INTRODUCTION

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Over the last decades, pension systems have been reformed in most developed countries. Further reforms are under way or are being discussed. Changes are prompted by the need to adjust pension arrangements to the new demographic, economic and social conditions, while trying to safeguard the essential achievements of social protection schemes: the possibility to transfer resources to the after-retirement part of life, the reduction of the risk of outliving one's resources, and the decline of poverty among the elderly.

Pension reforms are mostly driven by the need to control outlays. Most developed countries are ageing: the ratio of the elderly-to-working age population has already reached historically unprecedented levels and is projected to increase further. The ageing process is driven by progress in life expectancy and low fertility rates. Demographic changes increase the demand for transfers and services for the elderly. Public pension schemes bear much of this pressure. In spite of the reforms introduced over the last twenty years, the ratio of pension expenditure to GDP is still expected to rise in most OECD countries. In the euro area it is set to increase from 11 per cent of GDP in 2007 to a peak of 13.9 per cent in 2053. While the reform debate largely reflects the concern about these long-term expenditure developments, with the sustainability of PAYG systems being frequently questioned, policy changes are sometimes also invoked in order to improve budget balances over the short and medium term.

Reforms may also try to counter the adverse effects of the pension system on the labour market and to improve the distributive effects related to the composition of public spending. Over recent decades, while life expectancy increased, the participation rates of the elderly fell significantly in most industrialised countries. The average effective retirement age is about 60 in most European countries. One explanation for the low participation rates in Europe is that PAYG systems are not neutral with respect to the retirement decision. Indeed, in many countries social security provisions are such that the pension wealth of a worker decreases with the age of retirement. Even if the trend towards lower activity rates seems to have come to a halt, the present levels of participation rates are considered too low in view of the ageing process. There is also a growing awareness that, in order to achieve higher employment rates, countries need both to improve the design of pension schemes and to take action in the labour market.

The surge in pension spending has contributed to improve the economic conditions of elderly citizens, traditionally one of the groups most subject to high poverty. Poverty rates for older citizens have dropped and are now similar to the population average: in some European countries they are actually lower than for younger people. This has led to the question whether more public resources should be channelled to welfare programs targeting the needs of other social groups. The rise in the ratio of pensioners to the active population could lead to an increase in contribution rates and compress the resources available for other potentially problematic groups of citizens.

All pension reforms basically tackle one issue: how to grant adequate living standards to an increasing number of elderly citizens without imposing an excessive burden on the public finances. However, very different approaches have been implemented: from parametric changes to traditional PAYG public schemes to the introduction of new pension formulas (such as notional funding) in PAYG schemes, to the development of funded schemes. Even within the same broad line of reform, the specific changes introduced are usually significantly different from country to country, reflecting national traditions, problems and priorities.

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While the need for changes in pension rules is often widely recognised, the introduction of reforms is usually politically difficult. This reflects the importance of pension systems in all developed countries. Most citizens either contribute to finance them or draw benefits from them: individuals' plans and decisions are influenced by social security rules over a large part of their lifetime. Pension systems absorb sizeable public resources, influence the labour and capital markets, and affect income distribution both within and across generations. These features make reforms an extremely complex task.

All reforms are likely to hurt some categories of citizens or some generations, in terms of cuts to their social security wealth or a higher tax burden. Reforms can however improve the incentive structure of the pension system. The removal of distortions, such as the incentive to retire early, can have positive effects on economic growth. Reforms should both ensure the macroeconomic sustainability of pension systems and improve their microeconomic features.

Pension reforms represent an interesting test to evaluate the ability of each country to adjust its institutions to the new developments, manage complex long-term problems and reconcile multiple objectives. Interestingly, the need to reform pension systems has spurred the development of new policy solutions, such as bipartisan committees, and new technical tools, such as long-term projections. International organisations and the European Commission have played an active role in the pension policy debate and helped to elicit government preferences, widen the technical discussion on the issue and improve the availability of information to assess the sustainability of the public finances.

The papers presented at the workshop were organized in four sessions, mirrored by the sections in this volume. Section 1 examines the impact of pension reforms on the labour market and their implications for investments in human capital and productivity growth. Section 2 is devoted to the impact on capital markets, and specifically to the effects of the increasing role of funding. Section 3 considers how changes in the design of pension systems impact on income distribution within and across generations. The analysis is complemented by comments on some macroeconomic implications of the reforms. Section 4 deals with the political economy of pension reforms and their role in the broader fiscal policy context.

1 Pension reform and the labour market

Section 1 includes papers dealing with the interaction between pension system design and labour market functioning.

