at the rate at which the market value of steady, permanent income has increased. Let us note that the long-term U.S. Government Bond appreciated in total value by 36 per cent in 2011 (Bianco, 2012). It may take years for any diversified asset portfolio to generate this level of return and it may also take years to provide for this from income by any firm or any government.

Similarly, private insurance firms find themselves in a situation where they cannot earn any significant returns and they cannot provide them to their customers. At the same time, they are facing increasing regulatory pressures to mark the value of their liabilities to market, at a time of record low interest rates. They also must meet new regulatory capital requirements.

The entire world of private pensions and private insurance is waiting for interest rates on risk-free bonds to rise. That rise in interest rates seems inevitable. It must come sooner or

¹ Recall that duration is a measure of sensitivity of a financial instrument to change in interest rate, while convexity is the measure of sensitivity of duration of a financial instrument to change in interest rate. The combination of high duration and high dispersion of cash flows produces the highest levels of convexity, and convexity alone causes a financial asset to always benefit from changes in interest rate. See Gajek, Ostaszewski and Zwiesler (2005).

later but the timing of it does matter. To quote John Maynard Keynes: “*The markets can be irrational longer than you can remain solvent.*”

In Japan, the interest rate on the ten-year government bond has been under 2 per cent continuously since 1997, i.e. for the last 15 years. One possible scenario of the future of developed economies is that this level of interest rates will continue for at least another 15 years until 2027 or even 2030. Those born in 1946 will be 84 in 2030, most likely still in need of permanent income, the most valuable financial asset in the current economy. In the world that started with the 2008 crisis, private pensions and private insurance companies must provide that permanent income with very few sources of income available to them and many regulatory hurdles. On top of that, the crisis has generated a high level of mistrust towards financial institutions, including insurers undeservedly lumped together with banks.

In this challenging environment, insurance companies and private pension plans must survive until interest rates start their rise. They must have the staying power for the entire period that the ten-year risk-free bond yield stays as low as 2 per cent or less.

Private savings

If governments, occupational pensions and private insurance firms do not deliver the retirement benefits that the public needs, people can supplement their retirement income with private savings and continued employment, the two additional pillars of the four pillars framework. But we should note that if governments and sophisticated financial institutions find the post-crisis environment severely challenging, so must ordinary people. In many developed economies, high unemployment rates, reduction in wages from cost-cutting by employers and increased cost of living put a squeeze on workers, who find themselves less and less able to save for retirement.

On the other hand, in the current economic environment, workers who still have jobs often have actually increased their (precautionary) savings. Future income expectations have diminished and in view of that many consumers have cut their consumption. But increased savings are invested at lower rates of return, especially since individual consumers, just as businesses, have become reluctant to commit to long-term projects. This means they place their savings more often in risk-free investments.

Furthermore, private savings must be invested with financial institutions that have suffered a major blow to their public image. Consumers are distrustful of banks and of investing in stocks and real estate. This is, of course, a major opportunity for financial institutions that can be trusted. We believe insurance companies have proven themselves to be in that trusted group and it is important for them to communicate this to their customers.

How can trust be established? One traditional way to earn trust has always been to place limitations on one's actions. For example, private defined benefit plans become more trustworthy when assets of a plan are placed in a separate trust invested solely for the benefit of plan beneficiaries. Insurance firms have traditionally been designed to be trustworthy in a similar fashion. Premium income received by an insurance firm cannot be immediately recognised as income and used, for example, to pay bonuses to executives. Instead, a substantial portion of the premium effectively becomes untouchable by being designated as part of the reserve for the policy. Even if the money ends up not being used for claims or benefits, the result is that recognition of resulting profits is delayed substantially into the future. Somehow, the fact that insurance reserves are a form of

money held in trust for the benefit of customers has been underplayed in the public image of insurance firms.

Let us recall that the public image of life insurance firms in the United States during the Great Depression improved because they were perceived as more trustworthy and reliable than banks or investment companies (Ciment, 2001; Huebner and Black, 1982; and Porterfield, 1956). That perception was correct and it was earned by restraints that insurance firms placed on themselves, through conservatism of their reserves and high levels of capital held.

The lessons of the Great Depression may again be quite applicable. Insurance firms may be the pillars of stability in a time of crisis and meet the public needs this way, without resorting to chasing high returns, which require typically higher levels of risk. On the other hand, one has to think for a moment about the strategy of derisking the liability side of the balance sheet as some in the industry are considering. Derisking is inconsistent with being a pillar of stability for clients at a time when clients may again be looking for such anchors.

Silver workers

The dark stories about the post-crisis economic environment have been somewhat mitigated by anecdotal evidence (sometimes supported by data) of older workers retaining jobs in the recent downturn better than the general population. But a different and insightful perspective on the issue has been provided recently by Peter Orszag (2012). Orszag points out that by the time that the recent recession started, Americans were already well into a reversal of the 20th century trend towards earlier retirement. In the United States, the employment rate for older women started rising in the mid-1980s and for older men soon after that. The effects were most pronounced for workers ages 65 and older, yet it should also be noted that for people aged 60 to 64 the employment rate rose from 43 per cent in 1994 to 51 per cent in 2006. The financial crisis resulted in more workers wanting to delay retirement but the labour market limited their ability to do this.

The net effect of these opposing forces has been to actually reduce the employment rate among older workers in the United States. A 2011 survey (Banerjee, 2011) by the Employee Benefit Research Institute found that 45 per cent of retirees left the workforce earlier than they planned, typically for negative reasons such as health problems or losing a job. Notably, the percentage of workers who said that they never want to stop working was 22.4 per cent as the recession started and 16.3 per cent as it officially ended. Many such workers did not want to leave the workforce, had strong preference for continued work, yet were forced to yield to the harsh economic realities. Given a very weak labour market, work may not be available for all the older workers who want to keep working. As a consequence of this new situation, the share of 60- to 64-year-olds who are employed has been flat in the past few years. In 2011, 51 per cent of 60- to 64-year-olds were employed, the same as in 2006.

Current high unemployment rates and challenging labour markets mean that silver workers cannot automatically assume that they will supplement their retirement benefits with continued employment. In these challenging times, every job is a prize, and silver workers will find themselves competing intensely for those prizes, not to mention that silver workers are likely to live longer than they ever expected.

2. Conclusion

We must ask ourselves seriously how have developed economies arrived at this crisis in such a vulnerable situation that as a result of this sudden blow all four pillars of our retirement systems have been painfully weakened by the crisis. We must not allow such vulnerability to happen again. As we celebrate the 25th anniversary of The Geneva Association's Four Pillars Programme, we find ourselves looking into the future with concern. The constant theme for political and business decision-makers thinking about retirement systems should be that all of the four pillars must be reinforced, strengthened, rebuilt.

Let us propose some ideas that we view as valuable advice for the difficult years ahead:

- Pillar I should be viewed as a part of the public finance big picture and also as only one of the four pillars of the retirement system. Enlarging it to the point where it takes over the roles of Pillars II and III may seem beneficial and generous for a while, but if such expansion results in a crisis of public finance, such temporary generosity may be paid for with masses of unemployed, desperate people in the future. A smaller, but stable and reliable pillar I offers hope and help for those less fortunate and in need, and also gives incentives for citizens who are better off to work towards accumulating assets in other parts of the retirement system, thus creating a bigger savings pool and enhancing capital formation. That capital formation will be helped by the stability of public finance and in turn it will enhance both public finance and employment in the future.
- Pillar II should be built on the foundation of trust between employers and their employees, as well as between financial institutions and their customers. In times of crisis, some employers may be tempted to abandon expensive retirement commitments to their employees. While sound long-term financial management is essential to the success of a business, it may be better to provide scaled down but trustworthy promises than to abandon those important commitments.
- Pillar III can be greatly strengthened by insurance firms being pillars of stability in these difficult times. Unlike other financial institutions, insurance firms tend to take a long view of economic affairs and that view is uniquely valuable in times of great uncertainty. Insurance companies can take the lead in creating a new trusted financial environment.
- Pillar IV should become a high priority for political decision-makers and for private firms. The insurance industry can and should lead the way for better, more effective and more efficient ways to employ silver workers. Insurance is a complex financial product, often not fully understood even by people employed in the insurance industry, whereas silver workers involved in insurance possess the combination of knowledge and experience that can and should be used in contacts with customers, since these commonly trust silver workers more. These characteristics make them uniquely qualified to build an image of trust and reliability for the insurance industry. According to Reday-Mulvey and London (2007), the insurance industry can act as a leader in the employment of silver workers by providing continuing training, worktime reduction (to accommodate gradual transition from full-time work to part-time work and then to no work) and job redesign. As there will be significantly more elderly customers in the future, silver workers will be able to work with them

more naturally, through their commonality of experience and cultural references. The market for retirement products requires high level of trust, and one way to reach that level of trust will be through continued employment of the silver workers.

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Part 2

Solutions and Prerequisites

5. Funding for old age: an overview and comparative analysis of the solutions

David W. Parsons

1. Insurance as a response to a shift of the retirement planning and financing responsibility

In traditional employer-provided defined benefit pension plans, employees were told how much to expect in a retirement pension. They didn't have control over the investments of the employer's funding for that pension guarantee. After a long and loyal career, they expected that a steady income would be guaranteed during retirement for as long as they (and often their spouse) lived. While they may have been concerned about the impact of inflation in ravaging the purchasing power of that steady income, paternalistic employers often provided ad-hoc cost of living increases to the pensions of retirees during periods of high inflation.

As employers have moved from defined benefit retirement income plans to defined contribution savings plans, there has been a shift of the retirement planning and financing responsibility to employees.¹ With defined benefit plans, employers assumed the risk that pension payments would last longer than expected, due to retirees living longer than expected. Employers also assumed the risk that investments and the income thereon supporting the pension guarantees, both prior to and after retirement, were adequate.

With defined contribution plans, however, longevity and investment risks have been transferred to the employee. If the employee is not able or willing to assume those risks, insurance companies offer products that can help.

Insurance products make use of a "pool" of large numbers of insured individuals to take advantage of "pooling of risks". The products can also provide an avenue to risk-managed investment choices that might not otherwise be available to individual investors. Thus, insurance products can help play an important part of a portfolio of risk solutions in a well-managed and well-planned retirement.

The goal of the individual in retirement planning is to secure adequate and stable annual income with as little uncertainty as possible. This chapter will look at the risks that employees would like to avoid in planning for their retirement income and show how

¹ The shift from defined benefit to defined contribution plans is well documented. Two sources include *The Changing Face of Private Retirement Plans* (VanDerhei and Copeland, 2001) and the U.S. Department of Labor Employee Benefits Security Administration's *Private Pension Plan Bulletin Historical Tables and Graphs* (2011), Table E8.

insurance products can help manage:²

- the risk of outliving retirement income;
- the risk of value loss due to premature death;
- the risk of having no access to money in the event of a hardship;
- the risk of inflation eroding the value of retirement income; and,
- the risk that investments will decrease in value at the very time they need to be sold.

1. The risk of outliving retirement income: immediate life annuities

Life insurance companies have long been in the business of pooling large groups of individuals to provide cost-efficient death benefits. While death in a given year is a rare and unpredictable event for any one individual, for large groups of individuals the number of deaths in a given year becomes quite predictable, largely dependent on age. Because of this, the insurance company's risks are small relative to that of any one individual. This "pooling" of large numbers, which in effect transfers funds from those individuals who survive to those who die prematurely, allows the insurance company to offer life insurance at affordable premiums (Black and Skipper, 1994, Chapter 2).

When insurance companies guarantee pension (annuity) benefits to individuals, they also use the pooling mechanism. For annuity benefits, pooling of groups allows insurance companies to determine payments of pension benefits to each individual by considering each individual as being representative of the average individual in the group. For example, if a group of same age individuals has an average remaining life expectancy of 20 years, individual payments can be determined as if it is known that each person in the group will live exactly another 20 years. For each individual in the group, the chance is large that they will live either shorter or longer than that 20 year average. But the differences will nearly average out over the entire group.

The concept of an annuity has been around since ancient Roman times. In the modern era, individual life annuities began to form a core market in the United States during the Great Depression in the 1930s, as individuals sought out safe investment vehicles for their savings from secure financial institutions (Catalyst Institute and James Poterba, 1997, Section 2).

The simplest form of annuity is a product that offers an immediate monthly payout to a policyholder, upon payment of a single premium, with continuing monthly payments for as long as the policyholder lives. Payments that begin immediately after premium payment are the primary feature of an "immediate" or "payout" annuity. The alternative is to delay the start of monthly income benefits; this alternative is referred to as a "deferred" annuity (Catalyst Institute and James Poterba, 1997, Section 3).

A newly retired individual will often want to convert her retirement savings into a comfortable retirement income stream and might consider a coupon-paying corporate or government bond as a vehicle for providing that income. High-quality bonds of long duration to maturity are a possible solution that offers a steady source of income through the periodic coupon payments.

² These post-retirement risks, and others, are discussed in *Managing Post-Retirement Risks: A Guide to Retirement Planning* (Society of Actuaries, 2011).

Compared to an immediate life annuity for a new retiree, the bond's annual coupon payments will not be as large as the annual annuity payments an insurance company can provide. However, in contrast to a simple immediate annuity product that gives no death benefit to the policyholder, when an owner of a bond dies the bond's principal and future coupons provide value to the owner's beneficiaries.

This difference can be explained by noting that an insurance company effectively uses the value that would have been provided by bond investments on death to enhance the payments that are made while the policyholder is still living, and to cover the risk that an individual lives beyond his expected lifetime. The insurance company uses pooling of large groups of annuitant policyholders to ensure that asset values released on death are predictable and can be depended on to fund the "mortality enhancement" portion of the annuity benefits for those who are living.

The amount of available "mortality enhancement" to the policyholder's pension benefit depends on the life expectancy of the policyholder. To illustrate, the remaining life expectancy of a typical 65-year-old in 2007 was 18.6 years (National Center for Health Statistics, 2011, Table 22, p. 134). In an environment in which Treasury bonds return 3 per cent a year, an annual annuity payment of about 7 per cent (a mortality enhancement of 4 per cent a year to the Treasury 3 per cent yields) could be achievable for that typical 65-year-old, before reduction for insurance company expenses and risk charges. For a typical 75-year-old, the life expectancy in 2007 was 11.1 years, and an annual annuity payment of about 11 per cent (an enhancement of 8 per cent) could be achievable.

In fact if a 65-year-old individual knew that he would live exactly 18.6 years, then he could invest in a 3 per cent savings account, withdraw 7 per cent per year, and run out of money exactly when death occurs. While an individual can't possibly know exactly how long he will live, an insurance company can use pooling to guarantee annuity benefits to an individual for as long as he lives. It is not possible to self-insure longevity. Without the pooling of risks, individuals withdrawing the same amount that would otherwise be provided by an immediate annuity, run the risk of outliving their assets.

2. The risk of value loss due to premature death: certain annuities

So far, we have looked at three possible choices for an individual age 65 to convert retirement savings into a retirement income stream:

- Invest in a 3 per cent Treasury bond—the income stream of 3 per cent a year will last for as long as the individual lives, and there will be a sizable death benefit.
- Invest in a 3 per cent savings account, and withdraw 7 per cent a year from it—half of the time the individual will live longer than his 18.6-year life expectancy and will run out of money after 18.6 years. If the individual dies before 18.6 years, some money will be available to beneficiaries.
- Buy an immediate life annuity and receive 7 per cent a year, minus insurance company expenses and risk charges—the individual will receive this guaranteed annual amount for the rest of his life, regardless of how long he lives, but no money will be available to beneficiaries when he dies.

There are several immediate payment product alternatives to "life annuities" which provide a benefit on premature death. These alternatives can ease an individual's concern about paying an insurer a large lump sum for guaranteed lifetime income and dying

shortly thereafter, with nothing to leave behind for his beneficiaries. Each alternative has a tradeoff between the size of the annual annuity payment and the death benefit:

1. **Joint life**—often new retirees would like to receive payments that continue for as long as either they or their spouse live. This form of annuity is called a “joint life” or “joint and survivor” annuity. The annuity amount available depends upon the ages and life expectancies of both the policyholder and his spouse. For a 75-year-old married couple, for example, a joint life annuity may reduce the annual payment by about 2 per cent of the premium as compared to a “straight life” annuity on only one 75-year-old person. Under the assumption that the married couple needs less annual income after one person dies, a variation exists on this annuity that pays less to the survivor than it does to the living couple.
2. **Certain and contingent**—the policyholder would like to receive payments for as long as he lives, but in no event less than n-years (“n” could be 5, 10, 15, or 20). This is called a “certain and contingent” annuity and the n-year period is called the “certain period”. While this annuity provides a death benefit if the policyholder dies before the certain period is over, the tradeoff is a reduced annuity payment. For example, for a 65-year-old, the election of a 20-year certain period might reduce the annual payment by about 1 per cent of the premium as compared to a “straight life” annuity.
3. **Return of premium**—the policyholder would like to receive payments for as long as they live, but in no event receive payments that total less than the original premium. This form is quite similar to a certain and contingent annuity, with the certain period equaling the premium divided by the annual annuity benefit.

3. The risk of having no access to money in the event of a hardship: retirement income insurance

When a hardship occurs, a policyholder may require access to a sizable amount of cash, even though this will mean lower income later. If the coupon on a bond was used to provide retirement income, the retiree could access cash by selling the bond in amounts up to its full value. Annuitants, who may have substantial value in future life annuity payments, will generally not have access to that value through an immediate cash payment. While it may be possible to borrow cash against the future annuity payments, there are other alternatives.

We had reviewed previously the possibility of a 65-year-old investing his retirement savings in a 3 per cent savings account, and withdrawing 7 per cent a year, and concluded that there was a substantial risk of running out of income by living beyond 18.6 years. This self-administered retirement system provides a benefit on premature death and provides access to cash upon hardship. Is there a way to combine this system with an insurance product to protect against the risk of running out of income? The answer is in a product called “Retirement Income Insurance” (RII), also referred to as a deferred contingent annuity or longevity annuity.

RII is an annuity, which pays an annual amount starting at age 85, only if the purchaser lives to age 85. A variation is offered that provides a death benefit if the policyholder dies before age 85, but the annuity amount is substantially reduced. The product combines with the savings account system described in the above paragraph, to essentially replicate a 20-year certain and contingent annuity.

For example, a hypothetical 65-year-old with US\$600,000 of retirement savings could purchase an RII product for US\$50,000 that could pay him about US\$37,000 a year starting at age 85. The remaining US\$550,000 could be put into a 3 per cent savings account to support a withdrawal of about US\$37,000 a year for 20 years. Compared to the 20-year certain and contingent annuity, this combination of an insurance product with a self-administered savings programme has the advantage of providing access to the cash in the savings account in the event of a hardship.

4. The risk of inflation eroding the value of retirement income: unit-linked and inflation-linked annuities

An alternative to annuities that provide a retirement income of a fixed dollar amount per year is the “unit-linked annuity”, which provides a fixed number of fund shares or units per year. To envision how this works, think of US\$600,000 of retirement savings purchasing 10,000 shares of a mutual fund at US\$60 per share. The 10,000 shares could support, for 20 years, a distribution of 500 shares per year in retirement income. At US\$60 per share, the first distribution would be worth US\$30,000. Assuming the shares appreciate in value, each successive distribution is worth more than the last, providing increasing income each year.

The use of pooling by insurance companies in this product allows them to distribute, as a life annuity, a fixed number of units or shares to surviving policyholders, in annual amounts (before expenses and risk charges) that are equivalent to the number of original units purchased divided by the remaining life expectancy of the policyholder at the time of purchase. Units can represent shares of investment funds which can be selected to meet certain goals. For example, an equity index like the S&P 500 would offer retirement income that would rise or fall with the general stock market. As with any investment in the equity market, payouts from an equity-linked annuity can be volatile due to market performance and could undermine an individual’s attempt to create a stable retirement income stream.

A more specialised unit-linked annuity might buy shares of a fund that invests in inflation-linked investments like the U.S. Treasury Inflation-Protected Securities (TIPS), with share values that would be expected to appreciate with inflation. Such an “inflation-linked annuity” would provide retirement income for life, with annual payments that increase with inflation.

The inflation-linked annuity is particularly difficult to construct without adequate inflation-linked investments. Without the availability of such investments, it may not be possible to cost-effectively build a pure inflation-protected solution. With available inflation-linked investments, however, the construction of true inflation-linked annuity products is relatively straightforward. In the United Kingdom, for example, where inflation-linked pension benefits are the norm, the availability of inflation-linked government bonds has led to a large inflation derivative market, which in turn enables truly inflation-linked annuities to be offered widely.

5. The risk that investments may decrease in value at a time when they need to be sold: variable annuities with living benefits

Once a new retiree purchases an immediate life annuity from an insurance company, the investment choices are up to the insurance company, not the policyholder. The annuity benefits are fixed and guaranteed and do not change based on economic indicators.

Unit-linked annuities offer the possibility of participating in equity investment performance through unit values that increase or decrease, based on equity stock appreciation. However, the potential of increased income through good investment performance is offset by the risk of decreasing income through poor performance.

To give retirees the ability to benefit from good investment performance in enhanced retirement income, while limiting the impact of poor investment performance, insurance companies have created a “Variable Annuity with Living Benefits” product. Two versions of this product are “Guaranteed Minimum Withdrawal Benefits for Life” (GMWB for Life) and “Guaranteed Minimum Income Benefits” (GMIB).

Generally, a variable annuity is a deferred annuity, which provides an opportunity to purchase pension annuity products at a later date with proceeds from the accumulated savings account. The prices of the pension annuity products, purchased in the future with the savings account, are guaranteed to be no higher than a table of rates included in the variable annuity policy.

All variable annuities allow policyholders the control to direct the investment of their variable annuity savings accounts, within the investment options offered by the insurance company. The policyholder’s account, prior to the purchase of the pension annuity product, is available to the policyholder in cash (insurance company surrender charges and fees may apply and reduce the available cash amount). The account balance can increase or decrease, depending upon the investment performance of the options chosen by the policyholder.

To protect retirement income against the risks of poor investment performance in a variable annuity, insurance companies offer the GMWB for Life and GMIB “living benefit” riders (riders are contractual attachments). The riders are available for annual fees which are subtracted from the variable annuity savings account. In addition to risk charges and expenses, the fees are often used by the insurance company to purchase derivatives to hedge the risks of the guarantees. Some companies prefer to control the investment mix between equity funds and fixed funds to control risks.

The GMWB for Life (sometimes called the Guaranteed Lifetime Withdraw Benefit—GLWB) rider guarantees that the policyholder will be able to withdraw from the variable annuity account balance at least a certain specified percent of the initial deposit every year, for as long as the policyholder lives—even if the account balance reduces to zero during that time. The specified guaranteed annual percent will likely be higher at older ages. The withdrawals and annual fees are removed from the account balance and serve to decrease it, but good investment performance may lead to increases in the account balance, even after withdrawals and fees are deducted. In that case, the GMWB for Life rider offers a periodic “step-up” provision at specified policy anniversaries. If the account value is higher than the initial deposit, the guaranteed annual withdrawal percent is applied through the “step-up” provision to a new base, equal to the higher account value.

Through this rider, retirement income can be provided through annual withdrawals. Income may increase if investment performance outpaces fees and withdrawals, but is guaranteed not to decrease if performance is poor. However, the insurance company fees associated with the rider will cause the account balance to reduce faster than without the rider, and less cash value and death benefit may be available because of the rider.

The GMIB rider is similar to the GMWB for Life rider in that it guarantees a certain minimum level of retirement income for life. The GMIB rider does this by using a notional “GMIB Base” balance, which accrues at a guaranteed interest rate each year. The “GMIB base” balance is separate and apart from the variable annuity account value, though it will at least equal the account value at the start of the policy. Only the account value, and not the GMIB base, is available (after surrender charges) as a cash value. The “GMIB base” is used, together with the rider’s guaranteed schedule of age-related annuity purchase rates, to define the minimum pension (or income) benefit that can be purchased at any time, usually after some waiting period like 5 or 10 years.

Partial withdrawals of the variable annuity account balance are usually allowed, up to an annual maximum amount, and will reduce the notional GMIB base. Similar to the GMWB for Life rider, if the variable annuity account balance is greater than the GMIB base at periodic anniversaries, the GMIB base will be increased (“stepped up”) to the amount of the account balance. Through this mechanism, good investment performance will result in an increase in the minimum income benefit provided by the variable annuity, while poor investment performance will not reduce the minimum income benefit. Similar to GMWB for Life, the rider fees reduce the account value faster, and result in less cash value and death benefit than without the rider.

2. Summary

The table below summarises the risks inherent in retirement income planning, and the insurance solutions to help ameliorate those risks.

Risk to Retirement Income	Insurance Solution	Pros	Cons
Longevity – outlive your assets	Immediate life annuity	Guaranteed income for lifetime	No death benefit or inflation protection
Value loss from premature death	Certain and J&S annuities	Beneficiaries receive continued payments or death benefit	Reduced annual income compared to immediate life annuity
Financial hardship	Retirement income insurance (aka longevity annuity)	Provides ability to sell assets if needed for large expenses (e.g. medical bills)	A version with inflation protection not yet available in the market
Inflation	Unit- and inflation-linked annuities	Protects income stream from rising cost of living	Products not readily available in all markets
Poor asset performance	Variable annuities with riders	Allows systematic withdrawals even if assets lose value	The riders can be expensive

As evident from the table, the insurance industry has created some products that respond to consumer concerns about generating retirement income. Going forward, insurers will continue to innovate and create new products to handle retirement income risks. These products allow individuals to derisk their retirement income strategies and create a stable income stream appropriate to the individual's needs.

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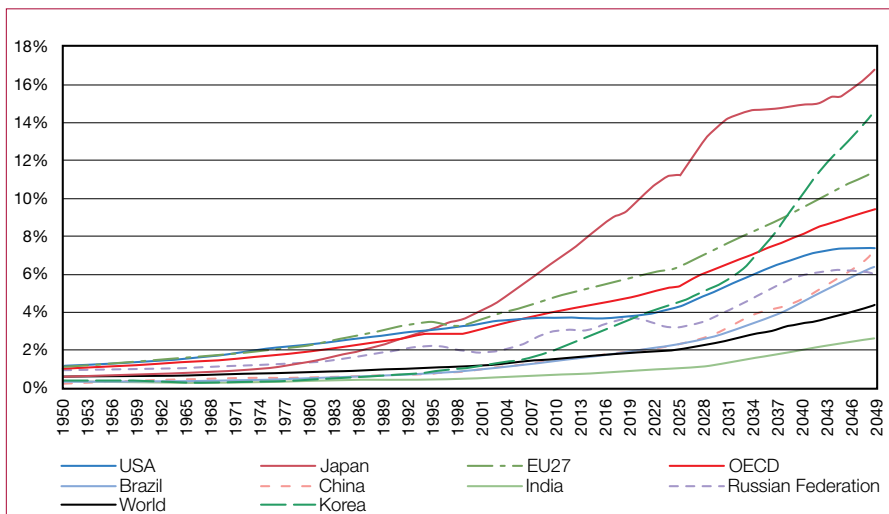
6. Insurance as a solution to cover long-term care needs

Christophe Courbage

1. Introduction

The ageing of populations and, in particular, the growing number of the very old that is occurring in most industrialised countries is accompanied by an increase in the need for long-term care (LTC). LTC is a mix of social and health care provided on a daily basis, formally or informally, at home or in institutions, to people suffering from a loss of mobility and autonomy in their activity of daily living. Although loss of autonomy may occur at any age, its frequency rises with age. For instance, in OECD countries today, the average probability of any given 65-year-old individual needing LTC in the future is estimated to be in excess of 40 per cent. In 2011, the first baby boom generation has just turned 65 and it is forecasted that the size of the old-age population in state of dependency will more than double in the next 50 years in OECD countries on average (OECD, 2005). At the same time, the number of informal caregivers is decreasing. This trend is attributed to the decomposition of the family unit, the distancing of children from their parents and the increase in women's employment rates.

Figure 1: Proportion of over 80 year-olds as a percentage of population (1950-2050)



Source: OECD (2009).

For most individuals, the cost of LTC in the case of severe loss of autonomy can be prohibitive. For instance, whereas the average pension of a French household is €14,000 per year, the average cost of institutional LTC in France is currently at €35,000 per dependent per year (Colombo *et al.*, 2011). Furthermore, low rates of public LTC coverage suggest that the financial consequences of dependency could be catastrophic for a number of elderly people and their families (Assous and Mathieu, 2002).

The lack of public coverage and increasing budgetary constraints have prompted a move towards developing insurance solutions to cover the financial consequences of dependency and the use of LTC. Market evolution strongly depends on institutional settings, and the United States and France are currently the most developed markets. Yet the size of the market for this kind of insurance seems relatively small in comparison to the very substantial levels of private expenditure involved and the aversion of individuals to such a risk. This can be explained by information asymmetry phenomena, intergenerational factors, bias in risk perception, the role of the state as insurer of last resort, family structure, access to informal care and the level of inheritance funds available. Nevertheless, solutions exist that allow easier access to LTC insurance. Besides tax incentives, insurance can be combined with life insurance, individual savings or reverse mortgages.

The aim of this chapter is to address the ways LTC is financed and the role of insurance in covering the risks of needing LTC. The chapter is organised as follows: in section 2, we briefly present the basic mechanisms to finance LTC; section 3 addresses the insurability of LTC risks; section 4 deals with the markets for LTC insurance; section 5 looks at the factors affecting the decision to purchase LTC insurance; section 6 focuses on how to increase access to LTC insurance; and the penultimate section presents some other insurance products to cover chronic conditions. Some concluding remarks are provided in the last section.

2. Financing LTC

LTC financing varies from one country to the other. The organisation of LTC coverage is in general a function of the health systems already in place. LTC is often provided by both health and social services, which are not necessarily disconnected. Hence, providing a typology of public coverage for LTC is a difficult task, as in many countries coverage for LTC does not follow pure models. Different approaches can apply to specific population groups or to different care cost components. This follows partly from historical and partly from societal choices about individual and collective responsibility towards care for elderly and disabled people. Three broad categories of public LTC coverage are identified by the OECD. They focus on the scope of entitlement to LTC benefits (whether there is universal or means-tested entitlement to public funding) and whether LTC coverage is through single or multiple programmes. The first category of public LTC scheme is in the form of a universal coverage within a single programme that provides a comprehensive, publicly-funded LTC to all individuals assessed as eligible due to their care-dependency status (e.g. Northern European Countries and Japan). The second category includes a mix of universal and means-tested entitlements, resulting in a fragmentation across services, users or providers (e.g. Southern and Eastern European Countries). Finally the third category is composed of a means-tested programme under which income and asset tests are used to set threshold for eligibility to any publicly funded LTC (e.g. U.S. and U.K.).

Private financing also plays an important role in LTC. According to a recent report by the European Commission (2008), most countries recognise the importance of finding an appropriate balance between public and private sources of funding. A mixed approach to funding based on public-private partnership in the coverage of LTC risk seems to be favoured by the largest number of countries (see Costa-Font and Courbage, 2012).

The role of private insurance with respect to public insurance is not unique and depends on the institutional setting. In particular it depends on whether individuals buying private insurance are also eligible for part of public insurance systems and whether private insurance offers cover for LTC services that are already covered by public insurance. More precisely, what characterises the importance of the public-private partnership is whether the public system is a primary or secondary payer. If it is a primary payer, the public system does not take into account private insurance benefits when means-testing benefits. Instead, private insurance tends to top-up the public entitlement, as happens in France. In contrast, if public insurance is a secondary payer, insurance benefits are paid first. It then often happens that people who buy insurance may be “pushed” over the means test, even if they would have been eligible otherwise. A classic illustration comes from the U.S. case, and in particular Medicaid which is a means-tested healthcare programme (see Brown and Finkelstein, 2008). To address these issues, the U.S. Congress approved legislation that allows individuals to purchase private LTC insurance policies with the assurance that Medicaid will cover LTC costs incurred beyond the terms of the private coverage.

3. The insurability of LTC risks

In order to address the role of insurance markets in covering LTC risk, it is crucial to reflect on the insurability of LTC risk and more specifically on whether dependency is a risk, whether this risk is sufficiently well defined and whether it can be measured.

Is dependency a risk?

Dependency is a risk and not a stage of life. Indeed, an important proportion of people die without being dependent. The incidence of dependency seems very low compared to the incidence of retirement. Moreover, long periods in dependency are rare. On average, people live in dependency four years, and only 6 per cent of men and 16 per cent of women who reach the age of 60 live more than five years in a state of dependency (Debout and Lo, 2009). Many people are dependent for only a few weeks or months at the end of their lives (for example at the final stage of a deadly disease). However, when the pathology at the origin of the dependence is not evolutionary (e.g. in case of a person affected by a severe stroke and who is very diminished but with no risk on his life expectancy), heavy dependence may last for many years. It so happens that the extent of the financial cost in case of dependency is affected by the uncertainty surrounding both the degree of dependency and its duration. We are therefore with a relatively rare but potentially very costly risk.

The characteristics mentioned above on the risk of dependency might disqualify the use of personal savings to protect against this risk for two main reasons: firstly, the use of personal savings does not allow pooling of risk and does not reduce the uncertainty faced by individuals; and secondly, the savings effort would be detrimental to current

consumption if it needed to provide full protection against the risk of LTC in case of heavy dependency for many years.

Is LTC risk sufficiently well defined?

Analysing the insurability of the risk of dependency presupposes a precise definition of this risk which is not so easy. There is, in practice, a continuum of states of dependency. Two main analysis grids are used to provide an objective way of measuring loss of autonomy: the Katz and the AGGIR scales. These are based on the ability to perform activity of daily living such as bathing, dressing, eating independently, etc. The Katz scale is used throughout the world, whereas the AGGIR scale is used mainly in France.

Heavy dependency is actually easier to define than partial dependency and the criteria used by private insurers to characterise total dependency are generally closely related. In the case of partial dependency, however, the definition is blurred and the criteria used are far from being homogeneous among the different insurance companies. This “light” level of dependency causes problems for insurers because moral hazard is more likely. In fact, a non-dependent individual could be incited to claim light dependency in order to receive free services that are useful even for non dependent individuals (cooking, house cleaning, shopping, etc.). In this case, it is difficult for the insurer to prove that this individual would be autonomous without any insurance.

Assessing the risk of dependency

The risk of dependency from the insurer point of view can actually be broken down into three risks: an occurrence risk, a dependency duration risk and a cost of care risk.

The main difficulty in assessing the dependency risk is that it is an intertemporal risk deferred in time. Individuals are likely only to become dependent some decades after contracting insurance. Offering an assessment and pricing of this risk means that insurance companies are able to forecast on a 15-20 year horizon the risk of becoming dependent, the length of dependency and the future costs of LTC.

Predicting probabilities of transition between three or four states of dependency is very complex (Taleyson, 2003). As an illustration, depending on whether an efficient treatment against Alzheimer’s disease (representing a high proportion of dependent people) becomes available, the total number of dependent people could be very different. It would be illusory to believe that insurers are able to estimate accurately the evolution of the average probability of entering into dependency and the average life expectancy when in a state of dependency.

