CURRENT AND PROSPECTIVE THORETICAL PENSION REPLACEMENT RATES

Report by the Indicators Sub-Group (ISG) of the Social Protection Committee (SPC)

- May 19th 2006 -

INTRODUCTION

Theoretical replacement rates have been developed with a view of shedding more light on the objective of adequacy of pensions (as reflected in the first streamlined pension objective) and in particular, to measure the extent to which pension systems enable workers to preserve their previous living standard when moving from employment to retirement.

Following the 2004 Progress Report on replacement rates, the ISG has made progress in refining the methodology of calculation and the definition of variants (in 2005, an ad-hoc group contributed to the refining of the methodology and a peer review was organised). Theoretical replacement rates have been widely used by Member States in their National Strategy reports from 2005, which is also reflected in the 2005 Synthesis Report on Adequate and Sustainable pensions (especially chapter 2 of the horizontal analysis). The ISG is now in a position to submit tables on replacement rates by country to the SPC. These tables are presented in section 5.

The following sections discuss the concept of theoretical replacement rates (section 1), the methodology, assumptions under which calculations were made (section 2) and results from the base case (section 3) and the different variants presented (section 4).

Results are presented to highlight the capacity this instrument has to offer and to illustrate main trends. Tables included in the text do not present comparative results of current levels of replacement rates (as given the methodology used direct comparisons of levels of replacement rates should be carried with caution), but show how the variation of assumptions impacts on trends (as the methodology used enables to monitor how the same set of circumstances will reflect for a given case in the evolution of theoretical replacement rates). Finally, the report points to further development needs in order to meet policy requirements.

1. THEORETICAL REPLACEMENT RATES AND PENSIONS ADEQUACY

Replacement rates show the level of pensions as a percentage of previous individual earnings at the moment of take-up of pensions. Public pension schemes and (where appropriate) private pension arrangements are included, as well as the impact of taxes, social contributions (and non pension benefits that are generally available to pensioners).

Theoretical replacement rates are calculated for an hypothetical worker, with a given earnings and career profile (and a corresponding affiliation to pension schemes) and by taking into account enacted reforms of pension systems. This 'base case' is chosen in order to reflect current actual situations and institutional frameworks. Replacement rates also rely on specific assumptions on the key economic and demographic parameters that are relevant for the calculation of future earnings and benefit entitlements.

Current replacement ratios describe the situation of people who retire today, according to a set of hypothetical cases (several cases are included in the calculations). Prospective replacement ratios describe the projected evolution of pension income of people retiring in the future. They should allow an assessment of adequacy of pensions, taking into account changes that have been decided in many countries as a result of recent reforms. Indeed, it is essential to present projected trends of replacement rates, both at a general level and for individuals. At a general level the projections are needed to monitor pension system and the projections are relevant for individuals who need to plan their future incomes.

It is essential to consider theoretical replacement rates with the associated information on representativeness and assumptions used (section 1.1) and to consider the links between theoretical replacement rates with other indicators (section 1.2), in order to develop a consistent approach of their contribution to shed light on the OMC objectives on pensions.

1.1. Theoretical replacement rates, assumptions and representativeness

Comparability between Member States of current and projected replacement rates depends on whether the base theoretical case is representative and this varies considerably across Member States. Information about the general background and whether the theoretical cases are representative are both necessary for the interpretation of the results. Variants also provide information on how the results from the base case are affected when some assumptions are modified (in particular as regards earnings profiles or length of active period).

Comparability of gross replacement rates also depends on the way in which pension contributions are shared between employers and employees. For a given total labour cost, a higher share of contributions paid by the employer implies lower gross earnings of the employee and hence a higher gross replacement rate. This is one of the reasons why information on gross replacement rates is also systematically complemented by net replacement rates. Besides, it is essential that the different tax treatments of income from work and pension income are taken into account while evaluating income replacement provided by pension provision, which is allowed through the use of gross and net replacement rates.

The choice of specific common assumptions about the hypothetical worker used for the calculation, such as the age of retirement and length of working and contribution period before retirement, inevitably implies that only a share of all possible situations are taken into account. The base case is chosen in order to reflect as closely as possible current actual situations and institutional frameworks. However, the base case may not necessarily be representative of some workers, when they reach retirement age, given the diversity of situations. Besides, a common base case across the 25 Member States will be more or less representative in each Member State, reflecting different retirement patterns and institutional frameworks. Theoretical replacement rates need therefore to be analysed in the light of background information aimed at showing in particular how "representative" the hypothetical worker is (see section 3.3). Besides, variants provide elements of information as regards the wage profile associated to theoretical replacement rates calculations.

Besides, it is essential to present together the projected evolution of adequacy and sustainability and these evaluations should as far as possible on a common set of assumptions. The projections of theoretical replacement rates presented here and the recent projections of pension expenditures by the AWG rely on the same set of macroeconomic assumptions, for example wage developments and rates of return.[1]

It should also be noted that given the assumptions used to the calculation of the theoretical replacement rates, the indicator reflects performance of the pension system in the light of assumed economic development. As projected economic developments differ

[1] However, it can be noted that even though assumptions are common, results are not necessarily strictly comparable.

significantly across member states (especially between old and new member states), this can have an impact on the results and can reduce international comparability. In particular, while AWG assumptions rely on different national trends for productivity (taking into account an assumption of convergance) and thus wages, one common unique assumption of real rates of returns has been taken into account. This can translate into a gap between wage growth and real rates of returns, which can be questioned in particular for fast growing economies, as this leads to differente developments of replacement rates for pay-as-you-go schemes and funded schemes. In this regard, Member States have been invited to provide national variants in order to complement information from the base case.

The projections of theoretical replacement generally rely on a less extensive set of assumptions than the projections of pension expenditures (in particular for DB schemes, but in general not for DC or NDC ones). In particular, theoretical replacement rates generally do not rely on an evaluation of the number of pensioners and consequently on the evolution of employment rates of older workers. Besides, in most DB pension schemes, demographic assumptions do not directly interact in the calculation of pension benefits (but not DC or NDC ones, where demographic evolutions are essential).

1.2. Theoretical replacement rates and other pension indicators

Theoretical replacement rate calculations should be accompanied by other indicators in order to get a more comprehensive picture of adequacy and of the effective ability of pension systems to provide adequate levels of replacement rate. Theoretical and empirical measures of pension adequacy (based on current income data both at the household and the individual level) are complementary and should be looked at together for a better understanding of a national pension system.

1.2.1. Theoretical replacement rates and adequacy of pensions

In particular, the ISG has also defined a set of common pension adequacy indicators based on income data from household surveys. These allow an assessment of the current poverty risk and income conditions of older people relative to those of people below retirement age. The ISG has also defined a measure to evaluate individual pensions for a cohort of people over the retirement age relative to individual earnings using household survey data. This measure takes individual median earnings of people aged 50-59 years as the denominator. Individual median pensions (including and excluding other benefits) received by people aged 65-74 are the numerator.

Empirical measures generally comprise other sources of income on which elderly people can draw, either through their own entitlement or through sharing of resources with other household members. As a consequence, the specific contribution of pension schemes to the income situation of the elderly cannot be very clearly gauged. Moreover, income provided today by current pension systems does not necessarily give reliable information about the income situation of future generations of elderly people, since pension systems are being reformed in many countries.

These indicators need then to be complemented by information more specifically focused on the pension systems themselves and their evolution. Theoretical replacement rates provide elements that enable to assess the ability of current and future pension systems in ensuring that the elderly have the resources to support adequate standards of living; they are to be used in complementarity to empirical, survey data on living standards which provide more comprehensive information regarding the actual income situation of older people.

Nevertheless, it should be stressed that trends in individual theoretical replacement rates will not directly translate into equivalent changes in future pensioners' income as household income. Rising female labour force participation in all Member States will result in higher average pensions within households. Economic modernisation and corresponding employment changes can also lead to better pension outcomes in the future. A full assessment of future pension systems would need a technique that projects work histories, patterns of household formation and sources of income in retirement other than those considered in replacement rates. This could be achieved through more complex dynamic micro-simulation models (though at the cost of a higher complexity, notably as regards the set of assumptions used), that at present, are available in a few Member States.

It can also be noted that individual projected theoretical replacement rates provide elements for different typical cases, which should only directly be compared cautiously with the evolution of future average pension related to average earnings that can also be obtained through general expenditure projections. Indeed these two indicators provide different types of information. The latter reflect different general trends regarding averages, such as maturing of pensions systems, increases in participation, but also evolution of pensions already in payment, while the former provides elements on the relative level of pensions to wages at the time of retirement or 10 years later.

1.2.2. Theoretical replacement rates and sustainability of pensions

Results provided here present the pension outcome under current legislation (enacted by mid 2005), including changes to the pension system legislated to be implemented gradually in the future. As a consequence, they do not reflect the reform that can have been decided since then. Some countries have designed their pension system so that benefits are adjusted automatically to changes in life expectancy and/or contribution income. Thus, financial sustainability is, to some extent, built into the scheme. In most Member States, however, the parameters of the pension system have to be adjusted through discretionary policy decisions in order to maintain financial sustainability. If such decisions have yet to be taken to ensure long-term financial sustainability, then the replacement rates reported here may be reduced in the future.

A similar issue arises with regard to private pension provision. The agreed common framework results in automatic adjustments of benefits in defined-contribution schemes as life expectancy rises. By contrast, where a private defined-benefit arrangement has been assumed, the level of benefits does not reflect such changes. The implicit assumption is that contributions will have to rise. It should also be noted that the net real long term rate of return to be used for funded schemes within this common framework (2.5%, for defined-contribution or defined benefit schemes) reflects a cautious approach.

One should also bear in mind that a number of factors can affect future adequacy and sustainability, and especially unexpected evolution of demography or employment, but also of rates of returns. Sensitivity analysis concerning the common assumptions are thus useful, particularly on the basis of alternative (pessimistic or optimistic) scenarios with regard to future demographic and economic developments, although it should be noted that pension schemes of the defined-benefit type (the most common among those considered in this exercise) are generally assumed not to adjust in response to demographic and economic changes – which is not a realistic assumption over the long projection horizon and highlights the importance of bearing in mind possible links with general developments.

In this respect, as regards comparability of the trends of replacement rates, it is essential to note that one should appreciate theoretical replacement rates trends by also taking into account the projected trends as regards the sustainability of pension systems, which are

mutually dependant. Indeed, as highlighted by the work of the AWG on pension expenditures, all Member States are not in the same situation as regards future sustainability of pensions and the evolution of pension expenditures.

1.3. Current and prospective theoretical replacement rates

Replacement rate calculations give a picture of national and overall EU pension adequacy and their projected evolution. The framework developed facilitates an understanding of how pension systems as currently legislated in different Member States operate now and in the future. Based on the definition of a base case and variants, replacement rates provide a tool for comparing some key aspects of widely different national pension systems.

Theoretical replacement rates allow monitoring, for a given country and a specific hypothetical worker, the effects of pension reforms on pension entitlements, while the use of different variations from the base case (in particular as regards different careers) also allows monitoring the effect of reforms that countries have already decided upon (and therefore could be included in the calculations) for different types of careers.

While the framework used accommodates different system designs including differences in financing as well as the different emphases on private and public provision, comparisons of current levels of theoretical replacement rates between Member States should be made with caution. The base case will vary in how representative it is in different countries; similarly the assumptions especially of the contribution rates will be much more relevant in some countries than in others. Calculations of theoretical replacement rates are best suited to assess the evolution of replacement rates in different cases and Member States. But, comparisons between Member States of expected trends provide very useful information on ongoing trends, provided common assumptions and the agreed framework are used, though, other factors such changes in employment or expenditures can also affect the future disposable income of pensioners.

2. THE METHODOLOGICAL FRAMEWORK

Following results presented in 2004, the ISG has agreed on a clear and reasonably comparable framework for Member States to follow in the calculation of current and prospective replacement rates. The methodology was refined in 2005 through discussions within an ad-hoc group of the ISG. First results were presented and discussed in a peer review in April 2005. The set of replacement rates in this report has been elaborated on the basis of a scenario which is consistent, as far as possible, with the timeframe and assumptions about demography and the economy as used in the latest public pension expenditure projections carried out by the Ageing Working Group (AWG) of the Economic Policy Committee.

With this methodology, replacement rates are calculated at the moment of pension take-up by dividing the pension income during the first year of retirement by the income during the year preceding retirement. The calculations refer to pension outcomes of people retiring today and who will retire at up to three points in time in the future (i.e., 2010, 2030 and 2050), assuming that only the rules already legislated today (by mid 2005 for the latest) will apply.

Pension income to be included in the calculations includes pension benefits that are relevant in the national framework, which include statutory schemes (‘first pillar’) and may include private schemes (typically occupational or ‘second pillar’) pension

schemes,[2] but also, in some cases, other monetary social benefits as applicable to the selected case (e.g. housing benefits). Pre-retirement income comprises all earned income (including overtime pay, bonuses, 13th month, etc.) and social benefits as applicable to the selected case.

In order to make more transparent the national calculations and to make them more useful for policy making, the replacement rates should be clearly broken down into individual components of retirement income: means-tested benefits, public and private provision. This also makes it easier to establish how similar the theoretical case is to typical real-life situations. Also, context information aims at showing how representative the hypothetical worker. In particular, this requires information on the average actual career length and retirement age, the coverage/membership and the contribution rates to each pillar or scheme considered in the base case.

Member States were asked to provide all elements that entered the calculations of gross and net replacement rates. Apart from pre-retirement and pension income, these include statutory social security contributions, contributions to supplementary pension schemes or funds, taxes and means-tested social benefits. This makes it possible to gauge the contributions to pensioner's relative living standards of the different pillars of the pension system, of the tax system and of other social benefits.

2.1. Common specification of the base case

The base case to be used by all Member States for the preparation of national strategy reports was defined as follows.

Table 1

Professional status	**Workers covered by the most general scheme** (i.e. private sector scheme, if there are different schemes by professions/sectors. If considered relevant, Member States may also calculate replacement rates for public sector employees, self-employed or other professional groups.)
Career length	**40 years** If relevant, other career lengths may be calculated in addition to 40 years.
Age at retirement	**65** If relevant, other retirement ages may be calculated in addition to 65 years.
Type of employment	**Full-time work**
Marital status	**Single person (male, if sex is relevant)** Member States were asked to explain any difference between men and women.
Pension schemes included as income	**First pillar, supplementary (occupational or personal) provision and means-tested supplements as applicable to the selected case.** The contribution of each pillar/type of scheme should be indicated and the underlying assumptions should be explicit (including level of contributions and duration of membership. The pensioner is assumed to have no other significant income or property that would diminish the entitlement to any means-tested benefits.
Earnings level	**100% of average earnings** (see below)

[2] First pillar: statutory pension schemes, regardless of whether they are funded or pay-as-you-go financed. Second pillar: occupational schemes, i.e. pension schemes linked to the employment status. Third pillar: individual retirement provision through insurance and retirement savings.

Earnings profile	**Constant relation to current average earnings (100%) over the whole period of employment**

Another case (replacement rate after 10 years of retirement) complements very closely the base case. This is calculated considering the value of an individual's pension 10 years after retirement, divided by the income of another worker retiring 10 years later the previous one. This provides an assessment of the evolution of the relative position of the individual, typically reflecting pension indexation.

2.2. Variants (other cases)

Calculations for variants also provide very useful information on how the replacement rate varies for different departures from the main assumptions. Variants embedded refer to key assumptions of the base case (earnings profiles and length of contributory period) and illustrate how the results from the base case are affected when those key assumptions are modified (average earnings and 40 years of activity before retiring at 65).

As the aim of the exercise on replacement rates is to give a picture as clear as possible of national and overall EU pension adequacy, MSs were also encouraged to integrate supplementary information (like additional data and analyses) to the above mentioned elements and to provide national variants where accurate in their national framework. This relates in particularly to background information, reforms and perspective developments, coverage of different schemes.

2.2.1. Mandatory variants

The variants include different lifetime earning profiles (linear profile from 80% to 120% and from 100% to 200% and concave profile) as well as one low wage variant (flat 66% of the average), but also the variants also include a calculation for a broken career.

- *Variant at 2/3 of average earnings*

Only the earnings assumptions are changed, corresponding then to a constant level 66% of average earning profile.

- *Variants of linear profile of earnings*

Only the earnings assumptions are changed, it grows linearly from 100% of average earnings to 200% and from 80 to 120%.

- *Variant of concave earnings profile*

A third rising earning profile, with a concave earnings profile beginning at 75% of the average and ending at 105%, so that the work life average earning is 100% of the average.

- *Variant of broken career*

This variant is defined as a worker retiring at 65 years as in the baseline, having a career length of 30 years instead of 40: after working for 15 years, the worker abandons the labour market for 10 years (not receiving any social benefit) and finally returns to work for a further 15 years. Member States could consider this 10

years period as two consecutive periods of 5 years corresponding to childcare for two children. Member States that believe this is relevant can then illustrate this with a calculation showing the effect of childcare. This should be accompanied by a short comment documenting how childcare periods are taken into account in the calculation of the pension and then eventually affect replacement rates.

2.2.2. Other variants

Furthermore, Member States were strongly encouraged to elaborate some other variants, reflecting other key dimensions that can strengthen the quality of information provided by variants on the type of career. In particular variants on the age of retirement and career length were envisaged (relevant examples can be a worker retiring at 67 with 42 years of seniority or at 63 with 38 years of seniority), as well as on the level of rate of return. More generally, Member States were encouraged to elaborate other variants that they would consider relevant in their national context.

Member States should also consider additional variants which they feel relevant in their national framework. These may in particular include calculation for different ages of retirement that would seem more representative of the national situation (for instance civil servants, self-employed or farmers).

2.3. Framework for national background information on representativeness and assumptions

The provision of information on representativeness and on assumptions used is essential for the interpretation of results (for instance for the interpretation of differences between different cases within a Member States or for differences between the same cases between different Member States).

Background information includes the following:

- *Age and seniority at retirement*. This refers to first-pillar social-security pension. Where this does not make sense in the national framework (for example because first pillar is based on citizenship), seniority with reference to the occupational pensions may be preferable (excluding as far as possible disability and social assistance pensions).
- *Coverage*. This refers separately to the coverage of the first pillar and of occupational (or private in general) pension schemes and corresponds to the *percentage* of active members as a percentage of employment, as the base case refers to a career of 40 years of employment (with possible supplementary information on coverage as a percentage of the labour force). The use of 15-64 age population has been privileged (with possible breakdowns, like for instance 15-24; 25-54 and 55-64). Member States were encouraged to provide more detailed data concerning for example composition (DB / DC / mixed) of private provision and the percentage of young workers enrolled in occupational pension schemes (15-30 years old workers).
- Percentage of the *annual flow of new retirees* receiving occupational pensions (or private in general);
- *Current overall contribution to the first pillar* as percentage of individual earnings for private employees (this refers to the sum of employee and employer contributions, with possible corresponding breakdowns).
- *Current overall contribution to occupational schemes* as percentage of individual earnings for private employees who are currently member of such a sheme (this refers to the sum of employee and employer contributions, with the possible addition of eventual public contribution, and with possible corresponding breakdowns);

- *Means-tested supplements and other social benefits*: conditions for receipt, as well as coverage.
- *Aggregate replacement rate*: individual pensions for a cohort of people over retirement age relative to individual earnings (in percentage)[3]. This statistic has also been agreed as indicator by the ISG. This refers to median individual pension income of retirees aged 65-74 in relation to median earnings of employed persons aged 50-59 excluding (or eventually including) social benefits other than pensions. As far as possible, gross and net levels should be provided.
- Average pension relative to average wage (in percentage, as far as possible, gross and net levels).

Besides, information on assumptions used is essential and in particular as regards the key elements that can depart from the common methodological framework and greatly influence national outcomes, such as contribution rates and the type of scheme included.

Information on assumptions used encompasses the following elements:

- Contributions by the employer and the employee to the different pillars included in the replacement rate calculations, as well as the other social contributions, with the possible addition of eventual public contributions[4].
- In case a Member States chooses to use a DB framework for the 2nd pillar schemes considered, contribution rates assumed have to be reported (both employee and employer contributions), while the choice of a DB system should be explained on the basis of the current situation and trends.

2.4. Assumptions, representativeness and interpretation of results

As the base case representativeness can differ considerably between Member States, it should be noted that in order to ensure a better comparability between Member States and facilitate the interpretation of results, it is essential to dispose of information concerning background information on representativeness (see table 2 and 3).

These differences in the representativeness of the base case suggest that by construction, comparisons of levels of theoretical replacement rates among Member States should only be made with caution and taking into account differences in both representativeness and the types of assumptions made. For the sake of a more accurate and interpretable interpretation of results, levels of theoretical replacement rates are thus not displayed in the general analysis of the results for the base case and the variants, but are provided only for country sections, while general sections provide an analysis of ongoing general trends among Member States.

Statutory pensions (first pillar) include classical pay-as-you-go schemes (that can be defined benefit schemes or notional defined contribution ones), and also include for some Member States (EE, LV, LT, HU, PL, SK and SE) the mandatory funded tier of the statutory scheme, which is a defined contribution scheme. Some Member States have included funded occupational and voluntary schemes in their base case, that can be either of a defined contribution type (DC) or of a defined benefit one (DB): BE (occupational pensions), DK (occupational, SP and ATP schemes), DE (occupational or *Riester*

[3] This indicator has already been agreed by the ISG.

[4] If there are difficulties in disentangling contributions to the first pillar scheme from other social contributions to the public welfare system, contributions to the other pension pillars considered should be separated from contributions to the public scheme (first pillar pension and other social contribution). As far as possible, data should always be reported separately for employee and the employer contributions.

Pensions), IE (occupational pensions), IT (DC occupational pension funds, financed through the diverting of employees' TFR deferred wage component), NL (occupational pensions, results presented refer to the case of indexation of 80% on wages), SE (occupational pensions) and UK (occupational pensions).

Table 2 - Background information as regards coverage, average age of retirement and seniority at retirement

	Coverage rate (%)				Age at retirement of new flows of retirees total (men/women)	Seniority (including non contributory periods) at retirement of new flows of retirees total (men/women)
	Statutory pensions	Type of statutory scheme (DB, NDC or DC)	Occupational and voluntary pensions	Type of supplementary scheme (DB or DC)		
BE	68	DB	40-45	DC	Nd (64/61.6)	Nd (42.6/30.5
CZ	100	DB	/	/	58 (60.2/56.3)	41.6 (44.4/39.6)
DK	100	DB	78	DC	62.1 (62/62.3)	27.7 (35.7/20.3)
DE	Nd	DB	70	DC	Nd	Nd
EE	100	DB and DC	/	/	60.3 (61.5/59)	43.7 (45.6/42.9)
EL	Nd	DB	/	/	60.4 (61.4/58.6)	25.1 (27.5/20.8)
ES	89	DB	/	/	62.9 (62.9/63)	38 (40.3/30.4)
FR	Nd	DB	/	/	Nd (60.4/62.1)	34
IE	100	DB	52	DB	65	Nd
IT	100	DB and DC	11.4	DC	59.7 (59.8/59.6)	32.1 (34.9/27.9)
CY	86	DB	/	/	62.7 (Nd/Nd)	Nd
LV	100	NDC and DC	/	/	60.3 (61.4/58.3)	30 (30/29)
LT	83	DB and DC	/	/	60 (61.4/58.4)	35.8 (37.5/34.2)
LU	92	DB	/	/	Nd (60.3/62.4)	Nd (44.2/39.1)
HU	100	DB and DC	/	/	59.4 (59.7/58.6)	37.7 (39.9/32)
MT	Nd	DB	/	/	60.8 (61.5/60.5)	26.3 (29.1/23.5)
NL	100	DB	91	DB	65 (65/65) *	Nd
AT	100	DB	/	/	60.4 (62.7/58.9)	Nd
PL	77	NDC and DC	/	/	57.8 (60.5/56.4)	34.3 (36.5/33.3)
PT	82	DB	/	/	Nd	Nd
SI	100	DB	/	/	63.2 (63.7/62.7)	28 (30/24)
SK	Nd	DB and DC	/	/	Nd	Nd
FI	100	DB	/	/	59.1 (59/59.2)	29.6 (30.9/28.6)
SE	100	NDC and DC	90	DB	64.7 (64.8/64.7)	28 (30/24)
UK	100	DB	56	DB	62.3 (62.7/61.9)	35 (42/26)

Note: The first four columns provide background information on current coverage levels, thus giving elements on the representativeness associated with the base case. Coverage rates refer to the coverage of the labour force; in some cases (notably for occupational and voluntary pensions), this can refer to the coverage of the employees in the private sector. They also provide information on the type of scheme taken into account (DB, defined benefit, DC, defined contribution, NDC Notional defined contribution). The last two columns refer to the average age at retirement and seniority at retirement for new flows of retirees and thus provide elements on the representativeness associated with the base case, related to the assumptions of retirement at 65 with 40 years of seniority. (*) This refers to the age at retirement of new flows of retirees for the first pillar; the actual exit age in the second pillar is not available.