In their paper, El-Mekkaoui De Freitas and Oliveira Martins address four empirical puzzles concerning the life-cycle theory: i) an excessive (relative to what theory predicts) consumption drop at retirement; ii) an excessive amount of savings in old-age; iii) the lack of a clear negative relationship between the generosity of PAYG systems and private saving rates; and iv) the lack of a positive relationship between increases in longevity and increases in saving ratios. The authors try to shed new light on these puzzles with a blend of theory, informal reasoning and empirical analysis. First, they set up a 2-period OLG model in which the relationship between longevity and saving ratios can be either positive or negative. Second, they argue that a change in the preference structure in old age (namely, a decrease in the demand for private consumption goods and an increase in the demand for health-related and other ”welfare” goods), if coupled with a generous public pension and health system, can explain both the drop in consumption at retirement age and the excess savings after retirement. Finally, they argue that the relationship between the size of PAYG systems and private savings may also depend on the size of the healthcare system. Regression analysis on a panel of 18 OECD countries seems to be consistent with the proposed explanations of the four puzzles.

In his contribution, Paul Rodway summarizes and updates recent work done at the New Zealand Treasury on the New Zealand public pension scheme. The scheme provides a flat rate, universal, non-means-tested pension benefit. Early-retirement provisions are basically absent and pensions are paid even if individuals continue to work after the eligibility age. The paper shows, using aggregate data, that participation at older ages tends to decrease in response to reductions in the minimum eligibility age, and vice versa. Furthermore, using survey data, it documents that receiving pension benefits significantly and negatively affects the chance of being in the labour force. All in all, it appears that the New Zealand superannuation scheme, despite having no explicit financial disincentives, for many senior workers is still a barrier to continued participation in the labour market.

Ahuja and Paserman discuss recent pension reforms aimed at prolonging working lives in the 27 member states of the European Union. Indeed, in the framework of the so-called Open Method of coordination, member countries have agreed on a set of common policy objectives concerning social protection systems. In particular, promoting longer working lives is a policy priority. To this end, a number of countries have legislated increases in the minimum retirement age (albeit often with a long phase-in period). Some countries have also introduced actuarial reductions for those retiring before a "normal" retirement age and/or actuarial premia for those postponing retirement after that age. Legal obstacles to receiving pensions while continuing to work have also been reduced while the link between the amount of benefits and that of contributions have been strengthened. Finally, access to early retirement schemes and unemployment benefit schemes specifically targeted at older workers has been restricted. The authors document that, partly as a result of these reforms, the employment rate for older workers (55-64) increased from 37 to 45 per cent during the 2001-2008 period. However, they argue that to benefit to the full from pension reforms, it is also necessary to sustain the demand for older workers through lifelong learning policies and incentives for employers.

Argimón, Botella, González and Vegas estimate the impact of social security wealth and the rules for the calculation of benefits on the transition to retirement in Spain. They use data on the employment and contribution histories of a sample of men aged between 60 and 70, drawn from a large administrative data set (all the individuals in the sample were in principle able to retire, according to the rules of the Spanish system). Using these data, they build measures of social security wealth and proxies for the financial incentive to retire implicit in the rules for benefit calculation (among such proxies are the replacement rate and the change in the social security wealth of workers who decide to postpone retirement by one year). Lastly, they estimate a duration model in which the dependent variable is the length of the period between the moment at which a person becomes entitled to a pension and the moment at which the pension is actually claimed. The results show that this period is shorter for larger pensions. Moreover, workers tend to postpone retirement if they are compensated with a suitably higher flow of pension payments. The paper also overviews the main implications of the current crisis for pensions. In particular, the authors argue that the rise in unemployment may severely affect the future pensions of young workers. It may also push older workers into early retirement and hamper the implementation of reforms aimed at reducing pension expenditure. Finally, it may dent the pension wealth accumulated in funded schemes.

Arpaia, Dybczak and Pierini build a comprehensive data set of the pension reforms legislated in the EU between 1990 and 2006. They classify the reforms in three broad classes: fundamental changes to the old-age scheme (*i.e.*, changes in the way the pension system is financed and/or in the eligibility conditions), non-fundamental changes to the old-age scheme and changes to early retirement schemes. They use the reform data set to conduct a "policy experiment" to assess the effects of such reforms on participation rates. It turns out that the benefits of reforms are somewhat elusive and depend on the age bracket, the gender and the nature of the reform. The effects are often non-significant and/or negative. The authors conclude that it is crucial, in order to maximize the labour market effects of pension reforms, to provide enough information to workers and to avoid lengthy and uncertain phase-in periods.

In his contribution, Kovács describes the challenges the Hungarian pension system is currently facing, and discusses the possible policy solutions. The Hungarian system underwent a structural reform in 1997. It now has two mandatory pillars: a defined-benefit PAYG system and a fully-funded defined-contribution scheme. The first problem discussed in the paper is the very high number of disability pensioners below retirement age limit (currently around 10 per cent of the active population). This problem dates back to the political transition out of socialism, which caused a sharp rise in the unemployment rate. In fact early retirement and disability pensions were used as a way to cushion the social costs of the transition. The second problem – also related to the functioning of the labour market – is the low contribution density. The author concludes that the time is ripe for an open debate about what changes to the pension rules are best suited to foster labour market participation in Hungary.

