

Dealing with the New Giants: Rethinking the Role of Pension Funds

Tito Boeri, Lans Bovenberg,
Benôit Coeuré and Andrew Roberts

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Geneva Reports on the World Economy 8

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The views expressed in this report are entirely our own and should not be taken to represent those of our institutions or the individuals mentioned above.

Foreword

Pension funds are one of the largest and fastest growing investors in global capital markets. They play a dual role, helping individuals save for old age and reduce the risks they face; while at the same time allocating capital efficiently across firms in order to ensure innovation and growth. Creating a pension system with the right mixture of public and private provision, and regulating this system effectively, is essential if these 'new giants' are to play both roles effectively.

The authors of this eighth publication in the series of Geneva Reports on the World Economy draw attention to two contrasting scenarios which very effectively illustrate the tension between these two roles. In the first scenario, public pay as you go systems grow, crowding out private retirement savings, while at the same time inflexible labour markets discourage individuals from accumulating human capital and encourage workers to be risk averse. Since individuals are risk averse, private pension funds seek to reduce risk as well, investing only in low risk government bonds. The result: productive investment by the private sector is crowded out, innovation lags and growth is slow. In the authors' second scenario, high income individuals rely on private pensions, while the public system is designed to provide a basic pension for low earners. The higher income individuals are more willing to bear risk, and so their pension portfolios favour riskier investments, which fosters innovation and growth. Of course neither scenario is inevitable, but the authors stress that without reform of the public pension system, the second, higher growth scenario is unlikely to occur. Yet the reforms to the public pension system outlined in the Report will bring their own set of challenges, precisely because they lead to increased reliance on private pensions. As the UK's experience reveals, private provision may well lead to high administrative costs and 'misselling'. The Report therefore calls for mandatory participation in pension plans, with limited choice at the individual level, but vigorous competition at the wholesale level, with pension funds obliged to contract out asset management and other services.

ICMB and CEPR are delighted to provide a forum for the authors to put forward this distinctive view of pension reform. We are confident that it will be widely read and discussed. It should give policy-makers, academics and the informed public a more sophisticated understanding of these issues.

Tommaso Padoa-Schioppa
Richard Portes

1 July 2006

Executive Summary

New giants give rise to many policy issues. Pension funds are, together with insurance companies, the largest institutional investors in global financial markets. Their holdings of equity and bonds currently account for about a quarter of stockmarket capitalization and about 10% of bond market capitalization in the OECD. Pension funds are growing rapidly, albeit not everywhere and with different features from country to country. The recent collapse of real fixed-income yields in the United Kingdom has highlighted the potential impact of pension funds on financial markets.

The role of pension funds as financial intermediaries is to help individuals save for their old age and protect the value of their pensions. By sharing risks effectively both along time and across individuals, pension funds can also support innovation and growth. To explore these various issues, we bring together several dimensions: financial illiteracy and the related need to delegate financial life-cycle planning to institutions such as pension funds; governance and principal-agent issues associated with this delegation; the need for clear accounting and funding standards; the potential of financial engineering to reduce mismatch risk between pension funds' assets and liabilities; the role of companies and governments in absorbing risks; optimal risk-sharing arrangements between the participants of pension funds; and labour-market and human-capital policies aimed at a longer and more flexible working life. This is what this report is about.

The microeconomics of optimal delegated saving and portfolio behaviour over the life cycle is the starting point for our normative analysis. At the same time, however, we consider the macroeconomic implications of various pension arrangements for financial and macroeconomic stability as well as human capital, entrepreneurship, innovation and growth.

Our recommendations are aimed at avoiding a risk-shedding scenario... Rather than following the usual two-handed approach of economists, we take a clear stance on a number of controversial issues. The common thrust of our recommendations is to avoid a scenario in which public pay-as-you-go (PAYG) pension systems crowd out private funded savings for retire-

...in favour of a scenario involving entrepreneurship and human capital investment.

Reforms of public PAYG pension systems called for.

Collective pension plans address financial illiteracy and transaction costs...

ment, private pension funds shed risk to banks and to governments, and inflexible labour markets harm the accumulation, maintenance and use of human capital, resulting in early effective retirement and low fertility rates. With workers unwilling to bear any risks in this scenario, pension funds invest mainly in low-risk assets and government bonds. This weakens fiscal discipline, crowds out productive investments and hurts innovation and long-term growth.

A second, polar scenario involves greater portfolio diversification in retirement savings with a greater role of private pension-saving by high-income individuals, public PAYG pension systems that are more closely targeted on providing a basic pension to low-income individuals, and more human capital investments resulting in a higher and more flexible effective retirement age and higher fertility rates. Moreover, flexible labour markets support entrepreneurship and allow workers to bear risk, as they can more easily vary work effort over the life course. In this second scenario, pension funds continue to invest in risk-bearing assets, thereby facilitating innovation and entrepreneurship. At the same time, low demand for fixed-income instruments matches the limited supply of public bonds as a result of governments restraining their fiscal deficits.

For the second rather than the first scenario to materialize, reforms of public pension systems are essential. Without further reforms, payroll taxes are bound to increase further, thereby crowding out private saving through pension funds. The PAYG system should continue to offer a pension for those with low lifetime incomes. Those with higher incomes should supplement this basic public pension with private pension provisions in order to maintain their standard of living in retirement. Reforms involving a higher retirement age and lower pension benefits face serious political obstacles. We therefore favour automatic adjustments in PAYG pensions, such as indexing pension benefits to the evolution of the wage bill and longevity. Notionally Defined Contribution (NDC) systems incorporating such automatic adjustments are being gradually introduced in Italy, Latvia, Sweden and Poland. The explicit risk-sharing agreements in these NDC systems alleviate political risks and facilitate planning for retirement.

Households typically lack the basic financial knowledge and computational ability to implement complex financial planning over the life cycle. In addition, the distribution of individual pension plans involves high marketing and management costs and, as evidenced by recent episodes in the United Kingdom, a substantial risk of misselling. Mandatory participation in collective pension plans offering a limited number of default choices can avoid this. More sophisticated life-cycle investment by pension funds on behalf of long-term investors also serves financial macroeconomic stability. We thus prefer limited freedom of choice for individual par-

ticipants, but substantial competition for various asset management and other services that pension funds can contract out, thus taking advantage of an integrated market for financial services. Competition thus occurs at the wholesale rather than the retail level.

We favour a two-tier governance structure for pension funds. The two-tier structure involves, first, a supervisory board or board of trustees representing the interests of participants and, second, a professional executive board to deal with the funds' daily operations. An investment committee should decide the investment principles. This committee can be a subset of the supervisory board, provided that its members are financially qualified. Elected representatives of the participants in supervisory boards should benefit from financial education, and participation of outside professionals should be compulsory. We favour minimum harmonized standards for reporting on pension rights and the performance of pension funds. This facilitates the portability of pension rights and enhances the financial literacy of individuals.

Defined-benefit liabilities are increasingly disclosed on a mark-to-market basis. We welcome this development because it enhances market discipline and transparency and facilitates better risk management with financial market instruments. In particular, financial engineering involving, for example, swap overlays allows pension funds to get rid of the interest-rate risk inherent to their liability structure without giving up diversification and returns.

Accounting and funding standards should be harmonized among each other and across countries in order to provide for a level playing field. In this connection, the swap discount curve should be used for discounting defined-benefit obligations. Moreover, public regulations should do justice to the ambition of pension funds to index pension benefits to inflation. By focusing on nominal pension benefits, some regulations give in to money illusion and expose participants of pension funds to inflation risk, which could otherwise be hedged.

Thinking that pension funds can shed all their risks to financial markets would be an illusion. There has been a growing trend to redesign portfolios to match the guarantees in defined-benefit pension plans, the so-called liability-driven investment. A shortcoming of such a strategy is that young individuals fail to take advantage of the risk premium of equities; buying guarantees is indeed quite expensive in terms of lost expected returns. By shifting financial risks to other parts of the financial system, pension funds cannot act as a stable long-term investor on behalf of participants with a long-run investment horizon. Moreover, extensive liability-driven investment aimed at matching risk-free pension promises may endanger macroeconomic stability and growth. As long-term safe interest rates are driven down by

...but demand professional pension governance.

Mark-to-market accounting is welcomed...

...but regulation can be improved and harmonized.

Liability-driven investment cannot eliminate all risks borne by defined-benefit plans and creates risks of its own to macroeconomic performance and financial stability.

the demand of pension funds for bonds, guaranteed pension promises become ever more expensive, thereby requiring even more pension saving. This process may set in motion a deflationary spiral and distort the signals sent by asset prices. At the same time, the supply of risk-taking capital may dry up, thereby harming innovation, employment creation and growth. Moreover, additional demand for fixed-income assets may generate a negative risk premium on long-term yields, undermine fiscal discipline and widen global financial imbalances by simulating private borrowing. Finally, pension risks may end up being absorbed by governments (that is, by households themselves), or worst of all, they may pile up on investment banks' balance sheets, creating substantial risks to financial stability. To avoid losing their relevance as financial intermediaries, pension funds should therefore restructure their liabilities rather than simply restructuring their assets to better match them.

The demise of occupational defined-benefit schemes is welcomed...

Occupational pension schemes in which corporate sponsors guarantee pensions to their employees are being increasingly replaced by stand-alone pension funds in which participants share risks among themselves and on capital markets. We welcome this development. Capital markets increasingly allow workers and retirees to diversify financial risks. Mobile workers should not rely on the guarantees of firms in which they already have invested their human capital. Modern capital and labour markets help emancipated workers to become less dependent on the firm they work for. Thus the employer's objective of using a defined-benefit plan with backloaded benefits to tie employees to the firm becomes less important. In any case, firms cannot offer much security in an increasingly competitive world economy. Companies do not want to become insurance outfits in which pension-related risks dominate the risks associated with their core business, as is today the case for some US car-makers. Furthermore, stand-alone pension funds can focus on serving the interests of the participants alone rather than having to serve the objectives of the employer as well. This avoids conflicts of interest.

...but it demands explicit risk-sharing agreements within stand-alone pension funds.

As private financial and non-financial institutions are de-risking their balance sheets in response to new accounting rules, households as explicit residual risk-bearers have to manage more explicit risks. A number of issues should be addressed when designing risk-sharing in stand-alone pension funds. First, just like governments in NDC schemes, pension funds should be explicit about how participants share financial-market and demographic risks in order to reduce political risks. Furthermore, reliance on fluctuating-recovery pension premiums to share risks between young participants (who are long on human capital) and old participants (who are long on financial capital) is increasingly costly in terms of adverse demand- and supply-side effects. We thus favour hybrid pension systems, where participants

transform their risky, defined-contribution claims into guaranteed defined-benefit claims as they grow older and become more dependent on pension wealth for their consumption.

This hybrid system, in which the young, active participants bear financial-market and demographic risks, is consistent with optimal investment behaviour over the life cycle. Indeed, the active participants who are not yet retired, and especially the young participants who are still endowed with substantial human capital, hold mainly soft equity claims, being in fact the owners and residual risk-bearers of the fund. Workers therefore are important owners of equity and the associated control rights. They thus control an important part of the economy's capital stock. The retired participants, in contrast, hold secure claims in the form of debt and annuities. The existence of liquid markets for wage-indexed and longevity-indexed bonds would lessen the need for such internal risk-sharing mechanisms by allowing participants of a pension fund to trade also with those who do not participate in the pension fund. Such markets, however, do not currently exist.

By exploiting the long horizon of young workers in order to buffer shocks, pension funds enhance macroeconomic stability by reducing the tension between facilitating macroeconomic stabilization and enforcing the market discipline associated with mark-to-market valuation. Indeed, the marginal saving propensity out of pension wealth is smallest for young households exhibiting the longest horizons and the largest human capital. These participants should thus be stable long-term investors who are in the best position to absorb financial-market volatility associated with mark-to-market valuation. By implementing more efficient risk-sharing, pension funds can continue to invest in risk-bearing assets. The continued supply of risk-taking capital facilitates innovation and growth, while the lower demand for fixed-income assets with longer durations fosters fiscal discipline and discourages excessive private, non-age-related borrowing.

Ageing societies should not only raise financial saving through more funded pension schemes but should also increase investment in human capital so as to protect long-run labour supply. Ageing challenges not only fiscal budgets but also risk-taking, human-capital accumulation and employment. It thus calls for more accumulation, better maintenance and more intense use of human capital in addition to fiscal discipline and additional private saving. Indeed, human capital allows households to buffer themselves against more risks.

Protecting fertility in an environment in which the human capital of women has become more valuable requires new institutions for the reconciliation of work and family. Among other things, a longer active working life

More efficient inter-generational risk-sharing benefits macroeconomic stability and growth.

Labour market reforms are called for to protect human capital...

...and to allow parents to invest in the human capital of children without depreciating their own human capital.

facilitates greater flexibility in employment patterns over the life course by loosening the link between age and career progression. This reduces career pressure at the biologically determined time when parents rear young children, thereby promoting gender equality, fertility and the development of children. Investing in the human capital of young children thus becomes less costly in terms of the depreciated human capital of the parents. This also requires easing entry and re-entry into the labour market, by phasing out over-strict employment protection regulations and greasing the wheels of the access to permanent contracts, preventing the development of dual labour markets, which often go hand in hand with two-tier pension regimes.

Effective retirement age should be raised...

A higher effective retirement age also raises the return on human capital by lengthening the horizon for investments in human capital. Phasing out various public schemes facilitating early retirement and linking annual pension benefits, or the age at which citizens are eligible for pensions, to life expectancy should encourage social partners to attune workplace cultures to the needs of older workers, to nurture the employability and adaptability of younger workers, and to increase labour-market flexibility more generally.

...and become more flexible in order to allow workers to buffer risks.

More flexible labour markets complement a longer and more flexible work life. They allow the speed and extent of phased retirement to act as a buffer for absorbing aggregate financial-market and longevity risks. Moreover, flexible labour-market institutions should enable parents of young children to easily enter, re-enter and remain in the labour market. Endowed with sufficient human and financial capital, adaptable individuals are empowered to embrace the non-verifiable, idiosyncratic risks associated with creative destruction in a dynamic competitive world economy. Moreover, pension funds can continue to supply risk-bearing capital, thereby boosting innovation and growth.

Growth is also stimulated through cross-border mergers and acquisitions.

Growth can be stimulated through not only human capital investment and an ample supply of risk-bearing capital but also by lifting the fences protecting domestic markets, in particular inside the European Union. Governments should encourage workers' mobility; facilitate cross-border mergers and acquisitions; and should not be able to use their pension regulations as an implicit instrument of industrial policy to protect their national industry. This provides another reason for harmonizing funding requirements and accounting rules across countries, and at some stage this may call for the creation of a single European pension regulator.

1 Outlook

Financial markets are experiencing the appearance of new giants: the pension funds. They are already, together with investment companies, the largest institutional investor in the OECD area, managing assets totalling almost 50% of GDP in the area, with peaks of more than 100% in Iceland, Switzerland and the Netherlands (Figure 1.1). This share is increasing rapidly: in the last ten years their growth has been three or four times faster than the growth of GDP in the OECD area. Assets of pension funds rose from less than \$6trn in 1994 to \$15.6trn in 2004, making a compounded annual growth rate of more than 10%.

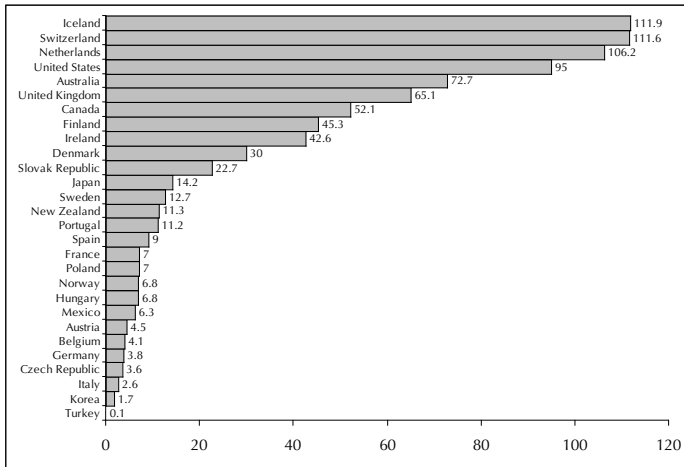


Figure 1.1
Pension funds' assets
(% of GDP)

Source: OECD Global Pension Statistics, 2004.

Aggregate pension fund assets currently represent more than 20% and 10% of G10 equity and bond market capitalizations respectively, albeit with great variability across countries (Visco Report, 2005). Five countries (United Kingdom, United States, Canada, the Netherlands and Switzerland) account for 90% of pension fund market. In the United States and the United Kingdom their equity holdings reach about one-half of stockmarket capitalization, according to the OECD's Global Pension Statistics, 2004. In Switzerland,

Pension funds are price-setters in domestic capital markets.

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where funds invest mainly in domestic securities, their bond holdings absorbed in 2001 almost 40% of outstanding public and private domestic debt securities. In the OECD area they accounted for about 55% of stockmarket capitalization in 2003.

The monopoly power of pension funds in domestic capital markets is particularly large in countries that have built up private pension schemes in the presence of a still largely underdeveloped stockmarket, such as Brazil (where pension funds account for almost 40% of stockmarket capitalization) or Estonia (50%). Elsewhere they are price-setters in long-term bond markets. In the euro area, for instance, their bond holdings account for almost 40% of the long-term government bonds outstanding.

Yet pension funds are not appearing everywhere. In some countries, private pensions of various sorts already form a very important part both of the incomes of current pensioners and of future provisions for current workers. In other countries they barely exist at all. Institutional history matters considerably in this context, as does the competition with public PAYG systems, notably in countries where contributions to pension funds are not mandatory.

The size of pension funds is to a large extent related to their maturity and whether or not they have been introduced as mandatory occupational schemes (Davis, 1995). In the Netherlands, almost 90% of workers subscribe to pension funds, compared with 40-50% in the United Kingdom, United States and Canada, and less than 10% in most other countries. Another country with a long history of mandatory contributions to funded schemes is Denmark, where pension fund assets are reported to be no more than one-third of GDP, but retirement savings are largely channelled to pension entities established as insurance undertakings.

Unsurprisingly, pension funds are important in those countries where state provision is fairly low and confined to providing a flat benefit, while in countries where the state system provides high earnings-related levels of income replacement in retirement, there is little room for a significant private pillar and one may not on the whole exist. As shown by Figure 1.2, contributions to pension funds in the period 2001-4 were generally larger in countries with a small effective contribution rate (including statutory contributions of employers and employees and transfers to public pension programmes) to the PAYG system. In Europe, for instance, the United Kingdom and the Netherlands have the largest funded sectors, with the amount of money in pension funds being close to or above the annual GDP of those countries, while in France, Germany and Italy, countries with a de facto state monopoly in pension provision, pension funds play only a very limited role.

Comparable statistics on the importance of pension funds to retirees' incomes are limited to countries involved in the

Contributions to pension funds are larger where the effective contribution rate to PAYG systems is small.

The share of pension funds in retirees' incomes is bound to increase everywhere.

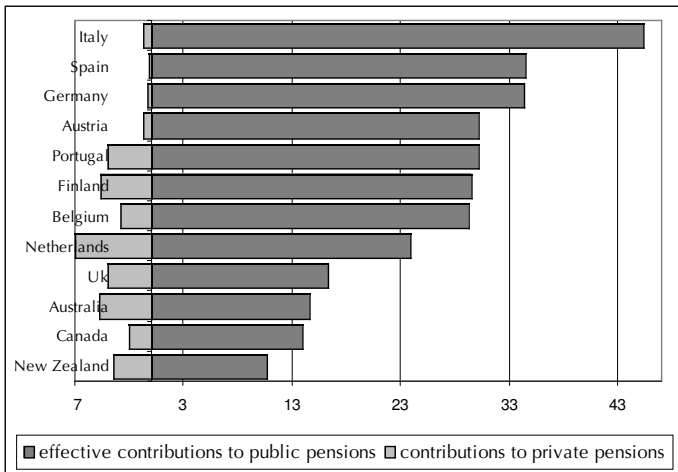


Figure 1.2
Contribution to private pensions compared with effective contribution to public pensions, 2001-3

Source: OECD Global Pension Statistics, 2004; European Commission Annual Macro Economic Database

SHARE project (Table 1.1).¹ Public pensions provide more than 90% of retirees' incomes in Austria, Germany, France, Greece, Italy and Spain. In Denmark, Sweden and Switzerland, the first pillar accounts for 70-80 percent of pensioners' incomes. Only in the Netherlands is the public pension share lower than 70%, i.e. pension funds reach about one-third of total pensioners' incomes. This is clearly related to the longer history of occupational pensions in the Netherlands. As workers retire after subscribing to pension funds for several years, the share of pension funds in retirees' incomes is bound to increase everywhere. The rapid growth of pension funds explains why they are currently more important among persons of working age than among older, retired people. Entitlement to pension funds is also stronger among males and workers with higher educations.

	1st pillar	2nd pillar	3rd pillar
Greece	98	1.5	0.5
France	97	1.5	1.5
Spain	97	1.5	1.5
Italy	96	2	2
Austria	95	3	2
Germany	94	4	2
Denmark	76	20	4
Sweden	75	20	5
Switzerland	72	26	2
Netherlands	56	37	7

Table 1.1
Composition of retirees' incomes (%)

Source: SHARE Project, 2003.

Pension funds can grow very rapidly. The Australian superannuation system experienced growth rates in the 1980s of the order of 25% per year, and in the 1990s, growth in pen-

Within a few years a country may find itself with pension funds holding assets of 100% of GDP.

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sion assets was still in the order of 15% per year. Growth rates stayed at this level until 2000. Such a fast growth is achieved when contributions to pension funds come from both employees and employers. Another key factor affecting the speed at which the assets in pension funds are growing is stockmarket performance. The Australian example is also very informative in this respect because there the pension funds invest largely in equities: the assets of Australian pension funds jumped from 57% to almost 73% of GDP in one year, from 2003 to 2004, as a result of strong stockmarket performance. Thus, almost overnight a country may find itself with pension funds holding assets amounting to 100% of its annual incomes.

Pension funds create positive externalities...

These giants have the potential to deeply affect incomes of millions of citizens, can crowd out other savings, influence stock-and bond-market performance and interfere with corporate governance.

Collective pension funds can exert large positive externalities on households by allowing for greater portfolio and risk diversification as well as risk-sharing within and across generations. They have a different risk profile from public PAYG systems, as they are less vulnerable to political and fertility risk. Firms can also benefit from the development of pension funds, as they operate in environments with larger capital markets, having access to equity capital for innovation, and benefit from external corporate control, helping them to evolve away from dynastic (family) governance structures. Pension funds can raise labour-market participation, increasing both employers' and households' incomes. Pension funds are relevant also from the standpoint of macroeconomic stabilization. They can exploit the long horizon of young workers to buffer aggregate shocks.

...but also negative externalities.

Pension funds may also end up exerting large negative externalities on the economy at large. The need to manage their pension liabilities may force them to adjust in a procyclical way their premiums and/or asset allocation, all the more so as the value of assets and liabilities is increasingly being marked to market. For instance, the boom-bust cycle in the Netherlands at the end of the 1990s induced pension funds to significantly increase premiums, depressing economic demand and employment at times of weak economic activity. The portfolio reallocation of pension funds in the United Kingdom away from equities to long-term bonds as a result of stricter funding rules is currently causing a downward spiral of interest rates in the United Kingdom. More broadly, the artificially low level of long-term interest rates resulting from reallocation into government bonds may distort intertemporal choices, confuse monetary policy and weaken the discipline exerted by financial markets on fiscal policies. Finally, the standardization of investment management on behalf of pension funds may be conducive to herding behaviour and exacerbate capital-market disruptions.

Pension funds have thus the potential to significantly ‘disrupt the smooth functioning of the financial system’, in the words of the president of the European Central Bank (ECB), Jean-Claude Trichet.

Informational asymmetries attribute to fund managers considerable monopoly power over participants, who may be vulnerable to exploitation. These risks are particularly large as investors are seeking investments of sizeable proportions of their wealth, contracts are one-off and involve a commitment over time. Moreover, for individual investors it can be just too costly to assess the solvency risk of the sponsor. Lastly, individuals lack the financial literacy and computational skills to devise complex retirement programmes.

Due to these actual and potential market failures associated with the operation of pension funds, these new giants are almost everywhere supervised by specialized regulatory agencies. Much policy experimentation is taking place to devise regulations that strike a balance between the development of pension funds and the protection of investors, competition and sustainability, and improve risk-sharing among the different actors involved. Regulations are somewhat lagging behind those for other large financial institutions. Rules are therefore needed which should not obstruct the development of markets.

The main purpose of this report is to contribute to the formulation of better regulations by outlining some sufficiently broad principles that can be applied to the different institutions' organizational structures where pension funds are taking off. We need first to define more precisely what we are talking about. Hence, in this initial chapter, we begin by introducing a taxonomy of pension funds weighing the pros and cons of the different configurations. Next, we provide basic background facts (demographic and labour-force participation developments as well as reforms of the first pillar and crisis factors in funded schemes), enabling an assessment of the potential for a further growth of pension funds in the context of more or less sustainable public PAYG systems. Finally, we outline the key issues which are discussed in the following chapters, where we take a stance on the most relevant policy trade-offs.

1.1 A taxonomy of pension funds

Pension funds have many different characteristics. These interact with national institutional features and make pension funds different from country to country. Yet it is convenient to classify the different types of pension funds along a continuum ranging from occupational to personal pensions.

Occupational pensions are provided when employers organize pension arrangements for their employees on a col-

Occupational pensions are provided on a collective basis.

Individual or personal pensions fill the gaps and provide old-age insurance for the self-employed.

Collective arrangements are more cost-efficient.

The advantages of individual over collective arrangements are fading away.

lective basis. They can be run at the company, industry or professional level. Occupational pensions often involve compulsory contributions, as established in collective agreements.

Individual or *personal pensions* fill the gaps in coverage left by the occupational schemes and provide old-age insurance for the self-employed. Occupational and personal schemes are not necessarily mutually exclusive. They can work together: generally larger companies run occupational schemes while better-off individuals in other companies make their own personal arrangements. Workers may well contribute to personal pensions in addition to some occupational scheme. These additional contributions are often voluntary, but can also be mandated or made universal by collective agreement. Some countries have indeed gone down the route of mandatory individual pensions (e.g. Chile), while others have achieved virtually complete coverage of occupational schemes (for instance the Netherlands).

Both occupational and personal schemes have pros and cons from the standpoint of individual investors. In particular, personal arrangements tend to be more flexible and portable from the point of view of the individual, but they also tend to be expensive.

Collective arrangements through employers have a number of advantages over individual schemes. They are, naturally, more cost-efficient since they do not involve costs associated with selling, getting advice on and administering a personal pot of money. They allow financially quite illiterate individuals to delegate complex intertemporal financial decisions under uncertainty. As a matter of empirical observation, they are more likely to attract higher contributions, as employers tend to put money in on behalf of their employees. Importantly, such collective arrangements allow a degree of risk-sharing. Although this is often perceived as a sharing of risk between employee and employer, in reality it may involve sharing risks between generations of employees. Those employees who retire when the stockmarket and asset prices are doing well are de facto cross-subsidized by those employees who retire at less auspicious moments. Risk-sharing in these schemes is, however, not always transparent and members often are unaware of the implicit contracts to which they have subscribed.

The advantages of individual over collective arrangements in terms of flexibility are fading away as it is becoming more and more common to offer portable occupational pensions. Personal pensions can be misold (as for instance occurred in the United Kingdom) and hence require strong regulation. It is likely that they will be viable only for relatively well-off individuals. In the United Kingdom, they were supported by introducing stakeholder pensions in 2001 for middle-income earners. Stakeholders' pensions differ from personal pensions because they have compulsory

minimum standards and guarantee workplace access, like Danish collective industry schemes.

There are two types of occupational or employer-sponsored schemes: defined benefit (DB) and defined contribution (DC).

DB arrangements offer pensions based on a measure of final salary and number of years worked. The residual risk-bearer is the sponsor. The way DB schemes were originally set up, such final salary occupational schemes served best those workers who stayed in the same company for many years and whose earnings rose towards retirement age. A fundamental feature of DB occupational schemes is that they reward people who stay and progress in an organization (the so-called backloading feature of DB plans). Even more obvious ways of doing this exist in the way in which vesting arrangements (the period of time after which retirees become eligible to claim benefits) have been used to deny workers with short enough tenures any benefits on retirement. Up to the 1970s, in virtually all countries, leaving a job before pension age would have a significant adverse effect on pension rights. In general, there would be limited indexation of benefits between leaving a job and retirement, so the eventual real value of benefits earned in a job that a worker might have left in his forties could be very low indeed, especially in times of high inflation.

In DC schemes the pension received depends directly upon contributions made and the returns made by the fund. The residual risk-bearer is the individual or the collective of individuals. DC schemes are better than DB schemes from the standpoint of portability across jobs. However, as they lack a sponsor guaranteeing pensions, DC schemes must rely more on traded capital market instruments to share and shield risks. They may require complex risk-sharing arrangements to in effect create assets that are still missing on capital markets. There also tends to be less of an incentive for employers to set up, run and contribute to a DC scheme, because such schemes are harder to adjust in order to manage other employment priorities, for example rewarding successful long-staying employees. In this sense DC plans can be viewed as total compensations tools while DB plans represent a burden to employers at times of adverse business cycles, when flexibility in the workforce is most needed. DC schemes also in principle offer more flexibility in saving plans than DB schemes in terms of both the amount of the contribution and the portfolio allocation. The latter type of flexibility is, however, constrained under collective arrangements.

DB schemes are still most common, although many countries are experiencing a shift towards DC schemes, which involves also a shift of risk from employers to households. In particular, DC plans have been growing fast in the United States, where by 1997 they had overtaken DB plans in assets

In DB schemes the residual risk-bearer is the sponsor

In DC schemes the residual risk-bearer is the individual.

Many countries are experiencing a shift towards DC schemes.

under management. The United Kingdom is experiencing a similar development, as many DB plans have been recently closed to new entrants and replaced by DC arrangements, a trend which is now even extending to schemes being closed to existing members. A clear indication of the dominant trend along the DB-DC divide comes from the experience of formerly planned economies. The pension funds being set up in the Czech Republic, Hungary, Poland and the Slovak Republic are also largely or solely supporting DC arrangements. At a company level, this shift is done on a flow basis (e.g. putting only new hires on a DC system).

Hybrid pension schemes are also taking off.

The reconsideration of traditional DB plans has also led to the development of hybrid pension schemes. Sponsor companies have sought greater flexibility to share market and other risks (including longevity risk), and to adjust benefits depending on business conditions, while often still guaranteeing a minimum benefit to employees. Such hybrid plans incorporate elements of both DB (as the sponsor makes matching contributions and often bears at least some investment or guaranteed return risk) and DC plans (as benefits are often expressed in terms of an account balance). In principle, these hybrid solutions may allow to combine the advantages of both DB and DC schemes.

Pension benefits at retirement tend to be taken as annuities, flows of income paid upon survival in retirement. DB schemes automatically guarantee an annuity because they promise a benefit as long as the retiree lives and often a benefit also to the surviving spouse, so that longevity risk is the largest long-term risk faced by the DB sponsors. A good example of these risks is provided by the effects on pension fund deficits of a national ban on smoking in public places in the United Kingdom. Hewitt Associates estimated (Doll et al., 2004) that an average improvement of one year in life expectancy could have increased the aggregate deficit of FTSE100 pension funds by as much as £15bn-20bn, reducing the profits before tax by around £1bn per year.

Before the annuity contract is signed, in DC schemes the individual bears the risk of longevity.

DC plans cannot guarantee a benefit but only a pot of money, and the annuity contract is typically signed at the time of retirement. Hence, before the annuity contract is signed, and as long as the annuitization is not compulsory, the individual bears the risk of longevity. As long as the plan is mandatory in the firm or industry and/or the annuity is collectively purchased, the insurance cost can be kept low. Otherwise underdeveloped annuity markets may price unfairly individually purchased annuities by a retiree who needs to convert his pot of money into income for retirement.

1.2 Assessing the potential

There is nothing inevitable about the growth of pension

funds. Pension funds are likely to be crowded out by public pension outlays unless demographic developments are accompanied by reforms of PAYG systems. Both the pace at which demographic developments are occurring and the nature of reforms of public systems are important to assess the potential for a further growth of pension funds in different regions of the world. We now address these issues in turn.

1.2.1 Demographic developments

DC schemes are less exposed to longevity risk than DB systems that involve an automatic annuitization of benefits. Hence, we should expect the pressure to develop DC arrangements to be stronger at times and in countries where longevity is rising the most. As suggested by Table 1.2, life expectancy at age 65 has been increasing at about two years per decade in the last 40 years. The population aged 60 and older is expected to rise not only in OECD countries but all over the world, increasing the age at which death rates start to peak. Asia and Latin America have been catching up with North America and Europe, while Africa has been left behind. Although some demographers predict a slowdown in the decline of mortality, in the past the increase longevity has been rather heavily underestimated. Developments in the health sector also do not support the view that a deceleration in the increase in life expectancy is occurring.

The other side of the coin of the demographic transition is the fall in birth rates. This development challenges mainly PAYG systems, as the sustainability of funded schemes is not affected by the decline in birth rates. Hence we may expect pressures to increase the size of pension funds to be larger in countries experiencing the largest drops in birth rates. Trends in fertility rates are characterized in Figure 1.3: in the last 40 years the world fertility rate decreased from about 4.5 % in the 1970s to 2.7% in the first five years of the new century. The decline was particularly marked in Latin America and Asia, and brought Europe below the steady-state population level at 2.1 children per couple. While African countries maintain the highest fertility rates (above 5%), they also came down from almost 7% in the 1970s.

Some slowdown in the decline in fertility is, however, visible. An important factor behind this slowdown is that fertility rates are no longer negatively correlated with labour-force participation of women in OECD countries. Indeed, the cross-country correlation of fertility and labour-force participation of women turned from negative to positive by the mid-1980s in OECD countries (Boeri et al., 2005). This development is likely to be associated with a number of factors that are bound to become even more important over time, such as cultural attitudes towards the sharing of child-care responsibilities between husbands and wives, the rela-

DC schemes are less exposed to longevity risk than DB systems.

The fall of birth rates challenges mainly PAYG systems.

The cross-country correlation of fertility and participation of women turned positive.

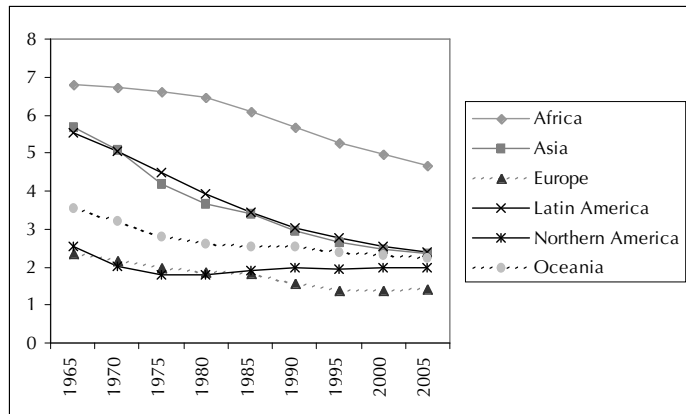
tion between the size of the market segment and the extent of public childcare support, as well as the increased employment costs of labour-market rigidities in a globalized world.

Table 1.2
Life expectancy at the age of 65 years

	1970		1990		2002	
	Males	Females	Males	Females	Males	Females
Australia	11.9	15.6	15.2	19.0	17.4	20.8
Austria	11.7	14.9	14.3	17.8	16.3	19.7
Belgium	12.1	15.3	14.3	18.5	15.8	19.7
Canada	13.8	17.4	15.7	19.9	17.1	20.6
Czech Republic	11.1	14.2	11.6	15.2	14.0	17.4
Denmark	13.7	16.7	14.0	17.8	15.4	18.3
Finland	11.4	14.3	13.7	17.7	15.8	19.6
France	13.0	16.8	15.5	19.8	16.9	21.3
Germany	12.0	15.0	14.0	17.6	16.0	19.6
Greece	13.9	15.2	15.7	18.0	16.3	18.7
Hungary	12.0	14.3	12.0	15.3	13.1	17.0
Ireland	12.4	15.0	13.3	16.9	15.3	18.6
Italy	13.3	16.1	15.1	18.8	16.5	20.4
Japan	12.5	15.3	16.2	20.0	18.0	23.0
Luxembourg	12.1	14.9	14.2	18.2	15.9	19.9
Mexico	14.8	15.6	16.2	18.0	17.0	18.5
Netherlands	13.3	16.1	14.4	18.9	15.6	19.3
New Zealand	12.4	16.0	14.7	18.3	16.5	19.8
Norway	13.8	16.7	14.6	18.5	16.2	19.7
Poland	12.5	15.3	12.7	16.9	14.0	17.9
Portugal	12.2	15.0	13.9	17.0	15.6	19.0
Slovak Republic	12.3	14.5	12.2	15.7	13.3	17.0
Spain	13.3	16.0	15.4	19.0	16.5	20.4
Sweden	14.2	16.8	15.3	19.0	16.9	20.0
Switzerland	-	-	15.3	19.4	17.4	21.0
Turkey	11.5	12.6	12.4	13.9	12.7	14.3
UK	12.0	16.0	14.0	17.9	-	-
United States	13.1	17.0	15.1	18.9	16.4	19.4

Source: OECD, 2004

Figure 1.3
Decline in fertility rate



Source: United Nations Population Division

1.2.2 Unused labour capacity

As documented above, people live longer everywhere. A troubling aspect of the welcome development of increased longevity is that longer lives do not go together with a lengthening of working lives. The elderly are typically no longer active in the labour market and the duration of working lives is actually decreasing.

