

Population ageing and fiscal policy in the euro area

Declining birth rates and longer life expectancy will put growing pressure on the public finances of euro area countries in the decades to come. The size of the anticipated burdens and the need for structural fiscal adjustments differ across the euro area on account of differing demographic trends and public pension system structures. In some countries implicit liabilities in terms of unfunded future pension payments are very large and are even turning out to exceed the current explicit public debt. The potential fiscal and broader economic consequences of population ageing are a serious cause for concern. In many euro area countries current fiscal policies and, in particular, public transfer systems are unlikely to be sustainable from a long-term perspective. Increasing government deficits and debt levels in relation to the growing financing needs of pension systems are having a negative impact on the medium-term prospects for stability and growth. As regards possible solutions for the financing problem of public transfers, the imposition of a strong increase in tax and social security burdens on euro area economies would clearly not be an appropriate remedy. Instead, current systems for providing old-age pensions should be scaled back to more affordable levels and supplemented by other forms of pension schemes, including, in particular, stronger funding of future obligations and certain elements of private pensions. In general, pension reforms should aim at making pension systems sustainable from a long-term perspective, instead of merely accommodating short-term financing needs.

I The implications of population ageing

Demographic trends

The ageing of populations is a general phenomenon across the euro area and in most of the industrialised world. Declining birth rates and longer life expectancy are the main factors contributing to this process. As a result, the ratio of elderly people to those of working age (often referred to as the “elderly dependency ratio”) is forecast to increase substantially in the euro area in the medium to long term, with a particularly steep increase foreseen after 2020, at which point the largest cohorts of the population will start to reach retirement age.

Birth rates in industrialised economies have been declining substantially over recent decades. Current rates – an average of around 1½ children per woman – are too low to allow for a natural replacement of the population and a stabilisation of its structure. Longevity is another important determinant of population ageing. Largely on account of improved medical standards and health care, life expectancy at birth of men in euro area countries has, according to Eurostat data, increased from around 67 years in 1960 to 75 years in 1997. For women, the increase was from 73 to 81 years. While the size and

structure of populations can also be influenced by net immigration, this influence is generally seen to be limited in European Union (EU) Member States. Although it has frequently been argued that immigration might help to alleviate the financial problems of public pension systems in relation to population ageing, the inflow of workers to EU countries is often restricted by labour market regulations or other structural factors. Moreover, the magnitude of net inflows of immigrants required to effect a significant slowdown in the population ageing process would need to be far higher than the inflows historically experienced in Europe.

The aforementioned evidence is sufficiently robust to allow the conclusion to be drawn that medium-term demographic trends are posing a serious challenge to the sustainability of current pension systems. The growth of generations of working age is largely determined by past fertility rates, and the number of future pensioners depends on the life expectancy of generations currently alive, the evolution of which is relatively stable over time. Medium-term projections of population developments are therefore seen as broadly reliable. According to Eurostat projections, dependency ratios will, on average, more than

double in euro area countries between 1995 and 2040, from around 23% to 48% (see Table I). While these figures describe a general trend, differences across countries with regard to the starting position as well as the expected time path of the demographic shift are noticeable. It would appear that the largest euro area economies, in particular, will be confronted with a severe change in the demographic structure in the decades to come.

Pension systems in the euro area

Virtually all euro area countries have based the largest share of old-age pension benefits on a compulsory, defined-benefit public pension system of the pay-as-you-go (PAYG) type. In some countries these arrangements are supplemented by some funded pension schemes of differing size and with different characteristics. A main traditional argument in favour of a large-scale publicly regulated system of providing for old-age pensions is that individuals of working age should be safeguarded against the consequences of taking insufficient care of their future needs and should be prevented from free-riding on public welfare benefits during their old age. Moreover, public pension schemes in most euro area countries also comprise redistributive elements, e.g. providing

pensions for the disabled, widows or orphans. The importance of funded public or private pension plans, i.e. systems in which the accrual of liabilities for future pensions is matched by a continuous accumulation of financial assets, is generally small in the euro area, although it is becoming more significant in some individual Member States. Hence pensions for the elderly in the euro area are to a large extent financed from contributions paid by current workers and their employers. Given this link between current contributions and current pension payments, the structure of the population is an important determinant in the financing of a PAYG pension system.