Commenting on El-Mekkaoui De Freitas and Oliveira Martins, Clemens suggests that the existence of a bequest motive and the possibility to change labour supply in the face of unexpected changes in longevity might both have a role in explaining the empirical problems encountered by the life-cycle theory. He also suggests that a decline in the demand for private goods at older ages could attenuate the welfare effect of the slowdown of growth due to ageing. Commenting on the paper by Rodway, he argues that New Zealand employment patterns are not surprising, given that even a flat-rate non-means-tested scheme can discourage labour supply, as it is implicitly a tax on labour. Moreover, the fact that willingness to work decreases in the presence of pension benefits can be attributed to an income effect. Concerning policy options for the future, he supports increases in the eligibility age (possibly linked to changes in life expectancy), while he remains sceptical about increasing the role of funded pension schemes. He also argues that the rise of single-person households is likely to reduce spending automatically, as willingness to work seems to decrease for those having a non-working spouse.

In commenting on the papers by Argimon *et al.* and Ahuja and Paserman, Jędrzejowicz points to two potentially important issues: involuntary retirement and minimum pension guarantees. In particular, he argues that generous minimum pension guarantees may have an impact on labour supply at older ages, even if its direction and magnitude are still the subject of debate in the empirical literature. He also adds further elements to the list of pros and cons of funding featured in the paper by Ahuja and Paserman: on the one hand, he highlights the political economy advantages of pension reforms based on funding (as they are more difficult to revert); on the other, he points to the significant risks inherent in investing on financial markets. Finally, Jędrzejowicz briefly describes the current challenges to the Polish pension system, mostly related to the labour market effects of some of its rules (e.g., the low retirement age for women and the insufficient accumulation of pension rights for many low-wage workers with discontinuous careers).

As regards the paper by Kovács, Köhler-Töglhofer points out that Hungary's problems are similar to those of other countries: even if in Europe there has been, on average, a significant rise in older workers' participation rates in the last decade, many countries have lagged behind. As regards the paper by Arpaia *et al.*, she points out that reform packages often include very heterogeneous reform measures. Thus, from a policy perspective, it would be important to check for the labour supply impact of specific measures or factors. She notes that the lack of any clear-cut short-term impact of reforms might be due to the fact that people do not change their plans quickly when the system changes. Moreover, reforms may have long phasing-in periods.

2 Pension reform and capital markets

Section 2 is devoted to the impact of pension reforms on the capital market and in particular to the effects of the increasing role of funding.

Draper and Westerhout study the effects of the introduction of a fully-funded DB pension scheme in the context of an OLG model, in which the rate of return on equity is stochastic and labour supply is endogenous. In the model, households have a finite life of uncertain length; there exists a pension fund which receives contributions from working generations and pays pensions to retired generations; households are obliged to participate in this pension fund. Pension benefits relate to the individual's labour history, but are unrelated to both capital market rates of return and the length of life: shocks to pension wealth are absorbed by changing the contributions that the pension fund levies upon working cohorts. In such a model, a trade-off emerges between the welfare improvement due to an increased degree of market completeness (as the pension scheme protects against longevity risks and financial market risks) and the welfare decrease due to labour supply distortions (to protect pensioners against adverse fluctuations of financial markets, a tax on labour is implicitly levied on workers; moreover, this tax burden is sub-optimally distributed through time). However, the authors propose a calibrated version of the model in which the introduction of the pension scheme turns out to improve welfare significantly.

Gillingham, Leive and Tuladhar describe the various ways in which the financial market crisis might affect workers, pension funds and governments. In 2008 the impact of the stock market decline on global pension assets was substantial (roughly 40 per cent, according to the authors' estimates for the G20 countries). Some individuals, especially those near to retirement, may have been severely affected. However, the authors note that, in most countries, the richest part of the population was disproportionately affected by the losses. Moreover, they used a simulation to show that the performance of individual accounts over the past 45 years has been quite satisfactory, even if internal rates of return differ markedly across cohorts. DB pension plans were affected by the crisis as well, since their assets/liability ratio declined sharply; therefore they could be obliged to increase contributions and/or cut benefits in order to restore an adequate level of funding. Governments will also be affected by the fall in asset prices: indeed, they often provide guarantee schemes that offer insurance against the loss of assets in private DB plans due to employer insolvency; in addition, some governments also guarantee minimum benefits or minimum rates of return to defined-contribution pension plans. Finally, there is the possibility that governments will be forced by strong political pressures to compensate pension plans for at least a portion of the reductions in asset value they suffered. The authors warn that in no case should government responses compromise fiscal sustainability.

Moreno and Santos argue that demographic changes and the degree of funding of the pension system can influence savings rates, the current account and financial development in emerging market economies (EMEs) in several ways. Their first point is that theory predicts a negative link between dependency ratios on the one hand and both savings and investment on the other Moreover, available empirical evidence suggests that the current account tends to improve when the dependency ratio decreases. This is obviously important for economies which are projected to suffer from population ageing in the coming years (for example, China). Their second point is that the positive link between the degree of funding of the pension system and saving rates is likely to be weaker than predicted by theory due to several factors, such as the lack of financial literacy. Therefore, reforms aimed at privatizing pensions, which are discussed in many EMEs, might be less beneficial than expected. Their last point is that in many EMEs there is a positive correlation between the degree of funding and financial development, and that a higher degree of financial development could in turn reduce current account surpluses: this could provide the benefits that some EMEs have sought from foreign exchange market intervention and foreign reserve accumulation, without the associated disadvantages.