The sustainability of pension systems, notably PAYG systems, can be enhanced by reducing unused labour capacity, that is, non-employment rates. Table 1.3 evaluates to what extent increased participation among persons in working age can compensate for the projected increase in the population aged 65 and over, thereby preventing a reduction of the so-called support ratio, that is, the ratio of workers to retirees. As suggested by the second and third column of the table, at unaltered employment rates, the support ratio is bound to decline dramatically in the next 50 years, not only in developed countries, but also in Asia, notably in China, and in Latin America. Even raising employment rates everywhere to 85%, well beyond the 70% target envisaged under the Lisbon 2000 EU employment guidelines, can only marginally mitigate the decline in the support ratio.

This suggests that labour-market reforms aimed at increasing the participation of the population in working-age (15-64) cannot be a substitute for reforms of pension systems, notably of PAYG systems.

At unaltered employment rates, the support ratio will collapse in the next 50 years.

Labour-market reforms cannot be a substitute for reforms of pension systems.

	Pop. > 65 (2050)	Support ratio 2005 (at current employ. rate)	Support ratio 2050 (at current employ. rate)	Support ratio at 85% employment rate
Asia	870	7.15	2.46	3.22
China	329	7.60	2.10	2.18
Latin America	144	6.38	2.05	2.94
Africa	129	9.18	5.46	8.26
More devel. countries ¹	321	2.50	1.26	1.91

Table 1.3
Unused capacity and the support ratio

Notes: The support ratio is the ratio of workers to retirees.

¹ Europe, North America, Japan, New Zealand, Australia.

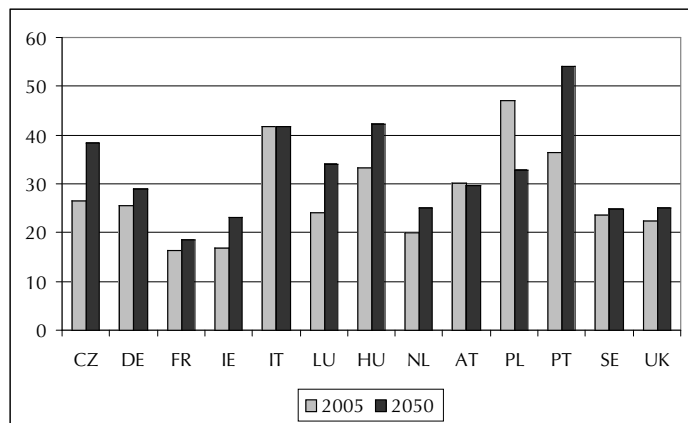
Source: ILO, *Global Employment Trends 2004*, UN Population Division

1.2.3 Reforms of public pensions

In light of these developments and facing the prospect of a strong rise of public pension outlays, governments in OECD countries are trying hard to reform PAYG systems so as to adopt sustainable public pension arrangements. These developments are very important in assessing the potential for a further growth of pension funds, otherwise increased social security contributions (and taxes on labour) could

crowd out contributions to pension funds. A visual characterization of these potential crowding-out effects is provided by Figure 1.4. This figure displays the equilibrium payroll taxes (the contribution rates clearing the social security budget) that would be required to match the increase in pension expenditures projected by the European Commission for the member countries in the context of the annual harmonized social policy expenditure forecast exercise. The latter assumes unchanged legislation. Hence the 2050 contribution rates displayed in Figure 1.4 should be interpreted as the taxes on labour required to match public pension outlays under unreformed PAYG systems. As shown by the figure, in some countries they are bound to increase above 50%.

Figure 1.4
Equilibrium payroll contributions to public pension systems (%)



Note: Estimates based on the EC projected public pension outlays in 2050.
Source: European Commission, 2006

Reforms are not preventing a further rise of public pension expenditure and hence equilibrium payroll taxes.

There are more reforms increasing benefits or contribution rates than cutting pension benefits or increasing the retirement age.

It is true that many G-10 countries (France, Germany, Italy, Japan, Switzerland and the United Kingdom) are reforming their pension systems, by reducing the generosity of the first pillar and promoting at the same time the take-off of occupational or personal pensions. However, Figure 1.4 suggests that reforms are not yet sufficient to prevent a further rise of effective contribution rates (the contribution required to clear the social security budget), over the gross wage bill in the next 50 years.

The issue is that reforms of the first pillar are often parametric and are enforced while grandfathering existing entitlements (changing the rules only for the new contributors). The inventory of pension reforms assembled at Fondazione Rodolfo De Benedetti (FRDB Social Reforms Database) also suggests that (see Table 1.4) there are more reforms increasing generosity or contribution rates than reforms cutting pension benefits or increasing the retirement age. The main risks of public PAYG schemes, longer aggregate longevity and smaller growth of the contribution base are thus shifted

directly to participants of the schemes. Hence, not only corporations but also governments are retreating as sponsors (i.e. residual risk-bearers) of pension systems.

	Decreasing public pensions	Increasing retirement age	Increasing contributions	Increasing generosity
Number of reforms	33	26	23	42

Table 1.4
Reforms of public pensions in Europe, 1986-2002

Source: fRDB Social Reforms Database

The shift from DB to DC systems is also partly occurring in PAYG systems as an increasing number of countries (Italy, Sweden, Poland and many formerly planned economies) are introducing so-called notionally DC systems mimicking the operation of a funded DC scheme.

Analyses of public opinion polls on attitudes towards reforms suggest that short-sighted self-interest and procrastination prevail among workers close to retirement age and retirees. When they are powerful enough, they make the younger workers pay entirely the costs of adjustment to financially sustainable public systems. This contributes to explaining why reforms often involve increased contributions rather than a higher retirement age or a reduction of pension benefits. Increased effective contribution rates unavoidably reduce the labour supply and crowd out pension funds.

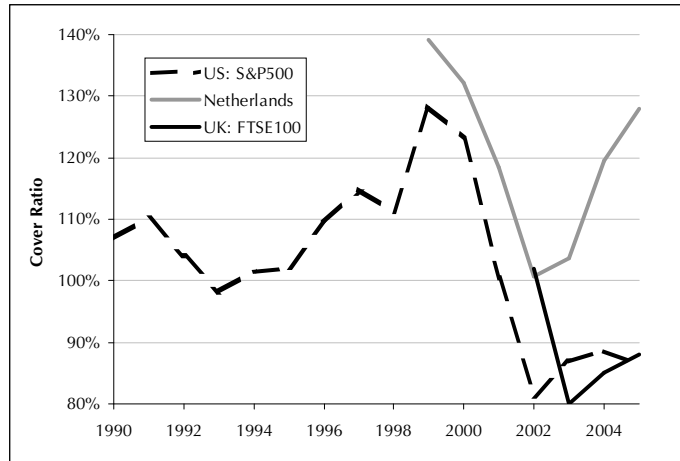
Selfishness and procrastination prevail among workers close to retirement age and retirees.

1.2.4 Pension funds experience perfect storm

A culmination of factors has led in recent years to major deficits of pension funds in many countries: increased longevity; falling bond yields at a time when regulators and accounting standards are moving to marking-to-market pension liabilities with such yields; a stockmarket glut; and high assumed return targets based on long-term actuarial assumptions that, ironically, force sponsors to systematically assume more risk in order to achieve these targets.

To give an example, in the United States, at the end of 2004 the Pension Benefits Guarantee Corporation (PBGC, see Chapter 3) estimated in their annual report that average funding among US private-sector pension plans among the S&P500 was 89%, i.e. pension plans assets amounted to 89% of the market value of their liabilities. This fell further during 2005 to just over 86%. The average funding ratio for all S&P500 company-sponsored pension plans with a deficit over \$50m is currently estimated at only 69%, with total underfunding of \$353bn. UK schemes exhibit similar funding ratios, running at around 85% funded.

Figure 1.5
Aggregate nominal
funding ratios for
various countries



Sources: Dutch National Bank, using no inflation assumption (see text); US S&P500 pension funding according to US PBGC; Lane, Clark & Peacock 'Accounting for pensions, United Kingdom & Europe'.

Continental European funds tend to have had greater fixed-income weightings, and are better funded. Netherlands schemes have average funding (cover) ratio of 128% (source: DNB, end-2005 data), against a 105% minimum, though below the government's recommended target of 130%. However, there were still 153 pension funds in the Netherlands with funding below 110% as of Q3 2004, and a further 209 in the 110-120% area (using 2004 data) (Figure 1.5).

These data are calculated on a nominal basis, given the voluntary nature of indexation (each fund announces annually whether the fund will be indexed for that year). Cover ratios would be just 95% if an inflation level of 2% was applied to each fund (see also Figure 4.2). Thus even in the one area where funding levels appear high, if indexation were applied, such funding ratios would fall below the required minimum. This is not in itself a critical issue if schemes can merely stop indexing the liabilities if required. But no country wants a pension system that is only well funded by destroying the real value of its pension promise. The current funding ratio in countries with soft indexation clauses thus depends critically on a social policy issue: future tolerance for purchasing power losses among the elderly.

The reaction to these developments has been one of extensive liability-driven investment aimed at matching pension guarantees. This has helped pension funds to better match their liabilities. At the same time, however, matching fixed pension liabilities creates risks for macroeconomic and financial stability and for growth. In particular, as long-term safe interest rates are driven down, guaranteed pension promises become ever more expensive, thereby requiring even more pension-saving. This process may set in motion a

deflationary spiral. At the same time, the supply of risk-taking capital dries up, thereby harming innovation, economic growth and employment creation.

1.3 Two extreme scenarios

In coming decades there will be factors playing in both directions, in favour of either further strong growth or marginalization of pension funds. On the one hand, demographic developments, notably the evolution of fertility rates, will put increasingly at risk the sustainability of PAYG systems encouraging the development of pension funds. On the other hand, resistance to reforms of public pensions systems and the breakup of the intergenerational pact may induce a further rise of contributions to public systems, crowding out contributions to funded schemes. Political and labour-market developments as well as regulatory development in the pension funds industry can strengthen either one or the other factor, setting in motion either a virtuous or a vicious circle.

This motion will be exacerbated by the general perception of pension funds. If pension funds are perceived to be instrumental in fostering macroeconomic stabilization and innovation, this will reinforce the likeliness of the virtuous scenario. But if their destabilizing, pro-cyclical aspects are perceived to be a threat, this will reinforce the risk of the vicious circle.

Future developments can therefore be better characterized by suggesting two extreme scenarios.

The first, rather gloomy, scenario is where public systems tend to absorb an increasing share of retirement savings offering low returns and being perceived by workers as a tax on labour. This scenario leads to a shrinking labour supply and declining fertility rates, increasing the risk factors associated with an ageing population and strengthening even further political opposition to reforms. It also involves lower fertility, less investment in human capital, hence faster skill depreciation, forcing early retirement. This is a scenario with low risk-taking, hence no innovation. In this scenario there is little scope for the expansion of private pension funds. Moreover, inflexible labour markets make workers unwilling to bear risks. Hence, pension funds shed risk and prefer to invest mainly in low-risk assets and government bonds, weakening fiscal discipline, crowding out productive investments and lowering long-term growth. Indeed, fiscal imbalances result in a substantial supply of government bonds, which are mopped up by pension funds.

The second scenario involves instead greater portfolio diversification in retirement savings, with a smaller role of PAYG systems, increased labour-force participation, a slower decline in fertility, more risk-taking and human capital accumulation. A larger private provision of retirement in this

The first scenario is one where public systems tend to absorb an increasing share of retirement savings.

The second scenario involves increased labour-force participation, more risk-taking and human capital accumulation.

scenario makes workers perceive compulsory savings for retirement as a form of deferred compensation, rather than as a tax, reducing the adverse effects of pension contributions on employment. Moreover, the take-off of DC systems encourages investment in human capital as a way to increase retirement income. Moreover, flexible labour markets support entrepreneurship and allow workers to bear risk, as they have the flexibility to absorb shocks by varying work effort. In this second scenario, pension funds retain the ability to invest in risky assets and thereby contribute to capital deepening and financing innovation and R&D. Indeed, as pension funds allocate a substantial part of their portfolio to risk-bearing capital, demand for public bonds remains limited. This matches the limited supply of public bonds as a result of governments containing their fiscal deficits. Hence, whereas the first scenario involves risk-shedding on account of the pension funds, the second scenario involves risk-bearing by these funds.

In order for the future to be closer to this second scenario than to the former, reforms of public pension systems should gain momentum, increasing the retirement ages in response to the evolution of life expectancy and indexing pension benefits to the tax base (the wage bill). Moreover, in order for pension funds to supply risk-bearing capital enhancing innovation and growth, pension funds should facilitate efficient risk-sharing while flexible labour markets facilitating the accumulation, maintenance and use of human capital should allow workers to buffer risks.

1.4 Key issues

Regulations of pension funds have an important role to play, over and beyond the future of pension funds themselves.

The way in which strategies of pension funds react to demographic, labour market and policy developments may also increase the likelihood that we move towards the second scenario by allowing workers to realize the greater risk diversification they can achieve when a mixed system is in place. This would contribute to reduce political obstacles to reforms and increase the probability that the second scenario materializes. Organizations of pension funds have therefore an important role to play, over and beyond the future of pension funds themselves.

Informational asymmetries and the optimal organization of pension funds

Outline of Chapter 2

The United Kingdom pensions missale experience suggests that poor information and myopia is widespread among potential buyers of pension funds. This may induce poor planning and wrong expectations about future pensions. Only 31% of older Americans had ever tried to devise a retirement plan, and only two thirds of these succeeded (Lusardi and Mitchell, 2006).

Financial literacy is even lower in Europe where there is a sort of systematic optimistic bias in expectations about future pension entitlements, both public and private. In particular, a public opinion survey taken in Germany, Italy, Spain and France in 2000, 2001 and 2004 asking individuals about aggregate costs, individual costs and intergenerational distribution operated by public pension systems, suggest that despite a widespread perception of unsustainability, many respondents underestimate the true cost of the PAYG pension systems (Boeri et al., 2001; 2002). The majority of the working population in the four countries surveyed does not know or underestimates the magnitude of the contribution rates to their public pension systems, and almost every second employee incorrectly thinks that these systems are in balance or even make a surplus.

Lack of financial knowledge creates both a limit to the possibility to tailor-make pension plans to individual risk profiles, and a pressing need to improve the scope and quality of the information disclosed to members. Even more worryingly, the technical ability of pension funds officers and trustees to perform their fiduciary responsibility has been increasingly questioned, raising the issue of the respective role of in-house and external governance and control. In the United Kingdom, the role of pension consultants has also been deemed excessive. More generally, pension funds are a typical example of delegated monitoring, with a delicate balance to be struck between too much control by members (with the risk of extra agency cost and interference in asset allocation policies) and too much leeway to management.

The introduction of the EU Pension Directive raises the question of whether a 'single market for pension funds' should be promoted. While competition between pension funds can only play a limited role in a model with collective plans, competition in services provided to pension funds, such as asset management or back-office services, can vastly improve their efficiency. There are still obstacles to the portability of pension rights, both within countries and across countries. In the EU, this raises the more general question of the completion of the single market for financial services

De-risking pension funds with market-based solutions

Equity allocations are currently close to, or above, 50% in the investment portfolios of many pension plans in Canada, Japan, the Netherlands, Sweden, the United Kingdom and the United States. Hence, pension funds are highly vulnerable to stock market fluctuations. This volatility deeply affected funding ratios, notably of DB plans, at the beginning of the New Millennium. From being funded well above 100% in the 1990s, between 2000 and 2002, many pension funds in Canada, Japan, the Netherlands and the United States became significantly under-funded. Pension funds are now

reacting to this boom-bust experience by gradually reallocating portfolios from equities to bonds. Regulatory changes enforcing prudent main regulations often force funds to operate such a reallocation rapidly. This is bound to affect financial markets and can depress equity prices in the short term, increasing problems of sustainability of those funds that have not reallocated.

Changes to the global legislative/regulatory background are moving pension funds to a mark-to-market basis, invariably using a combination of fixed-income yields or curve to discount liabilities. This is occurring in tandem with heightened longevity assumptions and falling bond yields globally, endangering funding levels across many pension systems. The current challenge is to find solutions that allow pension schemes to shield vulnerable participants from excessive risk by reducing mismatch risk in a world where supply of debt is sharply lower than possible demand, which itself risks driving bond yields lower and creating a vicious circle of falling funding levels for those that have yet to move.

The demise of DB plans and optimal risk-sharing

Chapter 3 explores how pension funds can restructure their assets to better match their liabilities. Indeed, this liability-driven investing is becoming rather popular. Banks increasingly exploit their financial-engineering expertise to create portfolios that match the future cash flows of pension funds. Chapter 4 takes a different approach by considering the liability side of the pension fund balance sheets. Can the liability side of pension funds be restructured so as to better implement optimal risk sharing? In other words, should the promises that pension funds issue be redesigned so as to offer less guarantees, thereby optimizing the trade off between return and risk? Indeed, one of the risks of redesigning portfolios to match the secure defined benefits of defined-benefit pension plans is that young individuals fail to take advantage of the risk premium of equities.

This scenario of extensive liability-driven investment aimed at matching risk-free pension promises² not only makes pensions rather expensive for the individual but also endangers macroeconomic stability and growth. The associated increase in pension costs and required additional saving exerts a destabilizing deflationary impact on the economy. Indeed, as long-term safe interest rates are driven down, risk-free pension promises become ever more expensive, thereby requiring even more pension saving. This process may set in motion a deflationary spiral. At the same time, the supply of risk-taking capital dries up, thereby harming innovation, economic growth and employment creation. Avoiding this negative spiral may require pension funds to restructure their liabilities rather than their assets.

Against this background, we describe and evaluate the demise of traditional defined-benefit schemes which are

being replaced by stand-alone pension funds in which participants have to share risks among themselves and by using capital markets. This change in the way risks are shared does not necessarily imply, however, that pension plans need to become individual defined-contribution plans. A number of issues are relevant in the design of risk sharing within stand-alone pension funds: what is the optimal design of the liabilities of pension funds so as to facilitate intergenerational risk sharing in the absence of company and government guarantees? How can shocks be best shared so as to protect vulnerable pensioners against excessive risks while at the same time containing the costs of building up pensions rights and provide the economy with sufficient risk-taking capital? We explore also how macroeconomic stabilization can be reconciled with financial market discipline imposed by mark-to-market valuations of assets and liabilities, which tends to be cyclical. In the same vein, the tension between the discipline of capital funding and the flexibility of allowing risk sharing among non-overlapping generations is investigated. In this connection, we explore how pensions should be taxed so as to foster fiscal discipline and at the same time enhance intra- and intergenerational risk sharing.

Labour market dimensions

Lower fertility rates call for higher saving rates as retirees can rely less on the human capital of younger generations for their retirement income. But how can the returns on funded pension systems be maintained if higher saving rates raise the capital-labour ratio, thereby making financial capital more abundant compared to human capital? Countries should not become entangled in a deflationary spiral with declining rates of return requiring ever-increasing saving rates to finance pensions. Hence, aging should not only raise financial saving through more funded pension schemes but also increase investment in human capital so as to protect long-run labour supply. This chapter explores the challenges aging countries face in labour markets.

Feminization of work raises the opportunity costs of raising children in terms of foregone career possibilities. Current institutions encourage individuals to concentrate their work effort in the relatively short life season during the modern life course in which they also raise children. This raises the question of how family and career can be better reconciled and how countries can escape a vicious circle of early retirement and lower fertility in which politically strong older generations favour generous passive spending on pensions and health care at the expense of investments in the human capital of younger generations.

Raising the participation rates of elderly workers is an important objective of many countries. At the same time, however, redundancies tend to be concentrated among older workers as employers buy out these workers by offering soft landing schemes into retirement. These schemes

Outline of Chapter 5

discourage the maintenance of human capital through life-long learning even though increased longevity has in principle raised the social return on human-capital investments. How can countries escape an early retirement culture in which workers retire early because their skills are obsolete, while human capital is not maintained because people can retire early?

Risk-taking capital is an important source of innovation and growth. However, rigid labour markets limit the ability of older workers to absorb risks by adjusting their work effort. How can more flexible labour markets help workers to bear more risk so that pension funds can continue to supply risk-bearing capital, thereby boosting innovation and growth?

2 Informational Asymmetries and the Optimal Organization of Pension Funds

Pension funds did not feature prominently in the post-Enron debate on the governance of corporations and financial institutions, which led to new pieces of legislation such as the Sarbanes-Oxley Act. At that time, and in relation with the Enron case, the main concern was the excessive risk borne by occupational plans when they are invested in the stocks of their corporate sponsor. But the growing presence of pension funds on financial markets raises other sources of concern. As the move to DC plans is shifting risk away from corporations and transferring it to households, excessive risk-taking can be the result not only of insufficient asset diversification and liability management, but also of sub-optimal pension fund organization. Moreover, the constellation of stakeholders gravitating to a pension fund: trade unions representatives, trustees, advisers, auditors, not to mention law-makers and regulators, makes information asymmetry and conflicts of interest a key concern.

This chapter discusses the different dimensions of pension funds' governance, drawing on the debate in those countries where these funds are more significant, in particular in the United Kingdom and the Netherlands. Next, the importance of financial literacy, i.e. the ability of households to devise and implement retirement planning and of pension fund managers and trustees to fulfil their fiduciary responsibility, is assessed. Finally, obstacles to the integration of the pension fund industry and the way forward are discussed.

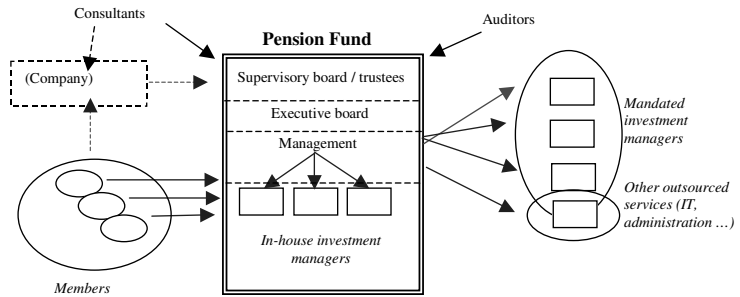
2.1 Pension fund organization and governance

Figure 2.1 shows a simplified pension fund. Information flows are organized on three main axes: between the members (or the corporate sponsor, in the case of a corporate pension fund) and the fund, between the fund and its asset managers and other outsourced services, and within the fund, between governing bodies and staff. The large number of stakeholders is a factor of complexity. As in any prin-

Pension funds are typical examples of delegated monitoring.

cial-agent relationship, members should design the pension fund so as to make sure that its objectives are well defined and its incentives are aligned with their own objective of wealth maximization. At the same time, they should avoid setting up too many layers of governance which would add to agency problems instead of solving them. The relevant theoretical reference is the model of delegated monitoring introduced by Diamond (1984) to describe the banking relationship: agents (here, fund managers) are controlled by an intermediary (a trustee or supervisory board), itself controlled by the principals (members).

Figure 2.1
A simplified pension fund



With so many participants, so many risks to manage and such a long time horizon, information asymmetries are indeed significant: incomplete information of the fund on the longevity risk of the population at large and on the members' risk profiles; and incomplete information of the fund's members on the return and risk profile of financial assets, on fund officers' motivations and skills, and on the performance of the investment managers. This can be alleviated by compulsory external auditing and by disclosure requirements, but above all by a proper governance structure.

International guidelines for pension fund governance are too vague.

International guidelines or best practices for pension fund governance have been discussed in order to clarify the division of responsibilities within the funds and the type of contract to be written between the funds and their sponsors. These guidelines are usually expressed in loose terms to accommodate a large array of different national frameworks (see OECD, 2005a, 2006), for the latest examples). In the EU, the Directive on the activities and supervision of institutions for occupational retirement provision (the so-called IORP or Pension Directive) was passed in June 2003 and had been implemented by 15 member states at the end of 2005. All EU countries have either now passed the Directive, or are on target to pass it soon. It only requires pension funds to be run by 'persons of good repute who must themselves have appropriate professional qualifications and experience or employ advisers with appropriate professional qualifications and experience' and that 'properly constituted rules regarding the functioning of any pension scheme operated

by the institution have been implemented and members have been adequately informed of these rules' (European Union, 2003, article 9), leaving all latitude to member states to specify these principles.³

A first range of issues relates to the design of the relationship between the pension fund and its sponsors. In a world of complete contracts, the governance structure would be irrelevant. But contracts are incomplete, and members have to monitor pension funds officers by naming an agent (in the United Kingdom, this would be a trustee, and in continental Europe, a supervisory board) and setting a proper incentive structure. Incentives should depend in turn on residual rights, hence on whether the plan is DB (i.e. a sponsor taking the investment risk itself and ensuring that participants get their promised pension, or DC. This principle implies that trustees or supervisory board members should be 'caring insiders' in a DC plan (otherwise their interest would not be aligned with the members), and that they should be outside experts named by the sponsor in a DB plan, provided that they are genuinely competent, that their mandate is focused and that the job market for trustees is competitive (Besley and Prat, 2003).

As we will argue later in this chapter and more at length in Chapter 4, collective pension plans allow financially illiterate individuals with scarce cognitive abilities to delegate complex intertemporal financial decisions. Delegation, however, results in agency problems: do financial institutions act in the interest of the individual? In this connection, the non-profit character of pension funds organized as trusts can bolster the confidence of the participants that pension funds act in their interests. Indeed, the participants themselves are the shareholders of the pension funds, thereby avoiding a conflict of interest between policyholders and shareholders.

Another possible agency problem is the risk of multitask monitoring, particularly in a corporate pension plan. With a short horizon and captive members, CEOs and CFOs are tempted to increase the risk profile of their pension fund to maximize the firm's return on equity, at the expense of the members' fiduciary interest. The best answer is to organize pension funds as stand-alone entities, i.e. financial institutions which are not related to a particular company. Stand-alone pension funds also stop workers linking their financial capital to the same company where their human capital is already invested, and they are better suited to increasingly fluid labour markets, as will be discussed in Chapter 5. The risk of multitask monitoring can be further mitigated by identifying the responsibility of the fund's trustees or supervisory board and making clear that they act for the sole interest of the fund's members, and by disclosing to the members the investment principles and performance of the fund. Pension funds operated by financial institutions, such

Agency problems are best addressed by non-profit, collective pension funds.

Stand-alone pension funds are more likely to avoid multitask monitoring.

The governance structure of a collective pension fund should be two-tiered

as insurance companies, should therefore have their assets ring-fenced to protect the interest of the beneficiaries. This is now compulsory in the EU under the Pension Directive (articles 7 and 8) and makes an even stronger case for stand-alone pension funds.

There is another range of issues with the internal organization of the fund. It goes without saying that investment planning and asset management operations should be submitted to the same standards as other financial institutions: division of tasks, separation of execution and control, internal auditing, etc. (see Crockett et al., 2004 for an overview). Moreover, there should be a clear divide between the fund's governing body (be it a board of trustees or a supervisory board) and its operational management. The governing body should be assisted by an actuary, inspected by auditors and, if needed, seek external expert advice. Actuaries and auditors should report to the supervisory authorities when appropriate action has not been taken by the governing body.

The governing body should decide on investment principles at a very general level (say, whether a fraction of investment should be socially responsible, or whether the fund is willing to bear foreign-exchange risk), but not on asset allocation and even less on individual portfolio decisions, otherwise long-term wealth maximization may be dominated by other objectives. Investment decisions should be left to an investment committee, which can be a subset of the supervisory board, provided that its members are financially qualified. Another key principle is that the mandate of the investment committee should be clear and verifiable, in particular when it comes to its risk profile and available instruments, while being flexible enough to accommodate unforeseen market developments. Finally, there is no easy solution to designing the best contract for investment managers. Pension funds, as most fund managers do, usually monitor the so-called tracking errors of investment managers against the performance of a benchmark basket of bonds or equity. This kind of ex-ante constraint is by no way optimal, since (as argued further in Chapter 3) the composition of the benchmark is usually unrelated to the fund's liabilities, and having all fund managers benchmarked on the same indices may generate destabilizing herding patterns. Ex-post monitoring of fund managers' performance may have better properties, but it is more difficult to organize.

One caveat relates to the size of the fund: as noted by the OECD, 80% of UK schemes have less than 12 members, in which case governance principles should obviously be implemented in a pragmatic way.

In Chapter 4, we will argue that collective pension funds are best equipped to share risks, particularly between the older and the younger members. This requires proper mechanisms to express stakeholder democracy.

Trade unions do not necessarily represent the population of individual members: they have a limited footprint in the working population,⁴ they may be dominated by retirees, and they may be unable to reconcile the conflicting preferences of their older and younger members (Boeri et al., 2001). The best way to aggregate preferences of the members is to vote: trade union representation should therefore occur only as a result of a direct vote by workers. Voice is all the more important as the possibility to exit from a fund is limited. Voting is also needed to settle conflicts of interest between members, in particular between working members and pensioners.

The objective of investment management is usually to maximize the return under some constraint on asset allocation and with limits to the risk exposure. A typical way to achieve this is to give the investment manager a benchmark portfolio, having established how far he/she can depart from it, and to use the benchmark to assess his/her performance. The fund usually relies on investment consultants to set up the strategy and organize the selection of managers.

Although the recent trend has been to invest more in bonds, pension funds remain heavily, or even mainly, invested in equity (see Chapter 3). As their size has expanded, they have the potential to become increasingly powerful in the market for corporate control. Should they exert their voting rights in shareholders' meetings and participate in executive boards when their weight would justify it? There is no doubt that the answer should be positive: with a view to maximize the future wealth of their members, all instruments should be used to improve the return on stocks, including persuading firms to improve their strategy and management. Also, even when funds refrain from intervening in daily management, they have to decide on which side they stand in the case of public offers, hostile or friendly. There are examples, mainly in the United States, of activist pension funds picking underperforming firms or presenting voting proposals in shareholder's meetings. A prominent example is California's public employees' retirement system (CalPERS), which promotes its own corporate governance principles. Empirical evidence on the consequences of pension fund activism is mixed: it seems proposals put forward in shareholders' meetings tend to be successful, but with a limited impact on the performance of the targets (see Smith, 1996 for a case study of CalPERS; and Charléty, 2001 for a survey).

There are two limits to pension fund corporate activism. First, ownership of any given company should be limited by diversification rules. Second, conflicts of interest and multi-task monitoring, let alone the possibility of personal fraud, should be avoided. Trade unions might wish to stop a hostile bid that they deem wrong for jobs in the short run. State

Trade union representation in collective funds may be desirable but should be voted for by workers

Pension funds should exert their control rights, but only at the level of investment managers

representatives in a public pension fund may want to stop foreign firms from expanding their stakes in domestic firms. All of this would be contrary to members' fiduciary interest. Corporate control decisions should therefore be delegated to the fund's investment committee, and possible conflicts of interest (e.g. when a committee member has a link with the company under scrutiny) should be identified and regulated.

2.2 Improving financial literacy

Incomplete information on the members' risk profile is a classical feature of insurance. If participation is optional, members with a lower risk profile do not want to share risk and decide not to join. In individual saving schemes, adverse selection can be accommodated by risk-scoring and price discrimination. In this report we propose a different approach: compulsory risk-sharing through collective arrangements, with a limited choice of retirement plans.

A key question involves the ability of pension fund members and managers to understand risk and manage it in an appropriate fashion: are trustees and board members capable of steering the fund? Are members themselves able to plan and implement their own financial decisions? How can the performance of mandated fund managers best be monitored? All these questions lead to practical recommendations on the organization of the fund.

Financial literacy of pension fund trustees and board members is low.

Pension fund trustees and supervisory bodies are typically not well equipped to understand complex investment principles and regulations, and to monitor their fund managers adequately. In the United Kingdom, the whistle was blown by Paul Myners in his 2001 report to Her Majesty's Treasury, and his criticisms were barely challenged.

The existing surveys are scary. The Myners report mentioned that 62% of trustees had no professional qualifications in finance or investment; 77% of them had no in-house professionals to assist them; more than 50% had received less than three days' of training when they became trustees; 44% had not attended any courses since their initial 12 months of trusteeship; and 49% spent three hours or fewer working on pension investment matters (Myners, 2001). In a 2002 survey for Watson Wyatt, only 7% of trustees had specific investment qualifications, 22.5% had professional accounting qualifications and over 50% had no specific qualification (Robinson and Kakabadse, 2002). In a 2005 survey for the Engaged Investor magazine of trustees of FTSE 350 company pension schemes, only 32% believed that they understood investment principles 'very well', and 33% admitted they understood trust and pension law 'slightly' or 'not at all' (Greenhalgh and Campion, 2005). One in seven did not even know their plan's investment

benchmark (the typical answer was: 'the money is invested in bonds and equities') and one in four was not aware of the valuation method.

Improvement has been limited over time. In 1997 and again in 2005, pension fund CEOs were asked in a survey to rate the governance, management and operations in their organizations. In both surveys, CEOs believed that trustee selection and evaluation processes were ineffective, resulting in board micro-management and inadequate internal compensation policies (Ambachtsheer, 2005). The perceived improvements between 1997 and 2005 related to the self-evaluation of boards of trustees, the adoption of formal strategic planning procedures and giving management the authority to retain and let go investment managers.

The need to educate pension fund trustees is now recognized. In the Greenhalgh and Campion survey, an element of optimism was that 76% of trustees had attended training courses in 2005 and 88% planned to do it the year after. The UK Pensions Regulator has prepared a Code of Practice for trustees and launched a toolkit so that trustees can train online. Private services training and support groups for trustees are also booming. Such courses should be encouraged, and financial competence and awareness of the regulatory framework should regularly be reviewed, so that trustees' education remains in line with the increasing complexity of the issues. Trustees can build a general knowledge of the pension fund's operations, investment principles and regulatory requirements, but they cannot turn into specialists of finance, labour and securities law and accounting, all the more so as this work is usually only a part-time activity (Figure 2.2). The only way forward is to make compulsory the participation of outside professionals in pension funds' governing bodies.

Pension funds' governing bodies should include outside professionals able to challenge their consultants' advice.

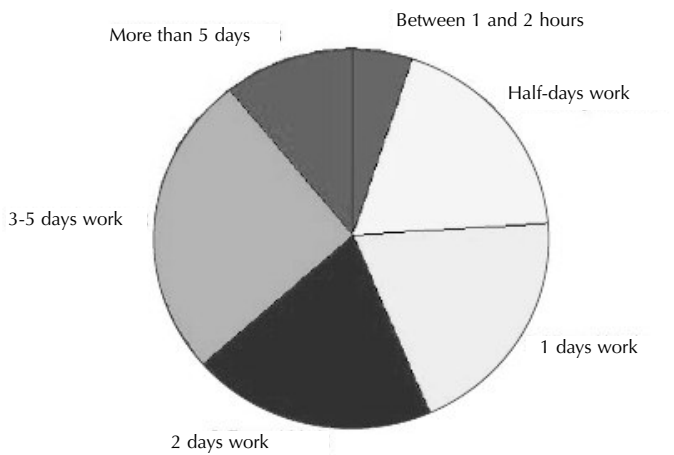


Figure 2.2
Time devoted to their role by UK pension fund trustees (hours or days/month)

The role of pensions consultants is also being challenged. Even though consultants do not bear the same legal responsibility as trustees and operate in theory in a competitive market, their limited number and the large number of smaller pension funds with no in-house investment expertise give them a disproportionate influence on pension fund decisions. In the United Kingdom, consultants play a key role in the definition of investment principles and in the selection of fund managers. It is a cartel, with the top four consulting firms accounting for 70% of UK managers' selection and the top three accounting for 75% of actuarial advice to FTSE 350 companies,⁵ with low levels of consumer switching. The reliance of pension funds' trustees on a small number of consultants is a recipe for collective errors (consultants have not prevented UK pension funds' funding gap to widen in the early 2000s). It also raises conflicts of interest, since the same consultant can advise a pension fund and its corporate sponsor, and even its mandated fund managers, and provide actuarial as well as investment advice. With few suppliers of services, it is hard to see how such conflicts could be avoided (Crockett et al., 2004). Conflicts of interest among pension funds' consultants have not been addressed by international guidelines for pension fund governance, but the UK Financial Services Authority (FSA) drew the industry's attention to this issue in its Financial Risk Outlook in February 2006. Whether this will be best addressed by law or by industry self-regulation is an open issue.

In addition, the reliance on advisers is conducive to inertia: in Paul Myners' words, 'no one in this situation has a clear mandate for taking decisive action or changing direction: trustees tend to feel that they lack the expertise to do so, and advisers that they lack the power to make decisions' (Myners, 2001). As a result, trustees tend to take investment decisions not based on first principles but on the observation that other pension funds have done the same. Better training of trustees, as advocated above, should make them more self-confident and more critical of consultants' advice. Consultants themselves should be challenged by newcomers and by investment banks acting in an advisory capacity.

Effective pension fund governance rests on the hypothesis that members can define their objectives clearly and set incentives accordingly. This supposes in turn that workers have a clear view of their overall financial planning, but this is rarely the case.