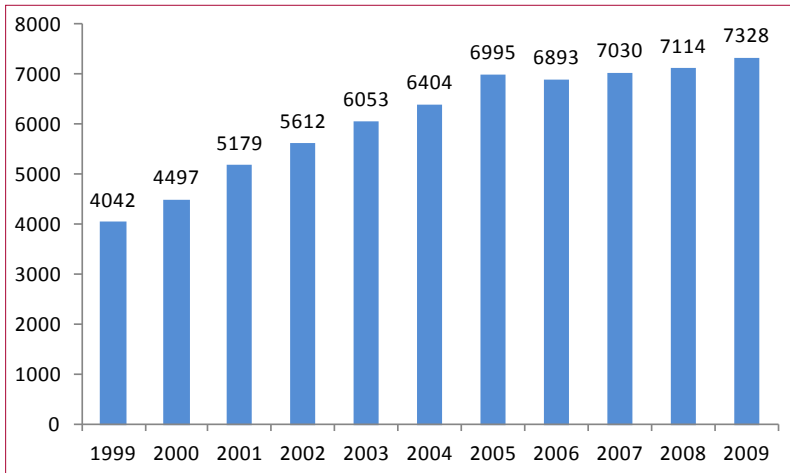
In addition, the average cost of care is very difficult to model. American studies have shown that over a long period of time, the cost of care in institutions was not stationary and that the confidence interval estimates of these costs were very wide (Cutler, 1993). Studies in France confirm this hypothesis of non-stationary costs. In practice, formal care at home is provided by relatively unskilled personnel. The future evolution of the average cost of care will be correlated with the wages of unskilled jobs, the long-term trend of which is difficult to predict with a good confidence interval. As regards care in institution, other criteria may also strongly influence the costs (price of real estate, health regulations, number of helpers, etc.).

In that sense, it is essential for LTC insurance to be able to use pricing revision. Most insurers effectively do not propose such guarantees.

4. The markets for LTC insurance

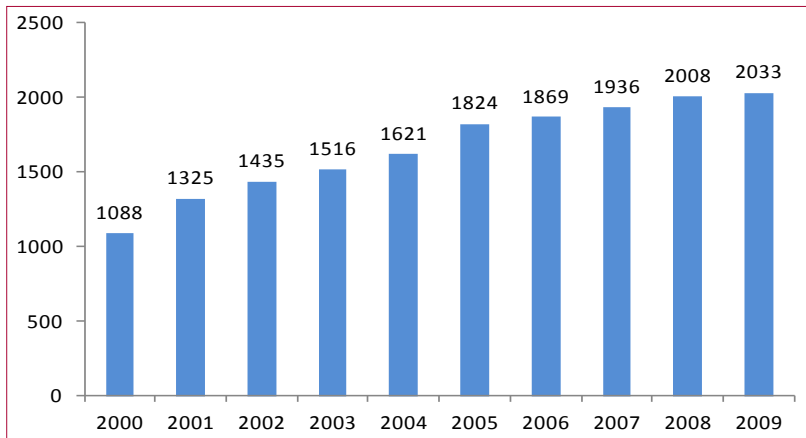
There are two main markets for LTC insurance. The American market is the largest market worldwide with over seven million policyholders and nearly 30 years of operating experience. About 10 per cent of the population aged 60 and over has private LTC insurance (Brown and Finkelstein, 2009). The second largest market is France, with approximately three million policyholders representing about 24 per cent of the population aged 60 and over (FFSA, 2009), and with 20 years of experience. Interestingly, these two markets are based on two different models, as they differ in the insurance benefit they offer.

Figure 2: LTC insurance policies in force in the U.S., 1999-2009



Source: NAIC Experience Reports, 2009.

Figure 3: LTC insurance contracts in France, 2000-2009



Source: FFSA, 2009.

In the United States, LTC insurance policies include individual, group association and employer-sponsored products. They provide for the reimbursement of care and services costs up to a certain limit. Benefit depends on the LTC risk undertaken also up to a certain limit. These products are directly derived from health insurance products. They are mainly distributed by agent networks and are tax approved.

In France, LTC insurance products can be individual or collective and provide for cash benefit payment, mostly monthly, which is usually proportional to the degree of dependency. The benefit does not depend on care services, nor on the place where the insured is receiving care, whether it is at home or in a specific nursing facility. The insureds are free to use the cash benefit as they wish. These products are derived from disability annuity products. They are mainly distributed by direct selling networks and are not tax approved.

As stressed by Le Corre (2012), U.S. reimbursement products generally offer many options to purchaser's choice. They usually specify three types of benefit: home health care, nursing home expense and assisted living facilities. Policies also differentiate in benefit frequency, which can be daily, weekly or monthly. The benefit period is determined by the policyholder at issue. Hence many choices need to be considered by the applicant and these can make this product highly complex. This may also explain why these products are mostly sold by agents and brokers who cope with this complexity. U.S. policies are usually written through a full underwriting process, with a detailed questionnaire and sometimes additional investigations made by nurses. Even if the questionnaire may be filled during a telephone interview, the whole underwriting process is quite complex and generates significant costs.

The cash model developed in France seems to be much simpler. Benefit is the same whatever the LTC expenses. Hence, the applicant has far less choice to make when buying the policy. French underwriting practice is quite simple. A short questionnaire of five or six questions is usually enough for most applications. Only a limited number of applications deserve additional investigation through a detailed questionnaire, to be filled in with the support of a general practitioner.

Amongst the other markets for LTC insurance, Germany is the third largest private insurance market, comprising mandatory private LTC insurance, and private supplementary LTC insurance, which represented about 15 per cent of the in-force premiums volume in 2007. Nearly one million German people were covered by supplementary LTC insurance in Germany in 2006 (Swiss Re, 2008), which is sold as a supplement (or top-ups) to the benefits of the social LTC insurance system. In other countries the private LTC markets remain very small, with different trends. It is growing in countries such as Spain, Italy and South Korea, but stagnating elsewhere, such as in the United Kingdom and the Nordic Countries.

5. Obstacles to the development of private LTC insurance

Though the market for LTC insurance has developed in past years, its size seems relatively small in comparison to the importance of LTC risk and the aversion of individuals to this risk. Various factors have been raised to explain why LTC insurance is still limited.

A common explanation for the lack of LTC insurance purchasing is that individuals are inadequately informed about the products available and that they ignore low-frequency, high-severity events that have not occurred recently (Kunreuther, 1978). Risk perception seems an important factor linked to the purchase of insurance. Those being informed about the risk associated with LTC are more willing to purchase insurance. For instance, having provided informal care in the past or being in contact with dependent people positively affects the purchase of LTC insurance (see Courbage and Roudaut, 2008, and Doeringhaus and Gustavson, 2002).

Another explanation for the limited development of LTC insurance markets includes the phenomenon of adverse selection, i.e. the fact there is an over-representation of high risks in the insured population or that people who cancel their contracts have a higher probability of becoming dependent. Moral hazard has also been raised as an obstacle to LTC insurance development in the sense that insurance would induce over-consumption of LTC. This seems to be the case, as it is difficult for the insurer to detect an individual's preference for receiving care from family members, as opposed to formal services. It is therefore difficult to predict how individuals' preferences might change when insured.

Also, the interaction of public insurance programmes arguably crowds out private insurance. Indeed, when there are expectations that the public system will provide public coverage, people may be reluctant to buy insurance to avoid over-insuring. In addition, an important barrier to the purchase of private insurance is that people wrongly believe that they are covered by the public LTC or healthcare systems. Thus, they see no need to purchase additional coverage.

High levels of premiums and thus issues of affordability of LTC insurance products also have been raised as reasons that deter from purchasing LTC insurance. As said before, there is a high uncertainty of the future cost of LTC as well as the probability distribution, and insurers cannot forecast expenditures with any certainty. This has a strong effect on the affordability of these products. Brown and Finkelstein (2007) have presented evidence of supply-side market failures in the U.S. LTC insurance market, such failures being explained by the characteristics and pricing of the products on offer. In practice, policies at an actuarially fair price are unlikely to be offered in the market for LTC insurance. Private insurers protect their companies from uncertainty about the future and the potential for adverse selection by increasing the cost of the premiums.

Since LTC is largely provided informally, mainly through family members, intergenerational factors have also been put forward to explain the rationale for taking out demand for LTC insurance (Pauly, 1990). The desire to leave a bequest seems to be a major motive for LTC insurance. However, elderly individuals with children may decide to forego the purchase of LTC insurance due to intra-family moral hazard. Indeed, parents who prefer to receive care from their children may decline the offer to purchase insurance, as this may create a disincentive for children to provide care. Intra-family moral hazard differs from classic moral hazard in the sense that it is not the policyholder's behaviour that is modified by the presence of insurance, but it is the caregiver's behaviour. Nevertheless, it happens that bequests can be structured so as to provide an incentive for children to care for their elderly parents in the presence of LTC insurance (Zweifel and Strüwe, 1996).

6. How to increase access to LTC insurance?

To address the relatively low development of the market for LTC insurance, a number of proposals have been discussed to expand and make this market more accessible. Here are a few suggestions.¹

Combining LTC insurance and life insurance

In recent years, new products have been developed to cover the risk of dependency, and in particular a combination of LTC insurance and life insurance into a single product. The longevity risk is usually covered through life insurance, while the risk of using LTC is covered by LTC insurance. The strategy of combining these two products in one is that risks compensate each other: healthy people with high life expectancy attracted by life insurance offset those in poor health with a short life expectancy attracted by LTC insurance. Combining these two risks in one product has two further advantages. Firstly, it reduces the phenomenon of adverse selection in the market for life insurance, since dependent people should not live long enough to qualify for long-term annuities. Secondly, the selection of risk is minimised because it consists only of filtering out individuals who can immediately benefit from insurance payments.

A study by Murtaugh *et al.* (2001) shows that combining life insurance with LTC coverage was likely to reduce the cost of both products as well as make them more accessible to potential buyers. In particular, their model shows that under a minimum risk selection, excluding those who would be eligible to receive payments on the date of purchase, 98 per cent of 65 year-old applicants would be accepted compared with 77 per cent under current LTC insurance underwriting conditions. These contracts are available in France and Italy.

Combining LTC insurance with reverse mortgages

For some time, financial institutions have been offering a product known as “reverse mortgage”, which resembles the notion of “*viager*” in France. A reverse mortgage is a loan secured on the value of a property. This type of loan enables to make liquid or to monetise real estate assets without any transfer of ownership. If necessary, the sale of the property at a later date enables the reimbursement of the loan. As few elderly seem to use reverse mortgages to supplement income during retirement, this tool could be used to finance LTC. This concept seems to appeal primarily when it is directly linked to LTC expenses. For instance, the recent report of the French authorities on the creation of the fifth risk for social security suggests that people whose wealth exceeds a certain threshold will have to pledge part of their inheritance to receive the full rate of public help in case of dependency.

Chen (2001) suggests going further by linking the reverse mortgage, not to LTC spending, but to either life or LTC insurance. The idea is that the reverse mortgage would be used to pay insurance premiums and not LTC. One solution would be to link the annuity to be received to the value of the house and to the level of dependency. The property would act as a safety net and would be used as financing of last resort. Of course, a limit to this solution is that this source of income is available only to property owners.

¹ For a comprehensive proposal related to the U.S. market, see Feder, Komisar and Friedland (2007).

Combining insurance and private savings

Another way that would make insurance coverage more accessible would be to allow and/or force individuals to save during their worktime period in order to pay for either their LTC expenses later in life or their LTC insurance premium. This would spread the cost of insurance over time and allow for one generation to accumulate sufficient resources to take care (partially) of its own needs in LTC through individual savings accounts. These savings accounts could take the form of health savings accounts that already exist in Singapore, China or the U.S., where savings are invested in a special account to cover only health care spending. These accounts are generally offered in combination with a high deductible insurance. Various possibilities exist, whether in the form of voluntary participation with financial incentives, or of mandatory contribution with additional contribution from the employer. These savings accounts could also take the form of the Swiss second pillar, the mandatory occupational pensions system. The funds of the second pillar are already being used to expand home ownership. They could also be used to expand access to insurance. Such a system, based on intertemporal distribution mechanisms, enables building up reserves for old age and makes it possible to fight against moral hazard. However, such accounts do not enable risk-sharing between individuals and depend on the performance of financial markets. Additionally, they can segment the pool of insureds further and make LTC risks more difficult to insure.

Anticipating the risk of dependence early enough— the Eldershield experience

Insurance products covering the risk of dependency have a relatively low penetration rate compared with other insurance products. One reason is that relatively few people are aware of this risk and the existence of such insurance products. Another reason is that insurance becomes an expensive solution when it is contracted at a later age. Indeed, since it is important to provision this risk (transfer of risk over time rather than between individuals), insurance is more interesting when it is contracted early. With this in mind, the Singapore authorities have introduced a new public financing system of dependency risk, entitled Eldershield. From the age of 40, all individuals are automatically enrolled in this system and randomly allocated to an insurer, although they are free to choose another insurer among the insurers authorised to participate in the system. It is also possible to refuse membership to the system in the first three months. In this case, it is not possible to take advantage of the benefits of the system (no public subsidies and preferential underwriting conditions). The product and its pricing are to be borne by insurers. The premium is paid until the age of 65 and compensation in case of dependency is for life. Possibility of surplus redistribution and premium discounts is also included. The plan was launched in 2002. The government funded a portion of the premium in order to smooth age segmentation. It also provided means-tested benefits for those already dependent. A large information campaign was conducted to promote the plan and its products. The opt-out rate of the plan decreased from 38 per cent in 2002 to 14 per cent in 2006, reflecting the importance of guiding people and of raising awareness of the risk of dependency.

Promotion of LTC insurance by the public sector

The public sector can promote the development of LTC insurance from both the demand and supply sides. On the demand side, the government can offer tax relief on both LTC

expenditure and LTC insurance premiums. Individuals can deduct a portion of their LTC expenses, including premium of their gross income. This can take the form of either tax deductions or tax credits. Of course the effect should strongly depend on the level of price elasticity. In the same way, the government could subsidise premiums for low-income subscribers as is the case for private health insurance in various countries.

The government can act also indirectly by raising awareness about the risk of needing LTC in the future. For instance, in France, it seems that national debates associated with the search for new solutions to cover the risk of LTC need, widely covered in the press, have increased the general public's awareness of the existence of this risk. Since people are getting more aware of the LTC risk, they also become more concerned about its financing and coverage. This has supported the development of the private insurance as stressed by Durand and Taleyson (2003). The new federal Community Living Assistance Services and Support Act (CLASS Act) in the U.S. should also be an illustration of these phenomena as the Federal Government will spend millions of dollars to raise the awareness that people need to plan for LTC. This will undeniably contribute to inform people about the role of insurance in protecting against LTC risks.

Encouraging group insurance

Group insurance is a good solution to increase the knowledge of LTC insurance and make it accessible at younger ages, than when buying on an individual basis. Group insurance does not face underwriting and anti-selection issues. These contracts are substantially cheaper to administer and thus have the potential to increase the number of people covered by private insurance. However, governments need to ensure that employment-based and other group insurance policies are portable and people are not dropped from their policies when their employment ends.

Public-private partnership and severity of dependency

Another way to increase the role of insurance in covering LTC needs could be to base the public-private partnership on the level of severity of dependency, under which the heavy level of dependency could be dissociated from what is called moderate or "light" dependency. The underlying idea is that light dependency deals with a majority of individuals and can be considered more like a stage of life and regular expenses than a risk itself. Only the state of heavy dependency would be considered as a risk and would only be covered by private insurance. Light dependency could then be taken over either by a social assistance scheme for the poorest or by individual savings accumulated over the working life for others and subject to higher levels of cost-sharing. This solution is of relevance in terms of market efficiency, since heavy dependency is a risk that can be easier to identify than light dependency. In addition, moral hazard is less possible in case of heavy dependency, while it may happen more easily in case of light dependency.

However this raises at least two difficulties: it requires a clear distinction between heavy dependency and light dependency to be made explicit; and, it delays the financing of dependency and curtails the coverage to the 85 per cent of cases with lighter dependency. Hence, there is scope here for forms of implicit or explicit partnerships.

7. Other insurance products to cover chronic conditions for seniors

LTC insurance is not the only product offered by insurance companies to cover chronic conditions. It is worth mentioning two other products that have developed so far: impaired life annuities and critical illness (King, 2007).

Impaired life annuities are annuities designed for those who, at the time of retirement or contracting insurance, are already suffering a chronic illness. Unlike traditional annuities, these are fully underwritten with full knowledge of the applicant's state of health. After receiving health details, the insurer makes an estimate of the remaining life expectancy of the applicant. Then, considering the lump sum that the life insured is prepared to pay, an enhanced annuity is offered, noting the shortened life expectancy of the insured. This contract is popular in the U.K., possibly due to the legislation there. For instance, a male aged 65 suffering advanced lung cancer with no spread, who contributes a payment of £100,000, can be offered an annuity of £15,050, compared to a standard annuity of £7,390. It has to be stressed that it is not easy for insurers to obtain sufficient medical evidence to underwrite this annuity.

The other product, critical illness, is a product that has been developed extensively in the U.K., Asia, Australia and South Africa. It provides a lump sum cover in the event that the insured suffers from chronic medical conditions that are covered by the policy. Common examples include heart attack, stroke, cancer, Coronary Artery Bypass Surgery (CABG), organ transplant and many chronic illnesses. The medical conditions in the policy are rigorously defined and the requirements of the definition must be met before a claim is admitted. Recent changes to the product in South Africa and the U.K. have increased the number of medical conditions which are covered and have introduced also partial payments when a claimant's medical condition is less severe. Usually, critical illness coverage ceases at age 65. However, recent product innovations in Asia have extended cover past this age, often to ages 75 or 80, with applicants being able to apply for this cover up to age 70. While critical illness products are not yet common in Europe, it might be an interesting product in this region, conditional to a competent pricing and a rigorous underwriting process.

8. Conclusion

Growing LTC needs, as well as the reshaping of traditional modes of caregiving, further increase the pressure for sustainable funding of more comprehensive LTC systems. Public coverage is low in comparison to the cost of needing LTC, and the insurance mechanism seems well adapted to apply to this risk. However, LTC risk is a challenging risk to insure as many features need to be taken into account such as demographic, medical, social and financial aspects.

The market for LTC insurance is still under-developed but is potentially expanding. Various solutions exist to make LTC insurance products more attractive. As a first step, application to LTC insurance should be made at younger ages, as the younger the age at inception, the lower the premium. This is very important since affordability constraints are currently often encountered. Another solution is the development of group insurance which does not face underwriting and anti-selection concerns. In addition, LTC insurance may be more attractive when combined with life insurance, individual savings or reverse

mortgages. Public authorities have also a role to play to develop the market of LTC insurance, whether this is through tax incentives, raising risk awareness, or developing public/private solutions.

At the moment, voluntary private LTC insurance serves principally the segment of the population with relatively higher income and accumulated assets. This text has demonstrated that various solutions exist to make this product interesting for a larger proportion of the population.

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7. The insurance industry's role in addressing longevity funding issues: opportunities and limitations

Greg Becker

1. Introduction

Prior to the relatively recent introduction of pensions—the first public pension system was created by German Chancellor Otto von Bismarck in 1881 (Rahn, 2008)—people relied on inter-generational wealth transfer, generally within families (from children to parents). Historically, mitigating longevity risk meant having more children, staying on good terms with them and ensuring that your offspring were well educated and productive. Failing this, neighbours, charitable and religious organisations provided a safety net. With the development of the first pensions, the need for “external” management emerged and the need for longevity protection has risen as retirement ages have not kept pace with increased life expectancy, and this has been compounded as people have moved from traditional inter-generational transfers to public and private pension arrangements.

In this chapter we will take a closer look at the role of financial players, in particular insurers and reinsurers, and the solutions that have been created to manage and mitigate longevity risk. While there is no doubt that the need for longevity derisking solutions is large, estimates vary. Those of pension assets provide a guide to the size of the longevity market and a recent report suggests an amount of US\$27.5tn invested in pension fund assets at the end of 2011, or a little more than 70 per cent of the GDP of 13 major markets they included in their study (Towers Watson, 2012a).

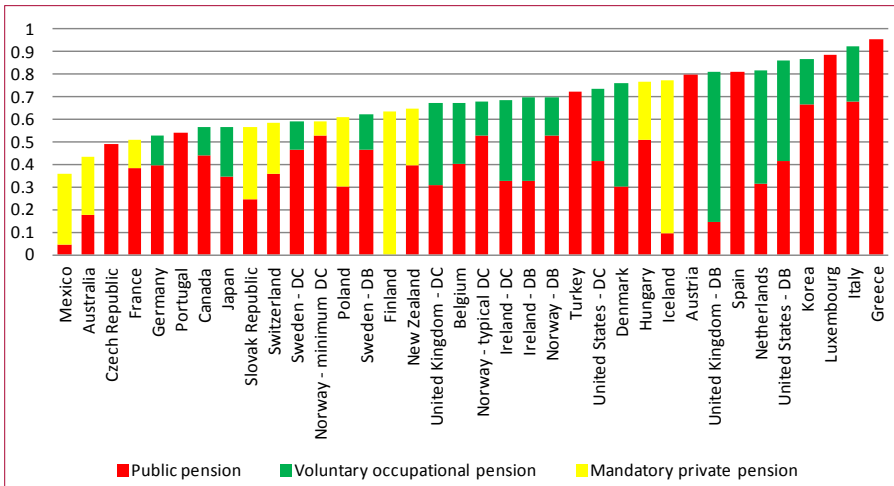
In this section we will look at various longevity derisking solutions that are currently provided by the insurance industry, with a particular focus on the U.K. We will also consider their limitations before looking at alternative sources of longevity protection.

2. Drivers of longevity business

There are many different ways for individuals, companies and governments to manage their longevity risk. In the developed world, many people have looked to manage their retirement income needs through their employers (private pension plans) and governments (public pension plans and the state pension safety net). In doing so, they have transferred their longevity risk to others.

An individual's projected retirement income can be seen as a proxy for an individual's longevity risk and this is captured by the pension replacement ratio (PRR). Data from the OECD show that there are vast differences between countries and the size and sources of an individual's retirement income (OECD, 2009).

Chart 1: Potential replacement ratio at normal retirement age: public pension, mandatory private pensions and typical occupational plans



Source: OECD (2009).

Chart 1 illustrates these significant PRR differences between countries, ranging from Australia and France with a PRR of ca. 50 per cent to Italy and Greece with pension replacement ratio's closer to ca. 90 per cent of final salary. It is also worth noting that there are differences between those with defined benefit (DB) or defined contribution (DC) schemes and those that rely on public pensions¹ (e.g. Greece) or private pension savings (e.g. Finland).

Various factors have led to these different outcomes and we will look at each of the causal factors of these inter-country differences in the following sub-sections, covering:

- weakening public schemes;
- the prevalence of corporate DB pension schemes;
- compulsory annuitisation requirements of DC schemes;
- disclosure requirements for pension liabilities; and,
- tax and accounting regimes.

Weakening public schemes

Not all public schemes should be considered in the same way. Some have benefit promises while others are similar to private DB pension schemes in that people make contributions to fund their retirement needs (National Conference on Public Employee Retirement System, 2008). In many countries, government employees such as teachers and health

¹ We encourage the interested reader to explore the various advantages of the following public sector solutions: Australia's Superannuation system, Brazil's Fundo de Pensão, Canada's Registered Retirement Savings Plan, France's Special Retirement Plan, Germany's Betriebliche Altersversorgung, India's Public Provident Fund, Mexico's Retirement Funds Administrators, New Zealand's KiwiSaver system and Singapore's Central Provident Fund, as well as Chile's innovative solution to the privatization of Social Security.

workers have pension benefits that are a function of service. For these pension benefits, longevity results in an increase in the state's liabilities and a growing shortfall.

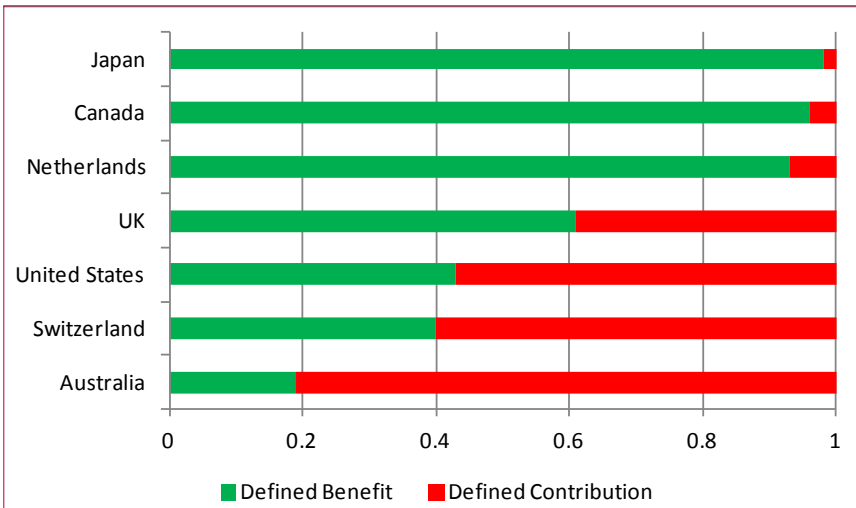
For funded schemes, increases in longevity will require additional contributions. Many schemes are unfunded, however, with today's contributions used to pay today's beneficiaries. The U.K.'s Office for Budget Responsibility has analysed the U.K.'s unfunded pension system, showing that a shortfall is projected in each of the next three years despite increases in contributions and measures to cap and share benefits (Office for Budget Responsibility, 2011). This shortfall is expected to increase due to inflation, longevity and improved pension rights. With decreases in the number of state employees forecast in many countries battling government deficits, the burden of unfunded pension benefits will fall on fewer and fewer state employees. Many feel that this burden will eventually revert to the state.

An argument could be made that governments—like companies—should include their pension fund deficits in their measure of government deficits.

The prevalence of corporate defined benefit (DB) pension schemes

As Chart 2 shows, the prevalence of DB pension schemes varies significantly from country to country and sector to sector, with some countries being predominantly DB (e.g. The Netherlands) and others predominantly DC (e.g. Australia).

Chart 2: DB vs DC pension funds for seven large countries



Source: Towers Watson (2012b).

Despite research showing that individuals overwhelmingly prefer DB schemes to DC schemes because they take on the asset volatility, inflation and longevity risk (National Institute on Retirement Security and Milliman, 2011), there is a near-universal trend leading to a reduction in the number of DB schemes, with schemes either closing to new members (not allowing new members of staff to join the scheme) or closing to new accrual (not allowing existing members to accrue any benefits).² Companies are limiting their

² 56 per cent of workers in a DB scheme in the U.K. in 2009 were in a scheme closed to new members (Office for National Statistics, 2011).

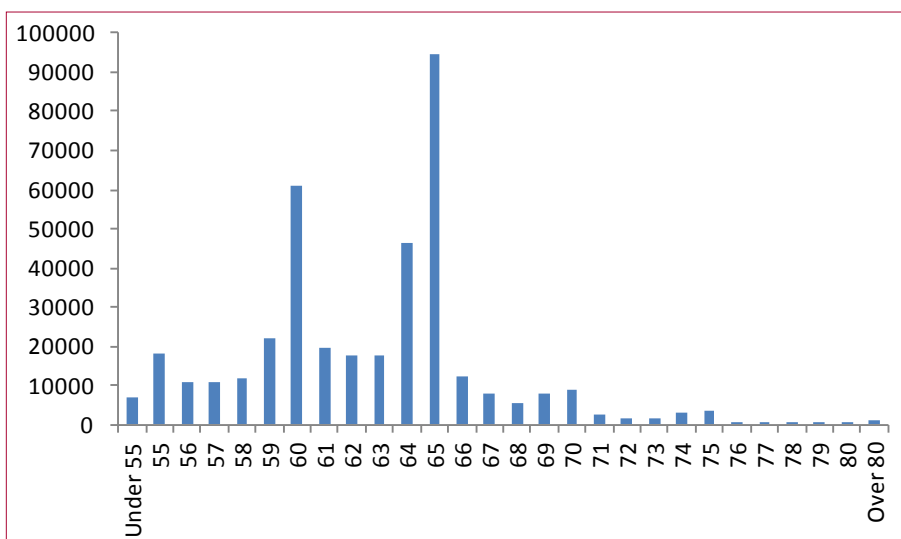
exposure as their existing deficits have ballooned (due in part to increasing longevity), which is leading companies to make record pension contributions. Some anticipate that this trend may accelerate across the EU with the introduction of a new pension funding framework that could be based on Solvency II legislation (Towler, 2012).

Unfortunately, closing to new members and accrual only limits the growth of the problem: the existing pension benefit obligations (PBOs) include significant longevity risk and this is unaffected by these trends.

Compulsory annuitisation requirements of defined contribution (DC) schemes

As discussed above, funds are closing to new members and accrual, and replacing DB schemes with DC schemes. Members of DC funds bear their longevity risk personally, although it is common to purchase an annuity. DC schemes are common in many countries and go by various names. In the U.S. they are known as Individual Retirement Accounts (IRAs) or 401(k) plans. Under a DC scheme, the individual is exposed to inflation, asset volatility and longevity risk. Risk-pooling solutions exist, notably annuities, and compulsory annuitisation is thought to be a big driver of sales.

Chart 3: Distribution of annuity purchases in the U.K. by age of principle annuitant at entry (sales in 2011)



Source: Association of British Insurers (2008).

Data from the U.K., as illustrated in Chart 3, shows that the vast majority of annuities are purchased before people get to the state retirement age and that compulsory annuitisation is not a key driver of annuity purchasing behaviour. The need for income in retirement is the overwhelming demand driver.

Disclosure requirements for pension liabilities

Pension funds are required to quantify their assets and liabilities on a regular basis, often on a three-year cycle. Both of the two most widely used accounting conventions,

U.S. Generally Accepted Accounting Principles (GAAP) and the International Financial Reporting Standards (IFRS) require that pension contributions be taken into consideration when developing company accounts, although they account for pensions in different ways. Key differences include the treatment of past service costs, which are amortised over the service period or life expectancy of workers under U.S. GAAP whereas they are expensed immediately under IFRS; and the treatment of assets, where a reduction in asset values leading to an increase in the pension deficit will be reflected in the accounts for the current time period under IFRS, reducing the company's shareholder equity. There is an ongoing joint convergence project, and as companies move from U.S. GAAP to IFRS the need to reduce deficits and short term volatility increases since these factors directly affect the balance sheet and income statement (Epstein and Jermakowicz, 2010).

Company pension schemes involve assets and liabilities that are long-term in nature and the new IFRS regulations pass short-term volatility (in particular that of the assets) into company balance sheets, which can materially affect a company's value. While surpluses can lead to companies being acquisition targets,³ it is more likely that material deficits will lead to reductions in value. As investors prefer stable and predictable financials, a move towards more accurate and regular valuation stimulates demand for risk mitigation and encourages the adoption of measures and hedging strategies to reduce the impact of short-term changes in pension funding levels.

Tax and accounting regimes

Many countries encourage saving for pensions through tax advantages. A common approach is to encourage savings now by making savings possible from pre-tax earnings, exempting interest, dividends and capital gains, and then taxing the proceeds on withdrawal. This approach has been popular, although its popularity is decreasing with the need for governments to bring forward tax revenues as political pressure is mounting to balance accounts. As an example, the U.K. has reduced the capacity for people to take advantage of tax relief on pension contributions, with a decline from £255k per annum in the 2010/11 tax year to £50k per annum in 2011/12.⁴

3. A general assessment of currently available insurance products' potential to help mitigate longevity risk

The Milliman 100 Pension Funding Index suggests that the funding level for the largest 100 pension funds is ca. 75 per cent, and the shortfall is currently ca. US\$400bn. Large U.S. employers are expected to make pension contributions of US\$100bn in 2012, and Milliman has forecast that the largest 100 funds in the U.S. will contribute US\$400bn between 2011 and 2015. This shows that increasing funding is possibly a more important priority than managing longevity risks.

Nevertheless, longevity is seen as a significant risk by many pension scheme trustees: 81 per cent of trustees rated longevity in the top three risks that concern them, with 39 per cent rating it as their largest concern. Pension funds are able to pool their longevity risk

3 The plot of the film *Wall Street* (1987) is a fictional representation of how a company's pension plan can be viewed as shareholder's equity.

4 The amendment has more complexity; for example, one can carry forward unused allowance for up to three years.

between members and achieve some diversification benefits, although small schemes—those focused on a single industry—can present a diversification challenge.

Various insurance products have been designed to mitigate longevity risk. The solutions are different for pension funds and individuals, and we will deal with them in turn. Some believe that governments also have a longevity risk that needs to be managed, although the magnitude of their needs vastly exceeds the available capacity from traditional sources, with non-insurance related alternatives being more viable.

Insurance and employer pension funds: addressing DB-based longevity risk

The three most common insurance techniques to manage longevity risk for pension funds are:

- pension fund buy-outs,
- pension fund buy-ins and,
- longevity swaps

While other non-insurance related solutions are available, notably increasing contributions, reducing benefits (e.g. delaying retirement age) and purchasing protection in the capital markets, we will deal with these three insurance solutions in turn and reference recent trends in transaction volume.⁵

Pension buy-outs⁶

A pension scheme buy-out occurs when an insurance company takes over the liability of paying the member benefits when they fall due. In this situation, the pension scheme transfers assets to the insurer and the insurer establishes a contract with each of the individual members. In effect, a full buy-out results in the fund being wound up. Buy-outs transfer all risk from the pension scheme to the insurer who will be responsible for asset volatility, longevity improvement and inflation.

Looking at the most developed market (the U.K.), 21 per cent of trustees have indicated that they are considering buy-outs (MetLife, 2010) and recent transaction data covering the U.K. market shows that buy-outs—while material—are significantly less popular than buy-ins (see below), with deals amounting to £886m having been conducted in 2010 (Hymans Robertson, 2011). Analysis suggests that buy-outs are more expensive than buy-ins at present, although both have been increasing in price (Hymans Robertson, 2012).

Pension buy-ins

A pension scheme buy-in purchases a bulk annuity to cover the costs of some of the benefits due to members. The longevity and investment risk to the scheme is thus reduced. The liability and day-to-day running of the scheme remains with the pension scheme trustees.

Looking at the U.K., 34 per cent of trustees have indicated that they are considering buy-ins (MetLife, 2010), and recent transaction data collated for the U.K. market shows that buy-ins are significantly more popular than buy-outs, with transactions amounting to £4,286m in 2010 (Hymans Robertson, 2011)—four times that of buy-outs.

5 Analysis of past transactions is difficult due to the lumpy nature of the deals (in particular longevity swaps).

6 See chapter 10 of this report for a U.S. perspective.

Longevity swaps

Longevity swaps are relatively new instruments (the first was conducted in 2008) and represent derivatives that allow a pension fund to hedge their longevity exposure. A longevity swap involves two parties: the cedant and the risk taker. The cedant (e.g. pension funds) will pay the risk-taker (often a reinsurer) regular fixed premiums which are defined at the outset of the contract; in return, the risk-taker will pay the cedant the actual amounts payable to the underlying lives in the hedged portfolio.