The paper by Rofman, Fajnzylber and Herrera describes the recent pension reforms adopted by Argentina and Chile. The procedures and results of these reforms and the reasons for them are different, although they share some characteristics. The structural reforms of the 1980s and 1990s sought to improve the long-term fiscal sustainability of the pension systems and their institutional design, while transferring part of the economic and social risks from the government to participants. However, in recent years the authorities in both countries identified the insufficient coverage among the elderly and the inadequacy of benefits as the most critical problems. As a result of differences in political economy and institutional constraints, the responses were different. In Chile, a long and participatory process resulted in a far-reaching reform that focused on the medium term results through a carefully calibrated adjustment. In Argentina, instead, reforms were adopted through a large number of successive normative corrections, with little public debate about their implications and immediate impact on coverage and the public finances. The slower stepwise approach taken by Chile's authorities will probably ensure better outcomes and more sustainable results than in Argentina. On the other hand, Argentina's bolder and faster reforms resulted in an immediate response to a current problem. Most of the elderly excluded from the system received a pension benefit within a year, improving their welfare immediately, while in Chile the process of reaching all beneficiaries will be more gradual.

Rezk, Irace and Ricca carried out an analysis of fully-funded pension regimes based on individual accounts implemented since the 1980s in six Latin American countries (Argentina, Chile, Colombia, Mexico, Peru and Uruguay), in order to ascertain whether they were conducive to increasing aggregate savings and helped to strengthen domestic stock markets. To this end, they used a version of the life-cycle model. The authors also studied the impact on private savings of a group of economic and demographic variables which the related literature usually links to the performance of both defined-benefit and defined-contribution pension systems. The impact of individual accounts systems upon aggregate private savings was assessed under different scenarios such as: homogeneous and heterogeneous individuals, voluntary and compulsory contributions and loose and tight borrowing constraints. The theoretical analysis made it possible to prove that only under mandatory contributions and operating liquidity restrictions would private savings be unambiguously increased by pension fund assets.

The paper by Cuevas, González, Lombardo and López-Marmolejo explores how privatizing a pension system can affect sovereign credit risk. The authors analyze the importance that rating agencies give to implicit pension debt (IPD) in their assessment of sovereign creditworthiness. They show empirically that financial analysts judge IPD and financial public debt differently as a consequence of their understanding of the intrinsic differences between the two, but this could also reflect myopia on the financial analysts' side, possibly due to their not being fully aware of the obligations entailed by IPD. The authors find that rating agencies generally do not seem to give much weight to IPD, focusing instead on explicit public debt. However, by channelling pension contributions away from the government and creating a deficit of resources to cover the current pension liabilities during the reforms' transitional periods, pension privatization reforms may transform IPD into explicit public debt, adversely affecting a sovereign's perceived creditworthiness, thus increasing its risk premium. The apparent lack of attention paid to IPD in the assessment of sovereign creditworthiness could be an indication that markets, though concerned over contingent liabilities, simply do not trust the available measures of IPD, which are subject to considerable error. In this light, accompanying pension reforms with efforts to offset their transition costs through fiscal adjustment would help preserve a country's credit rating. Should a government lack any room to implement the needed fiscal adjustments, it might be preferable to follow a gradual parametric approach to improve the sustainability of the PAYG pension system before undertaking the transition to a fully-funded system.

The paper by Leiner-Killinger, Nickel and Slavík addresses the risks for public finances associated to moving to funded pension systems in a volatile economic environment, such as that of the new EU Member States. The authors take stock of the available data on pension assets and combine them with data on inflation and other financial market developments. They argue that risks for the public finances stem only partially from potentially large variations in pension incomes due to stock market developments, as the share of pension funds invested in stocks tends to be comparatively small. The risks are higher for those new Member States where the limited diversification of assets and the relatively large fraction of total assets held in government debt securities limit the possible positive impact from systemic pension reforms. Should pension incomes turn out to be inadequate, governments might be induced to step in, thus implying a smaller reduction in the general government budget burden than anticipated. As a consequence, while maintaining multi-pillar pension systems remains of the utmost importance, a wider diversification of assets and better financial knowledge are decisive.

Commenting on the Draper and Westerhout paper, Afonso claims that the privatization message and its implications were not too clear in the article and wonders if the absence of perfect capital markets would cause significant changes. He also points out that some sensitivity analyses making use of calibration parameters would be useful to see to what extent some results still hold. Afonso asserts that the paper by Gillingham, Leive and Tuladhar provides input for some questions and further thinking on how governments should react in a crisis in terms of supporting the losses suffered by pension funds. He then argues that pragmatism should help and prevail when dealing with the problem of allowing past private profits to become current or future public losses. As regards the article by Rezk, Irace and Ricca, Afonso stresses that the thesis put forward by the study (mandatory pension fund regimes have a positive impact on private saving) is different from what is reported in other studies (*i.e.*, Freitas and Martins, 2009). He suggests that an alternative way to address the question would be to use a consumption specification as in Feldstein (1974 and 1982) to assess how pension funds' assets impinge on private consumption and influence the current account balances, on the basis of their relationship with private savings, government savings and investments.