According to a 2004 survey, 57% of American households did not know how much they should save for retirement. Adding a retirement module to the 2004 US Health and Retirement Study, Lusardi and Mitchell (2006) have shown that financial illiteracy is widespread among older Americans: only half of the respondents aged 50 or more could correctly answer two simple questions regarding interest compounding and inflation (Table 2.1), and only one-

Households are not equipped to make complex retirement planning decisions.

third correctly answered these two questions and a question about risk diversification. Only 31% of 50 year+ respondents had ever tried to devise a retirement plan, and only two-thirds of those who tried claim to have succeeded. Unsurprisingly, those with less financial knowledge – typically, women, minorities, and those without a college degree – were less likely to plan for retirement, and would rely more often on family, relatives' or co-workers' advice than on formal planning. Similar findings on the link between low income and financial illiteracy can be found in the UK literature: see the study on retirement planning in the FSA's Financial Risk Outlook for 2006.

The underdevelopment of decentralized markets for annuities in OECD countries may also be a byproduct of financial illiteracy among households. Another explanation is that it is the result of adverse selection due to individual longevity risk (see Finkelstein and Poterba, 2004, for empirical evidence in the British case).

Questions	Responses (%)			
	Correct	Incorrect	Don't know	Refuses
'Compounded interest'	67.1	22.2	9.4	1.3
'Inflation'	75.2	13.4	9.9	1.5
'Diversification'	52.3	13.2	33.7	0.9

Table 2.1
Financial literacy of
US households

Source: Lusardi and Mitchell (2006).

Notes: 'Compounded interest' question: 'Suppose you had \$100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow: more than \$102, exactly \$102, less than \$102?'

'Inflation' question: 'Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?'

'Diversification' question: 'Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."'

The need to improve financial literacy and strengthen consumer protection is a general feature of financial services and applies to insurance, consumer credit and retail asset management, where information asymmetry is likely to be high and malpractices have been repeatedly documented. It is especially acute when it comes to retirement savings, where a significant fraction of households' future revenue is at stake and part of the risks are shared with governments through first-pillar systems. In the words of Häusler (2005) from the IMF: 'If not properly understood, the assumption of risk may create resentment in the household sector, which may in turn bring political pressure to bear on governments to cover future shortfalls. In such a case, yet again, governments may be forced to borrow against future generations, which is precisely what needs to change.'

The risk of governments being ultimately liable for all

Lack of confidence increases pressure on governments to bring all risks back to their balance sheets.

pension failures is evidenced by a recent episode in the UK. In March 2006, the UK Parliamentary Ombudsman accused the government of having provided information to investors on the Minimum Funding Requirement (MFR) (a regulation aimed at ensuring that British pension funds would hold adequate assets to meet their liabilities, see Chapter 4) that was 'sometimes inaccurate, often incomplete, largely inconsistent and therefore potentially misleading', and called for financial compensation for those 85,000 people who had lost their pension benefits due to insufficient funding of their pension fund.

Financial literacy also matters for the political economy of pension reform. Today, too many people take the PAYG system as granted or even believe that it is a funded scheme: in 2004, 30% of Italian and 50% of German households believed that their (PAYG) pension contributions were also used to pay their own future pensions (Boeri et al., 2004). Better information on retirement prospects is also associated with stronger popular support for reforms reducing the size of the first pillar (Boeri and Tabellini, 2005).

Pension misselling is a risk.

Lack of understanding of investment principles and of the risk profile of the funds is also widespread. The UK pension misselling episode is a case in point. In 1988, households were given the option to opt out from occupational pension schemes. Many of them were advised to leave and join a personal pension plan, while they would have been better off at retirement if they had remained in their employers' schemes. As of December 2001, the UK FSA had received 1,248,631 requests for review for alleged misselling between 1988 and 1994, and more than 500,000 investors had been offered redress for a total amount of £4.4bn. Three strategies should be implemented to reduce the risk of pension misselling. First, there is a need to develop financial education programmes. Second, collective pension plans should be encouraged as they are better equipped to address financial illiteracy. Third, only a few default options should be available to investors.

Large-scale financial education programmes should be developed by governments or social partners

Using the same panel as Lusardi and Mitchell (2006), Lusardi (2004) showed that providing financial education and retirement seminars fosters wealth accumulation, especially for those households at the bottom of the wealth distribution and/or with low education. In the wider context of savings investment, the OECD defined a set of good practices and launched a financial education project to help governments set up financial literacy programmes (OECD, 2005b). Since part of the problem stems from the fact that households are not willing to pay for financial advice, there is a case for providing public financial education programmes. Such programmes could be run by employers, trade unions or central or local governments, and they could be tailor-made to the needs of particular social groups.⁶ They should focus on post-retirement earnings and

expenses and on understanding basic investment decisions. Also, households should be able to rely more on impartial advice when deciding upon a retirement plan. This becomes even more important as competition increases and national barriers are being lifted.

As already argued, collective pension plans allow individuals with scarce cognitive abilities to delegate complex decisions. Also, to limit the risk of misselling and misallocation of savings, only a few default options should be available when a pension fund member chooses her or his investment plan, with simple questionnaires helping members reveal their attitude towards risk. The non-profit character of collective pension funds also provides legitimacy to a lack of individual choice. Individuals choose not to choose because they trust the pension funds. This trust is essential because restricting individual choice not only protects people from making mistakes in complex intertemporal decisions under uncertainty but also gives rise to agency issues and problems associated with collective decision-making. Investment policies tailor-made to individuals should remain a benefit of optional, third-pillar investment schemes, not of collective pension funds.

A key input of household financial planning is access to relevant, reliable and timely information on the assets and liabilities of pension plans, and on their investment principles. In a US context, Starr-McCluer and Sundén (1999) compared workers' knowledge of their pension plans with the (presumably exact) data provided by the corporate sponsors. They found that workers usually knew which kind of plan they had, but when they could choose among a menu of investment options, only two-thirds were able to report which option they had chosen. Full knowledge of pension plans is key for individuals to understand the link between today's pension contributions and tomorrow's benefits, and therefore avoid considering these contributions as taxes which would distort labour supply decisions.

Although the disclosure of investment principles is usually compulsory, the scope and timeliness of disclosure differ a lot from one country to another, and across pension funds. The Pension Directive provides a detailed specification of the information that should be made available to members (Box 2.1). It remains to be seen how it will be transposed by all 25 member states. Oddly enough, while encouraging cross-border activities of pension funds and the portability of pension rights, the Directive does not provide for a single EU-wide template for disclosure. Also, the market value of the funds assets and liabilities is not mentioned, the only requirement being that 'the annual accounts and the annual reports shall give a true and fair view of the institution's assets, liabilities and financial position' (Directive, article 10).

Collective pension plans should offer only a few default options.

Information should be disclosed in a Swedish-type 'orange envelope' at the EU level.

Box 2.1

Disclosure requirements in the EU Pension Directive

1. Depending on the nature of the pension scheme established, each Member State shall ensure that every institution located in its territory provides at least the information set out in this Article.
2. Members and beneficiaries and/or, where applicable, their representatives shall receive:
 - (a) on request, the annual accounts and the annual reports [referred to in Article 10], and, where an institution is responsible for more than one scheme, those relating to their particular pension scheme;
 - (b) within a reasonable time, any relevant information regarding changes to the pension-scheme rules.
3. The statement of investment policy principles, [referred to in Article 12], shall be made available to members and beneficiaries and/or, where applicable, to their representatives on request.
4. Each member shall also receive, on request, detailed and substantial information on:
 - (a) the target level of the retirement benefits, if applicable;
 - (b) the level of benefits in case of cessation of employment;
 - (c) where the member bears the investment risk, the range of investment options, if applicable, and the actual investment portfolio as well as information on risk exposure and costs related to the investments;
 - (d) the arrangements relating to the transfer of pension rights to another institution for occupational retirement provision in the event of termination of the employment relationship. Members shall receive every year brief particulars of the situation of the institution as well as the current level of financing of their accrued individual entitlements.
5. Each beneficiary shall receive, on retirement or when other benefits become due, the appropriate information on the benefits which are due and the corresponding payment options.

Source: European Union (2005), article 11.

It would therefore improve the Directive to define a minimum reporting standard at the EU level. This could be along the line of the Swedish 'orange envelope' sent each year to Swedish pension fund members as well as contributors of the PAYG system with a forecast of their future pension. The report should cover individual data such as the expected level of retirement benefits, and fund-level data such as the market value of assets and liabilities, details of the valuation method, and funding gap, with a reminder of (and if case needed a report on) the corrective actions required under the prevailing regulatory framework. This would only be a minimum set of information and would be complemented by each institution. An open question is whether the report should be centralized (as is the case in Sweden) by some EU

body, say the European Commission or a single pension regulator, or produced by each pension fund.

2.3 Integration of the pension fund industry: fragmentation, portability and competition

International integration of the pension fund industry is limited by national barriers, which reflect the domestic nature of the regulatory, social and tax frameworks, and the limited cross-sector and cross-country mobility of workers. This is also because only six EU countries have significant pension fund industries (as measured by pension fund assets above 20% of GDP): Finland, Denmark, Ireland, the Netherlands, Slovakia and the United Kingdom.

Why should an integrated pension fund industry be promoted anyway? A possible answer could be that competition to attract workers would improve pension funds' governance and efficiency. However, as we will argue in Chapter 4, collective pension funds exhibit better risk-sharing and stabilization properties. Workers should not be too free to move in and out of such plans. Moreover, in the face of financial illiteracy, competition to attract new members can lead to biased information, erroneous choices by individuals (as exemplified by UK pension misselling) and, at the extreme, fraudulent proposals. In addition, competition between pension funds generates marketing costs which are ultimately borne by the members. Conversely, economies of scale can be exploited to reduce management fees. As Diamond (2005) pointed out, with a real wage growth of 2.1% per year and the real annual return on investment of 4%, annual management fees of only 0.5% of account balances would dent the value of accounts by 10.5% after a 40-year work career.

A simpler answer is that a lack of integration is an obstacle to inter-branch or cross-country mobility of workers and impedes the good functioning of the labour market. This is all the more worrying in the EU where labour-market rigidity weighs on potential growth and on the functioning of the single currency: as pension savings grow as a proportion of income, fragmentation of the pension fund industry will become increasingly costly. There is thus an urgent need for a level playing-field in the industry and full portability of pension rights. This is far from being the case in the EU, let alone at an international level.

The diversity of domestic laws creates many fixed costs (information costs, lawyers' fees, litigation risk) for a pension fund to operate away from its home country and for beneficiaries to join a foreign fund. These costs will not be reduced by the Pension Directive, which explicitly recognizes the preeminence of domestic social and labour laws

A level playing-field for the pension fund industry is needed to promote workers' mobility.

There are still many non-price barriers to cross-border operations of pension funds in the EU.

(European Union, 2003, article 20). It can be argued that pension arrangements will remain a key building block of social negotiations, which will remain (and rightly so) decentralized. But this creates a de facto fragmentation and even a risk, in a climate of *patriotisme économique* across the EU, that member states may use labour law and financial regulation as a shield against the operation of foreign pension funds. Also, the wording of the Pension Directive is ambiguous concerning cross-border activities. It is not clear whether it applies to the workers' workplaces or to firms' headquarters. In short, the 'European passport' for pension funds is not yet a reality.

Insufficient cross-border portability of pension rights is an obstacle to the single market.

Portability of pension rights is more likely to be an issue between countries than within countries. Portability is already effective at a national level in some member states, such as the Netherlands and Denmark, but it is much more difficult across member states. Even in the Netherlands, portability is granted as long as one remains an employee (it is possible to transfer pension rights say, from PGGM to ABP), but it does not hold for self-employed workers. This amounts to a disincentive to entrepreneurship. Using an empirical model of individual job change decisions in Denmark, Ireland, the Netherlands, Spain and the United Kingdom, Andrietti (2001) found that pension wealth losses reduce the probability of job mobility in the United Kingdom only, which is not surprising for Denmark and the Netherlands but is more so for Ireland and Spain.

As for cross-border portability, it might not yet be a priority, given the limited intensity of inter-state worker flows (only 1.5% of EU citizens work in a member state other than their country of origin (Recchi and Nebbe, 2003)). However, it might itself contribute to labour immobility and is thereby an obstacle to the completion of the internal market and to the ability of the European economy to adjust to local shocks, particularly in the euro area. And it is a direct loss for those workers who choose or are obliged to change countries, who lose a significant part of their pension rights. The European Commission acknowledges this issue and has published a draft directive on portability (European Commission, 2005). There is no easy solution, as tax treatments still differ across countries (see below) and because there is no single way to value pension rights with different calculation rules, discount rates and annuity tables across countries.

Discriminatory consequences of personal income and payroll taxes

Current tax systems do not yet ensure full non-discriminatory treatment of foreign pension funds. In almost all EU member states, contributions to pension funds benefit from some sort of tax relief, which most of the time exclude contributions to a foreign-based pension fund, sometimes because they were denied the qualification of pension contributions. The European Commission now considers that most of these discriminatory practices have been removed

or are being removed, with the partial exception of Denmark. Industry groups are less optimistic and the European Federation for Retirements Provision and accountants PricewaterhouseCoopers lodged complaints in spring 2006 against 18 member states, saying that they tax foreign pension funds more heavily than domestic plans. Such obstacles also remain at an international level.⁷ The Commission also noted that a general move towards the exempt-exempt-taxed (EET) taxation system (see also Chapter 4) would help reduce the risk of double taxation or non-taxation.

The Pension Directive does not cover mandatory social security schemes and book-reserve systems. Its relevance is therefore limited in those countries, like France, where PAYG first- and second-pillar schemes are dominant, or Germany, where corporate book-reserve schemes retain a major role. One way forward would be for the EU to encourage pan-European pension funds, be they managed by occupational pensions institutions in the sense of the Pension Directive or by financial institutions at large, with a unified legal framework in the spirit of the European company regulation of 2001.

The competition structure depends a lot on whether investment management is outsourced, in-house, or provided by a parent financial institution, say an insurance company. In the latter case, competition is likely to be more limited. In the former case, competition is fierce due to the integration and standardization of the asset management industry. Global asset management firms and asset management arms of investment banks or insurance companies are all managing money on behalf of pension funds. This implies that the line between the pension fund and the insurance industry is blurred when it comes to measuring assets under management.

The 1985 UCITS Directive and the 1996 Investment Services Directive created a European passport for asset managers and, at least in theory, they set a level playing-field for the marketing of investment services. Competition is also enhanced by the harmonization of performance measurement in the industry: increasingly, asset managers are mandated for a limited time and for a specified asset class, and their performance is monitored against a given benchmark portfolio.⁸ However this organization has its own drawbacks, such as the possibility of herding behaviour by managers in adverse financial market conditions (see also Chapter 4).

It is difficult to gather data on competition in the asset management industry. Indirect evidence can be found in asset management fees. In a 2000 survey, Watson Wyatt found that fees for a \$100m balanced mandate were 18 basis points in Ireland and the Netherlands, 27 basis points in the United Kingdom and Germany and 32 basis points in France (Davis, 2002). This may suggest that the former markets

Pan-European pension funds would be a way forward.

Competition between investment managers reduces costs and improves performance...

...but herding behaviour of investment managers can worsen adverse financial market conditions.

Completion of the single market for financial services in the EU will also benefit pension funds.

were more competitive. However, higher charges may also reflect better performance.⁹ It is also difficult to measure hidden charges, due to a lack of price transparency. Operating profits are very different across Europe, ranging from 9 basis points in Germany and 11 basis points in the United Kingdom to 42 basis points in Spain and Portugal, according to a 2000 McKinsey survey. Davis (2002) nevertheless concludes that the asset management market is less contestable in continental Europe than in the United States or the United Kingdom, with fewer new entries, the persistent importance of the relationship bank or insurer and higher regulatory barriers. One can conclude safely that transparency on the structure of fees should be compulsory.

Competition can contribute to lower pension fund operating costs along the whole production line of asset management: IT, back office, clearing and settlement of securities, etc. This will depend on the pace of completion of the single market for financial services. More competition in the market for financial services will lower the operating costs of pension funds, therefore increasing the wealth distributed to their members.

Summarizing, competition plays a major role in regulating the performance of asset managers, while it plays a minor role in regulating the performance and risk-taking ability of pension funds themselves. Obstacles to cross-country operations of pension funds should be removed and the portability of pension rights should be improved, but this cannot be a substitute for a proper prudential and governance framework.

2.4 Public compared with private pension funds

A limited number of privately operated funds.

In Chapter 4, we will argue in favour of collective, stand-alone plans, with a limited choice of financial options. Should these plans be privately or publicly operated? Two polar models have been advocated in the literature on pension reform. In the first model, there are many small funds competing to attract members; in the second model, there is one government-affiliated fund complementing the PAYG system (see Modigliani and Muralidhar, 2004, for a blueprint). There are advantages and disadvantages in both schemes. The public scheme is likely to provide lower transaction costs (such as marketing costs and management fees), to allow for better asset diversification and to limit the risk of misselling to individuals. Private schemes are likely to provide more innovation and less political risk, both as regards decisions on premiums and benefits and possible political interference in investment decisions, as discussed above. The reason why the US Social Security never turned into a fully funded scheme, as initially envisaged by

President Roosevelt, was because Congress opposed the federal government becoming a major actor in the financial markets. Another argument against public pension funds is the induced distortion of national accounts: public funds accumulating assets would reduce the general government deficit and lower the incentive for fiscal consolidation. This is currently the case in the United States and would also be true under the European system of accounts. A hybrid solution is the Swedish Premium Pension Authority (*Premiepensionsmyndigheten* or PPM), which centrally administers premiums and fund choices, with employees choosing their funds from a list of nearly 700 funds approved by the PPM, or staying with a default fund (see Weaver, 2005, for a discussion).

On balance, our preferred scheme comprises several large private plans, with competition at the wholesale rather than the retail level, that is with little freedom of choice for participants but lots of competition for asset management and other services (e.g. administration and IT).

3 De-Risking Pension Funds with Market-Based Solutions

There has been a simultaneous move by legislators and regulators around the world to operate on a mark-to-market basis, using fixed-income instruments to provide discount rates for measuring liabilities. At the same time, long-dated fixed-income instruments are coming off the back of a number of years of falling yields, due to structural falls in both inflation expectations and real yields. Together with increasing longevity risk and exposure (see Chapter 1), this has provided an unfortunate combination for pension schemes, with assets and liabilities coming under more scrutiny exactly at a time when many systems have seen sharp falls in funding and solvency. We examine the problems, and suggest market-based solutions that allow for better liability management and more diversified portfolio management.

The kick-start for the introduction of the mark-to-market process throughout the EU has been the Pension Directive (see Chapter 2). All EU countries have either now passed the Directive, or are on target to pass it soon. The Netherlands is the most notable exception, where there has been a one-year delay in introducing the new framework (delayed from 1 January 2006 to a proposed new date of 1 January 2007), the *Financieel Toetsingskader* or 'FTK'. This has been a significant delay for a country that, according to the data reported in Chapter 1, has the third-largest ratio of pension fund assets to GDP in the OECD. Indeed, this is still not definite, with significant changes being made to the proposed FTK as late as May 2006, when the recovery period for pension funds to meet the required funding ratio if they fell below it was lengthened to three years from one year. Much of the market-based focus on pension fund solutions has occurred in countries that have the greatest sensitivity to pension fund assets. Within the EU, the United Kingdom and the Netherlands hold around 99% of all pension assets, according to the Eurostat year-book 2005 (using 2001 data). This is also why there has been little focus up to now on Germany or France. Much of these countries operate on a PAYG public-sector pension system or with book-value corporate guarantees, and in

EU promotes mark-to-market valuation of liabilities.

coming years German and French companies will face the same issues that are being addressed in other countries, especially with the introduction of more transparent accounting rules on 1 January 2005.

3.1 A slow switch to market-based valuations

Market-based valuation enhances transparency but does not change the underlying nature of the liabilities.

The main influence for funds is the movement to mark liabilities to market on a realistic basis. In simple terms, this is a move to discounting liabilities using a bond-like instrument (which can differ from country to country). This implies that the discount factor and so the present value of liabilities being discounted with those factors fluctuate on a daily basis. We may liken this to shining a torch into a dusty room: a move to marking-to-market liabilities does not change the nature of those liabilities, but, by measuring them against tradable fixed-income instruments, it shows up where pension funds' assets may be heavily mismatched to liabilities. It a matter of transparency and therefore of incentives to take appropriate corrective measures. This does not imply that funding rules mandated by regulators are only based on current market valuations. Indeed funding rules usually imply a recovery period to make the necessary adjustments.

In what follows, we will take market-based valuation as a fact and we will not question its principle (see e.g. Plantin et al., 2005 for a discussion). We believe the discussion of the effects of market valuation on pension funds provides a good illustration of both its merits and drawbacks: beneficial ex-ante discipline, adverse ex-post adjustments. More importantly, pension funds illustrate the limits of market valuation when applied to actors that exert pricing power on financial markets.

Effects of market-based valuation were first seen in Denmark.

Many countries are about to see a move from valuing pension fund liabilities on a fixed-rate basis to a floating-rate basis. The market effect of this has already been seen in Denmark and Sweden, via the introduction of 'traffic light' systems to stress-test pension funds' balance sheets, using bond yield movements as one of the key parts of the test. The first example of the asset and liability management (ALM) debate moving European fixed-income products was when the Danish Financial Services Authority introduced their traffic-light test in June 2001. Funds have to be able to remain solvent after a 100 basis points fall in bond yields (and a 30% fall in equities) to pass the 'yellow' test, and then also be able to remain solvent after a 70 basis points fall in bond yields (i.e. -0.70%) and a 12% fall in equities to pass the 'red' test. The easiest way to pass such stress tests was to buy bonds with maturities corresponding to the fund's liabilities, so as to immunize the funding gap against movements in bond yields – the simplest example of asset liabili-

Consider a pension fund with nominal pension liabilities l_t at dates $t > 1$. For simplicity, the fund is only invested in a consol yielding a constant interest rate r . The market value of its portfolio is thus $A = pN$ where N is the number of bonds and $p = 1/r$ is their price. Pension liabilities grow at a constant rate λ with $0 < \lambda < r$. The market value of pension liabilities is

$$L = \sum_{k=1}^{\infty} (1+r)^{-k} l_k = \frac{1+\lambda}{r-\lambda} l_0$$

Let $\varphi = A/L$ be the funding gap,

$$d^A = -\frac{1}{A} \frac{\partial A}{\partial r}$$

be the duration of the bond portfolio and

$$d^L = -\frac{1}{L} \frac{\partial L}{\partial r}$$

be the duration of pension liabilities. Three results follow immediately:

- $d^A - d^L = \frac{1}{r} - \frac{1}{r-\lambda} < 0$

This *duration gap* results from the assumption that the fund invests in consols only, i.e. it cannot adjust the structure of its asset portfolio to match its liability profile.

- $\frac{1}{\varphi} \frac{\partial \varphi}{\partial r} = d^L - d^A > 0$

For a given asset and liability structure, decreasing long-term yields widen the funding gap, all the more so as the initial duration gap is large. Note that the duration gap itself widens in the process.

- $\frac{1}{N} \frac{\partial N}{\partial r} = d^A - d^L < 0$

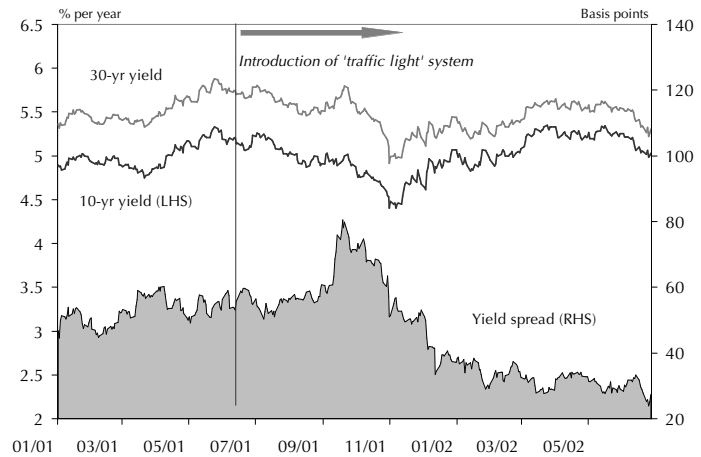
when φ is held constant. Under a given funding rule, the fund has to buy more bonds when long-term yields go down. In other words, the demand for bonds $N(p)$ is upward rather than downward sloping.

Box 3.1

The mathematics of long-term yields and the funding gap

ty management. During the second half of 2001, the consequent multibillion-krone buying and receiving of long-dated European fixed-income assets – a necessary diversification into a currency providing enough liquidity for krone-exposed liability managers – drove the slope of the long end of the euro-currency yield curve (measured as the 10-30-year spread) from an average 60 basis points in the second quarter to the flattest it had ever recorded, just 30 basis points, in February 2002 (Figure 3.1). The yield curve remained at this flat level for six months, until the anticipated start of the ECB rate-cutting campaign caused a re-steepening. To illustrate the financial impact of such long-dated yield movements, a €1m portfolio of 30-year bonds would be worth €1,040,950 after such an outright -30 basis points movement at that time.

Figure 3.1
Impact of Danish traffic-light stress-test system on euro government bond yields



Source: Ecwin.

Other EU countries are about to move to market valuation...

Much of Europe did not move as early to using market discount rates. In the Netherlands, for example, all liabilities are currently being discounted at a fixed 4% discount rate. It is proposed (and very likely) to move to discounting all liabilities using the euro swaps curve¹⁰ in the framework of the FTK regulation. The advantage of the swaps curve over any other bond yield curve is that it tends to be smoother than a government bond curve, which will always be subject to interpolation of the limited major points on the curve where governments issue their benchmark debt, and it does not depend on credit events affecting any particular country (such as news of debt and deficits). Moreover, we could argue that pensions liabilities are not risk-free and their valuation should therefore include a risk premium. Using a government yield curve is thus over-harsh on calculating the present value of liabilities; the average swaps curve yield premium over the government bond yield curve (the average EMU swap spread is 0.18% over the past five years) does

not fully reflect the credit quality of pension liabilities, but it allows for a marginally less onerous regime.

The United States proposes to use a different discount rate (the final US Pensions Bill will probably be published in the summer of 2006). It currently uses an average of long-dated yields on three investment bank bond indices for over ten-year high-quality US dollar bonds (defined as having a credit rating at or above 'A'). The new proposals have rejected using the swaps curve, but even so they are a clear step towards increased marking to market, proposing to split the yield curve into three zones (1-5 years, 6-20 years, 21-30 years), and use three discount rates – again based on high-quality bond yield indices – to discount liabilities.

The key for acceleration of addressing pension fund mismatches has always been the regulatory background. Figure 3.2 gives a clear indication that the move out of equities in UK pension funds was indeed triggered by the legislation that enacted the MFR in April 1997, almost exactly when the direct equity weighting among UK pension funds started to fall. Under the Pensions Act 1995, which introduced the MFR, the United Kingdom was using a penal notional 15-year gilt rate to discount liabilities.

...while the United States is also changing how it calculates liabilities...

...as is the United Kingdom...

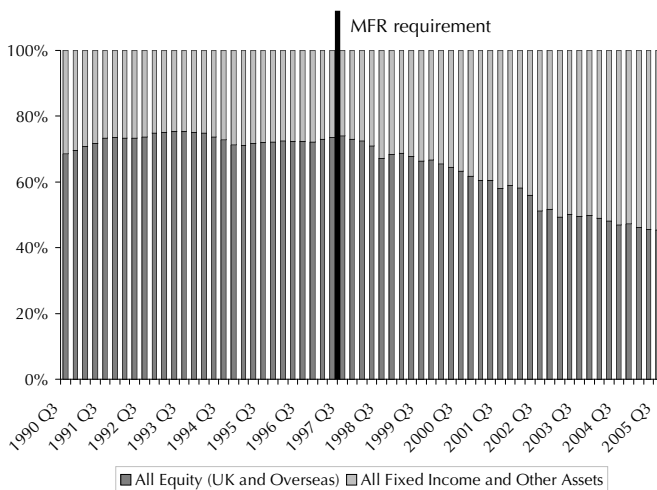


Figure 3.2
The UK trend away from equities

Source: Office for National Statistics, UK pension fund asset allocation.

The UK model has now changed, with the Pensions Act of 2004 setting up a US-style pension protector of last resort, the Pension Protection Fund (PPF, see Chapter 4). At the same time, it has introduced the Pensions Regulator to encourage the improved management of pension risks and avoiding moral hazard. The main key is what calculation the Pensions Regulator uses to factor whether a company or pension fund is taking excessive risks. Again, a high-quality corporate bond index has been selected as the discount factor, specifically using accounting standard Financial

Reporting Standard 17 (FRS17) as a reference. This accounting standard was published by the UK Accounting Standards Board in 2001 to replace SSAP24 for accounting years starting on or after 1 January 2005. However, FRS17 itself was superseded by the EU harmonization of accounting standards (International Financial Reporting Standards, IFRS) from 1 January 2005, which gave the international accounting standard, IAS19, precedence. Notwithstanding these changes in accounting, FRS17 has become a funding standard for pension funds, and this standard discounts 100% of liabilities using an AA-rated corporate bond curve. This is in fact one of the more onerous measures that could be used, not least because liabilities are very long-dated in the United Kingdom and so use long-dated discount rates, and 50-year rates have been as much as 60 basis points below 15-year rates as recently as May 2006. Moreover, MFR allowed pension fund liabilities due to active and deferred members to be discounted using an equity discount rate of around 9%. Thus FRS17 can show the present value of liabilities to be 30% (in some cases up to 40%) greater than compared with the measurement under the old MFR regime.

...with a risk of inconsistency between funding and accounting standards.

The UK story illustrates the risk of inconsistency between accounting and funding standards. The move towards fair-value (as opposed to historical-cost) accounting for liabilities has been consistent under pensions regulation and international accounting standards. However, valuation methods may differ. In the EU, IFRS were enforced in 2005 for listed companies only. Pension funds of listed companies are thus subject both to local funding standards and to European-wide accounting rule IAS19 on employees' benefits, while industry-sector funds are subject to funding standards only. As noted, IAS19 uses AA-rated corporate bond yields, while local funding standards may be harsher, using swap or government bond yields.

As the world moves to using market rates, longevity has increased and market rates have collapsed...

Shining a light into a dusty room is not in itself an unwelcome event, yet there has been criticism from all corners of the financial industry about this spotlight on pension fund mismatches and various volatilities that a move to the marking-to-market of liabilities using fixed-income instruments has engendered. We suspect the entire global pension fund debate would not be taking place with such prominence but for the major deficits that are being faced by pension funds in many countries. There has been an unhelpful cocktail for pension funds, as follows.

... leading the pension funds industry to face a perfect storm.

- Falling bond yields at a time when the world has moved to marking-to-market liabilities with such yields. Figure 3.3 illustrates that there has not only been a shift down in global real yields, but that the structural falls in inflation and inflation expectations have driven substantial yield decreases within nominal fixed-income debt.

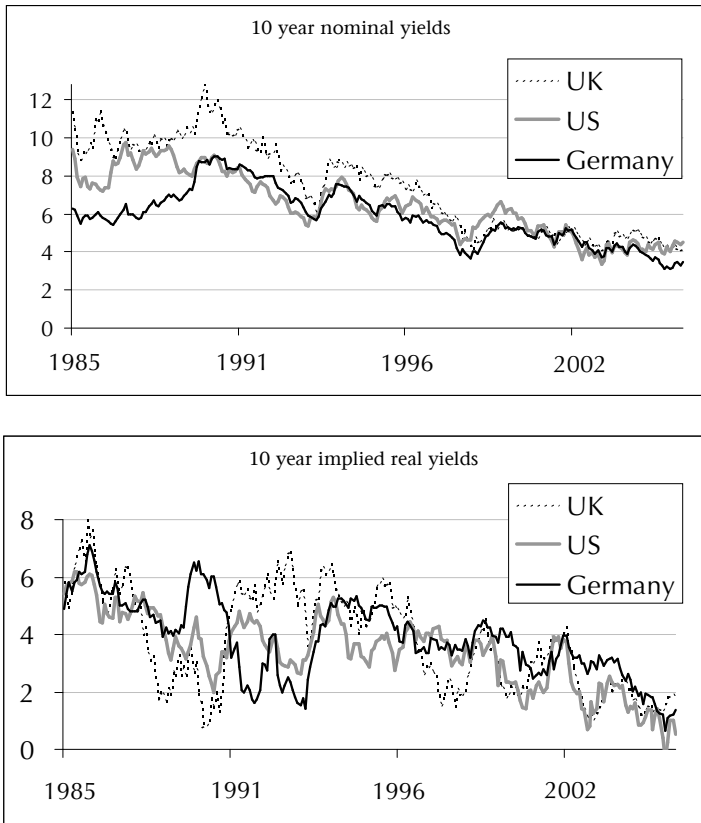


Figure 3.3
Tracking the secular
shift in global bonds

Source: Datastream.

Notes: Real yields calculated as nominal yield – CPI

- Increasing longevity – increasing proportions of current and deferred pensioners at the expense of current employees. This has already been documented in Chapter 1, and is likely to become a bigger issue.
- Excessive reliance on equity in episodes of irrational equity valuation, which has kept pension fund equity weightings high in many countries (though notably lower in continental Europe).
- High assumed return targets based on long-term actuarial assumptions that, ironically, force sponsors to systematically assume more risk in order to achieve these targets.
- A previous regime of regulatory funding frameworks that were fundamentally based on a budgeting exercise (such as smoothing discount rates and changes in portfolio returns) compared with one rooted in sound financial principles. The clearest example of this is the US Airways pension fund, which was 94% funded on an ongoing basis, but only 34% funded on a termination basis, when it was closed completely

and handed to the US pensions agency PBGC in 2004 (executive director's statement to US House of Representatives, 2004).

This has left funding levels lower than desired, as discussed in Chapter 1, which also noted that funding ratios in continental Europe would be much lower if implicit inflation indexation were accounted for.

3.2 Lengthening the duration of fixed-income portfolios

New balance sheet solutions are coming with pension funds lengthening the duration of fixed-income portfolios to match liabilities...

There are now two main themes that we expect to gain in importance in the coming years. First, there is an ongoing grab for fixed-income risk occurring within existing fixed-income portfolios. In the Netherlands, pension funds did not increase their fixed-income exposure during 2005, and back data show that equity asset weightings have not fallen since 2002 (when they fell from 41% to 35% before bouncing to the current 40%). What has been taking place is a lengthening in the duration of fixed-income portfolios.

Asset managers typically manage their portfolios against investment bank indices, which are averages of outstanding bonds. This allows for simple performance monitoring of investment managers (Chapter 2). However, as funds move to assessing liabilities on a mark-to-market basis, it is clear that this is inappropriate. Indeed, these latter indices can have risk characteristics – modified duration is commonly used as the best measure of risk – that are completely misaligned to the risk liabilities of pension schemes. The EMU broad fixed-income market – including all government and non-government debt which is ranked as investment-grade quality by ratings agencies – is just 5.5 years modified duration, shorter than any countries' average duration of pension funds' liability, calculated by the central bank at 15 years in the Netherlands. A similar situation exists elsewhere, with UK liability duration as much as 18 years, and an 8.3 year modified duration government debt market. Even in the United States, with limited private-sector pension fund exposure to inflation, liabilities are currently as high as 14 years; this is substantially higher than the 4.8 years modified duration of the total US debt market.

The first theme thus is a major duration extension among fixed-income portfolios. There is strong evidence of this accelerating process among Dutch pension funds, with the modified duration of fixed-income assets rising consistently through 2005, from five years to six years.¹¹ We put much of this down to the coming introduction of the FTK regulation and believe that not only is this a blueprint for what will happen throughout EMU, but that this process has a long way to run – with a modified duration of liabilities averag-

ing 15 years across Dutch schemes, funds are still nine years short of duration, even just on their fixed-income portfolios, which are only 44.1% of total assets.

The reason why that the debate has moved on from an equity versus bond dilemma is that moving from equities to fixed-income crystallizes scheme deficits and surpluses, locking in a lower expected return on assets. This is generally an unattractive prospect to company sponsors because it raises the costs of the pension scheme, especially at a time when bond yields are well below their historical average.

For instance, a typical pension scheme starting with a heavy equity overweight and bond underweight carries large risks. Typically, the pension fund wants to reduce the deficit variance and move gradually towards surplus. Traditionally, this would be achieved by switching equities into bonds. As the pension fund does this, it partially reduces the riskiness of the scheme, but it does crystallize the deficit, leaving the company sponsor with the unwelcome prospect of additional contributions off balance sheet. In extreme examples this could even involve a fund selling all its equities into fixed income, substantially reducing the risk to the fund, but leaving no way to reduce the deficit by means of fund returns.

A swaps overlay is increasingly being seen as an attractive answer to the pension fund dilemma. Rather than reducing the riskiness of the assets, it is increasingly being realized that it is far more important to address the mismatch risk with the liabilities, especially in a world where the liabilities are going to fluctuate daily on a mark-to-market basis. The interest-rate swap structure is instrumental in reducing this mismatch since it generates a stream of fixed (in the case of straightforward interest rate swaps) or price-indexed (in the case of inflation swaps) coupon payments that fit very well the annuity profile of the fund. Using swaps overlays thus allows a fund to keep its expected portfolio return maintaining the right mix of riskless and risky assets in its portfolio, but to dramatically reduce the riskiness of the fund as a whole by decreasing interest-rate risk.