Apart from the issue of the public provision of old-age pensions, which is dominating the current debate, other public sector policies can also be influenced by a change in the age structure of the population. In particular, it has been argued that health care expenditure and expenditure on education will be affected by the anticipated consequences of longer life expectancy and lower fertility. However, the theoretical basis and empirical evidence underlying this line of argument are less clear than in the case of pension systems. With regard to future trends in health care, the question arises as to the extent to which longer life expectancy and costly technical innovations will increase per capita spending,

Table I
Projected dependency ratios in the euro area

(population aged 65 and over as a percentage of the population aged between 15 and 64)

	1995	2000	2020	2040
Belgium	23.8	25.4	32.6	45.5
Germany	22.5	23.3	31.9	48.2
Spain	22.2	24.4	29.8	49.2
France	22.9	24.3	32.6	45.6
Ireland	18.0	17.4	24.5	34.6
Italy	24.0	26.5	35.5	54.9
Luxembourg	20.6	21.5	27.9	39.9
Netherlands	19.3	20.1	29.8	44.0
Austria	22.4	22.6	28.5	45.3
Portugal	21.4	22.5	27.3	39.2
Finland	21.1	21.9	35.0	42.1
Euro area	22.6	24.0	32.0	47.8

Source: Eurostat.

and whether productivity gains and cost saving incentives might compensate for such an upward drift. It is generally assumed that the effects of population ageing on these areas of public spending would be more easily manageable than the costs accruing to public pension schemes over the medium term. With regard to education spending, the size of the young cohorts will shrink significantly over the coming decades. However, stronger investment in human capital might increase per capita spending, thereby potentially compensating savings related to population ageing. All in all, public and academic debate has thus far concentrated largely on the effects of population ageing on public pension systems.

A further aspect requires emphasis. Past expenditure trends in public transfer systems – in particular a very steep increase in public pension expenditure since the 1960s – have been dominated by factors unrelated to changing demographic structures. This has included wider coverage of public pensions, the extension of generous benefits,

additional redistributive tasks allocated to transfer schemes and the rising cost of providing health care, etc. Whether or not these factors will continue to influence future expenditure trends or the extent to which it will be possible for them to be contained more effectively than in the past is as yet uncertain. A continuation of such intrinsic cost pressure in transfer systems would obviously add to the large financial burdens resulting from the impending population ageing problem.

A distinction can generally be drawn between two systems of PAYG-financed pensions, elements of which are often combined in existing public pension plans. Some countries operate systems providing a relatively low level of individual pension benefits, which are largely independent of a pensioner's work history and only cover basic needs during old age. Such minimum pensions are normally supplemented by additional compulsory or voluntary arrangements, often in the form of funded pensions. Other countries rely more strongly on insurance-related systems which

Table 2
Characteristics of public pension plans in euro area countries ¹⁾

	Statutory retirement age ²⁾³⁾		Average retirement age (1998) ³⁾		Indexation scheme ³⁾	Public expenditure on pensions in relation to GDP (1995) ⁴⁾
	Men	Women	Old age	Early retirement ⁵⁾		
Belgium	65	61	62.6	55.6	Prices	12.0
Germany	65	60	62.6 ⁶⁾	-	Net wages	12.0
Spain	65	65	65.3	60.9	Prices	10.6
France	60	60	58.8	.	Prices	13.3
Ireland	65/66	65/66	62.0	.	Discretionary	5.4
Italy	65	60	61.4	55.6	Prices	15.0
Luxembourg	65	65	.	.	Wages/prices	12.6
Netherlands	65	65	65.0	60.0	Wages/prices	11.9
Austria	65	60	64.1	57.9	Net wages	14.9
Portugal	65	65	65.8	.	Discretionary	9.5
Finland	65	65	64.5 ⁷⁾	60.4	Wages/prices	12.8
Euro area	12.7

1) All data refer to the private sector.

2) Old age.

3) National sources.

4) Sources: OECD Social Expenditure Database 1980 - 1996; ECB calculations for euro area average.

5) Excluding disability pensions.

6) Including early retirement.

7) Earnings-related pension scheme.

link pensions to past earnings and are aimed at largely replacing labour income during retirement age. In both systems the financial situation depends on the following four sets of variables: (1) contribution rates on wages, (2) replacement rates, i.e. average pensions in relation to average incomes, (3) the support ratio, i.e. the number of contributors to the pension scheme in relation to the number of recipients of public pensions – which largely depends on effective retirement ages, labour force participation and employment rates – and (4) budgetary transfers. In fact, contribution rates have to be higher, the more generous the pension system (i.e. the higher the replacement rates), the lower the support ratio and the lower the transfers from other budgetary areas.

Contribution rates to public PAYG pension systems are normally adjusted on a periodic basis, in order to align the annual flows of revenue and expenditure. While contribution rates differ, in all countries part of the contribution is paid by employers, normally amounting to around half or more. Given the differing scope and coverage of public pensions, the replacement ratios, too, differ widely across euro area countries. Statutory retirement ages are normally between 60 and 65 years in the euro area, while generous early retirement provisions have lowered the average effective retirement age (see Table 2). Defined-benefit PAYG pension systems typically base individual pension entitlements on a measure of past labour income, be it the average, final or near-final income. Indexation rules for benefits paid to current pensioners are typically based on either an inflation index or the growth rate of wages or both.