The swap can be set up either as an insurance contract with premiums and claims, or as a derivative contract with fixed and floating legs. Investment banks often act as intermediaries.

In the U.K., 47 per cent of trustees have indicated that they are considering longevity swaps (MetLife, 2010), and recent transaction data for the U.K. market shows that nine longevity swap deals were conducted in the U.K. between 30 June 2009 and 30 September 2011, with a value of £8.9bn (Hymans Robertson, 2011). The transactions are large and sporadic and make trends difficult to predict. Due to their scale, the transactions often involve many players, with investment banks facilitating the transactions and reinsurers standing behind to take the longevity risk.⁷

Insurance and individual longevity risk: complementing public and DC-based pension payments

Individuals saving for retirement using DC pension contributions are exposed to asset volatility, longevity and inflation risk. Asset volatility and inflation are beyond the scope of this chapter; we will focus on the demographic elements and consider the role of fixed and variable annuities in managing longevity risk, as well as the potential for long-term care (LTC) benefits to be included as well.

Fixed and variable annuities

Various types of annuity exist. The prevalence of fixed and variable annuities varies significantly from market to market, with fixed annuities being common in the U.K., with variable annuities being more common in the U.S (Abbey and Henshall, 2007).⁸

Fixed annuities provide a guaranteed income until death, often level although the income stream may include either inflation indexation or regular increases (e.g. 3 per cent per annum). The majority of annuities are contingent on the survival of a single life, although joint life annuities have payments contingent on more than one life. Sales of annuities in the U.K. indicate that people purchase the annuities that maximise their income in the short term, with the vast majority not purchasing either inflation protection or a joint life annuity to provide an income for their spouse (Association of British Insurers, 2008 and Barrow, 2011). Underwritten annuities are a further innovation and covered in a later section.

Variable annuity products with living benefit guarantees have proven to be very popular in North America and Asia, providing clients with both longevity and market risk protection. Typically, variable annuity account values grow on a tax deferred basis and the base annuity products are bundled with guaranteed minimum withdrawal benefits or guaranteed minimum income benefit riders. These riders provide a guaranteed lifetime

⁷ We will consider index-linked securities in a later section.

⁸ See chapter 5 of this report.

income stream based on the amounts invested and investment returns earned on the underlying funds, if any, with additional credits for deferring commencement of lifetime income. The products are subject to significant market risk for the issuing company and are usually accompanied by complex underlying hedging programmes. The level of residual market risk has discouraged insurance companies from aggressively expanding this product offering geographically, in particular into territories that will be subject to solvency regimes that do not allow for significant hedging credit in required capital calculations regulations.

For many individuals the risk transfer of annuities comes at too high a price despite the fact that they offer longevity protection. New and innovative products have been created to help manage longevity tail risk, such as the Longevity Income Guarantee from Metlife (2011) which allows individuals to purchase an annuity beginning at a later date. For example, an individual could purchase an annuity at age 65 that could begin regular payments at age 85, with payments continuing until death. As sales of such products have been disappointing, the insurance industry has recognised that it needs to do a better job in educating the general public on the shift in longevity risk burden towards them.

Is there a place for LTC in this longevity discussion?

Many believe that regulations regarding the products that can be purchased using tax-advantaged pension contributions should be extended to include LTC benefits. The arguments for incentives aimed at deferring consumption apply equally to a savings ring fenced for retirement income and long-term care protection. The outcome for the state is similar in that both private pensions and private LTC provision result in a reduction in reliance on the state.

Disability-linked annuities (DLAs) are annuities which have an increase in their payment on illness. They are currently available in many markets, notably France, Germany and Singapore. Regulatory certainty as to what the state benefits will be is seen as a prerequisite for individuals purchasing these products.

4. Further opportunities for the insurance industry to address longevity risk

While we have looked at some of the direct ways to address longevity risk, the need for solutions exceeds capacity, and some non-traditional and alternative approaches need to be considered. Simple initiatives—such as an increase in retirement age—can have a dramatic impact on retirement funding costs, although they are not available to all stakeholders. We will now consider a variety of interventions that are available to particular stakeholders.

The role of capital market-based solutions

Since the longevity derisking capacity of the insurance and reinsurance market will be unable to meet all demand, attempts to increase capacity should be encouraged. The Life and Longevity Markets Association (LLMA), a U.K.-based body, is looking to develop further derisking alternatives, in particular a traded longevity index (LLMA, 2010). This index has been built on the work done by J.P. Morgan in the development of the LifeMetrics toolkit.

A traded longevity index does not provide a complete hedge—protecting only against trend risk—although it lowers the barrier to participation, thereby increasing capacity. Indeed, initiatives aimed at lowering barriers to participation act in combination with the diversification that this new asset class provides existing investors (like hedge funds) to entice further investors and other risk-takers into the market. While it is true that the capital markets have not yet embraced this framework, there are signs that the capital markets will play a larger role in future. The recent capital market solution arranged by Deutsche Bank relating to €12bn of Aegon liabilities (Deutsche Bank Media, 2012) is an example of things to come.

Limitations within the insurance industry

Investment risk, or the risk that asset values may decrease in market value, can outweigh other sources of risk—particularly in the short term. As an example, the market value of the assets of the largest 100 pension funds in the U.S. dropped by US\$346bn between 2007 and 2008 (Milliman, 2011).

A common thread of insurance industry regulation is that capital needs to be held as a cushion against unintended events. The rules governing how much capital should be held varies between countries, with notable examples being the Swiss Solvency Test and Solvency II which covers insurers with sales within the EU or all the business of operations that are headquartered in the EU. Finite balance sheets limit capacity and the insurance market's capacity is significantly less than that needed to mitigate the longevity risk of employers or individuals.

In addition to market risk, the insurance industry is not well placed to manage inflation risk, which is best left to investment banks.

The most significant barrier to longevity derisking solutions certainly lies in the fact that individuals, companies and governments have not saved enough. Funding shortfalls are a larger issue for most and longevity could be regarded as a second-tier priority in many cases. As an example, public pay-as-you-go (unfunded) models present a different set of problems. In this situation, it is arguable as to whether or not longevity risk is a priority, and analysis highlights the significant contributions needed to make up the shortfall with European public pension expenditure forecast to hit 12.8 per cent of GDP by 2050 (CEA, 2007 and Office for National Statistics, 2011).

5. The role of reinsurance

Reinsurance companies have benefits over traditional carriers of risk due to their global perspective, their superior diversification, and their existing liability portfolio which offers a certain degree of mortality risk as a natural offset. The law of large numbers ensures that natural random variation is reduced in the portfolios of insurers and that of reinsurers. Due to their multi-national exposure, and since different countries and markets are exposed to different mortality and longevity drivers (whether they be social, economic or catastrophic in nature), increasing one's geographic diversity lowers the volatility of the portfolio in aggregate.

Pending European regulations, in particular Solvency II (which will affect a significant number of key pension markets), have led to research on the extent to which there is a natural hedge between a mortality book and a longevity book. The size of this natural diversification needs to reflect the idea that lives in retirement that present a longevity risk

are generally a different cohort of lives to those covered by life insurance, and that the impact of a trigger event may work in opposite directions for a protection and longevity book. Since they are different cohorts, and in particular because they have and will be exposed to different medical technology, social and environmental factors, reliance on this diversification factor should be treated with respect. Under Solvency II, one may use the standard model to value one's liabilities; this estimates the diversification between mortality and longevity risk as being -25 per cent.⁹ Thus, those with a large mortality book—like life reinsurers—have a competitive advantage over those who do not benefit from this diversification opportunity, reducing their regulatory capital requirements and enabling them to price more keenly.

Reinsurers and their role in product development and new initiatives

Reinsurance companies are a driver of product development and the role that reinsurers in the U.K. have played in the stimulation of the underwritten annuity market offers insight into how reinsurers can lead to the development of longevity derisking solutions.

One of the reasons individuals don't purchase annuities that provide longevity protection is the perception that those with sub-standard health will receive poor value. Underwritten annuities are a response to this and allow those with sub-standard health to benefit from risk-pooling when managing their longevity risk. In the same way that a person's health can affect her or his life insurance policy (e.g. smokers pay more than non-smokers), the same principle applies to annuities in some markets. In the U.K., underwritten annuities (Becker and Hurley, 2011) (also known variously as enhanced or impaired annuities) have grown in significance since their launch 20 years ago, and now account for a meaningful share of annuity purchases (Towers Watson, 2012b). This product involves the underwriting of the applicants when applying to purchase the annuity; furthermore, the applicants will be required to demonstrate ill-health for which their annuity will increase. The development of the Common Quote Request Form (CQRF) (Towers Watson, 2012b) was a key milestone in the development of the U.K. market, removing the need to get multiple quotes. When brokers use the CQRF, a single application form is sufficient to obtain quotes from all the leading players in the industry. This initiative led to a meaningful increase in take-up.

At times this initiative was led by reinsurers and nimble new entrants. Reinsurers are well positioned to leverage their expertise in the key areas of underwriting, pricing and the management of the complexities of long-term products, and their experience in the management of other product lines serves them well in the management of longevity risk.

6. Conclusion

With significant uncertainty still surrounding future longevity projections, and in particular future mortality improvement factors, longevity protection is something that many are considering purchasing. Individuals can look to purchase annuities; companies and pension funds have many options ranging from buy-ins to buy-outs, from longevity swaps to capital market index trades. Options also exist for governments, though they present more difficulties. They can limit their risk by encouraging private pension provision (e.g. through tax advantaged retirement income saving vehicles) as a substitute, increase the

⁹ The figure used in QIS5 and which is still used in the latest *Draft Implementing Measures Solvency II* released on 31 October 2011 by the European Commission.

retirement age (as is happening in many European countries) or reduce benefits in other ways (e.g. through caps). Unfortunately, all evidence suggests that enacted government changes will still lead to increasing shares of government expenditure being needed to cover public pension costs (Crook, 2012) and as most efforts are unpopular (Mulholland, 2011), governments are having difficulty reducing their pension liabilities. The extent to which the pay-as-you-go funding model is sustainable has been questioned (Piñera, 2004), with projections of increasing shares of government revenue being needed to cover unfunded pension liabilities (Office for National Statistics, 2011). Governments are introducing mechanisms to increase private pension saving and in the longer term, this will provide individuals with the resources needed to purchase longevity protection (e.g. National Employment Savings Trust in the U.K.).

Many believe that the capacity of the insurance market to absorb the market's longevity risk is an order of magnitude below that required, so while the participants may have many options at present, many believe that the current price of longevity protection, which partly reflects the finite natural diversification with other insurance product lines, will increase. That said, insurers currently manage €2,200bn in Europe alone (CEA, 2007) and their skills and expertise in pricing and managing risk could be used by many.

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8. The holistic view: why all pillars need to work in concert

Krzysztof Ostaszewski

1. The world of finance and the real world

The relationship between the financial world and the world of the real economy has been both admired and cursed, with the cursing becoming more common recently. The financial world encompasses two areas:

- the question of how the funds needed for economic projects are provided and channelled and,
- the question of how the results of economic activity are distributed.

The credit crisis of 2008 was preceded by waves of what was widely perceived as great financial innovation in the housing market in the United States. According to the proponents of that view, finance was making a contribution to the real economy by making it possible for the previously excluded poor to be able to afford the American Dream of owning a house. Following the credit crisis debacle, opponents of that financial innovation presented it as mismanagement at best, and fraud at worst. In that view, finance destroyed economic value. Of course, these two “before and after” views are directly contradictory: the method of financing housing can destroy value or add value, but not do both at the same time. Whatever the view, it is important to note that while we decide about the financial structure of an economic endeavour at its beginning, its value will be revealed later on, when the effects in the real economy become known.

The design of a retirement system is not unlike the design of other parts of economic systems. We decide about the funding upfront, and after some time we experience economic consequences. The four pillars of pension planning—the compulsory pay-as-you-go state pension, the supplementary occupational pension, individual savings (personal pension and assets and life insurance) and the flexible extension of work-life, mainly on a part-time basis—are all a result of legal and institutional design, including the finance part in the first three, that are given to every generation as they enter the labour force. But the real economic consequences of that design, including the finance part, become fully visible later on, when the generation enters the retirement years.

In the previous chapter, “The financial crisis: impact on the four pillars of old age protection”, we discussed the theoretical foundations of the Four Pillars Framework and pointed out that the recent credit crisis and the subsequent sovereign debt crisis have affected all four pillars in a negative fashion. We have also suggested possible ways to improve the current situation. In this chapter, we suggest that an institutional design in

which the four pillars work in concert is likely to deliver better real economic results, while designs that pit these four entities against each other are likely to cause imbalance and weakness in the real economy.

We should not assume that retirement systems are immune to producing negative impacts on the real economy and cannot play a similarly devastating role to that of the housing market in the U.S. We must therefore create a four pillars system whose design and financial structure has a positive impact on the real economy.

2. Greece: bump in the road or “we are all Greek now”?

As of early 2012, the country of Greece was in the headlines of the economic news worldwide (*The New York Times*, 2012). After months of negotiation, eurozone finance ministers approved the second bailout package for Greece in exchange for austerity measures under strict conditions imposed on that country. When the Greek parliament was debating the austerity deal, tens of thousands of protesters demonstrated in Athens, expressing extreme frustration with the fact that the people were forced to pay for past financial dealings that compromised their jobs, livelihoods and future. The financial side was seen by them as robbing the real economy.

The Government of Greece, on the other hand, found itself in the impossible position of having to meet financial obligations with shrinking revenues, and seeing its financial obligations increasing in size because the increased riskiness of Greek government debt resulted in dramatically higher interest rates on new borrowing. The “world of finance” in Greece affected its real economy in a highly negative fashion.

It is common to assume that, since Greece is a small country on the periphery of the world’s great economies, its problems can and will be addressed if enough resources are mustered. However, we would like to propose that the problems of Greece in early 2012 are not unlike the problems that even the most developed economies might encounter in the future. And since retirement systems and policies are largely affected by what occurs in the world of finance, we should ensure that the impact of that world on the real economy is a positive one as opposed to the consequences of the developments in Greece. What happened in Greece, as we see it, was an unbalanced expansion of the first pillar of retirement systems which removed incentives for the building of the other three pillars as well as entrepreneurial activity.

For people employed in the financial sector of an economy, finance often seems to be the highest, noblest calling, something akin to being the captain of an economic ship. For many poor people, far removed from the global markets and only engaged on the ground with the real economy, finance often seems like a sordid gambling house that forces everyone to participate and randomly throws numerous victims out of their homes during economic turmoil. Those victims are prone also to fall prey to ideologies promising a dream world where money will be easily available thanks to the efforts of a new type of political leader, who abolishes the artificial world of financial shenanigans and lets ordinary working people keep the fruits of their labour.

Alas, no such world exists. Every real economy comes with a conceptual finance economy. And the two always affect each other. The question of the relationship between the “finance” and “real” aspects of a business has, of course, appeared in theoretical financial literature. It is addressed in the Modigliani-Miller Theorem (Modigliani and Miller, 1958). This work, which covers most aspects of modern finance, shows that under

specific conditions the value of a firm is generally invariant with respect to the leverage policy, or the method of financing of the firm.

The general thrust of the theorem (Stiglitz, 1974; Braouezec, 2008) is that in the absence of taxes, bankruptcy costs or agency costs, the value of a firm is fundamentally determined by its earnings, not by the way it is financed. Of course, the theorem is presented in a vacuum, because in the real world, taxes do matter; bankruptcy is relevant because even the remotest possibility of it occurring raises the cost of doing business and obtaining capital; and, most importantly, agency costs (i.e. arising from resources being managed and/or used by people other than their owners), are quite substantial.

This confirms that finance matters in the real world. And this can manifest itself in ways that often seem to defy common sense. Why is there increasing social unrest in Greece? There could be, as there always is in politics, an aspect of political opportunism to the protests, but we would venture that political opportunism alone cannot generate the level of frustration and despair one sees in Greece today. People are protesting about layoffs, higher fees and taxes because the unemployment rate exceeding 20 per cent and tight labour markets prevent many of them from earning income. Not only would they like their government to ease their economic suffering rather than add to it, they also blame the government for causing their pain in the first place.

Why then is the government imposing austerity measures on the already impoverished and often unemployed population? Because the government's tax revenues have been sharply reduced by low employment and low profits, while a shrinking economy further reduces value-added tax receipts (and, as some critics point out, there exist serious deficiencies in collection of taxes in Greece, as well). Furthermore, it has to spend more on social spending and on the cost of debt. The government is trapped in the same downward spiral as its citizens.

Government's financial problems translate into real economic problems for the people—and these, in turn, further exacerbate government's financial woes. Notably, private financial institutions in Greece are not part of a solution to this problem, as illustrated by massive cash withdrawals from the Greek banking system. Private financial systems exist, from the macro-economic perspective, in order to deliver capital from savers to efficient uses of it in the business sector; the Greeks, however, do not trust their financial institutions with their deposits, so even the first step of this crucial economic process is prevented from happening.

Retirement systems are most commonly analysed from a financial perspective, especially if viewed by institutions such as banks and insurance companies. The view of social science scholars, on the other hand, considers solely the social costs often removed from market realities. The painful story of the current economic situation in Greece illustrates this important principle: The conceptual world of finance and the social world of human needs collide in the real economy, and the objective of public policy, as well as the work of the private insurance industry, is to replace that collision with harmony.

One could argue that the key problem in Greece is chronic overspending by its government. But that is merely the symptom of a greater disease: the government of Greece has attempted to take on all four pillars of the retirement system (with an unhealthy emphasis on the first pillar), and many other parts of the economy as well. The government is therefore doing too much, and such an imbalance does too little to meet the people's needs. The proper balance of the four pillars system needs to be restored.

Nassim Taleb (2012) points out that modern financial systems, especially because of interactions between large investment banks and governments and the “too big to fail” concept, have created a situation where the financial system and banks have become more vulnerable in a crisis situation. What the world needs, according to Taleb, is what he defines as “antifragility”, i.e. a financial system that becomes stronger and more stable in response to a crisis. The problem of a feedback loop between financial institutions that increases global financial risks is currently under scrutiny under the banner of systemic risk, but we suggest that the other feedback loop between the world of finance and the real economy is the one that matters the most.

The financial system should—and can—become a source of antifragility for the economy, and the private insurance industry is a key player in this mission. The Geneva Association (2010) points out that systemic risk does not originate from core insurance functions of insurance firms. In fact, insurance firms acted as pillars of stability during the Great Depression in the United States—as promoters of antifragility, using Taleb’s terminology (Ciment, 2001; Black and Skipper, 1982; and Porterfield, 1956).

As we have already discussed previously, the recent financial crisis has weakened all four pillars in areas related to the real economy. We should seek to build a system in which the four pillars work in harmony, because such an interrelation would have a stabilising effect on the real economy. When proposing reforms of retirement systems, we should therefore ask the following two questions:

- What is the impact of the financial aspects of the reform on the performance and incentives of the real economy?
- How do changes in one of the four pillars impact the other three, and what are the resulting effects on the real economy?

The design of a retirement system is a part of the financial system and the general institutional and legal design of the economy. Its results will not be judged, however, by its financial parameters or actuarial balances, but by the performance of the real economy at the time when retirement benefits are paid. Real goods and services will have to be provided to the retirees in the future economy at a time when they will no longer have the opportunity to redesign their retirement plans. The private insurance industry will also be held responsible for those results.

3. The four pillars are not separate from one another, they serve the same purpose

As the industrialised world prepares for the impact of the ageing of its citizens and the projected effects of large generations retiring, many steps have been already taken to address this issue. Whitehouse *et al.* (2009) provided an overview of pension reforms worldwide over roughly the last quarter of a century. Their paper describes reform packages that have taken place in 38 industrialised economies, some of them involving incremental changes to existing provision, others an overhaul of the entire retirement income system.

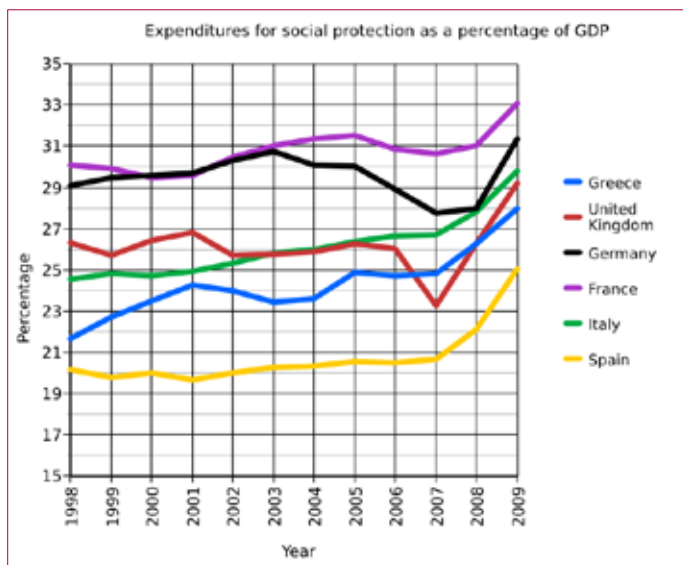
The changes had various objectives:

- Firstly, improved coverage of the pension system, especially of voluntary private pensions, was a common goal. This meant that a larger percentage of the population was brought into the market-based retirement system, in which they could participate

in mapping their future. Of course, this change provided better incentives for work and savings, with a positive impact on the real economy.

- Secondly, some reforms focused on improving the adequacy of retirement benefits to combat old-age poverty. It should be noted that while seeing the results of one's work is a motivator for work, there are exceptions to that rule. One such exception is when the situation appears hopeless: if working hard means remaining in poverty regardless of one's efforts, incentives for work disappear. If instituted carefully, reforms that alleviate poverty can have a positive impact on the real economy by improving incentives for work and by greater inclusion of all groups of a society in its economic system.
- Thirdly, the pressure of population ageing and the maturing of pension schemes meant that concerns for fiscal sustainability of public pensions, expressed through reductions in future benefits, were common. Often, the improvements to long-term finances are to be achieved by encouraging people to work longer, increasing pension eligibility ages and adjusting pension incentives to retire. Overall, such reforms have resulted in more efficient labour markets, again with a positive impact on the real economy.
- Finally, some reforms focused on streamlining the administration of retirement income provisions and improving the security of benefits in the face of different risks and uncertainties. These efficiencies should also help real economic performance.

The crisis that started in 2008 revealed many problems. One such vulnerability was the dire state of public finances in many countries. Greece is an extreme case but social spending increased as a percentage of GDP in all developed economies during the growth period preceding the crisis, so that when the crisis hit and the perceived need for social spending became an absolute necessity, many countries found themselves in a highly vulnerable state of public finances. We present below the history of expenditures for social protection in six key European countries as a percentage of their GDP, based on data from Eurostat (2012).



Clearly there was an increasing trend in those expenditures even before the crisis, and the crisis exacerbated that trend. Economic performance has recovered, at least somewhat, in 2010 and 2011, but the impact of that improvement on social spending is not yet known as of this writing (Freysson, 2011).

If the real economy is performing well, the first pillar of social security may be very important for the poor but it is only a part of the picture for the rest of the society. Also, a growing economy should provide an opportunity for employment to grow, the ranks of the poor to shrink and for employer-sponsored pension coverage to assume greater significance. Furthermore, under conditions of economic growth, most people should be able to save and invest. Additionally, a growing economy improves the stability of financial institutions and expands the size of the private insurance industry. This means that there are ample opportunities for the second and third pillars to play their roles. And an improved labour market helps strengthen the fourth pillar: continued employment of silver workers, i.e. the elderly in general, and retirees in particular, who should be able to continue working part-time and still make a contribution to the society and to their own well-being.

If, however, during the expansion, social protection expenditures expand by as much as 3 per cent of GDP as they did in Greece, and then the recession forces another increase of 3 per cent, as in Greece and possibly other countries, the public sector crowds out the private sector by expanding greatly in response to the crisis. In addition to any financial impact of public sector spending, increased uncertainty may reduce or stop private investment and even, in extreme cases, cause private disinvestment, with the resulting contraction of the economy, and very painful real economy adjustments, as well as negative feedback for public finances.

Insurance is a “superior” good (or, more precisely, service). The demand for private insurance will tend to grow faster than the incomes of consumers of insurance (if their incomes grow) and often also falls faster than their incomes fall. The job of the first pillar is, in a sense, to provide balance in this situation. In a time of crisis it is natural for the first pillar and all social expenditures in general to play a greater role in the economy and in the retirement systems in general; but during a period of economic growth, we can expect the institutional private-sector parts of the second and third pillars (i.e. private pension plans and private insurance firms) to grow faster than the economy. If the first pillar attempts to match that growth or even exceed it, it will find itself overextended during any future crisis. Proper balance between the four pillars is restored only if the first pillar plays a smaller, more tempered role in times of growth and allows other pillars to take over.

What about the balance of the second pillar with regard to the other pillars? The second pillar provides pension benefits based on the record of employment and is tied to the history of employment with one employer. As such, it promotes long-term careers and the building of human capital of employees by employers. It also provides incentives for employees to build the value of their human capital and to pursue long-term employment goals. These are very valuable incentives for both the employer and the employee, and they contribute to the stability of the overall economy. Let us also note that employment-based benefits lower the needs for social security payouts, while the permanent nature of employment provides funds for the employee’s personal savings. Finally, long-term

accumulation of human capital provides skills and experience for continued employment after retirement.

It should be noted, however, that many traditional defined benefit plans capped benefits at a certain maximum, preventing the accrual of additional benefits beyond a specified number of service years. That design effectively punishes continued full-time employment afterwards and is a punitive feature targeting the fourth pillar. Its continued existence in private pension plans is unjustified. Furthermore, the last quarter-century has brought about a substantial decline in private defined benefit plans, and an increase in the relative importance of defined contribution plans, especially in the United States. But defined benefit plans are more effective in providing retirement security and stability. Given the uncertainties of the next quarter-century, the commitment to such security and stability for employee benefits should be re-examined.

The third pillar—private savings—is where private consumers and financial institutions interact. The recent credit crisis has also brought about great uncertainties and reservations concerning financial institutions. We have already pointed out that the role of financial institutions, including insurance firms, is to create a situation where finance facilitates the real economy instead of impeding it. In a well-balanced free market system this is achieved merely by providing competitive rate of return, but this picture may be too simplified for the reality of many competing interests, and global competition. High returns may also be realised by rent-seeking or by pursuing public sector subsidies or bailouts. While such practices might benefit individual firms pursuing them, they are likely to result in lower economic growth, lower employment and the subpar investment results of other firms.

Furthermore, many consumers have lost trust in the fairness of both the political process and financial institutions. Lack of trust lowers economic growth. Trust can be viewed as an economic lubricant, reducing the cost of transactions, enabling new forms of cooperation and furthering business activities, employment and prosperity. Hence, a significant body of research suggests that a higher level of social trust is positively correlated with economic development (Knack and Keefer, 1997, Zak and Knack, 2001, also Fukuyama, 1996).

Public policy decision-makers often argue that they prevent this type of outcome, and that governments serve their citizens with dedication and integrity. We should hope that to be the case, but Public Choice Theory (Tullock, 2008) warns us otherwise, especially with its concerns about regulatory capture. And the effects of those negative public choice effects may be even greater than we tend to estimate, as the distrust of banking institutions generated by the recent economic crisis shows us. The insurance industry must adhere to the highest ethical standards in order to earn and keep the public trust.

The shattering of public trust also calls for a serious re-examination and revitalisation of the regulatory framework. The crisis has already brought about major changes in financial regulation, e.g. the Dodd-Frank Act of 2010 in the United States. A major thrust of any new framework should be the rebuilding of public trust with stable and viable social security systems and regulators who can make financial institutions reliable and trustworthy.

Much has been written about the importance of the third pillar for economic growth. A high savings rate is sometimes prescribed as a panacea for all economic ills. On the other hand, Keynesian policy perspective argues that excessive savings are the cause of

painful prolonged recessions in capitalist economies. It should be noted, however, that the Keynesian argument is rooted in a proposition that excessive savings are a manifestation of underinvestment, resulting from fear, uncertainty or lack of trust in future economic prospects.

If consumers and firms act this way, this is an indication that they lack faith in the protection provided by the other two pillars. They can't risk committing their savings because social security benefits may not be available in the future, financial institutions may become insolvent or labour markets will be too tight and too rigid to meet their needs. In such a situation, the innovative investment of private savings may actually be the best way to start the process of healing the economy.

Public policy decision-makers and the private insurance industry should encourage such developments by removing barriers to entrepreneurial innovation. After all, in the midst of a prolonged slump in business investment since 2008, Apple Computer was able to attain record profitability by creating innovative products, which are bought without hesitation by consumers who are otherwise very careful with their money.

Of course, a private savings pool is created by the individual decisions of consumers who must look to their savings and continued work to provide for themselves in retirement if the political process and financial institutions fail them. Liedtke (2001) points out that the ageing challenge facing those individual consumers (and retirement systems in general) is somewhat misnamed by its sole reference to ageing. We have witnessed great increases in longevity in the 20th century, from life expectancies of just under 50 in 1900 to around 80 in 2000. And those increases in longevity are continuing unabated.

On the other hand, during the 20th century we have also witnessed the expansion of universal education and lengthening of the education process. In 1900, retirement age of 65 was way beyond the life expectancy of a newborn, but it was also often close to 50 years after the age at which many workers entered the labour force. Now we live in a world in which many workers enter the labour force as late as 25, and we could reasonably argue that by the logic of the late 19th century their normal retirement age should be close to 75.

But we do not live in the 19th century. Increased productivity and the general economic prosperity of Western Europe, Japan and North America following World War II allowed many people with advanced degrees, high productivity skills and greatly improved working conditions to retire as early as 55 even though they did not join the labour force until the age of 25. Now we are beginning to realise that this was a temporary luxury afforded by the coincidence of a large generation of baby boomers joining the work force and large parts of the world (e.g. the communist bloc, the Middle East and Africa) pursuing ill-advised economic policies resulting in no growth and lack of competitiveness. The current world of global competition and ageing of the developed world looks dramatically different.

It is often argued that the main private retirement product, life annuity, provides insurance against living too long. Liedtke (2001) points out that the key measure of the challenge of retirement is measuring the time that remains in terms of years of productive work, not just living years. That time interval is uncertain because it ends at some undetermined date in the future. Together with the information about one's productivity, it provides us with the value of our human capital, i.e. the present value of all future income that one can generate through remainder of one's life. Workers must, of course, manage their financial

capital, which derives from the value of their social security benefits and of the future income they will receive from pension and private insurance contracts and the value of future income provided by other savings and investment. But they must also manage their human capital.

The human capital value of a silver worker is in fact equivalent to the fourth pillar value for that worker. It is determined not just by skills, education and character of the worker but is also influenced by public policy, the employment practices of employers and the overall labour market. Workers face a lot of risk in deciding how to utilise their human capital. By far the greater risk is the timing of their decision to exit the labour force. Life annuity is not just a protection against living too long, it is also a protection against foolishly leaving the labour force too early. When is “too early” for this purpose? One could argue (somewhat one-dimensionally, on a purely economic basis) that it means any time when the human capital value is still positive. Or one could say that “too early” means that the human capital value exceeds the utility of leisure in retirement.

The decision about timing of the exit from the labour force is difficult enough because such a calculation is immensely complex. But it is additionally complicated by the fact that the decision to exit the labour force may not be voluntary and it is often difficult or outright impossible to reverse, even if the worker is healthy. A worker who exits the labour force for a long time loses skills and contact with newly developed technology, as well as with work practices and procedures.

Let us stress this again: the decision to exit the labour force is extremely risky and it is perceived as such by most workers. Private insurance industry should consider all possible methods in helping people manage that risk. Innovative approaches have already been developed in disability insurance, where insurers may be willing to finance training and education if it results in return to work, even part-time. Silver workers looking for an opportunity to rejoin the work force can also be helped by education and training, or simply by being offered opportunities for part-time work with their insurance company.

Public policies and employment practices can also greatly affect the riskiness of exiting the labour force and the value of human capital. If workers cannot retire gradually but must instead switch from full employment to no employment, their human capital value is forcibly reduced by the entire future part-time income stream. In some cases, especially for poorer workers, this could amount to more than the entire wealth of the worker. One could hardly imagine anyone running for public office on the platform of taking several hundred thousand dollars from every poor worker without benefitting anybody else. That is, however, the implication of forcing elderly workers to retire fully.

We should also note that such policies have secondary effects, as retirees who suffer such a fate often reduce consumption upon retirement and resulting drop in aggregate demand could ultimately cause the jobs left behind for younger workers to disappear. The net result is greater social security expenditures (and we should include the cost of lower tax revenues due to reduced employment and unemployment benefits), lower rates of return for pensions and insurance firms investment portfolios due to lower economic growth and greater social costs.

In a simplified world, disregarding any non-economic factors, workers should retire only if their human capital value drops to zero. If their income from work is not sufficient for their needs, they should enjoy easy access to their personal savings and investments and to their pension and insurance benefits. If those are not enough, they should be able

to tap social security benefits. This ideal world is hard to bring about because, among other reasons, it assumes no agency costs, no abuse of social security benefits, no mismanagement and no fraud on behalf of financial institutions. But it may be a world worth considering because it assumes that workers utilise their human capital to the fullest.

Conclusion

In the debate on technical and financial issues pertaining to retirement systems, we should never lose sight of the fact that the financial world shadows the real economic world. The retirement system exists for the purpose of serving the needs and dreams of retirees, and is a part of the overall economy. We argue that the system should fully utilise all four pillars in that function, because in a well-designed retirement system the four pillars work in harmony to support the real economy and silver workers.

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9. What should be done: some recommendations for key stakeholders

Kai-Uwe Schanz

All key stakeholders in the global ageing debate, i.e. governments, employers, individuals/households and (re)insurers, have a specific and coordinated role to play in sustainably tackling funding and old-age security issues arising from longevity. For such a concerted multi-stakeholder approach to be effective all four major pillars of old-age security and their specific potential must be harnessed: government-sponsored pay-as-you-go systems, occupational schemes, individual provisions and labour-market participation beyond the official retirement age.¹

In the following, we offer some recommendations as to how key stakeholders in the ageing debate could mitigate retirement risk and address funding shortcomings. Of course, the most appropriate mix of measures will vary greatly between countries reflecting significant differences in their institutional status quo and cultural and historical circumstances.

1. Recommendations for governments

Rising dependency ratios erode public pay-as-you-go pension schemes, where today's employed will pay for today's pensioners, on the understanding that the next generation will do the same. Pension and healthcare promises could soon become unaffordable. Governments need to face up to this reality and accept that their role in providing old-age security is set to diminish even though it will remain important.² Avoiding action is no longer an option as public deficits threaten to spiral out of control. If no corrective action is taken, the cost of state pensions as a share of developed countries' GDP will double from about 8 per cent now to approximately 15 per cent by 2050. Add public expenditure on health and the figure could go up to 24 per cent by 2050.³ The bottom line is clear: pension reform is a prerequisite to long-term fiscal stability. Against this backdrop, most rich countries have already embarked on various reforms over the past decade, making their pensions financially more stable.