The worked example below (Table 3.1) illustrates this for an assumed pension fund with £1bn of liabilities, £0.8bn of assets (i.e. a 20% deficit), of which 70% is in equities. The top left data point reflects a value-at-risk of the deficit as a percentage of liabilities of 25%, indicating that with no swaps overlay on the pension example, there is a 5% probability that the deficit will rise by 25% of the liabilities in any one year. This is a substantial risk for any fund to be taking. Cutting equity weightings to zero only marginally cuts the value-at-risk on the fund from 25% to 20%. More significantly, it illustrates that equity risk is not the biggest driver for riskiness of pension funds: bond yield risk is.

The next process is for the pension fund to receive fixed-rate nominal and/or inflation-linked swaps overlays to

...while facing a risk-return trade off on asset choices.

Swaps allow pension funds to close asset-liability mismatch without giving up expected returns.

Equity risk is not the major driver for riskiness of pension funds: bond yield risk is.

match existing liabilities. A 100% swaps overlay strategy, would cut the variance in half, from 25% to 12%. It is critical to note within this process how much more attractive this is than the equity into fixed-income solution, since the risk the fund is running has been cut in half, yet there has been no change in assets, and expected asset returns have not been touched.

Table 3.1
Value-at-risk of deficits as % of liabilities

% hedge	% equity allocation							
	70%	60%	50%	40%	30%	20%	10%	0%
0	25	24	23	22	21	21	20	20
10	23	22	21	20	20	19	18	18
20	22	20	19	19	18	17	17	16
30	20	19	18	17	16	15	15	14
40	19	17	16	15	14	13	13	12
50	17	16	15	13	12	12	11	11
60	16	14	13	12	11	10	9	9
70	15	13	12	11	9	8	8	7
80	14	12	11	9	8	7	6	6
90	13	11	10	8	7	6	5	5
100	13	11	9	8	7	5	5	4

Source: Merrill Lynch.

Swaps will allow pension funds to focus again on the total return of their portfolio...

...as they will find new asset classes such as private equity, commodities or hedge funds...

Reducing risk by using swaps to match liabilities would allow pension funds to focus again on the total return of their portfolios. The idea is as follows. Once pension funds have used swaps to replicate their fixed or inflation-linked liability structure, the only requirement is for them to pay a floating rate (say, LIBOR) to fund the swaps. In effect, this frees completely their portfolio allocation, which can then be managed to generate the highest possible return against the floating rate. Pension funds become more like wealth funds or total return funds.

In this process, we suspect there will be a growing trend to reduce their equity allocation, increasing exposure to other, perhaps riskier asset classes. Some pension schemes have already announced a conservative approach, putting their portfolio into low-risk assets to generate LIBOR (like retailer W.H. Smith in 2005). However, it is important that most will choose a less conservative approach, and diversify their asset portfolios into alternative investments, commodities, etc. A diversification across asset classes can produce the same expected return, but should provide a better risk/reward profile, according to Markowitz portfolio theory that adding uncorrelated assets improves risk or reward. For instance, a fund that had a 7% assumed return for equities could assume an 8% return for the private equity asset class, and assume a 7% return for both hedge funds and commodities as asset classes, increasing the expected return from a shift into those assets, yet diversifying risk. Following the swaps overlay, there is no requirement at all for schemes to expect lower returns, and with the interest-rate risk mini-

mized on the liability side, it is logical to expect that many funds will choose to diversify assets within funds.

Another key aspect of diversification is cross-border investment. This has been historically limited by currency-matching requirements, but the use of derivatives makes it increasingly easy to manage overlay currency hedging. International diversification helps extend the efficient frontier, and reduce members' exposure to their own country risk, since the return on capital is likely to be correlated with labour income at a domestic level. Also, international investment may alleviate some of the issues raised by the narrowness of domestic capital markets, as discussed below.

There have been well-publicized examples of pension schemes diversifying assets (though it is unknown whether any of those schemes entered swaps overlays). The United Kingdom's biggest pension scheme Hermes announced in Q4 2005 on behalf of their owner British Telecom a £1bn move into commodities, after already announcing a \$1bn move into a fund of hedge funds. The Universities Superannuation Scheme, the United Kingdom's second-biggest pension fund, considered a £6bn move out of equities into alternative assets (Financial Times, 30 May 2006). The Swiss pension plan Nestle has increased its exposure to hedge funds to as much as 18%; and the biggest Dutch scheme ABP announced during 2005 a desire to increase its allocation to commodities (an asset class it first moved into in 2001). We expect more funds to follow these examples, especially after reducing scheme volatility by executing swaps overlay strategies.

There has already been a strong growth in the number of European and global asset managers providing what we will call 'LDI plus' absolute-return products, whereby they endeavour to provide pension schemes with LIBOR + 200 basis points (as example) return on capital, rather than the old 'vanilla' solution of providing returns benchmarked against fixed-income indices (such as the over ten-year EMU broad market). It is important to note, therefore, that there could theoretically be no bond buying at all through this whole process. However, this solution is only possible by means of receiving fixed-rate swaps, paid by the banking industry to funds, and the banks will need the underlying fixed-income instrument (or equivalent) to hedge these promises.

At this stage, we have investigated the consequences of the mark-to-market valuation of pension funds liabilities, taking asset prices as given. The impact of pension-fund decisions on financial markets, particularly on bond prices, has been increasingly discussed. The ECB president, Jean-Claude Trichet, has suggested that pension funds have the potential to significantly 'disrupt the smooth functioning of the financial system'. In the rest of this chapter, we discuss implied mechanisms and assess the risk of disruption.

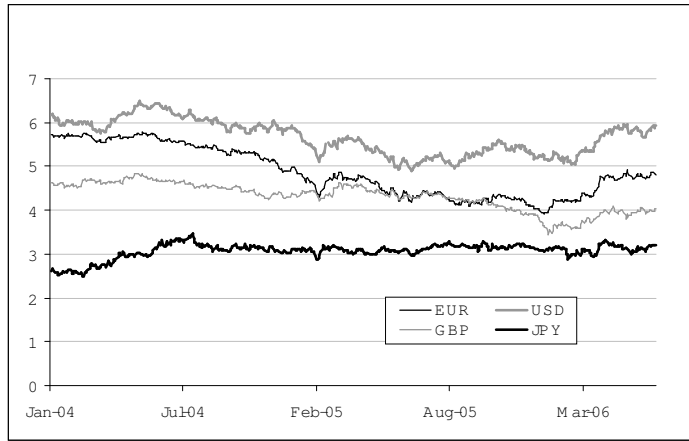
... and diversify internationally.

Pension funds may themselves impact financial markets.

In the UK, limited supply of fixed-income instruments has led to the collapse of long-term interest rates.

The potential for market-based solutions for the pension fund balance-sheet problem depends on one thing: available fixed-income products with which banks can hedge their swap provisioning. The absence of this has the potential to drive yields significantly lower. Indeed, this effect has already been seen in one financial market, which has been – not coincidentally – the first major area to address the pensions issue, and stands out as a warning signal as this issue is addressed globally.

Figure 3.4
15-year rates set 15 years forward



Source: Merrill Lynch.

UK 30-year inflation-linked debt fell to a record low of just 0.69% real yield in January 2006, entirely due to the growing demand for nominal and inflation-linked swap overlays in the United Kingdom. As a guide, actuaries Hymans Robertson (2006) estimate that the LDI business conducted by the top five firms in 2005 was already £26bn, and set to grow rapidly. At one point, 30-year real yield swaps starting in 20 years' time (which was possible to calculate given the existence of 50-year UK inflation-linked debt) traded intraday at -0.01%. This compares with traded long-end index-linked Gilt real rates averaging 3.0% over the first 25 years of their existence (1981-2006); on a longer time scale, real yields in UK nominal debt (deflated by headline inflation) have averaged 2.4% in the past 50 years. Even during the benign 1950-70 period before any global inflation shocks occurred, when inflation averaged a well-behaved 3.9%, real rates in Gilts averaged 1.5%, as much as 50 basis points above the current level. Moreover, the trend real growth is 2.25-2.5%, though we should be wary of comparisons with this, since doing so is to compare a risky cash flow (of the economy as a whole) with a riskless asset (a government bond). For comparison with the ultra-long-term, the average nominal yield on perpetual UK Gilts from 1700 to 2006 has been 4.5%, above the Q1 2006 average of 4.1%.

However we compare this, we draw the conclusion that

fixed-income yields have collapsed in the first major funded pension market to mark liabilities to market. We do not expect that abnormally low bond yields are likely to be reversed without a change in the structure of liabilities. The yield moves described above have increased the possibility that this will be attempted, and were a likely direct cause of the Department of Work and Pensions announcing in its White Paper ('Security in Retirement', 25 May 2006) a review of mandatory indexation of pensions in payment, and a desire to allow employers to alter retirement ages. The latter was reported in the press as a government desire, though this has not yet been published in the government's proposals. Without a major structural change in demand, it is difficult to see how supply can provide what capital is needed. If just 10% of funds executed 50% of their need to increase duration – a highly conservative estimate – this equates to equivalent buying of 30-year inflation-linked debt of around £43bn, somewhat higher than the record £11bn inflation-linked government bond issuance in 2004/05.

This problem is exacerbated by the absence of inflation-linked corporate issuance, partly due to IAS39. This standard forces companies to account for inflation-linked bonds as securities issued with embedded (inflation) derivatives, the derivative part of which must be accounted for at fair value. So companies that issue inflation-linked debt may find unwelcome volatility on their profit and loss account, as a result of shifting inflation expectations. Nominal bond issuance is not treated in this manner, even though such bonds also incorporate an inflation component. In a world moving to mark-to-market, a shift away from this process is difficult to envisage. Yet under FAS133, the US equivalent of IAS39, non-leveraged inflation-indexed debt issuance does not have the inflation embedded derivative separated from the host contract, and instead inflation is regarded as part of the general (nominal) interest rate. The exception to this rule given by US accounting is pragmatic and if applied in IAS could be a key factor aiding inflation-linked market development.

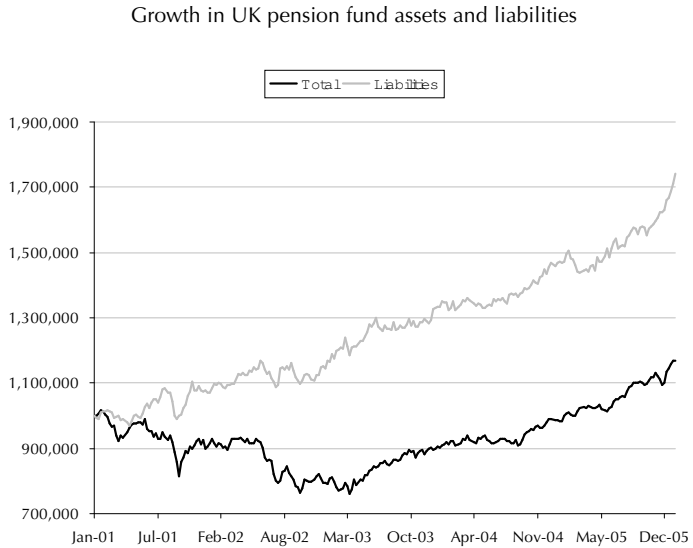
Increased global regulatory and legislative vigilance in the global pensions arena, with all major financial zones passing new laws within a three-year window, has the possibility of the extreme UK yield moves being translated across the globe. A measure of the demand-supply mismatch is easiest undertaken in the Netherlands, where the IMF estimates there is a matching need for €255bn of long-term bonds by pension funds (according to the IMF Global Financial Stability report (IMF, 2005)), whereas there is only €51bn of over ten-year euro-denominated inflation-linked debt outstanding. The supply of long-dated nominal fixed-income by European governments is much bigger, but the low long-term bond yields may reflect the fact that issuance is being

*Accounting standard
IAS39 limits
corporate issue of
inflation-linked
bonds.*

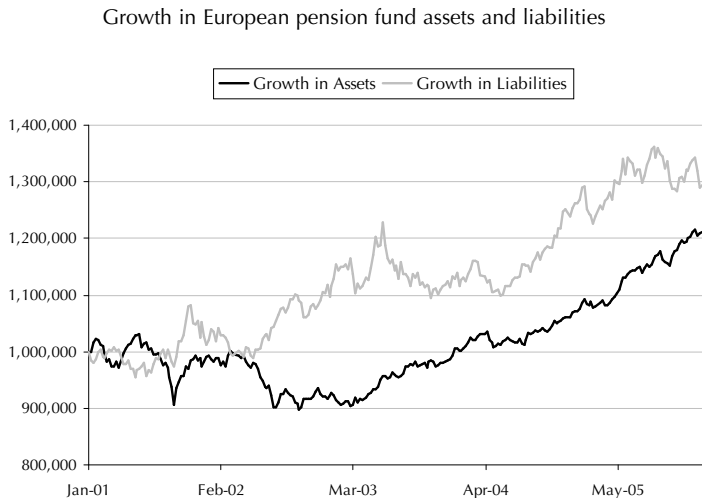
*The risk of a global
shortage of bonds...*

digested by the marketplace even before the structural increase in demand actually materializes. A case in point is the 50-year, €6bn nominal bond issued by the French Treasury in February 2005: only 8% of it was distributed to pension funds, but many other buyers bought it on the expectation of future pension fund demand.

Figure 3.5
The UK wall of death
on liability growth



Note: Assumes no change in asset allocation, no net new investment and no index rebalancing



Notes: Assets: Assumes constant asset allocations in line with The Netherlands. 40% equity, 44% govt bonds, 10% property, 5% cash - property allocation distributed pro-rata to other asset classes
Liabilities: discounted using zero coupon 15 year rate from swaps curve
Sources: Datastream, Bloomberg, author's calculation.

Even if there were changes to European and international accounting standards, the problem remains that private-sector bond issuance remains too low to match possible demand. Table 3.2 illustrates that for every country, a move to bonds, or equivalent liability-matching overlay (being as conservative as possible, representing 70% of the pension assets), outstrips the entire outstanding of long-dated nominal and inflation-linked debt. Note that at the OECD, Schich and Weth (2006) documented the supply-demand imbalance in the G-10 government bond market across the duration spectrum, and concluded that the gap was more severe in the 10-25-year maturity bucket. Thus efforts to match market demands are welcome, especially in the face of such uncertainties about how quickly such demand will accelerate. This raises the question of whether governments will be ready to change their own liability profile and issue longer-dated bonds into this demand.

	Outstanding supply		Potential demand	
	Corporate and govn. bonds (10+ yrs) (US\$m)	Corporate and govn. IL bonds (10+ yrs) (US\$m)	Pensions fund assets (US\$m)	Assets as % of total current supply (assuming 70% allocated in bonds)
US	865,014	87,218	8,123,000	597
EMU	820,725	51,212	1,274,000	102
UK	497,182	71,352	1,621,000	200
Japan	430,441	0	3,235,000	526

Table 3.2
The demand-supply
mismatch for long-
dated bonds

Notes: EMU pension fund assets an aggregate of Netherlands, Germany, France, Ireland. Inflation-linked bonds outstanding calculated at face value.
Sources: Watson Wyatt, Merrill Lynch global index system.

The best example of issuers' pragmatism is the opening of a truly global marketplace for inflation-linked debt. The United Kingdom started issuing in 1981, together with emerging-market and smaller European issuers. The United States started it in 1997, and France commenced the European market in 1998 with domestic inflation and extended it in 2001 with euro-area inflation. They were joined in Europe by Greece, Italy and Poland. Germany issued its inaugural inflation-linked bond in March 2006. The total share of inflation-linked debt is currently around 25% in the United Kingdom and 10% in France.

The same holds for long-dated nominal debt. The US Treasury announced in October 2001 that it was cancelling its 30-year issuance programme for two interconnected reasons: the lack of natural demand base of the product, and the steepness of the yield curve. It restarted its issuance of the product in February 2006, against a background of growing natural demand base (pension fund industry) and a sub-

*... can be mitigated
by government
issuance ...*

stantial flattening of the yield curve. When the 30-year US Treasury bond was reissued, the 2-year to 30-year yield curve spread was trading at 0 basis points, i.e. no curve premium. Supply is set at a moderate \$20-30bn a year, but there is obviously an ability to increase this as necessary or as recommended in the marketplace. In 2005, the opening of 50-year debt products by France, Poland (in euros) and the United Kingdom (a restarting of their 50-year product) was also welcomed. The UK and French 50-year bonds now have €11.6bn and €11.3bn outstanding respectively. As with the United States, a primary reason for the lack of ultra-long duration issuance by governments has been the steepness of yield curves and a lack of desire to pay higher funding costs.

In principle, governments and pension funds should have their interests aligned by market forces, since the fall in yields makes it more advantageous for governments to lock in low levels of real or nominal bond yields. This is exactly what has already happened in the United States and the United Kingdom, with inverted yield curves from the five-year maturity onwards, and has even materialized in continental Europe since end-2005, with the 50-year yield being lower than the 30-year yield by -5 basis points at end-March 2006. As a result, we should expect government debt duration to increase relative to previous trends. This has happened in France, with duration going up one year to 6.6 years between end-2003 and end-2005.

...but there is a limit to government response.

There is a limit to government response, however. First, as Table 3.2 shows, there is clearly no way that even aggressive government issuance could provide enough long-duration capital for pension fund needs if there were a sharp acceleration in liability matching. Second, there is a limit to the ability of debt management offices to adapt their issuance to evolving demand conditions, since they have to maintain liquidity across the whole maturity spectrum, all the more so as other actors, such as bank treasurers, money-market funds or Asian central banks, are big buyers of shorter-dated securities.

In addition, one might question the notion that governments should issue at all into liability-driven demand. This amounts to taxpayers providing an insurance on their own pension liabilities, with many frictions involved in the process (including the cost of using financial instruments). Even worse, since ultra-long debt will be redeemed in part by unborn taxpayers, workers may just be buying a cheap insurance whose cost will be passed on to future generations. In theory, a more cost-effective way to proceed, albeit rather difficult to implement in practice, would be for the government to enter into an off-market swap with every pension fund, providing them a risk-free (nominal or real) return. This would provide the same level of protection while avoiding the unintended consequences for market prices. This is in line with the proposal of Modigliani and

Muralidhar (2004) that the Treasury enter in a swap with a funded DB scheme run by social security.

3.3 The scope for market innovations

The supply-demand imbalance therefore has the potential to become extremely worrying given the dependence of the financial system on one instrument. We do expect that the marketplace will eventually help to find a solution to this, by re-engineering private-sector balance sheets. For instance, with 50-year UK real yields at 1%, a range of companies – notwithstanding accounting issues – will find it worth increasing gearing by issuing large amounts of debt, using part of it to inject into the pension plan to pay down deficits, and part to execute equity buybacks. An all-in cost of around 3.75-4% plus credit spread makes this advantageous to companies paying high dividend yields. The market will ultimately provide part of the solution, but only if pricing becomes extreme first. Governments should foster such developments by removing regulatory obstacles to corporates issuing inflation-linked bonds. Also, it should be noted that the country where this problem is more acute is the United Kingdom, due to the limited international diversification of pension funds and the narrowness of domestic capital markets. Dutch or Danish pension funds have been able to use the much deeper euro-area market to hedge their liabilities, and the impact on market prices has been much less painful. Given the UK is unlikely to join the euro, this argues for the need for much greater international diversification of capital by UK institutions.

However, up to now there have been fewer solutions surrounding the hedging of longevity risk. The European Investment Bank's (EIB) longevity bond (see Box 4.2) was withdrawn a year after issue, with blame attached to the high upfront capital outlay compared with how much longevity insurance was being gained. Such problems are being challenged, with suggestions that problem can be overcome by increasing gearing (Blake et al., 2006), and as pension schemes hunt for increasingly sophisticated long-term solutions to manage liabilities, a welcome return to a focus on longevity bond issuance is likely. Ultimately though, the problem with longevity bonds is that there are no natural government payers, since they would logically be buyers of longevity bonds themselves, given the link between life expectancy and the cost of increased social provisioning. A market for this product should eventually appear, with reinsurers as payers of this product, but will likely take a number of years to develop.

Other market innovations can be used in future for tackling soft pension claims, for instance using inflation-linked options. The Netherlands pension system allows for a vol-

Other market solutions exist to match fixed income risk, ...

...longevity risk,...

.. and pension funds' soft claims.

untary indexation of inflation, and many schemes have indexation written into contracts, that is, the funds will be indexed if funding ratios are above a certain level. Thus the schemes are exposed to soft inflation. So schemes want to be paid inflation if bond yields rise above a certain limit. Such an inflation option needs to use a market rate that is correlated to funding ratios, and as yields rise, funding levels rise, triggering indexation.

With inflation options and longevity bonds both expected to become more of a focus in coming years, financial markets should be able to provide much of the long-term solutions for pension schemes. Indeed, such solutions showed up even as recently as February 2006, with the prospect that hedge funds, among others, are interested in buying out companies' pension exposures and applying for regulatory approval to do so, with the view that they can provide a total return over the long run which is consistently higher than current buy-out rates, which can be as low as 1% below prevailing long-term government bond yields.

The persistence of an excess demand for bonds might become an issue for financial stability, on several grounds. First, government bond yields are considered the risk-free reference for the pricing of all financial assets, equity included, and they influence real-world savings and investment. Anomalous bond prices will therefore distort price signals on all other financial markets, and they will hamper the transmission of monetary policy as central banks are progressively losing control of the long end of the yield curves. The inability of central banks to move long-term rates might become an issue in the case of an inflationary shock, especially so in those economies where saving and investment decisions depend more on long-term than on short-term rates, such as in continental Europe.

There is a specific concern over falling business investment. As bond yields have fallen, pension deficits have risen sharply. In the United Kingdom they increased by 24% in 2005, according to Mercer Human Resources Consulting (2005), despite global equities returning 29% in the same time frame. Total private-sector business investment has fallen sharply in the United Kingdom, and was running at just 1.3% year-on-year at end-2005. It has since picked up to 2.8% year-on-year, but this is still down from a 20-year average of 5%, and is partly blamed on the desire of companies to remain cautious, keep cash levels high and/or inject capital into their pension funds, in the face of such pension liabilities or deficits. Paul Tucker, executive director for markets at the Bank of England, has already raised this, more as a question than a statement: 'There is a possibility that there may be a pause in investment as they [pension funds] consider what to do about pension shortfalls...it is hard to be sure but that may be the case' (*Sunday Herald*, 26 February 2006). Nevertheless, we could alternatively argue that the

Issues for financial stability: massive risk transfer to financial markets can confuse monetary policy,...

...hit business investment,...

cost of capital is collapsing in the United Kingdom as bond yields fall, which should actually lead to higher profitability and investment. Acting against this theory is that this deceleration in investment has been a global phenomenon. At this early stage we can only agree with the remark above, and conclude that the jury is out. But the issue needs monitoring.

Lastly, abnormally low government bond yields weaken the discipline exerted by financial markets on fiscal policies. This is all the more worrying as public debt is already on an unsustainable course in the United States and in the euro area. In this respect, pension funds play the same role as Asian central banks: they are encouraging the profligacy of governments in a perverse, albeit unintended way.

There is a limit to the de-risking of pension-fund balance sheets with market-based solutions. Since governments, corporations and retail investors cannot absorb all duration, inflation and longevity risk, financial intermediaries risk piling up additional risks on their own balance sheets. Given the short horizon of banks, this might reinforce the risk of market disruption, say in the case of abrupt movements in asset prices, or sharp revisions in inflation or longevity expectations. This does not yet appear as a concern for bank supervisors, but it could become one against the wider background of the banking sector's credit exposure (see Trichet, 2005, for a balanced judgement).

...weaken market discipline on government finance,...

... and threaten the stability of the financial system.

3.4 Conclusions

Given the scale of mismatch and the expected acceleration in liability management being driven by recent and forthcoming changes in legislation around the world, we are moving into a situation where bond yields stay lower for longer, yield curves stay flatter for any given economic scenario, and we should expect pension funds globally to continue a process of portfolio diversification from the historic equity versus bond debate to a greater focus on alternative investments such as private equity, hedge funds and commodities. This does not yet appear as a concern to bank supervisors (Trichet, 2005), but it could become a factor of systemic risk if banks continue to store longevity and inflation risk, particularly in periods when they would be less capitalized or in the presence of higher asset-price volatility. This is a desirable outcome both for pension fund participants and for the economy as a whole. Given the limited depth of markets and the possible risks for financial stability, there is, however, a limit to the extent pension funds will be able to transfer their liability risks to financial markets. Market-based solutions can complement, but they cannot be a substitute for, restructuring their liabilities, as discussed in Chapter 4.

4 Optimal Risk-Sharing

Chapter 3 explored how pension funds can use financial markets to better match their liabilities. In this way, pension funds can reach the risk-return trade-off by reducing unpriced mismatch risk without giving up returns. This chapter takes a different approach by considering the restructuring of these liabilities. In other words, how should the promises of the pension funds be redesigned so as to optimize the trade-off between return and risk? One of the risks of redesigning portfolios to match the secure defined benefits of DB pension plans is that young individuals fail to take advantage of the risk premium that is associated with investment in risk-bearing capital. By shifting financial risks to other parts of the financial system, pension funds thus cannot act as a stable long-term investor on behalf of its participants with a long-run investment horizon. In Chapter 3 it was suggested that the return-risk trade-off could be improved by using financial swap overlays to minimize unpriced risk and then allowing for an increase in the riskiness of portfolio assets. Chapter 3 described reaching the risk-return trade-off, taking as given the liabilities of the pension funds. This chapter, in contrast, discusses moving along that trade-off to select the optimal point on it by determining the optimal liability structure of pension funds from the point of view of the participants.

The scenario of extensive liability-driven investment aimed at matching secure pension liabilities¹² not only partly locks in the pension cost for young, active individuals but also creates risks for macroeconomic and financial stability and for growth. In particular, the associated increase in pension costs and required additional saving may exert a destabilizing deflationary impact on the economy. Moreover, pension funds shedding risk dries up the supply of risk-taking capital, thereby harming innovation, economic growth and employment creation. At the same time, the additional demand for fixed-income assets may undermine fiscal discipline and widen global financial imbalances. Whereas the return on fixed-income assets thus falls, risk premiums increase on risk-bearing assets.

Redesigning liabilities of pension funds facilitates risk-sharing within the funds as opposed to risk sharing through the financial market.....

.....and promotes macroeconomic stability.

These developments may be averted if pension funds restructure their liabilities. This chapter focuses on the liabilities rather than the assets of pension funds.

This chapter is structured as follows. Section 4.1 first describes and evaluates the demise of traditional defined-benefit schemes. This is part of a broader trend of governments, companies and other private institutions de-risking their balance sheets, thereby shifting more risks onto the balance sheets of households. Section 4.2 then turns to the optimal design of the liabilities of pension funds so as to facilitate intergenerational risk-sharing through capital markets and among pension-fund participants without having to rely on company or government guarantees. How can shocks best be shared so as to protect vulnerable pensioners against excessive risks while at the same time containing the costs of building up pensions rights and providing the economy with sufficient risk-taking capital? In this context, we explore how macroeconomic stabilization can be reconciled with financial market discipline, which is imposed by market-to-market valuations of assets and liabilities but tends to be cyclical. In the same vein, the tension between the discipline of capital funding and the flexibility of allowing risk-sharing among non-overlapping generations is investigated. We explore how the political risks associated with intergenerational risk-sharing can be contained. In this connection, section 4.3 investigates how pensions should be taxed so as to foster fiscal discipline and at the same time enhance intra- and intergenerational risk-sharing. Finally, section 4.4 summarizes the policy conclusions.

4.1 From occupational defined-benefit plans to collective DC schemes

The demise of traditional occupational DB plans ...

Occupational DB plans in which companies guarantee fixed pension benefits by absorbing all financial-market and demographic risks are on their way out. Several developments have accelerated the demise of these plans. First of all, the ageing and maturing of pension funds have increased the cost of guaranteeing pension benefits because these developments have expanded obligations compared with the premium base (see Figure 4.1). This implies that unanticipated shocks in financial markets and longevity require larger changes in pension contributions to shield pension rights from these shocks. The security implicit in guarantees has thus become more expensive. With the financial and actuarial risks of pension obligations starting to dominate those of their core business, companies no longer want to underwrite the risks of their pension funds. As an example, General Motors pension liabilities at the end of 2005 were roughly equal to its market capitalization, at \$11bn, against \$12bn. A number of US airlines (e.g. United, US) have

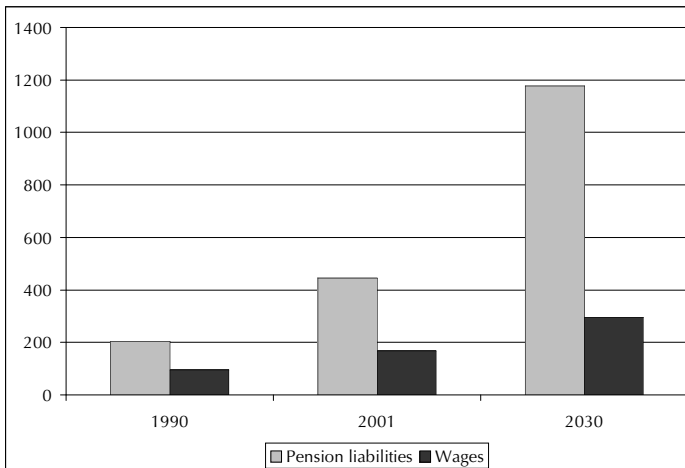


Figure 4.1
Liabilities and
premium base of
Dutch pension funds,
1990-2030

Source: CPB 'Document 67', The Hague.

already entered Chapter 11 insolvency protection, and have been able under that law to hand their pension schemes to the PBGC. British Airways has the United Kingdom's biggest deficit (last recorded at £1.3bn, but expected to have risen to as much as £2bn in 2005) as a proportion of market capitalization (£3.9bn), and overall liabilities of up to £12bn – three times the size of the sponsoring company. The finance director stated in April 2006 that the company will not buy any new planes until the pension deficit has been resolved, and it is looking at ways to cut costs, such as increasing retirement age – this is just one example. For year-end 2004, six large UK companies reported deficits in excess of 30% of market capitalization.

New accounting rules (FRS 17/IAS19/FAS87; see also Chapter 3) that make pension risks assumed by companies more transparent strengthen this tendency (Visco, 2005, Annex II.1). Companies want to focus on their core business. They do not want to, in fact, become an insurance company in which pension risks dominate the risks associated with their other, core, businesses. Indeed, the worldwide trend is that companies increasingly withdraw from their role as absorbers of pension risks. Governments have shown some willingness to become bearers of last resort of pension risks, as shown in the United States by the expanding role of the PBGC, and in the United Kingdom by the creation of the PPF in 2005. In September 2005, the PBGC had \$80.7bn of liabilities and a \$108bn off-balance exposure to probable terminations of corporate pension plans, as compared with \$63.6bn and \$96bn in 2004. But government intervention is limited to distressed companies. As a direct consequence, the participants of pension funds are confronted with increasing pension risks. More generally, households are absorbing more risks on their balance sheets, as some private financial and non-financial institutions are

*...as a result of a
more dynamic,
competitive world
economy ...*

de-risking their balance sheets in response to new accounting rules that force them to make their balance-sheet risks more transparent.

Another reason for the demise of DB plans with a company guarantee is an increasingly competitive and dynamic world economy. More intensified competition in a dynamic knowledge economy implies that companies exhibit shorter life spans and enjoy smaller rents with which they can guarantee DB pensions. Indeed, DB promises more and more often end up being empty; they in fact turn out to become DC plans in which workers are the residual risk-bearers because companies are in financial distress and go bankrupt at the same time as when the pension fund is in financial distress. The probability that a firm will experience periods of financial distress during the long horizon of the pension funding is substantial, especially in sectors facing intense international competition. Just as with the other holders of corporate debt, workers have in fact written a put option to the shareholders of the firm. These shareholders, who enjoy limited liability, reap the upside of the returns on the assets in the pension fund, but shift the risks of the downside to the participants of the pension fund or the taxpayers, if a public body (such as the PBGC and the PPF) guarantees part of the pension promise made by the company. This put option becomes increasingly valuable in a dynamic, more competitive economy with substantial volatility. This option also gives rise to moral hazard as struggling firms maximize the value of this put option by investing in risky assets or reducing their contributions to the fund (Bodie, 2005). As a result of these developments, DB plans with a company guarantee are on the decline in several major countries, including the United States and the United Kingdom. Firms no longer allow new workers to enter their DB plans or have terminated them altogether. The highest-profile example of this is IBM, which in January 2006 announced it was closing its US DB pension plans on 31 December 2007, moving employees to individual DC plans. This is a new phenomenon in the United States, and is gathering pace quickly in the United Kingdom. The Association of Consulting Actuaries calculated in 2005 that 68% of DB UK schemes are already closed to new entrants, 10% are now closed to existing members, and a substantial 43% of companies are planning to reduce spending on pensions. This is a recent move, with 52% of schemes reporting that they have closed their DB pension plans to new entrants within the last five years. In the same time period, 25% of employers have moved employees to DC or to DB/DC hybrid schemes.

*...should be
welcomed...*

The increased bankruptcy risk of sponsoring companies in a dynamic, more competitive economy implies that a shift away from occupational DB pensions with a company guarantee towards stand-alone pension funds should actual-

ly be welcomed. The DB claims of the workers on the companies they work for are in fact debt claims. The associated credit risk implies that workers are exposed to the risk of losing not only their jobs but also part of their pension if the company they work for goes bankrupt. They tie their fate to the company as regards not only their human capital but also their pension wealth. To better diversify risks, workers should invest their pension savings in the capital market rather than the company they work for. Indeed, modern capital markets allow workers to do exactly that. Not only modern capital markets but also transitional labour markets help emancipated workers to become less dependent on the company they work for. Indeed, in current labour markets with increasingly mobile workers, the employer's objective of using a DB plan with backloaded benefits to tie employees to the firm becomes less important (see also section 5.4 and Box 5.2). Finally, stand-alone pension funds may suffer from fewer conflicts of interest between the employer and workers (see Chapter 2). Indeed, stand-alone pension funds can focus on serving the interests of the participants alone rather than having to serve the objectives of the employers as well.¹³

In the absence of a risk-absorbing sponsor, participants of the pension funds face a hard budget constraint. As a direct result, households become the explicit risk-bearers as participants of stand-alone pension funds rather than as shareholders of the companies that guarantee DB pensions. Participants of stand-alone pension funds thus have to share risks among themselves and by using capital markets. In that sense, DB plans in which a sponsor absorbs financial-market and actuarial risks are replaced by DC plans in which the participants themselves buffer these risks. This change in the way risks are shared does not necessarily imply, however, that pension plans need to become individual DC plans or that the government should absorb the risks through implicit or explicit public guarantees. Indeed, as explained in Chapter 2, collective pension funds can create substantial value compared with individual DC plans. By allowing financially illiterate individuals to delegate their financial planning during their life course, these collective pension plans assist them to properly exploit their long-run investment horizon. More sophisticated life-cycle investment on behalf of long-term investors stabilizes financial markets and facilitates macroeconomic stability.

...but collective pension funds add value compared to individual schemes.

4.2 Optimal risk-sharing through hybrid pension schemes

Explicit agreements about how participants share financial-market and demographic risks are gaining importance for several reasons. First, participants are increasingly becoming

Rules rather than discretion...

the residual risk-bearers of the funds now that private and public sponsors are explicitly withdrawing from that role (as they are de-risking their balance sheets). Households thus should be informed about what risks they are exposed to so that they can adjust their portfolios accordingly. Indeed, participants of pension funds should know what type of asset their pension right in fact amounts to. Second, risks increase as pension funds become mature and participants age. The way these risks will be shared is thus increasingly important for the participants. Third, information and communication technology helps to define individual property rights without giving rise to excessive transaction costs.

...alleviate political risks...

Making explicit agreements about how risks are shared before the shocks actually materialize (i.e. implementing state-contingent rules), rather than allowing for discretionary decision-making ex-post, also prevents costly political conflicts when the shocks hit. In this way, these risk-sharing rules alleviate political risks and pension anxiety among workers, which can depress consumption and exert a deflationary impact on the economy. Moreover, sharing risks ex-ante allows for contracts that are advantageous for all parties (i.e. giving up resources in one contingency is traded with receiving resources in another contingency). After the shock (i.e. ex-post when the contingency that actually materializes is known), in contrast, one of the parties has to give up resources. Insurance has then become redistribution. Indeed, more information (i.e. about which contingency materializes) may actually block trade that is mutually advantageous ex-ante. Finally, explicit risk-sharing on the basis of complete contracts avoids litigation, which is often the result of ambiguous, incomplete risk-sharing agreements, and which generates additional costs. In 2003, the UK FSA commented that the pensions misselling scandal had cost the industry over £11bn in compensation payments.¹⁴

...but limit flexibility.

In designing state-contingent rules, pension funds face a trade-off between commitment and flexibility. On the one hand, pension funds may want to create clarity ex-ante how risks are shared, for the reasons described above. On the other hand, funds may want to leave some discretionary powers to respond to unforeseen shocks. This latter flexibility implicit in incomplete contracts requires, however, that participants trust the governing board to act in the interests of the participants. This requires professional governance (see Chapter 2).

Optimal intergenerational risk-sharing...