In that respect, it is important to underline that results for the base case refer to a worker being covered by different schemes taken into account. These results thus need to be accompanied by information on coverage of the various schemes. One important aspect is then to reflect also the situation of people that are possibly not covered by such schemes (for instance for occupational of voluntary schemes, this would translate into taking into account only statutory schemes).

It can be noted (first column of table 2) that while coverage of first pillar schemes is generally close to 100% of the labour force (reflecting universality of access to those schemes), thus allowing a good representativeness. However, this is not necessarily the case for second pillar schemes (current estimates of coverage range from 11% in IT to

90% in SE and 91% in NL) and this should be borne in mind when considering contribution from these schemes to replacement rates results for the base case (see section 4).

Besides, these elements on representativeness have to be completed by elements on average age at retirement and average seniority at retirement. In this regard, elements provided suggest that the assumption of an age of retirement of 65 is probably relatively higher in comparison to current levels (see table 2), notably for women. Only a few Member States appear to currently have retirement ages close to 65 (IE, SE). This suggests that for Member States for which current average age at retirement is significantly below 65, or close to 60, results from the base case probably provide an overestimated value and one should also consider variants with lower ages at retirement or lower seniority. Indeed, as regards seniority while the current levels appear to be generally close to 40 years in a number of Member States, there are also significant differences between Member States (and within Member States between men and women).

Total contribution rates used in the assumptions (table 3) generally range around 20 percentage points (between 15 and 25). [5] In some Member States, it can be noted that contributions rates can be higher, around 30 percentage points (CZ, ES, IE, PT, SE) or between 35 and 40 percentage points (IT, PL, UK).[6]

Representativeness is generally achieved for all Member States as regards assumptions on levels of contributions to first pillar (in some Member States, there can be some changes planed as concerns the distribution of these contributions, for instance as regards the diversion of contribution to the funded tier of statutory pensions). As regards second pillar schemes, it can be noted that Member States that included such schemes into the calculations generally project to increase contribution rates for this type of pension provision.

Assumptions used on long run rates of return are of 2.5% (3% of gross real rates of return minus 0.5% of administrative charges; the NL and DK used 0.25% of administrative charges, reflecting lower administrative costs enabled by large scale pension schemes). [7]

[5] Contribution rates for BE and DK are not directly comparable as the contribution rate for BE refers to the global management of Social Security, while most public pensions in DK are financed through the general budget.

[6] The assumption on contribution rates is linked for defined benefit schemes to the one of rate of return. The common assumption of 2.5% for real long run rates of returns (3% gross minus 0.5% corresponding to administrative costs) may not necessarily reflect the circumstances of some countries, notably those with well-established pensions industries. Member States have been invited to provide national variants when they wish to illustrate this.

[7] Some Member States used slightly different assumptions of rates of returns, which should be borne in mind when making comparisons of outcome of funded schemes. In Finnish and Swedish calculations a real net rate of return of 3% net has been used, while in the Cypriot and Maltese (in the variant 'some reform') ones an higher real net rate of return was used (see also national sections elements in section 5).

Table 3 – Assumptions and representativeness of contribution rates for pensions and types of schemes considered (contribution rates in percentage points)

	Statutory pensions (or in some cases Social security)	Occupational and voluntary pensions		Total contribution rate used as assumption
		Estimate of current (2002)	Assumption	
BE	46.3[a]	Nd	4.25	50.25[a]
CZ	28	/		28
DK	0.9[b]	8.8	12.7	13.6
DE	19.5	Nd	4	23.5
EE	22	/		22
EL	20	/		20
ES	28.3	/		28.3
FR	20	/		20
IE	9.5	10-15	20.7	30
IT	32.7	5.7	6.91	39.6
CY	16.6[c]	/		16.6
LV	20	/		20
LT	26	/		26
LU	24[d]	/		24
HU	26.5	/		26.5
MT	30[e]	/		30
NL	7	9.8	11.5 -12.5	21-22
AT	22.8	/		22.8
PL	36.9[f]	/		36.9
PT	32.6[g]	/		32.6
SI	24.35	/		24.3
SK	Nd	/		Nd
FI	21.6	/		21.6
SE	17.2	13.7	13.7	30.9
UK	14.75 – 10.9	16.6	23.7	34.6 – 38.4

Note: The two first columns provide information on contribution rates used for statutory schemes and also eventually occupational or private schemes included in the base case, thus giving elements on the representativeness associated with the base case. Contribution rates corresponds to overall contribution rates as a share of gross wages (from employees and employers) used as assumptions for the calculation of theoretical replacement rates. Contribution rates may differ from current levels reflecting for instance projected increases in contribution rates, in particular as regards assumptions used for second pillar schemes. (a) For Belgium, this refers to the overall Social Security contribution rate, due to its global management. (b) For Denmark, this refers to contributions, to the ATP (statutory Supplementary Labour Market Pension, though it should be recalled that the financing of the first pillar mainly comes from the general budget. (c) For Cyprus, one fourth (4%) comes from the general State budget. (d) For Luxembourg, one third (8%) also comes from the general State budget. (e) For Malta, this corresponds to a repartition of 10% from the employee, 10% from the employer and 10% from the State. (f) For Poland, this corresponds to old-age contributions (19.52 per cent of wage) and disability and survivors contribution (13 per cent of wage). (g) For Portugal, this corresponds to a general estimate (ratio between overall contributions and aggregate wages declared to social security). The total contribution rate used as an assumption in simulations is 34.75 (legal statutory contribution rate).

3. RESULTS FOR THE BASE CASE

Future levels of pensions in relation to earnings (income replacement levels) will depend on different factors, notably the pace of accrual of pension entitlements (which is linked to evolutions in the labour market), the maturation of pension schemes and the effect of enacted reforms.

Pension schemes (in particular statutory ones and widely developed private ones) generally currently manage to ensure adequate income replacement levels after a full career in most Member States (see chapter 2 from analytical annex of 2006 Synthesis report on Pensions). However, in certain cases, current average pension levels turn out to be low compared to current earnings, reflecting sometimes low coverage or income replacement from statutory schemes, but also maturing pension systems and incomplete careers or under-declaration of earnings in the past.

3.1. A trend towards a decline of replacement rates at a given age

Reforms of statutory schemes will often lead to a decrease of replacement rates at given retirement ages (see table 5), which also reflects the trend towards an increase of life expectancy at 60 or 65. Indeed, it should be noted that all types of pension provision have to adapt to the trend of the increase of life expectancy (be they funded on a pay-as-you-go mechanism or through funded defined contribution or defined benefit schemes). In that respect longer working lives (and also in some Member States higher savings and contribution rates towards second pillar pensions) appear as key channels to compensate for this projected evolution of theoretical replacement rates at a given age.

Observing the evolution by measuring relative changes of theoretical replacement ratios allows taking account of differences in initial levels (as compared to the evolution in percentage points). In some Member States, the intensity of changes can differ (it can be noted that Member States with a positive evolution in percentage points generally have a relatively higher increase in relative terms, indicating that initial levels are relatively low).

Results for the base case indicate that for most Member States, overall replacement rates are projected to decline over the coming decades: as measured with the evolution in percentage points, net theoretical replacement rates are projected to decline in 12 Member States, while the situation would not change significantly in 8 other Member States (a change of +/- 3 percentage points) and an increase in projected for 6 Member States (only two where this exceeds 5 percentage points). Taking into account that second pillar pension generally do not have a full coverage of the population, it should be noted that the decline is even more significant when focusing on the evolution of gross replacement rates of first pillar statutory schemes: gross theoretical replacement rates for first pillar are projected to decline in 14 Member States, while the situation would not change significantly in 8 other Member States (a change of +/- 3 percentage points) and an increase in projected for only 3 Member States.

The tendency towards a decline in prospective replacement rates at a given age is a result of various adjustments. The evolution of the overall (net) replacement rate reflects different contributions, the one from statutory schemes (pay-as-you-go and including also possibly a funded tier) and also in some Member States the one from private pension schemes (occupational or individual see box 2.1; in these Member States, this contribution will benefit those who are actually covered by these schemes - see table 2.3 corresponding coverage - and thus a significant share of pensioners will rely on the contribution provided by statutory schemes).

Table 4 - Evolution of theoretical replacement rates from 2005 to 2050 in the base case

	Change in theoretical replacement rate in percentage points (2005-2050)						Change in theoretical replacement rate in relative terms (2005-2050)		Decline in the replacement rate, 10 years after retirement (in percentage points) (*)	
	Net (Total)	Gross replacement rate								
		Total	Statutory pensions (DB, NDC or DC)		Occupational and voluntary pensions (DB, NDC or DC)		Net	Gross	Net	Gross
BE	6	4	-2	DB	6	DC	10%	9%	-4	-5
CZ	-9	-7	-7	DB	/		-12%	-12%	-13	-10
DK	5	15	-6	DB	21	DC	7%	31%	-3	-1
DE	4	5	-9	DB	15	DC	6%	12%	0	-2
EE	2	3	3	DB and DC	/		5%	9%	-2	-3
EL	-9	-11	-11	DB	/		-8%	-10%	-16	-19
ES	-6	-5	-5	DB	/		-6%	-6%	-10	-9
FR	-17	-17	-17	DB	/		-22%	-25%	-12	-10
IE	0	0	3	DB	-3	DB	0%	0%	-4	-4
IT	4	1	-15	DB and DC	16	DC	5%	1%	Nd	-12
CY	18	11	11	DB	/		35%	24%	-7	-6
LV	-6	-6	-6	NDC and DC	/		-7%	-10%	Nd	7
LT	-4	2	2	DB and DC	/		-8%	5%	-6	-1
LU	1	0	0	DB	/		1%	0%	1	0
HU	-4	11	11	DB and DC	/		-4%	11%	-14	-9
MT	-54	-41	-41	DB	/		-61%	-56%	0	0
NL	-2	-2	0	DB	-2	DB	-2%	-3%	-5	-4
AT	4	5	5	DB	/		5%	7%	-10	-10
PL	-33	-27	-27	NDC and DC	/		-42%	-42%	-26	-21
PT	1	-5	-5	DB	/		1%	-7%	-10	-10
SI	-22	-25	-25	DB	/		-27%	-39%	-10	-4.5
SK	1	1	1	DB and DC	/		1%	2%	Nd	Nd
FI	0	-4	-4	DB	/		0%	-7%	-8	-8
SE	-15	-12	-13	NDC and DC	1	DB	-21%	-18%	-10	-9
UK	3	3	2	DB	0	DB	4%	5%	-6	-5

Source : Member States calculations of theoretical replacement rates.

Reading: the first four columns provide the evolution of theoretical replacement rates in percentage points from 2005 to 2050, for a worker retiring at 65 after 40 years with average earnings: net or gross, total, and contributions from statutory schemes, from occupational or individual schemes be they defined benefit (DB), notional defined contribuition (NDC) or defined contribution ones (DC). The next two columns refer to evolution in relative terms. The last column indicates the decline of the replacement rates after 10 years of retirement and in percentage points in the base case for a worker retiring in 2005.

Most Member States have statutory pension schemes providing earnings-related pensions. Benefits under these pension schemes are related to earnings either during a specified number of years towards the end of the career or increasingly during the entire career. The contribution period taken into account in the calculation of pensions, as well as the pace of revalorisation of past wages (no revalorisation, revalorisation on prices, on wages, or a mix), the pace of indexation of current pensions are very different among Member States, and also the statutory retirement age are generally the target of adjustments during reforms.

It should also be noted that replacement rates evolutions can be affected by the unique common assumption used for rates of returns, which can translate into a relatively slower

evolution of rates of returns in comparison to wage evolutions in some new Member States (notably PL) and thus affect the evolution of replacement rates.

Besides, for countries which have introduced life expectancy adjustment factors in their pension systems (like DE, AT, FR, IT, PL, SE), this can translate into a decrease of theoretical replacement rates. One needs to realise that this was an intention to create the right incentives for extending working lives and this is thus important to consider not only the evolution of theoretical replacement rates for the base case, but also for variants, and in particular for variants of longer working lives, that can enable replacement rates to remain at current levels (see 4.4).

Several countries extended — or are still in the process of extending — the period of an individual's earnings history that is used for calculating the pension entitlement (e.g. AT, CZ, ES, FR, HU, PT, FI, IT). Thus, instead of using the years of highest earnings towards the end of the career, earnings during a much longer period or even the entire career (in notional defined contribution schemes like in SE or PL) are taken into consideration. This will usually lead to lower pension levels, particularly if past earnings are not fully adjusted for (nominal) wage growth. This also has implications in terms of redistribution of pension systems as more homogeneous career profiles will more benefit from such changes than career profiles with rising profiles in last years.

Pension levels can also be lowered through adjustments in the formula used to calculate benefits. One significant development has been the introduction of a demographic adjustment factor. In the Swedish, Polish and Italian pension schemes (as well as the Finnish from 2009 onwards) rising life expectancy will lower the replacement rate unless people postpone their retirement. In Germany, France, Austria recent reforms have also introduced mechanisms to take into account future demographic trends and in particular increases in life expectancy. Thereby, they provide strong incentives for people to postpone their retirement in accordance with rising life expectancy and offer opportunities for achieving adequate pension levels.

Finally, as they are generally for an important part indexed on prices (on an aggregate of wages and prices, with various weights), pensions in payment most often lag behind the evolution of wages. This can translate into significant declines of the level of theoretical replacement rates during the period of retirement (see last column of table 2.3, which refers to the decline after 10 years of retirement of the net ratio of pension in payment in relation to wages of people at the age of retirement).

3.2. How can working longer and a development of privately managed pensions influence replacement rates ?

Two major policies have been developed by Member States to cater for this projected decline in replacement rates at a given age, on the one side the strengthening of incentives to work longer and on the other side, the development of private pensions. It can also be noted that a number of Member States (such as Belgium and Denmark) have engaged a strategy of reduction of public debt, which can create room for manoeuvre for financing adequate pensions.

Member States have generally increased the accrual of pension rights if people work longer and these should act as incentives to work longer, thus contributing to compensate the projected decrease of replacement rates. Besides, in some Member States, the eligibility rules have been changed in the sense of a progressive increase of the legal retirement age. Some more elements on the evolution of theoretical replacement rates for shorter or longer working lives are provided in section 5.4.

It can be noted that increases in the age of retirement will not necessarily automatically and everywhere translate in longer work seniority at retirement, notably as part of the active population is entering later the labour market due to longer education and due to probably increasingly frequency of periods out of the labour market, for instance for purpose of training or of unemployment spells during a worker's career.

Moreover, in a number of Member States, the development of privately managed pension provision is projected to play a role in compensating future decrease in replacement rates. In Member States where statutory pensions provide a relatively modest level of income replacement, the ability to maintain one's living standard after retirement depends to a large extent on access to the funded tier of the statutory scheme, to private occupational or personal pension provision (such as DK, NL, IE, UK). Moreover, in some Member States the funded tier of the statutory scheme is expected to contribute significantly to the future income of pensioners (PL, EE, LV, LT, HU, SK). Furthermore, a number of countries have increased provisions for occupational or private schemes that complement public pensions.

In these countries achieving good coverage rates of such private schemes and adequate benefit levels are particularly important goals for policy-makers. Instruments for promoting private pension provision are diverse and include notably collective bargaining, tax incentives or direct financial support in the form of subsidies, or rules that make membership in such schemes mandatory (or quasi-mandatory), possibilities to opt out (LT, UK) or a silent assent (as in the case of the diverting of the TFR deferred wage component to private pension funds in IT).

It should be noted that an increasing reliance on private provision also has to be accompanied by appropriate coverage and contributions paid to these forms of pension provision. Current coverage of second pillar schemes taken into account vary and this should be borne in mind when considering contribution from these schemes to replacement rates results for the base case (current estimates of coverage range from 11% in IT to 90% in SE, see section 2.4). As regards contribution rates, some Member States assumed in the calculations of theoretical replacement rates that workers will contribute to private funds with more than 10% of their wage (DK, NL, SE) and in some cases with more than 20% (IE, UK).[8]

In a number of Member States, it can be expected that their contribution to incomes will rise in some Member States. It should be noted that this also includes a number of Member States are developing a funded tier within their statutory schemes (SE, EE, LV, LT, PL, HU, SK), which will contribute to the replacement rates delivered to future pensioners from these schemes (first payments will occur at the end of the decade). In this regard, it could be interesting to adapt the common agreed methodology, in order to provide information on the contribution of the funded tier of first pillars.

The development of occupational pension schemes (even in countries where increase in coverage rates is still recent by the standards of pension systems), will also translate into a significant increase of the number of pensioners with entitlements for a complete career over the coming decades. Besides, some countries plan to compensate partly for the decline in statutory replacement rates by the development of privately managed pension provision (in particular DE and IT), while in other Member States an increase of contribution rates towards private pensions is projected in order to achieve future projected levels of replacement rates of second pillar pensions (in particular in DK, NL and UK). In this regard, it should be underlined that in order to deliver according to

[8] In Ireland and in the UK, the vast majority of the assumed contributions in the base case corresponds to employer contributions.

expectations, it is essential to monitor the evolution of coverage and contribution rates of these schemes.

4. RESULTS FOR VARIANTS

Variants provide very useful information that enable to complement results related to the base case. It can be recalled that general sections illustrate ongoing general trends among Member States, while levels of theoretical replacement rates are not displayed in this general analysis, but only in country sections.

Following the same methodology as for the analysis of the base case, this section provides information on the trends projected for the different variants and how they compare with trends at play in the base case. It can be noted that this information can also be presented as the extent to which results for different cases depart from the base case in 2005 and 2050 (see section 4.4).

4.1. Variant of lower wage

As compared to the base case, the decline of the theoretical replacement rate is in most cases of a comparable magnitude (as expressed in percentage points) for a worker with wages at 2/3 of the average wage. As replacement rates are generally higher for that type of career, this indicates that the decline in relative disposable income is projected to be lower for more modest workers.

However, for some Member States, the evolution of theoretical replacement rates appears to be very significantly less favourable for lower wages than for average wages (EE, HU, SK, CY, FI and SE), which may reflect in some cases short transition periods associated to the introduction of a funded tier in the statutory scheme. For SE, this is mainly due to the loss of the guarantee pension and means-tested housing benefit, which in accordance with current legislation are price-indexed. However, the levels of these benefits can expected to be adjusted in the future. More generally, it can be noted that a reinforcement of the link between contributions and benefits can result into a flatter profile of the evolution of replacement rates according to initial levels, which could translate into significant declines of replacement rates for more modest pensioners.

Table 5 – Variant of lower wages, evolution of theoretical replacement rate in percentage points (2005-2050)

	Variant of 2/3 of average wage				Base case	
	Net (Total)	Gross replacement rate			Net (Total)	Gross (Total)
		Total	Statutory pensions	Occupational and voluntary pensions		
BE	0	0	-1	1	6	4
CZ	-11	-9	-9		-9	-7
DK	4	16	-5	21	5	15
DE	9	5	-9	15	4	5
EE	-12	-9	-9		2	3
EL	-15	-15	-15		-9	-11
ES	-6	-5	-5		-6	-5
FR	-19	-17	-17		-17	-17
IE	0	0	5	-5	0	0
IT	+4	+1	-15	16	4	1
CY	12	4	4		18	11
LV	-9	-10	-10		-6	-6
LT	-2	2	2		-4	2
LU	0	0	0		1	0
HU	+2	10	10		-4	11
MT	-30	-24	-24		-54	-41
NL	2	2	0	2	-2	-2
AT	4	4	4		4	5
PL	-33	-27	-27		-33	-27
PT	2	-5	-5		1	-5
SI	-22	-25	-25		-22	-25
SK	-12	-9	-9		1	1
FI	-8	-12	-12		0	-4
SE	-40	-22	-23	1	-15	-12
UK	4	4	3	1	3	3

Source: Member States calculations of theoretical replacement rates.

4.2. Variants of wage profiles

4.2.1. Variant of concave profile

As compared to the base case, the evolution of the theoretical replacement rate is in most cases of a comparable magnitude (as expressed in percentage points) for a worker with a concave wage profile (as expressed in relation to the average wage) than for a flat wage profile at the level of the average wage (table 6).

Indeed, in most cases the difference does not exceed one percentage point in gross terms (it is generally slightly higher in net terms due to generally progressive income taxation). In some Member States, the difference is slightly more pronounced (FI, LV, NL). This slight difference is probably linked to the fact that though wages taken into account in the years before just retirement are higher in the case of a concave profile, this effect is probably compensated by lower wages in former years. This may however not be the case for more pronounced forms of concave profiles (see below increasing wage profiles).

Nevertheless, it is thus worthwhile to note that, though concave earnings profile are clearly more representative of typical careers, the approximation through constant wages

profiles does not lead to very different evaluations of the evolution of theoretical replacement rates.

Table 6 – Variant of concave wage profile, evolution of theoretical replacement rate in percentage points (2005-2050)

	Variant of concave wage profile				Base case	
		Gross replacement rate				
	Net (Total)	Total	Statutory pensions	Occupational and voluntary pensions	Net (Total)	Gross (Total)
BE	6	3	-2	5	6	4
CZ	-9	-7	-7		-9	-7
DK	4	14	-6	20	5	15
DE	3	5	-9	14	4	5
EE	2	3	3		2	3
EL	-9	-11	-11		-9	-11
ES	-6	-5	-5		-6	-5
FR	-17	-17	-17		-17	-17
IE	0	0	2	-3	0	0
IT	0	3	-18	15	4	1
CY	18	10	10		18	11
LV	-10	-10	-10		-6	-6
LT	-3	2	2		-4	2
LU	0	0	0		1	0
HU	-6	11	11		-4	11
MT	-56	-42	-42		-54	-41
NL	-5	-5	0	-5	-2	-2
AT	1	1	1		4	5
PL	-33	-27	-27		-33	-27
PT	1	-5	-5		1	-5
SI	-22	-25	-25		-22	-25
SK	-2	-1	-1		1	1
FI	-6	-9	-9		0	-4
SE	-17	-14	-15	1	-15	-12
UK	3	3	2	0	3	3

Source: Member States calculations of theoretical replacement rates.

4.2.2. Variants of increasing wages (80-120 and 100-200)

As compared to the base case, the evolution of theoretical replacement rates is in most cases slightly lower (as expressed in percentage points) for a worker with a ascending wage profile (from 80% to 120% of the average wage) than for a flat wage profile at the level of the average wage. While in most MSs the evolution is not very different than in the base case (difference of about one or two percentage point), in some Members States, the evolution is less favourable of between 5 and 10 percentage points (in net terms, in IT, CY, LV, MT, NL, AT, PL, PT, SK, PT).

This less favourable evolution reflects probably different effects as compared to the base case, notably to the fact that the formula of pension benefits can be progressive (lower replacement rates for higher incomes), but also the fact that in a number of Member States pensions are calculated on the basis of an increasing length of contribution – typically from final wage to average wage- which can be relatively unfavourable for increasing wage profiles).

It can also be noted that differences with the base case are more pronounced for more rapidly ascending careers (100%-200%), as the effect of these different factors are probably increased. In a number of Member States, the evolution is less favourable by close or higher than 10 pp for the gross replacement rate (EL, LV, NL, AT, PT, FI), while the effect on the net replacement rate are generally more important (due to progressive income taxation).