Budgetary consequences of population ageing

The discussion on the financial burdens resting upon public finances and on the economy as a whole is traditionally concentrated on standard fiscal indicators, notably the government's budget balance and level of indebtedness. These indicators have

gained additional prominence in the institutional framework of Economic and Monetary Union because they are used as references for evaluating whether a Member State is in a budgetary position of excessive deficit. While budgetary positions have been improving since the middle of the 1990s and government debt-to-GDP ratios have been brought down over the past couple of years, a number of Member States are still recording significant budget deficits and very high debt levels.

Given their short-term – normally annual – definition, headline budget figures are by their very nature unsuitable for the purpose of fully assessing the long-term financial consequences of population ageing in an unfunded pension scheme. In the case of an ageing population, current pension expenditure and revenue trends in a PAYG pension system underestimate the accrual of future obligations. Moreover, the usefulness of short-term budgetary indicators for capturing long-term burdens is limited owing to conceptual difficulties in recording certain fiscal transactions and, hence, in including them in the calculation of the budget balance. For example, social security contributions are usually treated in the same way as taxes, i.e. as flows which reduce the annual government deficit. However, such payments are made by contributors in order for them to be entitled to receive a pension upon retirement and are thus similar economically to governments' accruing a liability. In the same vein, transfer payments to current pensioners could be considered as the redemption of such liability instead of being treated as current expenditure. Changing the accounting framework of the flows associated with the aforementioned transactions would inevitably alter not only the level of government receipts and spending, but also the budget balance or its accumulation over time in the form of government debt. Thus, only limited conclusions as to the long-term economic or redistributive effects of current fiscal policies can be drawn from the budgetary indicators commonly available.

A number of attempts have been made recently to quantify in a comprehensive manner the fiscal and economic costs associated with the demographic shift. In general, these approaches rely on long-term projections of future pension expenditure and contributions on the basis of more or less refined forecasts of demographic and economic developments. In addition, a number of summary indicators have been developed. These transform the projected time paths of pension expenditure and contributions into measures of overall net implicit liabilities of the pension system or quantitative indicators of the policy adjustment required to restore long-term fiscal solvency. As a further step, the “generational accounting” approach uses the economic framework of life cycle theories to draw particular attention to the aspects of overall fiscal sustainability and intergenerational redistribution.

The most basic method for calculating potential future trends in pension expenditure assumes that per capita public pension transfers will grow in line with per capita real income and applies this assumption to demographic forecasts. However, this method does not take into account future structural or institutional changes, or potential adjustments in individual behaviour, and can only be taken as a rough indicator of future financial burdens. More refined methods simulate future budgetary trends on the basis of legislated reforms phased in over a number of years. This requires a modelling of individual countries’ specificities in terms of the level and structure of public pensions and contribution rates. These simulations are finding that pension expenditure in relation to GDP will increase very substantially in most euro area countries in the period from 2000 to 2030. This increase could be in the order of magnitude of 5 percentage points of GDP or even more. Under current arrangements, the net present value of the balance between pensions and contributions would be up to twice the level of GDP in some countries. This compares with – and effectively adds to – outstanding general government gross debt levels, which, on

average, are still very high within the euro area.

The aforementioned results imply that policy adjustments are urgently needed. As a consequence of the forthcoming demographic shift, a very significant worsening of the general government primary balance-to-GDP ratios will be inevitable in the absence of large-scale adjustments. This would further aggravate currently existing fiscal imbalances and render the high level of government indebtedness in some Member States an even greater cause for concern. The improvements in current primary balances required to prevent an unsustainable build-up of public pension liabilities have been estimated to be substantial. Postponing the implementation of the required policy response would, over time, further increase the extent of necessary adjustments.

Moreover, it is claimed that public transfer systems result in strong intergenerational redistribution at the expense of unborn generations. The generational accounting approach, which quantifies financial burdens placed on different age groups by public finances, assumes that current generations are subject to current fiscal policies and public transfer arrangements and that future generations will bear the full financial burden of safeguarding long-term fiscal solvency. This assumption has a mainly illustrative purpose, and the results show the magnitude of policy adjustments required in order to honour current promises. The required net tax burden over the lifetime of future generations would be one-half or even more above the projected net tax burden of current generations in some euro area economies. In addition, these calculations indicate that a difficult choice will have to be made by policy-makers as to which generation will eventually pay for the financial burdens related to population ageing.

Long-term projections of fiscal trends naturally rely on a number of often rather uncertain and disputable assumptions with regard to future developments and, therefore,

have to be interpreted with due caution. However, most results appear to reveal consistently that fiscal policies and, in particular, public transfer systems in many euro area countries are hardly sustainable from a long-term perspective. Hence large-scale fiscal adjustments are indeed warranted as a matter of great urgency. In particular, anticipated fiscal problems related to population ageing could be significantly alleviated by means of appropriate policies geared towards bringing down government deficit and debt levels, as well as public spending and taxes.