Efficient risk-sharing implies that after an adverse shock consumption of all agents declines by the same percentage.¹⁵ In this way, risks are shared as broadly as possible. With permanent income determining consumption, everybody's wealth should thus decline by the same percentage after a negative shock. Efficient risk-sharing is important because it allows an economy to take more risks without endangering

macroeconomic stability. This boosts innovation and economic growth through entrepreneurship and experimentation.

Pension funds play a key role in implementing optimal risk-sharing among cohorts featuring a different composition of wealth. The most important components of aggregate wealth are pension wealth, housing wealth and human wealth (i.e. the discounted value of future labour income). For younger workers, human wealth is the most important wealth component. For older participants, in contrast, pension wealth accounts for most wealth. In fact, retirees have (almost) completely depreciated their human capital.

Pension funds allow generations to share financial and human capital risk. In particular, by linking pension benefits to the wages of workers, retirees share in the wage risks of workers. Moreover, in traditional final-pay schemes, young workers share in financial market risks faced by the older participants through so-called recovery premiums. In the case of an adverse financial shock, for example, pension premiums are raised so as to contain the decline in pension benefits paid out to retirees, protect the pension rights of the workers and reduce the resulting funding deficit. In a final-pay scheme with wage-indexed retirement benefits, the young, active participants in effect borrow from the older, retired participants by issuing non-tradable wage-indexed bonds to these older participants and using the funds to invest in the financial market.

Reliance on fluctuating-recovery pension premiums to implement this intergenerational risk is increasingly costly in terms of adverse demand- and supply-side effects. This is especially so because the ageing of the participants of pension funds demands larger changes in contributions to contain the fluctuations in pension benefits, because pension obligations expand compared with the premium base (see Figure 4.1). As regards the supply side, the fluctuating pension contributions distort the labour market. Indeed, higher pension contributions aimed at correcting funding deficits in fact act as an implicit tax on labour. Workers will try to avoid paying this tax by working in the informal sector or moving to another sector. In this way, workers can shift the burden of the implicit tax to others, such as consumers in non-tradable sectors or to shareholders in tradable sectors facing intense international competition. Underfunding can in effect be viewed as debt overhang that will depress economic activity in the sector (or firm) concerned.

Fluctuating-recovery pension premiums are likely to affect the demand side of the economy in a pro-cyclical fashion. In particular, in a recession, risk premiums tend to be high, while risk-free interest rates are typically low. High risk premiums reduce the value of risk-bearing assets (including equity). With mark-to-market valuation, low interest rates imply that the value of the guaranteed liabili-

...can be achieved through collective pension funds...

...among younger and older generations of participants.

Risk-sharing through pension contributions in final-pay schemes distorts the labour market....

...and destabilizes demand.

ties is substantial, at least as long as the pension funds have not hedged the interest rate risk through derivatives.¹⁶ With the low funding rates that result for the low value of assets and the high value of liabilities, pension funds have to raise premiums in a recession, which hurts the cash flow of workers and amplifies the recession. This pensions accelerator mechanism is thus comparable with the financial accelerator arising from worsening credit conditions (Bernanke and Gertler, 1989).

*Risk-sharing
through pension
rights...*

Some large pension funds have moved away from final-pay schemes to career-average schemes with conditional indexation of nominal pension rights, in part because of the adverse effects of volatile-recovery pension premiums (see Box 4.1). In this way, younger workers share in financial-market risk through not only recovery-pension premiums but also their pension rights. In the case of an adverse financial shock, for example, workers face not only higher pension contributions but also a lower real value of their pension rights. Older workers, who have accumulated the most pension rights, are most exposed to this risk.

Box 4.1

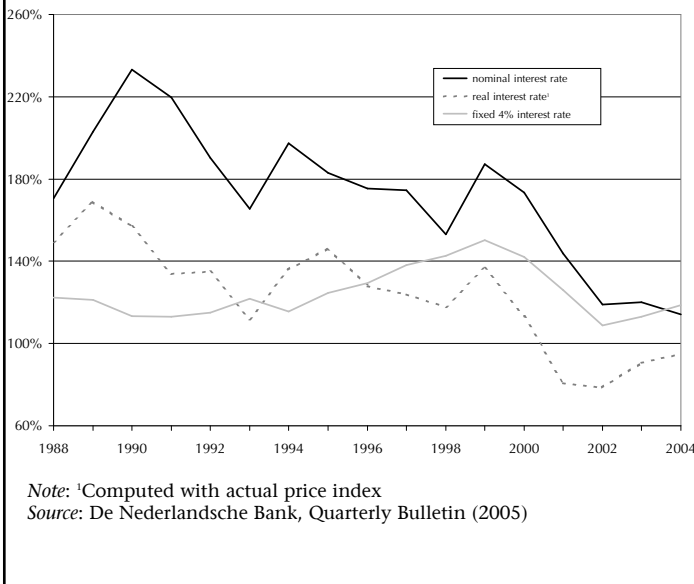
Risk-sharing in industry-wide pension funds in the Netherlands

Dutch pension funds distinguish between hard pension rights, which typically are defined in nominal terms, and soft pension rights, which typically involve the intention of the pension funds to index pension rights to prices or even wages. The solvency rules in the new Dutch supervisory framework FTK are based on the hard pension rights only. Indeed, the reported funding ratios for Dutch pension funds are generally based on the hard obligations. The funding ratio would look substantially less healthy if also the soft obligations would be taken into account (see Figure 4.2).¹⁷ The supervisory rules for cost-based premiums, in contrast, take into account not only the hard but also the soft rights that are being accumulated.

By shifting away from final-pay schemes to schemes that compute pension rights on the basis of career-average earnings with conditional indexation, pension funds have made the indexation of the pension rights of both the already retired participants and the active members conditional on the financial performance of the pension fund. At the same time, several large pension funds base their indexation policy now on explicit rules in the form of so-called policy ladders. In the past, these funds would make only rather ambiguous statements that pension rights would be indexed as long as the financial position of the fund would allow it. These policy ladders can be viewed as more complete contracts compared with the previous rather incomplete contracts, which allowed for a lot of discretion. They state explicitly how both the extent of...

...indexation of pension rights and a possible recovery premium aimed at correcting underfunding (and levied on top of the cost-based premiums for the newly accumulated pension benefits) vary with the funding ratio.

As a result of these reforms, the active working population absorbs more risks in terms of their pension rights than in terms of recovery-pension contributions. The ratio of soft to hard pension rights is especially large for young participants because of the long duration of their implicit claims on the funds. They are thus exposed to more inflation and financial-market risk than old participants are. The policy ladders help participants to better understand the risks they are exposed to. Moreover, more stable contributions avoid the macroeconomic disruptions associated with large fluctuations in recovery-pension premiums.



Box 4.1
(contd.)

Figure 4.2

Funding ratio of Dutch pension funds on the basis of different discount rates for computing liabilities

One can further refine this risk-sharing by having the pension rights of the younger workers fluctuate more with the funding ratio. For these workers, pension wealth accounts for only a small part of overall wealth. Hence, to achieve the same relative change in overall wealth for all cohorts (as required by optimal risk-sharing), the pension wealth of young cohorts has to fluctuate more than that of older generations if a shock hits the pension funds. Adapting pension rights in this way, one can shift financial and demographic risks to younger generations without having to rely on the recovery-premium instrument. Whereas pension rights for younger generations are relatively uncertain (i.e. the system resembles a DC system), they are less risky for the elderly. As individuals grow older, they thus transform their DC claims into DB claims.

...of especially young workers...

...is consistent with optimal life-cycle investing...

This hybrid system is consistent with optimal investment behaviour over the life cycle (Bodie et al., 1992). Young agents invest more in risk-bearing assets because most of their wealth consists of less risky human capital. As agents grow older, they move more into secure assets, which are preferably also protected against inflation (Teulings and de Vries, 2006). If agents exhibit loss aversion at retirement, hard guarantees are rather expensive for young agents in view of their long horizon (Benatzi and Thaler, 1995). For older, loss-averse agents with shorter horizons, risk-bearing assets are less attractive. These arguments for diverging investment behaviour of young and old become even stronger with habit formation. In that case, the young have more time to adjust their habits and thus should be less risk averse than the old. In any case, downward protection of the standards of living of the elderly, who have depreciated their human capital, thus goes together with more risky DC-type pensions for the young, who can exploit their human capital to buffer risks. This gives the young more upward potential so as to keep their pension costs within bounds. In this way, a hybrid system of both DC and DB elements emerges, involving risk-sharing between young and old participants.

...through generational accounts and contracts between younger and older members...

Pension funds can implement this intergenerational risk-sharing through so-called generational accounts, in which, ideally, each cohort should hold a specific portfolio of financial instruments. In the absence of complete capital markets with the appropriate financial instruments such as wage-indexed bonds, however, the pension fund can create its own non-tradable implicit financial assets to facilitate risk-sharing between the participants of the pension funds. To illustrate, a pension fund can promise to index some of the pension rights of the retirees to the wages of the active participants of the fund while at the same time making the pension rights of these active participants conditional on the funds that remain available after meeting these obligations to the retirees. The pension fund then in fact issues non-tradable wage-indexed bonds on behalf of the active participants to the retired participants and uses the funds borrowed from retirees to invest in the financial markets. In this way, macro human capital risk and financial risk is shared across generations as the young get rid of human-capital risk and the old shed financial-market risk. If pension funds differ in their age composition, swaps between older and younger pension funds can in theory facilitate this risk-sharing further.

...involving risks that are not yet traded in financial markets.

Similarly, in the absence of a well-functioning market for longevity bonds (see Box 4.2), longevity risks may be shared between younger and older participants in a pension fund. In this way, pension funds in effect create new non-tradable financial-assets instruments (including deferred real annuities or put options with a long horizon) that are not yet available on financial markets. Pension governance and

supervision should ensure that these contracts between generations are not only beneficial ex-ante but also can be enforced ex-post (i.e. after financial and human capital risks have materialized). Immediate and also continuous adjustment of pension rights to developments in capital and labour markets can help in this respect.

There are a few examples of tradable, longevity-related securities. In December 2003, Swiss Re, a reinsurance company, issued a \$400m, three-year maturity mortality bond, aimed at shedding some of the company's exposure to extreme mortality episodes. The principal of the bond was indexed to the maximum value over the life of the bond of the average mortality rate in the United States, United Kingdom, France, Italy and Switzerland. In November 2004, the EIB introduced a £540m, 25-year maturity longevity bond, also called a survivor bond, linked to the proportion of the UK population aged 65 in 2003 who would be still alive at the coupon dates. The longevity risk would be transferred by the EIB to Partner Re, another reinsurance company. The high capital outlay for the given longevity insurance made it unpopular; consequently it took in few assets and was withdrawn a year later. For a full discussion of longevity bonds, the reader can refer to Visco (2005, box II.4).

Box 4.2
Mortality bonds and
longevity bonds

The existence of liquid markets for wage-indexed and longevity-indexed bonds would lessen the need for such internal risk-sharing mechanisms in a pension fund. This would allow participants of a pension fund to trade not only with other participants in the same fund but also with capital-market participants generally. Indeed, there is a strong theoretical case for developing macro-markets for contingent securities (Shiller, 2003 and Athanasoulis et al., 1999). This is unlikely to happen soon. There are currently few 'natural payers' of mortality and wage risk: mortality risk is mainly borne by reinsurers, and it is hard to think of an entity with wage-related income, except perhaps for governments. Also young pension funds (with a large premium base) could issue wage-indexed bonds and longevity bonds, provided that the demand by older pension funds (i.e. funds with short durations of liabilities) was sufficiently large to boost the prices of such bonds. Meanwhile, governments are the most likely providers, as they are in a good position to shift this risk on to future and young generations. These generations may be able to absorb these risks best, for example through a longer working life associated with more human-capital investment. However, governments already bear a substantial longevity risk on their balance sheets through public PAYG systems. It is by no means obvious that they should increase their exposure to this risk. In any

case, the case for issuing longevity bonds seems stronger for governments that have shifted the longevity risk in the public pillar to their citizens through notional DC systems that index annuities to life expectancy. The limited, albeit developing, supply of inflation-protected bonds in G-7 countries suggests that the introduction of wage-protected bonds is not a likely option for government debt management offices.

Optimal inter-generational risk sharing prevents adverse supply effects...

Having younger workers share in financial-market risk through their pension rights rather than recovery-pension premiums yields smaller adverse effects on the supply- and demand sides of the economy. As regards the supply side, intergenerational risk-sharing does not distort labour incentives if pension rights rather than recovery-pension contributions fluctuate with macro-financial-market and longevity risks affecting the funding ratio. Intuitively, workers cannot escape the ex-post transfers to retirees by working less or by moving to another sector (including the informal sector), as transfers occur at the same time shocks occur. Debt overhang is excluded, as liabilities move together with assets. Funding deficits are thus excluded so that workers are no longer taxed on their work effort.

...and adverse demand effects...

Also, the demand effects of pension risks are reduced. In particular, adverse financial shocks are not directly transmitted into the cash flow of workers. Rather, they are transferred into the paper pension rights of especially young workers. In this way, the pension fund exploits the long recovery horizon of these workers, who have a long period during which they can undo negative effects on pension wealth by paying a somewhat higher contribution financed by less consumption or more work effort. In effect, optimal risk-sharing demands that everybody's consumption declines by the same percentage after a negative shock (over the remaining lifetime). This implies that the change in premium for the active participants should be (as a percentage of the wage) approximately equal to the relative fall in pension benefits paid to the retirees.¹⁸ In order to contain the effects of shocks on pension benefits, pension funds may levy cohort-specific pension contributions, which would depend on the shocks that a specific cohort has experienced throughout its lifetime.

....and facilitates macroeconomic stabilization, all the more so if new pension rights are made dependent on the economic cycle.

Exploiting the long horizon of young workers to buffer shocks enhances macroeconomic stabilization. Indeed, the marginal saving propensity out of pension wealth is smallest for young households exhibiting long horizons and substantial human capital. In this way, the tension between facilitating macroeconomic stabilization and enforcing the discipline of markets, which tend to be cyclical, is reduced. In particular, by letting the pension obligations for young workers fluctuate more with interest rates and risk premiums (thus taking advantage of their long recovery horizon) we limit the pro-cyclical effects of the discipline of mark-to-

market valuation. Young participants should in fact be stable long-term investors who are in the best position to absorb financial-market volatility. By exploiting the capacity of active pension-fund participants to absorb this risk, pension funds contain this volatility. Moreover, they allow the economy to live with market volatility that is becoming more transparent as a result of mark-to-market valuation.

To contain pro-cyclical effects further, accumulated new pension rights may be relatively small in recessions (when interest rates tend to be low and pension rights are thus relatively expensive) and large in booms, to avoid pro-cyclical variations in saving rates which would otherwise arise (i.e. raising pension saving if interest rates fall and decreasing it if interest rates rise).

This hybrid system of both DC and DB elements can be viewed as a pension fund that has on the liability side of its balance sheet both soft equity claims and hard debt claims. The active participants who are not yet retired, and especially the young participants who still have substantial human capital, hold most of the equity and are in fact the residual risk-bearers of the fund. They are in fact the owners of an insurance company that protects older participants against old-age risks. Workers therefore are important owners of equity and the associated control rights. They thus control an important part of the economy's capital stock, albeit in a different way from how Marx anticipated. The retired generations own more secure claims in the form of debt. With the older generations holding most of the debt claims, the duration of the debt-like obligations of the pension funds will fall. This would relieve some of the current pressure on the returns at the long end of the market for fixed-income securities. Hence, rather than adding high-duration fixed-income swap assets to meet the duration of their fixed-income promises, pension funds may want to reconsider the duration of their fixed-income promises to young participants. In other words, a liability swap away from secure claims to equity-type claims may be in order. Internal and external supervision should ensure solvency so that participants who hold secure claims (mainly the old) are protected against bankruptcy. This supervision should ensure that the bond-like promises issued by the young participants of the fund to the older participants are actually credible; the put option that the debt holders have in fact written to the shareholders should not become valuable.

Dutch pension funds, which account for most pension capital in the euro area, are already distinguishing between hard and soft claims, although they do not yet explicitly distribute these claims between their participants based on their characteristics. The solvency rules in the Dutch risk-based supervisory framework in fact focus on the hard rather than the soft pension rights (see Box 4.1).

The balance sheet of hybrid schemes: 'senior' claims are held by older participants, equity-type claims by the younger.

The nature of pension claims may also depend on workers' characteristics...

Allowing participants to opt out of their default portfolio choice can further refine the system. Moreover, in setting the default portfolio, one can take into account other characteristics of participants besides age, such as the nature of human capital, the income level and the flexibility of retirement choices implied by the flexibility of the labour market for the elderly. To illustrate, agents with especially risky human capital, which is strongly correlated with financial-market risks should invest less in risk-bearing assets (Viceira, 2001). The same holds true for workers that are liquidity-constrained, face substantial idiosyncratic human-capital risk, exhibit habit formation and do not exhibit much flexibility in their retirement choices and thus cannot use the speed and timing of retirement to absorb risks (Bodie et al., 1992; Gollier, 2005). These more tailor-made financial planning solutions should be traded off against the associated additional transaction costs.

...and differentiate between various types of risks.

Another dimension that can vary the risk-sharing is the nature of the risks. Various risk factors can be traded differently, depending on the background risks agents face. In particular, financial-market risks may be shared in a different fashion among the participants than aggregate longevity risks. To illustrate, longer life expectancy for cohorts younger than 65 years of age may be associated with a higher retirement age (or lower benefits) for the cohorts concerned if lower mortality is associated with lower morbidity and thus more human capital. If these shocks materialize only at older ages at which the cohort has already depreciated its human capital, then younger cohorts should optimally share a larger part of these risks.

Comparison with occupational defined-benefit plans.

Compared with an occupational pension scheme in which the sponsoring firm absorbs the risks, the young participants of a stand-alone pension fund can take over the risk-bearing role of the sponsor (or the shareholders of the sponsoring firm). By restructuring their liability side, bankrupt DB occupational schemes may be redesigned along the lines sketched above. Whereas younger participants lose guarantees, they should be compensated by more upward potential. The pension fund can force young households to hold the equity claims to address myopic loss aversion (Benatzi and Thaler, 1995) or they can offer equity claims by default with a limited number of opt-out options. By addressing myopic loss aversion, pension funds can continue to invest in risk-bearing assets (as guarantees are typically too expensive for young participants) and act as stable long-term investors, even though residual risks are shifted from the sponsoring firm to the participants of the pension fund. At the same time, labour markets should be reformed so that young households can bear more risks (e.g. by varying work effort over the life cycle; see Chapter 5). In this way, we avoid the risk-shedding scenario described in Chapter 1.

In principle, one can share current shocks not only between currently living generations but also with generations that are not yet participating in the pension fund when the shock actually materializes. From an ex-ante point of view, this is actually welfare improving. The reason is that one shares the shock even more broadly so that everybody's risk is contained further (Teulings and de Vries, 2006).

Pension funds, however, face some obstacles in implementing risk-sharing between non-overlapping generations. First, they cannot charge the future generations as shocks occur but only when they enter the fund. This entrance fee (or subsidy, depending on whether there are funding surpluses or deficits) distorts the labour market. Moreover, in a competitive labour market, workers can shift the implicit tax to others (such as consumers in non-tradable sectors or to shareholders in tradable sectors facing intense international competition).

risk-sharing among non-overlapping generations is also inconsistent with each generation funding its own pension. This principle is the basis for funding pensions. Pension funds thus face a tension between, on the one hand, the discipline of capital funding and, on the other hand, the flexibility of allowing risk-sharing across non-overlapping generations, which may indeed create substantial political risk as current generations shift burdens to future generations or appropriate the buffers created by previous generations.

Families and governments also play a key role in sharing risks across non-overlapping generations. Governments implement this risk-sharing through public-debt policy, PAYG financed pensions or publicly financed education. By issuing long-dated longevity bonds, for example, governments could allow present generations to share longevity risks with yet unborn generations. The main drawback to intergenerational risk-sharing through the public budget is that governments suffer from more political risks than pension funds do. The reason is that competition in labour markets provides more discipline for pension funds than for governments. We thus face a fundamental trade-off between facilitating intergenerational risk-sharing, on the one hand, and containing political risks, on the other. This trade-off emerges also when discussing fiscal rules. To illustrate, rules imposing fiscal discipline in the EMU, such as the Stability and Growth Pact, limit the room for intergenerational risk-sharing but protect future generations.¹⁹

Sharing risk with future generations broadens the base for risk sharing...

...but gives rise to labour market distortions....

...and political risks...

...involving a fundamental trade-off between risk-sharing and discipline.

4.3. Tax treatment of pensions

A majority of OECD countries tax private pensions on a cash-flow basis (Yoo and de Serres, 2004). Hence, pension premiums are tax-deductible, accrued investment income is exempted and pension benefits are subject to personal

income tax (the EET tax treatment). This means that the government delays the collection of the personal income tax until retirement. In this way, the government, in effect, participates in the pension funds. The return on this public investment amounts to the taxes the government eventually collects on the retirement benefits. If the tax rate against which contributions are deducted coincides with the rate at which benefits are ultimately taxed, the return on this implicit equity share of the government corresponds to the return pension funds earn on their investments.

Cash-flow treatment fosters fiscal discipline,...

The cash-flow treatment involves a number of important benefits. In particular, it broadens the tax base when the ageing of the population boosts public spending. If the government abolishes the cash-flow treatment of pensions by taxing pension premiums, it could, in theory, alleviate future fiscal imbalances by cutting public debt now, thereby reducing public spending on debt service in the future. Unfortunately such an operation would entail a number of serious complications. First of all, rather than reserving the revenues for future budgetary needs, short-sighted politicians may well use the additional current tax revenues to raise current spending or reduce current tax rates. Indeed, the required reduction of public debt would require a lot of fiscal discipline from the body politic. The fiscal claim on pension benefits due to the cash-flow treatment of pensions can help substantially to ensure fiscal sustainability in an ageing society, at least in those countries where pension funds are macroeconomically significant. To illustrate, in the Netherlands, the additional income tax revenues from funded pension benefits are large enough to finance more than half of the rise in public pension spending that is projected as a result of the ageing of the population. In 2000, the net present value of forgone tax revenues on pensions represented 75.5% of GDP in Ireland, 53.7% in the United Kingdom, 49.4% in the Netherlands and 48.6% in the United States (Antolin et al., 2004). When the indirect tax revenues that are collected on these pension benefits are added, the additional tax revenues finance almost all of this additional spending on public pensions. Indeed, with an overall effective tax rate of close to 50%, the implicit (direct and indirect) tax claim on the capital reserves that pension funds and insurance funds have currently accumulated to finance future pension benefits is in the same order of magnitude as the current stock of public debt of about 55% of GDP.

...includes the elderly in the tax net,...

In a 'grey' society with mature pension funds, the broader tax base under the cash-flow tax implies that unexpected shocks in public spending require smaller adjustments in tax rates. Moreover, income taxes are levied not only on workers, but also on those retired from the labour force. When higher age-related public spending requires higher public revenues, the cash-flow treatment mitigates the associated

rise in tax rates and thus alleviates the adverse effects of the higher tax burden on labour-supply incentives.

The cash-flow tax on pensions also limits the opportunities for international tax arbitrage. Without tax deferral, individuals would pay income taxes mainly when they participate in the labour force. After retirement, in contrast, they would not pay much income tax any more and would contribute to the public budget only through indirect taxes on consumption. However, the benefits they enjoy from public spending are likely to rise rather than fall when they grow older. Mobile individuals could exploit the time lag between paying taxes and benefiting from public services by moving to a high-tax country offering excellent public services after having spent their working lives in a country with a relatively low tax burden corresponding to low-quality public services. By moving to the high-tax country only after retirement, they escape most of the heavy income-tax burden that is required to finance the public services they benefit from when being old. By bringing the payment of taxes and the enjoyment of public services closer together in time, the cash-flow treatment of pensions may also help to sustain political support for those categories of public spending that primarily benefit the elderly. The reason is that by paying income tax on their pension benefits, the elderly contribute in a direct and transparent way to the public spending they benefit from.

The cash-flow treatment also contributes to an equitable income distribution between generations. In particular, under tax deferral, the government can employ the income-tax rate on pension benefits as an instrument to alter the intergenerational distribution of income. Alternatively, it could employ indirect (consumption) taxes, such as the value-added tax or excises, to change the tax burden on the elderly. Compared with the progressive income tax, however, these tax instruments put a relatively heavy burden on those elderly with low incomes. By including retirement benefits in the income tax base, tax deferral provides the government with an additional instrument to ensure an equitable distribution between generations without adversely affecting the income distribution within generations. Moreover, the cash-flow treatment contributes to the spreading of risks across generations. In particular, through tax deferral, the government participates in the investment risks of the pension funds.

Two other advantages of the cash-flow treatment involve intra-generational equity. First, tax deferral allows individuals with relatively high incomes at the beginning of their life cycle to spread their taxable income more evenly over their lifetimes. The resulting reduction of the burden of the progressive income tax is desirable if lifetime income is considered a proper measure for the ability to pay.

The other reason why tax deferral contributes to intra-

*...limits
international
tax arbitrage,...*

*....and enhances
intra-generational
equity and risk
sharing.*

generational equity involves the redistributive elements in most collective private pension plans. Contributions to DB plans typically do not constitute an adequate measure for the accumulation of individual pension rights. In view of the weak link between individual contributions and benefits, individuals often do not perceive pension premiums as being part of their disposable income (and hence their ability to pay). Instead, they look upon their pension contributions as a kind of tax. Accordingly, subjecting pension premiums to income tax, as a proxy for the accumulation of individual pension rights, would be perceived as a form of double taxation and thus viewed as inequitable and violating the ability-to-pay principle.

Phasing out tax benefits for the elderly.

In view of the benefits described above, private pensions should be taxed on a cash-flow basis. Hence, pensions would enjoy consumption-tax treatment. Some countries provide additional tax privileges by granting special tax privileges to the elderly when pension benefits are paid out. In particular, marginal taxes applied at retirement benefits are substantially below the marginal rates at which pension contributions have been deducted. Special tax privileges for the elderly made some sense when the elderly belonged to the poorest part of the population. In many countries, however, the elderly population is becoming increasingly heterogeneous, with some owning substantial financial wealth and enjoying a large pension income. Hence, age is no longer a good indicator of poverty. Since many elderly people lead longer, healthier lives than in preceding generations, they are in a position to be net contributors to the budget for a longer time. These considerations argue in favour of phasing out specific tax privileges for the elderly.

Taxing returns.

Another reason that most tax systems favour pension saving is that no income tax is levied on the investment income earned by the pension funds. Accordingly, the increase in the value of pension rights that corresponds to this capital income escapes the income tax, although it should be included in taxable income, according to the Haig-Simons concept of taxable income. Indeed, the return on other types of saving is, at least in principle, subject to income tax.²⁰ These tax preferences can be limited to a specific ceiling and to pension saving that is annuitized. To stimulate a longer working life when longevity increases, the ceilings may have to be adjusted in line with longevity if these ceilings are expressed as the additional annuity that can be accumulated each year.²¹

Extending cash-flow treatment to other saving.

Retirement accounts that are taxed on a cash-flow basis can be integrated with registered personal saving accounts that are taxed in the same way. In particular, individuals can be allowed to withdraw funds from these accounts before retirement, for example to care for children or to update skills. Hence, rather than taking leave only at the end of the working life to facilitate the rapid depreciation of human

capital, individuals can use the funds already in the stressful and expensive family season of life to invest in the human capital of their children or their own human capital so as to prevent the obsolescence of skills (see also Chapter 5). In this way, individuals save for old-age risks in the form of not only financial but also human capital; by investing in human capital earlier in life, individuals are able to work longer, being more productive at later stages of their life. Older workers can draw on the account to retire gradually or supplement a reduction in the hourly wage at an advanced age. More generally, endowed with sufficient human and financial capital, individuals are empowered to embrace the non-verifiable (and therefore non-insurable) risks associated with innovation and its associated turbulence in a dynamic internal market.

4.4 Conclusions

In this chapter we have welcomed the demise of traditional DB plans with a company guarantee. Emancipated workers should rely neither on the guarantees of the firm in which they already have invested their human capital nor on public guarantees, which are subject to serious political risks, especially as governments face grave fiscal risks as a result of ageing. Capital markets increasingly allow workers and retirees to diversify financial risks. At the same time, individual pension plans suffer from financial illiteracy (Chapter 2) and associated marketing and other transaction costs. Rather than individual pension plans or pension funds with substantial company or government guarantees, we favour stand-alone collective pension funds. Participation in these funds should be mandatory, and they would involve carefully designed defaults in addition to limited compulsory elements involving the amount of saving, annuitization, the insurance pool and portfolio choice. In this way, pension funds help financially unsophisticated participants to trade risks among themselves and on capital markets. The resulting more sophisticated investment behaviour enhances financial and macroeconomic stability.

These stand-alone collective pension funds should be explicit about how participants share financial-market and demographic risks. Reliance on fluctuating recovery-pension premiums to implement optimal intergenerational risk-sharing between young participants who are long on human capital and old participants who are long on financial capital is increasingly costly in terms of adverse demand- and supply-side effects. We thus favour hybrid pension systems, which imply that participants transform their DC-type claims into DB-type claims as they grow older. Indeed, the active participants who are not yet retired, and especially the young participants who still have substantial human

capital, hold mainly soft equity-type claims, whereas the retired generations hold more secure claims in the form of fixed annuities.

Risk-sharing is also possible in theory between non-overlapping generations if intersectoral labour mobility is limited, although altruistic links in families and public debt are other ways to achieve it.

By exploiting the long horizon of young workers to buffer shocks, pension funds enhance macroeconomic stability by reducing the tension between facilitating macroeconomic stabilization and enforcing the market discipline associated with mark-to-market valuation, which tends to be cyclical. The cash-flow tax treatment of pension saving fosters fiscal discipline while at the same time facilitating inter- and intra-generational risk-sharing. By implementing more efficient risk-sharing, pension funds can continue to invest in risky assets. The continued supply of risk-taking capital facilitates innovation and growth, while the lower demand for fixed-income assets fosters fiscal discipline and discourages excessive private borrowing. At the same time, pension governance should be designed so that a certain lack of individual choice remains legitimate (see Chapter 2). Moreover, labour markets should be reformed so that the participants of pension funds who are still active on the labour markets can afford to take some risks by holding soft rather than hard claims on pension funds. This issue is taken up in the Chapter 5.

5 Labour Markets and Human Capital

Pension funds involve not only financial markets and financial capital but also labour markets and human capital. This chapter outlines the main challenges an ageing society faces on the labour market when it relies more on funded pensions. Section 5.1 outlines the macroeconomic relationships between ageing, funding and human capital. It emphasizes that ageing increases the need to not only save more in the form of financial capital but also invest more in human capital. Section 5.2 documents that Europe especially has a long way to go in this respect. Whereas longevity has increased, human capital is depreciated early. As a direct consequence, individuals tend to concentrate their work effort in the relatively short period during their lives in which they also raise children. This raises the opportunity costs of raising children in terms of forgone career possibilities. Section 5.3 discusses the required reforms in the labour market aimed at extending working life and a better reconciliation of family (and fertility) and career. It delineates pension systems that are more actuarially fair by linking pension benefits and pension ages to longevity. It also investigates the need for life-long learning and increased wage flexibility. Section 5.4 broadens the perspective by exploring labour markets more generally and the relationships between workers and firms in particular. It argues that workers should become less dependent on the particular firm they work for by diversifying their savings (including their pension claims) and human capital. In this way, adaptable individuals are empowered to embrace more risk. As a result, pension funds can continue to supply risk-bearing capital, thereby boosting innovation and growth. Section 5.5 summarizes the policy conclusions.

5.1 Funding and human capital in an ageing society

Funded pension schemes have a great interest in well-functioning labour markets. In particular, high levels of

*Funded pensions
and well functioning
labor markets are
complementary*

employment ensure that the savings that result from more funding do not depress the rates of return. More funding reduces the rates of return because higher saving in a number of large European countries affects world financial capital markets. The associated larger capital-labour ratios depress returns around the world and at the same time raise wages (Boersch-Supan et al., 2003; Aglietta et al., 2003). Moreover, if commodities and services are not perfectly tradable, shifts in the real exchange rate and real wages imply that the return on pension saving is low – even in a small open economy that is perfectly integrated into world financial markets. Intuitively, as the older, inactive generations become larger in number compared with the active working generation, the consequent tight labour market raises real wages, thereby depressing the real value of the capital that the older generations have accumulated (Knaap, 2005). Ageing thus makes not only risk-bearing but also human capital more valuable. Accordingly, investment in human capital (and risk-bearing entrepreneurship) becomes more attractive compared with investment in other capital.

Ageing and walking on two legs: financial and human capital.

Countries that age should walk on two legs. Governments should not only raise financial saving through increasing the number of funded pension schemes, but also increase investment in human capital so as to protect long-run labour supply. In particular, the two main reasons for an ageing population are lower fertility and increased longevity. The policy implications are discussed below.

Lower fertility and PAYG.

As argued in Chapter 1, PAYG schemes are especially vulnerable to lower fertility, because they rely on the human capital of the young to finance the pensions of older people. Since generations nowadays invest less in the human capital of the next generations by reducing fertility, they should invest more in financial capital. In other words, lower fertility calls for gradually shifting from PAYG financing to funded pension schemes (Sinn, 2000).

The need for increased saving as fertility declines is closely related to the so-called intergenerational contract. This implicit agreement between generations demands that each generation invests in the human capital of the next and is taken care of at the end of its life by the generations in which it has invested. Hence, each generation cares twice, once for the previous and once for the next generation, and is taken care of twice, as a child and in old age. This contract used to be implemented on a family level. In modern societies, with shrinking family size and an increasing number of families without children, it is increasingly socialized. On a macro level, however, it is still valid. If generations invest less in human capital, they ought to invest more in financial capital to maintain their standard of living in old age. At the same time, as rates of return on financial capital decline as a result of a falling capital-labour ratio, they should invest more in human capital.

Both PAYG schemes and funded pension schemes are vulnerable to increased longevity, as stressed in Chapter 1. Indeed, a longer life expectancy raises the length of the inactive period that needs to be financed. In fact, if retirement ages do not adjust to higher life expectancy, funded pension schemes are especially vulnerable. The reason is that while the working life remains constant, the larger share of life spent in retirement calls for more financial saving. The resulting increase in the capital-labour ratio depresses the return on capital. This is bad news for funded pension schemes.

*Increased longevity
and funding*

5.2 Longevity and human capital

Increased longevity implies that human capital has become more durable. As discussed in Chapter 1, average life expectancy at 65 has increased by about two years or more per ten-year period in all continents except Africa. At the same time, knowledge and specific skills age faster on account of the creative destruction associated with fierce competition and rapid innovation. The combination of a longer life combined with faster obsolescence of skills and the increased importance of human capital implies an increased need for life-long learning. These developments also raise the importance of non-cognitive skills (such as social and communication skills facilitating stable relationships, self-discipline and self-esteem, perseverance and other virtues, emotional security, motivation to learn, openness to change and social adaptability) and the values of creativeness, personal growth, responsibility and the readiness to meet challenges. These skills and values are shaped early in life (Heckman, 2000). Early child development therefore gains in importance in accumulating key skills for successful careers in paid work and stable, supportive personal relationships in two-parent families, thus easing the stresses of life.

*Longevity raises
returns on human
capital...*

Whereas life expectancy increases and people enjoy better health at 65 years of age than ever before in history, the effective retirement age has been falling substantially below 65 everywhere, especially in Europe. In OECD countries only about 60% of the population aged 50-64 is working; men now work, on average, up to the age of 61, compared with age 66 in 1967 (Table 5.1).

*...but many
countries depreciate
human capital early.*

Cross-country variation is substantial. Several European countries feature particularly low effective retirement ages. Various soft-landing schemes facilitating early exit from the labour force have produced an early retirement culture setting in motion a vicious circle: workers retire early because their skills are obsolete, while human capital is not maintained because people can retire early and thus have only a short time horizon. Indeed, cross-country data show a

Table 5.1
Effective age of
retirement (males)

	1967	2000
Australia	65.6	58.6
Austria	63.3	58.7
Belgium	63.1	57.6
Canada	65.8	61.2
Denmark	67.3	61.0
France	64.1	58.5
Finland	63.3	58.1
Germany	65.9	60.4
Iceland	68.6	68.0
Italy	63.1	59.2
Japan	68.7	66.5
Netherlands	64.5	59.1
New Zealand	65.5	61.5
Norway	67.4	62.6
Spain	65.9	60.7
Sweden	66.1	62.0
Switzerland	67.6	62.5
United Kingdom	66.3	60.3
United States	66.3	62.2
Average	65.71	60.98

Sources: Blondal and Scarpetta, 1999; OECD.

strongly positive correlation between spending on training and the effective retirement age (OECD, 1998). Rigid labour markets for elderly workers contribute to the early retirement culture. In particular, as employment protection and high wage costs make older workers rather expensive, redundancies tend to be concentrated among older workers as employers buy them out by offering soft-landing schemes into retirement.

With increased longevity and earlier retirement, many countries – especially in Europe – risk becoming entangled in another vicious circle of early retirement and lower fertility in which politically strong older generations favour generous passive spending on pensions and health care, at the expense of investments in the human capital of younger generations. The low growth of spending in education in rapidly ageing countries such as Austria, Italy and Japan (see Figure 5.1) indicates that current generations are walking away from the intergenerational contract.