In commenting on the paper by Moreno and Santos, Cuccaro emphasizes the role that a widespread informal sector has in explaining low contribution density in many emerging market economies, while the lack of appropriate institutions might partly explain the portfolio composition of pension funds. Commenting on the paper by Rofman *et al.*, Cuccaro suggests that it is important to discuss the fiscal conditions and the context in which pension reforms were implemented. In the same vein, she underlines that the recent pension measures in Argentina might reflect the pro cyclical behaviour of fiscal policy. Therefore, the reduction of the pro-cyclical behaviour constitutes an additional challenge. In the short term, the main challenge is that of managing the pension system in a less favourable fiscal environment and with limited access to the capital market. Finally, the enhancement of the independency of social security institutions is also crucial. Setting up the proper legal framework to guarantee the transparency, efficiency and predictability of the administration of the pension fund is another pending issue.

Eich discusses the articles by Cuevas, González, Lombardo and López-Marmolejo, and Leiner-Killinger, Nickel and Slavík. About the first paper, he claims that rating agencies are not alone in facing the challenge of translating long-term trends into an assessment of the public finances. For example, following the reforms of the Stability and Growth Pact, the European Commission puts greater emphasis on long-term budgetary developments in its assessment of EU public finances. One innovation over recent years has been to incorporate implicit pension liabilities into medium-term public finance objectives for the Member States. The Commission uses quantitative and qualitative indicators to derive its assessment and, for instance, to weigh up the potential long term benefits of reforms against their potential short-term fiscal costs. Admittedly, many countries have not been very successful themselves in deriving clear policy objectives from the analysis of long-term trends. Commenting on the paper by Leiner-Killinger, Nickel and Slavík, Eich argues that the current economic crisis shows that occupational pensions are under immense pressure and that private pensions have also done badly in most countries. This proves the usefulness of a mixed system, with unfunded social security pensions complementing funded occupational or private pensions. On this basis, he claims that governments ought to be determined to ensure that, in the long-term, both occupational and private pensions play their respective roles successfully.

3 Pension reform, redistribution, macroeconomic impact

The papers presented in Section 3 deal with the impact of changes in the design of pension systems on income distribution within and across generations and with the macroeconomic implications of reforms.

Brender examines the distributive effects of Israel's restructured retirement benefits system using ten stylized representative prototypes of the most common Israeli household composition and employment profiles. He concentrates on the joint effects of tax benefits for pensions and the public Old Age Allowances program's contributions and disbursements on lifetime income distribution, net replacement rates at retirement and lifetime consumption smoothing. The author finds that the system is neutral in terms of its effects on lifetime income distribution, except for the top income decile which gains less than the others. Furthermore, forced pension savings result in a net loss for many low-income households, distort their consumption path and lead to post-retirement net replacement rates that he deems "too high". Finally, evidence points to rational and active behaviour of households with respect to these incentives, questioning the need for the compulsory pension savings enacted recently.

Dekkers, Buslei, Cozzolino, Desmet, Geyer, Hofmann, Raitano, Steiner, Tanda, Tedeschi and Verschueren stress that the demographic changes that Europe will face in the coming decades will have profound consequences not only for the sustainability but also for the adequacy of social security schemes, including pensions. The paper aims at assessing the consequences of the Ageing Working Group projections on the adequacy of social security pensions. The authors use a microsimulation model and examine three countries: Belgium, Germany and Italy. Adequacy is assessed on the basis of the replacement rate, the redistributive impact of pensions and the different risks of poverty. Pension beneficiaries are compared to wage-earners. The replacement rate will follow different patterns: in Belgium and Germany it will decline until the beginning of the 2030s and recover later, in Italy it will show a continuous decrease. In all three countries income inequality declines from the working age to the retirement age and the risk of poverty among pensioners first increases and then decreases. The pension reforms implemented in the three countries have similar effects on income redistribution and poverty levels; these effects are particularly strong in Italy.

Using data from the EU survey on Income and Living Conditions (SILC), Franco, Marino and Tommasino provide evidence that there are sizeable differences across EU countries with respect to the diffusion and intensity of poverty and that poverty rates change significantly across age groups, types of households and individuals of different occupational status. In some countries, poverty rates among young and elderly citizens are much higher than among working age individuals. The paper shows that, while pre-transfer age-poverty profiles are rather similar across countries, national social spending programs differ in their effectiveness in lifting children and elderly people out of poverty. The authors propose new parameters for the appraisal of the age-orientation of government spending, which are useful in explaining national age-poverty profiles: countries with smoother age-poverty profiles are those with elderly-oriented and children-oriented welfare states, where the transfer system is relatively more effective in lifting children and elderly people out of poverty. These countries mainly belong to the so-called social democratic group of countries. At the other extreme, Southern European countries show a pronouncedly V-shaped age-poverty profile. In these countries the transfer system channels relatively few resources toward families with children and with elderly people and, as a consequence, is relatively ineffective in lifting these groups out of poverty.