Table 7 – Variant of increasing wage profiles, evolution of theoretical replacement rate in percentage points (2005-2050)

	Variant of increasing profile (80-120)				**Variant of increasing profile (100-200)**				**Base case (Total)**	
		Gross replacement rate				Gross replacement rate				
	Net (Total)	Total	Statutory pensions	Occupational and voluntary pensions	Net (Total)	Total	Statutory pensions	Occupational and voluntary pensions	Net	Gross
BE	5	3	-2	5	2	-1	-4	4	6	4
CZ	-10	-7	-7		-6	-5	-5		-9	-7
DK	4	12	-5	17	7	10	-5	15	5	15
DE	2	4	-8	12	-7	3	-7	10	4	5
EE	1	2	2		8	7	-8		2	3
EL	-7	-8	-8		-16	-21	-21		-9	-11
ES	-5	-5	-5		-8	-9	-9		-6	-5
FR	-16	-15	-15		-17	-16	-16		-17	-17
IE	0	0	2	-3	0	0	3	-3	0	0
IT	-8	-11	-23	13	-9	-13	-23	11	4	1
CY	11	4	4		14	8	8		18	11
LV	-12	-11	-11		-22	-18	-18		-6	-6
LT	-4	1	1		-4	0	0		-4	2
LU	0	0	0		0	0	0		1	0
HU	-5	7	7		-7	6	6		-4	11
MT	-60	-46	-46		-46	-34	-34		-54	-41
NL	-12	-12	0	-12	-21	-19	0	-19	-2	-2
AT	-3	-3	-3		-7	-7	-7		4	5
PL	-37	-30	-30		-39	-32	-32		-33	-27
PT	-9	-13	-13		-18	-17	-17		1	-5
SI	-22	-25	-25		-22	-25	-25		-22	-25
SK	-4	-3	-3		-1	-1	-1		1	1
FI	-6	-10	-10		-10	-12	-12		0	-4
SE	-17	-14	-15	1	-10	-11	-10	0	-15	-12
UK	3	3	2	0	2	2	2	0	3	3

Source: Member States calculations of theoretical replacement rates.

4.3. Variants of broken career

As compared to the base case, the evolution of the theoretical replacement rate is in most cases comparable (as expressed in percentage points) for a worker with a broken career than for a complete wage profile at the level of the average wage, though initial levels are in most cases lower.

Table 8 – Variant of broken career, evolution of theoretical replacement rate in percentage points (2005-2050)

	Variant of broken career				Base case	
	Net (Total)	Gross replacement rate			Net (Total)	Gross (Total)
		Total	Statutory pensions	Occupational and voluntary pensions		
BE	2	2	-2	4	6	4
CZ	-9	-7	-7		-9	-7
DK	2	13	-3	15	5	15
DE	11	9	-3	12	4	5
EE	0	1	-14		2	3
EL	-2	-2	-2		-9	-11
ES	-6	-5	-5		-6	-5
FR	-17	-16	-16		-17	-17
IE	1	0	3	-2	0	0
IT	Nd	Nd	Nd		4	1
CY	6	0	0		18	11
LV	-6	-6	-17	11	-6	-6
LT	-3	1	1		-4	2
LU	0	0	0		1	0
HU	-14	2	2		-4	11
MT	Nd	Nd	Nd		-54	-41
NL	-1	-1	0	-1	-2	-2
AT	3	3	3		4	5
PL	-31	-25	-25		-33	-27
PT	3	-4	-4		1	-5
SI	-22	-27	-27		-22	-25
SK	-7	-6	-6		1	1
FI	-1	-5	-5		0	-4
SE	-25	-19	-20	1	-15	-12
UK	5	4	4	0	3	3

Source: Member States calculations of theoretical replacement rates.

However, in a few Member States the evolution of the situation for broken careers appears to be less favourable than in the base case (CY, HU, SK and SE).

The relatively more favourable evolution in EL reflects a nearly constant level of theoretical replacement rate for a broken career while a decline is observed in the base case. The less than favourable evolution of the replacement rates in Sweden is due to transitional rules between the old and the reformed pension systems. In the replacement rates for 2005 a large part of the pension income comes from the old pension system where 30 years of seniority is adequate, while younger cohorts are entirely insured under the reformed pension system that is based on the life-earnings principle.

4.4. Variants of length of active life

Only a limited number of Member State have provided elements on the projection of theoretical replacement rates for longer (DK, DE, ES, PL, SE and UK) or shorter (DE, EL, ES, IT, HU) working lives (see table 9).

Extending working lives enables an increase of the theoretical replacement rates, to an extent ranging from 5 to slightly more than 10 percentage points for 2 years of increase of employment. It is difficult to identify from available results, whether increase of replacement rates associated with increased length of employment can be projected to

evolve significantly in the future, as while the bonus associated with longer working lives is generally supposed to increase or remain constant, in some cases, it is projected to slightly decline.

Table 9 – Increase in theoretical replacement rate associated with an increase in the age of retirement (in percentage points in 2005 and 2050)

	Increase of age of retirement from 63 to 65 (base case)				Increase of age of retirement from 65 (base case) to 67			
	2005		2050		2005		2050	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
DK	/	/	/	/	3	3	3	3
DE	5	5	7	6	8	7	12	8
EL	12	7	11	7	/	/	/	/
ES	12	10	11	11	4	4	3	5
IT	4	4	9	9	/	/	/	/
LT[a]	2	3	3	2	/	/	/	/
HU	12	15	19	18	/	/	/	/
PL	/	/	/	/	2	5	3	6
FI	4	4	7	7	8	4	7	6
SE	/	/	/	/	10	5	8	5
UK	/	/	/	/	7	/	7	/

Source: Member States calculations of theoretical replacement rates. LT: from 62 to 65.

It would be important to analyse more in detail the future evolution of the increase in replacement rates associated with longer working lives, as a number of recent reforms have increased incentives to work longer, notably by a strengthened link between contributions and benefits. In defined-benefit schemes, the link can been strengthened through a longer contribution period required for a full pension, while applying actuarial reductions for early pensions and increases in pension rights for deferred retirement (in a number of Member States, like AT, FR, FI while the link was already strengthened by previous reforms in a number of Member States). Some Member States have put through major reform packages that have modified susbtancially their statutory schemes (DE, FR, AT, FI, IT). Notional defined contribution schemes (such as in SE and PL) also build on a strong link between contributions and benefits. Besides, since the end of the 90's, following the Swedish reform that introduced the premium pension, a number of Member States have also introduced statutory funded pension schemes (like in PL, HU, EE, LV), followed by Lithuania (in 2004) and Slovakia (in 2005).

4.5. Other variants

A number of Member States have provided supplementary national variants, that enable a more comprehensive evaluation of information provided in the base case and variants, notably on the effect of different levels of rates of return (DK, EE, NL, PL, SE). These variants are presented in the national sections.

5. MEMBER STATES SUMMARIES

Replacement rates calculations provide for each Member State a powerful instrument to assess future evolution of adequacy of pensions, notably through trends associated to the base case and different variants.

In order to provide more transparency on the way these calculations are carried this section gives for each Member State information on the type of schemes included and representativeness and assumptions used. Member States States were also invited to write a short comment explaining the calculations and results of theoretical replacement rates for their country.

It should be noted that the aim of these country summaries is to provide more precise and comprehensive information of theoretical replacement rates. In that respect, it should be noted that they do not provide a general overview of the situation of pension, which can be found in the country fiches of the recently issued Synthesis report on Adequate and Sustainable pensions.

5.1. Belgium

Description of schemes included

The retirement pension of employees in the private sector is determined on the basis of three elements: career, wages and family situation. Every year of the career counts for $1/45^{th}$ in the calculation of the pension. Pensions are calculated on the basis of the full career and provide 60 % (for a single person) or 75 % (for a head of family) of the revenues earned in the whole career up to a certain wage ceiling.

Calculations include a funded DC 2^{nd} pillar scheme. For the building up of this second pillar, it has been assumed that the contributions have been paid since 1992, with a contribution rate of 4.25% of wages. Only for the variant of 66% of the average wage, a contribution rate of 1% is taken into account. The lower contribution rate in this case reflects the fact that contribution rates to second pillar pensions vary depending on the level of wages.

Representativeness of the calculations

Men reach a full career after 45 years, women after 43 years at present (for employees in the private sector). As a result of the 1997 pension reform, the legal retirement age and the calculation fraction will be equalised with these of men as from 2009 in the scheme for salaried workers and self-employed. The effective average age of exit from the labour market (total population) is 59,4 (2004). This is below the legal early retirement age (60 years) and the legal normal retirement age (65 for men and currently 63 for women employees in the private sector) due to the existence of specific schemes embedded in the unemployment insurance. Available studies indicate that while the actual exit age from the labour market is lower than 60, the average age of take up of pensions for salaried workers is 64, after a career (including assimilated periods) of 42 years.

The coverage of occupational pensions for the working population is estimated to be around 40% - 45 % (around 20% of the current pensioners -2001- are covered by these schemes). On average, around 25% of their net pension is contributed out of occupational pensions. Contribution rates are very diverse and the modal value appears to be in the range from 1% to 5% (employers typically pay 90% of contributions).

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Belgium is projected to face similar demographic trends to most EU15 Member States in coming decades. According to 2005 Eurostat demographic projections used in the new OMC round of pension projections, the number of elderly persons (age 65+) will increase by some 67% until 2050, albeit less than the average for the EU15 (77%). This implies that the old age-dependency ratio will steadily increase from 26% in 2003 to 47% by 2050 (below the EU25 average of 52%).

Main results

At just over 43% for people on 2/3 of average earnings, around 39% for average earners, gross replacement rates of the first pillar are comparatively low for an earnings-related scheme. This is linked to the fact that pensions are calculated on the basis of earnings during the entire career. Minimum pension rules increase the replacement rate in the case of the hypothetical worker on 2/3 of average earnings and a ceiling on earnings taken into account for calculating the pension reduces it in the case of a hypothetical worker ending the career at 200% of average earnings.

The contribution of second pillar schemes to total pension income is currently small. For average earners it represents less than one tenth of the gross pension. This result is based on the assumption of a 12-years contribution period in 2004 and a contribution rate of 4,25% of gross wages (90% paid by the employer, 10% by the employee).

The net pensioner income comes close to 2/3 of the pre-retirement net income for people on average earnings and for people on 2/3 of average earnings, but it is significantly lower for people with rising earnings profiles. Pensions benefit from a tax reduction that is relatively important for low and average pensions.

In the case of the concave earnings profile the net replacement rate is very close to the base case result. This is linked to the fact that pension rights are built up during the entire career. In the broken career case the net replacement rate is substantially lower than in the base case, which is directly due to the fact that in this case the career is much shorter than in the base case (30 instead of 40 years).

Under current legislation, first pillar pensions of private sector employees are automatically raised in line with inflation. Additional adjustments, which may be targeted at certain categories of pensioners, have been made in the past on a discretionary basis. The calculation of the replacement rate ten years after retirement is based on the assumption that an additional pension increase of around 0,3% on top of the expected inflation rate will be awarded. For second pillar schemes it is assumed that the accumulated capital is converted into an annuity at the moment of retirement and that this annuity is adapted in line with inflation. The 10-years indexed replacement rate (pension income ten years after retirement relative to projected earnings) is significantly lower than at the moment of retirement or compared to a newly retired person.

Under the legislation currently in force and assuming that the minimum pension and tax thresholds increase in line with earnings, gross replacement rates for most cases with a 40-years' career will remain roughly constant for the first pillar over the projection period 2004-2050. Only in the case of the rising earnings profile (100% to 200% of average earnings) there is a significant drop of around 5 percentage points. This is due to the fact that on the long term the wage ceiling is assumed to increase more slowly than wages (1,25 versus 1,75 percent). Except in the case of the 2/3 of average earnings worker (where the contribution to the second pillar is only 1% of gross wages) the contribution of the second pillar to the gross replacement rate is expected to rise significantly as a result of the assumption that the number of contribution years to second pillar pension schemes will rise from 12 to 40 years by 2032, when the contribution of

the second pillar to the total gross pension income of the worker on average earnings will be around one fifth. After 2032, the gross replacement rate of the second pillar will progressively decline as a result of rising life expectancy. The combined development of first and second pillar pensions implies that total net replacement rates will slightly increase between today and 2050 for all cases for people covered by both pensions. On the basis of the assumptions used in this study, net replacement rates could be about 7 percentage points higher in 2050 than in 2004 in the base case. The increase would be much more modest (1 percentage point) in the 2/3 of average earnings case because of the assumed limited rate of contribution to the second pillar and in the case of earnings rising from 100 to 200% of the average (due to the effect of the assumption with regard to the evolution of the wage ceiling) and in the broken career case (increase of 2 percentage points).

Table 10 - Replacement rates summary table – Belgium

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	39	35	41	38	37	43	42	38	36	33	31	27	22	30	28
Gross replacement rate 2nd pillar	4	3	5	10	10	1	2	4	9	3	8	3	7	4	7
Total gross replacement rate	43	38	46	48	47	44	44	41	45	37	39	30	30	33	35
Total net replacement rate	67	64	72	76	74	65	66	66	72	60	65	50	52	56	58
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 11 - – Belgium - Summary table - replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees cohort of male workers born in 1938 and of the cohort of women born in 1940 (situation in 2003)	M	64	
	F	61,5	
	Total	n.a.	
Effective age of withdrawal from the labour market (2004) [(b)]	M	n.a.	
	F	n.a.	
	Total	59	
Average seniority at retirement of retirees cohort of male workers born in 1938 and of the cohort of women born in 1940 (situation in 2003)	M	42,5	
	F	30,5	
	Total	n.a.	
Coverage of the first pillar (employees private sector) as a percentage of persons in employment in 2003 Coverage of the first pillar (in % of labour force) (*)		Age 15-24	90%
		Age 25-54	71,4%
		Age 55-64	46,8%
		Total	67,9%
Active membership of occupational pension schemes (in % of the labour force) in 2002	M	n.a.	
	F	n.a.	
	Total	40 to 45% (estimate)	
New retirees receiving occupational pensions (in % of the annual flow of retirees) in 2001	M	36,8%	
	F	15,3%	
	Total	28,5%	
Average pension relative to average wage (in %)		76%	
Median pensions (without other social benefits) relative to median earnings [(b)]		61%	
Overall contribution to the first pillar as percentage of individual earnings for private employees		46,26%	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		Nd	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		46,26%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		Case 2/3 of average earnings	1,00%
		All other cases	4,25%
GDP growth rate		2005-2030	1.7%
		2031-2050	
Average wage (productivity) growth rate		2005-2030	1.8%
		2031-2050	

(*) The groups not contributing to the general scheme of the employees in the private sector are public servants and self employed. Around 100% of private sector employees are covered.

5.2. Czech Republic

Description of schemes included

Contribution rate to the mandatory pension scheme is in the Czech Republic 28 % of gross earning. This rate covers expenditures of all types of paid out pensions (old age, disablity and survivors). There is not any other direct State subsidy paid to the pension scheme. Contribution rate is split between employee and employer roughly 1/4 to 3/4. Current contribution paid by employer is 21.5 % and the rest 6.5 % is paid by employee.

Representativeness of the calculations

In 2005, there are two main aspects differing hypothetical cases from the actual situation: retirement age and the number of service years. While the assumption of age of retirement is fixed at 65 years, the actual retirement age for men was closely to 60 years, roughly 5 years under the hypothetical cases. The statutory retirement age for men retiring at 65 in 2005 was 60 years and 10 months. Due to actuarial reductions and bonuses used in the pension formula this difference has a positive impact on the level of pension in the hypothetical cases. On the other hand the number of obtained service years is more than 4 years higher than in the hypothetical cases. This lowered hypothetically calculated pension compared to the actual situation.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

The calculations reflect elements of income redistribution within the system, as the low income worker (2/3 of the average earning) has a replacement rate close to 100%, while for the base case it is 79 % and 49 % for higher income groups, represented by rising earnigs profiles (from 100 to 200 % of average income)

For the prospective replacement ratios there is a strong impact of the legislated increasing of the statutory retirement ages, which will gradually reach 63 years for men (and 59 – 63 for women depending on number of children). This increase of the statutory retirement ages leads to shortening of the period of deferred retirement, which is 4 times more credited for the pension entitlement. Due to this, theoretical prospective replacement rates decrease in all cases.

For the cases with growing earnings, the replacement rate is lower and in the course of time drops slightly more than in the case of the cases with the stable level of income. This is caused by gradual extension of the length of the reference period (since 1986) from which income for the pension calculation is derived. The target status (according to the legislation in force), i.e. the 30-year period prior to the year of granting the pension will be reached in 2016.

Table 12 - Replacement rates summary table – Czech Republic

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	61	51	58	54	53	78,7	69,7	58,8	51,6	53,0	45,7	35,2	30,7	50,6	43,6
Gross replacement rate 2nd pillar	61	51	58	54	53	78,7	69,7	58,8	51,6	53,0	45,7	35,2	30,7	50,6	43,6
Total gross replacement rate															
Total net replacement rate	79	66	76	70	70	100,1	88,9	77,3	67,9	70,3	60,7	48,8	42,6	66,2	57,2
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 13 – Czech Republic - Summary table – replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	60,2	
	F	56,3	
	Total	58,0	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	44,4	
	F	39,6	
	Total	41,6	
Coverage of the first pillar (in % of labour force)		--	
Active membership of occupational pension schemes (in % of the labour force)	M		
	F		
	Total		
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M		
	F		
	Total		
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		28	
Overall contribution to occupational schemes as percentage of individual earnings for private employees			
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		--	
Overall contribution to social security in % of individual earnings for private employees		28	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations			
GDP growth rate		2005-2030	5,4
		2031-2050	4,0
Average wage (productivity) growth rate		2005-2030	5,4
		2031-2050	4,8

5.3. Denmark

Description of schemes included

The first pillar of the Danish pension system is a universal, residence-based and non-contributory statutory old-age pension scheme that is financed from general taxation. It provides a flat-rate benefit combined with an income-tested element. A full public old-age pension is conditional on 40 years' residence in Denmark. The old age pension is indexed to private sector wages and is taxable. A second tier of the first pillar consists of the statutory, working time-related ATP scheme which is a mandatory scheme covering all wage earners and certain groups of recipients of transfer payments, e.g. unemployed and person on sick leave or maternal/parental leave. It provides benefits at a moderate level equivalent to an average of 10% of the first-pillar pension.

The second pillar consists mainly of defined-contribution occupational schemes based on collective agreements at the level of sectors. These schemes have been expanded significantly since the 1980s.

The housing benefit for pensioners is considered as an important supplement to the pensions paid. The net replacement rates are including this benefit. The housing benefit is income tested. The housing benefit to house owners is granted as a loan.

Representativeness of the calculations

At present, the old age pension is paid to more than 99% of residents above retirement age. Of these 96% receive the full flat rate amount and 60% the full income tested supplement. For single pensioners, the public old age pension constitutes currently 60% of their income.

As regards second pillar pensions, currently more than 80% of full-time employees aged 15-59 are paying contributions into such schemes. The contribution rate has been increased during the last 15 years and will reach 10.8% by the end of 2006 including coverage of the risk of disability. A level of 12.7% is used in the projections. 30,5% of the annual contribution is deducted from the savings for old age pension to cover the risk of disability and death before age 65.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Denmark is projected to face similar demographic trends to most MS until 2030 when it will then experience more favourable trends. According to EUROSTAT figures, the elderly dependency ratio will increase from the present 23% (2004) to 38% in 2030 and 42% in 2050, staying significantly below the EU25 average of 52% in 2050.

Main results

At present, the largest contribution to retirement income comes from the first pillar schemes. For a single worker on average earnings it offers a gross replacement rate of nearly 45%; for a person on 2/3 of average earnings the first pillar pension represents 68% of previous gross earnings. The current contribution of second pillar schemes remains very limited at 3.6%. The total gross replacement rate (including statutory and occupational schemes) amounts to 49%, resulting in a net replacement rate of 71% for the average earner (including a means-tested housing allowance which represents about 12 percentage points of the net replacement rate).

Due to the importance of the flat-rate benefit and the means-tested elements in retirement income, net replacement rates are much higher for people on lower incomes (98% for people on 2/3 of average earnings) than for people on higher incomes. The current

theoretical net pensioner income hardly differs between the different income profiles given the assumptions agreed in the ISG.

The supplementary second pillar defined contribution pensions are expected to pay out higher pensions in the future as they are maturing. By 2050 these pensions are expected to be the most important income for pensioners leaving jobs in the higher range of earnings. As the basic public pension is income tested an increase in second pillar pensions will partly be offset by smaller basic pensions resulting in falling gross replacement rates for the first pillar pension. However the total replacement rate (net and gross) is expected to slightly increase. Thus the net replacement rate for the average wage earner is projected to rise from 71% in 2005 to 76% in 2050.

As complementary cases are shown the rates with a real rate of return of 4,7% (3,7% after tax), which is the rate usually used by the Danish Ministry of Finance. The other case assumes, that rents increase with real wages. The thresholds in the housing benefit scheme is indexed according to real wage growth. When rents as assumed in the base case only increases with inflation the housing benefit will disappear over a period of 45 years. In a longer span of years rents are normally increasing with real wages reflecting the increase in living standards and therefore this case will better reflect the net replacement rate in the Danish pension system.

Table 14 – Replacement rates summary table – Denmark

	100% of average earnings (2nd column: 10 years after retirement in 2005; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		4,7% real rate of return (Ministry of Finance)		Rents increase with wages	42 years of seniority at retirement	
	2005	In 10 years	2010	2030	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050	2050	2005	2050
Gross replacement rate 1st pillar	45,1	44,3	45,4	42,4	39,2	67,7	62,5	43,0	37,3	37,6	32,7	22,6	17,8	43,6	41,0	45,1	36,3	39,2	45,1	38,4
Gross replacement rate 2nd pillar	3,6	3,1	6,5	20,2	24,8	3,6	24,8	3,6	23,6	3,5	20,6	3,4	18,4	3,6	18,6	4,2	37,6	24,8	3,6	28,3
Total gross replacement rate	**48,7**	**47,4**	**51,9**	**62,6**	**64,0**	**71,3**	**87,3**	**46,6**	**60,9**	**41,1**	**53,2**	**26,0**	**36,2**	**47,2**	**59,7**	**49,4**	**73,9**	**64,0**	**48,7**	**66,7**
Total net replacement rate	**71,3**	**68,1**	**73,8**	**77,0**	**76,1**	**97,6**	**101,8**	**68,5**	**72,9**	**61,5**	**65,1**	**44,5**	**51,0**	**70,0**	**71,5**	**71,8**	**86,6**	**86,8**	**71,3**	**79,0**
Of which means-tested benefits in percentage points of total net replacement rate	12,3	9,5	10,4	2,3	0,0	17,4	0,0	11,8	0,0	10,4	0,0	7,0	0,0	12,6	0,0	12,2	0,0	10,7	12,3	0,0

Table 15 – Denmark - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	62,0	
	F	62,3	
	Total	62,1	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	35,7	
	F	20,3	
	Total	27,7	
Coverage of the first pillar (percentage of persons enrolled in the labour force)		99,7 (96,0)	
Active membership of occupational pension schemes (in % of the labour force)	M	78,6	
	F	76,8	
	Total	77,7	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	92,4	
	F	82,7	
	Total	87,3	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees (Not including contributions to the ATP-scheme)		(0,0)	
Overall contribution to occupational schemes as percentage of individual earnings for private employees (Including contributions to the ATP-scheme)		(8,8)	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees ATP scheme		0.9%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		11.8%	
GDP growth rate		2005-2030	2,1
		2031-2050	1,6
Average wage (productivity) growth rate		2005-2030	2,0
		2031-2050	1,8

5.4. Germany

Description of schemes included

The general pay-as-you-go, earnings-related pension scheme covers around 80% of the employed population in Germany (33 million people). Civil servants' pensions are paid directly from public budgets and special schemes exist notably for farmers and the liberal professions (e.g. for doctors, lawyers, architects). There is a means tested social-assistance safety net for low income pensioners. The pension is payable from age 65 with five years' contribution and from age 63 with 35 years'. Fewer than five years contribution earn no benefit.

First-pillar schemes account for 78% of all incomes of people over 65. The general scheme alone provides 60% of all incomes in old age in West Germany and more than 90% in East Germany. The replacement rate calculation is based on worker from West Germany.