From a public policy perspective, ageing is a long-anticipated trend that perfectly lends itself to advance planning. While governments cannot and should not be expected to cover fully the financial cost of retirement systems, they can and should provide a long-term planning and financial stability framework that will support a constructive societal

1 See Chapter 8 of this report.

2 Public pensions are still the cornerstone of old-age protection in the OECD countries, accounting for 60 per cent of old-age income on average. See OECD (2011a).

3 See Jackson and Howe (2006) and Chapter 1 of this report.

resolution of the problem. Therefore, what should governments contemplate in order to maximise their contribution to addressing the old-age challenge?⁴

- 1. Raise the retirement age.** It is obvious that demographics increasingly strain social security systems. The ultimate outcome largely reflects individual and societal choices related to the age of retirement. In order to maintain the sustainability of public pension schemes it appears mandatory to closely align the retirement age with life expectancy. Such a move would also seem plausible as people in developed countries reach old age in better health and with higher education. The current mismatch between the retirement age and the trend towards increasing longevity is a major threat to the intergenerational compact and needs to be addressed. From an economic point of view, increasing statutory pension ages would be doubly beneficial: public finances would be relieved and revenues from taxes and social security contributions would increase.
- 2. Reduce pension benefits.** There are a variety of mechanisms by which this could be achieved. Most countries have pensions based on earnings. Benefits depend on the number of years worked and on the level of past earnings, adjusted for inflation. After retirement, pensions are adjusted annually to compensate for increases in the cost of living. Cuts in benefits can be achieved by changing any of these rules and regulations. For example, Italy did not only increase the retirement age but also increased the minimum number of contribution years needed for entitlement. It also cut the benefits for the highest earners whilst being careful not to place additional burden on the poorest pensioners.
- 3. Increase pension contributions and taxes.** Traditionally, the rising cost of public pension benefits has been covered by raising public pension contribution rates. This revenue-enhancing approach has become increasingly unsustainable as pension tax rates have reached levels where they threaten to stifle economic activity and growth.
- 4. Eliminate incentives for early retirement.** In the past few decades, various governments offered incentives encouraging people to retire before the official retirement age. The main objective behind these policies was to improve employment prospects for the younger generation—an empirically proven fallacy as the amount of available labour is not fixed. In any case, the effective retirement age has dropped significantly below the official one. A number of governments have realised that encouraging early retirement is the last thing needed to effectively dealing with rising life expectancy. For this reason, various countries have dismantled their respective incentives.
- 5. Offer incentives for part-time work beyond the official retirement age.** Governments should help change attitudes towards retirement, which should be perceived as a gradual process, rather than an abrupt end to working life. There is usually little incentive to continue working once a retiree qualifies for a pension. Continuing working implies paying additional taxes supporting the public pension scheme and forgoing pension payments with little or no compensatory increase in future entitlements. Eliminating this disincentive to continue working will be crucial to addressing the challenge of global ageing.
- 6. Provide a conducive institutional framework for increased private sector participation.** As the ultimate backstop for retirement risk, governments have

⁴ See Swiss Re (2010) for an overview.

a strong interest in encouraging the take-up of private-sector, insurance-based solutions, e.g. through:

- a. offering tax incentives for Pillar III (voluntary) pension savings;
 - b. making occupational (and, possibly, private) pensions mandatory in order to mitigate adverse selection effects (longevity protection tends to be bought by those individuals who expect to live longer than the average);
 - c. requiring a minimum annuitisation of pension levels in order to mitigate individual longevity risk;
 - d. providing accurate and up-to-date mortality tables—which have become an important public good—in order to reduce insurers’ uncertainty associated with assuming longevity risk;
 - e. improving people’s awareness of their financial status at retirement (expected pension entitlements and life expectancy, inadequacy of Pillar I benefits) in order to encourage increased individual pension savings and provisions for longevity risk; and,
 - f. broadening and deepening the supply of long-dated (30 years +) and inflation-linked government bonds in order to improve hedging opportunities available to annuity insurers (Swiss Re, 2007).
- 7. Increase labour force participation.** A substantial proportion of males and an even larger proportion of females aged between 15 and 64 are not currently employed. Any rise in the employment ratio would directly reduce the pensioner/worker ratio, providing some relief to pension systems. It would be particularly important to raise female labour force participation which, in some countries, is only half the males’ level. Achieving this does not only require some practical improvements, for example in the area of child care, but also a change in societal attitudes vis-à-vis women with small children opting to continue working.
- 8. Encourage higher fertility.** Along with rising life expectancies, declining fertility rates are the major reason for ageing populations. Against this backdrop, some governments believe that with the right incentives women can be encouraged to have more babies, bringing fertility levels closer to replacement level and mitigating ageing risk. Among these incentives are higher family allowances, tax benefits and an improved supply of nursery places.
- 9. Facilitate immigration.** In most countries the average age of immigrants is lower than that of residents. Therefore, immigration helps reduce the average age of the population as well as the dependency ratio.

2. Recommendations for employers

In a number of countries such as the U.S., Australia and Switzerland, occupational pension schemes form the most important pillar of old-age security—and other countries are watching these systems with increasing interest. Therefore employers globally will constitute an increasingly important stakeholder in the retirement and ageing debate.

One of the most promising methods to make pension schemes more robust and resilient is to give people the opportunity and incentives to work longer. Employers, obviously, play a crucial role in this. They need to prepare for a new paradigm and bid farewell to an

era when they had plenty of young employees (in particular the post-war baby boomers) to choose from. In addition to capturing the potential of experienced “silver workers”, employers need to reassess the financial exposure arising from increased longevity. More specifically, employers and plan sponsors should consider the following actions:

1. **Review their risk-bearing capacity.** Private occupational pensions need to be re-evaluated in light of, firstly, a changing capital market paradigm (record-low investment yields, coupled with heightened volatility) and secondly, longer life expectancy. Against this backdrop, a large number of employers have opted to derisk their retirement schemes and shifted from defined benefit (DB) schemes (where entitlements depend on the level of pay and years of contributions) to defined contribution (DC) schemes (where entitlements ultimately depend on the investment return on pension contributions).
2. **Consider risk transfer/insurance options for the continuation of DB schemes** based on a careful pricing of longevity, investment and inflation risks; seek advice from insurers as to existing plans’ reserving adequacy, drawing on their expertise in managing mortality and longevity risk.
3. **Explore ways to implement tailored solutions for individual employees**, involve them, seek expertise from insurance firms; maintain pension benefits as a competitive “weapon” in the “war for talent”.
4. **Make retirement and pension issues a cornerstone of employee communication** and communicate firmly and openly on what the company can afford or not.
5. **Capture the potential of “silver workers”:** longer life expectancy, improved health and vitality, declining physical demands in most jobs and better education will enable people to work longer. The increase in the age of eligibility and less generous levels of public pension benefits will encourage them to do so. At the same time, in an increasing number of countries (e.g. Japan and Germany), the workforce-age segment is actually shrinking whereas fewer people will be able to embark on early retirement. Against this backdrop, the workforce will age rapidly and the level of retirements is set to increase dramatically, presenting corporate managements with the challenge of maintaining a high workforce productivity, e.g. by:
 - retaining older workers and investing in their continued productivity, for example through additional training, internal transfers and workplace adaptation;
 - making horizontal career moves more attractive, for example by offering appropriate advisory roles in order to maintain the intangible know-how and superior resourcefulness that comes with seniority;
 - promoting performance-based compensation independent of age; and,
 - adopting a longer time horizon for planning of job families and their associated skill requirements (up to ten years in advance) (The Boston Consulting Group, 2011).

3. Recommendations for insurers

Longevity risk presents the life insurance industry with massive opportunities: each year of increased life expectancy adds trillions of dollars to governments’ and employers’ retirement liabilities. Biometric risk being a core business of life insurers, the industry clearly has the expertise, skills, data and diversification power (e.g. the natural offset

between longevity and mortality exposures) to address longevity risk. Life insurers already offer well-proven longevity indemnity products such as individual annuities.

However, the exposure at hand is gigantic: using total pension assets as a proxy, funded global longevity risk exposure in 2010 is estimated at US\$19.3tn (OECD, 2011b). This compares with a combined statutory 2010 life insurance risk capital of about US\$1.3tn in the world's 16 biggest life insurance markets (Swiss Re, 2011). Against this backdrop, one has to remain realistic as to the global insurance industry's capacity to take longevity risk onto its balance sheet.

In order to enhance their role in helping societies manage longevity risk insurers should consider following recommendations.

- 1. Support the development of innovative risk mitigation solutions.** Given the mismatch between the insurance industry's capital resources and the volume of global longevity exposure there is a strong case for a direct involvement of capital markets as ultimate absorbers of longevity risk, e.g. through dedicated investments in pension portfolios and through insurance-linked securities. Insurers are actively supporting the development of innovative forms of longevity risk transfer in order to maintain the availability and affordability of the private provision of retirement income (CRO Forum, 2010).
- 2. Optimise product pricing and design.** From a customer perspective, the appeal of annuity products obviously depends on their cost-efficiency. Providers can do a lot to further improve on this front, e.g. by refining longevity risk pricing, reducing administration and distribution expenses and refocusing products on those features customers are most interested in, i.e. longevity risk protection. In addition, there is significant scope for boosting the attractiveness of annuity products through simpler wordings and more transparent product characteristics.
- 3. Rethink existing business models.** Many annuity products offer a dual protection against longevity and financial market risk. This combination is becoming increasingly more difficult to sustain as record-low investment yields and new solvency capital requirements squeeze insurers who offer such guarantees. However, a radical derisking strategy would undermine one of the most relevant competitive advantages of insurers vis-à-vis banks and other financial services providers: risk protection. Insurers, therefore, need to tread carefully when trying to contain financial market risk. Pragmatic approaches include the restriction of policyholders' say in investment decisions and an increased use of hedging instruments and reinsurance solutions.
- 4. Educate the public on the cost of longevity.** Based on their distinct pricing capabilities insurers should bring to bear their "natural" credibility and raise their profile in the global ageing debate. This includes giving customers and the public an integrated perspective on the workings of the four pillars and their interdependencies.

4. Recommendations for individuals

Much of the burden for retirement saving is shifting from governments and employers to the shoulders of individuals. How can they respond to this new paradigm of self-responsibility?

- 1. Accept responsibility.** The necessary condition for designing and implementing appropriate individual strategies of adaptation is the recognition that the traditional

paradigm governing old-age protection is crumbling. Governments and employers are significantly scaling back their involvement. Against this backdrop, individuals need to accept that doing nothing entails the risk of suffering poverty in old age.

2. **Accept the need to pursue a multi-pillar approach.** Individuals need to understand that Pillar I (public pensions) is increasingly unsustainable in light of changing demographics and deteriorating fiscal positions. They also need to recognise that the predictability of payouts under Pillar II (occupational pension) schemes has decreased and will continue to decrease considerably as employers discontinue DB schemes. Accordingly, individuals are well advised to think about how to strengthen Pillars III (individual provisions—see below) and IV (e.g. the acquisition of additional skills and the agreement of specific workplace conditions with the employer in order to extend the working life beyond the statutory retirement age).
3. **Accept the need to save more (Pillar III).** The average replacement rate (retirement pension as a share of earnings while working) in the OECD is close to 60 per cent. Some countries, e.g. the U.K., significantly fall short of this average. At half of the OECD average, Britons would have to save 7 per cent of their income to close the gap, i.e. to reach the OECD average (OECD, 2011a). The percentage of earnings that individuals would need to contribute to voluntary pensions not only depends on this pension gap (i.e. the difference between an acceptable average and the actual replacement rate) but also on other factors such as the pension age and life expectancy.
4. **Mitigate the risk of outliving savings.** Each person can hedge her individual longevity risk. Through the purchase of annuities the risk of outliving savings can be effectively mitigated, in particular if these products also come with product features designed to protect against health and inflation risk.

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10. Retirement security in the United States—a national challenge

Gordon Stewart

2012 marks the 25th Anniversary of the “Four Pillars” concept of retirement security, which has been developed and continuously researched by The Geneva Association to be a viable and durable foundation for old-age security. This structure essentially adds a fourth pillar of part-time work in retirement to the traditional three pillars of publicly-financed pension systems, occupation-based defined benefit plans and individual savings accumulated privately or through defined contribution schemes such as the U.S. 401(k). In the various ways it has evolved over the years in different nations, the “Four Pillars” could be described as the underlying principle for providing levels of old-age security, which any state must do if it expects to continue in its existing form.

However, looking ahead it seems as though every year will present countries around the world with greater challenges to maintain a Four Pillars foundation as the numbers of people living on the earth grow, along with the numbers who will be living on it longer. So 2012 might also be described as marking a year when the viability and durability of the Four Pillars concept is experiencing serious threats from both the generic forces of demography and finances the whole world cannot escape, as well as powerful economic and political factors specific to individual countries or groups of countries.

To many concerned observers, unsustainable stresses on existing national retirement systems and the consequences for others, should they collapse, seem most evident in countries where the most comprehensive public commitments were made, such as modern Greece. But what if the collapse of an old-age security system follows the elimination of a central pillar in the non-comprehensive national retirement system of the world’s leading market democracy that has been the Rome of modern times—the United States?

This chapter argues that the economic, demographic and political characteristics of the U.S. make it qualitatively as well as quantitatively different from the mature market democracies of Western Europe and Japan, and that the consequences of an inability or an unwillingness of U.S. “stakeholders” to act together to restore and preserve for the majority of its citizens a credible belief in their opportunity for a reasonably secure retirement above poverty levels, primarily because of the collapse of the pillar of employer-based pensions and the inadequate strength of the pillar of personal savings, could over time challenge its citizens’ commitment to free-market democracy.

The most serious threat to the stability of the Four Pillars in the U.S. results from the virtual demise of the second pillar of employer-sponsored defined benefit (DB) plans and the inability of the third pillar of individual defined contribution (DC) plans as presently

structured to fully carry its own weight, let alone bear the added load of a collapsing second pillar, which has been a central support for of the U.S. system for tens of millions of workers. Equally serious potential consequences are possible for many democratic market societies such as those of Continental Europe should their (often dominant) Pillar I public pension schemes erode or even collapse. In fact, it must be considered a reasonable assumption that in all advanced economies old-age security is “systemically relevant” in terms of citizens’ commitment to their free market democracy.

The sobering thesis of this chapter is that the U.S. now faces a retirement crisis in slow motion, one which can be met, but only if its government, business community, and individual stakeholders find the will and the ways to overcome their increasingly bitter divisiveness and recover their historic ability to transcend political differences when the future of the nation itself is threatened. The facts presented here will show that, first, the longevity risks most countries face, when combined with demographic and other risks more unique to the U.S., create a level of risk that no single stakeholder or group of stakeholders can mitigate, and that, second, serious consequences for the other mature and developing economies of a U.S. failure to meet them will be inescapable. Fortunately, the historic ability of the United States to overcome its gravest challenges gives reason to hope that an adverse or even tragic outcome is not inevitable, although yet another historic effort will be needed to prevent this one.

Unlike the occasions when the U.S. was attacked in an act of war, the formidable obstacles to a positive outcome this time include a national acceptance that a kind of internal crisis in slow motion exists at all, or that if it does, that the government of the U.S. should play a decisive role in bringing all the other stakeholders together to deal with it. Non-Americans often find it difficult to accept that while three of the six rationales set forth in the Preamble to the U.S. Constitution are to “Establish Justice”, “Promote the General Welfare” and “Secure the Blessings of Liberty”, the very concept that the consent of the governed might rest to some degree on some form of an at least implied “social contract” with The State for the economic as well as physical security of its citizens has always been an unresolved controversy. The Four Pillars concept remains bitterly contested in the U.S. today, arguably much more so than in other developed countries.

To be sure, the view that some form of social contract both underlies the legitimacy of formal constitutions in the eyes of citizens and facilitates compliance with the obligations their duly elected governments may impose upon them as a result remains contested in many parts of the world. Nonetheless, it is hard to imagine that in today’s Europe, for example, a majority could be marshaled based on a pledge to return the old-age security of every citizen to conditions such as the absence of Pillar I that existed before Bismarck. But in recent years, efforts to return the U.S. Pillar II to the conditions that prevailed before the first employer-sponsored pensions were introduced by railroad companies in the 1870s have largely succeeded in the private sector.

Abundant “engineering studies” over recent decades of the U.S. Pillar I, its Social Security and Medicare systems, have produced many reasonable recommendations for remediation from think tanks, task forces, commissions, and academics and authors including those with valuable contributions to this volume. Therefore, an in-depth discussion of U.S. Social Security is unnecessary here. Nor are forces driving the U.S. retirement crisis to be found in the growing number of elderly people working longer (The Geneva Association’s Pillar IV). However, some have expressed concerns that high

unemployment among young people might be harder to alleviate if more older people remain in the workforce longer. And the practical possibilities of working longer vary greatly among individuals depending on their state of health and how dependent their jobs were on physical labour.

In the U.S., the facts show that the nearly total elimination of employer-based pensions (Pillar II) in favour of a system of 401(k) individual savings accounts (Pillar III) has severely damaged the retirement outlook for tens of millions across at least two generations, as it will for at least two more, unless dramatic and decisive action is taken collectively by all public and private stakeholders. These most certainly include the insurance industry, which as has been long and often noted, can and indeed must, play an important role in any comprehensive solution.

However, it has also been the familiar experience of those corporate and government officials directly involved with numerous attempts in recent years to actually define the specific roles insurers might play in practice, that the very real and legitimate necessity that private sector firms have to operate at a profit constrain what private sector entities can reasonably be expected to contribute to a comprehensive U.S. national solution. The 2010 inflation-adjusted median income of U.S. households was US\$49,445, a decline of 2.3 per cent from 2009 (DeNavas-Walt, Proctor and Smith, 2011). This means that probably as many as half of all the households in the U.S. would not be profitable business prospects for many savings products offered by financial services firms, including insurers.

In a survey released on 13 March 2012 by the Employee Benefits Research Institute only 14 per cent of U.S. workers believe they will have enough to live comfortably in retirement. Sixty per cent of U.S. workers report that they have less than US\$25,000 in savings and investments.

The common and inescapable lesson of these realities supports a thesis of this chapter that the U.S. faces a retirement crisis so severe that only a collective national effort can construct the new retirement security structure for the U.S., which has become a national necessity following the severe erosion of the central second pillar of employer-sponsored individual DB pensions.

The following brief “Coroner’s Report” on U.S. employer-sponsored pension plans is based not only on figures from government, academic and business sources, but on the author’s direct experience as Chairman of the Pension Plan for Insurance Organizations (PPIO) with 74 employers and some 12,000 beneficiaries. It confirms that the demise of occupation-based pensions in the U.S. is nearly total.

As points below will illustrate clearly, there are no conceivable incentives and considerable disincentives for firms to continue to maintain the considerably higher contribution levels needed to meet defined benefit pension plan obligations that must now by law be valued at current market valuations when the amounts they may add to a defined contribution plan are voluntary at all times and highly likely to be greatly less. Nor are there any rational business reasons why a corporation would want to retain or re-assume legal liability for benefits due to its workers at retirement. Not one U.S. research organisation or individual academic specialising in pensions today believes that there is any reason why this trend will be halted or reversed.

1. Largely as a result over time of the combined forces of relentless pressure on profitability and the liberation from legal liability described above, *“today only 17 per cent of workers have (such) defined-benefit pensions, while 39 per cent have*

401(k)'s; some in those two groups have both, but an unfortunate 53 per cent have neither” (Greenhouse, 2012).

2. According to Towers Watson, 90 of the Fortune 100 companies offered some sort of Defined Benefit (DB) pension plan in 1998 (Towers Watson, 2010). Thirty do so today. In the same period, the number offering a Defined Contribution (DC) Individual Savings Account as their sole retirement benefit rose from 10 in 1998 to 70 in 2012 (McFarland, 2011 and Towers Watson, 2010). No legal or institutional means of mitigating or managing this seismic shift from Pillar II to Pillar III exists within the context of the U.S. political economy. In any case, the possibility of “managing” this transition is moot because it has already happened—the result of thousands of firms doing what they believed they had no rational alternative to doing to survive in a competitive global economy.
3. The trend is not moderating or reversing, it is accelerating. In just the first six months of 2011, seven Fortune 100 companies converted their DB plans to DC plans for all new hires. There were zero conversions to hybrid plans that would offer some defined benefit (McFarland, 2011).
4. Data from the U.S. Pension Benefits Guarantee Corporation (PBGC) shows that from 1975 to 1985 there were 57,808 DB Plan terminations. From 1990 to 2000, there were another 51,960 (Pension Benefit Guarantee Corporation, 2011).
5. From 2000 to 2010, pension plan terminations swelled to 177,753. In 1985 there were 112,208 plans insured by the PBGC. By 2010 there were 26,124.
6. In 1979 there were only 526 funds with about 9.8 million shareholder accounts holding US\$94.51bn in assets. By 2009 there were 7,685 funds with 269.2 million shareholder accounts holding over US\$1tn (Investment Company Institute, 2011).

The behaviours of the Participating Employers of the Pension Plan for Insurance Organizations (PPIO), all entities supported by insurance firms, offer a clear illustration of the national pattern. Ten years ago not one of the PPIO’s 75 or so employers had frozen or closed their DB pension plans. Today 54 have done so, and almost every month the Named Fiduciaries receive requests for more closures and more restrictions.

The collapse of the employer-sponsored pension plans now appears in every form of U.S. organisation: for-profit and non-profit, union and non-union, private sector and public. It features in nearly every bankruptcy proceeding, such as the recent one of American Airlines. General Electric froze its plans for white collar workers in December 2011 (Burr, 2011). New employees of some powerful pension plans may not themselves receive pensions from the plans they work for. And in what many thought was the unassailable redoubt of state and local government unionised workers, pensions are being successfully “reformed”, even in traditionally labour-friendly states like New York, whose Governor recently signed a law designed to reduce pension costs by US\$80bn largely by reducing benefits for new public workers (Governor’s Press Office, 2012). Forty-three other states have also enacted pension “reforms” that limit or lower benefits (Ghilarducci, 2012) and public reaction was generally favourable based on the sad but sound logic that, “*Since I won’t get a pension, why should they?*”.

Excellent expert pathology reports explore and explain the slow demise of American employer-sponsored pension plans in depth.¹ Some of the common causes include:

1. Defined contribution plans cost employers far less than the defined benefit pensions that were once the norm on which the essential Pillar II was based.
2. Defined benefit pension plans typically lower a public company's earnings and thus make its shares less attractive to investors than competing firms that do not offer them. General Electric CEO Jeffrey Immelt summed up management's perspective when he remarked publicly at the company's annual meeting in December of 2011 that "*Pension has been a drag on earnings for years*".
3. Obligations to qualifying participants in an employer-sponsored defined benefit plan become the permanent legal liabilities of a firm, further dampening Wall Street's enthusiasm for its shares. As Blake *et al.* (2011) put it when discussing new approaches being developed in the capital markets: "*Goldman Sachs announced it was setting up a pension buy-out company itself because the issue of pension liabilities was beginning to impede its mergers and acquisitions activities. It decided that the best way of dealing with pension liabilities was to remove them altogether from the balance sheets of takeover targets*".
4. There is another, perhaps even more decisive factor, over which neither private sector pension plans nor their sponsors have any control, and one to which the author can personally attest as a presiding Named Fiduciary and personally liable under U.S. Labor Law for meeting the obligations of one of the five largest multiple-employer pension plans in the country. This factor is the deliberate and collective policy of Central Banks around the world to seek to mitigate the effects of severe post-2008 economic downturns and stimulate recoveries by lowering and keeping interest rates at zero or even negative inflation-adjusted levels. This makes it impossible for pension plans, which must act within strict government investment rules and legally binding asset return estimates, to pay every single penny of earned benefits to every single employee past or present (and usually their surviving spouse), for as long as the Plan Document requires, without sharply raising the contribution levels of the sponsoring firms—thus arguably tolling their own funeral bells as pension plans and the second pillar of retirement security for millions of American workers.
5. Ironically, the Pension Protection Act of 2006 may—by tightening funding requirements, limiting actuarial flexibilities and closing loopholes—have had the effect of hastening the demise of existing DB plans, and discouraging employers from creating them.

The inevitable result of these and other factors has been vastly increased pressures on employer-sponsored individual savings accounts in plans authorised and encouraged by the U.S. government such as the 401(k). But whatever their merits as savings vehicles for many, particularly for higher-paid employees, the facts show that as presently structured

1 In addition to research by the membership-based Employee Benefits Research Council, leading academic work can be found at institutions including [The Center for Retirement Research](#) at Boston College (Dr. Alicia Munnell), [The New School for Social Research](#) (Dr. Teresa Ghilarducci), and [The Pension Research Council](#) at the University of Pennsylvania (Dr. Olivia Mitchell). The [National Bureau of Economic Research](#) (NBER) continues to publish important papers in this field. Government Agencies such as the [Social Security Administration](#) have online libraries on this well-known U.S. issue.

they can neither provide a substantial foundation for individuals when they can no longer work, nor can they be relied upon collectively as a pillar of a national retirement system. And because defined contribution plans like the 401(k) shift legal responsibility to provide retirement benefits from employers as firms to individuals as their employees, they cannot be represented to be a form of pension or Pillar II as widely common in other countries. Whether employers match contributions at some levels or not, they are individual savings plans, with each individual worker bearing the entire responsibility for what Pillar III retirement funds they will have when the time comes.

In light of the following facts, and others far too numerous to list, there is simply no credible way to assert that the U.S. 401(k) system as it presently exists is even close to adequate as a third pillar for retirement, let alone claim that it has become a functioning substitute for the vanishing second pillar of employer-sponsored pensions:

1. The investment company with the largest number of 401(k) accounts announced on 1 May 2012 that its average 401(k) account balances rose to US\$74,600 (Fidelity Investments, 2012). It did not mention that the median balance in all such accounts as of 2010 was US\$12,655 (Farrel, 2010).
2. No employer is required by U.S. Law to offer any kind of retirement plan whatsoever, including a Pillar III DC plan such as a 401(k). A survey of small business owners found that 70 per cent do not offer 401(k) plans. Of the larger employers, about half do not offer new employees immediate enrolment but have waiting periods from one to two years. There has been notable reduction in employer matches since 2009. The net for Pillar III in the U.S. is that only about 39 per cent of U.S. workers are eligible to participate in a 401(k) plan at all, for the simple reason that this is as many on whom U.S. employers are willing to bestow eligibility (Greenhouse (2012).
3. 401(k) plans are an inherently regressive benefit. They become more valuable the higher one's salary level. Academic studies confirm what common sense would predict and every employer who offers a 401(k) plan knows. Employee participation (the "take-up rate") increases with salary levels and vice-versa. This is why the law requires firms who wish to offer these plans to recruit percentages of their lower salaried employees to participate. Otherwise they will simply be what they are best suited to be: tax sheltered savings vehicles for the most highly compensated officers who are most likely to have extra income (e.g., Dworak-Fisher, 2008).
4. Obviously higher paid employees have more to put into their 401(k) accounts. Fewer people realise how much more their employer match will then be worth. But even for those who can put aside the maximum of US\$17,500 now permitted, how strong a pillar will that build? Less than 1 per cent of Fidelity's 401(k) balances exceed US\$1m (Olshan, 2012).
5. Far more importantly, the U.S. Census Bureau reports that in 2010 the median income for entire households was US\$49,445. In spite of exhortations from companies, financial planners, media and government, how realistic can it be to expect that the one half of all the families in America who live below this line can afford to reduce their incomes to US\$32,500?
6. And of course no power on earth can predict how much those who are able to enroll in such plans will actually have in their accounts when they are ready to, or have to, retire. The market risk in DC plans is borne entirely by the worker, not the employer. 401(k) portfolios have lost about US\$2.8tn following the 2008 market collapse. The

impact is clearly most severe on those facing imminent retirement, as well as older workers who were “retired” involuntarily because of the subsequent recession.

7. 401(k) plans may be affected by more employee choices than just their investment decisions. For example, most U.S. workers will change employers about five times in their careers, with many electing to cash out their existing 401(k) plans when they do. And over 25 per cent of 401(k) participants have already borrowed against their plan.

This reality in turn begs the two central questions which were posed at the outset of this chapter, and will now shape its conclusion:

Given the collapse of the occupational pension pillar, along with the inadequacy and unreliability of the current personal savings pillar, 1) how can the deteriorating outlook for retirement security be halted and altered? and 2) what will be the consequences for the U.S. and the world if the model and standard-bearer for market-oriented democracies fails to provide even the shards of economic security for huge numbers of its citizens?

The answer to the question 1 is simple: the individuals stakeholders cannot—whatever their size, importance and intentions. Acting by themselves, none of the individual stakeholders—employers, wealth management firms, insurers, researchers, governments and certainly not individuals—can reverse the downward trends and firm up the existing pillars. Nor can they establish a new national foundation for retirement security consistent with both the reasonable expectations of citizens in societies governed by their consent and the realities of global competition on an unprecedented and irreversible scale.

Insurers are naturally near the top of the list of concerned stakeholders, given that pensions, annuities and tax-advantaged asset growth are among their core competencies and reasons for being. Certainly, insurance concepts and mechanisms will be indispensable to any comprehensive national solution. And it should not be beyond the financial capability of insurers and the political competence of government to develop or revise public policies that will enable insurance concepts and mechanisms to greatly strengthen private savings (Pillar III) as a foundation of the retirement security of those workers who have access to them and sufficient income to accumulate significant savings. Thus work on improving the way such DC plans as the 401(k) function must be an important common objective for both the U.S. government and the insurance industry. And with sufficient effort from both, this essential objective can be achieved.

Small legions of insurance industry government affairs executives who have worked directly with U.S. Congressional Members and staff for many years on this aspect of what role insurers might best play in the search for overall solutions know very well that the issues involved at different income levels require qualitatively and quantitatively different cooperative approaches, especially in structuring a sufficient foundation of retirement security for lower-income, often unionised, workers who have traditionally depended the most on the vanishing second pillar of DB pensions. There appears to be a consensus that as a general rule the farther down one goes on the scales of income and net worth, the larger the role the public sector will have to assume. And any experienced insurance agent on the life side can testify to precisely the same phenomenon from a commercial rather than a public policy perspective.

Therefore, what stakeholder but the U.S. government is left to provide such financial capacity and political leadership to overcome the challenges ahead?

We have to be realistic, though: on the fiscal side, the U.S. national debt is now over US\$16tn and by the end of 2012 will exceed U.S. GDP for only the second time since 1900, with the first being after, not upon entering, World War II. Further, it is likely that the 2013 budget of the U.S. Government will begin with a deficit of about US\$1tn, if a final budget can be adopted at all. This is because on the political front, there is no escaping the net assessment of virtually every researcher, commentator and the participants themselves, that the state of even basic civility, let alone actual cooperation to confront a national crisis, is poor. The long, bitter and still unresolved struggle over how to deal with health care provides an uncomfortable preview of what might be involved in re-writing terms of a social contract for retirement security.

Yet no other practical possibility exists for constructing a sustainable foundation to bear the longevity needs and risks of U.S. citizens than some form of public/business/individual collective national effort. The only possible answer to the key question—what is to be done?—is that even against current odds, but consistent with the finest hours of its history, the stakeholders of the American Republic simply must find the will and the way to defend its economic, and its political, future.

Fortunately, it is precisely such an inescapable practical necessity that has always led the U.S. to come together to confront a crisis that creates a credible reason for this chapter to propose that a secure foundation for retirement can be achieved. Despite significant differences with present circumstances, U.S. history offers tangible reasons to believe that success is possible if both political parties and all economic sectors are able confront a threat on practical rather than ideological terms. In fact, the outlines of a promising plan for the people of the U.S. to prevail have already emerged in the work of academic institutions, government agencies, public policy research tanks and in programmes being tried in individual states and other venues.

Because these plans are largely driven by the practical necessity to confront a real threat to the survival of the market democracy as a whole, they tend to involve the creation of some form of National Savings Plan mandatory and beginning with first employment, as does Pillar I (Social Security and Medicare), but without the creation of large federal agencies, not only because new bureaucracies would be political impossibilities, but because the concept and goal of partnership with private sector mechanisms and entities is to make them unnecessary. Special features such as compulsory annuitisation at certain minimums, i.e. defined benefit pensions to replace the lost Pillar II, will have to developed and adopted.

And overcoming the crucial obstacle of how to apply a public/private programme across income levels, the National Savings Plan might require a kind of grand bargain between the sectors in which insurers, for example, would receive reliable income and an essential place in the political economy of the U.S., though with lower returns, on creating structures for the lower income quintiles, while benefiting from more ambitious retirement products offered to higher income quintiles and/or above accumulated savings levels sufficient to create Pillar II pensions.

However, the primary purpose of this chapter is not to evaluate the fortunately growing number of policy proposals being put forward, but to argue that the U.S. must confront its greatest national challenge at home since the Great Depression and to encourage a consensus conviction that the retirement crisis facing America can be overcome if the collective will to do so can be created.

And as for the second question posed at the outset: what might be the consequences for other countries and their citizens if the United States, having helped to offer physical and economic security to so many for so long, and as it adjusts now to reducing the burdens and benefits of empire, fails to offer security to its own citizens in their longer old age? This will be best left for readers around the world to assess in light of their own circumstances, histories and points of view. But it would be reasonable for all to assume that the consequences of the world's most recent Rome to continue to prosper as a market democracy will be far more severe than the inability of modern Greece to balance its current obligations. As Benjamin Franklin warned at the creation of the U.S. Constitution, and as the experience of so many countries in the last century and this one has proven, no democracy is a state of nature.

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Part 3
Effects on Key
Stakeholders—
What Difference
Insurance Could Make

11. The challenge of public pension reform in advanced economies¹

International Monetary Fund

1. Introduction

Public pension reform will be a key policy challenge for advanced economies in the coming decades, not least as many countries will need to achieve significant fiscal consolidation over that period (IMF, 2010 and 2011). A major rationalisation of public spending, including on pensions, will in many cases be required to support this fiscal consolidation. Fortunately, the extensive pension reforms enacted by many countries in the past two decades contain valuable insights into the design of future pension reforms. It is therefore opportune to evaluate their likely impact on pension spending, assess associated risks and consider options for deeper reforms should these be necessary. In particular, it is important that pension reforms do not undermine the ability of public systems to alleviate poverty among the elderly. Finally, these reforms may affect labour force participation rates and private savings, and thus long-term growth and the ultimate success of fiscal consolidation efforts.