The paper by Ramaiah focuses on the Indian government's recent initiatives to reform the pension system in the light of the pressure exercised by demographic factors. A newly defined contribution system was introduced in 2004. The author stresses that there are some policy issues which need to be addressed for its success. The first point raised is that the voluntary nature of the system, along with poor financial literacy and the attitude of households towards financial savings, prevents the system from achieving optimum coverage. A priority would therefore be to design an effective, efficient and accessible system for a heterogeneous workforce. The second point raised relates to the provision of an adequate retirement income. Ramaiah highlights the importance of extending coverage to as many people as possible so that subscribers might substantially gain in terms of lower fees and charges and high returns. Finally, the paper notes that India has the world's youngest and fastest-growing working-age population and that public policy has a critical role to play. It will be necessary to include those working in the informal economy in the pension system in the years to come.

The paper by Barrell, Hurst and Kirby deals with the effects of pension reforms on some consequences of the crisis. According to the paper, the rapid introduction (but slow implementation) of a policy to extend working lives could alleviate the sharp rise in the national debt stocks of the euro-area countries and the United Kingdom due to the crisis and the fall in equilibrium output caused by the contraction of the capital stock. The paper analyses the effects of a possible extension of working lives in the euro-area and the United Kingdom and draws a distinction between the impact of these changes on output and income in open economies with capital mobility. The authors find that lengthening working lives will, in due time, increase consumption and restore the equilibrium capital stock. If consumers and firms recognize that they will have to work longer and hence have a higher income, consumption and investment would increase, helping to offset the impact of the recession. In addition, tax revenues would grow and pension spending decrease. These gains by the government could be used to improve services, cut taxes or pay off debts.

The results presented by Zaidi indicate that OECD countries significantly differ in terms of the rate of poverty of elderly citizens. Using a country-specific relative poverty line, he finds that almost 13 per cent of the elderly people living in OECD member countries are poor. Countries with low poverty rates for the elderly generally have a good social safety net in the form of a basic pension and/or they offer strong redistribution in the earnings-related contributory pension schemes in the form of minimum guaranteed pensions. Single women and the oldest age cohort (aged 75+) have, in general, a much higher poverty rate compared with other subgroups. For women this is mainly due to the features of their working career; while for the oldest individuals the reason lies in the lack of pension coverage during the earlier part of their working career and in the indexation of pension benefits to price dynamics rather than income dynamics. The paper shows that poverty rates for all age groups above 50 declined, while those for people below that age they rose, owing to the success of past pension policies in providing adequate pension benefits. However, in view of financial sustainability concerns, recent pension reforms have scaled down the level of pension benefits. Thus, in the absence of longer work careers, it is likely that future generations of elderly citizens will be poorer more often than the rest of the population.

The main purpose of the study conducted by Fall and Ferrari is to analyse the impact of demographic factors on pension systems and to consider the role that a reserve fund can play in the context of the adjustments needed to balance the accounts of the pension schemes. The study does not deal with the question of the financial management of the reserves. In particular, in the projections presented in the paper, a purely normative assumption has been used for the return on reserves, corresponding to the average return on bonds over the long period. Actually, reserve fund's investments could turn out to be more profitable than the repayment of government debt, thereby generating leverage. A reserve fund can go overweight in risky (and hence high-yield) assets as long as the disbursement horizon is distant, thus benefiting from attractive returns combined with limited long-term risks. By defining its schedule of income and disbursements, the Pension Reserve Fund can optimise its returns for a given level of risk. However, even with a distant and well-defined disbursement horizon, investment in the Fund would still be riskier than paying down the public debt. Leverage is obviously not contradictory with the Fund's assigned objective. But this leverage cannot be taken as the prime function of a reserve fund, and its size cannot be precisely calibrated on this basis.

Commenting on the Barrell *et al.* paper, Cottarelli highlights some critical aspects. First, he suggests to verify whether there are empirical studies supporting the idea that raising the retirement age will increase people's perception of their life expectancy. Second, the adoption in the paper of a unique equation describing the transfers of pensions and unemployment benefits to the population for all countries neglects the existence of the country-specific features of the pension system. Third, from a purely accounting perspective, stating that it is possible to finance the cost of the crisis by increasing the retirement age by two years is misleading, given that, even before the crisis, the increase was thought to be necessary to ensure debt stability in the long run in European countries. Concerning the paper by Zaidi, Cottarelli argues that the results could potentially be very sensitive to the measurement methods and the definition of poverty adopted. Therefore, some sensitivity analysis would be required to strengthen their robustness. He lists important drawbacks of using relative poverty measures, especially for pensioners.