The 2001/2004 reforms promoted the development of supplementary pension schemes. As to the second pillar, legislation provides for five options for occupational provision: "Direktzusage" (book reserves), "Unterstützungskasse" (support fund), direct insurance, "Pensionskasse", "Pensionsfonds" (pension fund). Calculations include a funded DC scheme. For the building up of this scheme, it has been assumed that the contributions have been paid since 2004, with a contribution rate of 4% of wages. These assumptions are in line with the State promoted individual pension (the so called "*Riester pension*").

Representativeness of the calculations

In 2004 new retirees had on average 32,7 years of contributions and the effective retirement age was 63,1.

Since 2001, the coverage rate of occupational pension schemes has increased, in the private sector from 38% to 46%. Currently, about 10.3 million workers in the private sector and 5.4 million public employees contribute to an occupational pension plan (roughly 60% in accordance to TNS Infratest Sozialforschung, 2001-2004). Besides, since the 2001 pension reform, employees are entitled to convert remuneration into contributions to employee-funded occupational pension schemes. Remuneration conversion was used by roughly 1.7 million employees until mid 2004. The average amount converted was 1.100 € per year.

With "*Riester pension*", introduced in 2002, private savings in especially regulated contracts up to 4% of the contribution base (gradually increase up to 2008) can compensated for reductions in the pension level of the statutory pension scheme. It is promoted by bonus independent of wages and by tax deductibility of the contribution. Highest relative support level by the tax financed State supports is provided for low income groups and for persons who bring up children. 6,2 million "*Riester contracts"* have been concluded. Besides the "Riester pension" there are other ways of private old age provision. Since 2002 for instance, some 8 million private annuity contracts were concluded in addition to the "*Riester contracts*".

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Germany is projected to face similar demographic trends to most EU15 Member States in coming decades, as the old-age dependency ratio is projected to increase by some 93% until 2050, albeit less than the average for the EU25 (108%).

Main results

The average earner can currently expect a gross replacement rate of 43% and a net replacement rate of 63% from the first pillar (this is higher than the net replacement rate for earnings rising to 200%). The pension of an average earner in the base case is equal to the pensions of workers with concave earnings profiles or rising earnings from 80% to 120%, but this is translated in a lower replacement rate due to the higher reference wages in these two cases. Workers on 2/3 of average earnings have a slightly higher gross replacement rate, but the net replacement rate is significantly lower than for a hypothetical worker on average earnings due to the fact that the difference between pre- and after-tax earnings is larger on average earnings than on lower earnings.

Ten years after retirement, pensions relative to average earnings can be expected to fall by about 2 percentage points (gross replacement rate) which results in the same net replacement rate decline of 1.5 percentage points in the net replacement rate.

Recent reforms will significantly reduce the gross replacement rate of the first pillar by about 9 percentage points by the year 2050. However, reforms also created better opportunities for increased occupational or personal provision. It is expected that for people availing themselves of these opportunities the gross replacement rate can increase by nearly 5 percent points (and the net replacement rate to increase by 4 percentage points between today and 2050).

Currently in the broken career case the net replacement rate is substantially lower than in the base case, which is directly due to the fact that in this case the career is much shorter than in the base case (30 instead of 40 years). As a result of recent reforms, which include additional acquired pension expectancies for parenting, the net replacement and gross replacement rate can be expected to substantially increase until 2050. In the broken career case gross replacement rates can be expected to increase by 9,3 percentage points and net replacement rates by 10,8 percentage points.

Table 16 - Replacement rates summary table – Germany

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	43	41	41	37	34	43,3	33,8	41,2	32,2	36,1	28,2	32,5	25,4	34,6	31,6
Gross replacement rate 2nd pillar	0	0	2	9	15	0,0	14,5	0,0	13,7	0,0	11,9	0,0	10,3	0,0	12,3
Total gross replacement rate	43	41	43	46	48	43,3	48,3	41,2	45,9	36,1	40,1	32,5	35,7	34,6	43,9
Total net replacement rate	63	63	67	65	67	57,4	66,7	61,2	64,3	55,5	57,8	56,4	49,6	50,8	61,6
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 17 – Germany - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees (a)	M	63,1 (2004)	
	F	63,0 (2004)	
	Total	63,1 (2004)	
Effective age of withdrawal from the labour market	M	61,3 (2004)	
	F	61,1 (2004)	
	Total	61,4 (2004)	
Average seniority at retirement of retirees cohort	M	39,9 (2004)	
	F	26,1 (2004)	
	Total	32,7 (2004)	
Coverage of the first pillar (in % of labour force) (b)		80	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	59 (2004)	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	25 (2003)	
	F	0,5 (2003)	
	Total	13 (2003)	
Average pension relative to average wage (in %) (c)		51 (2004)	
Median pensions (without other social benefits) relative to median earnings (b)		-	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		9,75 (employee) 9,75 (employer)	
Overall contribution to occupational schemes as percentage of individual earnings for private employees (d)		4,0 (employee)	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		-	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations (d)		4,0 (employee)	
GDP growth rate (e)		2005-2030	1,48
		2031-2050	1,19
Average wage (productivity) growth rate (e)		2005-2030	1,49
		2031-2050	1,72

(a) Average retirement age of old pensioners
(b) Without civil servants pension scheme
(c) Average old age pension of pensioners with 35 or more insurance years
(d) Contributions to Riester pension, contribution is increasing from 2,0% in 2005 to 4,0% in 2008 and thereafter
(e) Based on AWG assumptions

5.5. Estonia

Description of schemes included

The Estonian pension system is composed of three parts, the State pension insurance, the mandatory funded pension scheme and supplementary funded pension schemes. EET taxation scheme is used in case of the mandatory funded pensions.

The State pension insurance system is covering in addition to old age permanent incapacity for work and survivors pensions. It is financed on a pay-as-you-go principle and mainly from the State pension insurance part of the social tax. The old age pension benefit is composed of three elements: the base amount, the length-of-service component and the insurance component. The base amount is flat rate. The length-of-service component applies to periods of pensionable service until the end of 1998 and is calculated purely on the base of the length of service expressed in years. The insurance component is calculated since 1999 and it depends solely on the social tax paid.

Increasing of pensions in payment is performed through regular indexation (with equal weights on the increase of social tax revenues and the increase of consumer price index). However, supplementary ad hoc pension increases have been applied in the past.

In 2005, the retirement age for men is 63 and for women 59 years and 6 months (rising gradually to 63 by 2016). In addition there is a qualification period for receiving the old age pension, of 15 years of pensionable service.

The mandatory funded pension scheme was launched on 2002. It is based on full pre-financing principle and is covering only the risk of old age. Pension funds are administered by private asset management companies. In essence, it is an individual savings scheme, where the amount of pension benefits depends on total contributions over the working career and yields of pension funds. Participation in this funded scheme is mandatory for persons born in 1983 or later. The contribution rate is 6% of wages – the employee pays 2% from the gross wage (withheld by the employer) and the employer another 4% (as a part of the 20% pension contribution).

Representativeness of the calculations

In 2005 there are no pensioners who get pension from mandatory funded scheme, in 2050 near 100% of new pensioners receive also pension from funded scheme. As agreed in ISG the length of service year is 40 but in Estonia it is currently 44 years and as result actual pensions are slightly higher.

Main demographic and economic assumptions

The economic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

All calculations are made with assumption that legislative framework will remain the same as in 2005, only new changes in future that are already in legislation are taken into account. It should be noted that due to the pension formula of the state pension, the indexation affects also pensions of new pensioners.

It can be noticed that current pension index appears very conservative comparing to growth of revenues, which implies that under these calculations there would be a significant budget surplus, leaving room for actually higher replacement rates, notably if there are supplementary ad hoc pension increases, like was the case in the past.

Table 18 - Replacement rates summary table – Estonia

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Rate of return of 4%	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	32,7	29,9	35,4	34,5	35,7	47,2	38,5	31,3	34,0	27,7	29,7	17,8	25,2	27,0	28,1	32,7	40,5
Gross replacement rate 2nd pillar																	
Total gross replacement rate	32,7	29,9	35,4	34,5	35,7	47,2	38,5	31,3	34,0	27,7	29,7	17,8	25,2	27,0	28,1	32,7	40,5
Total net replacement rate	41,1	38,9	42,6	41,6	43,1	57,2	45,0	39,5	41,1	35,3	36,2	23,3	31,5	34,0	33,9	41,1	48,8
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 19 – Estonia - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61,5	
	F	59	
	Total	60,3	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	45,6	
	F	42,9	
	Total	43,7	
Coverage of the first pillar (in % of labour force)		100%	
Active membership of occupational pension schemes (in % of the labour force)	M	≈ 23%	
	F	≈ 27%	
	Total	≈ 50%	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	2005 - 0%, 2010 - 6,4%, 2030 - 20,5%, 2050 - 45,4%	
	F	2005 - 0%, 2010 - 16,3%, 2030 - 25,8%, 2050 - 54,4%	
	Total	2005 - 0%, 2010 - 22,6%, 2030- 46,3%, 2050 - 99,8%	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the payg statutory scheme as percentage of individual earnings for private employees		switchers to funded tier - 16% nonswitchers - 20%	
Overall contribution to funded tier of statutory schemes as percentage of individual earnings for private employees		6%	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		switchers to funded tier - 16% nonswitchers - 20%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		6%	
GDP growth rate		2005-2030	2,9
		2031-2050	1,3
Average wage (productivity) growth rate		2005-2030	3,2
		2031-2050	2,2

5.6. Greece

Description of schemes included

IKA-ETAM (ex. IKA) is the major first pillar, pay as you go, scheme for private sector workers in Greece. Pensions are defined benefit, according to contribution length and wages. It is financed from employer's and employee's contribution which, for old age pension amount to 13.33% and 6.67%, respectively, of gross wages. The state is also projected to contribute 1% on average of the GDP until 2030. IKA – ETAM pensions are indexed yearly according to the State's social policy. In general lower pensions receive more generous increases. Full pension (without any reductions due to age, or contribution years) is provided after 35 years of service and after age 65. These pensions contribute to 80% of the replacement for the base case.

Auxiliary pension branch provider ETEAM (ex. IKA-TEAM) covers all private sector employees insured to IKA-ETAM who have no other auxiliary pension provider. It is also a mandatory first pillar institution. Pension contributes to 20% of the replacement rate. A lump sum benefit is also calculated which, if annuitised, represents 5% of pension replacement.

Pensions are treated as any other taxable income and are imposed to the same tax scale as wages. Second pillar pensions are established quite recently, in 2002. For the time being there is no pension occupational coverage.

Representativeness of the calculations

Approximately 50% of the total insured population joins IKA-ETAM. First pillar pension providers are also OGA for farmers or the self employed residents of small urban areas and OAEE for the self employed.

A minority of pensioners, under 3%, complete 40 contribution years before retirement. The average career length is 25 years, this the reason why effective replacement rates are significantly lower than theoretical replacement rates for the primary pension. Auxiliary pension and the lump sum are also unfavourably affected.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Inflation is considered 2% for all years. Productivity rise is 2.5% till 2006, 1.9% from 2007 to 2009 and 1.6% from 2010-2050 above inflation. Earnings and tax thresholds are rising in line to productivity plus inflation and adopted to 2005 prices.

According to EUROSTAT's 2004 population projections, Greece is expected to face a demographic pressure from ageing. The old age dependency ratio which was 26.38% in 2004 is expected to rise from 41.07% in 2030 to 68.66% in 2050, this is higher than the EU25 average of 52% for 2050. Life expectancy at the age of 65, 16.4 for men and 18.5 for women in 2004, is also expected to rise by 2.9 years for men and by 2.8 years for women at 2050.

Main results

For the year 2005, workers with average level earnings, after 40 years of service (base case) can rely on gross replacement rates around 100%. The net replacement rate is 115%. This result is does not reflect the current levels of pensions, which are actually lower, due to shorter careers.

Replacement rates for 2/3 of the average wage earners are slightly higher than those of the base case (109% gross and 123% net), due to tax relieves of lower incomes.

Nevertheless 2/3 of average earnings is not an enough low income to activate the safety net of minimum pension or means tested benefits.

Due to the 1992 reform, theoretical replacement rates decline until 2050, for the base and 2/3 of the average cases. For workers receiving 200% of the average wage, replacement rates are lower than the base case because of increased taxes.

Table 20 - Replacement rates summary table – Greece

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	105	86	108	112	94	109	94	105	94	102	93	90	69	81	79
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	**105**	**86**	**108**	**112**	**94**	**109**	**94**	**105**	**94**	**102**	**93**	**90**	**69**	**81**	**79**
Total net replacement rate	**115**	**99**	**117**	**121**	**106**	**123**	**108**	**115**	**106**	**113**	**105**	**100**	**84**	**94**	**92**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 21 – Greece - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61.38	
	F	58.63	
	Total	60.40	
Effective age of withdrawal from the labour market	M	TBC	
	F	TBC	
	Total	TBC	
Average seniority at retirement of retirees cohort	M	27.56	
	F	20.79	
	Total	25.15	
Coverage of the first pillar (in % of labour force)		TBC	
Active membership of occupational pension schemes (in % of the labour force)	M	0	
	F	0	
	Total	0	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	0	
	F	0	
	Total	0	
Average pension relative to average wage (in %)		60.74	
Median pensions (without other social benefits) relative to median earnings [(b)]		TBC	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		TBC	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		0	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		TBC	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		0	
GDP growth rate		2005-2030	2,0
		2031-2050	0.8
Average wage (productivity) growth rate		2005-2030	1.9
		2031-2050	1.7

5.7. Spain

Description of schemes included

The first pillar of the Spanish pension system consists of a general earnings-related scheme for private sector workers. Special schemes exist for civil servants working for the central government or the justice system and for people working for the armed forces.

Benefits are calculated as a percentage of a so-called 'base pension' which takes into consideration the earnings-related contributions paid during the 15 years before retirement. The percentage of the base pension that is paid out depends on the number of years a person contributed to the system and on the retirement age: a full pension is reached after 35 contribution years and retirement at age 65.

Supplementary pension schemes of the second or third pillar cover nearly six million people, but only 10% of these (around 600 000 people) are members of an occupational scheme established by a collective agreement. Pension plans tend to be more often adhered to on an individual basis or through membership in a group (association, trade union, etc.). Occupational schemes were therefore not included in the replacement rate calculations.

Representativeness of the calculations

The average career length of men retiring today is 40 years (women 30 years). The average retirement age for both men and women is just over 63.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

In 2005 a full career on average earnings (base case) results in a gross replacement rate of just under 91% and a net replacement rate of around 97%. This would also hold for careers up to five years shorter than the 40 years assumed for the base case. Replacement rates at 2/3 of average earnings are identical to those at average earnings. An earnings profile rising from 80 to 120% of average earnings results in replacement rates that are about six percentage points below those for a flat career on average earnings. By contrast, when the earnings rise to 200% the replacement rates are lower: 71% of gross earnings and 79% of net earnings, this is due to the ceiling that applies to pensions.

The 10-years indexed replacement rate (pension income ten years after retirement relative to projected earnings) has been calculated by index-linking pensions in payment to inflation, as is required by legislation. This results in a value of net pensions relative to net earnings that is around 9 percentage points lower than the net replacement rate at the moment of retirement.

Under current legislation, future gross replacement rates for people on flat average earnings are expected to fall by about six percentage points by 2030 and remain stable thereafter. This is linked to wage profiles used; between 2005 and 2020 the results depend on historical data up to 2005 and earnings calculated according to the assumptions in the remaining period up to 2020; from 2020, replacement rates depend completely on earnings calculated according to the assumptions about future earnings' real growth and inflation.

Table 22 - Replacement rates summary table – Spain

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Retirement at age 63 with 38 years of seniority		Retirement at age 67 with 42 years of seniority	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	90,5	81,7	90,6	85,3	85,3	90,5	85,3	90,2	85,1	84,9	80,1	71,2	62,2	81,5	76,8	78,8	75,1	94,2	89,8
Gross replacement rate 2nd pillar																			
Total gross replacement rate	90,5	81,7	90,6	85,3	85,3	90,5	85,3	90,2	85,1	84,9	80,1	71,2	62,2	81,5	76,8	78,8	75,1	94,2	89,8
Total net replacement rate	97,2	87,6	97,2	91,6	91,6	97,1	91,6	96,8	91,3	91,7	86,6	78,8	70,6	88,6	82,4	86,0	80,6	100,5	96,4
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 23 – Spain - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	62,9	
	F	63,0	
	Total	62,9	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	40,3	
	F	30,4	
	Total	38,0	
Coverage of the first pillar (in % of labour force)		89%	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		28,30%	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		--	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)			
Overall contribution to social security in % of individual earnings for private employees		33,25%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	2.3
		2031-2050	0.6
Average wage (productivity) growth rate		2005-2030	1.7 (Variable)
		2031-2050	1,7%

5.8. France

Description of schemes included

The French pension system is based on compulsory, earnings-related and pay-as-you-go schemes and covers 98% of the total pension expenditure. In the private sector, employees are covered by a two-tiered scheme which composed, let say, the "first pillar". In the first tier, the general scheme organised by law, is an annuity scheme, which, for a full 40 qualifying years in activity, pays 50% of the average annual wage calculated on the basis of the best 25 qualifying years within the limit of the social security ceiling (about 140% of average earnings). Supplementary pension schemes are also mandatory, financed on a pay-as-you-go basis but based on a point system ("ARRCO" for the blue collar, and "AGIRC" for the white collar). The benefit formula is more earnings-related, and the rules of calculation effectively ensure a closer link between contributions and benefits paid.

Other types of pension provision are marginal in France, and are not taken into account in these calculations.

Representativeness of the calculations

The coverage of the "first pillar" is total in France. In 2001, the average retirement age of the new flow of retirees is more than 60 for men and 62 for women and their average contribution period is closed to 33 years. To have a better representativeness of the "base-case", the calculations have retained a blue collar. As regards these information, the baseline case does not deliver a real representative picture in France, according to the shorter length of seniority at retirement observed. But complementary figures show that the youngest generations of woman pensioners are much more numerous than by the past to benefit from a complete career.

Main demographic and economic assumptions

France will face similar demographic developments than the other Member States until 2025 when it is then projected to register more favorable patterns. In accordance with the provided information assumptions retained by the Economic Policy Committee in April 2005, the old-age dependency ratio is projected to quasi double during the next 50 years, reaching 47,9% (2050) from 25,1% (2003), and would be consequently below the EU25 average (52,8%).

From 2004, average real wages are supposed to increase by 1,7% a year. The average GDP growth rate is also equal to 1,7% from 2004 to 2050.

Main results

The gross and net replacement rates are decreasing with the generations for several reasons.

Concerning the basis pension scheme (CNAV), the fall between 2005 and 2010, is due to the number of years taken into account in the calculation of the reference wage : the 17 best years for the employee born in 1940 and retiring in 2005, and the 25 best years for the employee born in 1945 and retiring in 2010. Beyond that period and until 2030, replacement rate will continue to decrease, due to the updating of past wages with reference to the consumer price index.

Regarding the replacement rates of the supplementary scheme (ARRCO), they decrease over all the period because of the cost price of the point on wages, which is indexed on a price index, contrary to the acquisition value of the point. This rule could be re-examined by the social partners in 2008, and then could stabilize in long term the replacement rates of the supplementary scheme.

Net replacement rates are higher than the gross replacement rates, because on one hand the social contributions paid by employees remind higher than those paid by the pensioners, and on the other hand, the progressive pattern of the income tax.

Both employees with an ascending wage profile have lower replacement rates than the basic case-type, mainly because of the rules of calculation of the basic pension scheme. Indeed, the highest wages are capped at the level of the Social Security ceiling. Thus, the replacement rate of the basic pension scheme is lower if wages exceed this ceiling, which is the case considering the ascending careers9, and particularly for the rising earnings from 100% to 200% of average.

The replacement rate is increasing with the length of the career. Thus, the employee with a 30-year career has a replacement rate much lower than that of the basic case-type. On the contrary, the employee having worked 42 years has a higher replacement rate. At the beginning of the period (2005 and 2010), he benefits from a bonus, because he worked two years more than the 40 years required to obtain the full rate of the basic pension scheme. The premium decreases over time due to the steady growth of the " full career" duration, which is projected to reach 41,75 years by 2020. This mechanism arises directly from the incentives which were set up with the pension reform in 2003 aiming to keep longer in activity the old workers.

The employee having a 40-year career and retires at 60 years has a lower replacement rate than the "base-case". After 2010, it is mainly explained by the deductions implemented in the pension reform 2003 who affect the employee retiring before 65 year and without have contributed the necessary duration to obtain the full rate.

[9]The level of average wages used for the basic case-type is very close to the ceiling of Social Security. It is even slightly higher at the beginning of the period (until the beginning of the 1980s).

Table 24 - Replacement rates summary table – France

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	66,2	55,9	62,3	53,3	49,3	65,8	49,2	65,2	48,5	58,5	43	48,3	32,4	51,1	35,4
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	**66,2**	**55,9**	**62,3**	**53,3**	**49,3**	**65,9**	**49,2**	**65,2**	**48,5**	**58,5**	**43**	**48,3**	**32,4**	**51,1**	**35,4**
Total net replacement rate	**79,7**	**67,4**	**75,9**	**66,4**	**62,6**	**81,2**	**61,7**	**78,8**	**61,7**	**71,7**	**55,6**	**60,6**	**43,6**	**63,9**	**46,7**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 25 – France - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees (*)	M	60,6	
	F	62	
	Total	-	
Effective age of withdrawal from the labour market	M	60.6	
	F	60.5	
	Total	60.6	
Average seniority at retirement of retirees cohort	M	33,18	
	F	33,98	
	Total	-	
Coverage of the first pillar (in % of labour force)		100,00%	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)		76% in 2005	
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		Depending on wage and status (white/blue collar) Between 21.20 % and 21.33% below social security ceiling and 19.40% and 19.75% between one and three social security ceilings	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to the first pillar in % of individual earnings for private employees		Depending on wage and status (white/blue collar) Between 21.20 % and 21.33% below social security ceiling and 19.40% and 19.75% between one and three social security ceilings	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	2%
		2031-2050	1,6%
Average wage (productivity) growth rate		2005-2030	1,6%
		2031-2050	1,7%

(*) : statutory basic pension scheme.

5.9. Ireland

Description of schemes included

Social insurance provides pensions cover for all employees and the self employed in Ireland. The pensions are flat rate amounting to 32% of average earnings. Workers are encouraged to supplement the State pension through pensions cover under occupational arrangements.

The 'base case' corresponds to a worker in the private sector with 40 years service as a member of a defined benefit pension scheme with a 1/60th accrual rate. The DB pension is integrated with the social insurance pension. The employee contribution is 5 per cent of pensionable earnings, and the employer pays the balance of cost. Any other income or benefits before or after retirement are not included.

Representativeness of the calculations

In 2005, it was estimated that 51.5% of all persons at work were covered by occupational pension schemes, while 58.6% of persons aged 30-65 had private pensions, and this is the key group for pensions policy (the National coverage target of 70% applies to this group). Men have higher coverage than women, and employees have higher coverage than the self-employed.

These schemes have traditionally been defined benefit arrangements, although membership of defined contribution schemes has been growing rapidly in the private sector in recent years. Approximately 69% of employees covered by occupational pensions are defined benefit scheme members, with the remainder being defined contribution scheme members.

Besides, it can be noted that the 30 year variant (10 year career break) is probably more representative of DB scheme members generally than a full 40 years contribution record.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

Two national variants were provided. One is based on 20 year membership of a DB scheme, which would provide the minimum gross replacement income level (50% of pre-retirement income, based on retirement income from all sources) recommended for National pensions policy. Another is based on 4.1% net real investment returns.