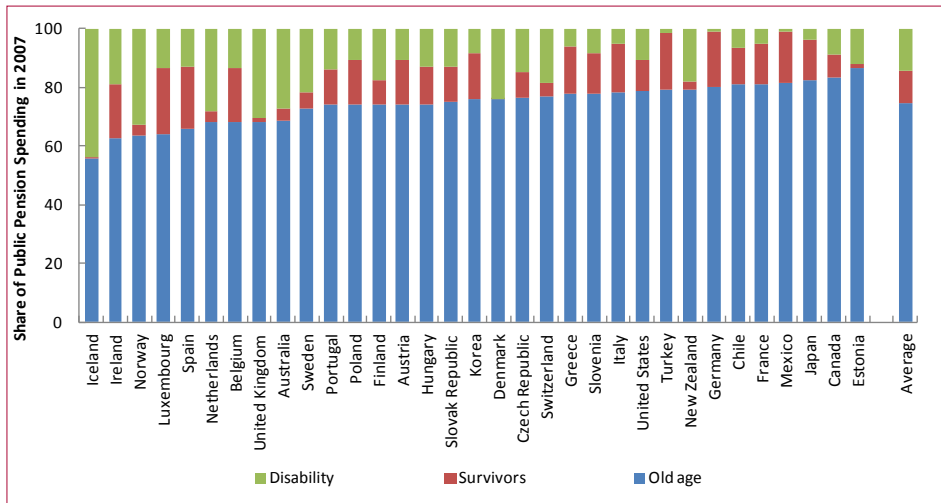
Population ageing will affect not only public pension systems but also public healthcare provision. In fact, the fiscal challenges arising from public healthcare spending trends in the coming decades are most likely more significant than those arising from public pension spending (IMF, 2012b).

2. Current pension landscape

Old-age benefits account for about three-quarters of total pension spending. The remainder consists of survivor benefits (10 per cent) and disability pensions (15 per cent). Although on average these shares have remained fairly constant over the past three decades, some countries have experienced substantial variation in the composition of pension spending, reflecting both economic conditions—claims for disability pensions tend to increase during economic slowdowns—and policy reforms. The importance of each of these programmes varies across countries, to a large extent reflecting both the degree to which disability pensions are used as a pathway to retirement and the relative generosity of disability and old-age pensions (OECD, 2006) (Figure 1).

¹ This chapter draws on a forthcoming Occasional IMF Paper (IMF, 2012a).

Figure 1. Composition of public pension spending, 2007



Sources: OECD and IMF staff estimates.

More than three-quarters of public pension systems link benefits to earnings during working lives. These could be “defined benefit” plans (DB, where pension benefits typically depend on the number of years of contributions and the average of covered earnings), or “defined contribution” plans (DC, where benefits depend on the contribution history and returns on these contributions). Some countries also offer a flat-rate component that does not depend on previous earnings, while other countries provide only a means-tested or flat-rate universal public pension. Access to means-tested benefits for the elderly (regardless of contribution history) is more common among advanced than emerging economies.

Mandatory private schemes are rare in advanced countries. Instead, some advanced economies have mandatory occupational pensions where participation is linked to employment in firms or membership in a profession or trade. Moreover, advanced economies often complement their public systems with voluntary private schemes, including voluntary occupational plans. However, their role in providing retirement incomes varies widely across countries.

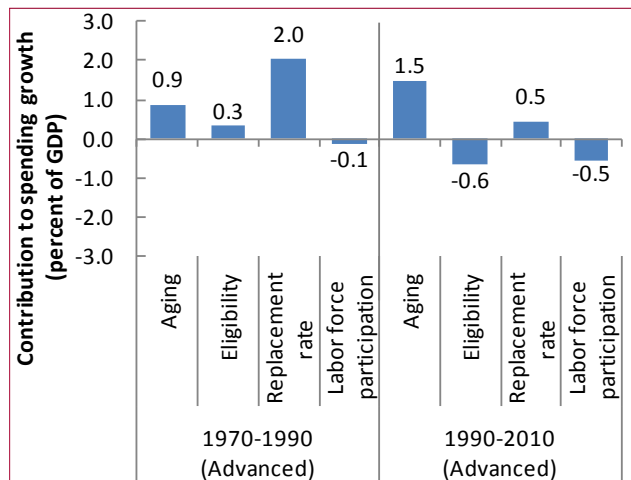
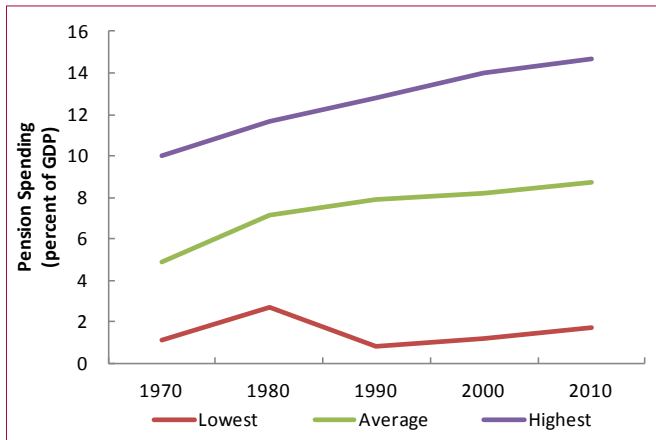
3. Historical patterns in public pension spending

In advanced economies, public pension spending increased from 5 per cent of GDP in 1970 to 8.5 per cent in 2010. The four drivers behind the change in public pension spending as a share of GDP are ageing, eligibility rates (the number of pensioners as a proportion of the population 65 and older), replacement rates (the ratio of average pension to average wages) and labour force participation rates (Figure 2). During 1970–1990, increases in spending reflected a combination of higher replacement rates, ageing and increased eligibility—the average statutory retirement age declined by one year over this period.² Increasing female labour force participation offset some of the increase

2 The increased generosity of systems over 1960–1980 reflects partly the expansion of the welfare state more generally (Lindert, 2004; Tanzi and Schuknecht, 2000).

in spending. Pension spending growth was more contained over the past two decades. The impact of ageing and benefit increases was partly offset by both tighter pension eligibility rules (including increasing retirement ages) and further growth in labour force participation rates.

Figure 2. Evolution of public pension expenditures in advanced economies, 1970–2010

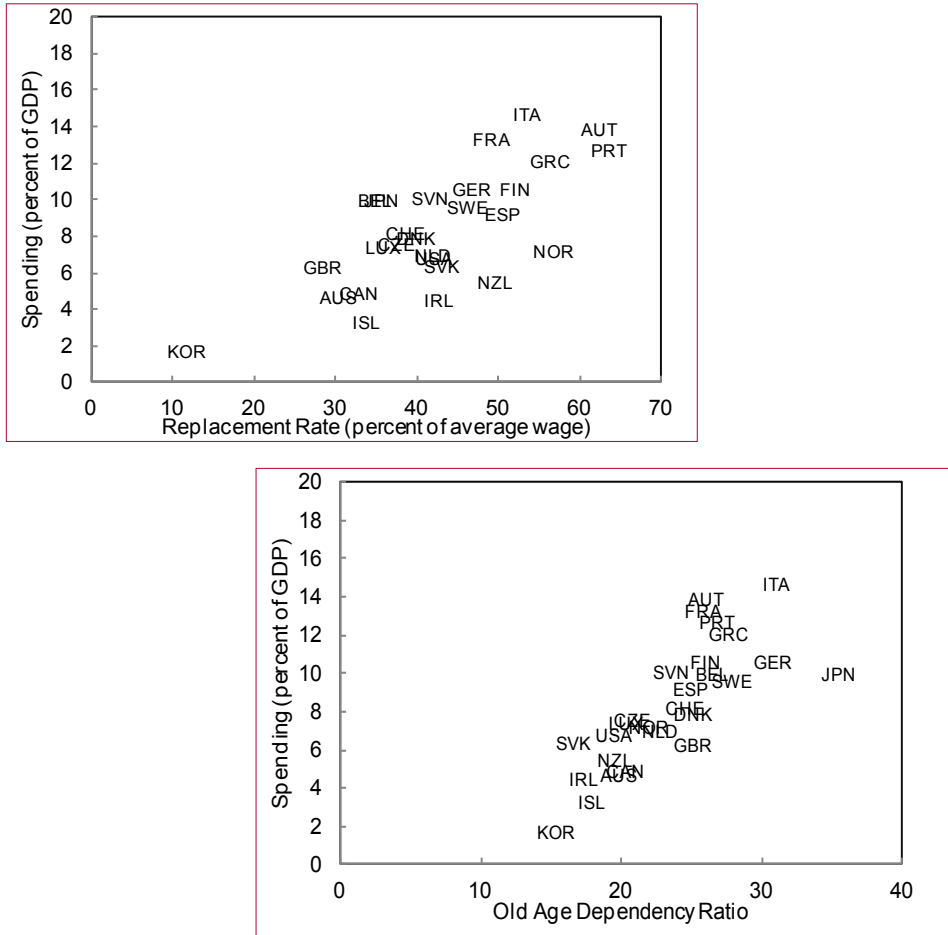


Sources: OECD, Eurostat, ILO, and IMF staff estimates.

Note: The averages for these figures are calculated including only economies with consistent data for 1970–2010.

The variation in current public pension spending across countries primarily reflects differences in old-age dependency ratios, generosity of benefits and coverage rates (Figure 3).

Figure 3. Pension spending, replacement rates, and ageing, 2010



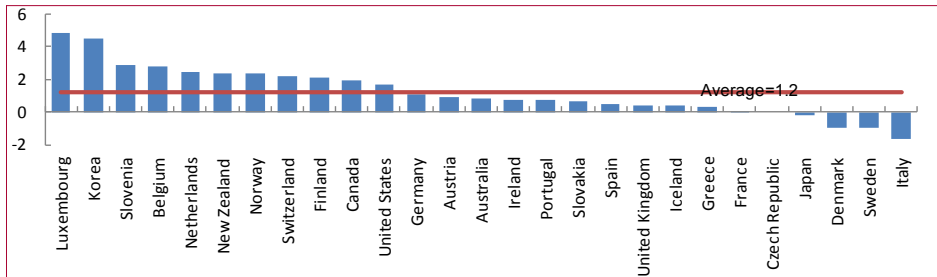
Sources: OECD, Eurostat, ILO, UN, and IMF staff estimates.

4. The outlook for public pension spending

Pension spending is projected to increase by about one percentage point of GDP over the next two decades, but substantial variation exists across countries (Figure 4).³ Increases in spending in excess of two percentage points of GDP are projected in Belgium, Finland, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Slovenia, and Switzerland, while spending is projected to decrease in Denmark, Italy, Japan and Sweden.

³ The projections presented here are-where-available-based on publicly available official projections.

Figure 4. Increase in pension spending, 2010–2030 (percent of GDP)



Sources: OECD, EC, ILO, UN, and IMF staff estimates.

In addition to these projected increases in public pension spending, governments face other fiscal challenges, most notably from their healthcare systems (Box 1).

Box 1: Fiscal challenges and healthcare systems*

Large increases in public health spending are projected in advanced economies. Public health spending is projected to rise in these countries on average by three percentage points of GDP over the next 20 years. Around one-third of the increase would be due to the effects of population ageing, a slightly higher share than in the past. The remaining two-thirds would be due to excess cost growth, reflecting among other things technological change and health policies.

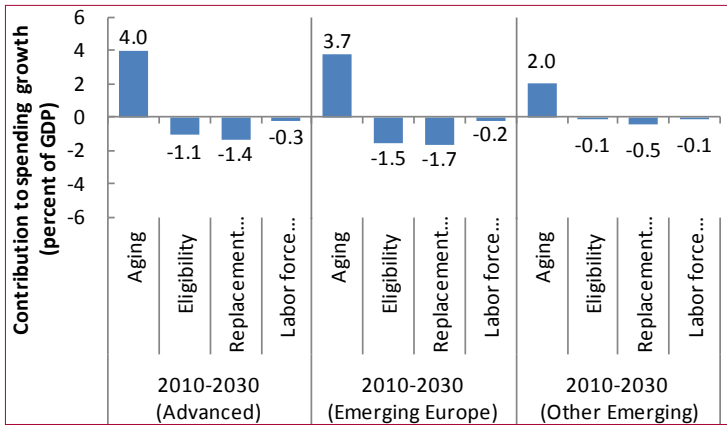
The projections suggest that the outlook is grim in the United States, but also in Europe, where the fiscal challenge posed by health spending is sometimes underestimated. In the United States, public health spending is projected to rise by about five percentage points of GDP over the next 20 years, the highest among advanced economies. Spending increases are expected to be driven by continued high rates of excess cost growth. In Europe, public health spending is also expected to rise substantially, by two percentage points of GDP, with spending expected to rise by over three percentage points of GDP in seven countries.

The cumulative fiscal burden of public spending increases will be large. The net present value of the projected increases in public health spending during 2011–30 is 26 per cent of today's GDP. This figure rises dramatically—to 98 per cent of GDP—when increases over the 2011–2050 period are considered, based on a longer-term projection of a spending increase of 6.5 percentage points of GDP over this period.

*This box draws on *The Economics of Public Health Care Reform in Advanced and Emerging Economies*, IMF (2012b).

The projected public pension spending increases would be significantly higher had reforms not already been enacted over the past two decades to deal with the challenge arising from population ageing. In advanced economies, old-age dependency ratios are projected to double between 2010 and 2050, partly because of increasing longevity but mainly because of the past decline in fertility rates (Goss, 2010). In the absence of reforms, public pension spending would increase by four percentage points of GDP (Figure 5).

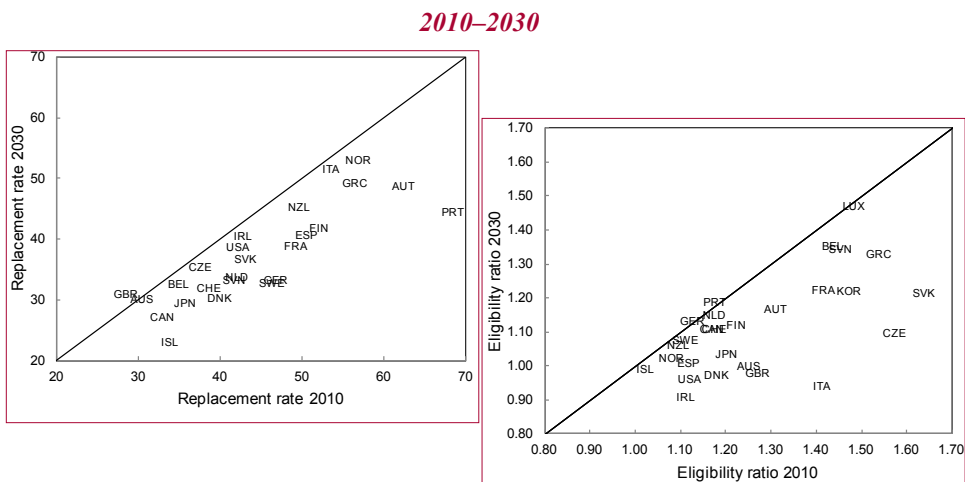
Figure 5. Projected evolution of public pension expenditures, 2010–2030



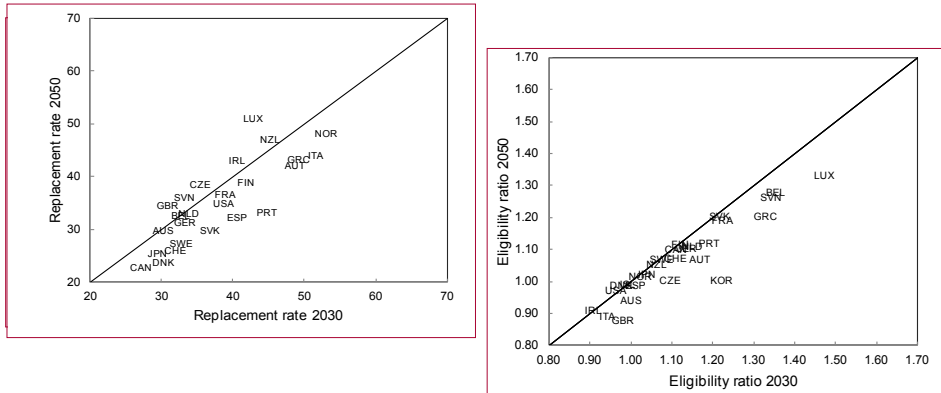
Sources: OECD, EC, ILO, UN, and IMF staff estimates.

There is considerable uncertainty with respect to these projections, which could actually understate the expected additional strain on public finances in a number of countries. Firstly, the impact of ageing is directly related to demographic assumptions—fertility rates and longevity—for which past projections have proven relatively optimistic. Secondly, projected spending in a number of countries is based on relatively optimistic macroeconomic assumptions. Thirdly, official projections are also subject to risks of reform reversal. In response to substantial ageing challenges, legislated reforms often imply ambitious reductions in pension spending. As these reforms take effect, political pressure to reverse them could mount. To reduce the risk of reform reversal, replacement rate reductions should not undermine the ability of public pension systems to alleviate poverty among the elderly. For example, recent reforms in Greece and Italy have reduced benefits while protecting low-income pensioners (Figure 6).

Figure 6. Current and projected replacement rates and pension eligibility in advanced economies, 2010-2030 and 2030-2050



2030–2050



Sources: OECD, EC, ILO, UN, and IMF staff estimates.

Note: Countries, for which a reduction in the replacement rate or the eligibility ratio is projected, are displayed below the diagonal line, those with projected increases above. Being on the diagonal line means that there is no change.

Potential risks also arise from the interaction between public and private sector pensions. For example, shortfalls in the funding of DB private pension systems could impose a burden on public sector finances; the degree of underfunding is considerable in some systems. Insurance schemes have been set up to protect defined-benefit pension programme participants in the case of corporate bankruptcies in countries such as Germany, Sweden, the United Kingdom and the United States. While these insurance schemes reduce the exposure of government to individual corporate failures, they have not been designed to absorb more widespread private DB pension scheme closures. As such, governments' exposure to these risks is likely to be accentuated in times of crisis (IMF, 2009). Similarly, there is also the risk that replacement rates in private DC schemes could be inadequate and create pressure for higher social pension spending. While in most countries there will be no legal obligation for government to step in, a contingent liability could arise from an implicit social obligation of the pension system to ensure adequate income in retirement. These risks further increase relative to the importance of DC schemes in providing retirement income. In Australia, Denmark and Switzerland, more than three-quarters of pension fund assets are in defined-contribution schemes (OECD, 2011). Of course, in order to limit future liabilities, governments could more forcefully encourage a stronger role of the third pillar of old-age security, i.e. individual savings and/or insurance solutions mitigating longevity risk.

Mitigating longevity risk⁴

The calculation of pension liabilities is generally based on baseline population projections. In the past, however, these have consistently underestimated how long people live. Therefore, unexpected longevity beyond those baseline projections, while clearly beneficial for individuals and society as a whole, represents a financial risk for governments, sponsors of defined-benefit pension schemes and annuity providers, who

4 This subheading draws on the IMF *Global Financial Stability Report* (IMF, 2012c).

will have to pay out more in social security benefits and pensions than planned. It may also be a financial risk to individuals, who could run out of retirement resources themselves.

Few governments, private pension providers or individuals adequately recognise longevity risk. Yet it is large. IMF research (2012c) shows that if individuals live three years longer than expected—in line with underestimations in the past—the already large costs of ageing could increase by another 50 per cent, representing an additional cost of 50 per cent of 2010 GDP in advanced countries and 25 per cent of 2010 GDP in emerging economies.

On a global scale, reducing longevity risk would require reversing the current bias toward underestimating longevity. Given the uncertainties inherent in forecasting, however, it is likely that longevity risk will remain. Effectively dealing with longevity risk rests on three requisites:

1. Government longevity exposure needs first to be addressed, i.e. governments should acknowledge the significant longevity risk they face through defined-benefit plans for their employees and through addressing old-age social security schemes.
2. Risk should be appropriately shared between governments, pension plan sponsors and individuals (including across generations). One of the most effective offsets to longevity risk is individuals' human capital, their labour or entrepreneurial income. An essential part of risk-sharing with individuals would therefore make the retirement age increase along with expected longevity. This could be mandated by government, but individuals could also be encouraged to voluntarily delay retirement. Better education about longevity and its financial impact would help make the consequences clearer. Allowing flexibility for pension providers is also important: where it is not feasible to increase contributions or retirement ages, benefits may have to decrease.
3. Further sharing of longevity risk could be achieved through market-based transfer of longevity risk to those better able to cope with its adverse financial consequences. Simply-designed, over-the-counter (OTC) bilateral contracts and longevity bonds are the two principal instruments through which longevity risk can be transferred. Bilateral contracts include buy-ins, buy-outs and longevity swaps. (See Chapters 7 and 12 of this report for further details.) The use of capital market-based longevity risk management solutions has been growing, but their use remains small, with the notable exception of the swap, buy-in and buy-out markets in the United Kingdom and the Netherlands. Explanations for the slow growth include:
 - (i) limited recognition of longevity as a financial risk by pension providers;
 - (ii) a lack of familiarity with the market for longevity risk transfer;
 - (iii) the existence of basis risk (a result of longevity in the reference population differing from that of the actual pool of retirees of the pension provider);
 - (iv) a limited pool of “natural” buyers of longevity risk (largely confined to re-insurers and insurers exposed to life insurance risk);
 - (v) significant counterparty risk due to the long-term nature of longevity transfer contracts; and,
 - (vi) a lack of reliable and sufficiently detailed information about longevity developments.

It is expected that the market for longevity risk transfer will further develop with enhanced recognition of longevity risk and the benefits of its transfer. The government has a potential role in supporting this market, including through provision of better longevity data, better regulation and supervision, and education to promote awareness of longevity risk.

5. Pension reform options

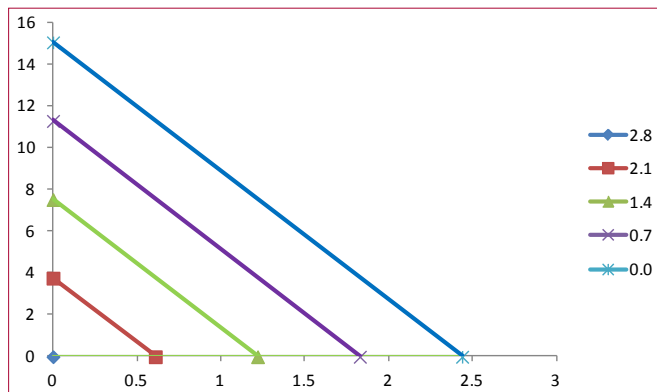
There are a number of considerations that should guide pension reform. Firstly, the basic objective of public pensions is to provide retirement income security within the context of a sustainable fiscal framework. Many economies will need to achieve significant fiscal consolidation to lower their debt-to-GDP ratios over the next two decades (IMF, 2010 and 2011). In this regard, countries could consider strengthening their overall fiscal positions and reducing public debt in anticipation of age-related spending pressures. Pension reform could potentially play an important role in this.

Secondly, the importance of providing income security, especially for low-income groups, suggests that equity should be a key concern of pension reforms.

Thirdly, the design of public pensions could potentially have an impact on economic growth through its influence on the functioning of labour markets and national savings.

Pension reforms that curtail eligibility (e.g., by increasing the retirement age), reduce benefits or increase contributions can help countries address fiscal challenges. The trade-offs between these choices are illustrated in Figure 7. Beyond what is already legislated, with no increases in payroll taxes and no cuts in benefits, average statutory ages would have to increase by about another 2½ years to keep spending constant in relation to GDP over the next 20 years.⁵ Relying only on benefit reductions would require an average 15 per cent across-the-board cut in pensions. Relying only on contributions would require an average payroll rate hike of 2.5 percentage points. To keep pension-spending as a share of GDP from rising after 2030, additional reforms would be needed: for each decade, retirement ages would have to increase by about one year, benefits cut by about 6 per cent, or contribution rates increased by about one percentage point.

Figure 7. Trade-offs across reform options to stabilise spending, 2010–2030



Sources: OECD, EC, ILO, UN, and IMF staff estimates.

5 Increasing the retirement age helps pension finances by increasing the years of contributions and reducing the number of years pensions are paid. To the extent that workers accrue higher pension rights by delaying retirement, higher replacement rates might also increase pensions.

The appropriate combination of reforms depends on each country's circumstances. Nevertheless, raising statutory retirement ages has clear advantages. Firstly, it would promote higher employment levels and economic growth, while increases in social security contribution rates could decrease labour supply. By increasing lifetime working periods and earnings, raising the retirement age can also boost the growth of real consumption, even in the short run (Karam *et al.*, 2010). Secondly, raising retirement ages would help avoid even larger cuts in replacement rates than those already legislated, thus reducing the impact of reforms on elderly poverty. Thirdly, increases in retirement ages could also be easier for the public to understand in light of increasing life expectancies. Many countries have room for more ambitious increases in retirement ages. In advanced economies, the number of years men are expected to live beyond age 60 is expected to increase by an average of five years between 1990 and 2030. In contrast, the average statutory retirement age is being increased by only one year over this period. To better address increases in longevity, statutory ages could be gradually raised to 67 by 2030 (as already legislated in a number of countries) and indexed to life expectancy afterwards.

Increases in the statutory retirement age would need to be accompanied by steps to limit early retirement, for example by decreasing (financial) incentives to do so (Queisser and Whitehouse, 2006) and by controlling alternative pathways to retirement such as disability pensions (OECD, 2006); individuals currently claim pensions, on average, about four years earlier than the statutory age. Furthermore, they should also be accompanied by measures that protect the incomes of those that cannot continue to work. In the United States, for example, about a quarter of all workers in their sixties may find continued work difficult on account of disabilities or reduced health status (Munnell, Soto, and Golub-Sass, 2008). Older workers should be fully protected by disability pensions where appropriate and social assistance programmes exist to ensure that increases in retirement ages do not raise poverty rates. To ensure that higher life expectancies do not erode the progressivity of pension systems, consideration could be given to offsetting measures, such as reducing replacement rates for upper income households.⁶

Another reform option is to reduce further the replacement rate. This could be appropriate in countries with relatively high projected replacement rates for 2030, such as Austria, Greece, Italy, Norway and Portugal. This could be achieved by freezing pensions for a period of time or by reducing the indexation for those receiving high pension benefits—in most advanced economies, pensions are indexed to inflation. Alternatively, benefits could be linked to demographic and economic variables so that they are reduced in response to changes in these variables (Austria, Canada, Germany, Japan, Italy and Sweden have some form of automatic adjustment mechanism).

Increasing revenues could also help to offset increases in pension spending. This is particularly the case in countries where there may still be room for raising payroll contribution rates (e.g. Australia, Ireland, Korea, New Zealand, Switzerland and the United States). In some cases it may be appropriate to lift the ceiling on earnings subject to contributions. In this regard, some countries should also aim to increase the efficiency of contribution collections, for example by unifying revenue administration for tax and social security collection (Barrand, Ross and Harrison, 2004). Another option is to equalise the taxation of pensions and other forms of income—many advanced economies

6 Diamond and Orszag (2005), in their proposal to reform social security in the United States, called for raising the cap on contributions and reducing benefits for those in the top income tier in light of the increasing gap in life expectancy between low- and high-income earners.

tax pensions at a lower rate. Where increasing revenues is desirable, alternative revenue sources such as consumption taxes could also be considered, particularly to finance the redistributive components of pension systems.⁷ Similarly, countries that subsidise private pensions, either through tax relief or matching contributions, could consider scaling these back since these often have very little impact on the national savings rate and benefit mostly higher income households (European Commission, 2008).

6. Concluding comments

The financial and economic crisis has left many countries with substantial debt burdens. Strengthening overall fiscal positions and reducing public debt in anticipation of age-related spending pressures on pensions and healthcare over the next two decades will thus be a key priority.

Pension reform could potentially play an important role in this. While the need for reform varies across countries, reforms could be considered in the majority of economies, particularly where the projected increases in age-related spending (health and pensions) over 2010–2030 are relatively high. In addition, the relatively large size of pension-spending in government budgets in several advanced economies suggests that fiscal adjustment plans will need to include pension reforms, particularly in countries with large consolidation needs. Countries with low retirement ages and high eligibility ratios may also wish to consider pension reform a priority for boosting growth, especially where the gap between increases in life expectancy and retirement ages is relatively high. While the appropriate mix of reforms depends on country circumstances, giving priority to increasing retirement ages has many advantages.

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⁷ Some macroeconomic advantages could also be derived from shifting revenue sources from social contributions toward value-added taxes (IMF, 2011). Changes in the composition of social security revenue sources, however, should not undermine the relationship between individual payroll tax contributions and benefits (Musgrave, 1981).

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12. Longevity risk and insurance solutions for U.S. corporate pension plans

Christine Marcks and Margaret McDonald

Rapidly changing demographics and increases in life expectancy pose a serious challenge to the health of corporations, potentially impacting their ability to compete. For American corporations, the impact of ageing can be seen most clearly through the lens of their employer-sponsored retirement plans.

In this chapter we focus on the U.S. corporate pensions market, where there is broad consensus that the risk position of corporate pension plans is not sustainable. Yet, despite this recognition, U.S. plan sponsors lack awareness of the impact of improved life expectancy on their pension liabilities, and focus almost exclusively on investment risk. It is our position that a true understanding of longevity risk is the needed catalyst for U.S. corporate pension plans to more actively adopt derisking strategies.

Defined benefit pension plans have grown to enormous proportions, with some dwarfing the size of their sponsoring organisations. Unprecedented pension deficits are front-and-centre and the cash required to close them is straining free cash flow. Having endured significant market downturns over the past several years, sponsors are now keenly aware of how volatile that cash call can be. Transferring pension risk through an insurance solution offers a sponsor the opportunity to remove these risks from their balance sheet and focus on their core business.

The challenges are not limited to corporations that sponsor defined benefit plans. As members of the baby boom generation approach retirement, their ability to retire with security is also becoming the focus of corporations that sponsor defined contribution plans as the main source of retirement benefits. When uncertainty about the ability to make account balances last throughout retirement causes these older employees to postpone retiring, the normal course of promotion and hiring that keeps a corporate culture vibrant and motivated is disrupted. Lifetime income solutions can provide needed security to this generation of workers and support workforce management strategies.

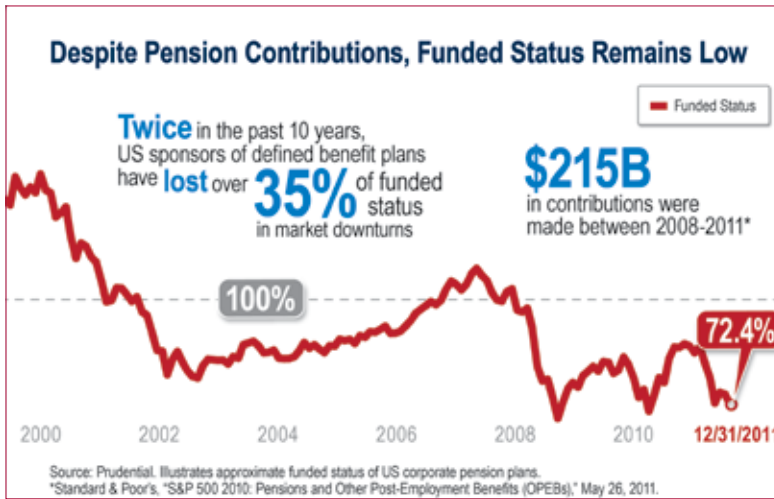
1. Employers face unprecedented defined benefit pension liabilities and volatility

Pension plan liabilities have increased dramatically over the past few decades, due to both an ageing workforce and increased longevity of retirees. The recent market crisis diverted

employers from these risks as they struggled to address the challenges to their core business. Now the focus is squarely on pension plans, as many corporations have pension liabilities that exceed 25 per cent of their market capitalisation, with some businesses owing more than their net worth (CNBC, 2012). The investment community is keenly focused on pension plan financials as a major driver of free cash flow and earnings.

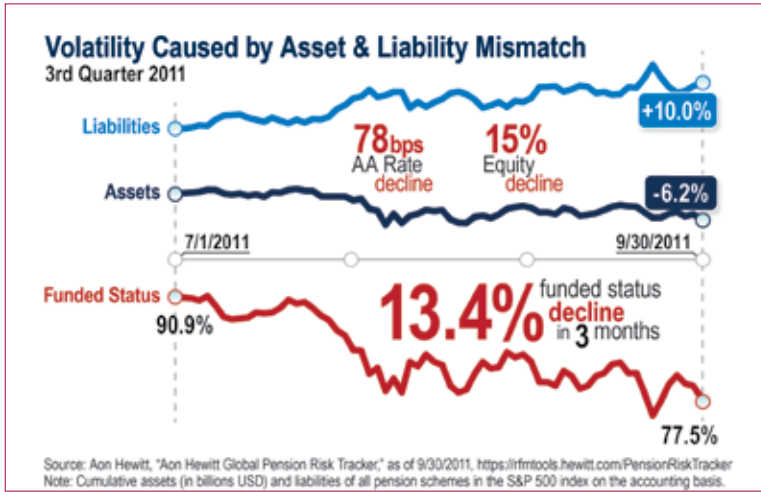
As of year-end 2011, the average ratio of plan assets to liabilities for the 100 largest U.S. pension plans stood at 73 per cent, meaning that U.S. sponsors will face onerous funding requirements over the next several years as they fund a deficit of approximately US\$0.5tn (Milliman, 2011). Even more troublesome to employers than the current poor-funded status is the volatility of that funded status. A recent poll of plan sponsors indicates that their highest priority for 2012 is “controlling funded status volatility” (Mercer, 2011). The graph below shows that despite hundreds of billions in pension contributions, the funded status of most plans has not significantly improved since the depths of the recent economic crisis. What’s more, twice in the last 10 years plan sponsors have lost over 35 per cent of their funded status. It is imperative for plan sponsors to find relief from this volatility.

Figure 1



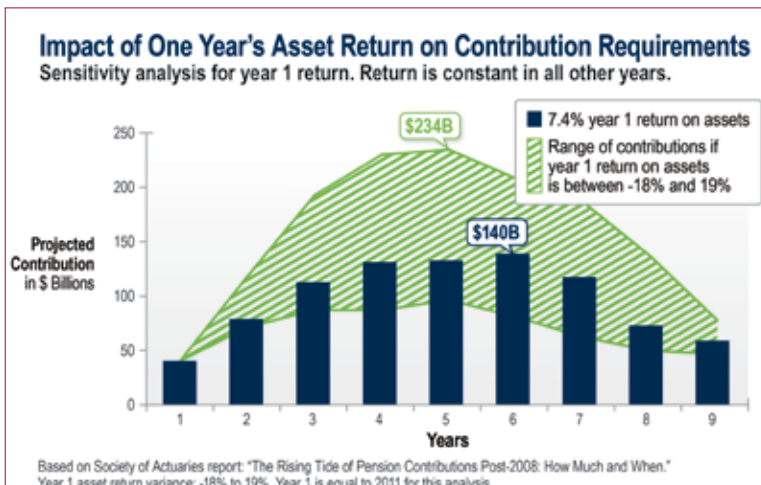
Pension liabilities, once calculated under long-term investment return assumptions, are now calculated at discount rates based on high-quality corporate debt, while the majority of pension fund assets are still invested in equities and other risk assets. The result is a poor correlation of asset and liability returns. An example of this divergence can be seen in the third quarter of 2011, when discount rates dropped 78 basis points, increasing liabilities by 10 per cent. Simultaneously, investments in the average pension fund lost more than 6 per cent, due in large part to a 15 per cent drop in equities. The result was a 13.4 per cent drop in funded status in just one quarter (Aon Hewitt, 2011). To a plan sponsor with funding requirements and a pension earnings charge that is based on a snapshot of funded status on one day each year, this volatility is untenable.