In his discussion of Brender's paper, Follette suggests to investigate further into the adequacy of the Old-Age Allowances (OAA) program in preventing poverty for low- and moderate-income families, given that the stylised households used in the simulations may not capture all the variations in work and household formation experiences. He then elaborates on Brender's conclusion that the mandatory defined contribution program is too large for many households as it will deliver too much income in the retirement years and result in too little disposable income during working years. He suggests to scale down the mandatory pension program in order to reduce the amount of over-saving at the low end of the distribution. The relative importance of the OAA and the pension plans could be shifted towards pensions proportional to income and away from the flat benefit. As regards the paper by Ramaiah, Follette argues that even if in India a newly-defined contribution scheme was recently introduced, coverage has not been expanded, and a series of risks have been shifted on to households. He then focuses on other points not addressed by the paper. How much did the public finances improve as a result of the reforms? Who paid for the financial hole in the PAYG system determined by the shift from PAYG to funded systems for new entrants? What options are available to expand coverage in the private sector? How do the administrative costs for the Indian plan compare with those of other countries?

Before commenting on Franco *et al.* and Dekker *et al.*, Paul examines the distribution of poverty among age groups in France in 2007, pointing out that, as stated in the first paper, poverty rates are higher for younger people, in spite of the generous family allowance scheme. However, family allowances are not means-tested and therefore are insufficiently targeted on low-revenue families. Paul raises a few criticisms about the use of poverty indicators expressed in monetary terms and notes that the informal economy, self-consumption and family support are not taken into account in measuring poverty. Turning to Dekkers *et al.*, he notes that in France poverty among the elderly is lower than among the working age population. Nevertheless, there is a risk of a reversal of this situation as a consequence of the rise in unemployment, which makes it difficult to get full pension benefits, and of the ageing of the population, which threatens the financial balance of PAYG pension systems. He stresses that results from the MIDAS model should be taken with caution for different reasons. For instance, the model does not take into account incomes different from pensions. and even very small adjustments in the parameters related to demography and economic growth may substantially change the results.

4 Pension reform and fiscal policy

Session 4 examines the political economy of pension reforms and their role in the context of fiscal policy.

The paper by Gonand investigates the issue of the choice of different reforms of the PAYG pillar on the basis of the degree of aversion to intergenerational inequality and the rate at which the welfare of future generations is discounted. The effects of pension reforms on economic growth, households' intertemporal utility and social welfare are simulated with a dynamic general equilibrium model with overlapping generations parameterised on four countries with different demographic patterns (France, Germany, Japan and the United States). The model shows that a no-reform scenario, in which taxes are increased to balance spending, leads to a lower rate of economic growth. It also shows that no pension reform is Pareto-improving in the four countries considered: all reforms reduce the welfare of the baby-boomers and increase that of their children and future generations. If expenditure savings are achieved via cuts in the replacement rate, baby-boomers bear most of the welfare cost of the reform, while younger generations benefit from it. A rise in the average age of retirement would smooth the intergenerational redistributive effects associated with the reform.

Carone and Eckefeldt evaluate the impact of recent pension reforms in EU countries on the basis of the 2009 round of long-term projections of pension expenditure carried out by the Ageing Working Group of the EU. In the coming decades, demographic factors are projected to be the main driver of pension expenditure growth. They are expected to be partly counterbalanced by the decline in the coverage ratio (thanks to the increase in the retirement age), less generous public pension transfers and the increase in the employment rate, especially of older workers. In several countries these developments have been enhanced by recent reforms. A comparison of the 2009 projection exercise with that of 2006 gives some additional indications about the impact of recent reforms: in many countries the fall in coverage is more accentuated in the latter projection, thus offsetting the dependency effect to a greater extent. Moreover, in several countries the offsetting impact of the reduction in benefits has increased, compared with the 2006 projection. Both these developments reflect the effects of the pension reforms. The authors note that more policy action is necessary in many countries, in particular in order to increase the retirement age and the employment rate of older workers.

Clavijo analyzes the pension and healthcare reforms implemented in Colombia in the 1990s and in the first decade of the new century. While pension reforms aimed at curbing expenditure, health reforms aimed at broadening the coverage of publicly-provided care. Parametric pension reforms focused on increasing the retirement age and curbing replacement rates. They reduced the net present value of pension liabilities in 2007 from 260 to 160 per cent of GDP. Clavijo argues that further reforms are necessary to achieve fiscal sustainability. It is also necessary to improve the incentives implicit in pension rules, reduce payroll taxes levied on firms and increase the retirement age. Reforms have significantly increased healthcare coverage. This has boosted spending, which is now relatively high with respect to other countries. The public healthcare deficit is expected to increase further in the coming decades. Clavijo stresses that it is important to tackle the labour informality problem. Through their impact on contributions to pension and health systems, labour market reforms can have important effects on the public finances.

The paper by Cunha, Paulo, Sousa Pereira and Reis examines the reforms implemented in the Portuguese pension system in recent years. From the mid-1970s pension expenditure increased fast because of generous pension rules and the ageing of the population. The reforms introduced in 1992 and in 2002 have been reinforced by additional reforms in 2005 and in 2006. Key features of the latter were the curb on public sector employees' special provisions, the introduction of a sustainability factor linking new pensions to life expectancy and the introduction of new rules for the indexation of benefits. The paper evaluates the implications of these rules, which are very progressive and will reduce the gap between larger and smaller pensions. They show that high wage contributors will have lower incentives to postpone retirement: they will face a trade-off between the initial pension level and the future updates. The authors also point to the need for a better understanding of how the sustainability factor affects the decision to retire.