Table 26 - Replacement rates summary table – Ireland

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	31	34	34	34	34	47	52	30	32	26	28	16	17	30	33
Gross replacement rate 2nd pillar	36	29	33	33	33	20	15	37	34	41	38	51	50	27	25
Total gross replacement rate	**67**	**63**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**67**	**58**	**58**
Total net replacement rate	**78**	**74**	**78**	**78**	**78**	**74**	**74**	**79**	**79**	**81**	**81**	**80**	**80**	**69**	**70**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 27 – Ireland - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	-	
	F	-	
	Total	65-66	
Effective age of withdrawal from the labour market	M	Na	
	F	Na	
	Total	64,4	
Average seniority at retirement of retirees cohort	M	Na	
	F	Na	
	Total	Na	
Coverage of the first pillar (in % of labour force)		100%	
Active membership of occupational pension schemes (in % of the labour force)	M	56%	
	F	47%	
	Total	52%	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	Na	
	F	Na	
	Total	Na	
Average pension relative to average wage (in %)		60%	
Median pensions (without other social benefits) relative to median earnings [(b)]		82%	
Overall contribution to the first pillar as percentage of individual earnings for private employees		17,2%	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		13,7%	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DB and DC	
Overall contribution to social security in % of individual earnings for private employees		17,2%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		20.7	
GDP growth rate		2005-2030	3.9
		2031-2050	1.6
Average wage (productivity) growth rate		2005-2030	2.7
		2031-2050	1.7

5.10. Italy

Description of schemes included

The 1995 pension reform introduced the new Notional Defined Contribution system and will only fully apply to individuals entering the labor market from 1996 onwards, while people with at least 18 years of contributions in 1995 will continue to be subject to the previous (defined benefit) system and people in-between will see their pension calculated by a mix of the old and the new formula.

The Italian calculations not only consider the common base case agreed in the ISG, but also the case, more representative of the current situation in Italy, of a worker retiring at 60 with 35 years of seniority. Furthermore, two cases are considered separately of an employee and of a self-employed worker, as the differences between the two categories are expected to be significant, particularly in the future. Thus, four cases are considered:

- Private employee retiring at 65 with 40 years of seniority;
- Private employee retiring at 60 with 35 years of seniority;
- Self-employed retiring at 65 with 40 years of seniority;
- Self-employed retiring at 60 with 35 years of seniority.

As for the pension components considered, the calculations take into account only the public scheme in 2005, while assuming in the following period the public pension being supplemented by a private component, based of defined contribution. Workers are assumed to enter this private scheme in 2006, so that an individual will have 4 years of contributions in 2010 and so on, until a maximum of 40 years. The contribution rate to private schemes has been set at 6.91% of gross wages, corresponding to a deferred wage component called *Trattamento di Fine Rapporto* (TFR), which has been envisaged by the law as the main source of financing of employees' private schemes.

Representativeness of the calculations

Currently, both retirement age (59.7 in 2003) and seniority at retirement (32.1 in 2004, calculated on the annual flow of new retirees) are below what has been assumed in the common base case.

Also, active membership of private schemes is quite low (11.4% of labor forces in 2004). It can be noted that 2004 pension reform introduced a silent-assent clause for the diverting of TFR to private plans, which will operate from 2008. This explains the consideration of this private provision in the calculations, as coverage is expected to increase.

Net replacement rates are calculated according to the rules of the tax system as of September 2005.[10] The relevant tax and social contribution thresholds are updated, as agreed, in line with nominal wages.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Coherently with the macroeconomic framework agreed, the annual individual real earning growth and the productivity growth rates are both assumed to be 1,6%, the real GDP growth rate is 1.3% and the inflation rate 2%. The basic earning level has been set at Euro 24,494 in 2005.

[10] Thus, they do not tale into account the reduction of tax rates on private pensions introduced in December 2005.

The demographic projections and the associated life expectancy, necessary to calculate annuity coefficients both in the new notional defined contribution public system and for private pensions, are those of the 2005 Ageing Working Group scenario produced by Eurostat.

For the public pension component, the replacement rates take into account the gradual shift from the earnings related system to the contribution based system introduced by the 1995 reform. Pensions in the mix and new systems are calculated coherently with the periodic revision of the public pension annuity coefficients in response to the increase in life expectancy, required by the pension law. The effective contribution rate of employees is 32.7% (23.81 paid by the employer, 8.89 by the employee) while the notional contribution rate, used to calculate the pension in the mixed and contribution based systems, is 33%. For the self-employed, the contribution rate for craftsmen has been considered: the effective rate is 17.2% in 2005, increasing by 0.2 points every year until reaching 19%, as stated by the pension law; the notional contribution rate is constant at 20%[11].

For what concerns private pensions, as agreed by the ISG, an annual real rate of return on private pension funds, net of expenses, of 2.5% has been assumed (being the gross rate 3%, the nominal rate 5%, the real rate net of expenses and taxation of pension funds returns slightly above 2%)[12]. The entire capital is used at the moment of retirement to buy annuities, at a cost amounting to 1% of the capital itself[13] and with an interest rate on the residual capital anticipated in the calculation of the pension amount in such a way that, holding constant the nominal interest rate, rents grow at a 2% annual rate, and thus the private pension – although not formally indexed to prices – is constant in real terms.

Annuity coefficients for private pensions are calculated assuming 60% of the pension can pass to survivors and averaging across sexes. Also, annuity coefficients are calculated at each date taking into account the rising life expectancy underlying the 2005 Eurostat - Ageing Working Group scenario population projections. It can be noticed however that, differently with respect to the current practice in the Italian private pension insurance sector, life expectancy differences between annuity beneficiaries and the rest of the population are not taken into account of (i.e. members of pension funds or holders of pension insurance policies): this differences typically reduces annuity coefficients offered by the insurance industry with respect to those calculated considering the general population.

Main results

Calculations indicate an expected gradual drop of the public pension replacement rates after 2010, due to the gradual application of the contribution based method of calculation of the pension and to the actuarial correction of the pension system parameters prescribed every ten years by the pension law. The drop is particularly significative for the self employed, which are characterized by contribution rates about 13% lower than for employees.

While total net replacement rates are significantly higher than total gross rates, private pension funds are expected to substitute for a substantial part of the loss in public

[11] Notice therefore that, in the calculation of net replacement rates, at the denominator the contribution deducted from gross earnings is just 8.89% in the case of employees, the entire amount in the case of self-employed.

[12] It Italy returns on pension funds investment are subject to taxation at 11%, however, to avoid double taxation, private pensions are tax exempt for the part on which the pension funds already paid taxes.

[13] This adds to the 0.5% on returns, assumed to be applied by the insurance companies that issue the annuity (thus during the decumulation period) as it is by the pension funds during the accumulation period.

provision. The taking into account the take-off of private funds, suggests that it seems possible to maintain replacement rates, at least for employees, at levels close to the current ones. Furthermore, working longer with respect to the current situation would allow to maintain the living standards also for the self-employed, and for those employees (like those with a steep career) which are more penalized by the shift to the new notional defined contribution public pension system.

However, two elements should be considered in assessing such results.

- Firstly, in the calculation for private employees it is assumed that the entire TFR is diverted to private pension funds. Indeed, the increase of pension funds membership is one of the primary goals of the 2004 pension reforms, which has introduced, as said, a silent-assent clause for the diverting of TFR to private funds.[14] It should be borne in mind however, that this means that the future private provision is obtained at the cost of worker's TFR, which means the disappearance of a deferred component of wage that currently many workers use well before retirement, for instance to buy their house, to finance particular expenses, or to have a cushion in case of loss of their job.
- Secondly, differently than for private employees, the entire contribution of the self-employed weights on their gross earnings. Moreover, the increase in the net replacement rates in 2010 for the self-employed is in large part due to the assumption of no contributions to private funds till 2005 and of a 6.91% contribution rate in 2010, which reduces the denominator in the calculation of net replacement rates. Therefore, it is not by itself a genuine signal of improvement, but rather of the reduction of the net income under the assumptions used in the simulation.

As regards the evolution of the replacement rates 10 years after retirement, the replacement rates decrease, as a consequence of both the indexation of pensions to prices only and the less-than-full indexation to prices for pensions above a certain threshold (€ 16,381 euro per year in 2005). Although not captured by this indicator, it should be noted that the underlying phenomenon is going to become more pronounced for the retirees as life expectancy increases.

[14] The TFR cannot be considered a pension benefit – neither formally nor in substance –, as in many cases it is received by individuals before retirement, nor it can be attributed to work income, for a specular reason. The Indicator Subgroup decided that lumps sums as the TFR must be recorded for the goal of calculation of replacement rates neither as work income nor as pension, but that social contributions aimed at financing such lump sums should be taken into account and attributed to employees or to employers, according to national legislation and standards. Accordingly, TFR contributions are attributed to the employer, and the diverting of TFR to private pension funds is signaled by a shift, between 2005 and 2010, of such contributions from the line "Other employer contributions" to the line "Employer contributions to private pension schemes".

Table 28 - Replacement rates summary table – Italy

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	78,9	67,6	78,0	70,7	64,1	78,9	64,1	78,9	61,2	77,1	53,7	73,1	48,4	na	na
Gross replacement rate 2nd pillar	0,0	0,0	1,5	9,1	15,5	0,0	15,5	0,0	14,8	0,0	12,9	0,0	11,5	na	na
Total gross replacement rate	78,9	67,6	79,5	79,9	79,7	78,9	79,7	78,9	76,0	77,1	66,5	73,1	60,0	na	na
Total net replacement rate	87,8	na	88,5	90,2	92,0	88,1	92,0	87,7	88,1	85,9	78,3	83,1	74,5	na	na
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 29 – Italy - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	59.8 (2003)	
	F	59.6 (2003)	
	Total	59.7 (2003)	
Effective age of withdrawal from the labour market	M	-	
	F	-	
	Total	-	
Average seniority at retirement of retirees cohort	M	34.9 (2004)	
	F	27.9 (2004)	
	Total	32.1 (2004)	
Coverage of the first pillar (in % of labour force)		100%	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	11.4 (2004)	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	Less than 5% (2005)	
Average pension relative to average wage (in %)		54% (2003)	
Median pensions (without other social benefits) relative to median earnings [(b)]		58% (2001)	
Overall contribution to the first pillar as percentage of individual earnings for private employees		32.7% (23.81% employer, 8.89% employee)	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		5.7%	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC TFR equivalent to employees' "Trattamento di Fine Rapporto" (TFR) deferred wage component, starting in 2006	
Overall contribution to social security in % of individual earnings for private employees		32.7%	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		6.91%	
GDP growth rate		2005-2030	1.3%
		2031-2050	1.3%
Average wage (productivity) growth rate		2005-2030	1.6%
		2031-2050	1.6%

5.11. Cyprus

Description of schemes included

The pensionable age is 65. However, persons who have completed a prescribed period of insurance are entitled to pension at the age of 63 without actuarial reduction of the pension. The General Social Insurance Scheme is financed by contributions from insured persons, employers and the state. Pensions depend on the duration of insurance (the pension accrual rate is 1.5% per year), the insured earnings and the number of dependants of the person concerned. Each year's insurable earnings are converted into "points". At the time of award of the pension, these points are revalued according to the current value of the "basic earnings", which is indexed on the evolution of the average insured earnings (wages and income of self employed). As regards indexation, the pension is divided into two parts: the basic part and the supplementary part. The basic part (which includes supplements for dependants) is indexed to insured earnings every year, whilst the supplementary part is indexed to the Consumer's Price Index. The minimum flat rate pension corresponds to 85% of the full basic social insurance pension and is given to anyone whose amount of pension is below that level.

The Social Pension Scheme provides non-means tested pensions to those residents who did not accrue a pension income either from the General Social Insurance Scheme or from any other source. The rate of Social Pension is equivalent to 81% of the full basic social insurance pension, and as consequence, it is automatically indexed to earnings.

Pensioners having a pension below CY£6500 per year are paid a special allowance without any other means test. Persons legally residing in Cyprus whose means are not sufficient to meet their basic and special needs have the right to the provision of financial assistance and / or social services.

Representativeness of the calculations

The average withdrawal age from the labour market is 62.7 (in 2003) which almost coincide with the legal early retirement age (63 years) and is below the legal normal retirement age (65 years) of the Social Insurance Scheme. The average actual career length for the retirees of 2005, which was calculated from the actual years of contribution to the Social Insurance Scheme, without considering any periods of unemployment or incapacity for work, is 26.5.

The calculation of replacement rates was based on the statutory scheme. The coverage of the Social Insurance and Social Pension Schemes is 100% of the total population, since persons who do not fulfill the requirements to a pension from Social Insurance Scheme and satisfy prescribed residence conditions receive Social Pension. The coverage of occupational pension schemes is 42.6% of the total population and a part of the population is covered by provident funds which provide lump sum amounts.

Reflecting a necessary increase in contribution rates to ensure financial sustainability, it has been assumed that contribution rates to Social insurance schemes will significantly increase over time from the initial level of 11.6 % in 2005 (see 2005 national strategy report).

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. The wages rate of growth is projected to increase from 4.5% in 2004 to 5% in 2050, while inflation is projected to remain

constant to 2%. The rate of return of the Social Insurance Fund is projected to decrease from 4.75% to 4%.

The population aged 65 and over, which in 2002 was about 12% of the total population, is projected to increase to 28% in 2050 and as a consequence the old age dependency ratio will increase from 17.4% in 2002 to 46.1% by 2050, staying below the EU25 average of 52% in 2050.

Main results

Following the maturation of the supplementary part of pensions that was introduced in 1980, replacement rates are lower in 2005 and will gradually increase until around 2025. The year of maturity of the Scheme is 2020, when the gross replacement rates stabilize. The net replacement rates continue to increase after that year under the assumption that the basic part of pension will continue to be indexed to earnings. This increase is the consequence of the impact of increases in social insurance contributions biting into the gross wage and reducing the net wage.

Social Insurance Scheme, which is a statutory scheme offers for a single worker on average earnings a gross replacement rate of 46% (2005) and a net replacement rate of 52% which are projected to reach in 2050 to 57% and 70% respectively. For a worker on 2/3 of average earnings it offers 51% of gross and 55% of net replacement rates which are projected to reach to 55% and 67% respectively.

Pensions are calculated on the basis of earnings during the entire career and not on the last wage before retirement, so there are not major differences between a concave earnings profile and the base case. Since pensions depend on years of insurance, a broken career results in lower replacement rates. Furthermore, due to a ceiling on earnings taken into account for calculating pensions, the replacement rates of a hypothetical worker ending his career at 200% of average earnings are lower than they would have been without such a ceiling.

Table 30 - Replacement rates summary table – Cyprus

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2005	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	46	40	47	57	57	51	55	46	54	41	45	33	41	42	42
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	46	40	47	57	57	51	55	46	54	41	45	33	41	42	42
Total net replacement rate	52	45	53	66	70	55	67	52	68	47	58	41	55	47	53
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 31 – Cyprus - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	Na	
	F	Na	
	Total	62.7	
Effective age of withdrawal from the labour market	M	Na	
	F	Na	
	Total	Na	
Average seniority at retirement of retirees cohort	M	Na	
	F	Na	
	Total	Na	
Coverage of the first pillar (in % of labour force)		93	
Active membership of occupational pension schemes (in % of the labour force)	M	Na	
	F	Na	
	Total	43	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	Na	
	F	Na	
	Total	13	
Average pension relative to average wage (in %)		25	
Median pensions (without other social benefits) relative to median earnings [(b)]		Na	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		11.4	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		12.6 (a)	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	
		2031-2050	
Average wage (productivity) growth rate		2005-2030	
		2031-2050	

Note (a) : For the years after 2005 the contribution rate is assumed to increase (reaching 14.10% in 2010, and 35.8% in 2050).

5.12. Latvia

Description of schemes included

In 1995, Latvia implemented a reform of former pay-as-you-go public pension system, and introduced a notional contribution defined public pension scheme (NDC PAYG). The pension reform in Latvia now is completed. The State mandatory funded pension scheme as 2nd tier has been launched from July 2001. Private pension funds as 3rd tier are operating from July 1998. Only the NDC PAYG pension scheme will be described hereafter.

The first tier pension scheme implemented in Latvia in January 1996 is a state mandatory non-funded pension scheme mimics a defined contribution funded scheme. Social insurance contributions, earmarked for the old-age pensions (20% of contribution wage) are recorded in notional (virtual) individual accounts that return notional interest until retirement and accumulate notional pension capital, while real contributions are used for financing current pension expenditure (i.e. it is a pay-as-you-go pension scheme). At retirement, pensions are calculated by dividing the amount accumulated in the notional account by the average number of years projected for the pension payouts at each specific age of retirement (number of years of projected life expectancy at the date of retirement with no gender differentiation).

The State mandatory funded pension scheme in Latvia has started operation in July 2001. It is a fully funded public pension scheme, where a part of the social insurance contributions within the 20 % contribution rate for old-age pensions are invested in financial assets. Saving function is based on the unitization principle, i.e. individual contributions, invested according to portfolio, chosen by individual, are marked in units. Units are used for accounting purposes in relation to assets and in transactions. The value of a unit, which is a subject to investment performance, is calculated as a ratio between the value of assets as at the calculation time and the number of units registered at the calculation time.

The share of contributions dedicated for saving in this scheme is scheduled to increase gradually, proportionally reducing contribution rate for the 1st pillar. Initially only 2 percent of the contribution wage will be transferred for the investment. Over time, the contributions, designated to the funded pension scheme, will rise gradually to 10 percent in 2010, reaching the same proportion for both pillars (10%+10% = 20%). As the financing of the state mandatory funded pension scheme is in the framework of public pension scheme, all subsidies for the individual, paid by the state budget or other social insurance budgets (in case of child care, military, unemployment etc.) are respectively attributed for both schemes.

Latvia`s calculations are based on a forecasting Model for Individuals which has been prepared in collaboration with World Bank experts. The Latvian calculations not only consider the base case and variants as agreed in the ISG (a employee retiring at 65 years of age with 40 years of seniority), but also the case, more representative of the current situation in conformity with national legislation:

- Retirement age of 62 years (length of insurance period of 47 years, if a person becames socially insured at the age of 15 according to the Law “On State Social Insurance”)
- Retirement age of 62 years (length of insurance period – 40 years)
- Retirement age of 62 years (length of insurance period of 25 years; it can be noticed that a person had interruptions of labor at the definited periods, for

example permanent unenployment or situation when social insurance contributions were not payed at the period of work).

- Retirement age of 63 years and length of insurance period of 35 years.

Representativeness of the calculations

Coverage in the public funded pension scheme is mandatory for persons who were under the age of 30 July 1, 2001, when the State Funded Pension Law came into force. Persons who were at that moment in the age group of 30 – 49 can affiliate to this scheme on a voluntary basis at any time. Participation conditions are simplified to a maximum extent and synchronized with the participation in the 1st pillar scheme. This means that the state funded pension scheme gradually will cover almost all persons covered by the state pension insurance. However, persons who were at the age of 50, when the law came into force, have no option to participate. This scheme is expected to be fully mandatory around the 2035, when cohorts of voluntary participants will gradually vanish.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

Currently the gross replacement rate of pensions is 61% (78% net replacement rate) for a worker retiring at 65 after 40 years of contributions at the average wage. According to the ISG projections, the net replacement rate will fall from 78% in 2005 to 67% in 2030 and then increase to 72% in 2050 (gross replacement rates will decline from 61% in 2005 to 51% in 2030 and then increase to 55% in 2050). The increase in the average life expectancy translates into an increase of pension disbursement time and further decrease of income replacement rates in the framework of the Latvian pension system.

Calculations indicate that for persons with insurance record of 47 years, retiring in the age of 62 in 2010, net income replacement rate will be 83%, meanwhile with shorter participation in the system income replacement rate will also be lower, for instance, for persons with insurance record of 40 years (retirement at 65) of 80%.

Table 32 - Replacement rates summary table – Latvia

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Prudent rate of return (2%)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	60,8	68,2	62,6	51,2	54,5	64,6	54,5	60,8	51,1	60,8	50,3	60,8	43,0	45,4	39,8	60,8	42,9
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	60,8	68,2	62,6	51,2	54,5	64,6	54,5	60,8	51,1	60,8	50,3	60,8	43,0	45,4	39,8	60,8	42,9
Total net replacement rate	77,6	na	80,1	67,1	71,8	80,3	71,4	77,6	67,3	78,2	66,4	79,3	57,0	57,9	52,4	77,6	56,5
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 33 – Latvia - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61,36	
	F	58,34	
	Total	60,32	
Effective age of withdrawal from the labour market	M	-	
	F	-	
	Total	-	
Average seniority at retirement of retirees cohort	M	30	
	F	29	
	Total	30	
Coverage of the first pillar (in % of labour force)		100	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)		-	
Median pensions (without other social benefits) relative to median earnings [(b)]		-	
Assumptions			
Overall contribution to the payg tier of the statutory scheme as percentage of individual earnings for private employees		18 (decreasing to 10)	
Overall contribution to funded tier of the statutory scheme schemes as percentage of individual earnings for private employees		2 (increasing to 10)	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	3,7
		2031-2050	0,9
Average wage (productivity) growth rate		2005-2030	3,8
		2031-2050	2,2

5.13. Lithuania

Description of schemes included

Statutory social insurance pension system consists of two tiers: the State pay-as-you-go defined benefit pensions and mandatory funded defined contributions pensions. The old age pensions consist of two parts: the main part (basic pension) is almost flat, depending on the years of service only, and a supplementary part (calculated with a formula comprising years of service, individual wage coefficient and average insurable income, that is income on which social insurance contributions were paid).

The funded part of the statutory scheme was introduced on 1st January 2004. This second tier of the statutory system is actually voluntary: people can choose whether to join it or not. However, opting out from the scheme when once joined is not allowed. There are no restrictions for participation except being insured in the State social insurance pension system for full pension insurance and aged below the legal retirement age.

Pensions are financed from contributions: 23.5% of gross wage paid by the employer and 2.5% by the employee (data as of 2005). It can be noted that private occupation pension schemes are not developed in Lithuania.

Calculations have been presented for the PAYG and funded components of two-tiered first pillar separately and have provided two variants of RR calculations – one for switchers to the 2nd tier and another to non - switchers. The number of those retiring from the two-tiered statutory scheme becomes dominant in 2030 and this case is considered as the base case.

Representativeness of the calculations

The general PAYG earnings-related pension scheme covers approximately 93% of the employed population in Lithuania. Nevertheless some categories of self-employed persons (including farmers) are not insured in a mandatorily (they may insure themselves on voluntary basis), and some of them are insured only for the main part of the social insurance pensions. Some groups of population are covered by means of State budget for the main part of pension: persons taking care of children under three years or other dependent family members and soldiers in their compulsory primary military service.

Regular legal retirement age for men is 62,5 years and for women 59,5 years (rising to 60 by 2006). The qualifying period to receive full pension is 30 years. Currently new male retirees have on average 37 years of contributions and they retire at 62. Thus common assumptions on age and career length used for calculation of hypothetical replacement rates are not very representative.

Currently, already 54% of the eligible persons have joined the 2nd tier and a rise in total coverage until 60% by 2010 is expected. The scheme is a defined contribution scheme and financed by a fraction of the social insurance contribution (increasing from 2.5% to 5.5% of gross wage by 2007).

As regards administration fees of second tier pension funds, an average of 1-2 per cents of contributions and the annual asset management tax from the assets (up to 1 per cent) are deducted. There is no fee for the conversion of accumulation into annuity.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. According to Eurostat demographic projections, Lithuania is facing one of the fastest decreases in population among EU25 (by 16.4% until 2050). Reasons for the decrease are low fertility rates and negative net migration. However, life expectancy compared to other EU countries is projected to

remain rather low. Consequently, the increase in the old-age dependency ratio is projected to be moderate, from 22% in 2003 to 45% in 2050.

For the calculations of the replacement rates Lithuania has used gross average industrial earnings rather than the data series based on national accounts provided by the Commission from which it would have been difficult to derive a reliable gross earnings series.

Concerning income taxation, the structural reform of income tax was included. In 2005 a gradual decrease of income tax from recent 33% to 27% in 2006 and to 24% in 2008 has been planed. No income tax is applied to pension benefits paid from the statutory schemes.

There is not automatic indexation rules legislated in Lithuanian legislation; nevertheless adjustments have been made in line with wage increases. Indexation to wages was common practice in the past and it has been assumed in the calculation of the 10-years indexed replacement rate that this practice will be maintained in the future. Furthermore, in 2005 government of Lithuania assumed the commitment to index pensions even faster than real wage growth in order to achieve higher pensions.