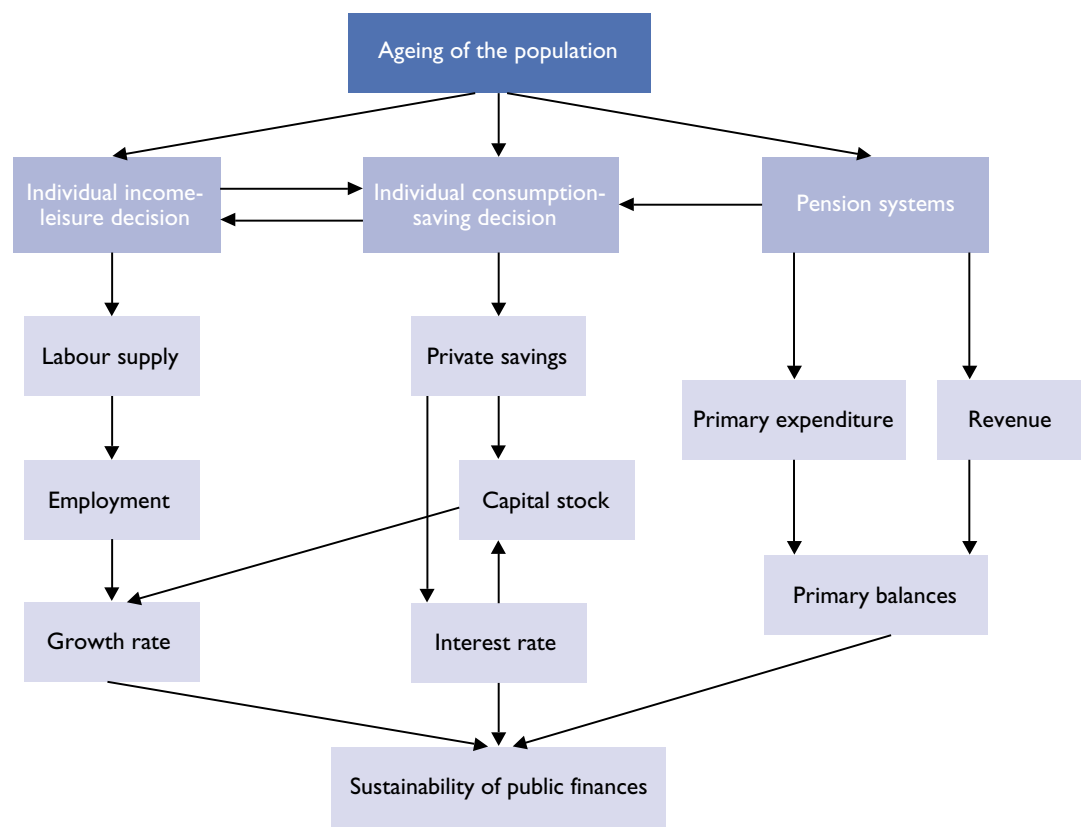
policies, a change in the demographic structure as described above raises questions with regard to broader economic effects, in particular those on economic growth, employment, labour productivity, private saving behaviour and living standards. All these changes might have important consequences for the operation of markets, their efficiency, the transmission mechanism and effectiveness of monetary policy, and the prospects for price stability. It should be emphasised that fiscal sustainability will be a key condition for monetary stability in the future. Hence the economic consequences of ageing populations will, in the course of time, also influence the monetary policy of the Eurosystem.

Economic consequences of population ageing for the sustainability of public finances

Apart from direct consequences for public finances and the sustainability of current fiscal

It is difficult to disentangle the influence of population ageing on individual economic variables, as they are all interdependent. The most basic and relevant interdependencies

Chart I
Economic and fiscal effects of population ageing



are depicted in Chart I. One central variable in the population ageing-sustainability nexus is private savings. Private savings are a major source of individual old-age income as well as of an economy's overall capital supply. If population ageing influences individual consumption-saving decisions, it might also have important overall economic consequences, especially for the future growth potential of GDP and the level of per capita income. Correspondingly, research on the effects of population ageing on saving figures prominently in more recent economic literature on the subject. In this context, the most important aspects are the potential response of individual saving decisions and the extent to which public dissaving owing to rising pension expenditure can be compensated by additional private saving.