Also the decline in fertility in various European countries implies that current generations are investing less in future generations. With current institutions that are not yet adapted to the feminization of work, the opportunity costs of raising children in terms of forgone career possibilities seem excessive for many highly skilled women, who opt for a career in paid work rather than raising children. One of the reasons for the high career costs of children is that current institutions encourage individuals to concentrate their

work effort increasingly in the relatively short period in their lives when they also raise children (see Box 5.1). On the one hand, a modern knowledge-intensive economy requires longer periods of learning, so that young adults start their working lives later. On the other hand, older workers terminate their working careers earlier as effective retirement ages decline or stagnate, even though life expectancy increases; thus, longer lives go hand in hand with shorter working lives. This is highlighted by Table 5.2, which displays cohort-specific life expectancy at 65 years and average length of working life among EU countries.

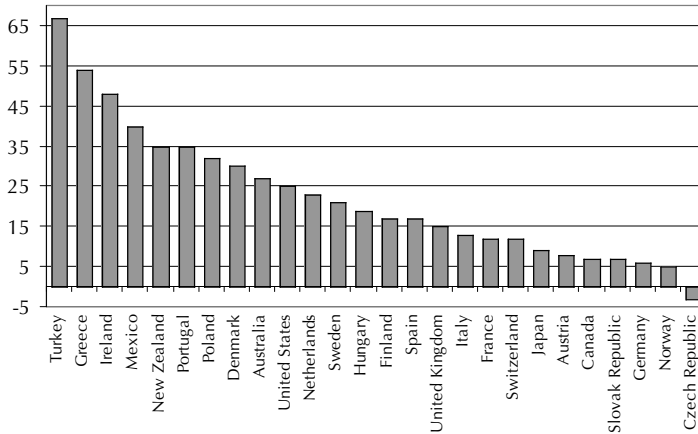


Figure 5.1
Growth of expenditure on education, 1995-2001 (%)

Note: Adjusted to 2000 prices using the GDP deflator.
Source: Education at a Glance: OECD Indicators, 2005.

Cohort	Average length of working life (years)	Life expectancy at age 65 (years)
1925	45.80	14.09
1930	43.92	16.12
1935	41.52	17.32
1940	37.64	17.57

Table 5.2
Cohort-specific average length of working life and life expectancy at 65

Sources: ECHP for average length of working life; OECD (2004); Health Data, 2004, for life expectancy at the age of 65.

5.3 The labour market for elderly workers: the retirement process

A higher effective retirement age is crucial for several reasons. First of all, it maintains the return on funded pension systems by raising labour supply and thus containing the potential rise in the capital-labour ratio. It also raises the return on human capital by lengthening the horizon for investments in human capital. Moreover, longer and deeper involvement in paid employment allows people to exploit

A higher retirement age is called for...

their longer life to reconcile the two ambitions of first, investing in the next generation as a parent, and, second, pursuing a fulfilling career in paid work in which one keeps learning and applying new technologies. A longer active working life facilitates greater flexibility in employment patterns over the course of life for men and women alike, by loosening the link between age and career progression. This reduces career pressure at the biologically determined time when parents care for young children, thereby promoting gender equality, fertility and child development. In this way, increased longevity, the feminization of work and the well-being of children are complementary: parents of young children can continue to invest in the human capital of their children without having to depreciate their own human capital.

A longer working life also reduces the need to transfer resources from the family season of life (i.e. the period in life when people are responsible for raising young children, the so-called rush hour of life) to the older generation. A longer working life also alleviates the time and income squeeze in the rush hour of life (see Box 5.1). Moreover, it allows the transformation of passive benefits compensating the loss of human capital (i.e. early retirement and disability benefits) into preventive facilities that build and maintain human capital (i.e. education, life-long learning, child-care facilities). Fulfilling work also provides stimulus and companionship, preventing the social exclusion of the elderly. As they can use their talents, the elderly stay healthier longer. Finally, with better-maintained human capital, elderly workers can bear more risk in their pensions, thereby allowing pension funds to keep the costs of pensions in check by investing more in risk-taking capital (see Chapter 3). In an actuarially neutral pension system, working one year longer and receiving annuities one year later tends to raise the annual pension by about 7%.

Box 5.1

The modern life course

In the modern longer life course, adults spend considerable time in households without young children as a result of delays in family formation, parenthood and death. Indeed, in the 'spring' of the modern life course, young adults first experiment with relationships and jobs before they take responsibility for raising children during the 'summer', the family season. After the children have grown up, adults typically spend considerable time in good health in the 'autumn' season of their life course before they enter 'winter', the last phase of life in which people may suffer from serious health problems. The modern life course is most apparent in northern Europe. In this region, many people in the age brackets 20-30 and 50-60 live as singles or as couples without children. In southern Europe,...

Box 5.1
(contd.)

...in contrast, the extended family is still dominant in these age groups. Figure 5.2 illustrates these different household patterns over the life course for Denmark (representing northern Europe) and Spain (representing southern Europe).²²

The summer season in the modern life course is quite hot. The costs of living are high and time is scarce, as parents invest not only in their children but also in their careers. Single-parent households especially face both a time crunch and a money bind. In the spring and the fall, in contrast, the climate is more moderate, since adults do not have to care for young children and enjoy relatively high purchasing power. In particular, the feminization of work associated with more human capital for women has increased the number of two-earner families in the spring and autumn.

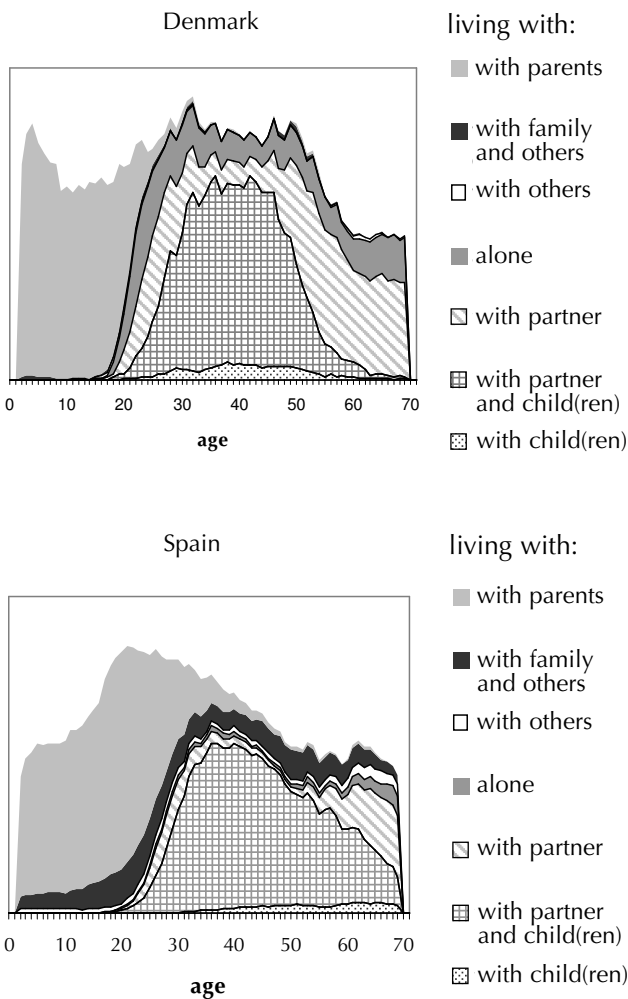


Figure 5.2
Age and household composition, 1996

Source: Kalle et al., 2002.

...by confronting individuals with the costs of early retirement,...

Facilitating a longer effective working life by means of being more adaptable and more employable requires individuals to bear more individual responsibility for the maintenance of their own human capital – and this will stimulate a move towards lifelong learning in firms. To that end, retirement schemes should be actuarially fair (so that individuals face the high cost of early retirement), while the eligibility criteria for passive unemployment and disability benefits facilitating early retirement and the rapid depreciation of human capital should be tightened. These reforms raise the return on investments in human capital by increasing the horizon over which investments in human capital pay out.

...abolishing statutory retirement age and phasing out implicit contracts,...

Human-capital investment also smoothes out the age-productivity profile, reducing its hump-shaped pattern. Several studies indicate that better educated workers can use their experience to counteract their decline in functional ability (Stephen and Levin, 1988; Miles, 1999). Lifelong training can also help halt the decline with age of cognitive abilities. This means that the statutory retirement age at which the employer lays off the employee can be increased without putting undue strain on the enterprise. Indeed, the employee should be able to use the retirement age as an instrument to buffer risk. Increasing the statutory retirement age requires adjusting the implicit labour contract according to which workers are underpaid when young and overpaid later on. Employees should thus accept more wage flexibility over the life course (payment according to labour productivity, i.e. a mark-to-market reward for labour) and internal flexibility in working practices (so as to protect their labour productivity at greater ages). If there is a more flexible labour market for elderly workers, they will be less dependent on their firm surviving. The differences narrow between the insiders who are lucky enough to work for a surviving firm and the outsiders whose firms have not survived. Moreover, golden chains no longer tie older workers to the firm they work for. This facilitates entrepreneurship and a more efficient allocation of labour. Indeed, workers can more easily transfer between different states in the labour market (e.g. entrepreneurship, full-time employee, part-time worker, part-time retirement, etc.).

...and linking public pensions to life expectancy.

Last but not least, the age at which citizens are eligible for public pensions should be linked to life expectancy in order to contain pension contributions. This could be done by the automatic indexation of annuities to life expectancy, as envisaged in some notionally DC systems (see Chapter 1). By sharing demographic risks in this way, work is better allocated over the life cycle and incentives to maintain human capital are protected. Moreover, public pensions are aimed at the elderly who cannot work rather than those who do not want to work. This increases the political legitimacy of public transfers to the elderly poor. Sufficiently high public pensions for the vulnerable old (especially widows) are to be

preferred above meagre pensions for a large group of elderly, including the younger elderly. Moreover, higher labour-force participation from the younger elderly benefits the older elderly through better, less costly health care and personal services.

Tax benefits for pension saving can also be linked to life expectancy. The rule of automatically linking public pensions and tax privileges to life expectancy avoids the political costs of discretionary decisions to limit eligibility to public pensions and tax benefits as longevity increases further. Agreeing on a risk-sharing rule ex-ante also reduces the political risks associated with collective discretionary decision-making. Moreover, it allows individuals and firms to gradually adapt to a longer working life by better maintaining human capital and adjusting the organization of work. In this way, an increase in spending on disability pensions and unemployment benefits is avoided. Such a spending increase would be likely if the statutory retirement age were increased suddenly and unexpectedly.

Low-skilled agents with a shorter life expectancy can be protected through disability and welfare benefits. To combat moral hazard in labour supply and saving, social assistance can provide conditional transfers based on the principle of mutual obligation. In particular, public benefits would be paid out if older workers help in providing public-care services to the very elderly with serious health problems. This also helps to build social capital in neighbourhoods.

5.4 Labour-market flexibility

More flexible labour markets complement a longer and more flexible work life. European labour markets should become more inclusive so that workers do not have to be continuously full-time employed in order to enjoy a successful career. Rather than shielding insiders through employment protection and a two-tier labour market, labour-market institutions should enable youngsters and parents of young children to easily enter, re-enter and remain in the labour market. Rearing children thus becomes less costly in terms of the depreciated human capital of the parents. Various privileges for full-time male breadwinners should be replaced by facilities that allow parents to raise young children while maintaining their own employability. Employability is the best employment protection. Moreover, more flexible labour markets should allow young households to bear more risks by allowing these households to vary their labour effort (including the speed and timing of their retirement) depending on the shocks they have experienced throughout their lifetime. By thus allowing workers to buffer more risks, pension funds can continue to invest in risk-bearing capital (see Chapter 4).

More flexible labour markets,...

...marking pension premia to market...

Another way to facilitate an efficient labour market is to mark pension premiums to market. This means that the pension contributions should correspond to the value of additional pension rights accumulated. In this way, pension contributions become part of the labour reward rather than being a tax.²³ The backloading of pension benefits in DB schemes often implies that young workers bear substantial implicit taxes (see Box 5.2). Moreover, many of these schemes share risks through volatile labour taxes implicit in changing pension premiums rather than volatile (existing and additional) pension rights (see Chapter 4).

Two reforms can reduce the labour-market distortions by making pension premiums more actuarially fair. First, less backloading of pension benefits reduces the taxes on young workers (see Box 5.2). Second, to reduce taxes on labour effort as a result of debt overhang, shocks should be absorbed immediately in existing pension rights. These two reforms are actually closely related. Young workers can absorb more risks in their pension rights if they accumulate more pension rights.

The implicit PAYG financing implicit in backloading the financing of benefits is a threat for the value that collective pension funds create. This is especially so when insurers start to exploit the potential of financial markets and financial innovations to create bundled and deferred annuities with guarantees and to offer these products to young workers. Addressing the backloading of benefits and marking pension premiums to market (in the sense that the premium paid corresponds to the value of the additional pension rights accumulated) is not easy, however. It creates the familiar transitional burden of moving from PAYG to funding. Possible solutions involve using collective buffers or asking sponsors who want to get rid of the risk to pay a one-time fee for transferring these risks to their younger workers. In any case, a long transition period is called for to gradually implement two-sided solidarity between the young and the old, so that the young buy enough individual rights for their money and continue to have an interest in the system.

...attributing new roles to employers...

A more flexible labour market generates new roles for social partners. Employers should attune work to the needs of employees who want to remain employable in the face of substantial family obligations, rapid innovation and thus creative destruction. The role of employers thus shifts from being a risk-bearing sponsor to, first, a facilitator of investments in human capital; second, an insurer of that human capital by protecting it; and, third, the creator of flexible work arrangements that allow young parents to invest in the human capital of their children without having to depreciate their own human capital. To remain competitive in an economy in which more women are in work, employers should allow workers to juggle with time as they combine

Box 5.2
Backloading of
pension benefits

An important part of the implicit labour contract is the backloading of pension rights in many collective pension plans. In particular, the young pay the same price for a deferred annuity even though the money they contribute will be paid out later and thus can yield a higher overall return. This lack of market pricing implicit in the uniform pricing of deferred annuities not only erodes the legitimacy of collective pensions but also complicates free choice and free competition, which results in all kinds of distortions.

The backloading of benefits belongs to an era in which a breadwinner worked his entire life in a full-time job at a single employer who took care of the pension risks for the employee. The system starts to result in inequitable outcomes, however, in a transitional labour market in which many workers experience voluntary periods of time-outs from work or work part-time or as a self-employed worker during certain phases of their life course. The feminization of work is an important factor in this respect. Many workers increasingly combine work and care for children or ageing parents now that the traditional division of tasks between male and female in a household is changing due to the increased demand for and supply of female human capital in the formal labour market. Moreover, the feminization of work raises the opportunity costs of investing in children, and makes the family season a relatively vulnerable one during the modern life course (see Box 5.1). In the spring season, individuals invest substantial resources in their own human capital rather than that of their children. As a direct consequence, transferring resources from the early seasons of life during which substantial resources are invested in human capital to the more affluent autumn season of life becomes less attractive.

Another reason why the backloading of benefits becomes less attractive involves a shift of risk-bearing. Employers are shifting pension risks to workers (see Chapter 4). To contain risks for elderly participants, young workers have to absorb more risks. To reward these younger participants for this, they should (in expectation) collect more pension rights for the pension premium paid. Moreover, young workers must have a larger share of the pension wealth in order to be able to absorb a larger share of the pension risks into their wealth.

The backloading of benefits also creates political risk for older workers by making the system vulnerable to DC systems (in other countries or other sectors, including self-employment) in which young workers are allowed to buy individual pension rights for every euro they contribute. Indeed, the financing of the substantial pension rights that middle-aged workers anticipate accumulating in the remaining period before their retirement is not backed by financial assets, but relies on the promise of young workers (or employers) to supplement the money that middle-aged workers put in.

work, care and training. A flexible labour market also helps to buffer risks. Protecting human capital and juggling time are combined in facilitating gradual, phased retirement, acting as a buffer for absorbing aggregate financial-market and longevity risk.

...emancipating workers from their employers, ...

Phasing out the implicit contract (in which workers in fact invest not only their human capital but also their financial capital in the firm they work for) and reducing job protection is consistent with the idea that employees become more independent of specific employers. Indeed, workers should not put all of their eggs in the basket of a single employer, but rather diversify their human and financial capital. In an increasingly turbulent and dynamic world economy, firms can no longer offer security (e.g. even strict job protection cannot prevent plant closures). Workers are better off investing in their own human capital rather than in the firm where they work.

This trend of making workers less dependent on their employer is also consistent with the full portability of pension rights (see Chapter 2), a shift from the DB pension system relying on sponsors to DC pension schemes based on risk-sharing through capital markets and intergenerational risk sharing (see Chapter 4), and less backloading of pension benefits (see Box 5.2). Endowed with sufficient human and financial capital, adaptable individuals are empowered to embrace the non-verifiable, idiosyncratic risks (including the bankruptcy of the firm they work for) associated with creative destruction in a dynamic internal market. Moreover, by no longer allowing firms to shift the costs of reorganizations on to public-disability or unemployment schemes, governments encourage firms and social partners to invest more in older workers (instead of getting rid of them) and to adapt work and workplace cultures to their needs.

...and providing a new role to the unions.

With employees becoming more independent of employers, the emancipation process of workers enters a new phase. In this connection, unions should find a new role. In particular, they can advise workers in accumulating and insuring human and financial capital over the life cycle. Retirement planning is already one of the excludable services that unions provide in some countries (e.g. Belgium, Germany and Italy) in order to cope with their free-rider problem. Extending this to financial education thus would not require necessarily a major reorganization of the unions. Advice and education about financial and career planning represents an important investment in the human capital of workers, a service that can be especially appreciated by young workers. This is particularly important for unions that are ageing at a higher rate than the workforce. More freedom of choice will result in more responsibility for one's choices – and people should be prepared for that. Better financial education would also allow an increasing fraction

of the workforce to use individual pension plans in order to diversify their pension portfolios.

Freedom of choice also clearly has its limits, however. Unions should therefore keep organizing collective pools for old-age and other insurances for those with similar types of human capital and the associated risks. In doing so, they should set sensible defaults for those workers who do not have the expertise or time to choose themselves. Moreover, governance arrangements should address principal-agent issues (see Chapter 2). Hence, participants can have confidence that the trustees take delegated decisions in the interests of the participants.

5.5 Conclusions

Countries that age should walk on two legs. They should not only raise financial saving through more funded pension schemes but also increase investment in human capital so as to protect long-run labour supply. Ageing challenges not only fiscal budgets but also domestic labour markets. It thus calls for an additional labour supply in addition to fiscal discipline and more private saving.

Protecting fertility in an environment in which the human capital of women has become more valuable requires new institutions for the reconciliation of work and family. Among other things, a longer active working life facilitates a greater flexibility in employment patterns over the life course by loosening the link between age and career progression. This reduces career pressure at the biologically determined time when parents care for young children, thereby promoting gender equality, fertility and child development. Rearing children thus becomes less costly in terms of the depreciated human capital of the parents.

A higher effective retirement age raises the return on human capital by lengthening the horizon for investments in human capital. Phasing out various public schemes facilitating early retirement and linking annual pension benefits or the age at which citizens are eligible for pensions to life expectancy should encourage social partners to attune workplace cultures to the needs of older workers, to nurture the employability and adaptability of younger workers and to increase labour-market flexibility more generally.

More flexible labour markets complement a longer and more flexible work life. They allow the speed and extent of phased retirement to act as a buffer for absorbing aggregate financial-market and longevity risks. Moreover, flexible labour-market institutions should enable parents of young children to easily enter, re-enter and remain in the labour market. Endowed with sufficient human and financial capital, adaptable individuals are empowered to embrace the non-verifiable, idiosyncratic risks (including the bankruptcy

of the firm they work for) associated with creative destruction in a dynamic internal market. Moreover, pension funds can continue to supply risk-bearing capital, thereby boosting innovation and growth.

Discussion and Roundtables

Session 1 Presentation of the Geneva Report

*Chair: Philipp Hildebrand, member of the governing board,
Swiss National Bank, Zurich*

Mikio Wakatsuki commended the authors on the excellent report, and expressed agreement with most of the points raised. In the context of the report's analysis and recommendations, he focused his remarks on the situation regarding pension funds in Japan.

The Japanese pension system is facing more or less similar difficulties and problems to those currently facing other developed countries, he noted. The key problem relates to demographics – the ageing of Japanese society is progressing rapidly, much faster than projections had anticipated, and fertility is continuously declining, also faster than anticipated. Indeed, the Japanese population, noted Wakatsuki, is now in decline about two years earlier than forecast by projected estimations. As a result, the funding gap is widening, and, given the protracted anaemic economic growth and the sharp decline in stock prices and low interest rates, it is much wider than most estimates forecast.

The overall result of this is a particularly serious problem, specific to Japan: the hollowing-out of the public pension system, the roots of which lie in both the overall sustainability of the system but also in structural flaws. The hollowing-out means that the reluctance to participate in the basic pension system and pay contributions, have been increasing, particularly among the younger generation. Fears that contributions will not be recouped in the future have correspondingly led to an increase in non-payment of contributions. The fact that housewives of corporate employees are exempted from contributions exacerbates the problem.

The problem is thus a very serious one which affects the whole credibility of the system, emphasized Wakatsuki. During the past three years, however, thanks to the robust economic recovery and the sharp rebound in stock prices,

Mikio Wakatsuki
Chairman,
AXA Japan Holding
Co. Ltd, Tokyo

the situation has somewhat improved. Thus, for instance, the Government Pension Investment Fund (GPIF) reported an increase in profit of around 12.4% in 2005, the third increase in a row, thereby erasing past accumulated losses. Similarly, many private pension funds and insurance companies have registered high increased profits, in the order of 23%, in 2005.

There are thus signs of an amelioration in the hollowing out problem. Nonetheless, many of the structural issues remain unsolved and make reform necessary.

The dominant role of the public pension system in Japan has meant that much of the discussion on reform has centred on the public pension system. One issue that has drawn much attention is the rebalancing of contributions and benefits. Because of the wide deviation in preconditions and assumptions, it has become overwhelmingly clear that the current contribution balance cannot be sustained. In the 2004 amendment, therefore, the contribution rate was raised from 13.6% to 18.3% and the replacement rate was lowered from 59% to 50%, to be phased in over a period of ten years. The starting age of pension receipts was also extended, gradually, from 60 to 65.

In addition, and in order to improve the underfunding of the basic pension (the first pillar) and thus reduce concerns relating to sustainability, the portion of tax money attributed to the pension system was raised from one-third to one-half.

Some argue that the pension system should be entirely financed through taxpayers' money: the money needed would be generated through an increase in the consumption tax, which at the moment is at 5%. In view of the acute fiscal constraints, however, this may be easier said than done, and it is quite possible that much of the increase in the consumption tax is allocated to other purposes.

The private sector has proposed that the second-pillar corporate welfare pension be changed from the present PAYG DB system to an all DC-funded system. The difficulty here, noted Wakatsuki, is the underfunding of the present system. It is estimated that switching to an all DC system, while preserving the benefits of retirees, would require an additional ¥110trn. This so-called dual burden for the current workforce is too large, and would need a longer-term solution, possibly with government assistance.

The amendment of the third pillar, the introduction of Japan's 401k and NDC system, in 2001, has seen only modest and slow growth, in large part because of various constraints on the system. At the end of March 2005, the number of participants amounted to only 1.2 million, while the amount of funds stood at around ¥1trn. In the 2004 amendment, then, the tax deductibility limit was raised in the 401k, and both the portability and the early withdrawal of the funds were introduced in order to make the system more

usable. A hybrid cash balance system adopting NDC is now being studied by several big firms for formal adoption.

With respect to governance, transparency and efficiency, Wakatsuki noted that as the ageing issue and the pension problem were attracting attention amongst the population, public scrutiny in the areas of governance, transparency and efficiency was increasing. In line with this, policy-makers were beginning to find it politically correct to mobilize private-sector expertise to manage institutions connected to public pensions. One symbolic move was to recruit a former corporate executive to head the national social pension agency. The GPIF is also run by an executive from the financial sector, and other pension associations are managed by former private-sector executives, who have replaced *ex officio* bureaucrats.

Hitherto, about half of the money from the GPIF has been deposited in the Government Fiscal Investment and Loan Fund for fiscal use. Now these funds are to be returned to the GPIF, to be managed entirely by government pension funds. This means that the GPIF money will increase to roughly ¥160trn. Inevitably financial markets will be affected, and as a result, the fund is now required to make detailed reports on management to the public.

Wakatsuki welcomed the points made in the report about changes in the labour market. In Japan's case, the government was encouraging later retirement, in line with the downward adjustment in benefits and the delay in the starting age of pension payments. And thanks to the economic recovery and the looming labour shortage, many firms were also extending the *de facto* retirement age from 60 to 65, as well as encouraging greater female participation in the workplace. As a result of this, the total labour force increased by 150,000 in 2005, a number mainly consisting of the female and aged population.

Flexibility in employment also increased, thanks to labour reforms and deregulation, but this introduced another problem: part-time and temporary workers are not equally treated in the pension system. This has become a political problem, and reforms are currently under consideration.

Finally, Wakatsuki made a few comments on the issue of market innovation. He noted that so far inflation-linked bonds represented only a fraction of the market. In a deflationary environment, demand for such bonds is not great, he noted, but the situation may change rapidly and the government is increasingly moving in this direction.

One of the key features of the Japanese system is the overwhelming size of the public pension fund, particularly the size of the GPIF. The largest private pension fund is around ¥1trn (around US\$8bn). This compares with the GPIF that totals around ¥160 trillion yen (roughly US\$1.3trn). Essentially, remarked Wakatsuki, the GPIF is like a whale in a pond.

The Japanese market is not yet well developed or sophisticated enough to be able to appropriately handle such a giant. It would be difficult, for example, for the GPIF to decide to allocate 10% of its funds to alternative investments, as the amount of ¥16trn would, quite simply, be too large. In addition, the GPIF is very understaffed and recruiting employees that are able to compete with the private sector is very difficult. Many hedge funds, noted Wakatsuki, are rumoured to be eyeing the government pension funds, but to date, no mutually satisfactory arrangements have been found.

Lars Nyberg
Deputy Governor,
Sveriges Riksbank,
Stockholm

Lars Nyberg similarly complemented the authors on their report, notably for their uncompromising and sometimes bold policy conclusions.

Nyberg made a few comments on the pension system and pension funds in Sweden. Sweden reformed its system as far back as 1994, he said, from what was largely a DB PAYG system to an NDC system. This reform has been described by many as a great political achievement, and the result of the Scandinavian consensus mentality. Nyberg questioned this assessment, and argued rather that the pre-reform Swedish system was in such a poor state, that it was obvious that the promises made could quite simply not be fulfilled. Everyone knew that something had to be done.

Fundamentally, the Swedish system provides reasonable incentives to work, particularly when compared with the pre-reform system. As of 2005, when the transition period ended, pension rights are earned on all work between the ages of 18 and 68. In the old system, only the 15 most productive years would count in the calculations for pension rights. The system also produces incentives to acquire more education. With the tight link between income and pensions, individuals face additional incentives to choose education that leads to work. Third, the system provides incentives to individuals to stay in the workforce for longer. From the age of 61, work and partial pension can be combined, according to the preference of each individual. Staying an additional year in the workforce after the age of 63 raises the pension significantly.

How this was reform possible as early as 1994? In the first instance, and as described above, it was obvious to all that the prevailing system needed reform. This was realized by politicians, labour unions and employers. People also realized that the promises made in the old system could not be fulfilled.

Clearly, Nyberg noted, there would be winners in the new system, as compared with the unfulfilled promises of the older system. What was crucial, however, in finding a political compromise was to ensure that there are no real losers in the new system. In the construction of the new system in Sweden, there were really two groups of losers: in the first

instance, individuals who worked part-time and individuals partly absent from the labour market, particularly housewives. This was solved by giving women, and even men staying home for considerable periods of time, the possibility of compensation of up to four years per child. The second group of losers were academics, essentially because academics tend to enter the labour market somewhat later and do not have a very steep career path. This group was, however, not compensated, largely because academics have the freedom to continue working well beyond 65.

More generally, the system was welcomed: it provided a relatively generous guaranteed minimum pension and the transition period envisaged was sufficiently long to minimize generational conflicts.

In any of these reforms, noted Nyberg, transitions are particularly unattractive politically, notably in the short term. Costs arise because some groups of workers have to pay twice, to fund the current generation and to save for their own retirement. By retaining the PAYG financing, the NDC system avoids these transition costs. Nyberg noted that no assets are actually deposited in the accounts as the payroll tax is immediately used to fund benefits for current pensioners. Thus, in contrast to a funded account system, the NDC system is financed primarily on a PAYG basis. The NDC account earns a virtual rate of return that is tied to the growth of the economy. This lay at the heart of the acceptance of the reform as well.

There is also, in the Swedish system, an automatic balancing provision, which reduces the rate of return credited to the notional account if the system is out of financial balance in any given year. This is called a break. If something really happens in the economy, pensions will simply be cut. In reality, this situation has not occurred, but there is quite clearly a certain probability that it may happen.

This is where the orange envelopes discussed above become important. As Nyberg explained, every year each Swede receives this envelope, outlining the amount that the individual is entitled to at retirement. This has the effect of incentivizing the individual to start saving. An important contribution of the orange envelope, emphasized Nyberg, is to undermine the individual's belief that the government will in the end finance your living expenses upon retirement.

Marcello Messori welcomed the richness of the report. His remarks focused on one particular topic, nonetheless, namely pension funds governance. More specifically, he made four separate points. In his first point, he addressed the double structure proposed in the report as a solution to the organizational structure of pension funds. His second point dealt with the idea of a benchmark portfolio as a constraint on the behaviour of pension fund managers. Third, he talked

Marcello Messori
Professor of
Economics,
University of Rome
'Tor Vergata', Rome

about the allocation of corporate control decisions, and in his final point, he analysed the supply of default options as a solution to information asymmetries between members of a pension fund and their respective supervisory boards.

Messori maintained that the analytical framework proposed by the report, namely a principal-agents model with information asymmetries, is essentially correct. He suggested, however, the need to be slightly more specific. In particular, he proposed that the overall framework should be that of delegated monitoring models. In such models, pension fund members play the role of principals, fund managers play the role of agents, and at least in respect to occupational pension funds or pension funds with collective participation, trustees or supervisory boards play the role of intermediaries. In addition, noted Messori, the organization of pension funds implies that there are very rich information asymmetries at work, both *ex-ante* and *ex-post*. The implication is that there are also various adverse selection mechanisms, as well as moral hazard with hidden action and hidden information mechanisms involved.

The recent literature, said Messori, does not provide for a solid model of delegated monitoring that is able to handle such a rich set of information asymmetries and produce robust analytical conclusions. The results, are therefore, quite likely to be controversial. Messori's four points are thus intended, in this context, to address some of these controversial problems.

The first problem is that a key reason underlying the need for intermediaries lies in the fact that members, because of their financial illiteracy and/or their different risk profiles, are unable to monitor fund managers. The trustee or supervisory board thus has to take on this role on behalf of the members of the pension fund. The trustees or supervisory board then has to fulfil at least two different tasks. First of all, they must set the investment principles of the pension fund (strategic asset allocation). Second, they must monitor and verify the behaviour of fund managers. However, as noted above, recent surveys show that intermediaries often have insufficient financial knowledge to fulfil these two tasks. Messori did not feel entirely convinced by the solution proposed in the report, namely that trustees or the supervisory board should delegate these two tasks to a specialized and external investment committee. This would raise an agency problem in the intermediary itself, thus adding an additional moral hazard problem to the original ones. Messori proposed, instead, that investment committees be totally internal to the supervisory board. Members of the investment committee must thus share the full responsibility of decisions taken by the supervisory board.

The second problem is that this internal investment committee must monitor fund managers and verify their outcomes. It clearly needs tools in order to fulfil these two tasks.

The solution proposed in the report, namely to constrain investment managers with a benchmark portfolio and with a given tracking error, is equivalent, argued Messori, to putting a very strict ex-ante constraint on the behaviour of fund managers, which might well be too rigid particularly in terms of investment strategy. A benchmark portfolio, noted Messori, might be incompatible with hedging strategies and other dynamic strategies. If, moreover, as suggested in the report, financial guarantees were needed for members, hedging and dynamic strategies would become unavoidable. Messori felt that there was thus a contradiction in the solution proposed in the report. To overcome this contradiction, he suggested emphasizing ex-post monitoring and verification rather than ex-ante constraints. This would, however, raise problems as well. In order to play a monitoring role, members of the investment committee would need a very sophisticated risk control model, which would in turn necessitate strong financial skills.

Moving on to his third point, Messori expressed confidence that in the immediate future, pension funds would play an important role in markets for corporate control. This could imply that pension funds will participate in shareholders' meetings and executive boards. Noting that the report authors recognized this possibility, Messori disagreed with the conclusions reached, namely that pension funds would have to delegate all corporate control decisions to fund managers in order to avoid conflicts of interest or the enlargement of multitask monitoring. More specifically, Messori felt that this solution posed a contradiction, since it would prevent pension funds implementing a bottom-up investment strategy. His suggestion was rather to accept the possible conflicts of interest and to regulate them directly.

The fourth problem is that with respect to default options, Messori noted that because of financial illiteracy and the consequent incomplete information about their own risk profiles, members of pension funds would be quite unable to play the role of principals. In contract theory, this would imply that the probability of market failure increases substantially. The trustee or supervisory board would thus have to replace the pension fund members as principals in order to minimize this probability. As intermediaries, they could offer only few default options. Messori argued that this was not a good solution, since the supply of few default options could not be compatible with different individual risk profiles. Indeed, he noted, the degree of information in the hands of the pension fund members is not lower than the degree of information in the hands of the supervisory board with respect to members' different risk profiles. He suggested therefore that the information of the supervisory board be improved, particularly by, for example, building simple questionnaires to assess the attitudes towards risk of individual members.

Arnaud Marès
Head of Policy,
UK Debt Management
Office, London

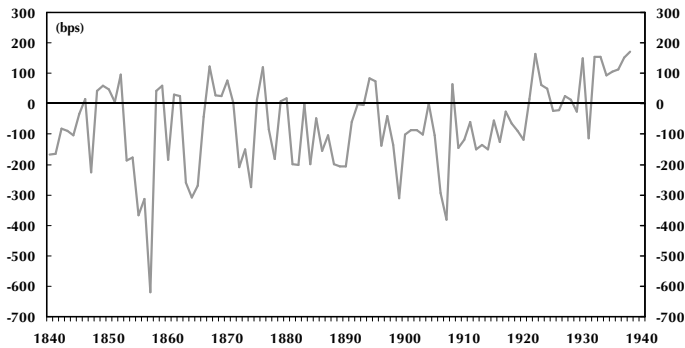
As a practitioner of government debt management, Arnaud Marès focused his observations on a somewhat narrow angle of the discussion: the role of the government, especially in intermediating across generations some of the risks faced by pensioners through its debt issuance in the market.

Speaking in a personal capacity, Marès essentially chose to highlight two points. The first related to the lack of faith, as he read it in the report, in the ability of the market to accurately price some of the risks faced by pension funds. A particular example is the suggestion that there is a distortion – that bond yields are abnormally low or that the yield curve is abnormally flat, even inverted in the case of the United Kingdom – which is interpreted as a mismatch of supply and demand, effectively preventing the market from clearing at the right price. Indeed, he noted, the curve has been inverted, in the United Kingdom at least, for the better part of eight years. However, he argued, it was slightly difficult to believe that, if this was genuinely an anomaly, this would not have been corrected over such a long period of time, particularly in a market that otherwise shows every sign of functioning correctly. Instead, Marès wondered whether an inverted yield curve, instead of being a distortion, might actually be a perfectly simple and rational reflection of the preferences of investors, and more specifically, of pension fund members, given that pension funds and insurance companies effectively hold up to 60% of government bonds in the United Kingdom, and much more in the case of long-dated or inflation-linked bonds.

While normally we would consider the curve to be positively sloped, the assumption behind that is that investors have a preference for liquidity, and thus require a premium to hold long-dated assets. But if the preference of investors is not for liquidity but for stability of income through time, the relationship is inverted and one could expect investors to require a premium for holding a short-term asset. The curve would therefore be inverted.

Thus, conjectured Marès, it is not completely absurd to think that in a world dominated by pension funds, the normal shape of the curve could be inverted. In fact, he noted, there are historical precedents, as can be seen in the graph below, which shows the slope of the yield curve in the UK from Bank of England base rates to perpetual yields, from 1840 to 1938.

Two things are striking in the graph. The first is that the yield curve has been inverted on average throughout the whole of the 19th century. Indeed, if one were to think about this, bondholders at the time were typically individuals whose characteristics are perhaps fairly close to those of pensioners today, that is, they were drawing their entire income effectively from their financial wealth, and they had a preference for income stability. This latter aspect is reflected in, for instance, the fact that when referring to the wealth



Slope of the UK
yield curve
(Perpetual consols
yield minus Bank of
England rate),
1840-1938

of an individual, they would not talk about the value of assets but rather about the annual income that they derived from them.

The second interesting point is the structural shift that occurred after the first world war, which was arguably also a time of deep change in society and in the structure of bond ownership. It is perhaps therefore not absurd to think that these societal and preference changes were also accompanied by changes in risk premiums, in which case, argued Marès, the inverted shape of the yield curve in the United Kingdom might reflect a market equilibrium which we should get used to.