Figure 2



Funding rules under the Pension Protection Act (PPA) of 2006 resulted in a more direct correlation between pension plan funded status and cash flow requirements. The combination of the current poor funded status of most plans and the new PPA funding rules will dramatically increase funding requirements of corporate U.S. pension plans over the next several years. In stark contrast to the 10 years ending in 2009 when minimum contribution requirements fluctuated between US\$9bn and US\$22bn, projections for the period between 2010 and 2019 average US\$90bn per year, with a peak amount of US\$140bn needed in 2016 (Society of Actuaries, 2011a). While these amounts are staggering, consider how dramatically the picture changes if plans experience one year of poor asset returns. A scenario in which the first year asset return is assumed to be -18 per cent increases the peak year contribution to US\$234bn, a 67 per cent increase over the baseline scenario (Society of Actuaries, 2011a).

Figure 3

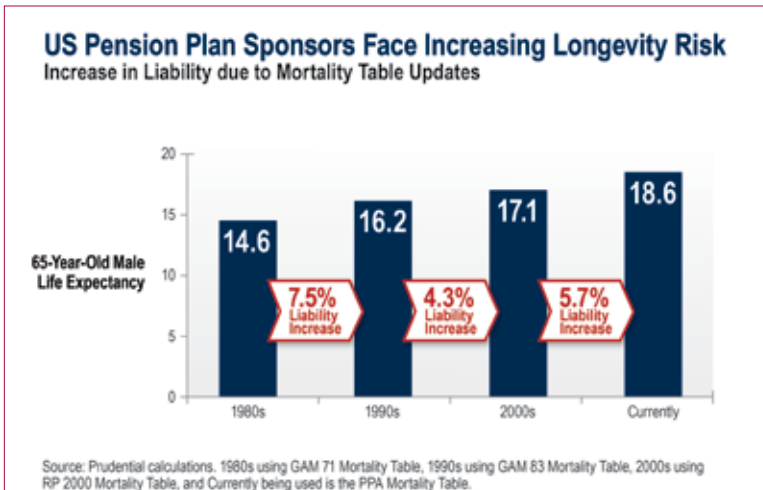


2. Plan sponsors rethinking risk

With corporate cash and earnings at risk, many plan sponsors have chosen to close their plans to new entrants or even freeze benefit accruals to curtail the growth of plan liabilities. According to a recent Mercer study, more than two-thirds of U.S. corporations participating in the survey have either closed or frozen their defined benefit plans (Mercer, 2011). However, while freezing or closing a plan signals an employer’s intent to shed pension risk, this has only a minimal impact on funded status and the related cash flow and earnings volatility in the short term. Plan sponsors need effective longer-term solutions.

Corporations sponsoring defined benefit pension plans assume the real risk of participants living longer than anticipated by valuation mortality tables. For those with large plans, it could be said that these employers are running a substantial life insurance operation alongside their stated business. Population data shows that the retired lifetime—that is, the period from retirement to death—for the average U.S. male has increased 27 per cent, or four years, in the past three decades.¹ As shown below in Figure 4, pension valuation tables have typically lagged actual experience, resulting in a significant increase in pension liability in every recent decade as these tables were updated. Research conducted by the actuarial profession indicates that the rate of longevity improvement continues to trend higher than expected. A study conducted by the Society of Actuaries, completed in 2011, shows improved longevity for retirees of over 2 per cent per year (Society of Actuaries, 2011b). Upon recognition, anticipated to take place in the next two to three years, this change could add nearly 8 per cent to pension liabilities in the U.S., potentially driving up deficits by 30 per cent. While most plan sponsors have become attuned to the investment risk that is inherent in their pension plans, longevity risk is a significant yet often ignored risk which cannot be addressed through investment strategy alone. It is not a risk most plan sponsors would choose to hold but one that can be very efficiently managed through insurance products.

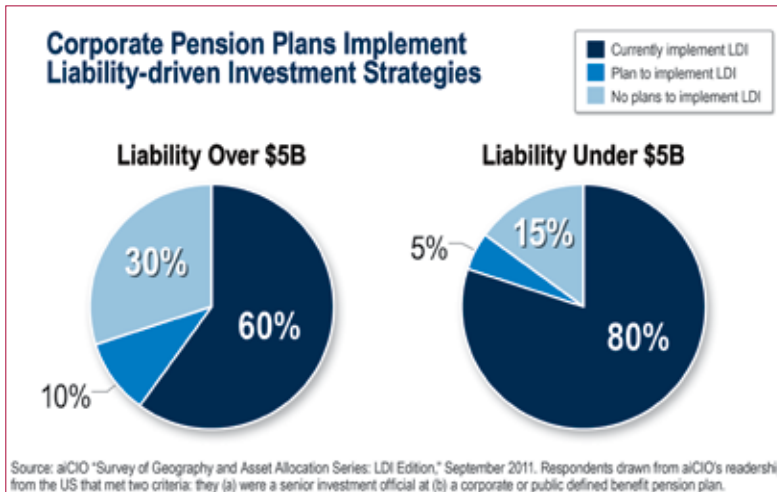
Figure 4



¹ Prudential Analysis based on published mortality tables, GAM 71, GAM 83, and RP 2000.

Asset management strategies such as liability-driven investing (LDI) techniques, which seek to match the cash flow needs of the pension plan with those of the pension portfolio, can offer plan sponsors meaningful relief from volatility. As the chart below indicates, the majority of corporate plan sponsors say they have adopted an LDI approach for at least a portion of their plan. However, the recent funded status volatility described above indicates that most still have large allocations to risk assets. It is evident that, in the face of substantial underfunding, many sponsors are still hoping to close the gap between assets and liabilities with returns from riskier assets. However, along with this aspiration comes significant volatility, which can result in a level of cash requirement that is unacceptable to shareholders.

Figure 5



3. Insurance solutions for the pension market

Buy-outs and buy-ins

The insurance industry is well suited to offer solutions to defined benefit plan sponsors who want to eliminate longevity and/or investment risk. Multi-line insurers have broadly diversified risks reflecting diverse sources of business risks and earnings across products, markets and geographies. Managing the risk of longevity through retirement annuities is a desirable complement to mortality risk, providing a valuable source of diversification. Additionally, the insurance industry has a long history of managing assets on the basis of matching liabilities and is therefore well-equipped to manage pension risk (Haefeli and Liedtke, 2012).

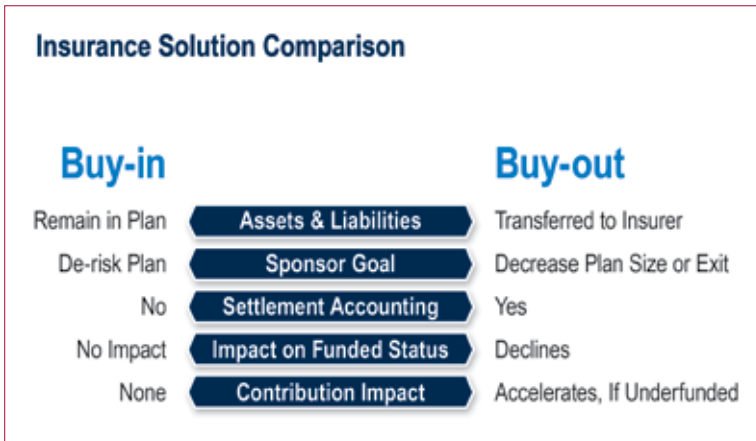
A pension buy-out is a transaction which has been used for decades to transfer liabilities and associated assets for a specified set of pension participants to an insurance company under a group annuity contract. It is designed to shrink the size of the pension plan on the corporation's balance sheet and to relieve the sponsor permanently of the risks associated with the settled participants. A buy-out is often seen in plan termination scenarios, in which annuities are purchased for all participants. For plans that are less than 100 per cent

funded, a buy-out can also be used for certain groups of participants, such as retirees. It is the only solution for plan sponsors who want to completely relieve their balance sheet from some or all of their pension burden.

Unless the plan is fully funded, a buy-out will result in a deterioration of funded status, because the plan must pay more to effect the transaction than is held on the company’s balance sheet as a liability. This has been a particular concern for plan sponsors under PPA regulations due to the administrative and funding requirements associated with falling below certain funded percentage levels. Plan sponsors who have the cash available may contribute additional funds in order to maintain funded status. A transaction for only a portion of the plan would be another way to mitigate the funded status impact. The retiree population, which is already in receipt of monthly pension payments, typically is the population identified for a partial transaction such as this. Plan sponsors who want to minimise the transaction further, or who want to dollar-cost-average the transaction in various interest rate environments, may consider a series of transactions over a period of several years.

A buy-out, unless it is *de minimis* in size, will also trigger settlement accounting under Accounting Standards Codification 715, which requires the immediate recognition in earnings of a proportional share of Unrecognised Net Losses. As the current Unrecognised Net Loss for the average plan sponsor in the Dow 30 is approximately 38 per cent of liability, this is a significant factor for sponsors concerned about the earnings impact of a buy-out. However, many pension-heavy plan sponsors are less concerned about this particular event, as they believe that the investment community will reward them for completing the transaction and that recognition will outweigh the one-time earnings hit.

Figure 6



Although popular in the U.K. for some time, buy-in transactions are new to the U.S. market, with Prudential completing the first U.S. buy-in transaction in May 2011. The transaction is similar to the buy-out, except the liability and associated assets for the transaction group remain in the plan. A buy-in is designed to provide the same risk protection offered by a buy-out without deteriorating funded status or triggering settlement accounting. The buy-in is revocable and provides for a transfer to a buy-out at any time. In short, it combines a near perfect liability-driven investment strategy with longevity protection.

Longevity insurance: an emerging solution

For plan sponsors who want to shed longevity risk without a transfer of investment risk to an insurance company, longevity insurance is an option. This solution has emerged in the U.K. where pension plans offer a Cost-of-Living-Adjustment (COLA) that magnifies the impact of improved longevity. As such, longevity insurance has been embraced by several large plan sponsors in the U.K. The transaction exchanges a series of actual benefit payments for a series of fixed benefit payments. This longevity protection is typically used alongside a LDI asset strategy to offer a plan sponsor additional risk mitigation. Although longevity risk is less apparent in the U.S., the risk is real. Longevity insurance will be an attractive alternative for risk-conscious plan sponsors who realise that despite having effective investment strategies, they have no solution for longevity risk.

Buy-outs and buy-ins: diminishing tail risks—illustrative scenario

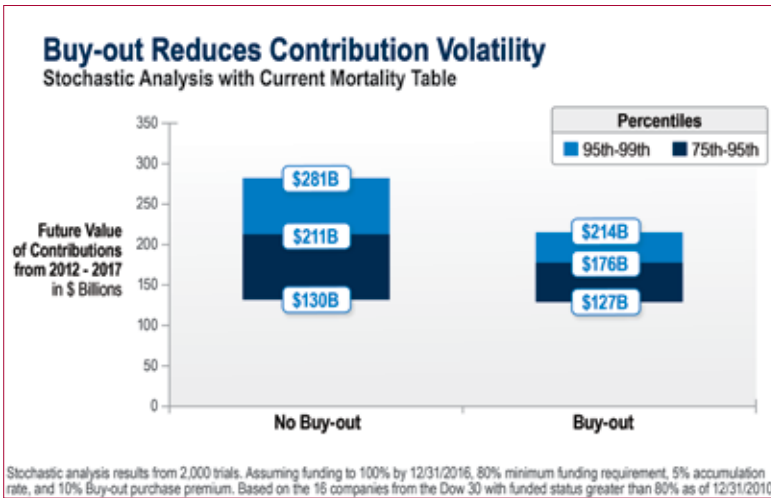
To demonstrate the benefits of buy-outs and buy-ins and their impact on derisking, we consider a subset of the plans sponsored by corporations that form the Dow 30. Twenty-five of these corporations sponsor defined benefit plans, for a total of US\$0.5tn in assets, or approximately 25 per cent of the U.S. corporate pension market. These plans mirror the larger U.S. market in several ways: on average their funded status is below 80 per cent and retirees account for about half of the liabilities.

We modelled the assets and liabilities for each of the 16 plans in the Dow 30 that are at least 80 per cent funded in order to provide an analysis that best relates to the average corporate plan sponsor considering a risk transfer solution. We have assumed that the sponsor will contribute enough to reach 100 per cent funded status at the end of five years. We used a stochastic analysis with 2,000 trials to consider the impact that a pension risk transfer for the retired population would have on plan-funded status and required cash flow.

Impact of a pension buy-out

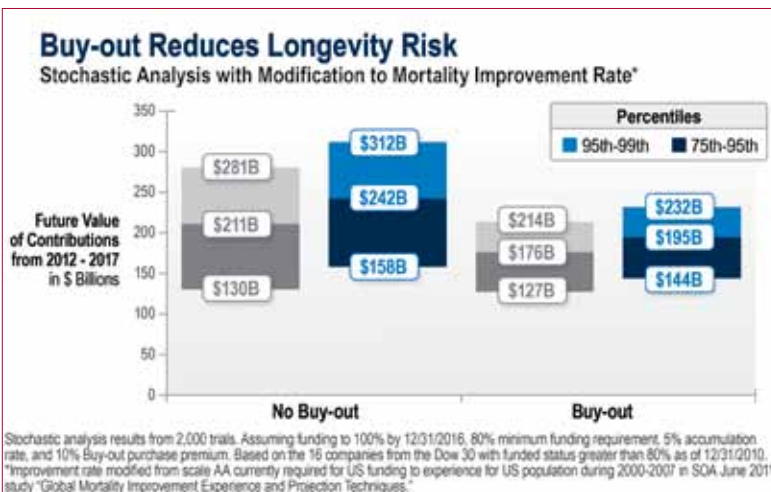
Most sponsors considering risk transfer are primarily interested in mitigating tail risk, or the probability of highly negative results. In this analysis, that would likely be those scenarios with the very lowest investment returns and/or lowest corporate bond rates since these together result in the highest cash contribution requirements. The graph below shows the impact that a buy-out for the retired population would have on funding requirements for the 16 companies over the next five years, with a focus on the results for the 25 per cent of scenarios which produce the highest contribution requirements. Those 25 per cent of trials are illustrated below, with the lighter blue band representing the range associated with the worst 5 per cent of results, and the darker blue representing the next 20 per cent of the highest contribution outcomes. The results show that, for the 5 per cent of the trials that result in the highest contribution requirements, contributions would be reduced by between US\$35bn and US\$67bn. For the next 20 per cent of trials, a buy-out would reduce the present value of contributions by US\$3bn to US\$35bn. Already facing sharply increased funding requirements, plan sponsors are rightly concerned about the possibility of the enormous contributions associated with tail events, and this concern is what leads them to consider insurance solutions.

Figure 7



The analysis above does not incorporate any improvements in life expectancy beyond what is anticipated in currently prescribed mortality tables. If these tables were updated to reflect a continuation of the longevity improvement indicated by the Society of Actuaries (2011b) study, the need for additional protection becomes even more apparent. Figure 8 compares the results in Figure 7, shaded in gray, with those that include these improvements. Under this new scenario, the contribution requirements over the 5-year period associated with the 5 per cent of trials with the worst results is reduced between US\$47bn and US\$80bn, with a reduction of US\$14bn to US\$47bn for the next 20 per cent of trials. For sponsors who have been ignoring longevity risk, it is time to recognise the magnitude of this risk they bear and to consider whether it is a risk they are rewarded for holding or whether it is a risk that should be transferred to an insurer.

Figure 8



Impact of a pension buy-in

Plan sponsors considering a buy-in transaction are similarly interested in reducing tail risk. However, because the assets and liabilities remain in the plan, they are also interested in making sure the funded status at the time of the buy-in transaction is protected over time. To demonstrate this benefit of the buy-in, we have tracked the funded status of a hypothetical buy-in, transacted on 1 January 2010. As of the transaction date, the covered population was 110 per cent funded; that is, the assets allocated to the buy-in were 110 per cent of GAAP liability. We have tracked the market value of the buy-in asset and accounting liabilities for two years. As Figure 9 indicates, in spite of market turbulence during 2010 and 2011, there is only a slight variation in funded status for the transacted group. For plan sponsors looking for nearly perfect protection from funded status volatility, the buy-in is the solution.

Figure 9



Defined benefit regulatory reform

The current regulatory environment in the U.S. does not encourage plan sponsors to derisk their defined benefit pension plans with insurance products. Regulators must re-evaluate established regulations and systems to help plan sponsors meet their challenges. Consider the following:

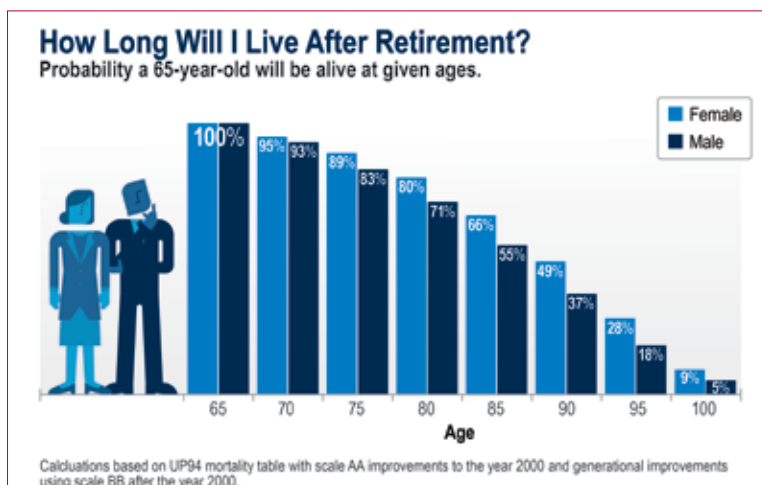
- For plan sponsors seeking to derisk their plan through a buy-in, Department of Labour regulations present a roadblock because they are designed to ensure that the sponsor selects an annuity provider among the safest available at the time of a buy-out transaction. Because of these rules, buy-in transactions must have a revocability provision, so that the plan sponsor has recourse if the insurer chosen for the buy-in is no longer considered a safest available provider at the time of conversion to buy-out. Allowing plan sponsors to perform the required due diligence at the time of the buy-in would provide both transaction certainty and more favourable pricing.
- As regulations stand now, full flat-rate Pension Benefit Guaranty Corporation (PBGC) premiums must be paid on behalf of participants who are part of a buy-in, even though the risk for that cohort has been substantially eliminated. A reduction

in this premium would incent plan sponsors to derisk without posing any additional risk burden on the PBGC.

Shifting investment and longevity risks to employees

Many plan sponsors have shifted the focus of their retirement programme from defined benefit to defined contribution plans. This shift transfers both investment and longevity risks from employer to employee. Individuals under defined contribution plans face the risk of outliving their retirement savings if they fail to accumulate the necessary funds in their plans or if they live beyond their life expectancy. While significant progress has been made with respect to offering a broad range of investment options to enable diversification of investment risk, there has been relatively little focus on longevity risk or the need for lifetime income protection.

Figure 10



Facing this risk, coupled with the recent financial crisis, many employees have elected to postpone their retirement. A 2012 study conducted by the Employee Benefits Research Institute (EBRI) found that the age at which workers expect to retire continues a slow upward trend. In particular, the percentage of workers who expect to retire after age 65 has increased, from 11 per cent in 1991, to 17 per cent in 1997, 18 percent in 2002, 24 per cent in 2007, and 37 per cent in 2012 (EBRI, 2011). The effects of delayed retirement extend beyond the individuals to employers. Many workers choose to work beyond 65, and their maturity and experience can be a positive factor for the workplace. However, it can become problematic for an employer if a large number of retirement-age employees remain on the job because they simply cannot afford to retire. There is a tipping point where employers may be concerned about higher medical costs, decreased opportunity for younger workers or limited availability to acquire new talent. It is in the interest of employers to provide risk-mitigating tools that help those ready to retire to do so with greater security.

Guaranteed income: an insured solution

Lifetime income products are solutions that provide a certainty of retirement income which can help employees retire with confidence. These products help participants accumulate assets and convert those assets into guaranteed income at retirement. Additionally these products are cost-effective as they are designed to pool mortality risk through insurance wrappers, thereby allowing providers to price the products at institutional rates as opposed to higher individual rates. Finally, unlike traditional annuities, newer lifetime income products typically provide a death benefit, flexibility and control—all of which are attractive features to participants who have spent decades accumulating their retirement wealth.

Defined contribution regulatory reform

To encourage employers to offer lifetime products to their employees, a fiduciary safe harbour regulation for employers is recommended. This would allow employers to offer a lifetime income option that satisfies the necessary requirements without fiduciary concern.

Regulations allowing plan sponsors to use lifetime income products as the qualified default investment option for their plans (the automatic investment choice for those who do not elect otherwise), would also encourage greater product adoption.

Lastly, providing a tax advantage to employees who elect a minimum percentage of their account balance to be paid as a lifetime benefit would spur an increase in election rates for this product feature.

4. Longevity, ageing and the pension market

The ageing of the U.S. population requires new tools to manage retirement plans. The size and volatility of defined benefit pension obligations have become visible and unwieldy for a number of reasons; chief among these is the impact of longevity risk. Plan sponsors must derisk in order to preserve their corporation's ability to compete and prosper.

Momentum is building in the U.S. for insurance solutions. A *CFO Magazine* survey conducted in 2011 found that among the financial executives surveyed, 45 per cent were considering DB risk transfer or have initiated discussions regarding DB risk transfer solutions with their Board of Directors (CFO Publishing LLC (c), 2012).

Defined contribution plans have now become the dominant retirement vehicle for most U.S. companies, shifting the investment and longevity risks to employees. Employers need to take steps to ensure that these plans provide the retirement security that workers need to retire with confidence.

Insurance solutions, incorporating the vast investment and life contingency capabilities of the insurance industry, are ideally suited to help employers meet these challenges. Having the necessary experience in managing longevity and investment risk, along with a regulatory framework that requires maintenance of adequate capital reserves to meet long-term obligations, insurance companies are uniquely suited to provide pension derisking solutions. Buy-outs and buy-ins for defined benefit plans and lifetime income products for defined contribution plans offer the certainty of outcomes that the market needs. The industry should continue to work with regulators to promote these solutions because they offer the promise of retirement security to American workers.

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13. Insurers and their role in the economy

Patrick M. Liedtke and Philippe Trainar

1. Background

Although the scope and depth of the financial crisis has brought other issues to the fore of policymakers' attention, like safeguarding the financial system against possible collapse, recapitalising the banks and avoiding the worst in a crippling sovereign debt crisis that affects several countries, a looming long-term challenge remains: old-age security. For many years, we have known that the demographic developments in most developed countries—and indeed in some developing nations such as China—are not conducive to the stability of our old-age security systems.

Governments have tried to counter this by implementing several reforms, altering benefit levels, increasing contributions, tinkering with retirement ages and trying to change or introduce some technical elements that would lessen the burden on public (and sometimes private) pension schemes. However, they often seem to neglect the contribution that a vibrant insurance sector could make by potentially providing many particular solutions to the old-age challenges existing in most countries, developing and developed alike, particularly since the financial crisis, the consequences of which have arguably further reduced the capacity of governments, employers and individuals to address the old age security challenge.

In order to adequately appreciate the complex interaction between insurance and the key issues concerning old-age provision and the industry's full potential contribution, the fundamental role of insurance in a modern economy has to be understood and properly appreciated. This includes issues such as the role of insurance mechanisms generally, the incentives generated through insurance for market players and individuals to behave in certain ways, the impact of insurance products and services (or their absence), the significance of insurers in the capital markets, etc. This chapter will provide an overview on the key direct and indirect contributions of insurance to modern economies.

2. The insurance mechanism

In its basic form, insurance is the arrangement by which an individual or entity (the policyholder) is compensated for the consequences of a predefined misfortune covered by a contract with a risk carrying institution (the insurer).¹ Usually the compensation is financial to cover losses but can also be (prearranged) services to rectify an unwanted

¹ For a thorough scholarly treatise of insurance and its key aspects see e.g. Dionne (2000).

condition. It is used as a common and very accessible form of risk management primarily employed to protect against the risk of a contingent, uncertain loss in the future.²

Insuring risks in a modern economy is a multi-dimensional undertaking. It is a complex business that interacts with many aspects of our lives. The importance of the insurance industry for an economy can only, in part, be measured by the number of its employees in a given country, the assets under management, or its contribution to the national GDP. It actually plays a more fundamental role in the workings of a modern society, being a necessary precondition for many activities that would not take place were it not for insurance: businesses would not invest as much if their factories were not insured against fire and other risks; large infrastructure projects become more viable where insurance exists to protect them; and shipping companies or airlines are not allowed to operate without liability insurance to protect the victims of a potential accident, etc. Insurance also plays an important role in uncovering and diffusing information about risks in general. If any industry understands the need to tackle demographic and pension issues and the risks involved for all parties that try to find a sustainable solution, it is insurance—the risk industry. This claim will be substantiated in the following sections.

3. The nexus between custody, investment management and risk management

In order to better understand the contribution of insurance to the modern economy, we have to understand the intricate position that insurers find themselves in when they conduct their business. Especially in the complex area of old-age provision, several very different elements come together for an insurer that makes the business more demanding than that of other service providers. In principle the insurance products sold can be decomposed in two elements:

1. *Savings*: policyholders pay once or several times into a fund that tries to generate returns on the capital available commensurate with the financial needs of the future.
2. *Risk*: in accordance with its general principles, insurance acts as a social or commercial device providing financial compensation for the effect of “misfortune”, with the payments being made from the accumulated contributions of all parties participating in the scheme.

At the core of the insurance mechanism lies this idea about accumulating financial assets for times of need. There is a fund in which all insureds will pay an (actuarially) assessed contribution (premium), which is not the same for everybody, but depends on the specific risk profile. In return, all those who contribute are entitled to an appropriate payment, should an insured event occur. We have put the word “misfortune” in inverted commas since it could describe clearly either a calamity such as an early death, in which case a risk life policy would pay out to the benefactor (often the family of the deceased), or a rather positive outcome such as living longer, in which case an annuity would continue to pay out. Despite the positive fact of an extended lifespan, the latter case would clearly be a misfortune in the absence of adequate financial protection, in the sense that the person outliving his or her financial resources would be left in a destitute state. Insurance can help manage these risks and has a long track record of doing so.³

2 The importance of insuring against risks becomes apparent if one follows the logic developed by Hans-Werner Sinn who considers risk as a production factor in its own right (Sinn, 1986, pp. 557-571).

3 See Chapter 3 of this report.

Insurers are experts in managing the complex risks involved in setting up and managing schemes to protect persons from the risks of old-age. They not only do so by endeavouring to generate maximum returns or managing capital provided to them using a specific risk-reward function with an aim to accumulate as much capital as will be needed for one specific individual. Insurers also determine premiums and pay-out mechanisms for everybody contributing to their schemes. They act as fund managers, fund owners and risk experts at the same time. All three dimensions of this undertaking are relevant to the outcome as the insurer manages investment risks and biometric risks for many products and different risk groups, often sharing that risk to a certain degree with their policyholders but usually not leaving them alone with the risks.

To comprehend how insurance markets are organised, it is necessary to understand this very special position: on the one hand, an insurer is a custodian or a treasurer of the established fund; on the other hand, he is a (partial) owner of the fund with a proprietary investment agenda. Through this setup he has a direct interest in its performance. The two interests cannot easily be aligned. However this potential conflict can be effectively managed with the mechanism of insurance and a clear determination of rights, as well as sometimes various forms of guarantees for policyholders or profit sharing arrangements.

4. Policyholders and regulatory relations

Insurance regulations recognise the importance of special protection for policyholders. The laws and norms governing the insurance sector are among the strictest that private markets know and tightly control what kind of activities the insurance companies can engage in and how they have to conduct their business. Given the high amount of trust placed in them, insurers have to operate to very high ethical and business standards and since their services are fundamental to the stability and the development of an economy, governments hold them to those high standards. Comprehensive policyholder protection regulations and special schemes address this.⁴

At the same time, the insurance sector protects the rights of policyholders also in other ways, with insurers becoming the champion of these rights. Not only does an insurance company assure that anybody joining a fund it has created to cover special risks will do so according to his risk profile and only enter if the price is correctly reflecting the inherent risks, it also safeguards proper payouts. When an insurer is confronted with unfounded claims, he protects actively the other participants in the scheme. By denying what is unfounded, the capital is preserved for those cases that warrant the benefits of the scheme.

As we have just seen, insurers diligently analyse the risks that their policyholders present to their scheme. Here, an insurer works as a risk manager and risk expert because he has to understand and assess the risks before accepting or declining them for the scheme. If somebody buys into that scheme, a new relationship is established and has to be judged as to its merits, not least *vis-à-vis* the existing participants and their risks. Whenever an insurer accepts a new risk into the scheme, this affects everybody who is already in it. It is not just a decision that the insurer takes and where he has a direct obligation concerning the risk *per se*, he also has an obligation to the existing participants in the scheme.

⁴ For a basic discussion of policyholder protection funds see e.g. the OECD publication by Yasui (2001).

For the insurer as risk manager and custodian of a pool of risks, unexpected changes affecting the pay-out scheme present a fundamental problem. Those changes can be of an economic, legal or other nature, such as biometric risks. This is especially true if the economic, legal or natural environments change suddenly in a major way during the period in which risks were accepted and before payments for claims were made. The insurer's liabilities will have already been calculated and the necessary premiums to finance these collected before the change in the system renders these initial calculations obsolete. In effect, the insurer will then have placed (voluntarily or not) a bet on the development in question.

When policy-makers discuss legal changes that are directly or indirectly linked to insurance activities, they do not fully reflect upon these particular effects on the insurance system. In the case of providing solutions for old-age security, the development risks faced by insurers are especially acute as the business depends on many variables that are, or at least can be, heavily influenced by governments and their actions: legal norms directly affecting the insurance business ranging from solvency and investment requirements to consumer protection laws and competition policy, the rivalry of social security systems to private market solutions, fiscal and monetary policy, etc.

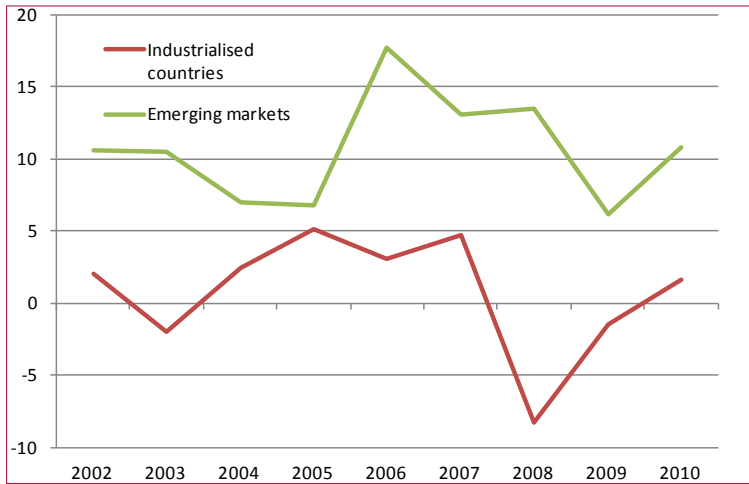
5. Insurance premiums: penetration and density levels in comparison

According to Swiss Re's January 2012 update of *sigma* 2/2011, total insurance premiums worldwide amounted to US\$4,320bn in 2010. This represents 6.9 per cent of world GDP and about US\$625 of insurance premiums per capita.

However, there are significant regional differences. Industrialised countries, where insurance solutions are more readily available and uptake by the general population is more widespread, account for the majority of the worldwide premiums, with a share of 85 per cent. In those countries, the insurance premiums to GDP ratio (i.e. the insurance penetration) is very high, at 8.7 per cent; so does the total amount of insurance premiums per person (i.e. the insurance density), which reaches US\$3,517. In emerging countries, insurance solutions are not as extensive. Total insurance premiums in emerging countries stood at US\$643bn in 2010, which equals a penetration of 2.9 per cent. The insurance density was rather low at only US\$109 per capita.

Emerging markets are often seen as those with the highest growth potential for insurance services and figures from recent years confirm this: the growth rates for insurance premiums are usually significantly higher than in industrialised countries. For 2010, life insurance growth amounted to 1.6 per cent real growth in industrialised countries whereas emerging markets displayed growth rates of 10.8 per cent.

Figure 1: Inflation-adjusted growth rate (in %) of life insurance premiums



Source: Swiss Re, *sigma* (various years).

Insurance premiums statistics are often divided according to the fundamental characteristics of the business and whether it belongs to the life or the non-life insurance business (or as they are called in the U.S.: property & casualty insurance). In the context of this chapter, the life numbers are of higher interest as they describe the primary funds destined to protect the future financial position of policyholders and their families (and/or other beneficiaries).

Life insurance premiums, growth, penetration and density (by region for 2010)					
	Premiums (US\$ bn)	Real growth	Share of world market (in %)	Premiums in % of GDP	Premiums per capita (in US\$)
North America	557	-0.7	22.21	3.47	1,618.6
Latin America and Caribbean	54	12.0	2.17	1.12	93.3
Europe	955	1.8	38.10	4.44	1,098.8
Japan and newly industrialised Asian economies	615	23.5	24.54	8.36	2,920.6
South and East Asia	234	15.8	9.35	2.51	65.4
Middle East and Central Asia	9	9.4	0.34	0.38	27.2
Africa	43	-11.8	1.71	2.48	41.5
Oceania	39	2.6	1.57	2.83	1,109.3
World	2,508	2.7	100.00	3.98	362.5
Industrialised countries	2,152	1.6	85.82	5.09	2,066.0
Emerging markets	356	10.8	14.18	1.61	60.2

Source: Swiss Re, *sigma* 2/2011 (January 2012 update).

6. Insurance and employment

The amount of direct and indirect employment created by insurance companies is significant and in many economies the sector is an important employer. For the EU, the regional trade association CEA estimated the direct employment alone at close to one million persons for 2007. In the U.S., the Information Insurance Institute (III) for 2008 quotes more than 1.4 million employees at insurance carriers and a further 900,000 at brokers, agencies and similar service providers. With an insurance industry payroll of more than US\$183bn (data for 2006), the insurance sector is clearly one of the top economic sectors in the U.S. and elsewhere, with a high percentage of high-quality and well-paid jobs. Its relative share of overall direct employment for selected countries is given in the following table:

Insurance Sector					
Percent of employment (selected countries)					
	2002	2004	2006	2008	2010
Belgium	1.3	1.2	1.2	1.1	0.9
Canada	1.5	1.4	1.4	1.4	0.8
France	0.6	0.6	0.5	0.5	0.5
Germany	5.3	5.1	4.3	3.5	3.4
Italy	0.2	0.2	0.2	0.4	0.4
Luxembourg	5.6	5.8	5.8	6.1	6.3
Portugal	1.0	1.0	1.0	0.8	0.7
Spain	0.3	0.3	0.3	0.3	0.3
Sweden	0.4	0.4	0.5	0.5	0.5
United States	1.6	1.6	1.6	1.6	1.6

Source: OECD, U.S. Bureau of Labor statistics.