Main results

For employees who switched to funded pension scheme, the contribution rate to the first tier will gradually fall by 5.5 percentage points by the year 2007 and later will remain constant. Consequently, the gross replacement rate in the first tier will be diminished by 14.5 percentage points until 2050. The development of the funded tier is expected to add a supplement increasing from 0 percentage points in 2004 to 2 points in 2010, 10 points in 2030 and 17 points in 2050, as the workers gradually acquire seniority in membership of the private funds. Thus the total gross replacement rate for the average wage earner is projected to rise by 2 percentage points.

The average earner with 40 years seniority can currently expect a gross replacement rate of 40% (net replacement ratio of 55%) from the statutory scheme. Ten years after retirement, pensions relative to average projected earnings can be expected to fall only by 1 percentage point (gross replacement rate). This is due to indexation included into the pension formula (basic pension and average insurable income where indexed by real wage growth).

After 2009, gross theoretical replacement rates in the PAYG scheme are expected to fall by 3-4 percentage points. This is due to the fact that until 2009 pension calculation results will include historical data up to 1994. There is an option to choose 5 best years of career from 1984-1993, thus contributing to relatively higher replacement rates. People retiring after 2009 will be subject to new rules - supplementary part of their pensions will be calculated from the insured earnings of the best 25 years after 1995, while insured years will cover the whole career.

Gross replacement rates for hypothetical worker on 2/3 of average earnings (48%) in 2005 are significantly higher than those of people ending their career at 200% of average earnings (28%) due the fact that the flat rate (basic pension) constitutes currently 50 % of former pension.

Table 34 - Replacement rates summary table – Lithuania

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Non switcher	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	40%	39%	33%	30%	25%	48%	33%	39%	24%	35%	22%	28%	16%	33%	23%	40%	36%
Gross replacement rate 2nd pillar	0%	0%	2%	10%	17%	0%	17%	0%	16%	0%	14%	0%	13%	0%	13%	0%	0%
vTotal gross replacement rate	40%	39%	35%	39%	42%	48%	50%	39%	40%	35%	36%	28%	29%	33%	35%	40%	36%
Total net replacement rate	55%	49%	44%	48%	51%	62%	60%	54%	51%	49%	46%	42%	38%	46%	45%	55%	45%
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 35 – Lithuania - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61.4	
	F	58.4	
	Total	60.0	
Effective age of withdrawal from the labour market	M	n.a	
	F	n.a.	
	Total	60.8	
Average seniority at retirement of retirees cohort	M	37.5	
	F	34.2	
	Total	35.8	
Coverage of the first pillar (in % of labour force)		83%	
Active membership of occupational pension schemes (in % of the labour force)	M	41.3%	
	F	43.6%	
	Total	42.5%	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	0	
	F	0	
	Total	0	
Average pension relative to average wage (in %)		gross -33.5%, net -46.8%	
Median pensions (without other social benefits) relative to median earnings [(b)]		0.63	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		26	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		2.5 (2004) 3.5 (2005) 4.5 (2006) 5.5 (2007 and later)	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		34	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		2.5 (2004) 3.5 (2005) 4.5 (2006) 5.5 (2007and later)	
GDP growth rate		2005-2030	4.60%
		2031-2050	1.13%
Average wage (productivity) growth rate		2005-2030	4.30%
		2031-2050	1.95%

5.14. Luxembourg

Description of schemes included

The general pension scheme is a mandatory scheme to which each person having a gainful occupation in the private sector has to be affiliated. It can be characterised as a defined benefit scheme, the pension being based on a formula linked to members' wages or salaries and the length of employment. It is a contributory scheme where both the employers and the members have to pay into the scheme.

The length of time an individual earns rights to the pension benefit is formed by two types of service periods: periods during which contributions are paid (gainful occupation, periods of compensation benefits or voluntary contributions) and additional periods (mainly related to apprenticeship, educational training or child education) for which no contributions are paid. The entire service period will be referred to as "total career length" (TCL) whereas the part of the career length related to contributions is referred to as "effective career length" (ECL).

The old age pension consists of several components: a flat rate component, an accrual rate component, a staggered accrual rate increases and an "end of the year allowance". Flat rate related benefits are based on the total career length and are not affected by earnings. After 40 years of membership, they are equal to 23.5% of a reference amount (RA) fixed by law. Accrual rate related benefits are exclusively associated to the effective career length and are equal to one twelfth of 1.85% of the sum of all income from work, adjusted to price and wage evolution (TIC). Staggered accrual rate increases depend on the age and the contribution history of the beneficiary, beginning at the age of 55 with a contribution history of 38 years. Each additional unit (one per year of age and one per year of contribution) raises the accrual rate by 0.01 up to a maximum limit of 2.05. The "end of the year allowance" (EA) represents an additional flat rate component. This allowance is reduced by 1/40 for every year of difference between 40 and the total career length. The number of years taken into account cannot exceed 40.

Pensions are adjusted to price evolution each time prices increase by more than 2.5%. In addition, pensions are adjusted every two years to the real wage evolution. Whereas price indexation is automatic, the decision on indexing pensions to wage evolution is the responsibility of government and has to be approved by the parliament.

Every beneficiary is entitled to an old age pension at the age of 65, provided he has a total career length of at least 10 years. A beneficiary is entitled to an early old age pension at the age of 60 if he has a total career length of at least 40 years. An early old age pension at the age of 57 years is granted to beneficiaries with an effective career length of at least 40 years.

Representativeness of the calculations

In Luxembourg each person with a gainful occupation must be affiliated to the social security system at the beginning of his professional activity. Information on age, sex, marital status, working status, national and foreign service periods, contributions, gross income over the working career, pension type and pension amount is centralised in a national social security register.

The following table compares register based figures for male beneficiaries with complete professional careers to ISG base case.

	Register data	ISG Base case
total career length	44.2	40
effective career length	41.0	40
age at retirement	60.3	65
gross replacement rate	78%	91%
net replacement rate	88%	98%

Register data shows that most retirees stop professional activity at the age of 60, meaning that the ISG base case age criterion of 65 is not met. The career length assumption for the ISG base case is quite close to observed effective career length of retirees. Actual gross replacement rates are lower than theoretical ones, this being linked on the one hand to the higher age at retirement (in the ISG hypothesis), resulting in an overestimation of the staggered accrual rate component in the pension formula, and on the other hand to the flat earnings profile assumption of the ISG base case resulting in an underestimation of income from work at the end of the professional career.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

Concerning the adequacy of the pension scheme, prospective replacement rates indicate that the general pension scheme guarantees adequate replacement revenues in the future. But the results should not be misinterpreted as the hypothetical evolution of the benefit level will probably not be financially sustainable due to increasing supplementary budgetary pressure on public finances in the long run.

Table 36 - Replacement rates summary table – Luxembourg

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	90,8	90,4	90,4	90,7	90,7	97,5	97,3	86,5	86,4	75,7	75,6	65,1	65,0	52,9	52,8
Gross replacement rate 2nd pillar	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total gross replacement rate	**90,8**	**90,4**	**90,4**	**90,7**	**90,7**	**97,5**	**97,3**	**86,5**	**86,4**	**75,7**	**75,6**	**65,1**	**65,0**	**52,9**	**52,8**
Total net replacement rate	**98,3**	**98,4**	**98,4**	**98,8**	**98,8**	**107,4**	**107,1**	**94,8**	**95,3**	**86,4**	**86,2**	**74,1**	**74,0**	**63,5**	**63,8**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 37 – Luxembourg - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	60.3 (2.8)	
	F	62.4 (3.1)	
	Total	-	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	41.0 (4.1) / 44.2 (4.2)	
	F	31.7 (9.9) / 39.1 (6.6)	
	Total	-	
Coverage of the first pillar (in % of labour force)		92.2%	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		24	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		--	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		--	
Overall contribution to social security in % of individual earnings for private employees		--	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		--	
GDP growth rate		2005-2030	4,06%
		2031-2050	2,70%
Average wage (productivity) growth rate		2005-2030	1,95%
		2031-2050	1,69%

5.15. Hungary

Description of schemes included

Calculations cover the mandatory pension system. Concerning years 2005 and 2010, retirement from the pure pay-as-you-go social security system has been assumed, while for the purpose of calculating prospective replacement rates in 2030 and 2050 retirement from the two-tier system was presumed. By that time, the majority of people will retire from the new two-tier system, which comprises a reduced social security element and a privately managed prefunded scheme being mandatory for all new entrants to the labour force (and voluntary for some other groups). In those years, the result table contains the sum of benefits from those two tiers. Benefits from various voluntary supplementary pension arrangements were dismissed for the purpose of calculations on account of their low predictibility.

Representativeness of the calculations

In 2004, average effective retirement age was 59.7 in the case of men and 57.3 in the case of women. The average seniority seniority of men was 40.3 years while that of women amounted to 37.9 years (but it oscillates a lot due to transitional early retirement rules, for example in 2003 the average seniority of women was only 32 years). Therefore, the representativeness of parameters used in the base case calculations and compulsory variant scenarios is limited for Hungary.

Furthermore, people deferring retirement beyond standard retirement age are entitled to a benefit bonus of 6 per cent per year. Men retiring at age 65 are thus entitled to 18 per cent bonus; in the case of women, the increment can be even more massive: the standard retirement age for women born in December 1939 being 55, a postponement of retirement until December 2004 could have resulted 60 per cent additional benefit. Nevertheless, deferred retirement is a rare exception rather than the typical case: in 2004, only 341 people retired at age 64 or above, while the total number of new old-age retirees was 70 thousand. The common parameters are therefore realistic for only less than half per cent of new retirees in Hungary.

When looking at the evolution of gross replacement rates we should bear in mind that it includes the effect of a foreseen change in taxation rules. From 2013 on, benefits will be calculated on the basis of gross earnings and will become taxable (today, they are all exempt). Therefore, the development of the net replacement rate is a more appropriate indicator when assessing adequacy.

Main demographic and economic assumptions

According to EUROSTAT projection, Hungary will undergo the largest increase in both male and female life expectancy in the EU. In the period 2004-2050, life expectancy at birth of men will go up by 9.6 years (from 68.5 to 78.1) and that of women will rise by 6.6 years (from 76.8 to 83.4). This development will have a direct effect on the calculation of annuities to be expected from the defined contribution scheme. Labour productivity growth and hence the assumed wage growth will exceed the EU average as a result of a catching-up process.

Main results

As a national variant were included calculations for a male retiring at age 62 with 38 years of seniority (although people generally retire earlier than 62, this early retirement does not engender any benefit reduction if 38 years of service are available, therefore this case can be viewed as typical). This variant indicates 83 per cent net replacement rate in 2005 and 80 per cent in 2050. The net replacement rate of women turns out lower (at

about 71 per cent in 2005) because of somewhat lower seniority and average earnings base.

Table 38 - Replacement rates summary table – Hungary

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Average wage, 38 years seniority, ret. male at 62		Base case with real rate of return of 2%	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	65,8	56,8	73,6	59,1	58,5	67,7	58,5	63,0	55,7	58,2	48,8	50,8	43,9	56,2	43,9	53,6	45,9	65,8	58,5
Gross replacement rate 2nd pillar	0,0	0,0	0,0	13,5	18,7	0,0	18,7	0,0	17,8	0,0	15,6	0,0	14,0	0,0	13,9	0,0	17,0	0,0	15,5
Total gross replacement rate	65,8	56,8	73,6	72,6	77,2	67,7	77,2	63,0	73,6	58,2	64,4	50,8	57,9	56,2	57,8	53,6	62,9	65,8	74,1
Total net replacement rate	101,9	88,0	114,0	96,0	98,1	90,0	92,4	100,1	94,6	96,9	89,9	91,6	78,3	87,1	73,4	83,1	79,9	101,9	94,1
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 39 – Hungary - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	59.7	
	F	57.3	
	Total	58.5	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	40.3	
	F	37.9	
	Total	39.1	
Coverage of the first pillar (in % of labour force)		~99%	
Active membership of occupational pension schemes (in % of the labour force)	M	56%	
	F	69%	
	Total	62%	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M		
	F		
	Total	less than 1%	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first payg pillar as percentage of individual earnings for private employees		8.5%/0.5%	
Overall contribution to the funded statutory scheme as percentage of individual earnings for private employees		0%/8%	
Assumptions			
Type of funded statutory scheme provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		26.5/18.5	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		0/8	
GDP growth rate		2005-2030	2.8%
		2031-2050	1.1%
Average wage (productivity) growth rate		2005-2030	3.0%
		2031-2050	1.9%

5.16. Malta

Description of schemes included

Due to the fact that the work on the theoretical replacement rates for Malta coincided with the Pension Reform, calculations applied the pension rules are as of 2005. The theoretical replacement rates presented in this document are based on the principle of pension calculation which was valid prior to the Pension Reform announced by the Government on the 1st March 2006. Nevertheless, some national variants are provided as to highlight the potential effect of the current reforms and in particular a 'some reform' scenario is included (it was also presented in the 2005 Maltese National Strategy Report on pensions).

The Two-Thirds Pension Scheme (introduced in 1979), is the most common scheme and provides an income related pension. The pensionable income of an employed person is taken as an average yearly salary on which the relevant contribution had been paid, of the best three consecutive calendar years, during the last 10 calendar years prior to retirement. In case of a person in self-occupied and self-employed status, the calculation is different: the pensionable income is assessed as the average net income declared from the persons's gainful activity or in case of self-employed from investments/rents during the last 10 calendar years or part thereof. The Maximum Pensionable Income of Lm6,750 introduced in 1981 was applied as a capping in the calculation of the Two-Thirds pensions, adjusted for the cost of living increase. This limit is set to change in 2010.

Further, the ceiling has been kept throughout in the whole 2005-2050 projection period (adjusted only for the 80% of the inflation rate on an annual basis). While the average income has been adjusted equally for the productivity growth and the inflation rate until 2050, keeping the ceiling on the maximum pensionable income capped until 2050, results in a decline of theoretical replacement rates.

In a 'some-reform' set of variants, secondary pensions were introduced from year 2030 (only for the base case), which ultimately reduces comparability. The Government has announced that the introduction of this funded scheme will be postponed.

Malta's variants also include the self-employed worker as well as the minimum wage earner, as these are considered as two important special cases. However, due to the fact that 30 year contribution period is considered as a full contribution period, the interrupted career reflects the scenario of the 20 year contribution period in Malta, which reduces comparability with other countries.

Representativeness of the calculations

Two sets of assumptions were applied resulting in two sets of outcomes presented in the NSR Pensions.

- The base case takes the pension system as it was at the time of the March 2005 peer review i.e. without any pension reform effects. This corresponds to a single male worker career retiring at the age of 61 and contribution period of 30 years (full career period, at the time of the calculation) and contribution of the employee of 10%.
- A 'some reform' case has been introduced for the 2005 NSR and is in some respect closer to the ISG base case. This corresponds to an age of retirement set at 65 and a second pillar has been introduced only for the base case for years 2030 and 2050 given that the returns from the secondary pillar would start only from the year 2024. The second pillar contribution rate of return has been set at 5% which is much higher than

the 3% (0.5% administrative costs) suggested rate. In this case, the capping has been kept throughout. The Pension Reform (announced on the 1 March 2006) does consider five-yearly assessments. However, the reform does envisage the introduction of the SPPS on a mandatory basis, at a later stage.

Main demographic and economic assumptions

The life expectancy at birth was projected to reach 78.3 and 82.6 years in 2030 and 80.7 and 84.1 years in 2050 for males and females, respectively.

Main results

The results indicate that prospective theoretical replacement rates are projected to decline under the current rules. Through the mechanisms of the statutory scheme, the projected decline appears to be significantly lower for lower wages (variant of 2/3 of average wage or of minimum wage) than for average wages or profiles of rising wages over the career.

It should be noted that Malta is currently under the process of reforming its pension system and that a reform has been launched in March 2006, that could not be taken into account in these calculations. In that respect it can be noticed that longer working lives and the development of a supplementary funded scheme would contribute to a significantly slower decline of the theoretical replacement rates.

Table 40 - Replacement rates summary table – Malta – Base case

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		20 years working career		Self-employed case		Minimum wage earner	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	72,2	72,2	72,2	53,2	31,5	72,2	48,4	72,2	29,9	72,2	26,3	49,5	15,6	49,0	21,4	70,2	32,8	72,2	58,8
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	72,2	72,2	72,2	53,2	31,5	72,2	48,4	72,2	29,9	72,2	26,3	49,5	15,6	49,0	21,4	70,2	32,8	72,2	58,8
Total net replacement rate	87,9	87,6	88,0	61,2	34,3	82,2	52,1	88,3	32,8	89,4	29,2	65,1	19,0	59,9	23,3	93,9	36,8	81,3	64,4
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 41 - Replacement rates summary table – Malta – "Some reform" case

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		20 years working career		Self-employed case		Minimum wage earner	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	72,6	74,3	74,2	55,4	32,3	72,6	50,2	72,6	30,6	72,6	25,6	49,6	15,8	54,5	20,9	65,9	31,0	72,6	59,1
Gross replacement rate 2nd pillar	-	-	-	4,1	11,9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	72,6	74,3	74,2	59,5	44,1	72,6	50,2	72,6	30,6	72,6	25,6	49,6	15,8	54,5	20,9	65,9	31,0	72,6	59,1
Total net replacement rate	88,3	93,5	93,3	74,4	51,7	82,8	57,5	88,8	36,2	89,9	30,5	65,3	20,7	66,8	24,4	77,8	35,7	81,7	68,0
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 42 – Malta - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61,45	
	F	60,46	
	Total	60,78	
Effective age of withdrawal from the labour market	M	58,2	
	F	59,4	
	Total	58,8	
Average seniority at retirement of retirees cohort	M	29,1	
	F	23,5	
	Total	26,3	
Coverage of the first pillar (in % of labour force)		ND	
Active membership of occupational pension schemes (in % of the labour force)	M	*	
	F	*	
	Total	*	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	*	
	F	*	
	Total	*	
Average pension relative to average wage (in %)		67%	
Median pensions (without other social benefits) relative to median earnings [(b)]		67%	
Overall contribution to the first pillar as percentage of individual earnings for private employees		30%	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC	
Overall contribution to social security in % of individual earnings for private employees		30%[15]	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		To be completed	
GDP growth rate		2005-2030	3%
		2031-2050	2.5%
Average wage (productivity) growth rate		2005-2030	2%
		2031-2050	2%

Note . The 30% contribution is the National Insurance (NI) contribution, and it does not cover only the first pillar pension scheme.

[15] 10% from the employee, 10% from the employer and 10% from the State.

5.17. The Netherlands

Description of schemes included

The AOW is the statutory old age pension scheme of the Netherlands. It provides all residents at the age of 65 a flat-rate pension benefit at the subsistence level. Other forms of income have no effect on the AOW benefit. All residents between the age of 15 and 65 are insured. During this period, entitlement is accrued in 2% steps for every year. This leads to a 100% entitlement on reaching the age of 65, provided there are no gaps in the period of insurance. People who are not entitled to the full AOW benefit and who have, in spite of other sources of income, a total income below the subsistence level are entitled to social assistance. The replacement rate calculation is based on a 100% entitlement.

The statutory pension is financed as a pay-as-you-go scheme : today's contributors finance the pension payments made to the pensioners of today. There is an upper limit on the AOW contribution rate which will be used in the calculation of the replacement rates. Deficits in the AOW fund due to insufficient income from contributions will be balanced by a government grant.

Occupational pensions are agreed upon by employers and employees. These pension schemes are supplementary to the AOW state pension. The AOW benefit is therefore included in most calculations of second pillar pension schemes. Ocupational pension ar based on the wage above a certain amount. This is known as the AOW *franchise*. Occupational pension aim at a 70% replacement rate (including occupational pensions).

In the calculation of the replacement rates a Defined Benefit final pay scheme is used which is converted to a Defined Benefit average pay scheme in 2004. In the average pay scheme the AOW franchise is decreased in such a way that the gross replacement rate based on the final pay remains at 70% for the normal career. This normal career is approximately represented by the concave variant with a starting salary of 75% of the average increasing to 105% of the average.

Most pension funds have no guaranteed indexation of the pensions for increased prices or wages. When the financial position of the fund requires so, the indexation can be lower than usual. In a pension system based on final salaries, partial indexation only affects the pension of those already receiving a pension. In a system based on average wages, the reduced indexation also affects the pension accrual by those below the age of 65. The consequence is that the future replacement rates are not certain. The government will demand the pension funds in new legislation to be clear on their ambitions regarding the indexation. Two variants regarding the outcome of future indexation are presented: an indexation of 80% and an indexation of 100%.

Representativeness of the calculations

About 91% of the employees are covered by an occupational scheme. About 9 out of 10 active members participate in a defined benefit scheme. In recent years many pension systems shifted the pension base from the final salary to the average pay during the career. The final salary schemes usually apply a pension accrual of 1.75% for each year. In 40 years time this results in a pension of 70% of the final salary. The average pay schemes may have a higher accrual rate or lower franchise in order to compensate for the normal career pattern. For employees with this career pattern the pension based on final earnings results in the same 70% replacement rate as the one based on average earnings.

Depending on the pension fund, indexation is based on prices or wages. For about half of the pensioners, indexation is based on prices; for the other half the indexation is based on wages. For the pensioners an average indexation is used, based on both prices and wages.

For the accrual of pension rights, the indexation is most often based on wages. This is also what is used in the calculation.

For the Netherlands the future private pension is based on the average income during the entire career. As the average career develops in a concave way and the pension accrual is based on an average career, the concave variant gives a more representative picture than the base case.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

The pension contribution to the statutory scheme is set to the structural maximum for all years (18.25% of taxable income with a maximum minus a tax benefit). For employees in the private sector, the contribution is on average 7.1% of gross the wage.

For occupational pensions a structural contribution rate is calculated as the present value of all expected (current and future) expenditures that arise from the pension rights accrued in the current year (2005). Expected future increases in the pensionable wage and in pensions are included in the value of expected future pension expenditures (coming service). In this calculation all future costs are included. Mainly because of increasing life expectancy, the contributions will increase between 2005 and 2050. As far as demographic developments and life expectancy are concerned, the most recent national forecasts have been used to calculate the structural contribution rate.

According to the guidelines the real rate of return on investments is set to 3%. 0.25% is subtracted to compensate for administration costs. From national data on administration costs of pension funds it can be calculated that on average administration costs (= investment costs + costs of pension insurance administration) are 0.35% of the assets of a pension fund. However, because Dutch pension funds have invested approximately 50% of their assets in equity and other higher risk titles, this 0,35% also includes the costs of active asset management. Because the rate of return in the guidelines is based on risk free investment 0.1% was deducted - being an estimate for the cost of active asset management - from administration costs.

Besides the old-age and survivors pension contribution, all other occupational pension contributions, social security contributions and taxes were taken into account in the calculation of the net replacement rate. The tax system and social security contributions for the future remain as they are in 2005. The health insurance is not included in the calculation of the replacement rate. The only means-tested benefit that is relevant in the Dutch situation is the housing subsidy. This subsidy depends on income and rent. In none of the variants, housing subsidy has an impact on the replacement rate.

Main results

The shift from final wage to average age implies that future careers become relevant for the replacement rate. In the base case of the flat wage profile, replacement rates will increase because of the decrease in the AOW franchise. In general the impact of the shift to the average pay scheme will become more significant as time passes. This is because the new generations will experience a longer period in the average pay scheme than the older generation.

As the average career develops in a concave way and the pension accrual is based on an average career, the concave variant gives a more representative picture than the base case.

It should be noted that member states with a funded pension system (such as the Netherlands) are vulnerable to changes in interest rates and not only demographic trends. Higher interest rates or higher returns on equity investments of the pension funds may improve future replacement rates.

The replacement rates are not very sensitive for the assumptions made on the level of occupational pension contribution. An increase in the pension contribution of 1% results in net wage decrease of 0.1%. The lower net wage results in a higher replacement rate. This is contrary to the effect of limiting the indexation of pension accrual. This decreases the future pension and therefore the replacement rate. As long as the mix between increases in contributions and limited indexation is in balance, the increasing costs of occupational pensions will have no major impact on the future net replacement rates.