The question then, ventured Marès, is why the yield curve does not exhibit the same shape in other economies that have similar demographic structures and where investors are likely to have similar risk preferences. A bold explanation might be, simply, that in these other countries a larger part of the pension risks are intermediated on the government balance sheet at off-market prices, and therefore are not reflected in the market clearing price. In that case, what is distorted might not be the shape of the yield curve in the United Kingdom, but arguably the shape of the yield curve in other currencies.

Of course, noted Marès, this argument may not be believable, but, he argued that it is certainly worth considering.

The next question, then, is how should governments, as debt issuers, respond? Arguably, it does not matter if the inversion of the curve is the result of a distortion or the result of a rational risk premium. What it does is that, if it is sustained, it creates a cost argument for issuing long-term debt, which, if governments have an objective of cost minimization, which in practice most of them do, should induce a response in the form of issuing long-term debt.

This is what is happening. The French government famously issued a 50-year bond last year in the euromarket; the government in the United Kingdom has issued a vast amount of 50-year debt in both nominal and index-linked format, and the week following the conference a new 40-year bond will be launched.

There still remains a question, however, that needs to be asked: how much should governments actually issue at long maturities, and at what price. Marès issued two health warnings. The first is that the government, as every other institution, has a balance sheet, and if risk is transferred from pension funds on to the government balance sheet, while this might reduce the mismatch for pension funds, it may well create a mismatch on the government balance sheet. A problem is that compared with that of other institutions, there is very little information disclosed on a government balance sheet. It might seem odd, then, that at a time when all regulatory and legislative efforts seem to be moving in the direction of improved disclosure, understanding and management of the risks on everyone's balance sheets, the risk is transferred to perhaps the one balance sheet in the economy that remains the most opaque.

Marès second health warning had to do with the question of intergenerational transfers. In the private sector, he noted, if an insurance company were to sell any form of insurance, the current shareholders responsible for the decisions are the ones who actually bear the risk. If they have mispriced that risk, it will affect equity value and they will suffer a loss of wealth. In the case of the government, however, if an insurance product is sold, whether it is in the form of a long bond, an inflation-linked bond, a longevity bond, a GDP-linked bond or indeed any other form of bond, the risk is arguably not borne by the current stakeholders – the current voters – but by future tax payers, because the transfer of equity value (so to speak) of the government from the former to the latter takes place at zero cost. And because there is no perfect coincidence between the interests of the two, notably if the unborn are brought into the equation, it might actually be attractive for current stakeholders to issue, through the balance sheet of the government, an insurance policy to themselves at a relatively favourable price, and to pass on the cost to the next generation.

In essence, Marès stressed the point that if any transfer is to be done through the government's balance sheet, this should reasonably encourage closer scrutiny of it. More generally, if the government balance sheet is used to enter a contract between the current and future generations, in particular the unborn, the question we need to look at is who speaks for the unborn. If no one does, the question we need to ask ourselves is whether there exists an escape clause for the younger generation or the unborn to renegotiate, ex-post, the contract written on their behalf.

Philipp Hildebrand
Member of the
Governing Board,
Swiss National Bank,
Zurich

Philipp Hildebrand raised three points that struck him during the discussion. The first concerned the suggestion that pension fund activity may act as a strong impediment to M&A activity in Europe. This was clearly a crucial issue, he

noted, particularly in terms of reform or re-landscaping of the European economy and economic structure. If some of the reforms of pension systems were indeed to be implemented, there might well be a booster effect in terms of accelerated M&A activity that could, in turn, fundamentally alter the European economic structure.

His second point drew on the presentation made by Wakatsuki, and more particularly, on the figures given, notably the fact that the Japanese public pension fund industry currently accounts for about US\$1.3trn. The entire hedge fund industry, noted Hildebrand, is about US\$1trn. What we have, then, he warned, is a potentially substantial liquidity problem if pension funds intend actively to invest substantial amounts in hedge funds.

Finally, in a third point, Hildebrand emphasized the importance of economic literacy, and in particular drew attention to the links between economic literacy and benchmarking, which he said raised yet again the principal-agent problematic. Clearly, one of the key problems in the real world is that trustees or supervisory boards have as their main priority the mitigation or limitation of their own risk. Their incentives are thus clearly to stick as closely as possible to benchmarks, arguably behaviour that is likely to be exacerbated by the lack of economic literacy. This creates a separate set of problems, not least that it prevents the type of evolution advocated by Messori, such as more active risk-taking through overlay strategies or alternative investments.

Session 2 General discussion on the Geneva Report

Chair: Neal Soss, Chief Economist, Economics, Credit Suisse First Boston, New York

Laurence Boone expressed an interest in the transition period alluded to in the report between a publicly funded pension scheme and a private scheme, and asked the authors to elaborate on this aspect of pension system reform. The idea is that the transition period requires a generation to pay more on their pension, and it would be interesting to find out how countries who have made the transition have funded (and probably smoothed across generations) this additional funding requirement.

Olivier Garnier welcomed the report's analysis of optimal risk-sharing between participants of funded pension funds, and expressed particular interest in the mixed DB-DC system proposed by the authors. He raised two questions: what is the optimal mix between a PAYG and a funded system, and how does the existence of a PAYG system in the first pillar alter the optimal mix between DB and DC features in the funded pillars?

Laurence Boone
Chief French
Economist, Barclays
Capital, Paris

Olivier Garnier
Deputy General
Manager, Société
Générale Asset
Management, Paris

Ernst Baltensperger
Professor, Department
of Economics,
University of Bern,
Bern

Like the previous speaker, Ernst Baltensperger was intrigued by the hybrid system proposed by the report's authors. He wondered how one might think about the transition between active participants holding equity-type claims and retired participants holding debt-like annuity claims. Would this be a fixed date, such that up to the day of retirement, an individual would share the risks of his pension fund but as of retirement day, his claim would be converted? Or would there be a particular reference age? Or would this be a system where a claim, as an individual approached his retirement, would be transformed into a debt-type fixed claim according to some specified mechanism? In addition, how would such a system fit with generational accounting?

Ignazio Visco
Central Manager for
Economic Research
and International
Affairs, Banca d'Italia,
Rome

Ignazio Visco raised two questions. His first question concerned the two scenarios, pessimistic and rosy, presented in the report. With respect to the pessimistic scenario, Visco queried the claim made that pension fund investments in long-term bonds discouraged investment opportunities. Could this be, he conjectured, because such behaviour creates problems on the balance sheet of firms? With respect to the rosy scenario, in which pension funds hold a substantial part of their portfolio in equities, which in turn stimulates investment and growth, Visco asked the authors to specify what would be the role of pension funds, as opposed to other institutional investors. There is a risk-return trade-off here, he noted, which, given that funds do not have a profit-maximizing objective in their mandate, should be fully discussed.

Visco raised two questions about the hybrid scheme proposed by the authors. The first concerned the design of such a system, which he feared might be highly complex. For example, he said, given that longevity is increasing, one would have to define the young and old in a variable way as a moving trajectory. Somehow, he argued, the scheme would have to be linked to demographics. The second question was about the shift from an equity to a bond portfolio. Essentially the shift is from a variable to a fixed return. The problem, then, is that the fixed return is for the most part given in nominal and not real terms. What is the role, then, of real as opposed to nominal bonds in the particular scheme advocated by the authors?

Amlan Roy
Director,
Demographics and
Pensions, Credit
Suisse, London

Returning to basics, Amlan Roy asked the authors to consider the objectives, constraints and operating environment of pension funds today in their framework of analysis. Current pension funds, public and private, he noted, are considerably different from those that came into existence after the first pension fund was set up in Germany by Bismarck, or even from the earliest existing corporate pension funds. In addition, Roy said, today's world is far removed from the Modigliani-Miller world, in which a firm's valuation did not

depend on how it was financed and the value of a firm depended on stockholders and bondholders. Today's valuation, however, needs to be done in the context of employees and pensioners being an important component of the equation. We thus need to return to the work of Tirole, Laffont, Hart, Arrow and Debreu, among others, on incomplete contracting. Where incomplete contracting exists, pension promises may well need to be renegotiated.

Roy raised the issue of strategic asset allocation. For long-term pension funds, the asset allocation models proposed by Markowitz and Sharpe are not relevant because they are essentially single-period models. He cited a whole new lot of research by John Campbell and co-authors on strategic asset allocation. Modern finance theory suggests that pension funds need to look at bonds and other asset allocations in a multi-period horizon encompassing risk aversion.

Finally, Roy urged the authors to address the issue of longevity risk more substantively. He noted that the world's two most authoritative voices on longevity trends held widely divergent views, but that few people were actually talking about this divergence. At the same time, every government in the world in the last five years had substantially underestimated longevity. And in terms of their longevity risk assumptions, how were actuaries and ratings agencies influencing other aspects of financial markets, such as M&A or corporate finance?

In general, Roy, speaking under his 'finance' hat, expressed some degree of anxiety about the report's conclusions, and urged the authors to incorporate more inputs from financial theory, although he agreed that the macro-perspectives were well discussed and analysed. He cited Modigliani's last book, *Rethinking Pension Reform*, highlighting the prospects that hybrid schemes may do better than either DB or DC schemes and that the switch from DB to DC may have happened too fast.

From Guillermo Larrain's perspective, the report put too much emphasis on the risks of disruption and the existence of externalities. Risks of disruption, as outlined, were in large part related to poor regulation, and could therefore be dealt with. As such, he noted, there is nothing inherent in pension funds that might lead to disruption in the economy.

Larrain raised the problematic of income distribution and suggested that the approach proposed by the authors of moving towards notionally defined accounts in the first pillar accompanied by pension funds in the second pillar, might well worsen income distribution. While this might not be a problem for a country such as Sweden, which has a fairly egalitarian income distribution as its starting point, for many other countries this would clearly be a significant problem. Even in some European countries, Larrain said,

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Macroeconomics,
University of Chile,
Santiago de Chile

there are problems with the status of temporary workers, seasonally employed workers, self-employed workers and with informality in general, which suggested that there might be a case for a larger first pillar.

Larrain emphasized the importance of promoting financial literacy. But, he argued, such efforts would need to be complemented by simpler investment options for individuals. The Swedish system, he noted, consisted of over 600 pension funds from which people had to choose. Even well-educated individuals might have trouble understanding what was in the market. Thus, simplicity must accompany financial literacy.

Jean-Pierre Landau
Deputy Governor,
Banque de France,
Paris

First Jean-Pierre Landau reminded participants that any pension entitlement, whatever its form, represented a claim on future GDP. He thus expressed complete agreement with the view that investment, particularly in human capital, was the key to improving pension schemes, perhaps even more so than savings. Indeed, the emphasis on investment rather than savings was a critical point and any discussion of financial arrangements in pension systems should not minimize this basic message.

Landau then raised two questions. His first question touched on funding and accounting requirements. The report, he noted, takes it for granted that the move to fair-value accounting is a good proposition. While recognizing the need for transparency and accountability, Landau questioned this basic tenet, stressing that the assets and liabilities of pension funds were mostly long-term commitments. In addition, the suggestion that funding and accounting requirements be harmonized, not only across instruments, but also across countries, would raise some issues for consideration, in particular, whether pension fund giants should start to behave similarly or move together in the market. Would the behaviour, induced by regulation of asset liability management, be optimal in terms not only of asset allocation but also of market dynamics?

His second question was about risk-sharing. He suggested that pension funds are not financial service providers, as assumed in recent discussions at the EU level on a pension fund directive, but rather financial service buyers operating in a framework of risk-sharing arrangements between members. This was an important distinction to make: in such a framework, for instance, competition between pension funds would clearly not be the same as competition between asset managers.

Furthermore, he said that different social groups or different national groups are entitled to different risk-sharing arrangements according to their collective and social preferences. An interesting proposal in this respect in the report is that young people should be made to bear more risk because they have more human capital and display less risk aversion.

That is perfectly rational, agreed Landau. But the question is whether they would want to enter into such an arrangement. If they do not, what incentives exist to persuade them to enter such risk-sharing arrangements, as opposed to, for example, individual retirement accounts? On what basis would young people be enticed to enter into risk-sharing arrangements? Indeed, if this is done, it could only be done on the basis of a national, social contract, rendering the harmonization of such contracts across countries rather unconvincing.

Concerning the ideas voiced by many about working longer lives and the value of human capital, Neal Soss noted that, with the rapid technological changes under way and the move away from physical labour, at least in the developed world, towards intellectual-type labour, the obsolescence rate of human capital is itself rising rapidly. In such a world, he argued, it is obvious that the human capital that we, as individuals, create in our youth, does not have a very long service life, but will need to be augmented frequently throughout our lives. How would this alter the calculus for pension schemes?

Pension funds have been blamed for falling real yields at the long end of the curve. Isn't it the case, actually, that the government holds some form of a monopoly in issuing at the long end of the curve, as evidenced by the fact that, if one looks at the supply of corporate bonds in Europe, there is almost nothing being issued beyond ten years? Is this because markets are stupid and unable to price the risk of corporate bonds beyond ten years, even in the face of huge demand for bonds at 15, 20, or 40 years? Or is it because there are regulations or accounting rules which prevent corporates from issuing such bonds? Interestingly, noted Jacques Delpla, the IMF is addressing the possibility of a role for government in enhancing, or wrapping, the risk involved in issuing such bonds. What is indeed the scope for government intervention in this area?

Ulrich Kohli characterized PAYG schemes as clever, but potentially dangerous. Such systems, he argued, worked well as long as the population, or at least the labour force, was growing. This in turn would determine the rate of return. But the scheme would get into trouble as soon as populations stopped increasing or if future generations were to refuse to play along. Fully funded schemes are, he noted, in that sense far more sound.

This is because any pension scheme is, essentially, a claim on future GDP. The key, then, is to increase future GDP. Ideally, one would want to save – to accumulate physical or human capital – in order to increase GDP. The return would then pay for pensions. The worry, he argued, is that many

Neal Soss

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Economics, Credit
Suisse First Boston,
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Jacques Delpla

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Ulrich Kohli

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alternate member of
the governing board,
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so-called fully funded pension schemes were heavily invested in government bonds, and buying government bonds does not necessarily contribute to GDP growth. Of course, one could argue that such bonds are used to improve infrastructure or perhaps pay for education. But that would be wishful thinking, since much of the funds generated are likely to be used to finance current expenditure and transfers.

The concern is then that the notion of a fully funded scheme is, if invested mainly in government bonds, somewhat of an illusion. While market participants may not necessarily worry about this, governments should be concerned. Unlike the recommendations outlined in the G-10 Report, perhaps the private sector rather than governments should look to supply instruments suitable for pension funds.

José Viñals

Director General and executive board member, Banco de España, Madrid

José Viñals suggested that the financial market impact of pension funds could be just the tip of the iceberg. Many of the elements that apply to pension funds from the viewpoint of the risks in their balance sheets also apply to other institutional investors, such as life insurance companies, which also provide, in many countries, retirement products similar to pension funds. If pension funds account for 50% in terms of assets under management of the OECD's GDP, these insurance companies also account for about 50%.

These companies are affected by asset liability management regulations as well as by the new international accounting standards, and being quoted companies, will want to reduce the short-term volatility in their balance sheets. In addition, they will be subject to other forces, such as the Solvency II process, as of 2009. All these are incentives to de-risk their balance sheets, which will in turn have an impact on financial markets going forward. This will furthermore be a worldwide phenomenon, since the new international accounting standards are worldwide standards.

With this in mind, Viñals raised two questions. His first question was related to an earlier point made about the problems associated with too much similarity in behaviour across different institutional investors, problems that would potentially affect the workings of financial markets. Viñals suggested that this was all the more reason to put a premium on the advantages of making debt management policy more responsive to the long-term financial demands of such companies.

Charles Wyplosz

Professor International Economics, Graduate Institute of International Studies and Director, ICMB, Geneva

Charles Wyplosz registered a general concern at the implications of asking the 'giants' to carry the world on their shoulders. Indeed, he noted, there was a tendency to think about what pension funds could do to fix problems that were not inherently pension-related, such as income distribution or labour market treatment of young workers.

He queried the suggestion that pension funds are responsible for potential distortions in financial markets caused by demand for long-term bonds. Either financial markets are functioning correctly and it is quite simply a fact of life that demand at the long end will increase, or there are distortions in the system. But in the case of the latter, why should pension funds be required to deal with that?

Wyplosz noted that while the report devoted much discussion to regulation and governance, little was written about competition. Could the market not be made to work better through competition, he ventured? The orange envelope, he suggested, was a clever device in this respect, and an idea that merited greater investigation.

Finally, in a last question, Wyplosz questioned the points made about government balance sheets, notably how long these should be. On the asset side, as long as a state remains a state, and is thus in a position to raise tax revenues, the asset side of its balance sheet is atemporal; it seems difficult to draw any conclusion about the desirable structure of the liability side.

Session 3 Ageing and pension system reform: implications for financial markets and economic policies

Ignazio Visco presented a report commissioned by the Deputies of the G-10 (hereafter G-10 Report), and presented to G-10 ministers and governors in September 2005.²⁴

The basic finding of this report is that institutions matter; regulation matters; laws matter. More specifically, the G-10 Report discusses three main issues: the effects of population ageing; the retirement saving industry; and finally possible policy recommendations. With respect to the last, the report tries to say more about the role of the public sector rather than the appropriate design of the private sector in the overall pension system.

There are a number of effects of population ageing. The first set relates to the macroeconomy, notably growth, fiscal balances, external balances and capital flows, and asset prices. There are also effects on financial markets and on the way the industry works.

The secular rise in longevity, coupled with lower fertility rates, leads to population ageing and rapidly soaring old-age population dependency rates, noted Visco. The graph below shows these, and illustrates the particularly dramatic rise that is foreseen for the next 45 years, in some countries in particular.

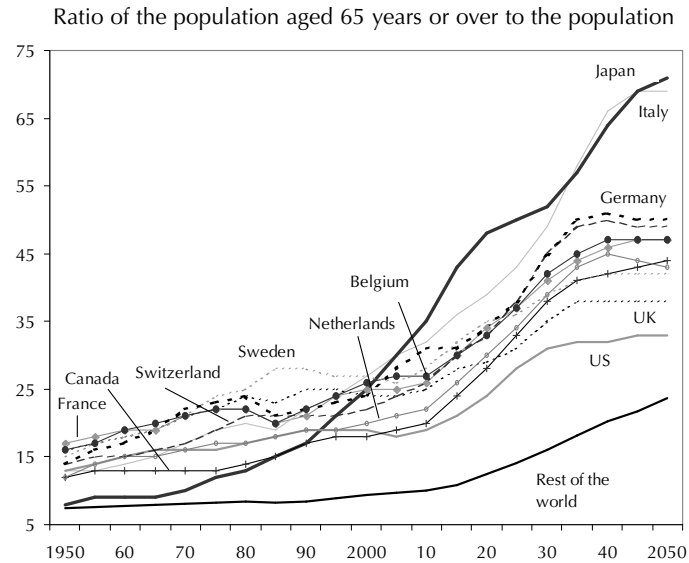
The interesting thing, said Visco, is that for the next 30 years, the 'game' is fully specified and not reversible. It can possibly be reversed a little between 2030 and 2050, if fertil-

Ignazio Visco
Central Manager for
Economic Research
and International
Affairs, Banca d'Italia,
Rome

ity rates increase more than is considered in these calculations, which are the most recent ones made by the UN. But even so, this reversal would not be dramatic, unless fertility rates were to increase from, say, 1.7% to 2.5%, which is quite unlikely.

The picture may also change a little if immigration rates are superior to the ones assumed for the calculations, which are rather conservative. But while this may help solve certain problems, they will not be sufficient to reduce the dependency ratios that will be observed. The picture as presented is thus more or less the one that will be faced.

Old-age dependency ratios are increasing sharply



Source: United Nations Population Division, World Population Prospects, 2004 Revision Population Database.

Growth and savings rates may fall as a consequence of ageing, unless pension system reforms lead to higher savings to maintain consumption levels after retirement. Strong age-related public spending pressure will also be observed; this will not be limited to pension outlays, but will also be visible in other age-related spending, such as health and long-term care (see table below).

The calculations above are between two and three years old. They were revised last year, according to new OECD and EC calculations. These revisions make the point that pension reforms may well have reduced the gap, which on average is now about 3%, that is, pension expenditure will be, in terms of GDP, about 3% higher by 2050 than today. Health spending, on the other hand, remains more or less at the same intervals of about 4%.

Overall, Visco pointed out, in the last 50 years there has been a continuous underestimation of average life expectancy on the part of demographers, which is persistently

	Old-age pension outlays		Health and long-term care spending		Ageing-related public spending pressures are mounting
	circa 2000	circa 2050	circa 2000	circa 2050	
Belgium	9.0	13.0	6.3	10.6	
Canada	4.7	6.4	6.3	10.5	
France	12.1	14.5	6.9	9.4	
Germany	11.8	13.8	5.7	8.8	
Italy	14.2	14.4	5.5	7.6	
Japan	7.9	8.5	5.8	8.2	
Netherlands	5.2	8.3	7.2	12.0	
Switzerland	7.2	10.8	5.8	10.3	
UK	5.0	5.6	7.9	11.0	
USA	4.4	6.2	2.6	7.0	

Notes: Assuming unchanged policies as from the early or mid-2000s, in per cent of GDP.

Sources: Dang et al. (2001); Casey et al. (2003); for Belgium, Comité d'Etude sur le Vieillessement; for Canada, latest actuarial Old Age Security and Canada Pension Plan reports; for pensions in France, Germany, Italy and the Netherlands, European Commission (2005); for Switzerland, Schluep (2003) and Federal Office of Public

observed. What is worse is that even when anticipated, the adaptation of mortality tables used by pension funds, life insurance companies and others shows a lag at times of several years.

The shift towards current-account surpluses, that may be followed by deficits in ageing industrial countries as they first invest in and then disinvest from younger countries, is yet another issue. We may observe movements in capital flows that could have substantial effects on exchange rates. There are currently some puzzles – deficits as large as the US deficit cannot be explained on the basis of life-cycle savings – but overall the tendency is there, even if we suspect that the overall effects might be less than what some have anticipated.

This is also probably the case with asset prices. There is a presumption that downward pressures on asset prices may occur as retirees sell their financial assets to a smaller, middle-aged generation in order to fund their consumption. But it is likely that this effect will be much smaller, in terms of asset volatility, than even that which has been observed most recently through the equity boom and bust. This is not to say that pension funds do not have effects on asset prices, but rather that the ageing component of that effect may be exaggerated. The demographic developments and the growing need to provide private savings for retirement will likely push up the flow of saving that is directed to fund this retirement. And this will most likely happen, whether or not accompanied by an overall increase in savings rates, which is itself uncertain, given that alongside ageing may come a reduction in the overall savings rate.

The recent move towards a more sustainable public pension system, however, has been observed and is likely to continue. In general, these reforms have tried to make PAYG

systems more sustainable, through three basic instruments: increasing the retirement age, increasing contribution rates and reducing benefits. These may be accompanied by a change in the system towards NDC.

In any case, the recent move that has been observed towards sustainability has been accompanied by a tendency for that part of pension benefits that is provided by the public pension funds to move away from DB and towards DC. It is not true that this is a general move, however. In certain countries, it has quite simply not taken place. But in a good many countries, it has been observed, in line with the growing tendency to shift risk from the government to the private sector, and from the private sector, companies, to the individual. A key issue in this trend is how this shifting of risk can be diversified and/or hedged.

As noted, G-10 countries aggregate pension fund assets represent about 10-20% of equity capitalization and 10% of overall bond market capitalization. In general, the importance of pension funds has been rising across time and space, and a further substantial increase in the pension fund industry is likely, argued Visco. This may be so especially in some European countries where much more has to be observed in terms of the development of a public pension system (see the table below). This may not necessarily have a great influence on financial markets. Nor will it necessarily have much effect on monetary policy or the way monetary policy is conducted. Certainly, the effect on asset prices may disturb monetary policy, but this should be dealt with mostly by prudential regulation instruments rather than monetary policy instruments.

Pension fund
importance across
time and space
(pensions funds assets
in % of GDP)

	1990	1995	1996	1997	1998	1999	2000	2001
Belgium	2	4	4	5	6	6	6	6
Canada	29	39	42	44	48	46	48	48
Germany	3	3	3	3	3	3	3	3
Italy	3	4	3	3	3	5	5	4
Japan	12	15	15	16	16	19	19	19
Netherlands	72	85	93	101	108	119	114	105
Sweden	2	2	2	3	3	3	3	4
Switzerland	56	-	80	-	98	-	105	114
UK	50	68	69	79	79	88	79	66
USA	42	57	61	67	71	74	69	63

Source: OECD, *Statistics on Institutional Investors*, Table S.2.

The retirement savings industry experienced in the last five years substantial underfunding. This was accompanied by a fall in equity prices. Declining bond yields contributed to this, by increasing the present value of liabilities, and poor asset liability management was clearly also a cause. Excessive risk-taking was observed too, without proper hedging instruments against obvious market risks, such as interest-rate risk or inflation risk.

The responses observed from industry and on the regulatory side have essentially been fourfold. In the first instance, there has been a shift from DB towards DC by some pension funds, with the burden shifting towards individual workers. The second response has been the introduction of fair-value market-based accounting standards, which have led to increased volatility and pro-cyclical movements across these funds. The problem is not mark-to-market per se, argued Visco, so much as the obsessive use of mark-to-market. In fact, accounting has been reacting to the observation that underfunding was substantial, but it is not obvious that accounting was the best possible response to bad asset liability management. Third, we have been observing an improvement in asset liability management, with better assessments of risk and improved disclosure. And finally, there is in general a better and fuller assessment of the financial costs of the promises of pension benefits, notably those included in DB funds.

Currently, there is a perceived lack of long-dated bonds and index-linked bonds, as well as instruments for longevity risk management. Calculations show that there is substantial unmet demand for these (see table below). Whether the reasons for this are supply- or demand-driven is up for discussion.

		Current supply		Potential demand		
		Corporate and government long-term bonds	Inflation indexed government bonds	Pension fund assets (at end-Dec. 2001)	Pension fund assets, assuming a 75% allocation to bonds as a % of long-term and inflation-indexed bonds	Potential unmet demand for long-term and inflation-linked bonds (selected G10 countries; in \$bn; amount outstanding)
US	2000	1,143	115			
	2004	1,266	223	6,136	309	
UK	2000	144	99			
	2004	241	155	954	181	
France	2000	74	12			
	2004	178	92	-	-	
Italy	2000	81	-			
	2004	241	28	47	15	

Visco asked what longevity risk is. The answer is that a risk is something that may happen which is not expected. By longevity risk, then, we do not mean the expected increase in average lives. It is true that we know that longevity will increase and that should in turn induce public authorities to take measures to sustain the pension promises that have been made. But there is a continuum of errors in measuring expected life changes. At an individual level, this is normal since no one knows whether he or she will live more or less than 80 years. But what we are observing is that our expectations of longevity seem to be continually biased downwards, and that is the kind of risk implied by longevity risk. What happens then, if you have an extreme tail risk? This is the same as when a hurricane or earthquake hits. How can

you insure yourself against a major earthquake or a substantial malaria problem that develops in a particular region because of flooding? These kinds of accidents cannot be easily diversified or individually hedged, not even by pension funds or insurance companies. As a result, argued Visco, there is a case for government intervention.

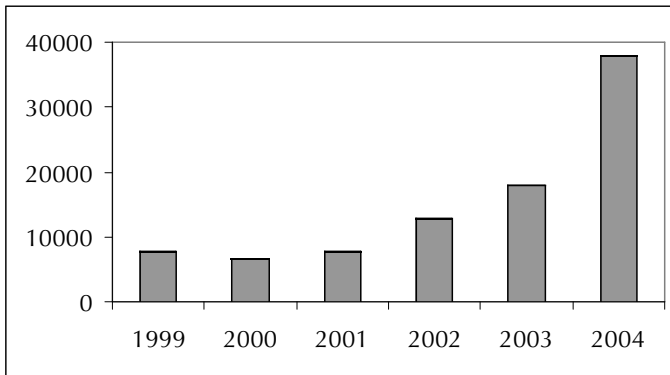
If this is so, he suggested, it is important to define the role of governments. The role of governments, he argued, should be to reduce exposure to risks which can be diversified by the market, and to try to be more present where the market cannot work. These kinds of risks are often intergenerational; while the market may enter the game of overlapping generations, it is difficult for markets or enterprises to deal with intergenerational risks. Companies cannot issue bonds with such long time horizons. In such cases, then, there is a comparative advantage for the state that the market does not have.

But there are instruments that can be used to match liabilities and assets and overcome some of these risks. Among them are longer-term bonds, index-linked bonds, and certain kinds of longevity and mortality bonds. The question is whether the government should also enter these markets and directly issue these bonds. At this point, Visco admitted that he did not have a clear answer. On the one hand, some of these bonds could clearly only be issued and marketed if they were considered AAA-rated, and thus if governments are not in the game, no other player can be in the game. But on the other hand, there is an argument that the role of governments should not be to enter into mass issuing of such instruments, but should rather be to help build the market for them, by providing information about them and how to price them. The problem here is that there are certain accounting regulations that may make it very difficult to issue certain kinds of bonds, particularly those that have a derivative component attached. In this sense, then, one has to be pragmatic in adapting the regulation to the economic needs of the market rather than to the formal needs of accounting.

At the same time, continued Visco, the G-10 Report observes one phenomenon that is not included in the Geneva Report: there is a lack of instruments to be used, not when investing for retirement, but rather when one is trying to get the benefits from retirement savings. In other words, annuity markets are extremely underdeveloped. Why is this the case? He ventured a number of reasons. Bequest motives, for example, or asymmetric information and adverse selection. In addition, there is another factor at play. This is related to the design of tax systems. In a number of countries, Visco observed, tax laws have been written in such a way that they favour lump-sum benefits at the end of insurance periods rather than annuity streams. From a welfare point of view, this makes no sense, argued Visco, but what it tells us

is that one should really look at individual regulations and tax laws to understand what is happening in this field.

Visco also referred to reverse mortgages. Real-estate instruments are an important part of the gamut available to invest for ageing purposes. But, he noted, instruments to hedge against the risks linked to house-price volatility remain rare, even in the United States, arguably the most advanced financial market today (see graph below). Instead, what we observe is that as risks are shifted towards households and individual workers, increasingly complex products, such as life-cycle and structured funds, are being introduced.



Reverse mortgages remain rare even in the US (number of federally-insured reverse mortgage loans, fiscal years)

In terms of policy recommendations then, Visco noted that the report proposed four things. The first two were clearly well supported and non-controversial, even if not necessarily easy to implement. Increasing national savings and efficient allocation is easier said than done. Developing regulatory and supervisory frameworks that encourage more rigorous risk management, greater transparency and better governance in private pension funds, as well as ensuring consistent accounting and tax rules, is, however, obvious to all.

But the other two recommendations are more controversial, he argued. One is to facilitate the development and expansion of markets for undersupplied financial instruments, as suggested earlier. This clearly has to address the following issues: defining the market failures, and once these are defined, devising the role of the public sector in dealing with them. Market-building and a catalytic role are some justifications, perhaps, for issuing particular instruments. The existence of extreme risks, or tail risks, that cannot be diversified at the individual level, is another.

One thing is clear. This is the need to improve the use of adjoined mortality tables and projections, to facilitate the development of longevity products and the attention given by pension funds and insurance companies to this kind of risk.

In a quick digression, Visco noted that, during the dis-

cussion on the report the French and Germans showed some degree of unease during discussions of pension funds. Indeed, these are relatively underdeveloped in both countries. Was this because the public system is so generous? Not necessarily, proposed Visco. Rather there is a long tradition in continental Europe, starting from the 19th century, for insurance companies to provide retirement products, from life insurance to annuities, and these have crowded out the market. The question is then whether it would be better to segment the market, with a clear definition of the different roles of individual institutional investors. A second question is whether, like insurance companies that are designed to make profits, pension funds should also operate in the same way. Obviously there are shareholders, or stakeholders, such that a more profitable pension fund is better able to deliver returns to its members, but the exact relationship of profits to pension funds merits greater discussion.

Visco made a last point on the role of the public sector. Pension guarantee funds exist in many countries to insure against the risk of bankruptcy of DB funds. Perhaps, he suggested, these funds may be reduced in the future and the design of the protection that they provide be better thought out. In the end, nonetheless, adequate funding rules are key for pension funds at large.

The conclusion of the report was really to emphasize the importance of better financial education to improve the efficiency of markets, avoid fraud and raise the propensity to save. But even if this is achieved, Visco registered some scepticism. There is substantial inertia, he noted. And furthermore, even sophisticated agents may not necessarily understand the entire workings of the market, which may produce delays in action and other behavioural shortcomings.

Eric Chaney
Chief Economist,
Europe, Morgan
Stanley, London

The first thing, noted Eric Chaney, having read the two reports, is that there is a lot of overlap between them. There is a consensus: perhaps, he warned, this is something we should think about. When there is a consensus, one might suspect that one is missing something.

Chaney listed the following consensus points.

- Labour-market reforms are necessary to help soothe the demographic transition, but they are not sufficient.
- Contribution rates must not be raised continuously. Unfortunately, in a lot of current reforms, governments will continue to increase contribution rates.
- Funded pension funds should take over from PAYG systems. There is a large consensus on that, and maybe this could be discussed.
- DB schemes are GM, old fashioned. DC schemes seem to be the future.
- A very large pension fund industry raises macro and

micro issues. If we think that in ten or 20 years' time, the pension fund industry could be two or three times larger than now, on a global basis, these issues should be addressed. On the macro side there are asset price distortions, bond yields, yield curve effects. On the micro side, issues are linked to information asymmetries.

- Again perhaps some wishful thinking concerning economic literacy. Chaney observed that even professional economists do not often think about their own pensions, so perhaps the issue is only about economic literacy, or, rather about incentives.
- Hedging assets and liability risks of mismatch require innovative financial markets. This is a bit in contradiction to asking for more regulation. If you want the financial markets to innovate, to offer products that allow for more or smarter risk management against risks that have not been foreseen, then you might need to give them some leeway.
- Market failure risks may require innovative regulation from public authorities.

In terms of divergences, Chaney made the following points.

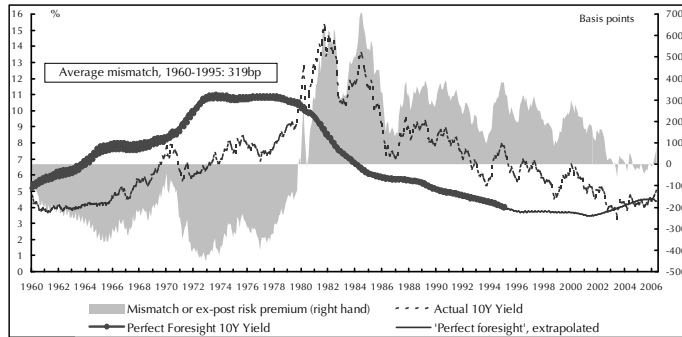
- Unlike the G-10 Report, the Geneva Report suggests that current structures of corporate pension funds are not optimal and they should rather be built on a stand-alone basis, and if possible, be the result of collective negotiation.
- Secondly, while the G-10 Report put some emphasis on the need for tax neutrality, the Geneva Report argues that the solution to the current discount rate chaos, where the official discount rates used by pension funds under government regulation vary between 2% and 6% in countries which are otherwise comparable, lies in the establishment of a European regulator.
- There is apparently a need for very long-dated bonds and inflation linked products, as pension funds need to hedge duration and inflation risks. The Geneva Report suggests that pension funds should be incentivized to invest in riskier assets rather than fixed-income products. The G-10 Report argues that governments should issue more long-term and inflation-linked bonds. This goes to the very heart of the earlier discussion point on the role of pension funds and the potential use of pension fund reform as a solution to other policy problems.

Chaney then addressed the question of the role played by pension funds in the fall in long-term interest rates. He cited an article by Fischer Black, written in 1980: "My message is simple: almost every corporate pension fund should be entirely in fixed dollar investments."²⁵ While clearly related to the tax and regulatory framework for corporate pension funds in the United States, the remark nonetheless tells us

that the fact that pension funds are tempted or told that they should invest massively in fixed-income assets is not a new phenomenon. Yet looking at the structure of investment in US corporate pension funds, Chaney noted that it is still largely dominated by equities. Since 2004, some have switched to bonds, but this change is marginal.

The bond conundrum.
Are PF the sinners?

(a) The bond premium
is volatile:
the US case

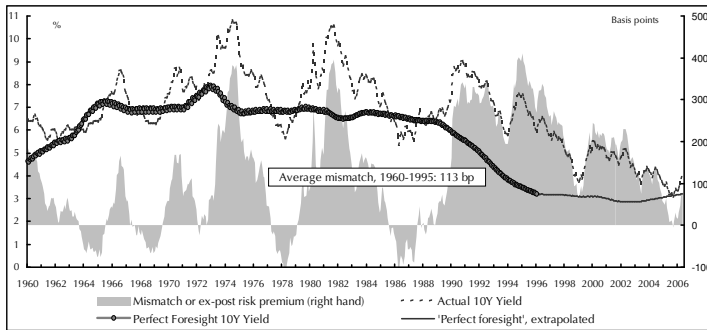


The graph presents a view on US long-term interest rates from 1960 to today. The dotted line shows 10-year bonds, while the thick black line is the perfect foresight 10-year rate. It so happens, noted Chaney, that, with the benefit of hindsight, we can calculate 10-year rates that are consistent with future 3-month rates. In effect, then, the sequence of future short-term rates is known. Furthermore the difference, the spread, is very close to sophisticated estimates of the term premium on government bonds.