According to basic life cycle models of consumption, individuals save part of their income during working age and dissave during retirement age in order to distribute consumption more evenly over their lifetime. In an ageing population the private aggregate saving rate should therefore fall, given that an increasing proportion of the population will dissave rather than accumulate wealth. It is often argued that the operation of large-scale public PAYG pension systems contributes unfavourably to an economy's saving rate. If current workers perceive pension entitlements as a close enough substitute for their personal savings, they will save less than in the case of non-existent or less comprehensive public pension arrangements. Nevertheless, pension entitlements only materialise once workers reach the required retirement age and therefore represent a rather illiquid form of saving. For that reason, paying social security contributions does not serve the purpose of the precautionary savings which individuals may wish to make in order to give themselves some form of security against future uncertainty and the risk of unexpected income variations. Hence a full substitution of enforced old age saving for private saving is not a plausible assumption, nor is it confirmed by empirical evidence.

In an ageing society private savings may also be lowered on account of intergenerational redistribution. The aforementioned results of generational accounting calculations indicate that a PAYG pension system may lead to a shift in financial burdens to future generations, given that future contribution rates ultimately have to be raised or else benefits to future recipients have to be curtailed in order to respect the long-term conditions of government solvency. This would further lower the inclination of current generations of taxpayers to put aside part of their income given the relatively high return they can expect from the social contributions they are paying.

Opposite effects may also come into play, implying a rise in private saving in view of the population ageing problem. In particular, workers may cut back on their current consumption if they foresee substantial future tax increases or cuts in benefits and wish to safeguard themselves or their dependants against the income losses associated with these additional burdens. Such a reaction may be spurred by growing uncertainty among current generations of taxpayers with regard to the sustainability of pension plans and the effectiveness of pension reform, especially in highly indebted countries. In addition, the intergenerational redistribution of resources may be conditioned by the magnitude of private transfers across generations, in the form of bequests or inter vivos transfers. These may partly offset the redistribution effects inherent in public pension schemes. However, it is seriously questionable as to whether or not these positive effects on private savings can outweigh the aforementioned negative effects. Moreover, within a PAYG pension scheme the impact that population ageing may have on private saving will also depend on capital market imperfections and the degree of myopia characterising individuals' behaviour. If individuals face liquidity constraints or are short-sighted when taking saving decisions, it is less likely that contributions to a PAYG scheme will be a substitute for voluntary private saving.

While private saving decisions are a key determinant of an economy's capital supply, national saving also depends on the government sector's financing and investment policy. As such, an assessment of the potential future course of capital accumulation in an economy has to take due account of the interplay between private and public saving. In particular, the issue to be addressed is whether or not, over time, additional private saving can at least partly offset a decline in public saving resulting from a surge in pension expenditure. Moreover, the relative weight a government gives to public capital expenditure versus current primary expenditure will also affect an economy's overall capital stock.

The existing empirical evidence on the effects of population ageing on private and national saving is not conclusive. However, there is widespread concern among economists about the possibility of substantial capital supply shortages in industrialised countries resulting from anticipated medium-term demographic developments. This would imply an under-accumulation of physical capital and, therefore, a decline in living standards unless an ageing-related fall in the labour force were to increase labour productivity sufficiently to stabilise per capita incomes even with lower rates of investment. Moreover, a fall in national saving may have major effects on current account balances, international capital flows and, thereby, real interest and exchange rates.

The effect that population ageing is expected to have on existing pension systems will also affect the willingness of individuals to supply labour and will therefore influence future labour market conditions in the euro area (see also the article entitled "Developments in and structural features of the euro area labour markets" in the May 2000 issue of the ECB Monthly Bulletin). Both existing incentives to retire early and increasing social contributions have contributed to labour market imbalances in euro area countries in the past. The rising social security contribution rates needed to restore fiscal

sustainability would impinge heavily on labour market conditions, as they would tend to widen the wedge between labour costs and net wages, thereby creating disincentives to participate in the labour market and hire workers. Hence the level of contributions are in themselves key factors influencing the financial soundness of a public pension arrangement and, more generally, the international competitiveness of the euro area. On account of the high rates of unemployment prevailing in most Member States, lifting contributions above the currently high levels is not a feasible way of meeting pension systems' medium and long-term financing needs.

In addition, it is frequently argued that population ageing will result in declining labour productivity given the reduced mobility and flexibility of older workers. This would have an adverse effect on economic growth conditions in addition to the potential loss of economic output resulting from a declining labour force in an ageing society. On the other hand, this effect could at least partly be outweighed by the experience older workers have acquired during their working life.

All in all, complex and potentially undesirable economic effects may result from the ageing of the population, in particular against the background of comprehensive PAYG pension systems. According to simulations of future fiscal and economic trends in a general equilibrium setting, taking into account various effects of population ageing and the respective links between economic variables, a continuation of current policies would result in a substantial loss of output in the EU as a whole over the next 50 years. Population ageing would lead to a noticeable lowering of the annual GDP growth rate and would be detrimental to the international competitiveness of the EU, as well as to the living standards of its inhabitants. Such developments would add considerably to the direct financial burdens which population ageing is already imposing on public finances and the sustainability of fiscal policies.