A variant is presented in which the rates of return and wage growth are based on the levels that were stated by the Pensions and Insurance Supervisory Authority. Based on an investment portfolio of 50% bonds and 50% equity, the nominal rate of return is projected to be 6.5% and thus the real rate of return 4.5%. Subtracting 0.25% administration costs results in a net real rate of return of 4.25%. In the national case, with the 4.25% real return, a 100% indexation is assumed. This results in changes in the structural contributions necessary to achieve the level of replacement rates as reported in the following tables: the structural contribution rate that stands at 15.4% in 2050 in the case of a 100% indexation and 2.75% real rates of returns is reduced to 8.3% in the case of real long run rates of returns of 4.25%.

Table 43 - Country replacement rates summary table- The Netherlands (80% indexation)

	Base case					Other cases									
	100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2005	In 10 years	2010	2030	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050
Gross replacement rate 1st pillar	29.6	29.6	29.6	29.6	29.6	44.4	44.4	28.2	28.2	24.6	24.6	14.8	14.8	29.6	29.6
Gross replacement rate 2nd pillar	41.1	36.9	40.4	38.9	39.3	26.1	27.7	42.5	37.8	45.5	33.6	55.2	36.5	30.8	29.9
Total gross replacement rate	70.6	66.5	70.0	68.4	68.9	70.5	72.0	70.7	66.0	70.1	58.2	69.9	51.3	60.4	59.4
Total net replacement rate	92.0	87.3	91.3	89.6	90.1	87.3	89.0	92.5	87.2	90.6	79.0	92.4	71.3	80.3	79.3
Means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 44 - Country replacement rates summary table- The Netherlands (100% indexation)

	Base case					Other cases										National case	
	100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		National rate of return; 100% average earnings	
	2005	In 10 years	2010	2030	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050
Gross replacement rate 1st pillar	29.6	29.6	29.6	29.6	29.6	44.4	44.4	28.2	28.2	24.6	24.6	14.8	14.8	29.6	29.6	29.6	29.6
Gross replacement rate 2nd pillar (2)	41.6	39.3	42.0	43.9	45.2	26.4	31.8	43.0	43.2	46.0	38.0	55.8	41.1	31.2	33.9	41.6	45.2
Total gross replacement rate (2)	71.1	68.9	71.6	73.5	74.8	70.8	76.2	71.2	71.3	70.7	62.7	70.6	55.9	60.8	63.5	71.1	74.8
Total net replacement rate (2)	92.9	90.6	93.6	95.8	97.3	87.9	93.6	93.5	93.9	91.7	84.9	93.6	77.9	81.0	84.3	91.9	96.2
Means-tested benefits in perc. points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 45 – The Netherlands - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees (first pillar)	M	65	
	F	65	
	Total	65	
Effective age of withdrawal from the labour market (2004)	M		
	F		
	Total	61.1	
Average seniority at retirement of retirees cohort	M		
	F		
	Total		
Coverage of the first pillar (in % of labour force)		100%	
Active membership of occupational pension schemes (in % of the labour force)	M	.	
	F	.	
	Total	91	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	.	
	F	.	
	Total	86%	
Average pension relative to average wage (in %)		37%	
Median pensions (without other social benefits) relative to median earnings		43%	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		7.1%	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		11.5%-12,4% (80% indexation)	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DB	
Overall contribution to social security in % of individual earnings for private employees			
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		11.5%-12.4% (80% indexation)	
GDP growth rate		2005-2030	1.7%
		2031-2050	1.7%
Average wage (productivity) growth rate		2005-2030	1.7%
		2031-2050	1.7%

5.18. Austria

Description of schemes included

The first pillar consists of a general scheme for private sector employees and special schemes for the self-employed, for farmers and for civil servants.

The standard retirement age is 65 for men and 60 for women. The pension depends on the length of the insurance career and on the level of insured earnings (which are limited by a ceiling of €3750 per month in 2006). The pension is based on the average earnings of the 15 best years of the entire insurance career (to be extended gradually to 40 years by 2028). A full pension of 80% of the assessment base (which is slightly lower than the ceiling for insured earnings) currently requires 40 insurance years; this rises to 45 as a result of the 2003 pension reform. The assessment basis was €3132 in 2006. Pensions are paid 14 times per year.

The extension of the assessment period from 15 to 40 years and the increase in insurance years required for a full pension from 40 to 45 years will result in a decrease in pensions. The decrease has, however, been limited to 10% in the pension reform 2003. The harmonisation of all pension systems and the introduction of an individual defined benefit pension account abolished the limitation (those, who entered the labour market in 2005 for the first time are fully affected by the pension account – see also the 2005 National Strategy Report).

The second pillar is voluntary. It is estimated that 300 000 people have already acquired pension entitlements under occupational schemes, although this figure does not include the more traditional direct benefit promises by employers (book reserves). Occupational schemes are not included in the replacement rate calculations.

Representativeness of the calculations

The average career length (including periods assimilated to insured employment) of blue and white collar workers is 40,8 years for men and 34,2 years for women. The average retirement age for old age pensions in 2004 is 62,8 years for men and 59,2 years for women.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

Main results

Pension level- and replacement rate calculation are based on the new arrangements of the pension reforms 2003 and 2004 (see also the 2005 National Strategy Report). Austria's earnings-related first pillar scheme provides, for a worker on average earnings, a gross replacement rate of 64%, equivalent to a net rate of 80%.

As pensions in payment are not index-linked to earnings, net replacement rates ten years after retirement are over 10 percentage points lower than at the moment of retirement. In the calculation, an inflation adjustment of 1.5% per year was assumed.

As a result of the pension reforms 2003 and 2004, the replacement rate will increase for constant earning profiles (base case, 2/3 of average earnings), which is not really representative. The driver for this development is a better revaluation of the past earnings, although the accrual rate is decreasing and the basis for assessment is increasing. In case of rising earning profiles, replacement rates are decreasing.

Table 46 - Replacement rates summary table – Austria

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	64,1	53,8	64,5	65,8	68,6	64,1	68,6	63,9	65,3	60,4	57,1	58,5	51,4	48,0	51,4
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	64,1	53,8	64,5	65,8	68,6	64,1	68,6	63,9	65,3	60,4	57,1	58,5	51,4	48,0	51,4
Total net replacement rate	80,3	70,3	80,7	81,7	84,0	82,3	85,9	79,7	80,9	76,0	73,2	72,3	65,5	65,9	69,0
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 47 – Austria - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	62,7	
	F	58,9	
	Total	60,4	
Effective age of withdrawal from the labour market	M	-	
	F	-	
	Total	-	
Average seniority at retirement of retirees cohort	M	-	
	F	-	
	Total	-	
Coverage of the first pillar (in % of labour force)		100%	
Active membership of occupational pension schemes (in % of the labour force)	M	--	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		22.8	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		22.8	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	1.8
		2031-2050	1.8
Average wage (productivity) growth rate		2005-2030	1.8
		2031-2050	1.8

5.19. Poland

Description of schemes included

The projection is based on the mandatory pension system in Poland for the employees and self-employed. It covers the first pillar that is contributory. The contribution is divided between two tiers (accounts):

- NDC non-financial defined contribution account (12.22% of wages), which is administered by Social Insurance Institution and based on pay-as-you-go principle;
- FDC financial defined contribution account (7.3% of wages), which is administered by private institutions chosen by individuals. Contributions are transferred to open pension funds managed by Pension Fund Societies. As of 2005, there were 15 open pension funds (OFEs) operating on the market.

The new pension system covers all individuals born after 1948. It was implemented from 1999. All persons born after 1968 have both NDC and FDC accounts. Persons born between 1949 and 1968 had a choice whether to have only one NDC account or split their old-age pension contribution between NDC and FDC accounts.

Overall pension contribution is divided between old-age contribution (19.52 per cent of wage) and disability and survivor contribution (13.00 per cent of wage). Contributions are split fifty-fifty between employees and employers. Contribution collection is centralised by Social Security Institution that also transfers part of contributions to selected OFEs.

Workers that have social insurance record prior to 1999 have their NDC accounts credited with the so-called initial capital, which reflects their pension rights accrued before 1999.

There is a minimum pension guarantee in the pension system, in the form of topping-up pensions paid from NDC and FDC accounts.

Through the creation of special incentives and preferences, the Polish state supports voluntary forms of saving for pension purposes in the form of Employee Pension Plans (EPP) and Individual Retirement Accounts (IRA). The first employee pension plans were created in 1999, and IRA – in 2004.

The coverage of occupational pensions for the working population is estimated to be around 2%. Due to that occupational pensions are not included in replacement rates' calculations. The relatively low coverage is caused i.e. by fact that insurance market is not yet very well developed in Poland and the level of savings is also limited. One of the main premise of pension reform in Poland was to inform citizens about the potential level of their old-age benefit. It is expected that economic and insurance market development as well as knowledge about new pension system will lead to the higher coverage of occupational pensions and individual pension savings. *Representativeness of the calculations*

The employee pension system is the largest social insurance system in Poland, covering all employees and self-employed. In 2004, there were 12.8 million persons covered by general social insurance system (annual average), compared to 1.54 million persons covered by farmers social insurance system, which is the second major scheme operating in Poland. In the same year, the total number of economically active persons (employed and unemployed) ranged at around 17 million persons.

The effective retirement age amounts to 58.7 for men and 56 for women in 2004. It means that men used to retire on average 6.3 years earlier and women 4 years earlier than it is

foreseen by the general law. The statutory retirement age is set at the level of 65 years for men and 60 years for women.

In 2004, new pensioners had on average 34.9 years of contributions (37.3 years man and 33.9 women). It is expected that the number of contribution years will increase as a result of pension reform. In new pension system, each additional year of work will strongly influence on the level of old-age benefit.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. Old-age dependency ratio is projected to rise from 18.6 in 2004 to 51 in 2050. At the same time pension system dependency ratio (number of pensioners relative to the number of contributors in public pension schemes) increases slower than old-age dependency ratio mainly because of following factors: the increase in the effective retirement age, results of changes in disability law which were implemented few years ago, assumption of high employment rate growth and the participation rate growth.

Main results

Replacement rates in 2004, 2010 and "in 10 years" reflect the old pension system. In 2030, a retiree will be covered by the new system already, but the amount of his/her benefit will be additionally affected by the initial capital. In the case of a person retiring in 2050, the benefit will be fully calculated in accordance with new rules and such a person will be covered by the new pension system from the beginning of employment.

The results presented do not take into account the division into the financial and non-financial system. This results from the fact that in each period the share of old-age pension from specific accounts will be different due to the existence of initial capital. The initial capital, i.e. part of the old-age pension right stemming from the old system, is added to the account in ZUS and its share in shaping the future benefit depends on how long a given person worked before 1999.

The results of projections show a drop in replacement rate value in 2050 as compared to 2030. Firstly, it results from the forecasted increased of life expectancy in 2050 and from greater share of initial capital in the old-age pension calculated for a person retiring in 2030.

The projected results are more sensitive on macroeconomic results than on a pattern of a career. The decreasing replacement rates for 2004 in different career scenarios reflect redistribution in old pension system. Differences in 2050 reflect influence of assumption of wage growth and interest rate on replacement rates. In case of Poland assumed wage growth is higher than real interest rate.

The scenario where, on the basis of historical data, a higher real rate of return was assumed (gross 4% instead of 3%) shows that increasing the rate of return by 1 p.p. results in the increase of the replacement rate by nearly 4 p.p.

In another variant, for a woman retiring according to current rules at the age of 60 the replacement rate is lower by 12 p.p. This results from the fact that women save for their old-age pension for 5 years shorter; additionally, the accumulated funds have to last for a longer period of receiving the old-age pension benefit. The gender-neutral life tables were used (in accordance with regulations in force, i.e. it was assumed that on average women live as long as men) and no difference was made between the amount of remuneration of women and men.

The variant, in which a person retires after 42 years of work at the age of 67 shows how the economic incentives to continue professional activity after having attained retirement age can affect replacement rates. The decision to work for 2 years longer allows for increasing the relacement rate in the discussed example by 6 p.p.

Table 48 - Replacement rates summary table – Poland

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		Woman, retirement age of 60 and 35 contributory years		4% real rate of return		Retirement age of 67, 42 contributory years	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	63.2	43.5	63.2	51.7	35.7	63.2	38.7	61.9	33.9	60.4	29.7	59.5	26.8	55.9	26.8	57.8	25.9	63.2	38.7	65.3	40.4
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	63.2	43.5	63.2	51.7	35.7	63.2	38.7	61.9	33.9	60.4	29.7	59.5	26.8	55.9	26.8	57.8	25.9	63.2	38.7	65.3	40.4
Total net replacement rate	77.7	53.5	77.7	63.8	43.9	77.7	43.8	76.1	41.7	74.7	36.6	73.2	33.0	68.7	32.9	71.1	31.9	77.7	47.6	80.4	49.7
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 49 – Poland - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	58,7	
	F	56	
	Total	56,8	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	37,3	
	F	33,9	
	Total	34,9	
Coverage of the first pillar (in % of labour force)		76,6	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M		
	F		
	Total		
Average pension relative to average wage (in %)		65	
Median pensions (without other social benefits) relative to median earnings [(b)]		-	
Overall contribution to the first pillar as percentage of individual earnings for private employees		9,76	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		18,71	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	3,6
		2031-2050	0,9
Average wage (productivity) growth rate		2005-2030	3,3
		2031-2050	1,9

5.20. Portugal

Description of schemes included

The exercise on prospective replacement rates presented reflects the legal framework as far as April of 2005. Since the submission of these scenarios there have been, and there is also expected to be other significant changes on pension and tax rules which could result in different projections from those presented. From 2006 and on, pension benefits will progressively be taxed in the same way as wages meaning that in a short term the tax system would be "neutral" in converting gross to net replacement rates. Furthermore, there is a debate going on regarding the implementation of further reforms to allow the financial sustainability of the Social Security System. Some of these reforms will probably have significant impacts on replacement rates of new pensioners stressing thereby the importance of revising these projections.

The Portuguese pension system is basically a mandatory defined benefit scheme working on a PAYG (pay as you go) financing basis. In the Social Security System, the scheme that covers almost all of the private sector labor force (although there are a few exceptions; bank and some former public companies employees) legal retirement age is 65 and pensioners can be eligible for full pension benefits with a vesting period of 40 years. The most common pension benefit formula grants new Social Security pensioners a gross replacement rate regarding their reference wage (average of the best 10 out of the last 15 yearly wages) of 80%. New pension rules have been adopted in 2002, reference wage is to be determined as an average salary of the entire contributory career and in some cases annual accrual rate is set according with the level of the reference wage, low salaries grant higher accrual rates. Transition clauses, in order to safeguard accrued rights, will postpone full implementation of these new rules to 2017. Earnings related pensions require a minimum vesting period of 15 years and a set of minimum pensions are granted for new pensioners.

Regarding the tax system instead of considering annual average income tax rates we considered monthly tax rates that apply to wages. These rates depend solely on the level of monthly wage and family type and are collected by employers. There is an advantage using these rates once that annual income tax depend on many factors; tax benefits, house mortgages, education, wealth expenses and others. It is assumed that tax bands (thresholds) growth in line with inflation, so, with real wages growth workers will bare higher tax rates. Another issue regarding tax rules is that wages are more heavily taxed than pensions. Pensions are also exempt from any income tax to a much higher threshold than wages. Pensions are calculated according to the established rules and the convergence procedures to the new benefit formula, according to the contributory career of the new pensioner on 2002 and the specific year that he retires. On contribution rates for Social Security it was considered an overall contribution rate of 34.75% which is the statutory rate that applies to the great majority of employees.

Representativeness of the calculations

Regarding representativeness one should take in account two elements; the pension scheme considered and the specific profiles underlying the projections.

As stated the Social Security system covers almost the entire entire private workforce, apart from Social Security there is an important pension scheme for public employees. This is roughly a more generous scheme, regarding its rules and eligibility criteria, providing higher pension benefits.

Assumptions and specific profiles tested represent standardized scenarios therefore not reflecting reality itself. Effective retirement age for old age pensioners is somewhat lower

than 65, there are some voluntary early retirement schemes and retirement age could be bellow 65 in some cases (long term unemployment and specific workgroups). The contributory career is usually lower than 40 years. Although there has been a considerable increase in the contributory career of new pensioners, due to the maturation of the system, average old-age contributory career is around 30 years. Gender differences are very significant; women get lower pensions benefits than men which reflect historical lower participations rates in the labor market, as well as lower wages.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

In projecting individual pensions of a defined benefit pension system main assumptions have to do with pension rules and wages. National administrative data on wages was considered rather than the one provided by the Commission. Using the average monthly wage declared to the Social Security system in 2003, it is possible to derive a retrospective wage history applying to this wage the aggregate wage growth given by National Accounts since 1960.

Portugal faces not just a demographic problem regarding Social Security, but also an economic, budgetary and a social one in a sense that besides ageing EC scenarios predict a sluggish economic growth in the long run, the system is still maturating and elderly are still a vulnerable cohort of the population to poverty and social exclusion.

Working age population is expected do decrease by 22% between 2004 and 2050. Old age dependency ratio in 2005 will be 58.5, representing an increase of 34% from 2004 to 2050. Ageing will cause, despite the increase in participation rates, a significant decrease of the overall labor force, about 16.2% until 2050 namely after 2025. Long term EC projections estimate a potential economic growth rate of 1.4% for the Portuguese economy. In this exercise it is assumed that average wages will growth on average 1.5% a year until 2050.

Main results

Overall results show that in most cases and in the long run replacement rates will not face a significant reduction. In fact, the new pension rules, adopted in 2002, do not seem to have a significant impact on replacement rates. Only high wage and rising earnings profiles seem to have a more acute reduction on their replacement rates. By considering lifetime wages in determining pensions rising earnings profiles means that there is a smaller proportion between the reference wage and the last declared wage. High wage workers, as mentioned, with the new pension benefit formula will have smaller accrual rates than low wage workers.

In the base case there is a slight decrease of the gross replacement rate between 2005 and 2050, from 74.8% to 69.8%. After 10 years of retirement replacement grate decreases considerably, this is because it is assumed that pension increases are indexed to prices and not to salaries. Net replacement rate is always higher than gross, once that pension benefits are calculated on gross wages and after retirement pensioners are exempt of social security contributions on their pensions. Overall net replacement rates will face a slight increase due to the tax system. From 2006 and on the fiscal system is being reformed in a way that pension benefits and wages will be taxed in the same way.

Three different national scenarios are presented. These scenarios reflect a realistic contributory career and wage profiles for both men and women:

F1: seniority at retirement – 27 years.

F2: male profile - seniority at retirement of 31 years and a wage of 120% of the average wage.

F3: female profile - seniority at retirement of 22 years and a wage of 89% of the average wage.

Table 50 - Replacement rates summary table – Portugal

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		F1-Scenario; Base line assumptions with a leght of service of 27 years		F2-Scenario; Male wage profile with a leght of service of 31 years		F3-Scenario; Male wage profile with a leght of service of 22 years	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	74,8	64,6	75,6	71,2	69,8	74,8	70,2	74,8	69,8	72,1	59,3	70,7	53,6	56,1	52,4	50,5	51,3	58,0	57,2	41,2	43,4
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	74,8	64,6	75,6	71,2	69,8	74,8	70,2	74,8	69,8	72,1	59,3	70,7	53,6	56,1	52,4	50,5	51,3	58,0	57,2	41,2	43,4
Total net replacement rate	90,7	80,3	92,7	91,8	91,8	86,5	88,3	90,7	91,8	90,6	81,3	93,3	75,3	67,2	70,4	61,2	68,9	72,9	78,5	49,3	57,4
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 51 – Portugal - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	63,7	
	F	64,8	
	Total	64,2	
Effective age of withdrawal from the labour market	M	--	
	F	-	
	Total	-	
Average seniority at retirement of retirees cohort	M	31,4	
	F	21,8	
	Total	27,3	
Coverage of the first pillar (in % of labour force)		82,0%	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)			
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		32.6 [a]	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		34.75 [b]	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	-
		2031-2050	-
Average wage (productivity) growth rate		2005-2030	1.5
		2031-2050	1.5

(a) this corresponds to an estimate of the annual effective contribution rate for social security system (ratio between overall contributions and aggregate wages declared to social security). (b) Total contribution rate used as an assumption in simulations is 34.75 (legal statutory contribution rate).

5.21. Slovenia

Description of schemes included

A dominant mandatory earnings-related scheme covers the risks of old-age, disability and survivors. All employees and self-employed persons are covered, while inactive persons can join the system voluntarily. The total contribution rate is 24.35 %, paid by employees (15.5 % of gross wages), employers (8.85 % of gross wages), self-employed (for the total) and through state compensatory contributions. Contributions are mandatory and paid in proportion to the pensionable earnings and pensionable earning is not capped (while entitlements are capped through statutorily determined highest pensionable earning).

With the implementation of the 2000 pension reform, Slovenia introduced a different method of calculating pension accrual. Each full year in the mandatory insurance scheme now counts the same regardless of the gender of the insured person and pension accrual amounts to 1.5% per year for men and women equally, while the accrual for the period above six months and up to a year increases by 0.75%. Minimum percentage for calculating old-age pension benefits differs with the sex of the insured person. For 40 years of pensionable service for men and 38 years for women, which will be the necessary service period for full old-age pension subject to the pensioner's having achieved the lowest possible age, the old-age pension will amount to 72.5% of the pensionable earning (in comparison with 85% before the 2000 reform). In the mandatory pension scheme financed on the pay-as-you-go basis, the pension is determined as 56% of an individual's salary in the last year before retirement after 40 years (for men) or 38 years (for women) of pensionable service, respectively. This provision will begin to apply at the end of the transitional period in 2024 when the Act is fully implemented. In 2005 this ratio amounts to 63%.

The old-age pension increases with the length of the mandatory insurance period and the insured individual's age at retirement. A shorter mandatory insurance period results in a lower pension. However, income and social security is also guaranteed to individuals who cannot, achieve a general level of security on the basis of their contributions and conditions, who are granted benefits comparable to those of the active population. This is primarily achieved through the minimum pension (35% of the lowest pensionable earning) guaranted by the law and the right to income support. Furthermore career breaks due to incapacity for work of disability pension recipients are compensated, contributing to more adequate pensions.

The pension reform also introduced funded supplementary pension insurance, in which monthly contributions are accumulated in an individual's personal account.

Representativeness of the calculations

Pensions are adjusted to wages. Proposals to index pensions only to the costs of living have not been adopted so far because they would lead to pensions lagging behind wages, which would in the long run further lower the ratio of individual's full pension entitlement to his/her wage in the year preceding retirement to 35% of the latter.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. By 2025, according to Eurostat demographic projections the total population in EU25 is expected to increase mainly due to net migration, after 2025 the total population is projected to decrease gradually. The working age population in the EU25 is expected to begin falling in 2011, while projections for the Slovenia show a drop from 2014 onwards.

The Slovenia is expected to face similar demographic trends as most EU Member States. Slovenia is projected to experience rapid ageing in the coming decades. Demographic trends will result in a significant increase in the old-age dependency ratio, from 21% in 2003 to 56% in 2050.

Main results

Theoretical gross replacement rate for male worker with a career length of 40 years and average earnings lies at 64% and net at 82% in the year 2005 and is projected to decline to 39% by 2050 (60% net). This results holds under the current pension legislation and projected demographic trends mentioned above. However, it should be noted that tax legislation is going to be changed in Slovenia in the near future.

The results based on other variants (e.g. 2/3 of average earnings, concave earnings, 80-100% rising, 100-20% rising and for broken career) show almost constant and stable relationship between those individuals with higher wages and those with lower, due to the design of the pension system (pensions are calculated as a share of the final wage).