Next to the direct and indirect employment numbers generated by the insurance industry, insurers have an additional important impact on modern economies. Their role as old-age security providers has an influence on how people engage in the labour markets. For many individuals, the issue of how to work is tightly connected to their expectations about their future retirement. Flexible insurance solutions can help to engage larger groups of productive people in paid employment while restrictive approaches might hinder this. Other chapters in this report provide more details about the interactions between the labour markets and pension provision and the products of insurance companies that can help to harness productive human capital. One significant strategy is the Four Pillar approach that The Geneva Association developed over the past 25 years, which combines part-time work for the elderly with partial pension rights, supported by flexible tax, insurance and savings solutions.⁵

⁵ For more details see also the Four Pillars Research Programme of The Geneva Association (www.genevaassociation.org) or the website of the Silver Workers Institute (www.silverworkers.ch).

7. Insurers as investors⁶

A healthy insurance industry is vital to the functioning of a modern market economy, which includes capital markets. In addition to the importance of this sector for risk transfer, mitigation and management insurers are major financial intermediaries, converting policyholder payments into longer-term investments, often without generating the liquidity constraints facing most deposit taking institutions. Of special relevance in connection with old-age security provision is the economic importance of the insurance sector's role in the intermediation of policyholder premiums into investments that sustain economic growth. Insurers are providers of investment funds across the economy and, very importantly, across the maturity spectrum.

Insurance has a double positive impact on the savings of an economy: firstly, it increases the general savings rate, especially through the existence of life insurance products but also by creating pools of assets that are meant to cover potential future claims. It thus creates deeper markets and allows for more investments. Secondly, it decreases the level of unnecessary (individual) precautionary savings, which is often not available to capital markets. This stimulates investment and consumption by reducing bound (and therefore unproductive or less productive) capital. Insurance thus helps to provide more working capital to an economy and the money saved in the process can be allocated more productively. Hence insurance mechanisms transform dormant capital into free and productive capital.

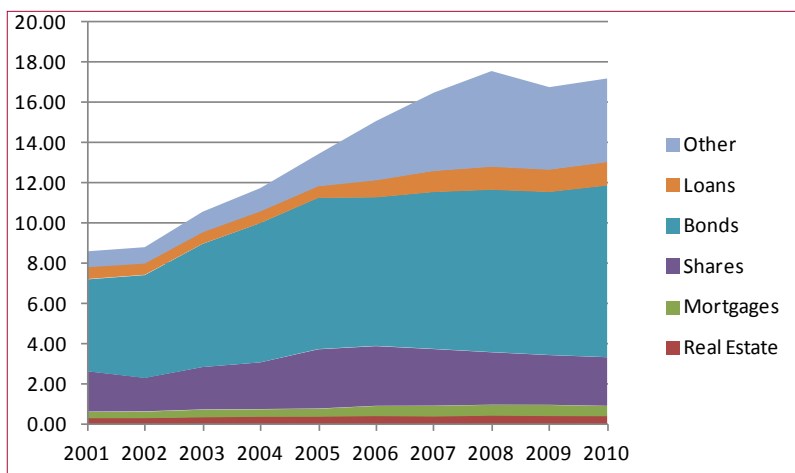
As central bank data show,⁷ the insurance sector has been a consistent provider of investment funds over time, particularly for private sector investment. The structure of insurance sector investments and the sector's somewhat unique position in funding longer-term investment instruments has been a source of market stability as will be explained in more detail further on in this chapter. In addition to allowing insurers to cover future policyholder losses, investment returns provide economic returns to shareholders, attracting new investment into the industry. Successful insurers use profits to pay dividends and increase capital, in particular those involved in life insurance, which forms a key pillar for old-age protection. The "transformative" nature of their business raises capital productivity and channels it to more efficient uses with higher returns. While policyholder funds play a very large role in this respect, it should be noted also that the insurer's own equity (the capital provided by shareholders and accumulated retained earnings) is in itself a significant source of investment capital.

The investment portfolio of insurance companies in the OECD countries has grown steadily over the past decade, with a slowdown in the most recent years. From 2001 through 2008 total investments more than doubled from US\$8.6tn to US\$17.8tn in 2008 (a compounded annual rate of almost 11 per cent). Figure 2 below provides a summary of the development of insurance company investments in trillions of U.S. dollars over the decade from 2001 to 2010.

6 This section is partly based on Geneva Association work carried out by Prof. Etti Baranoff and Prof. Kim Staking for the 2012 Meeting of the Amsterdam Circle of Chief Economists (cf. The Geneva Association, *Etudes et Dossiers* No. 388).

7 See e.g. the statistics of the U.S. Federal Reserve System, the European Central Bank or the Bank of England.

Figure 2: Insurance assets by class in US\$tn



Source: OECD, Geneva Association calculations based on available data.

To place the insurance sector in perspective, over the past 10 years total insurance investment in the OECD has grown from 30 to 42 per cent of GDP (despite the decline in 2009-2010). And while the composition of investment portfolios tended to be relatively consistent within countries from year to year, there are some important differences in the investment portfolio choices between countries. Scandinavian countries (in particular Denmark, Sweden and Finland), France and the U.K. have tended to favour higher investments in equity; real estate holdings, in contrast, are high in Chile, Greece, Norway and Switzerland (above 10 per cent) and moderately high in Australia, Austria, Finland, Korea and the U.K. (about 4 to 5 per cent). Deutsche Bank estimates that in 2011, total insurance industry assets amounted to US\$24.5tn, thus making insurers the second largest institutional investors behind pension funds and before mutual funds, which controlled US\$30tn and US\$23.1tn respectively (see Chapter 3 of this report).

8. Long-term assets and liabilities

Insurance is one of the rare mechanisms that allow spreading of risk over long periods of time. This risk spreading over time can involve several decades and works even from one generation to the next. There are very few other industries that have as long a time horizon as the insurance industry. Who else would think more than 50 years ahead? Perhaps the builders of a nuclear power plant, but few others. And insurance has to consider periods of up to a century. If the French woman Jeanne Calment, who lived to the age of 122, had taken out a life insurance policy with an annuity component when she was 20 years old, it would have remained in force for over a century.

Payments associated with an insurer's liabilities are consequently financed through cash flows that are also spread over rather long time horizons. For insurers, and especially for life insurers, with many products that vest only many years into the future, longer-term investments are a natural result of professional asset-liability management. In the table below, the average maturity is calculated based on the reported maturity structure of life insurance investments (bonds and other credit instruments categories) in the U.S.

(cf. NAIC data for 2002-2009). Over this time period, the maturity structures of these investments have remained relatively stable with approximately one-third of investments in long-term assets (maturities beyond 10 years), and more than half of these were invested in maturities beyond 20 years. Another third of investments was made in medium term assets (maturities of 5 to 10 years), and one-third in maturities of less than five years.

U.S. bonds and credit investments by maturity (in %)					
Year	<1 year	1—5	5—10	10—20	20+
2003	8.6	28.3	31.5	15.1	16.5
2004	8.3	28	32.5	14.5	16.7
2005	8.9	26.2	33.3	14.1	17.6
2006	9.4	27.8	32	13.8	17.1
2007	9.7	27.3	30.8	13.9	18.4
2008	11.6	28.6	29.5	12.8	17.5
2009	10.3	28.9	28.7	12.6	19.5
2010	9.6	28	28.4	13.7	20.4

Source: NAIC Regulatory filings database.

As we have seen, insurance is not just about the financial compensation of victims; insurance also plays a central part of the capitalisation process of a modern economy, creating huge capital assets. These funds, due to the nature of the contracts underlying them and the often long time horizons involved (cf. the maturity analysis above), usually stay in the financial market of a given economy for quite some time. Most often it is not fickle investment capital that rushes around looking for quick gains, but remains available for investments (e.g. infrastructure projects) that need many years to produce returns and that are often shunned by other investor classes. Many long-term investment projects, for example, depend on the availability of assets held by insurance companies to be feasible. Insurance thus plays a special role underpinning the steady growth of an economy.

At the same time, insurers have to produce a return on their assets and as market participants looking for profitable investments, they are submitted to the same basic constraints that other investors face. Hence they need stable and liquid markets even when they operate with rather long maturity rates, actively trade only parts of their portfolios, and have relatively low turnover rates compared to other financial services providers. For life insurance and its particularly long time horizon, it is crucial that governments and central banks succeed in their quest to keep markets efficient, stable and resilient over time.

9. Stabilising the financial system

Even when subjected to great stress, the insurance sector has a tendency to be more stable than other parts of the financial services sector, as the current financial crisis has demonstrated.⁸ Insurance crises play out in fundamentally different ways compared to

⁸ See the extensive work of The Geneva Association on insurance and financial stability as part of the Insurance and Finance Research Programme and the various reports published between 2008 and 2012, in particular *Anatomy of the Credit Crisis* (Liedtke, 2010) and The Geneva Association Report on *Systemic Risk in Insurance* of March 2010 (The Geneva Association, 2010).

banking crises for example, when the most feared phenomenon is a run on a bank. The effect is immediate and it has to be stopped before it destroys the economy, as ever more funds are withdrawn and the capacity of the banking system to cope with the reduction in assets deteriorates very rapidly. A major crisis in the insurance sector develops differently as there is less liquidity risk and usually more time to react. Most insurance risks cannot be triggered by the policyholder, such as bringing the biological age at which a life insurance policy vests. Or, as in the case of risk life, accident or health policies, risk will usually not be triggered as they involve serious personal harm. Even in the case of savings products, insurance companies often build in withdrawal costs, which stabilise the system in adverse times as they make the cancellation of policies more costly to the insured (The Geneva Association, 2010).

Consequently, financial experts agree and insurance supervisors confirm in their analysis (IAIS, 2011) that traditional insurance activities are not systemically risky. The insurance sector is furthermore characterised by very detailed and effective recovery and resolution schemes (Haefeli and Liedtke, 2012). An insurance company failure is a drawn-out process—both management and regulators have time to first consider various options and then take remedial action as the impact of the event(s) emerge that ultimately leads to the insurance company failure. In order to protect policyholders and to limit the social impact of an insurance failure, several existing mechanisms are in place to resolve the insurance company in an orderly manner.

And even in the event of an insurance firm becoming technically insolvent, policyholder claims can be honoured (to a large extent) as existing technical reserves are “run off” over extended periods of time. This is important not only for the policyholders concerned (who are often protected through additional policyholder protection schemes) but also for the stability of the financial system. In a moment of utmost stress on the financial system, the resilience of insurers is much higher than for banks due to this mechanism that allows spreading the stress over a longer time period.

10. Creating risk awareness

As stated earlier, the insurer defines the conditions for future pay-outs and establishes some criteria for what constitutes “proper”, i.e. risk-conscious behaviour. There is a positive impact too in the contribution that insurance can have on the development of an economy that goes beyond just the risk sharing and transfer mechanism. An insurer is of course an entrepreneur: he is looking for new markets, for business models and strategies; he wants to grow the business, to establish client relationships, to create an operational infrastructure. This means that he can act as a valuable provider of information about old-age security issues. Marketing and information campaigns conducted by insurers as well as their regular interaction with potential customers help to make them aware of their needs and how these can be met.

Insurers are also key transmitters of preferences in a society. Very often, particular insurance schemes are encouraged to compensate for specific behavioural structures that a society believes it should influence. Tax breaks for taking out life insurance are regularly justified on the grounds that the myopic nature of most individuals are skewing their behaviour in a way that would produce adverse outcomes for a society, such as too little old-age protection and the risk of future poverty, if the system were left to itself. This provides a lever for introducing social policies and societal preferences into the economy

using insurance mechanisms. However, one has to be very careful, as the nature of the insurance business is that of a private market activity. Regulatory interference and special constraints have to be carefully balanced with the efficiency of the market mechanisms and the necessary preconditions for any insurer to engage in his entrepreneurial activities. It seems that striking this balance right is especially difficult for old-age security solutions and often governments are tempted to use private insurance mechanisms to engage in direct “social engineering”. In other cases, the funds that private insurers carefully built over many years for their clients were seen as welcome targets for fiscal policy having to suddenly make outsized contribution to rectify budget problems that sovereigns incur. While most countries have stringent regulations that protect the sector and its clients, those have been pierced on occasion and the resulting loss of confidence has had detrimental effects for the trust of citizens in both their governments and the safety of their old-age provisions. Most recent cases include the experiences in Argentina and Hungary, for example.

11. Generating knowledge and fostering expertise

Old-age insurance solutions provide independence to people and increase their capacity for self-reliance as they approach their later years in life. The ability to cope with adverse effects, which are often unexpected and might occur at the least opportune moment, is strengthened. While there is a direct economic effect through the financial protection of assets, there is also an additional consequence: peace of mind. People tend to behave differently—and we suppose more positively—when they know that certain risks are covered. This is a psychological rather than a financial effect accompanying the purchase of insurance. The counter argument here is the existence of moral hazard, where individual behaviour becomes more risky due to an existing insurance coverage. It is difficult to assess the exact impact of both effects, a positive one that reduces risky behaviour and a negative one that would encourage it. However, there is strong evidence that robust old-age protection schemes usually prevail in mature and stable economies.

Insurance companies are information providers, knowledge carriers and training centres providing highly complex products that require in-depth financial and non-financial knowledge: a fire insurer needs to know about building codes and materials, a flood insurer about geographic features and meteorological conditions, a health insurer about medicine and pharmacology, a life insurer about lifestyles, etc. This bundling of specialist knowledge has a positive effect on and is of significant value to the development of economies and societies.

Firstly, insurers need well-formed experts in risk matters that work for them and so they have an interest in the education and formation of an experienced workforce. Through their work and the specialists needed to run their business, better understanding about risk issues is introduced into society. Secondly, they create more knowledge about risk management, risk assessment and understanding vulnerabilities on the side of their potential customers, consulting, for example, about risk exposures and prevention, mitigation strategies and possible solutions. The sale of an insurance product is closely tied to a risk assessment exercise by the insurer, which is usually shared with the prospective client. Individuals interested in their old-age risks can consult with insurance specialists who can not only offer them financial products to channel their savings but also evaluate their lifestyles, estimate the likelihood of them reaching a certain age and telling them about special

risks they might face which could have an impact on their life-spans and their financial condition throughout it. For many years, insurance companies have been a driving force to study and understand biometric risks and have invested heavily in exploring the links between certain activities or developments and their impact on insured and uninsured risks.

The pursuit of better knowledge by the insurance industry in all fields is valuable not just for the insurance markets, but for the general development of the economy because risk assessment, risk management, prevention mechanisms, etc., are very much a precondition of and a driver for sustained growth. Its absence, as we all too often find out, can be disastrous for many undertakings. Overcoming a lack of understanding about the biometric risks faced by societies and the accompanying changes in the risk exposure of a growing group of elderly citizens would be a step forward for any country aiming at long-term development.

12. Behavioural impacts

It is interesting to note the high correlation between the existence of insurance in certain markets and the profusion of preventive measures as well as a shift in general behaviour. This apparently not only affects those parts of the economy where insurance is active but also in a more general way, as certain risk management practices spread and are more widely adopted. Even legislators seem to react to this mechanism because more sophisticated legislation tends to appear in tandem with more sophisticated insurance markets. While this conclusion is merely based on observation, it seems robust across a series of countries and at various stages of development.

Insurance can affect *ex ante* behaviour by encouraging more efficient prevention and planning. In the case of old-age security systems and life insurance policies, effective systems that are based on actuarially correct calculations provide people with a credible source as to their longevity expectations. As a consequence it makes them aware that they need to plan for the possible event of a prolonged life-span and the costs associated with that. Once this information is available, rational behaviour will make savings more likely, thus reducing the risk to the individuals of outliving their productive capacities and to society of having to provide for larger groups of persons without adequate old-age resources. At the same time, the actuarial information tells individuals what kinds of behaviour (e.g. smoking) or physical condition (e.g. obesity) have a direct impact on their life expectancy.

Insurance can also affect *ex post* behaviour. The information and knowledge that elderly persons have adequate income, and ideally some form of health and long-term care insurance, allows speedier treatment of sick or accidented persons. Providers of medical services find the interaction easier and worry less about the payment of their services when they know that the affected parties have coverage for their condition and can guarantee sufficient funds to finance their treatment.

But it is not only the pay-out capacity that has an effect. Already the understanding by all parties that a risk is covered leads to positive results as it tends to create a special infrastructure of services around it. Doctors, paramedics and hospital staff can be on stand-by if it is known that their patients have access to funds to pay for their medical conditions. This means that the existence of an insurance scheme creates a larger reservoir of activities and services that can be made available in case of need.

The existence of an insurance market fosters an industry around it: offers for preventive measures and services, damage assessments, legal advice and assistance, claims handling services, relief mechanisms, etc. These services are not only available to the insured but benefit the whole economy. They also create many jobs, much like the insurance industry does. They are often well-paying jobs for a large number of people with diverse backgrounds.

Insurance also has a very positive interaction with the public domain. Major incidents could result more easily in large disruptions and even in civil unrest in the absence of mechanisms to compensate the affected population. The 11 September 2001 attacks caused economic losses to the city of New York of over US\$80bn, as estimated by Robert Hartwig one year after the attacks.⁹ The final insurance pay-out is estimated by the Insurance Information Institute to be US\$32.5bn¹⁰, a significant share of it in the form of life insurance payments to distressed families who lost their prime income-earner. It is only too obvious that these pay-outs helped mitigate the effects of the disaster on the general population. As the New York experience showed, the insurance infrastructure allows for easy piggybacking after large disasters of additional initiatives such as impact assessment and information sharing, public disaster information and relief centres, the channelling of humanitarian help, etc. The Disaster Relief Centre, created by the III in New York, grouped and coordinated 25 different organisations, all with the aim of helping people and businesses to cope with the aftermath of the terrible event.

As we can readily observe, the existence of insurance and the protection and prevention schemes that go with it have a noticeable impact on public life. People will generally not accept the same lax attitude towards risk management by governments if they are fully aware of the consequences. The nuclear debates in the 1970s took a different turn when the high risks associated with this technology became more apparent and publicly known. Insurers and their business partners provide much of the knowledge concerning old-age security and other situations where risk is prevalent. Through their work the public risk debates are different, not only usually more informed but also more intense, and they often play a direct role in stimulating less risky behaviour. Safety campaigns like “Safe driving”, “Safety at Work” or “Stop Smoking” are very positive as they aim to reduce sickness, fatalities and accidents.

Insurers are sometimes considered as very boring because they want people to buckle up in their car and they do not want them to take risks recklessly. People can still decide not to buckle up (even though they would have to pay a fine in most countries) but at least they are aware of the dangers, and this sort of behaviour is becoming less acceptable and less common. The possibility of associating insurance premiums directly with the risk exposure, especially where individual behaviour plays a major part, is a powerful tool. The awareness about insurance premiums going up because of risky behaviour is not lost on the cost-conscious consumer—with a generally positive result for the economy at large. Keeping a larger share of the population in good health for longer periods of time will also increase the likelihood that they can keep working longer and in consequence reduce the old-age security burden on the collective.

⁹ See Hartwig (2002). Calculating the total cost of the September 11 attacks to the U.S. is very difficult as opportunity costs have to be estimated and the costs associated with the wars waged by the U.S. in Afghanistan and other places would need to be included. See the testimony of Joseph Stiglitz on 8 February 2008 before the Joint Economic Committee of the U.S. Congress (Stiglitz, 2008).

¹⁰ As per Insurance Information Institute (2011).

13. Conclusion

This chapter has described the positive role and impact that insurance has in a modern economy. Unfortunately, many of the above constructive and helpful effects are neglected or not fully considered in all their ramifications when it comes to policy decisions. Despite the existence of mutuality and risk-sharing schemes for hundreds of years, and in its modern form for arguably more than a century, insurance is still not fully understood by all key stakeholders. In particular, the complementary interaction between social security systems and the private market solutions offered by insurance companies are disregarded and the special role that insurers can play for financial and social stability is often underestimated.

This is not only a misfortune from an intellectual point of view but a real waste of possibilities to develop modern economies in the most efficient way. When it comes to old-age security, the insurance industry has much to offer. At the same time, other aspects of our social and economic decision-making processes on how to provide for the elderly in our societies and how to incite the younger to take the right decisions early on in their careers will have to better take into account the extraordinary potential that insurance represents.

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14. Individuals and their financial position: the future of retirement

Mark Twigg

1. Funding the future of retirement

Ageing societies and unsustainable pensions systems

HSBC's The Future of Retirement survey is an independent study into global retirement trends, household attitudes towards retirement and levels of retirement preparedness. It provides original insights into the key issues associated with ageing populations and increasing life expectancy around the world. Since The Future of Retirement programme began in 2005, more than 110,000 people worldwide have been surveyed, resulting in seven global reports. In 2011, over 17,000 people in 17 countries were surveyed, making this one of the largest surveys of its kind in the world. The Future of Retirement research findings have been widely used to underpin and illustrate this chapter.

Throughout this period, there has been a broad public debate around the need for individuals to make greater personal provision for their own retirement planning. The impact of changing demographics on retirement funding models is a worldwide concern. Singapore's Central Provident Fund (CPF), for example, has seen the number of members aged over 55 increase from 105,000 in the 1980s to 695,000 by the end of the last decade. In the same period, the number of people in the scheme aged below the age of 24 has halved (HSBC, 2009, p. 19). Across Europe, the ageing population will see a doubling of the old age dependency ratio (the proportion of the population aged over 65 as a proportion of the population aged 15-64) from 26 per cent in 2010 to 50 per cent in 2050 (European Commission, 2012, p. 6). In other words, there are currently four people of working age for every person in retirement age, and this ratio will fall to two to one by the middle of the century. These changes make the costs associated with old age and retirement a major public policy issue around the world.

The great pensions risk transfer: mitigating longevity risks on household finances

Given the response to date by the state and by employers, the cost of mitigating the risks of longer life expectancy can be expected to fall increasingly on households. The state has in many countries sought to limit taxpayer's future pension liabilities by increasing the official state pension age. For example, the U.K. has committed itself to increasing the state pension age from 65 today to 68 by 2043 and has subsequently brought forward the start of the planned increase in retirement age from 2020 to 2018 in light of its ongoing

fiscal consolidation. Other European countries have taken similar routes including Denmark, France, Germany, Hungary, Ireland, The Netherlands, Poland and Spain (European Commission, 2012, pp. 23-39).

Where employer pension provision is already established, employers have sought to increase employee contributions to company schemes, reduced accrual rates to defined benefit arrangements and have in many cases closed more generous final salary or defined benefit schemes to new and existing members altogether in favour of employer-sponsored defined contribution or money purchase schemes in which longevity risk and investment risk are borne by the individual. In light of this massive risk transfer from institutions to the individual, the need to meet the growing cost of funding one's own old age can be greatly facilitated through the development of greater risk-sharing between the household and other social partners such as employers, for example, in moving from final salary to career average schemes or by introducing conditional indexation of accrued benefits in company pension schemes, through to the development of innovative risk-pooling products in the retail financial services market. The social utility of insurance in helping households to manage and mitigate the long-term financial risks posed by high inflation, volatile investment returns and increasing life expectancies places the insurance industry in a prime position to help households deal effectively with the changing demographics, as well as prepare them for the likelihood of less generous state and employer pensions. There is therefore a universal imperative to reform pensions and to place greater emphasis on how households make use of insurance products in accepting more of the long-term risks associated with funding retirement.

2. The increasing role of the individual

Towards a more balanced approach to funding retirement

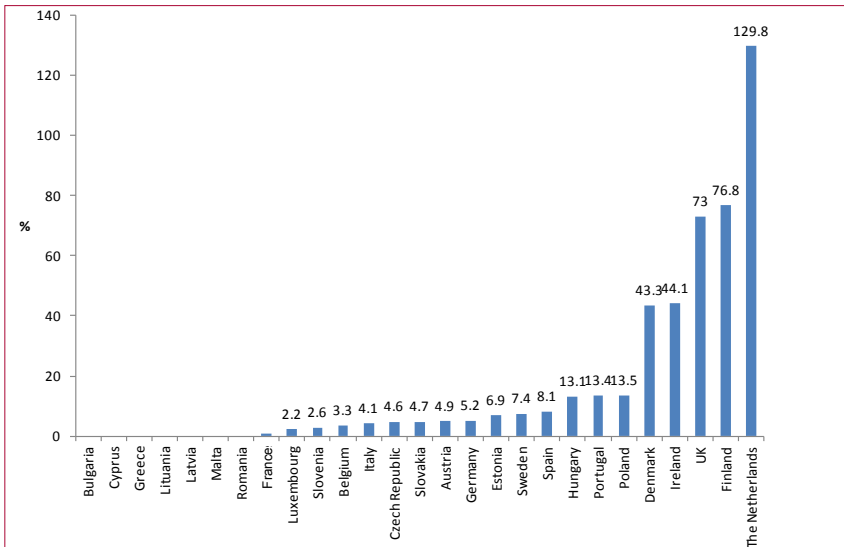
Of The Future of Retirement respondents, 64 per cent preferred options which involved having to save more, compared to 23 per cent who preferred to work longer and just 13 per cent preferred to pay more tax (HSBC, 2009, p. 20). Yet only 56 per cent actually felt like they were doing enough to prepare themselves for old age. Of course, saving for old age is not the only way to prepare for retirement. As the U.K.'s Pensions Commission outlined in its first report in 2005, the route to sustainably funded retirement will involve generating a balanced approach to funding retirement in which retirement incomes are generated from a number of sources. This approach sees a role for all the pillars of pension provision including the state through social security systems, and increasingly through saving more for retirement either individually, as a household, or through employer-sponsored arrangements.

This approach also involves the need to work beyond current retirement ages. However, our findings show that most people remain reluctant to consider working longer, with expected retirement ages being largely defined by current retirement ages (as determined by the state pensionable age) rather than any kind of appreciation of increasing life expectancy. When questioned, only 9 per cent said that they expect wages or salary from paid employment to provide them with the largest proportion of income during retirement (HSBC, 2011a, p. 26). If households do not recognise the need to defer retirement ages they will find themselves needing to save even more of their income or risk retiring with inadequate savings.

Pension asset accumulation

When considering the challenge of building greater pensions assets, not all households or countries start from the same position. Current pension wealth is distributed very unequally. Those countries in which governments have historically spent less have also seen households and employers save more through private pensions. For example, the U.K. and Irish governments currently spend around 6 per cent of GDP on pensions, compared to 15 per cent in Italy (European Commission, 2012, p. 4). At the same time, Italy has negligible levels of assets accumulating in pension funds compared to the U.K. and Ireland. Much of continental Europe has preferred to focus on pay-as-you-go systems which are funded from current taxation rather than by investing past pension contributions aimed at paying future benefits. In the current financial crisis, pay-as-you-go pension schemes are being adversely affected by falling employment and hence lower pension contributions. More generally, ageing populations make these state-funded systems increasingly unaffordable. During 2010 and 2011 numerous countries including Greece, France and Italy all sought to cap the future liabilities of their state pension systems through increasing retirement ages.

Figure 1. Pension fund assets as a percentage of GDP



Source: European Commission, 2012, pp. 23-39.

At the same time, pension arrangements which are funded through contributions from employers and employees have been affected by falling asset values and reduced returns. This has seen many countries, most recently the Netherlands in 2011, consider the need for reforms to the more generous defined benefit pension schemes. This retrenchment from employers and the state necessitates the further development of the insurance and

wealth management industry in helping households to achieve their growing needs for asset accumulation, asset protection and income generation in retirement.

3. The impact of family life on planning for retirement

Against the backdrop of the changes discussed above, it does not necessarily follow that there will be an equal role for the insurance industry in all countries. The ongoing relationship between the individual and their wider family helps to define what kind of role the insurance industry is expected to perform. Both family structure and gender roles will remain significant demand-side factors in shaping how consumers respond to the challenge of becoming more financially responsible for old age. It is important that insurers seek to understand this context within which financial decisions are shared within the family.

The importance of family structure

Countries with larger family units tend to look inwards to other family members for support. For example, in India the presence of larger extended families in the shape of the joint family system, which sees parents, children and grandchildren living under one roof, means that 32 per cent expect to spend their retirement living with relatives, twice the global average (HSBC, 2011a, p. 21). With 25 per cent of Indians being concerned about the burden of supporting their own parents through retirement, this generates a precautionary motive for long-term savings, though these savings might not be channelled into insurance-based savings products. For example, while Indian households save on average over one-third of their incomes, the Future of Retirement research found that formal pension arrangements cover only 13 per cent of the country's paid employees. As of 2009, 284 million people did not have any pension coverage, though initiatives such as micro-pensions—where informal and low paid workers purchase low-cost retirement savings products—are gaining in popularity (HSBC, 2009, p. 10). In the U.K., where average household sizes are much smaller, people are denied access to the pooled “insurance” support provided by extended families and instead have to look outwards to financial institutions for the products and services to manage long-term financial risk. It has been suggested by the British Conservative Minister David Willetts that those countries which historically had smaller family units have been at the forefront in developing private insurance sectors (Willetts, 2010).

The importance of gender roles within the family

Even where the market for private pensions products and financial services is well developed, there remain major gaps in provision between different socio-economic groups. Again, the role of the family and gender roles—which have traditionally kept women out of full-time careers and financially dependent upon their male spouse—can help to explain these trends. This could be a reason why currently 22 per cent of women over the age of 75 fall below the at-risk-of-poverty threshold.¹ The Future of Retirement survey showed that globally only 44 per cent of women have a financial plan (compared to 55 per cent of men) and that nearly half (47 per cent) of married women stopped working at some point to have children compared to just a sixth (15 per cent) of men,

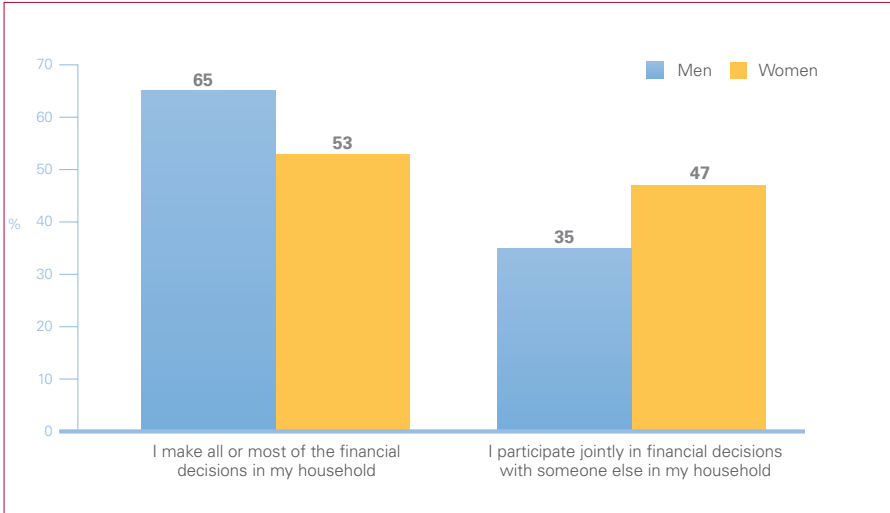
¹ Eurostat, EU-SILC data 2009.

who continue to take the lead in retirement savings and financial decision making (HSBC, 2011b, p. 24 and p. 19 respectively).

Q: When it comes to decisions about your financial affairs, how would you describe yourself?

Base: All

Figure 2



Many of the issues raised in the EU Pensions White Paper (European Commission, 2012) relating to the need for more cost-effective and safer complementary pensions arrangements particularly apply to women. In order to build higher pension savings for themselves, women will need not just greater access to paid employment, but also better protection for those women undertaking caring responsibilities—as well as low-risk and low-cost pension products better tailored to their needs.

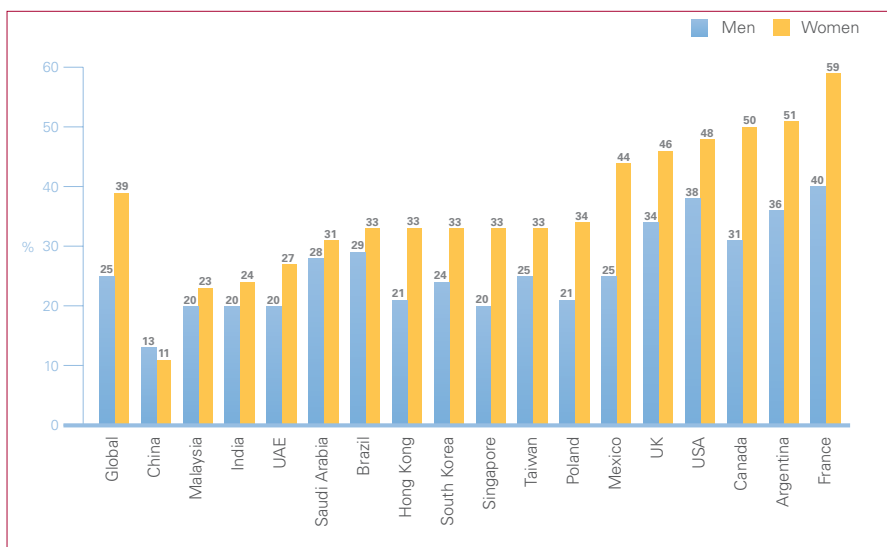
The risks associated with long-term investment are particularly salient issues for women. For example, The Future of Retirement research in 2011 illustrated how women adopt a more risk-averse approach to financial planning. Women were more likely to see investing in stocks and shares as being extremely risky. This is significant because the findings also revealed that women are less likely to undertake financial behaviours which involve adopting risk: 39 per cent of women described themselves as being conservative, preferring to sacrifice long-term returns in order to avoid long-term investment risk. This figure fell to 25 per cent among men (HSBC, 2011b, p. 32).

Q: When it comes to investing, which of the following best describes your risk tolerance?

A: Conservative. I don't want to lose money, and realise I won't make a large return

Base: All respondents

Figure 3



Women are marginally more likely to be saving for retirement through cash deposits (44 per cent compared to 43 per cent for men), while men are more likely to be investing in mutual funds (24 per cent to 18 per cent for women) (HSBC, 2011b, p. 33). Even if planned reforms are successful in boosting female participation rates in paid employment and in offering wider access to private pensions savings, further consideration needs to be given to gender differences in risk awareness and appetite and how that influences investor behaviour.