Declining economic growth rates and a long-term increase in real interest rates would substantially worsen the foreseeable financing problems of public pension schemes. Accordingly, appropriate government action

would consist in directly addressing the budgetary consequences of an increase in pension outlays, as well as providing incentives for stronger capital formation and higher employment.

2 Pension reform

Forthcoming population ageing problems will be unprecedented in terms of their quantitative impact. Awareness of the fiscal and economic risks implied by these developments has motivated debates about the structure of public transfer schemes and has led to the gradual implementation of pension reforms in many countries. Some individual Member States had already set their systems on a sounder financial footing in the past. Nevertheless, it has become clear that substantial further adjustments in pension systems, coupled with reform in other areas of public finances, are now needed. Without such changes, sizeable future increases in contribution rates or in government debt or substantial cuts in benefits will endanger economic efficiency and threaten intergenerational equity. Postponing the necessary policy changes will ultimately lead to the need for even more painful measures. In general, two variants of pension reform have been extensively discussed: (1) the adjustment of existing public pension schemes with regard to the structure of benefits and contributions (often referred to as “parametric reforms”); and (2) more fundamental changes in pension schemes towards funded systems which base future benefits on accumulated assets (“systemic reforms”). In practical policy-making, combinations of the two variants have often been proposed.

Before turning to a discussion of these two variants of pension reform, it is worth re-emphasising the point that general structural reform of the public sector and overall fiscal retrenchment will help to finance sharp medium-term increases in pensions. The state of public finances at the point in time when the demographic shift becomes most visible

is crucial for a government’s ability to react to the challenges ahead. Once age-related spending starts on the dramatically increasing path which is being forecast, it will be difficult for countries to comply with the fiscal norms established among EU Member States, while maintaining sufficient flexibility to react to cyclical or other unforeseen changes. Hence governments would be well advised at present to pursue a pre-emptive policy of more rapid debt and deficit reduction. Extending budgetary safety margins so as also to cover demographic risks is a matter of growing urgency in many countries. The current favourable economic trends should be seen as the best opportunity to take the necessary steps sooner rather than later.

Moreover, medium-term developments in labour markets are a key aspect in the context of fiscal and overall economic burdens related to population ageing. As mentioned above, it is not the “demographic” dependency ratio, but rather the support ratio (i.e. the number of contributors in relation to the number of beneficiaries in a pension system) that will determine future increases in financial burdens in the context of a PAYG public transfer system. Hence increasing the employed labour force as a proportion of the population by improving the functioning of labour markets and lowering existing disincentives to supply labour and hire workers are essential preconditions to be able to address the forthcoming challenges.

Parametric reforms

Inertia of existing pension arrangements has often made parametric changes within the

existing systems appear to be more feasible to policy-makers. In addition, relatively small increases in contribution rates or budgetary transfers to the pension scheme were normally sufficient in the past to restore the solvency of pension schemes in the event of increasing financial imbalances. Given the magnitude of the forthcoming population ageing problems, more substantial changes in pension arrangements are needed and are currently under discussion in many euro area countries. This debate takes place in an environment of rapid globalisation of economies. Growing resistance on the part of current taxpayers and international competition between tax systems are increasingly placing a constraint on governments with regard to financing future increases in pension benefits by raising taxes. Hence discussion about effective parametric pension reform largely concentrates on different variants of lowering benefits, normally implemented gradually and mainly affecting future recipients. Basic options for lowering benefits are (1) an increase in the effective average retirement age, (2) a reduction in replacement rates and (3) a change in the indexation rules for pensions. It is generally deemed necessary to allow for a relatively long period before the new arrangements take full effect. This will enable workers to adjust their consumption and saving plans gradually, so that they can replace the loss of expected old-age pensions by saving more while still of working age.

It is often argued that increasing the age at which an employee becomes eligible to receive a pension can be justified given the longer life expectancy and improved health conditions of average workers at an age traditionally considered to be suitable for retirement. In particular, standard retirement ages were specified at a time when life expectancy was significantly lower than is currently the case or is forecast for the future. Furthermore, average workers have tended to retire well before reaching mandatory retirement ages in recent decades as a consequence of strong incentives to opt out of the labour market. From a budgetary

point of view, higher standard retirement ages are beneficial because they increase the number of years during which an average worker contributes to the pension system, while they also reduce the number of years during which an average pensioner receives transfers. A number of euro area countries have recently introduced or have announced a phased-in rise in statutory retirement ages. According to various estimates, a five-year increase in the effective retirement age would substantially alleviate the future financial burdens on pension systems in some countries.