Matsuo examines the structure and prospects of the Japanese pension system in the context of the challenges posed by population ageing and the high current public debt. Social security expenditure accounts for almost half of the general expenditure in the Japanese budget and is growing rapidly. In the coming years the first baby-boomers will retire. Therefore, pension reform is deemed indispensable for the sustainability of social security and the overall Japanese fiscal position. Matsuo describes the main features and implications of the reform introduced in 2004, which aimed at making the pension system sustainable for the next 100 years and at limiting the burden for the working-age population. The reform set a ceiling on the pension system contribution rate and introduced a new mechanism for the indexation of pension benefits. Pensions will not be fully adjusted to changes in prices, either upward or downward. The reform has also set a minimum level of 50 per cent for the ratio of first and second pillar pensions to the average income of employees.

Melguizo, Muñoz, Tuesta and Vial analyze the fiscal costs stemming from pension reforms introducing mandatory individual capital accounts managed by the private sector. They examine the experience of Chile, where individual capital accounts have been in operation for almost 30 years. They also evaluate the more recent Chilean reform, which strengthened the solidarity pillar, and the pension reforms introduced in Colombia, Mexico and Peru. They argue that, while it is difficult to export the Chilean experience to other countries with different political and economic structures and institutions, the Chilean reform provides several important indications. It shows that a key factor for the success of a system based on individual retirement accounts is the proper functioning of market institutions, especially the financial markets. The protection of property rights and minority shareholders is crucial. Regulation is also important, though it can be introduced gradually and pragmatically. Fiscal policy is also paramount. The transition costs tend to be high and persistent, making fiscal consolidation prior to the reform advisable. The functioning of the labour market is also important: widespread informality limits the coverage of the pension system. If informality is pervasive, it may be necessary to establish a large solidarity pillar, although this can act as a disincentive to formalization.

Langenus comments on the papers by Carone and Eckefeldt and by Gonand. Concerning the former paper, he notes that the new AWG projections show that, in spite of the new demographic scenarios and the recent reforms, the projected increase in pension expenditure in the coming decades has not become significantly smaller since the 2006 AWG update. He suggests to be cautious about the assumption underlying the projections: the assumed increase in the employment rate of older workers may require changes in labour market institutions, and the decline in replacement ratios can raise social sustainability problems. Moreover, it is not clear whether the policy environment required to permit high net migration is or will actually be in place throughout the projection period. Langenus also points to the problems met in comparing AWG projections when trying to disentangle the impact of reforms, revised assumptions and changes in projection models. As regards the paper by Gonand, Langenus points to the difficulty of translating analytical results into clear policy recommendations. He notes that the comparison of utility, welfare, income and consumption levels of different cohorts is quite complicated. He suggests discounting the welfare of future generations. He also suggests that EU fiscal rules can help governments to take action in favour of future generations. In particular, more ambitious medium-term objectives can increase the pre-funding of ageing costs.

Eckefeldt comments on the papers by Cunha *et al.* and Matsuo. With reference to the first paper, he writes that the pension reforms introduced in Portugal go a long way towards enhancing fiscal sustainability. The sustainability factor plays a big role in this regard, while the new indexation scheme presents interesting and innovative features. However, the substantial decrease in the benefit ratio introduces a risk element in terms of pension adequacy. Concerning this aspect, Eckefeldt notes that, in spite of the reforms, the benefit ratio for public employees will remain much higher than for the general social security pensions. The Japanese pension reform will also significantly reduce the income of pensioners compared to that of workers. Eckefeldt indicates that the guaranteed 50 per cent benefit ratio is achieved via an increase in the government contribution to the pension system, which will require a major tax reform. He praises the fact that the 2004 reform enhances transparency and a more effective allocation of pension funds: this can increase the "political sustainability" of the pension system. The improved information to workers on their accrued pensions will raise awareness of retirement income and could also lead to an increase in private savings.

Ter-Minassian, while appreciating the analysis carried out by Clavijo, argues that more details concerning the methodology and the assumptions used to project the future liabilities of the public pension system would allow readers to better assess their realism. A sensitivity analysis would also be useful. In addition, she suggests that Clavijo evaluate the political and social feasibility of his proposal to link the retirement age to life expectancy and to specify what further parametric changes would be necessary to reduce the replacement rates for the public system. As to the private pillar, she suggests to evaluate the impact of rates of return on pension portfolios lower than the historic figures, which appear relatively high in an international perspective. Ter-Minassian notes that the paper by Melguizo *et al.* presents an interesting overview of pension reforms in Chile, pointing both to achievements and shortcomings. The paper highlights the trade-offs between the social objective of preventing old-age poverty and the economic objectives of preserving incentives to contribute to the pension system and minimizing fiscal costs. She suggests that the authors expand the analysis of the 2006 reform, both in terms of the reform process and its incentive to contribute to funded schemes.