4. Insurance and household risk management

Having considered reforms to encourage long-term savings in ways which work with the grain of family and working life, it is important to consider what risks people face and how they are expected to prepare for them. The retirement of the future is likely to see households faced with a range of additional risks:

1. Longevity risk

Longevity risk deals with the danger that your savings and/or income will run out before you die. The ability to transfer this risk at retirement through a range of products such as variable annuities, equity release and long-term care insurance is a fundamental area where the insurance industry helps to serve society. In spite of the obvious growing consumer need in this area, many countries have yet to develop annuity markets, which means that securing an income in retirement, future-proofed against longevity risk or inflation risk, can prove problematic. The Future of Retirement research results

in 2009 showed that product penetration across the at-retirement product suite was still negligible. In some parts of the world, particularly the Middle East, this may be driven by religious concerns. Even in the U.K., there was the infamous case of the Plymouth Brethren who fought against compulsory annuitisation on the grounds that making bets on life expectancy went against their religious beliefs. More universally, consumer take up of these products may also be limited by regulatory pressures which have increased the cost of capital on long-term guarantees offered through insurance policies. The impact of new capital requirement standards, in the shape of Solvency II, is likely to exacerbate this trend worldwide.

Even where consumers can access such products, concerns remain about the potential costs. This in part reflects the lack of consumer understanding of the scale of the financial risks facing them in old age and the real costs involved in insuring those risks. Market conditions in recent years have added to consumer concern as bonds (the main investment for annuities) have suffered with low yields during the financial crisis, pushing annuity rates to historic lows. Against this backdrop there is need for further product innovation in the at-retirement market and a need to communicate better to consumers the benefits (not just the costs) of product guarantees when they consider insurance in this area. Greater provision of at-retirement financial advice and planning could play a significant role in reducing this widespread uncertainty and remove a potentially major obstacle to consumer demand for insurance-based retirement products.

One product innovation of recent years—equity release schemes—reflects the growing amounts of household financial wealth held in non-pensions assets, largely in residential property. The development of equity release products, mainly targeted at those aged over 55, help retirees turn housing equity into retirement income (which is guaranteed until death) and provide a potentially significant insurance-based solution to the problem of funding retirement. The U.K. and U.S. are prime examples of countries where equity release could prove useful in retirement. However, among the target consumer group, uncertainty remains high. The Future of Retirement research in 2009 showed that only 1-in-5 people are prepared to think about equity release given the competing demands on the purse strings, such as the desire to leave a financial legacy for one's children (HSBC, 2009, p. 29). Some 38 per cent of people in the U.K. were unsure about using housing wealth to fund retirement, and this figure was higher still at 45 per cent in the U.S. (HSBC, 2009, p. 29).

2. Asset allocation risk

The perceived risk of increasing volatility in investment markets and the relative absence of risk-transfer products may help to explain why cash deposits prove to be such a popular channel for retirement savings. All age groups need to consider how best to deal with investment risk through sound asset allocation. Younger people can afford to expose their portfolios to greater equity risk. As retirement nears, safer harbours are sought. However since the financial crisis of 2007-08, all asset classes display greater levels of volatility and finding a safe harbour in the financial storm may be easier said than done.

Often where people are saving for retirement, it is in savings vehicles which might not offer the best long-term returns. The Future of Retirement research in 2011 found that 44 per cent of our global respondents made use of cash savings specifically for funding retirement. This was more popular than investment-linked insurances (30 per cent) and twice as popular as those households which held mutual funds (22 per cent). There is an opportunity here for the insurance industry to develop more of a life-cycle approach to its products and services, joining up the key life events facing consumers (college fees, first job, marriage, starting a family, home purchase, etc.) to support wealth creation throughout the accumulation phase (up to retirement), while helping to generate incomes in retirement. “Lifestyling” retirement funds away from equities into lower risk asset classes enables people to derisk their portfolio as they move towards and into retirement. One important way for governments to facilitate this is through creation of a single lifetime tax wrapper.

Many governments currently offer a wide range of tax incentivised wrappers around retail savings and insurance products, for example, life insurance, investment funds, investment trusts, deposit accounts and rainy day funds, children’s savings and pensions. Creating a single wrapper which enables the household to accumulate and decumulate their lifetime savings without having to switch those funds between wrappers would help to maximise the benefits of tax relief on savings products and remove some of the barriers which currently prevent consumers from becoming more financially engaged, such as the perceived cost and complexity of long-term saving. Given the important role played by the tax system in determining what shape savings product take, this is clearly an area for government involvement.

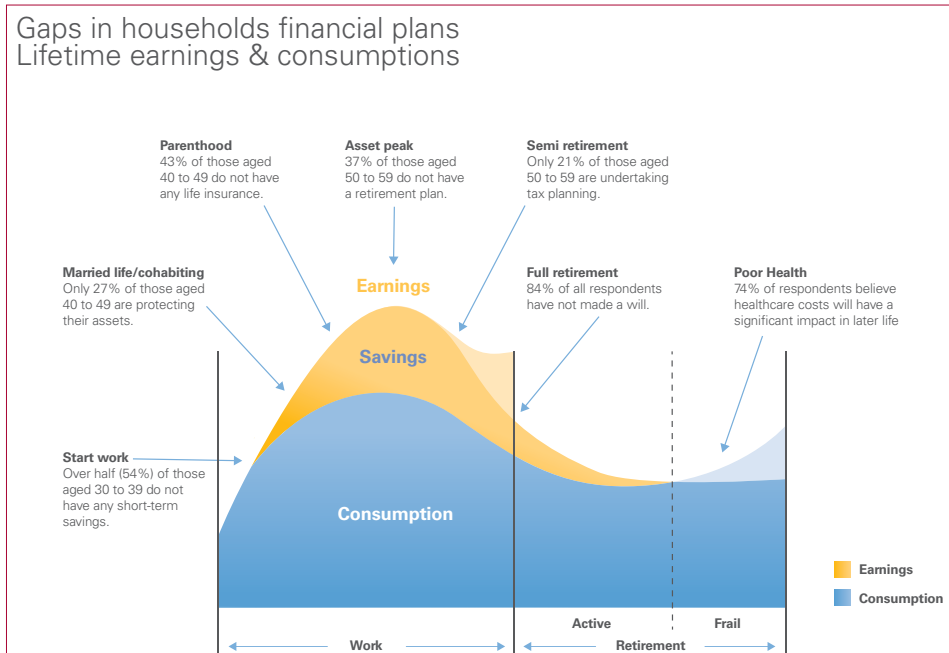
3. Asset protection

Encouraging asset accumulation for retirement must go hand in hand with efforts by households to protect those assets against market volatility and inflation. Another critical way that the insurance industry plays a leading societal role is in the area of asset protection, for instance through mitigating inflation risk, in which prices eat away at the value of savings and income during retirement. Families also need to think about protecting their assets against tax, as part of their efforts to ensure tax efficient wealth transfer across the generations. There is also a need to protect household incomes as well as their assets. With nearly half of the households (44 per cent) surveyed in The Future of Retirement research saving for retirement in liquid assets, such as cash deposits, there is a very real danger that many households faced with unforeseen events such as prolonged periods of unemployment or ill-health, may be forced to use up most or all of their liquid retirement savings, simply to fund day-to-day expenses well before they reach retirement. In addition, liquid funds are particularly vulnerable to inflation as opposed to equities, which offer some hedge. In many countries, these risks could be transferred to insurers via income protection, critical illness cover and term life assurance (in cases where the breadwinner dies). Yet half of families surveyed did not have life insurance in place to protect their financial dependents. The risks associated with not having insurance in place were overlooked by most parents. Addressing this family protection gap should be seen as an integral part of any household’s retirement plans.

Across each of the above distinct consumer needs, there are currently major shortfalls in household planning as households struggle to cope with their growing financial burdens.

Over one-third of those in their 50s have no retirement funds in place, while only 21 per cent of this group are undertaking any tax planning (Figure 4) (HSBC, 2011b, p. 26). While 74 per cent expect ill-health to have an impact on them in old age, only 40 per cent of those who are actually planning their finances have thought to include some kind of care insurance in those plans (HSBC, 2011a, p. 14 and 2011b, p. 26).

Figure 4



Base: All respondents

5. Removing consumer obstacles to the take up of private insurance

To expand the role of the insurance industry in retirement provision, there are several obstacles which must be overcome.

The most obvious obstacle appears to relate to household economics. Traditional efforts to provide saving incentives through the tax system have yielded mixed results, with large proportions of tax relief tending to end up with higher income earners who already have the means to save. A more recent policy approach has been to encourage workforce participation as a solution to the long-term savings problem. By encouraging people to retire later and encouraging groups such as women into the workforce, governments increase household disposable incomes as well as giving individuals access to formal workplace pension schemes.

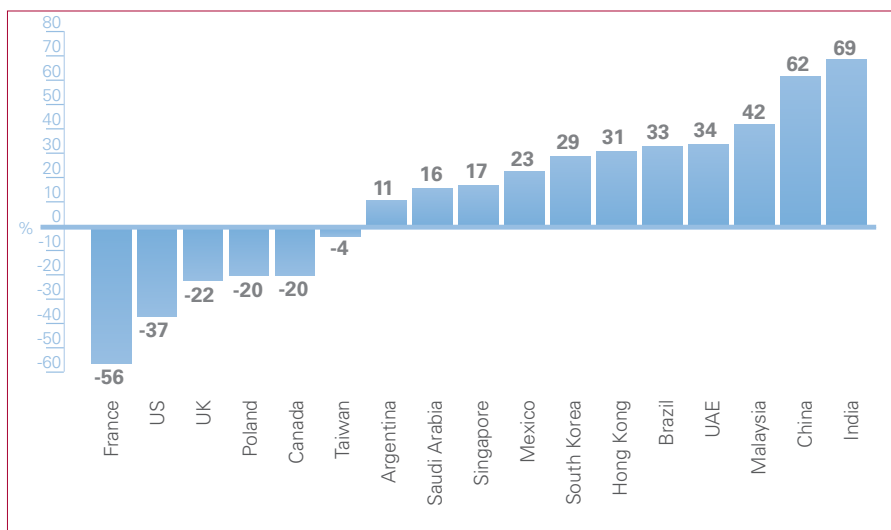
Higher levels of economic activity allow households to sustain a savings ratio more appropriate for future retirement needs. This is particularly true in the straitened economic

circumstances since 2008, especially in Europe and North America, where pressure on household finances is limiting people’s ability to save for retirement. The Future of Retirement findings show that, of those with no financial plan in place for their family’s future, 60 per cent said they lacked the money to implement one (HSBC, 2011a, p. 34). The same findings also highlighted the emergence of a generation of workers in North America and Europe who think that they will have a lower standard of living than their parents’ generation in retirement (HSBC, 2011a, p. 16).

Q: Overall, do you think your generation will be better or worse off in retirement compared to your parents’ generation?

Base: All respondents, those answering that they would be “much” or “slightly” better off minus those answering that they would be “slightly” or “much” worse off.

Figure 5



The European Commission has taken a keen interest in retirement issues with a view to reversing current household savings behaviour and promoting greater provision through private insurance products. Their White Paper *An Agenda for Adequate, Safe and Sustainable Pensions* sets out proposals for funding future retirement, making clear the need to enhance opportunities for households to build up complementary retirement savings (European Commission, 2012, p. 3). This will involve bolstering the role of occupational and personal pension arrangements to reduce the burden on cash-strapped governments. For this to take place, there are a number of prerequisite reforms needed to make these pillars of pension provision more cost-effective and ensure that investors are adequately protected.

1. A cost-effective savings and investments industry

The need to create a more cost effective long-term savings industry has been a long-held preoccupation for policymakers, given the evidence that sub-scale schemes

lead to sub-optimal consumer outcomes. A recent Parliamentary debate in the U.K. revealed that nearly one-third (31 per cent) of the typical pension pot is eaten up by fees and charges (U.K. Parliament, 2012).

Better regulation may help to address the fundamental drivers of the costs associated with long-term savings products. Of the U.K.'s 46,540 trust-based defined-contribution pension schemes, 44,000 have fewer than 12 members, and 38,300 have fewer than four; the average U.K. scheme size is 2,500 members. This contrasts with Australian schemes that average 26,000 members (Johnson, 2012). A similar assessment was undertaken into Europe's mutual fund industry which showed that the industry remains highly fragmented owing to tax and regulatory barriers in Europe's cross-border funds market. This leads to a proliferation of funds, helping to explain why European fund costs are higher than those in the U.S. (European Commission, 2006, esp. p. 14).

2. Better investor protection

The collapse of numerous employer-sponsored pension schemes during the past decade saw 120,000 workers in the U.K. alone lose part or all of their defined benefit pension entitlements. This has led to the introduction of greater supervision of employer schemes across Europe through legislative changes under the Institutions for Occupational Retirement Provision (IORPs) Directive and more rigorous funding requirements. The recent European Commission White Paper has reaffirmed the need to improve supervision of occupational pensions and for improving the protections put in place where scheme sponsors become insolvent.

The failure to offer adequate protection to retail investors provides a potentially powerful obstacle to households saving for retirement. Many countries, including the U.K., Netherlands, Australia and Singapore, have been prompted to undertake detailed reviews of the way in which the retail investment market is regulated to ensure higher standards of conduct, prudential supervision and consumer disclosure. The forthcoming EU initiative on Packaged Retail Investment Products (PRIIPs) will ensure minimum standards of transparency and disclosure for all insurance-based long-term savings wrappers marketed across the 27 EU Member States with a view to removing some of the confusion around investing for the long-term and encouraging more proactive consumers.

3. Better consumer education

Encouraging households to adopt the optimal financial behaviours necessary to achieve their aspirations in retirement is a major priority for governments around the world. The Future of Retirement research findings show that across all respondents, including both men and women, the concept of risk is generally poorly understood. For example, flying by plane is seen to be riskier than crossing the road, even though many more people are killed (per mile travelled) on the roads every year. How people conceptualise the risks around them often reflects irrational fears rather than actual experience. People are also more likely to acknowledge the risks associated with high profile public awareness campaigns such as drink driving, smoking and driving without wearing a seatbelt. Countries such as the U.K. and the Netherlands have put in place national campaigns to improve financial education and awareness. These programmes are still in their infancy, however, and it will be difficult to measure the

outcomes quantifiably within the next decade. Efforts to promote greater household savings over the short- to medium-term are also required. Initiatives such as the National Employment Savings Trust (NEST), which will be introduced in the U.K. in 2013, will be keenly watched for their effectiveness in increasing retirement savings levels through auto-enrolment, which means use of behavioural economics.

4. Promoting the benefits of financial advice

Given the concerns raised above about the perceived costs and risks associated with long-term savings, the benefits associated with long-term savings can be less clear to households. In 2011, The Future of Retirement study sought to quantify the benefits of planning for retirement. The survey showed that where people do actually undertake financial planning—and only 50 per cent of respondents worldwide did—there is a direct correlation between those who undertake financial planning and seek professional financial advice and those with more sizeable financial assets. We found that those who had a plan for their retirement and who had sought advice had amassed on average 69 per cent more than the global average and three-and-a-half times (357 per cent) more than those without either a plan or advice.² Significantly, these distinctions remain when we controlled the results for other variables such as the respondent's age or income. This shows a strong correlation between financial planning behaviour and levels of saving, regardless of age or income, and whilst we cannot be sure that there is a causal relationship between planning and higher savings, establishing this relationship is an important finding and worth exploring further in future research.

6. Conclusion

In the current economic climate, many households naturally prioritise considerations about the short-term costs of paying for advice or making regular contributions to long-term savings and insurances. Removing these obstacles to consumer action will mean that in future, consumers must give much greater consideration to the long-term benefits of undertaking financial planning activities and the long-term cost of doing nothing (such as income shortfalls and pensioner poverty). This positive behaviour change is unlikely to happen on a significant scale without encouragement. More effective use of the tax system, more simplified and cost-effective consumer solutions will be required. So too will reforms to labour markets which enable all social groups to access decent household incomes which can create the economic conditions which support household savings. This is a long-term journey and many countries find themselves at a very early stage in developing appropriate public policy and market responses. While the state and employer may be looking to rebalance the responsibilities for saving for old age, with more of a burden placed on individuals, all of the social partners will retain an important role, alongside the growing role for the insurance industry, in facilitating households to accept that responsibility.

² Typical fund values vary greatly between high-income and middle-income countries (HSBC, 2011a, p. 40).

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Books and monographs

Insurance and Resolution in Light of the Systemic Risk Debate—A contribution to the financial stability discussion in insurance

Edited by Daniel Haefeli and Patrick M. Liedtke, February 2012.

Company failures are at the heart of the systemic risk discussions and are occupying the minds of many regulators, supervisors and policymakers the world over. Much of the discussion is centred around banking and the most recent experience during the financial crisis. Experts realise how much damage failures in banking often create and how quickly they can generate a systemic threat and consequently an immediate need for substantial and very expensive government interventions. The picture in insurance is much less clear to many of those experts. And while historically no insurance failure ever created a systemic financial crisis, the issue of recovery and resolution in insurance demands special attention and careful analysis: How do these processes work specifically in insurance and how do they relate to the systemic risk discussions and possible new financial services regulation?

Building on the first three reports of The Geneva Association on financial stability, this report examines the existing features of recovery and resolution mechanisms in insurance and their relation to ongoing international supervisory and regulatory discussions on systemic risks. It also proposes recommendations for possible measures to increase the existing resilience of financial systems.

Financing Long-Term Care in Europe—Institutions, Markets and Models

Edited by Joan Costa-Font and Christophe Courbage, Palgrave Macmillan, 2012.

The ageing of the European population brings new financial risks that call for state, market and societal responses. In 2011, the first baby boom generation is turning 65, and forecasts predict that the size of the old-age population in need of long-term care will double in the next 50 years in Europe. However, how different countries are responding to the challenge of financing long-term care is still a question open to further examination, including the role of market development, changing intergenerational contracts and especially the constraints of state intervention.

Growing long-term care needs in several European countries as well as the reshaping of traditional modes of care-giving further increase the pressure for sustainable funding of more comprehensive long-term care systems. This book examines different forms of partnership and the potential cooperation of state, market and societal stakeholders. It not only offers a full understanding of the institutional responses and mechanisms in place for financing old age but also provides a deep analysis of both the demand and supply factors underpinning the development of financial instruments to cover long-term care needs in Europe.

The Future of Insurance Regulation and Supervision—A Global Perspective

Edited by Patrick M. Liedtke and Jan Monkiewicz, Palgrave Macmillan, April 2011.

The recent financial crisis has provoked a broad spectrum of regulatory observations and possible responses. Currently most of these proposals have been quick solutions to politically pressing questions and often only address parts of regulatory systems, but not the whole. At times, the result has been more confusion than clarity. Although historically wide-ranging reshaping has been a common phenomenon after the severe failure of an existing financial infrastructure, there is an important difference this time—the global reach of today's markets

and enterprises. Moreover, never before have so many reforms following a banking crisis not only affected the banking sector but also other parts of the financial services sector, such as insurance, the social systems and, of course, our real economy.

Written by leading academics, researchers and insurance industry experts, this book offers a diversified perspective on how the regulatory and supervisory framework for the insurance sector will develop over the coming years. It is supported by The Geneva Association, the world-leading think tank of the private insurance industry.

Considerations for Identifying Systemically Important Financial Institutions in Insurance

Edited by Daniel Haefeli and Patrick M. Liedtke, The Geneva Association, Geneva, April 2011

The Geneva Association's efforts in the field of financial stability in insurance continue with this report which addresses two fundamental areas that are currently occupying policy-makers' and regulators' agenda: in Part I "A Methodology to Identify Systemically Important Financial Institutions (SIFIs) in Insurance", and in Part II "An Analysis of the AIG Collapse: understanding systemic risk and its relation to insurance".

The methodology presented in Part I is a logical further development of the earlier work carried out by The Geneva Association. It is inspired by the need to develop a comprehensive approach to identifying potentially systemically risky activities and the entities that carry them out.

Part II provides an analysis of the AIG case, which regularly features prominently in discussions about systemic risk and insurance and which is often misunderstood. The analysis aims to provide more clarity on this oft cited example and sets it in the wider context of systemic risk issues and their relationship to insurance.

Key Financial Stability Issues in Insurance—An account of The Geneva Association's ongoing dialogue on systemic risk with regulators and policy-makers, Follow-up report on Systemic Risk in Insurance

Edited by Patrick M. Liedtke and Kai-Uwe Schanz, The Geneva Association, Geneva, July 2010.

This report is based on a series of background papers and special presentations on systemic risk in insurance created between March and June 2010. It summarises the insurance industry's thinking—as advanced and crystallised by The Geneva Association—on these areas which include both corporate activities (e.g. asset management) and regulatory measures (e.g. crisis resolution mechanisms).

The Geneva Reports—Risk and Insurance Research

No.5: Extreme events and insurance: 2011 annus horribilis

Edited by Patrick M. Liedtke and Kai-Uwe Schanz, September 2011

2011 has been the most expensive year in recorded history both for the national economies and the insurance sector, with an estimated direct economic cost of US\$380bn and original insured losses of approximately US\$105bn.

It also showed an increasing severity arising from natural catastrophes, with a series of extreme events including the 11 March Japanese earthquake, the Australian and Thai floods, the New Zealand earthquakes, and the U.S. tornadoes.

These extreme events entail huge consequences in terms of human and economic losses but they also have important repercussions for the insurance industry.

This report presents the insurance's role in managing extreme events and the mechanisms that make these insurable, both by the public and private sectors. In this context, it provides a detailed picture of the main extreme events that occurred in 2011 and analyses their impact on local insurance markets as well as the lessons learnt to efficiently manage these risks.

No.4: *September 11—Ten Years On: lasting impact on the world of risk and insurance*

Edited by Patrick M. Liedtke and Kai-Uwe Schanz, September 2011

Ten years after the terrorist attacks of September 11, 2001 The Geneva Association has initiated a comprehensive research effort focusing on the lasting impact of an event which was the most expensive man-made disaster for insurance ever and which in its immediate aftermath was widely viewed as heralding a new era in global politics, economics and business. This effort builds on The Geneva Association's seminal special monograph which, written and published in 2002, has proven remarkably prescient in many respects.

With the following collection of eight essays from leading industry economists, underwriting specialists and Geneva Association researchers, we intend to make a meaningful contribution to establishing the event's permanent relevance for the world of risk and insurance. We also hope to stimulate our readers to consider the long-term development of the insurance industry and the various ways in which it is intertwined with human lives and activities.

No.3: *Anatomy of the credit crisis—An insurance reader from The Geneva Association*

Edited by Patrick M. Liedtke, January 2010

In this special Geneva Report, The Geneva Association has assembled a series of key articles written during and on the subject of the credit crisis, compiling them into an insurance "Reader". This Reader provides an insight into the credit crisis from an insurance point of view, looks at its impact on the insurance industry and finally examines the episode for lessons-learned and concerns that remain. The majority of the articles were written during the crisis and have been published unchanged in order to give a true insight into how thinking developed as the crisis unfolded.

With articles unchanged from the time of writing accompanied by a highly detailed timeline, the Geneva Report No 3 provides a very real anatomy of the credit crisis, the lessons learned from it and the implications it has for the insurance industry in future.

No. 2: *The insurance industry and climate change—Contribution to the global debate,*

The Geneva Association, July 2009

Climate change brings new risks but also new opportunities for the insurance sector.

The insurance industry is forward-looking by nature and has a long-term comprehensive approach shared by few other economic actors.

In the context of insurance and climate change, two main issues are addressed in this report:

- Climate change is happening and calls for mitigation and adaptation measures. These differ between industrial countries and developing countries. From an insurance perspective, specific weather-related hazards will need to be identified, quantified and prioritized on a local level.
- A low-carbon economy is the agreed societal vision, and a transition to a more sustainable economy is inevitable for industrial countries to reach a low-carbon future. The transition to these low-carbon approaches will change the economic structure of industrial countries, hence the risks and opportunities for the insurance industry as well as its relationship with the economic actors involved.

The report shows that climate change is about more than just extreme weather events. It analyses what insurance companies are already doing, what they could do in the future and where they need the cooperation of governments and other partners to succeed.

No.1: *Regulation and intervention in the insurance industry—fundamental issues*

E. Baltensperger, P. Buomberger, A.A. Iuppa, B. Keller and A. Wicki, February 2008

Financial markets belong to the strongly supervised and regulated sectors of most modern economies. This applies to both banking and insurance. Traditional motives and justifications for regulation in these two industries overlap to some extent, but differ also in many ways.

Financial markets have undergone extraordinary growth and structural change in recent decades, due to a variety of developments (worldwide integration of capital markets, revolution

in information technology, shifting attitudes towards competition and protection in the financial services area). Along with this, existing approaches to regulation have been increasingly questioned and regulatory frameworks modified in a multitude of ways, a process very much still going on.

While a very substantial body of literature concerned with the regulation of banking has developed over recent years, dealing with both its fundamental motivation and specific forms and applications of such regulation, a similar intellectual effort concerned with insurance regulation is lacking to a considerable extent. It is the aim of this paper to work towards closing this gap.

Newsletters (also available as e-newsletters)

- ***Insurance and Finance*** deals with research activities in the fields of finance where they are relevant to the insurance and risk management sector.
- ***PROGRES*** contributes to the exchange of information on studies and initiatives aimed at better understanding the challenges in the fields of insurance regulation, supervision as well as other legal aspects.
- ***Risk Management*** summarises The Geneva Association's initiatives in the field of risk management and is open to contributions from any institution or company wishing to exchange information.
- ***Insurance Economics*** which serves as an information and liaison bulletin to promote contacts between economists at universities and in insurance and financial services companies with an interest in risk and insurance economics.
- ***Four Pillars*** provides information on research and publications in the field of social security, insurance, savings and employment.
- ***Health and Ageing*** brings together facts and figures linked to health issues for people aged 50-80 and productive ageing, to try to find solutions for the future financing of health.
- ***World Fire Statistics***.

Other publications of The Geneva Association

Journals

(published by Palgrave Macmillan for The Geneva Association)

- ***The Geneva Papers on Risk and Insurance—Issues and Practice***

This prestigious journal, published quarterly, leads its field, publishing papers which both improve the scientific knowledge of the insurance industry and stimulate constructive dialogue between the industry and its economic and social partners.

Volume 37, No. 1 / January 2012

- Editorial—Moving Insurance, *by Patrick M Liedtke*
- Who Responds to Tax Reforms? Evidence from the Life Insurance Market, *by Carolin Hecht and Katja Hanewald*
- Non-Risk Price Discrimination in Insurance: Market Outcomes and Public Policy, *by R. Guy Thomas*
- Regulation and Reform of Rating Agencies in the European Union: An Insurance Industry Perspective, *by Anja Theis and Michael Wolgast*
- Insurability in Microinsurance Markets: An Analysis of Problems and Potential Solutions, *by Christian Biener and Martin Eling*
- Governance and Shareholder Response to Chief Risk Officer Appointments, *by Manu Gupta, Puneet Prakash and Nanda Rangan*
- Globalisation and Convergence of International Life Insurance Markets, *by Chien-Chiang Lee and Chi-Hung Chang*

IIS AWARD-WINNING PAPERS

- Structure, Principles and Effectiveness of Insurance Regulation in the 21st Century: Insights from Canada, *by Mary Kelly, Anne Kleffner and Darrell Leadbetter*
- Principles for Insurance Regulation: An Evaluation of Current Practices and Potential Reforms, *by Robert W Klein*

- ***The Geneva Risk and Insurance Review*** is an international journal published in annual volumes of two issues. Its purpose is to support and encourage research in the economics of risk, uncertainty, insurance and related institutions by providing a forum for the scholarly exchange of findings and opinions.

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- Risk Aversion, Downside Risk Aversion and Paying for Stochastic Improvements, *by W Henry Chiu*
- Risk-sharing Contracts with Asymmetric Information, *by Renaud Bourlès and Dominique Henriot*
- Corporate Management of Highly Dynamic Risks: Evidence from the Demand for Terrorism Insurance in Germany, *by Christian Thomann, Razvan Pascalau and J.-Matthias Graf von der Schulenburg*
- Raising Capital in an Insurance Oligopoly Market, *by Julien Hardelin and Sabine Lemoyne de Forges*
- Enhancing Insurer Value Using Reinsurance and Value-at-Risk Criterion, *by Ken Seng Tan and Chengguo Weng*

Working Papers “Etudes et Dossiers”

These working documents present intermediary or final results of conference proceedings, special reports and research done by The Geneva Association and its partners. Among the last issues:

- *14th Meeting of the Geneva Association's Amsterdam Circle of Chief Economists & 6th Geneva Association Meeting of Chief Investment Officers in Insurance*, No. 388, April 2012
- *12th CEO Insurance Summit in Asia*, No. 387, April 2012
- *2nd Climate Change Summit*, No. 386, March 2012
- *7th Chief Risk Officer Assembly*, No. 385, March 2012
- *8th Insurance and Finance Seminar of The Geneva Association*, No. 384, January 2012
- *8th International Liability Regimes Conference of The Geneva Association*, No. 383, February 2012
- *8th Geneva Association Health and Ageing Conference—Insurance and Dementia*, No. 382, November 2011
- *3rd Climate Risk and Insurance (CR+I) Seminar*, No. 381, November 2011
- *38th Seminar of the European Group of Risk and Insurance Economists*, No. 380, October 2011
- *M.O.R.E. 25 Seminar*, No. 379, September 2011
- *16th International Conference on Space Activities Development—Risk Management & Insurance Aspects*, No. 378, September 2011
- *13th Meeting of ACCE & 7.5th International Liability Regimes Conference*, No. 377, August 2011
- *9th ART OF CROS*, No. 376, August 2011
- *27th PROGRES International Seminar*, No. 375, July 2011
- *11th CEO Insurance Summit in Asia*, No. 374, July 2011
- *14th Joint Seminar of the European Association of Law and Economics and The Geneva Association “Law and Economics of Natural Hazards Management in a Changing Climate”*, No. 373, June 2011
- *1st Climate Change Summit for Asia's Insurance Industry*, No. 372, May 2011
- *7th Insurance and Finance Seminar of The Geneva Association and Presentations on The Geneva Association's Financial Stability in Insurance Initiative*, No. 371, April 2011
- *6th Chief Risk Officer Assembly, A vision for risk management in the “new normal”*, No. 370, March 2011
- *World Risk and Insurance Economics Congress*, No. 369, March 2011
- *7th Geneva Association Health & Ageing Conference, U.S. and French Long-Term Care Insurance Markets Development*, No. 368, January 2011
- *7th International Liability Regimes Conference of The Geneva Association and 12th Meeting on The Geneva Association's Amsterdam Circle of Chief Economists*, No. 367, January 2011

The Geneva Association and Life, Health and Ageing

The Geneva Association has two main research programmes that focus on life, health and ageing: the Health and Ageing Programme, and The Four Pillars/Pensions Programme. While one studies the general issues arising in populations worldwide deriving from general health problems and ageing, the other looks at the economic impact of ageing populations on its pension systems, and on the need to extend the notion of professional life beyond what modern society has become used to.

The Health and Ageing Programme of The Geneva Association

This research programme aims to investigate the role of demographics, new technologies and insurance in the management of health risk in society. It seeks to bring together analyses, studies and research related to issues in health provision and the role of insurance in covering health risks, with an emphasis on the changing demographic structure, whereby the population over 60 years old largely exceeds that of other groups. The key is to test new and promising ideas, linking them to related works and initiatives in the health sector, and to try to find solutions for the future financing of healthcare.

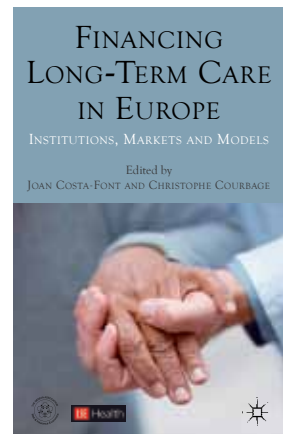
Financing Long-Term Care in Europe—Institutions, Markets and Models

Edited by Joan Costa-Font and Christophe Courbage

To be published in November 2011 by Palgrave Macmillan

The ageing of the European population brings new financial risks that call for state, market and societal responses. In 2011, the first baby-boom generation is turning 65, and forecasts predict that the size of the old-age population in need of long-term care will double in the next 50 years in Europe. However, how different countries are responding to the challenge of financing long-term care (LTC) is still a question open to further examination, including the role of market development, changing intergenerational contracts and especially the constraints of state intervention.

Composed of 16 chapters from the main experts in the field (including scholars and leading academics, the OECD, Swiss Re and civil servants), this book draws on past meetings The Geneva Association has organised on the topic of LTC insurance. It addresses the different forms of LTC financing: public coverage, insurance markets, family and housing as self-insurance for LTC.



The Four Pillars/Pensions Programme of The Geneva Association

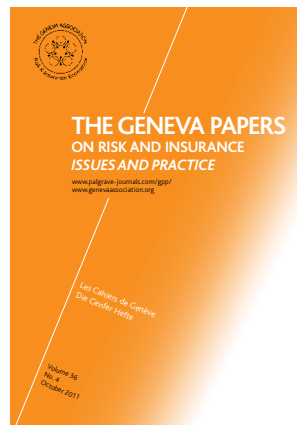
This research programme, launched in 1987, was developed with the aim of identifying possible solutions to the problem of the future financing of pensions and, more generally, of social security in our post-industrial societies. The programme derives its name—The Four Pillars—from a visionary proposal that uses part-time work for those at retirement age to solve a myriad of problems that exist with retirement, its financing and how it affects individuals, companies and the wider economy. Insurance solutions play a key role for providing old-age security and constitute huge future potential.

***The Geneva Papers on Risk and Insurance—Issues and Practice* October 2011—A Special Issue on Longevity**

This Special Issue on Longevity, edited by David Blake, Christophe Courbage, Richard MacMinn and Michael Sherris, is a dedicated issue of selected papers presented at the 6th International Longevity Risk and Capital Markets Solutions Conference that was held in Sydney in September 2010.

This volume addresses the issue of Longevity Risk and Capital Markets, Insurance-Linked Securities, Modelling Mortality, Reverse Mortgages, Financial Risk for Life Insurers, and Incidence Experience.

Founded by The Geneva Association in 1976, this prestigious journal publishes peer-reviewed papers which both improve the scientific knowledge of insurance and stimulate constructive dialogue between the industry, academics and its economic and social partners.



The Geneva Reports

Risk and Insurance Research

No. 6 • June 2012

Increasing life expectancy and falling fertility rates are creating a demographic situation that has become one of the greatest economic and societal challenges of the 21st century.

No doubt, the drivers behind these challenges are major successes such as longer life-times reflecting better health and increasing affluence and education.

However, funding these longer lives will become increasingly difficult under current schemes. The sustainability of public and corporate pension schemes is at risk. Indeed, the cost of funding state pension benefits is set to rise dramatically—by more than double in some countries. This poses a considerable political and economic dilemma about how to keep the burden on the working population bearable whilst not sacrificing the standard of living for those drawing pensions.

Against this backdrop, governments and employers tend to shift responsibility for old-age security to individuals. The financial crisis has further accelerated the underlying shift in responsibility as governments face mounting fiscal pressures and employers contend with a low-growth environment. Insurers can make a meaningful contribution to old-age security if a conducive legal and regulatory framework is in place. So too can they devise and implement innovative solutions appropriate for the broadest possible spectrum of society.

With papers from old-age security experts, industry practitioners as well as the IMF and Center for Strategic and International Studies, this report provides a concise and authoritative overview of the global ageing challenge, its funding and the insurance role amongst the solutions available for its resolution.