Another reform proposal frequently discussed relates to an adjustment of average replacement ratios. The number of years taken as an assessment period for an individual's work history, as well as the factor determining the accrual of pension rights in relation to annual assessed income (the "accrual factor"), are key elements in characterising the generosity of a PAYG pension plan. Therefore, average replacement ratios could be adjusted by changing the accrual factors, or by extending the number of years of income taken into account in order to calculate pension entitlements. Such reforms would lower the generosity of public pension schemes, which is often argued to be excessive in a number of euro area countries, and would introduce stronger elements of actuarial fairness, i.e. a closer proportionality between contributions paid and the accruing pension entitlements.

The evolution of replacement ratios would also be altered by changing the indexation rules for pensions. When pensions are linked to prices rather than to wages, significant budgetary savings are made. However, assuming that real wages increase over time, the relative income position of pensioners compared with that of workers is eroded over time under such an indexation rule. By contrast, when pensions are indexed to the growth of nominal gross wages, pensioners do better than workers in the event of increasing tax or social security contribution rates. A number of countries in which wage

growth is used as an index for pensions have therefore linked pensions to net wages rather than gross wages. Budgetary savings and a more equal distribution of financial burdens among generations were the main arguments presented by advocates of this measure. Positive financial effects can also be expected from a temporary suspension of wage indexation, which would result in a permanent lowering of replacement ratios for current pensioners. Some countries have recently implemented or announced measures changing the indexation of pensions for a limited period of time.

Parametric reforms initiated or discussed in the past were often suspected of being – and many of them have in fact proved to be – temporary in nature. Hence they were not considered to put social security on a permanently stable footing, given the possibility of further changes in contributions and benefits if the financial or political situation were to call for such an intervention. Advocates of more fundamental changes to pension systems therefore argue that resistance to parametric reforms often stems from this credibility problem. Moreover, given the assertion that the financing of a comprehensive PAYG pension scheme is unsustainable under current demographic trends, there has been widespread support in past decades for greater funding of future pensions. Such changes would represent a systemic rather than a parametric reform.

Systemic reforms

Funded pensions provide those currently making social security contributions with individual benefits accounts, which represent private property rights similar to holdings of other assets. In a defined-contribution scheme, contributions are predetermined, normally as a proportion of wage income, while pension benefits equal an annuity paid on the assets plus interest accumulated on individual accounts. In an actuarially balanced system, contribution rates to a funded system are fixed at a level which balances the present

value of all future receipts and the present value of future benefits, making assumptions about, inter alia, the number of future retirees and contributors and wage growth. This has an important advantage compared with PAYG systems in that the contribution rate in a funded system signals the actual current and future costs of pension provision, while these costs may be severely underestimated by current PAYG contribution rates. In the euro area, the Netherlands and Finland have based a significant share of old-age pensions on funded systems, as is the case for other EU Member States and industrial economies around the world.

Two general types of funded pensions can be distinguished which, again, are normally combined in existing schemes: those with partial funding and those with full funding. Moreover, funded systems can be operated by the public sector or by private companies, and membership can be compulsory or voluntary. Partial funding of social security is typically applied in the framework of compulsory public systems and has been introduced in some euro area countries in the past. In addition, some countries operate notionally funded systems. In such cases, contribution rates are fixed in line with the requirements of a funded system, i.e. above the level needed to finance current pension payments. At the same time, contributions are not actually invested in assets, but they accrue to the government, which may use positive balances in the pension system's budget to lower outstanding debt. The aforementioned signalling function of contribution rates in a funded system is thereby preserved.

Funded systems offer a more direct link than PAYG schemes between the contributions workers pay and the benefits they can expect to receive once they retire. This link is often blurred in PAYG systems, mainly owing to the fact that these systems fulfil a number of distributional tasks – often also tasks unrelated to the provision of old-age pensions, e.g. the substitution of transfers to unemployed persons through early retirement

benefits – and cannot normally offer rates of return on contributions paid that are similar to market rates. Hence stronger funding is seen to lessen distortions on labour markets by creating an actuarially fair connection between contributions and benefits. It has also been argued that an accumulation of financial reserves covering pension promises would involve lower costs than PAYG financing. This can be shown to hold true in general in a situation in which the real rate of interest is above the rate of productivity growth plus population growth, i.e. if the economy operates on a dynamically efficient growth path. Funding pensions would, hence, largely avoid further hikes in social contribution rates or substantial reductions in pension benefits needed to maintain existing PAYG systems. By shifting towards more substantial funding of pensions, labour markets could therefore be cushioned against further unfavourable effects of increasing pension costs and the associated financing needs. Efficiency gains and cost savings could also be attained by means of greater involvement on the part of private companies in the management of pension funds. Moreover, this would help to isolate social security from political pressures and would, hence, make it less subject to electoral cycles and more certain from the point of view of the population.