The graph shows that the spread was largely negative before the first oil shock and the great battle against inflation led by Paul Volcker. From then, there was an overshooting and the spread turned largely positive. In effect, then, before Volcker there was a massive underestimation of future inflation, and after Volcker, vice versa. Indeed, since this overshooting the term premium has declined, not necessarily on a steady path, but nevertheless it has declined on trend until it hit close to 0 last year when Greenspan spoke of the bond conundrum. Chaney's first point was that this is a kind of relatively long-term process. His second point was that the very long-term average, even if it does not make sense to aggregate over what are arguably two distinct periods, is a spread of more than 300 basis points.

The picture for Europe is presented below, taking Germany and then the euro area after 1989.

Chaney's first point was that the spread is much smaller, and, unlike in the case, there are no distinct periods over time. Perhaps, suggested Chaney, this is because the Bundesbank was more credible than the Fed. Nonetheless, the same phenomenon can be seen in the European case: the term premium has been declining since the mid-1990s. Now, of course, the pension fund industry has grown sub-



The bond conundrum.
Are PF the sinners?

(b) The German-€
case (less volatile...)

stantially during this period, and it might thus be that the decline in the term premium can be explained by pension funds. But, argued Chaney, the euro area comprises essentially the big countries of Germany, France and Italy, in which pensions funds are arguably less dominant. It is thus very difficult to make the case that the term premium can be explained exclusively by pension funds.

He noted, moreover, that over the very recent period, the term premium has increased, so that it is now at about 80-90 basis points. Given that the very long-term average is around 110 basis points, he expressed doubt that the bond conundrum is still here. And yet, pension funds are still investing in long bonds. Instead, Chaney suggested that other possible suspects should be investigated for their part in the decline.

In closing, Chaney made a few heterogeneous remarks. Firstly, he noted his puzzlement at the idea that the shift from DB to DC is a shift in terms of risk-bearing from companies to workers. Rather, he argued that, even in a DC system, there is a risk for labour which is the risk of bankruptcy – default risk, essentially. This is potentially a serious risk, as suggested by current troubles in the US car industry.

Second, if we think globally instead of locally, Chaney hypothesised that the United States is in today's global economic environment a kind of massive pension fund for China. China is almost automatically generating a surplus of savings, because productivity is rising faster than real wages, the result of a massive imbalance in the labour market. Furthermore, when one takes into consideration the demographic transition China will face around 2040, perhaps the idea of generating such a massive surplus of savings is not such a bad idea. As for where these should be invested, the United States presents at this moment in time the deepest and most liquid market in the world. So, it is perhaps not such a silly idea to at least consider the possibility that the United States is acting as vehicle for pension investments, not only for China, but possibly also for the rest of the world.

In a final remark, Chaney challenged the conventional

wisdom about the impact of pension reforms on household savings rates. If we start from the two extremes – France, where there are no pension funds, and where the personal savings rate is 16% of disposable income, and the United Kingdom, where the pension fund industry is well-developed, but where the personal savings rate is about 5% – there seems to be a gap that does not necessarily make sense. Chaney said that the explanation is really quite simple. The French are saving for their old age, but not through so-called pension funds, rather through life insurance products. These are where they put their money. Why? Because they do not trust the official pension system. Now surely, if pension reform is to be credible, one of the visible effects should be a fall in savings. This, suggested Chaney, is an important message for policy-makers, who are still reluctant to implement the pension reforms that are needed. If they do things properly, maybe they would be rewarded by stronger consumption, which is, of course, the mirror image of a lower savings rate, all other things being equal.

Tito Boeri

Professor of
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University and
Scientific Director,
Fondazione Rodolfo
Debenedetti, Milan

Health is an important issue that features in the G-10 Report but not in the Geneva Report, began Tito Boeri. Health clearly has important interactions with retirement decisions. A recent survey carried out in Europe on health and retirements (the Survey of Health, Ageing and Retirement, SHARE) suggests that health is indeed an important determinant of retirement decisions. It is also important from the standpoint of the PAYG systems, not only when they are defined as DB systems. Health is also important from the standpoint of the supply of new financial instruments, that is, longevity-indexed bonds.

Boeri disagreed, however, that the Geneva Report focused unduly on European regulation. He explained that in fact the authors of the Geneva Report were interested in harmonizing accounting standards at the global level and not only at the European level. The point being made about European regulatory features was rather that Europe needed specialized pension fund supervisory bodies and agencies at a national level, even if over time, there might be scope for supranational coordination of these bodies.

Finally, Boeri made a brief reference to the point raised by Visco on reverse mortgages. Surprisingly enough, he said, these types of instruments are not really taking off. He hypothesized whether this might be due to the need for greater information and clarification about the type of instrument, but agreed that in principle there could be a case for this type of instrument to take off in a number of countries where there is a large share of owner-occupied dwellings.

Lans Bovenberg

Scientific Director,
Netspar; Professor,
Tilburg University,
Tilburg

Lans Bovenberg explained the Geneva Report's stance in favour of stand-alone pension funds was in large part to do

with the fact, mentioned above, that company pension funds are not entirely riskless. In company funds, participants clearly face substantial credit risk, yet financial markets today clearly allow for much better diversification of that risk. This is part of a general tendency towards the greater emancipation of the worker.

He noted that the authors in the Geneva Report also come out fairly strongly in favour of human-capital investment, unlike the G-10 Report which appears to stress the importance rather of increasing savings.

Finally, Bovenberg noted that the idea of the United States as a pension fund presented by Chaney could also be used to describe the situation in Europe, where, for instance, some countries such as the Netherlands and Switzerland could be considered as the pension fund for other countries.

Jean-Pierre Landau sought clarification on the differences between individual private insurance retirement arrangements and collective pension funds. He asked whether individual arrangements were good substitutes for collective pension funds. What were the advantages and disadvantages of the two formulas?

Landau also raised a question about the explanations given for long-term interest rate determination. On the one hand, theory suggests long-term interest rates are determined by long-term supply and demand for bonds, while on the other they are rather the sum of expectations and the term premium. Which explanation was most relevant in explaining the recent rise, he asked.

Benoît Coeuré disagreed that the divergence identified by Chaney concerning the role of government was really a divergence. In the Geneva Report, he noted, the authors are stating that there is a limit to the extent to which governments can supply long-term and inflation-linked bonds, while the G-10 Report argues that governments should take appropriate measures to ensure that the market for such products develops, but not necessarily issue them themselves. Governments may need to take various regulatory steps or even kick-start the market to provide initial liquidity, as indeed various countries have already done for inflation-linked and ultra-long bonds, but they may not necessarily continue to supply the whole demand. Indeed, one critical feature of the Geneva Report was that pension funds should better exploit the potential for diversification and risk-sharing among generations, so as to avoid transferring too much risk to governments.

Coeuré made a point about longevity risk, that on top of longevity risk itself there was substantial model uncertainty, that is, the possibility that mortality tables would be revised. He cited a study by UBS which computed the pension deficits of the FTSE 100 companies according to various

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mortality tables. What the study finds is a pension deficit of £40bn using British mortality tables; using the same pension liabilities but French mortality tables gives a pension deficit of £63bn; and using German mortality tables gives a £3bn surplus.

Finally, in a very short comment on the anomalous structure of the yield curve Coeuré argued that there was most likely a mix of determinants involved. Certainly, yield curve behaviour primarily reflects the expectation hypothesis, but there may indeed be distortions around the expectations hypothesis which are due to supply-demand imbalances. For instance, he noted, what we are seeing on the euro curve, which is quite different, as discussed earlier, from the sterling curve, is that the euro yield curve is probably a reasonable version of the expectation hypothesis up to a maturity of 30 years, following which there is a declining yield curve between the 30-year and 50-year maturity, and this might be the reflection of demand from pension funds. It might also be, Coeuré stressed, because there is a convexity value specific to ultra-long bonds which is due to the volatility of financial markets.

Arnaud Marès
Head of Policy, UK
Debt Management
Office, Lond

Speaking in a presonal capacity, Arnaud Marès raised a question for Visco about the potential role of governments to improve the supply of undersupplied financial instruments. As Marès understood, it, two aspects were identified by Visco. The first is that the government help kick-start the market. The second is that the government hedge tail risk, situations of very low probability and high impact risk which are otherwise not insurable by the private sector. He asked if that was best done by a creature of contract, such as a bond, or by a creature of policy. Governments do insure, implicitly, a large number of these risks – extreme weather, terrorism events – but typically not by contract, nor through a bond or any other market instrument. But should such a risk materialize, the government may choose, as a matter of policy, to effect a redistribution through fiscal transfers, financed by taxation, or any other means. Why, then, would pensions or longevity issues be different? Why would such cases be better dealt with by a creature of contract, by the issuance of legal instruments by the government, and why would the use of policy not be just as efficient?

Guillermo Larrain
Former Superintendent
of Pension Funds, AFP
and Professor of
Macroeconomics,
University of Chile,
Santiago de Chile

Guillermo Larrain expressed an interest in the disbursement phase of the European pension system. He enquired how pension funds pay their pensions. If there are life insurance companies active in the disbursement phase, surely they would consider the real mortality tables when selling annuities? The point is then rather how the regulator treats reserves, and if, he noted, there are official mortality tables with which reserves are built, the problem becomes one of significant moral hazard.

Avinash Persaud made two points. Concerning Visco's point about the lack of market products in the annuity space, Persaud expressed scepticism at the notion that policy-makers might suggest that the market should provide things that it is not currently providing. He considered that there is no shortage of instruments in terms that provide income from capital. Where there is a shortage, however, is in income that is augmented by the probability of mortality. He suggested that this is a classic adverse selection problem caused by asymmetric information. Clients of these products have better information on their mortality than the seller of the product. Unless one is to tackle the adverse selection problem, the annuity space will not be filled merely through moral suasion.

His second contribution was about the idea that China is running a big pension fund, and that the assets of this are all held in US government securities and agencies. He considered this is a good analogy but clearly a very bad asset allocation. For a number of reasons, the allocation should be different. If indeed this pension fund is designed for future generations, it should then be invested in less liquid assets so that the beneficiaries can earn the liquidity premium. This would not only be good for future generations in China, it would also be good for current generations of emerging economies where these savings may be invested, and it might also be good for the US economy because it would provide greater investment discipline than the current mechanistic asset allocation.

Amlan Roy highlighted that the G-10 report had failed to mention the leading researchers at Harvard School of Public Health (Bloom, Canning and Sevilla), who have in many well-cited recent papers studied the interactions between demographics and health. He agreed with Persaud that annuity-type products are there, but he noted that the leading actuaries in the United Kingdom and Germany would nonetheless claim that these markets are in a crisis because the pricing is not correct, which relates back to the point that was made by Coeuré, namely that mortality tables are not updated regularly enough.

Claudio Borio took up the issue discussed earlier in the day of accounting. He remarked that there was an implicit assumption in the discussion that it was easy to mark to market pension liabilities, but that this was, in fact, not the case. A key question one must decide, in marking products to market where there is no market, is the discount rate. This has two components: one is the riskless component and the other is the risk premium. The risk premium is absolutely critical. The question is then, what is the risk premium that best approximates the risk profile of pension fund liabilities.

There is an enormous discussion today on insurance com-

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Chairman,
Intelligence Capital
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Amlan Roy
Director,
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Pensions, Credit
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Claudio Borio
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Monetary and
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panies – how to value the liabilities of insurance companies and how to apply risk premiums to them – precisely because this question is not settled. When talking about accounting distortions, there are essentially three such sources. The first is at the micro level, where, even if it was agreed that fair-value accounting was the right approach, one might have problems estimating the right numbers. If you have too much of a fixed-rate bond yield, you will be biasing your portfolio composition towards bonds, even if the liabilities themselves have more of an equity/real component to their risk profile. The second set of distortions relates to the macro level. This encompasses the impact on asset prices and quantities in the aggregate resulting from the influence of accounting on individual choices. One such example would be the impact on bond yields resulting from distortions in accounting numbers. And the third concerns how regulation should somehow take these factors into account: what type of funding requirements, given the different types of accounting methodologies, what the amortization period should be, etc. These could have a significant impact on market-wide dynamics in the build-up to and materialization of financial distress, not least by affecting investment horizons.

Marcello Messori
 Professor of
 Economics,
 University of Rome
 'Tor Vergata', Rome

Marcello Messori agreed that governments might have to supply instruments for longevity risk management. However, he noted that from an economics point of view, this is more or less equivalent to stating that the government has to produce an externality. Normally, the production of an externality has a cost. What, then, are the distributional effects of these costs over generations? May we maintain that young people are ready to pay for these costs because their expectation is that in 40 years someone else will be ready to behave in the same manner?

Bernhard Winkler
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 Monetary Policy,
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 Bank, Frankfurt-am-
 Main

Bernhard Winkler came back to Chaney's issue of the impact of credible pension reform on savings behaviour. The striking thing about this, he noted, was that very similar health and pension reform challenges across the globe nonetheless coincided with very different savings behaviour, as evidenced by the different statistics in Japan, the United States, the United Kingdom and Europe.

He suggested that it could be the case in pension reform that if the public is not aware of the unsustainability of the PAYG system, there is no reaction in their savings behaviour. But as governments start talking about reforms, savings behaviour may react to a growing uncertainty about what is going to happen.

In explaining different savings behaviour, one may, however, also want to go back to the question of social discount rates. There may be different time horizons and long-term planning in different countries. Essentially, asked Winkler,

what were the factors explaining the different secular trends in savings ratios over the last 5-10 years?

Winkler made a second point about the volatility and reactivity of savings behaviour to asset prices from a more cyclical perspective. As we move from DB to DC schemes, we might expect savings to be more reactive to asset prices and their current valuations. The question then is whether we would like households to see through that short-term volatility. How would the macroeconomy react? Would there be more volatility?

Concerning the role of governments in issuing long-term and index-linked bonds, **Visco** noted that transaction costs sometimes may inhibit the development of markets. He cited the example of Italy, which today has one of the most efficient public-debt markets in the world. The amount of work put into building this market by the Central Bank, acting for the Treasury, however, was quite remarkable. Much work needed to be done on inflation-linked bonds, he said. There may be certain regulations that are also preventing the market from taking off. He agreed with Persaud that it is not the government's business to tell the market what to do. But the government could and should examine the environment in which the market operates, including assessing the legal and regulatory environment.

In terms of hedging tail risks, Visco argued that, in cases where risk was not diversifiable, the key question was that of designing the appropriate institutions. Not through a contract such as that implicit in the issuance of a 50-year bond, but some other type of contract, perhaps, between the public and private sectors might be necessary.

Finally, on the question of annuities, Visco suggested that bad institutional design and education were key reasons behind the poor development of an annuity market. There is too much faith in public pension systems, he ventured, and a significant misperception on the part of individuals in assessing their own retirement benefits. This was an area that merited more work.

Chaney argued that the market – companies – could also provide long-dated bonds and other instruments. Indeed, he argued, if there is such a strong demand for long-dated bonds from pension funds, the private sector would be very likely to step in. Where was the necessity for governments to move into the market?

Responding to Winkler's question on savings rates trends, he agreed that there were clear divergences in trends across countries. My first suspect, he noted, before looking at structural issues, such as pension liabilities or the awareness of pension shortfalls, would be simply to look at overheating or a growing output gap. Short-term cyclical developments could explain a lot of these divergences. Divergences in level

terms are, he argued, more likely to be due to structural factors.

As to whether households were aware on a day-to-day basis of the risks of a pension shortfall, or a drop in their future income, the answer could be related to the concavity of the utility function, Chaney argued. If this were flat, then yes, the savings rate would probably react. But, he noted, the first role of savings is to smooth consumption, since more volatility on the savings rate was likely to come from volatility in real income.

Andrew Roberts

Chief European Fixed-Income Strategist,
Merrill Lynch, London

Andrew Roberts joined the debate on the annuities market, stating that the debt management office in the United Kingdom had put out consultations asking whether the private sector would like such instruments; the market did not express any interest in them. The fact is, noted Roberts, that financial markets are sophisticated enough: if you give them the base instrument, they will make what they need. So you have to ask yourself what an annuity is. Essentially, a flat annuity or an inflation-linked annuity is a type of fixed-income promise with a longevity risk associated to it. The reason why there is no focus on annuities, he suggested, is because we have assumed that these are just part of the fixed-income exposure.

Yet, argued **Ignazio Visco**, a number of estimates show that the welfare gains of buying annuities are really large, with some studies estimating the difference in gains between having an annuity stream or having to invest an individual lump sum between 25% and 40%. The underdevelopment of the annuity market is clearly bad from a welfare point of view.

Charles Wyplosz

Professor, International
Economics, Graduate
Institute of
International Studies
and Director, ICMB,
Geneva

Charles Wyplosz made the following point: Suppose from now on, when their current debt is coming to maturity, governments reissue a 50 year bond, and do so for ever until they only have 50-year bonds on the market. What difference would this make? Surely, there would simply be a very liquid 50-year bond market?

In response to this, **Visco** noted that it would be preferable for savings to be invested in equities rather than bonds.

Implicit in the rationale of bonds, which are used to finance public infrastructure and other projects that have lower returns, is that, in issuing bonds, public debt is increased. Wyplosz's comment, however, is that, given a certain public debt, the composition can be changed. But there are reasons why in history public debt that originally was infinite-lived – we had consols – became very short-term debt. This is linked to the credibility of governments, and the sustainability of the public debt as perceived by those who buy that debt. There is a limit, argued Visco, to how

long and how much a government would be able to issue very long-term debt to replace short-medium debt.

The answer, replied **Coeuré**, depends on how and for which purpose you use public debt as an instrument. This situation has already taken place, he noted. In France, for instance, in 1913, just before the first world war, 70% of the debt portfolio was perpetual rent. Why have we moved away from perpetual rent to short-term instruments? One reason is inflation; it was unacceptable for creditors to have their portfolios invested in very long, fixed-income instruments in a world of high inflation. Now that we are back in a world of low inflation, closing this 50-60 years of parenthesis, maybe we are going to move back to a 19th-century world of high-duration debt. That may be a possible scenario. It also goes the other way round: we know that the way governments structure their debt portfolio is also sending signals on their general policy framework. There are many objectives assigned to debt managers on top of interest cost minimization and you have to choose one, he quipped.

Session 4 Chilean pension funds

Chair: Svein Gjedrem, Governor, Norges Bank, Oslo

José Viñals noted the similarities between the recommendations given in the Geneva Report and what happened in Chile. The Chilean reform experience, he suggested, was particularly interesting, given that it occurred some 25 years ago, and could, in some sense, be useful in validating some of the main assertions made by the Geneva Report, notably that of moving from a PAYG system to a more diversified system in which private DC pension funds play a greater role.

There are, nonetheless, some key differences that must be borne in mind, and which stem in large part from the fact that the Geneva Report is mostly about industrialized countries, while Chile, even with the good performance it has registered economically to date, remains an emerging market economy. The first difference concerns income inequality and poverty. These issues are not particularly prominent in the economic or political agendas of industrialized countries, but are clearly very present in Latin America and Chile.

The second difference is that emerging market economies are in general far less stable. They are subject to more significant shocks, both externally and internally generated, and the transmission mechanism of these shocks is much harsher. This is due to the fact that these markets are less efficient and complete: labour markets are often dual, characterized by substantial informal sectors, and financial markets are

José Viñals
Director General and
executive board
member, Banco de
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less developed. Of course, this means that there is more to gain in terms of combining pension reform with financial-sector and labour-market reforms.

The first question is why reform took place so early on in Chile. It is interesting, noted Viñals, that these reforms were in 1981, 25 years ago. There are several reasons that can be advanced. The first was a recognition that the system was financially unsustainable. At that time, it cost the government about 3% of GDP each year to fill the gap in the PAYG pension system. Most importantly, however, was that demographic trends and other forecasts showed policy-makers that, in the absence of reform, the government would by 2000-5, have to contribute about 20% of GDP each year to fill the gap. This would be alongside a public debt which at the time was about 90% of GDP.

The second reason was that only 62% of the labour force was covered by the system, creating a substantial social problem. Other reasons for reform included low savings rates, an underdeveloped financial system and the idea that pension reform might be a good way to introduce market mechanisms to the Chilean economy. Essentially, then, pension reform was considered a good opportunity to reinforce both the efficiency and growth benefits of general market reform, as well as to deal with some of the equity considerations

Viñals argued that while the reforms were indeed efficiency-enhancing, they may not have performed as well in terms of equity as generally supposed.

The present system as described is a three-pillar system, in which the key is the second pillar, the individual mandatory DC system in which pension funds basically diversify risk through markets. In a way, noted Viñals, the system is very close to the recommendations made in the Geneva Report, but with some differences, one of which is that the Chilean system comprises individual mandatory accounts while the report suggests occupational pension funds.

In terms of the positives of the Chilean reform, Viñals argued that social security system problems were indeed solved in the sense that financial sustainability was assured. Furthermore, now Chile is in a much better position than most OECD countries to tackle the future problems of an ageing population. The second positive was that the average replacement ratio is today quite adequate, when compared with the average replacement ratio of the OECD. A number of positive externalities also resulted, in terms of savings rates, domestic capital market development, portfolio diversification and improved capital market access. These are all among the list of positive externalities highlighted in the report. Indeed, noted Viñals, if one had to cross-check this list, one could surely say that many or most of the positive externalities outlined did in fact materialize in the Chilean example. Estimates suggest, explained Viñals, that reform

contributed 0.5% each year to Chile's growth rate in the past 25 years. If this was indeed the case, it seems to suggest that the positive externalities significantly outweighed the negative externalities, and that, with the exception of the type of specific fund proposed in the report, the policy conclusions seem broadly to be a very good idea.

But of course not everything was so positive in the Chilean case, reminded Viñals, especially at the social and micro levels. Chile has a pure individual DC pension fund and there are therefore no features which allow any of the intergenerational sharing of risks between young and old workers that were proposed in the report. In particular, the otherwise adequate average replacement ratio hides very important divergences across different income groups. One can show that social security reform in Chile essentially worsened income inequality: there is a positive correlation between the average income of those contributing and the contribution density of contributors. In fact, one-third of the population nowadays may have replacement ratios as low as 10-20%, and these are the poorest people. Clearly this is a problem: that one-third of the population, the poorest, only has a 10-20% replacement ratio. In the OECD, in contrast, poor people have replacement ratios of 70%.

Furthermore, continued Viñals, according to the figures presented, 40-50% of the population does not have access to any sort of decent pension in the second pillar. They must rather look to qualify for the first pillar. And of this percentage, only 20% qualifies for the first pillar, leaving 30-40% who do not receive anything. This clearly means that there is a significant, continued safety net problem.

Now why is this? The reason, suggested Viñals, is that the second pillar was not as successful as expected in bringing in the contribution of individuals such as women or self-employed. The system was not mandatory for the self-employed and so they did not contribute. Perhaps it was also the result of an information and education problem, because individuals did not perceive their contributions as an investment in future income but merely as a payroll tax. Finally, the labour market's structure and its duality can explain much. Clearly, if mandatory contributions are required for the self-employed, they will show a preference for the informal economy – indeed, labour-market reforms – since to decrease the informality would have helped in making self-employed contributions more attractive.

Other negatives were also evident, such as the lack of competition, high fees, the dominant position of pension fund managers in the financial markets, potential bubbles and so on, which call for greater competition in the supply of services as well as higher international diversification. But, added Viñals, if one aimed at higher international diversification, one would need to create the markets to protect, to hedge the currency risk, and it thus becomes impor-

tant to develop a market for currency swaps. Again this is something that links to the Geneva Report.

None of the issues raised earlier in the day, such as how mark-to-market regulation or asset liability management might affect pension funds in industrialized countries, is relevant here, because basically they apply mostly to DB pension plans, while in Chile the system is DC.

In conclusion, Viñals argued that, reforms notwithstanding, there continued to be very-long-term sustainability problems with the Chilean system. Indeed, the IMF highlighted just such a problem in a recent Article IV consultation. The key issue is the dearth of contributions coming from the second pillar, and therefore, second-pillar replacement rates are expected to fall below what is needed 30 years from now to guarantee a decent standard of living. This implies that people will have to turn to the minimum state guarantee (first pillar), but here the problem is that they do not necessarily qualify. Half the population may not qualify because they would not have contributed to the second pillar for the 20 years needed in order to qualify. This problem goes some way towards explaining the social and political debate during the recent electoral campaign.

The question is what can be done. What is needed, proposed Viñals, is a combination of policies that on the one hand enforces toughness, and, on the other hand, facilitates greater generosity. More specifically, he suggested, the government should be tougher with respect to the second pillar, the DC system, by, for example, considering making self-employed individuals contribute on an obligatory rather than on a voluntary basis, all while reducing the opportunities for them to turn to the informal economy. Second, it would be important to increase the retirement age, in particular for women, so that individuals contribute longer and thus more to their retirement. This would also mean that if individuals are unable to contribute enough, they would at least qualify for the first pillar, having a bigger chance of contributing for 20 years. Finally, financial literacy is needed to inform individuals that their contributions are not payroll taxes.

In terms of generosity, it would be important to consider the possibility of reducing the time needed to qualify for the minimum pension scheme and perhaps take advantage of the fiscal room for manoeuvre currently existing in Chile, which has a net government debt of 11% of GDP, to better fund the first pillar, which is so important for 50% of the population.

Overall, concluded Viñals, the Chilean reforms deserve a good grade in terms of their macro impact and in terms of solving financial sustainability issues. However, going forward, Chile's grade may well falter, particularly because of the social situation.

Guillermo Larrain noted that the reform proposals currently under discussion in Chile contained many of the elements mentioned by Viñals. What has already been done has been to extend pillar 0 to the entire old-age population in conditions of poverty. Second, pension increases were under consideration, along the lines of a concept known as the 'stairway'. The idea with this was to give some sort of insurance – some DB ex-ante – to individuals in order to reduce uncertainty stemming from the potential variance in returns. This is now being discussed and would constitute a useful way to change the current minimum pension as it is structured.

Thus, in terms of the generous side of Viñals's recommendations, advances are being made. In terms of the tougher recommendations, Chilean policy-makers are not convinced of the merits of forcing the self-employed to contribute. Informality is still too prevalent and hard to control. In contrast, what has been designed is a default system through the tax system, such that the self-employed are offered a default option of contributing to the minimum wage. The idea is in the first place to induce contributions, and then, as informality is reduced, to move to enforce such contributions. Larrain noted that the retirement age, and in particular female retirement ages, have been discussed and are key issues on the agenda. Finally, the abolition of barriers to entry into the second pillar would clearly be advantageous.

One of the main arguments for reform in the report related to the reduction of transaction costs. Lans Bovenberg questioned the size of transaction costs in the Chilean system, notably given the two phases, accumulation and decumulation, outlined by Larrain. Part of the argument for a collective system, was that it dealt effectively with selection, marketing and other costs. How, in contrast, did the decumulation phase function in Chile and how large were the costs associated with this?

Svein Gjedrem noted the impressive real return posted by the Chilean system over the last 20-25 years of around 10% in real terms. Clearly, this is not sustainable, he argued. What must be done to guarantee a real return for the system into the future?

The fees charged in the accumulation phase in Chile are not particularly high, replied **Larrain**. The problem is, however, that the fees are charged to the flow and not to the balance of accounts. Thus the fee, about 1.8% of an individual's salary, must be transformed into a fee that relates to the assets under management. One simple way to do this is to take from the balance sheets of all companies all the income

Guillermo Larrain

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Lans Bovenberg

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generated by these fees and consider that as a share of the assets under management. Today, this would be about 0.6%, a figure that compares well with several asset management industries worldwide. This is a number, furthermore, that will decrease over time as the system matures and accumulates funds.

The issue, argued Larrain, is not that the fee is expensive, but rather that it can be significantly cheaper than what it is today.

A crucial point is indeed the transaction costs of passing from the accumulation to the decumulation phase. This is a very unregulated system, since the life insurance industry did not wish to be regulated. Consequently transaction costs were as high as 7%, on average, of funds. In 1994, the government proposed a law on this, which was only passed in 2004, and which has led to a fall in transaction costs from 7% to 2%. To be more efficient than this, noted Larrain, would be difficult.

With respect to the real return, Larrain argued that pension fund managers were currently over-restricted in terms of possible approaches to investment. Allowing more room for managers to look for investment opportunities, in an active and responsible way, would be beneficial.

Bernhard Winkler followed up on the question posed by Bovenberg. He noted that Larrain had focused greatly on the IO issue of pension funds. The same problems of the degree of concentration and thus competition in the market could also be raised with respect to insurance companies, notably during the disbursement phase of the pension scheme. Winkler also sought more details and clarification on the way the annuity market was organized in Chile, in light of the difficulties experienced in establishing such a market elsewhere.

Bernhard Winkler
Adviser, Directorate
Monetary Policy,
European Central
Bank, Frankfurt

Jacques Delpla queried the extent to which the success of the pension system in Chile was due to the demographics of the country. The problem in Europe, he noted, with the PAYG system is the extent of ageing and the decline in birth rates. Could the fact that the Chilean population is still young and fast-growing account for the success of the pension scheme?

Jacques Delpla
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Advisor, BNP Paribas,
Paris

Vít Bárta shared Larrain's emphasis on the need for complementary reforms to ensure the success of Chile's pension reforms, and raised a question concerning the political circumstances under which reforms were launched. In particular, he noted that the reforms were started during a period of dictatorship. Could such a political framework, he asked, somewhat provocatively, be more suitable for the launch of comprehensive reform?

Vít Bárta
Advisor to the Vice-
Governor, Czech
National Bank, Prague

On a more technical note, Bárta raised a question concern-

ing the possible use of funds stemming from privatization revenue in the pension reform scheme.

Andrew Roberts was keen to hear more about inflation-linking in Chile, in particular in relation to the indexation of pension policies before and after retirement.

Guillermo Larrain explained, in response to the question from Winkler, that a law had just been passed reforming the disbursement phase. He noted that in the insurance sector, there was quite a lot of competition: there was something like 25 life insurance companies operating in the sector, with the active participation of all major global companies and including seven or eight relatively competitive domestic companies. A consolidation would nonetheless be most likely, he argued, given the small size of the Chilean market, and given recent directives to these companies to increase their reserves in the light of revised mortality tables. However, he stated that, at the end of the day, the system was fairly competitive, with lower transaction costs than in the past.

Larrain also said that an electronic market had been created for this disbursement phase, similar in nature to the blind quotation system in use in Sweden. This resulted in a fall in transaction costs to the 2% currently prevailing. The electronic system was particularly promising, in terms of generating reductions in prices and administrative costs, as well as improving transparency.

Reacting to the point made by Roberts, Larrain noted that Chile has never experienced inflation, even if the country had experienced the longest period of inflation historically across countries. As a result of this inflation persistence, Chile was totally indexed. What is interesting, he added, was that Chile had created an indexation unit, which, in contrast to other Latin American countries, was today not related to the dollar. Other Latin American countries, including Brazil, initially adopted a similar indexation unit, but then in the 1960s they dollarized. Thus, in Chile, everything is indexed to this unit, so that current annuities are not calculated in terms of pesos but rather in terms of this indexation unit. Thus, individuals do not run inflation or longevity risk, which is instead assumed by the life insurance company.

Demographics, noted Larrain, was not really a key issue. Chile and Latin America more generally were basically experiencing the same demographic transitions as in the industrialized world, even if with a few years' lag.

On the question of privatization, Larrain said that, indeed, the series of privatizations that took place in the mid-1980s did correlate with an increase in the corporate sector's share of the composition of pension funds. He agreed that there might be some link between privatization

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Chief European Fixed-
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and pension fund reform, but that this was largely limited to the mid-1980s.

As for the political environment, Larrain noted that reforms in Latin America more generally had taken place under democratic regimes. The prime point to be made, he suggested, was rather the importance of policy persistence. Several reforms were needed in several different areas over a sequence of time, which made reform persistence key. This was a strong factor in the Chilean reform experience.

In a final brief question, **Bernhard Winkler** enquired whether the orange-envelope system was used in Chile. Given that pensioners are hedged against inflation risk, as well as against longevity risk, since they receive an annuity, they still remain vulnerable to market risk at the time when they transform their capital into an annuity.

Referring to the 'stairway' system outlined by Larrain, Winkler suggested that it was, in fact, somewhat similar to the DB idea because it provided a floor for capital risks on the down side. In a way, he suggested, Chile may thus well have essentially a hybrid system.

Not orange envelopes but white ones, replied **Larrain**. Indeed, individuals are informed about the possible outcomes of their pension rights in a wide range of circumstances.

Endnotes

- 1 The Survey of Health, Ageing and Retirement in Europe (SHARE) is a cross-national database on individuals aged over 50, reproducing to a large extent the same structure of the US Health and Retirement Survey (see www.share-project.org)
- 2 Often pension liabilities are not secure in real terms because they are defined in nominal terms and inflation indexation is only an option.
- 3 The OECD guidelines use similar words: 'The governing body of the pension plan or fund and other appropriate parties should be subject to a 'prudent person standard' such that the investment of pension assets is undertaken with care, the skill of an expert, prudence and due diligence.' (OECD, 2006, §2.1).
- 4 Union membership has been falling steadily in many OECD countries in the last 20 years, and there are no elections of workers' organizations. An extreme example is France, where workers' participation in unions stands at only 10% and union representation in collective bodies is usually limited to five so-called representative unions, listed by a 1966 decree.
- 5 Sources: respectively, 'The Consultancy World Keeps on Turning', Investit, September 2005, and 'FRS17/IAS19 Pension Liabilities: The Essential Guide to Actuaries and Actuarial Assumptions', Pension Advisor Review, August 2005.
- 6 A 2005 report to France's Autorité des Marchés Financiers has advocated the creation of a public financial education institute. See Mercer Human Resources Consulting (2005), for an example of market-based financial education.
- 7 In light of this, the OECD recently proposed changes to its model tax convention in order to unify the tax treatment of cross-border pensions.
- 8 The Myners Report (2001) discusses the pros and cons of balanced mandates versus benchmarking.
- 9 It should be noted that in the same study, comparable fees were even higher in the United States, at 46 basis points.
- 10 An interest rate swap gives the right to receive a sequence of fixed payments while paying a floating, short-term interest rate. The swaps market has become immensely liquid and provides a pricing reference for many fixed income transactions, particularly in Europe. Since it is mainly an interbank market, swap rates reflect the credit quality of AA-rated banks and are therefore somewhat higher than rates on AAA-rated government bonds.
- 11 According to the Dutch National Bank December 2005 Statistical Bulletin,

- which used an average of 90% of funds, not including the top or bottom 5% in modified duration terms.
- 12 Often pension liabilities are not secure in real terms because they are defined in nominal terms.
- 13 Nevertheless, an employer may have an interest in a well-functioning pension fund for the employees of his company so as to increase the net reward employees receive for working for the company.
- 14 Speech by Sir Howard Davies at the annual conference of the Association of British Insurers, 10 April.
- 15 This assumes that all agents feature the same constant relative risk aversion and that utility is time-separable and separable in consumption of commodities and leisure. More generally, optimal risk-sharing implies that everybody's marginal utility changes with the same percentage after a shock hit. See Bohn (2005).
- 16 By protecting pension funds against low interest rates in an economic downturn, these derivatives thus may enhance macroeconomic stability, depending on how the ultimate risk-bearers to which these derivatives shift the risk respond to the capital losses they incur.
- 17 With a typical duration of 15 years and an expected inflation rate of 2% a year, including soft indexation rights as hard pension obligations would decrease the funding ratio by about 30%.
- 18 Under the assumptions stated in footnote 14 (Teulings and de Vries, 2005). With habit formation, exploiting the long recovery horizon of the young becomes even more important. Adjustment of short-run consumption levels then becomes more costly so that most of the adjustment is postponed to when habits have had time to adjust.
- 19 Razin and Sadka (2002) have argued that fiscal discipline in EMU could prevent the transition from PAYG to funded pension systems, since governments have to issue debt to compensate older workers.
- 20 In practice, other major categories of saving, such as housing, typically enjoy fiscal privileges. Furthermore, some industrial countries have moved away from a comprehensive income tax towards a scheduler income tax on capital income. Under these scheduler taxes, capital income is taxed at a flat rate below the top marginal rate on labour income.
- 21 Ceilings do not have to be adjusted if they are expressed in terms of the tax-free contributions. The reason is that annuities become more expensive if longevity increases. Hence, those who take advantage of the maximum tax benefits can afford to buy a smaller annuity if they continue to retire at the same time despite the rise in longevity.
- 22 Kalle et al. (2002) provide these data for 12 other EU countries.
- 23 The pension premium in the first, public pillar, in contrast, involves a tax element, since the first pillar is aimed at fighting old-age poverty through intergenerational redistribution.
- 24 The report 'Ageing and Pension System Reform: Implications for Financial Markets and Economic Policies', was published in the Financial Market Trends of the OECD in November 2005. It can be found on a number of websites, including those of the BIS, IMF and OECD. All the charts and tables that follow are drawn from this report.
- 25 Fischer Black, *Financial Analysts Journal*, 36(4), July 1980.

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