In addition, a more efficient allocation of resources would be facilitated in a funded system since the accumulation of large pension assets would require and actually accelerate favourable capital market developments. Establishing large pension funds would create substantial demand for capital market instruments and it is claimed that it would make markets more liquid and deeper. It has also been argued that funded pensions would enable greater worker participation in the economic gains from globalisation and would, therefore, enhance the acceptance of capital markets and returns on financial assets by the population. Finally, it is frequently argued that the transition to funding increases national saving, thereby contributing to a higher longer-term

economic growth potential, and it is supposed to be fairer than a PAYG system from the point of view of intergenerational cost sharing.

However, important questions have been raised with regard to a move to funded pension schemes. First and foremost, the transition from a PAYG system to a funded system poses serious problems. If current workers were to join a defined-contribution pension plan, their contributions would be invested in their pension-related individual savings accounts. Hence the government would have to serve the benefit claims of current pensioners on the PAYG system without having recourse to current workers' payroll taxes. The size of the emerging deficits would reveal the implicit liabilities accumulated in the PAYG system and make them explicit.

Moreover, the amount of pension savings typically affordable to low-income workers may not always finance a pension sufficient to maintain an appropriate standard of living after retirement. More generally, a key drawback of funded defined-contribution systems is seen in the investment risk they impose on pensioners, given that pension benefits largely relate to the real return on the accumulated assets, which are uncertain. Accumulated pension funds might not therefore compensate sufficiently for the loss in labour income once retirement age has been reached. Additional tax-financed fiscal instruments would in such cases need to fulfil redistributive tasks.

Some other supposed advantages of funded systems have also been challenged. It is normally argued that the financial basis of a PAYG system gradually erodes with a decline in the number of contributors. However, in principle, a funded system also depends on the age structure of the population. In a funded defined-contribution system the elderly following retirement will try to sell their accumulated pension assets to those of working age. Given the expected decline in the number of workers, the demand for the

pensioners' assets as well as the value of the assets themselves and the annuity paid out of them may be correspondingly lower. An additional problem related to the introduction of funded pension systems arises from the need to invest higher private savings in capital markets, possibly reducing the yield of financial assets. This argument can be countered, however, by mentioning that pension funds could also be invested in countries in which capital needs and financial asset yields are relatively high, notably in transition, emerging market or developing economies. In general, funded systems should have the possibility of choosing investment strategies which appear to offer the highest return without incurring unbearable risks, e.g. by means of an international diversification of portfolios. In existing systems, this possibility is often restricted by national legislation.

3 Conclusions

The ageing of populations is likely to be the greatest foreseeable challenge for fiscal policies in the euro area in the decades to come. Given the magnitude of the expected break in the demographic structure of populations and the large share of pension spending in government budgets, pension reform and broader adjustments of the public sector are urgently needed in order to meet future financing needs. The long-term sustainability of pension systems, rather than short-term financing needs, should be the governments' leitmotif in pursuing pension reforms. Most euro area countries have postponed implementing the necessary measures and, therefore, appear to be ill-prepared to deal with the projected surge in public transfer payments. In addition, a number of countries still show excessively high explicit government indebtedness or have yet to achieve overall budgetary positions consistent with the provisions of the Stability and Growth Pact. At the very least, these provisions require Member States to achieve budgetary positions allowing a full operation of automatic stabilisers over the

In synthesising a range of viewpoints, there is some preference in the ongoing debate for a combination of elements of funded and unfunded pension provisions, benefiting from the respective advantages of the different systems, while largely diversifying risks. More specifically, it is often claimed that public PAYG systems should provide for a basic lump-sum pension only, while this basic pension would be supplemented by additional payments related to past earnings. These supplementary pension benefits should be paid out of a compulsory private or public funded pension pillar, as well as out of a voluntary private funded pillar. This three-pillar approach – with different specifications of details – has been successfully adopted by some countries in the past and is under discussion in many others.

cycle without breaching the deficit limit of 3% of GDP. Additional safety margins are warranted, however, in order also to address budgetary risks unrelated to cyclical fluctuations. In the near future, governments should create such safety margins by speeding up deficit and debt reduction so that public finances will be in a sufficiently sound state once the most rapid phase of population ageing has taken place. The solid economic growth currently forecast for the next few years should be seen as the best opportunity to introduce the required policy measures.

While sound overall public finances would alleviate the financial burdens resulting from population ageing, more specific reforms of public transfer systems also appear to be warranted. In this context, existing distortions of EU labour markets caused by high tax burdens and disincentives to supply and demand labour need to be reversed. In general, reforms should provide a clear signal that the policy response acknowledges the urgency of the matter and is well designed to address the issue of long-term fiscal

sustainability, rather than merely filling short-term financial imbalances. Within the existing systems, the adjustment of standard retirement ages and replacement ratios, potentially linking these parameters to life expectancy, are effective reform elements. In addition to a tightening of pension

entitlements financed by the public PAYG schemes, gradually supplementing these schemes by funded arrangements with private sector involvement would be a positive contribution to the sustainability of public finances. Some Member States have already successfully embarked on this policy path.