Table 52 - Replacement rates summary table – Slovenia

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	64	60	58	45	39	64	39	64	39	64	39	64	39	45	58
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	64	60	58	45	39	64	39	64	39	64	39	64	39	45	58
Total net replacement rate	82	73	75	65	60	83	60	83	60	83	60	83	60	29	45
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 53 – Slovenia - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	-	
	F	-	
	Total	-	
Effective age of withdrawal from the labour market	M	-	
	F	-	
	Total	-	
Average seniority at retirement of retirees cohort	M	-	
	F	-	
	Total	-	
Coverage of the first pillar (in % of labour force)		100	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)		-	
Median pensions (without other social benefits) relative to median earnings [(b)]		-	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		24.35 %,	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		24.35 %,	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	2.8
		2031-2050	1.2
Average wage (productivity) growth rate		2005-2030	3.1
		2031-2050	1.9

5.22. Slovak Republic

Description of schemes included

Since the 2004-2005 reform, the Slovak pension system consists of three parts: the first two parts are the two tiers of the statutory pension scheme, while the third part is voluntary. The statutory pension system is mandatory for all employees and the majority of self-employed. Contributions to the statutory pension schemes are attributed to its two tiers:

- A first tier pay-as-you-go financed, defined-benefit and administered by the public Social Insurance Agency.
- A second tier, fully-funded, defined-contribution, administered by privately-run pension asset management companies chosen by individuals. As of June 2006, there were six pension companies operating. Contributions to this scheme are collected by the Social Insurance Agency, which transfers the funds to individual retirement accounts.

From January 1st 2005 to June 30th 2006, most economically active populations were given the choice either to remain fully reliant on the pay-as-you-go pension scheme or to enter the new, two-tiers pension system. People entering Slovakia's pension system for the first time after June 30th 2006 are automatically covered by the two-tiers pension system.

The total contribution rate to the mandatory pension schemes is 28.75% of wages, from which 18% finance old-age pensions (employer 14%, employee 4%). People covered by the two-tiers pension system contribute 9% of their wages into their personal retirement account, whilst the remaining 9% goes to the publicly administered pay-as-you-go financed tier. The overall pension contribution also includes 6% contribution to a disability funds (employer 3%, employee 3%) and 4.75% contribution to a reserve fund (paid by the employer only).

Representativeness of the calculations

The base case of the calculation is a full-time worker, single, male (although the marital status and sex of the insured person have no affect on the calculation of pension benefits in the mandatory pension system), retiring at age of 65 after a 40-year career.

The calculations include pension benefits provided by both tiers of Slovakia's mandatory pension scheme. However, the replacement rates calculated for 2005 and 2010 reflects the level of benefits provided by the pay-as-you-go financed pension system only. This reflects the currently legislated provision which allows pension benefit pay-outs from the fully-funded tier after 10 years of saving at earliest (i.e. no sooner than in 2015). The replacement rates calculated for 2030 and 2050 mirror the level of pension benefits from both tiers of the mandatory pension system.

According to the ISG methodology, occupational pensions which play a marginal role in the Slovak Republic and are not included in these calculations.

Main demographic and economic assumptions

The economic and demographic assumptions have been set in accordance with the ISG guidelines and the Ageing Working Group (AWG) macroeconomic assumptions.

Inflation is set at 2% from 2005 onwards in accordance with the framework developed by the AWG.

Main results

The calculation of prospective replacement rates confirms a relatively strong linkage between the level of contribution paid to the pension system and the level of benefits, steming from the new architecture of Slovakia's pension system.

The evolution of replacement rates over the periods 2005-2010 and 2030-2050 is mainly driven by increases in life expectancy. Increased life expectancy plays an important role in the later periods as it is reflected in the level of pension benefits provided from the funded tier of the mandatory pension system.

Table 54 - Replacement rates summary table – Slovak Republic

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)	
	2004	In 10 years	2010	2030	2050	2004	2050	2004	2050	2004	2050	2004	2050	2004	2050
Gross replacement rate 1st pillar	49,4	-	49,4	49,4	50,2	59,2	50,2	49,1	47,8	45,2	41,8	43,0	37,7	37,0	31,4
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	49,4	-	49,4	49,4	50,2	59,2	50,2	49,1	47,8	45,2	41,8	43,0	37,7	37,0	31,4
Total net replacement rate	**63,1**	-	**62,8**	**62,7**	**63,7**	**72,0**	**60,4**	**63,1**	**61,0**	**58,7**	**61,0**	**58,0**	**50,6**	**47,3**	**39,9**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 55 – Slovak Republic - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	61,44	
	F	56,77	
	Total	58,49	
Effective age of withdrawal from the labour market	M	42,42	
	F	36,70	
	Total	38,81	
Average seniority at retirement of retirees cohort	M	-	
	F	-	
	Total	-	
Coverage of the first pillar (in % of labour force)		-	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	-	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)		-	
Median pensions (without other social benefits) relative to median earnings [(b)]		-	
Assumptions			
Overall contribution to the first pillar as percentage of individual earnings for private employees		18	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DC (second tier of first pillar)	
Overall contribution to social security in % of individual earnings for private employees		28.75	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	3,6 %
		2031-2050	1,6 %
Average wage (productivity) growth rate		2005-2030	3,3 %
		2031-2050	2,3 %

5.23. Finland

Description of schemes included

The mandatory statutory pension provision includes a basic national pension scheme that aims at guaranteeing a minimum income for all pensioners and an earnings-related pension scheme that enables workers to maintain their standard of living to a reasonable degree after retirement. The two schemes form the statutory scheme.

The national pension scheme provides a residence-based minimum pension that can reach EUR 498 per month (subject to 40 years' residence) in 2005. It decreases as the person's other pension income increases. The monthly amount of earnings-related pension of about 1000 euros reduces the national pension to zero. The share of pensioners receiving only the national basic pension is on a declining trend. A housing allowance is granted to pensioners depending on their income and housing costs.

A large pension reform has been in force from the beginning of 2005. It is the biggest reform of the Finnish earnings-related pension system in forty years.

The earnings-related pension provides insurance-based pensions and covers all wage and salary earners and self-employed persons without any income ceiling. Until 2005, old-age pensions for private sector employees accrued during a maximum of 42 years starting from the age of 23 at the rate of 1.5% per year up to the age of 60; after that age, the accrual rate raised to 2.5% per annum. Pension is decreased permanently if the old-age pension is taken between the ages 60-64 and a permanent bonus is calculated if the pension is taken after 65. These rules changed in 2005: 1.5 % per year from the age of 18 to the age of 52, 1.9% from the age of 53 to the age of 62 and 4.5% per year from the age of 63 up to the age of 68. The pension is decreased actuarially if taken between 62 and 63 and a permanent bonus is calculated if the pension is postponed after the age of 68. The target (maximum) gross replacement rate was 60% until 2005 but that is abolished 2005 onwards.

Until 2005 the pension was calculated on the basis of average earnings over the last 10 years in each different employment relationship. As of 2005, calculations will be based on the entire working career. When calculating the amount of a pension previous earnings were revaluated using TEL index until 2005, thus the development of wages and prices were taken into consideration on equal terms in adjusting the pensions to the changing economic situation. From 2005 onwards this index takes into consideration 80% of the development of wages and 20% of that of prices.

All pensions in current payment are revaluated in line with an index where the weighting of the earnings level index is 20 per cent and that of the price index is 80 per cent.

A life-expectancy coefficient will be introduced in 2010 and it will reduce the monthly amount of pensions that are awarded after 2009 if people continue living longer.

Due to the comprehensive coverage of the statutory scheme, demand for voluntary supplementary pension provision is small. In 2000, the benefits paid out from second and third-pillar schemes amounted to 4.4 % of all pension benefits, and the contributions to these schemes to 5.6 % of all pension contributions. The second pillar schemes were therefore not included in the calculations.

Representativeness of the calculations

The calculations refer to a person insured under the most general pension scheme in Finland, TEL, which covers over 50 % of the insured (the rules are practically the same in each scheme). The career length is 40 years between 25 and 65. The retirement age is 65.

In all the cases it is assumed for the sake of simplicity that the person was employed by only one employer. The assumption of the number of employers affects the amount of pension in the old system, but not in the new one, as the pension is no longer calculated by employment. If for example there were five employers, the amount of pension according to the old system would be a little bit lower. How much, depends on the development of wages. The pension in the old system would be lower especially when the development in wages is steep.

As the Finnish pension scheme is a defined-benefit scheme, the contribution affects the pension level only by being subtracted from the earnings before the calculation of the pension. The pension contribution is divided into the employer's and employee's parts. In 2005, the employer pension contribution is in average 17% and for the employee (under 53 years of age) 4.6%. In the reform, a higher contribution was introduced for people over 53 years. It is about 27% (19/15) higher than the contribution of the younger ones, being 5.8 percentage points in 2005. The total contribution in 2005 is 21.6%. When the older employees pay more, the employers pay less, meaning that the total contribution doesn't change according to age.

A real rate of return of 3% has been used to calculate the contributions in the future as has been done in our pension expenditure calculations for the AWG. The level of the real rate of return doesn't affect the pension directly as it is a defined-benefit scheme, but indirectly through the contribution levels that is deducted from the wage. If real rate of return of 2.5% would be used it would mean a 0.3 percentage point decrease in the gross replacement rate. It has not been considered that this difference that would require to calculate theoretical replacement rates using other rates of return.

It has been assumed that the tax income brackets and all the other parameters in taxation follow the real wage growth, which means that the level of wage taxation remains the same as in the 2005 cases. The deductible employee pension contribution is assumed to change as predicted from 4.6% to 10.2% in 2050.

To calculate the life-expectancy coefficient, we have used the Eurostat predictions that were used to calculate our pension expenditures to the AWG.

As agreed, we assume that there will be no other increases in the national pension and housing allowances than what is stated in the legislation. That means that no additional increases have been taken into consideration except price changes even though the practice so far has been to increase these benefits occasionally by separate Parliament decisions.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. The average annual real wage growth has been assumed to be 1.9% between 2005 and 2050.

Main results

Net replacement rate levels are projected to remain roughly stable for a worker retiring at 65 after 40 years at the average wage, at a level of 63% in 2005 (gross 57%). As a result of reforms adopted, the replacement rate is projected to decline more than in other cases for a career with high wage progression, due to the extension of the calculation on pensions on a whole career (from 61% to 53% for progressively high earners). The level of the replacement rate is also projected to decline for a worker retiring at 65 after 40 years at 2 thirds of the average wage (from 74% in 2005 to 67% in 2050).

The replacement rate also declines due to the life-expectancy coefficient adopted in the reform.

Several variants have been included, in particular careers of 38 and 42 years, as they are relevant in the Finnish national context. In the old system, pension was permanently reduced if taken before 65 (possible earliest at the age of 60), the reduction being 0.4% per month. In the new system, the pension can be taken out without reductions at 63.

In the old system, pension was increased if postponed after 65. Pension accrued until 65 and after that no contributions were paid of earnings if work continued. The increase to the pension was 0.6% per month. In the new system, earnings after 63 accrue pension 4.5% until 68 and only after that an increase is calculated, which is 0.4% per month postponed. All these are taken into consideration in the calculation for the cases of 38 and 42 years of career length.

The broken career is calculated without childcare and with childcare. In the old system, this doesn't change the results, because childcare, if employment is interrupted (interruption lasts over a year without pay) doesn't give any extra accrual. But in the new system it does. Childcare accrues pension during the first three years after the child is born. The first year of childcare accrues pension according to the wage to which the benefit is based (assumed to be the wage of the year before childcare) and the next two years according to a fixed wage of about 523 euros/month (in the 2004 level). After this there is no accrual until the next child is born. Because the person hasn't worked between the childbirths, the pension accrues according to the before mentioned 523 during all the three years for the care of the second child.

Table 56 - Replacement rates summary table – Finland

	Base case 100% of average earnings (and 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career(30 years of seniority at retirement		*Working career 38 years between 25-63*		*Working career 42 years between 25-67*	
	2005	In 10 years	2010	2030	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050*	2005	2050	2005	2050
Gross replacement rate 1st pillar	56,6	48,7	60,3	57,3	53,9	64,8	53,9	56,6	51,8	54,5	46,1	53,4	42,3	45,8	42,3 (44,7)	51,2	46,8	64,2	60,8
Gross replacement rate 2nd pillar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total gross replacement rate	56,6	48,7	60,3	57,3	53,9	64,8	53,9	56,6	51,8	54,5	46,1	53,4	42,3	45,8	42,3 (44,7)	51,2	46,8	64,2	60,8
Total net replacement rate	62,6	55,1	66,2	65,7	63,6	74,1	67,0	63,5	60,7	60,7	56,1	61,5	53,2	54,6	54,3 (56,1)	58,5	56,2	66,5	69,5
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	4,9	-	-	-	-	-	-	-	0,6	-	-	-	-	-
Notes: 2005 refers to pension in 2005 with reference to work income in 2004 except in case a MS needs to refer to a different moment or a previous year.																			

Table 57 – Finland - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	63.4 (new flow of old-age pensions)/ 59.0 (a) (all)	
	F	63.2 (old-age)/ 59.3 (all)	
	Total	63.3 (old-age)/ 59.1 (all)	
Effective age of withdrawal from the labour market	M	59.0	
	F	59.2	
	Total	59.1	
Average seniority at retirement of retirees cohort	M	30.9	
	F	28.6	
	Total	29.6	
Coverage of the first pillar (in % of labour force)		95	
Active membership of occupational pension schemes (in % of the labour force)	M	-	
	F	-	
	Total	8.5	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	-	
	F	-	
	Total	-	
Average pension relative to average wage (in %)		48.9 (gross) 54.7 (net)	
Median pensions (without other social benefits) relative to median earnings [(b)]			
Overall contribution to the first pillar as percentage of individual earnings for private employees		21.6 b	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		-	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		-	
Overall contribution to social security in % of individual earnings for private employees		21.6 b	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		-	
GDP growth rate		2005-2030	2.0
		2031-2050	1.5
Average wage (productivity) growth rate		2005-2030	2.1
		2031-2050	1.7

(a) New flow of all pensioners calculated according to Finnish Centre for Pensions (Kannisto, 2006) called expected effective retirement age for 2005, which is not the same as effective age of withdrawal from the labour market.
(b) The contribution rate is the total average contribution of the TEL-system which contains old-age pensions as well as invalidity and other pensions of the earnings-related pension system.

5.24. Sweden

Description of schemes included

The statutory scheme introduced in 1999 consists of an earnings-related (contributory) scheme and an old-age guarantee pension (non-contributory). The income related scheme is contribution-defined. Sixteen percentage points of the contribution of 18.5% of earnings are used for pay-as-you-go financing and are accumulated at a given interest rate as a notional pension capital (which accumulates roughly in line with the growth of average earnings); 2.5 percentage points are invested in one or several funds chosen by the scheme member (the so-called premium pension scheme). The notional pay-as-you-go capital and the capital accumulated under the premium pension scheme are converted at the time of retirement into a pension the amount of which depends on the average life expectancy at the age of retirement.

The average retirement age under the statutory scheme is around 65 years and the career length close to 40 years.

The old defined-benefit pay-as-you-go system is currently being phased out and will ontinue to apply, on a diminishing scale, to persons retiring until 2017. For a base case worker, the gross replacement rate from the first pillar amounts to 57% in 2003 of which 20% accrued under the new system and 80% under the old.

The financial sustainability of the PAYG pension system is maintained by the adjustment of pension payments to average life expectancy. Furthermore an extra safety net in the form of an automatic balancing mechanism regulates outgoing benefits by adjusting the indexation of pension rights in the case of a financial imbalance. The automatic balancing mechanism means that a deviation will occur from the normal indexing of accrued pension rights and payable supplementary and income pensions, if pension liabilities exceed total assets – the value of income from contributions plus the value of assets in the system's buffer fund.

To protect those with a low or no income-related first pillar pension a guarantee pension tops-up the pension income, payable from the age of 65 years. The guarantee pension is price indexed and is a residence-based benefit where 40 years of residence in Sweden are required to receive a full guarantee pension. Fewer years as a Swedish resident lead to a proportionally decreased guarantee level. The benefit is financed via general tax revenue and is subject to income taxation.

The second pillar consists of large occupational pension schemes based on collective agreements and covering around 90% of employees. Contributions are typically between 2 and 5% of wages. Traditionally, these pensions were of the defined-benefit type, but are becoming increasingly defined-contribution schemes. In 2000, pensions paid out of these schemes accounted for 17% of total pension disbursements.

The main scheme for private sector employees is the ITP-plan and is used in the Swedish modeling. Only the employer finances the contributions that amounted to 13.7 percent of gross wage per employee in 2004. The entry age is 28 and withdrawals are possible from the age of 55. The pension arrangements mix defined contribution components (ITP) with defined benefit components (ITPK). A salary up to 30 times the income amount (IBA) is pension accruing and employment of less than 360 months' reduces the ITP pension proportionally. The ITP pension is calculated as a percentage of the final salary. The defined contribution component, ITPK, receives 2 percent of the contributions.

In order to reflect the functions and flexibility of the pension system, calculations based on additional national variants have been carried out: a calculation with a more prudent assumption on rates of return is included (net of administrative charges) and in view of

the flexible retirement age in Sweden cases with workers retiring at another age than 65 (retiring at 67 with 42 years of seniority).

Representativeness of the calculations

Gross and net replacement rates are calculated for the base case retiring in 2005, 2010, 2030 and 2050 (referring to cohorts 1940, 1945, 1965, respectively 1985) with reference to work income the year before. The base case of the calculations is single, male[16], a full time private sector worker who retires at age 65 after a 40 year uninterrupted career. Inflation is set at 2 percent for predictions from 2004 and onwards in accordance with the framework developed by the Ageing Working Group (AWG).

The calculations encompass the national pension comprised of both the income pension and premium pension components, and a supplementary occupational pension based on the ITP scheme for white-collar workers. The funded tiers of these schemes, the premium pension and ITPK, yield proceeds in line with the assumed real rate of return on pension funds, calculated at 3,0 percent net of administrative charges.

Historically the rate of return on funded assets has been much above 3 percent. Administrative charges also are below the 0,5 percent suggested in the calculation guidelines. A charge of, at present, 0.22 per cent of the credit balance on each premium pension account is deducted annually for administrative costs. It is interesting to note that in the annual report of Swedish pension system, a real rate of return of 3.25 percent net of administrative costs is predicted at a 2 percent growth rate for pension funds. The Premium Pension Authority advocates a return on premium pension funds of up to 6 percent at a 2 percent growth rate.

The ITPK pension beneficiary is presumed to choose a life-long payment period for this pension scheme instead of five-year payment scheme. This is because the five-year payment scheme implicated unreasonably high replacement rates and heavily falling pension incomes after five years. The annual increment on the ITP pension is based on inflation. For the funded tier of the first pillar scheme, an assumption of funded insurance withdrawal has been made.

An assumption for a housing supplement is also included for above described single male living in an apartment with two rooms and a kitchen. The average rent is calculated at 3970 Swedish kronor in January 2004. Thereafter, the rent and the benefit ceilings projections increase line with inflation of 2 percent. This means-tested benefit in cash is included in the calculations as it is an important part of the pension income in Sweden and partly defines the minimum living standard for Swedish pensioners.

Private pension savings are excluded from the Swedish calculations despite that the beneficiary's funds may be tied up until retirement, as they are not considered a compulsory or an essential part of the Swedish social security net. Private savings are more of an optional service for those who can afford it.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions.

For the earnings related income pension, the base case is assumed to receive a constant gross wage of 100 percent of earnings for an average production worker (APW). The average annual earnings for an APW amounted to 244 454 Swedish kronor in 2003 and a growth rate of 3.2 percent between 2003 and 2004 has been projected. The growth of

[16] Please note the sex of the worker does not have any affect on the calculation for the Swedish pension system.

future real earnings is settled at 1.8 percent from 2004. The wage index is, however, already fixed for up to 2005 so this real earnings growth rate affects the wage index from 2006. The tax brackets for government tax are increased in accordance with Swedish legislation at 2 percentage points above the inflation rate. In this exercise this would correspond to a 4 percent increase.

The size of the annuitisation divisor is based life expectancy predictions from Statistics Sweden[17] for each cohort. These predictions concur quite well with the data from EUROSTAT. The growth rate norm and the rate of return norm described above are included in the calculation of the annuitisation divisors.

Main results

For an average worker defined by the base case, the gross replacement from the two tiers of the first pillar amounts to 53 % in 2005. Occupational pension schemes add another 15 percentage points to the gross replacement rate, amounting to a total of 68 %. The net replacement rates amounts to 71%. The difference between the gross and net replacement rates is accounted for through employee pension contributions that are not paid by pensioners as well as, in some cases, housing benefits received by pensioners only.

Ten years after retirement, the total gross replacement rate can be expected to have fallen by around 7 percentage points. This is due to the fact that first pillar NDC pensions are index-linked to average earnings reduced by 1,6 percentage points per year giving a real growth of only 0,2 percent. Income growth follows the assumption of 1.8 percent. Occupational pensions are linked to inflation.

Workers on 2/3 of average earnings can expect gross replacement rates amounting to almost 80 %, resulting in a net rate close to 100 percent. The high replacement rate is a result of the guarantee levels and a raised income through housing benefits. A worker with 100 percent of average earnings but a concave earnings profile receives a lower gross replacement rate primarily due to a higher departing wage. A linear rising income curve results in lower gross replacement rates from the first pillar system. Workers with earnings rising from 100% to 200% of average earnings can, however, expect higher net replacement rates than workers with a lower rising profiles (80 to 120 percent) due to the large amount that second pillar pensions contribute to the pensions of workers with a high departing salary. The second pillar replacement rates amount to over 30 percent for workers with a steep income career.

The results of the base case calculations show that younger cohorts receive a lower replacement rate than older cohorts, given that they retire at the same age. Future replacement rates from the first pillar can be expected to decline due to the rise in projected life expectancy. This entails that the pension has to be divided by a greater number of years than for older cohorts and is reflected in the higher annuitisation divisor. For an average earning worker the gross replacement rate from the first pillar declines 13 percentage points to a rate of 40 percent by 2050 compared with today. The fall in the first pillar gross replacement rates are particularly dramatic for people on 2/3 of average earnings (22 percentage points), amplified at the level of net replacement rates (almost 40 percentage points). This is mainly due to the loss of the guarantee pension and means-tested housing benefit, which in accordance with current legislation are price indexed. In most cases the gross replacement rates of occupational pensions increase slightly as real earnings increase. This is due to the design of the occupational pensions schemes, which cover the proportion of income above the ceiling of the first pillar system.

[17] Source: Population projection for Sweden 2003-2050, Statistics Sweden

One way to compensate for falling replacement rates is to prolong working life, as additional years in increased life expectancy are often healthy years. Looking at workers retiring at age 67 with 42 years of seniority shows that replacement rates can be increased for most cohorts due to extra pension rights earnings as well as a lower life expectancy based annuitisation divisor. Complementary calculations show that a worker from the cohort 1985 would have to work for 44 years in order to obtain a replacement rate close to the one of a worker from the cohort 1940 with 40 years of seniority. For older cohorts the increase is especially high for each extra year in employment over the age of 65 as they are still covered, to a large degree by the old pension system, due to transitional rules. The old system rewarded work beyond the age of 65 without respect to seniority.

In the case of a worker with a 'broken' career, the difference in the first pillar gross replacement rates compared with a full career is 3 percentage points in older cohorts. In younger cohorts this difference amounts to over 10 percentage points. This is because in the 1940 cohort 30 years of seniority is adequate, as a large part of the pension for these workers comes from the old pension system. That was a benefit-defined system that required only 30 years of work for a full benefits. The younger cohorts are entirely insured under the reformed pension system that is based on the life-earnings principle.

Assuming a lower real rate of return results in lower projected replacement rates, due to decreased calculations for capital returns on the premium pension and ITPK systems. This however has no affect on statutory pensions of the 1940 cohort as a very small part of their pension has accumulated under the premium pension system.

Table 58 - Replacement rates summary table – Sweden

	Constant income of 100 % APW[1)]					Constant income of 66 % APW Poor pensioner		Concave income profile from 75 to 105 % APW		Rising income from 80 to 120 % APW		Rising income from 100 to 200 % APW		2 % Prudent rate of return		Broken career (30 years of seniority)		Retirement at age 67 with 42 years of seniority	
	2005	2010	2030	2050	After 10 yrs[2)]	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050	2005	2050	2007	2052
Gross replacement rate from the national pension system	53.0	49.6	42.6	40.4	46.1	62.5	40.4	49.7	35.2	48.0	33.6	36.1	25.9	53.0	39.2	49.6	30.3	62.8	45.8
Gross replacement rate from occupational pension	14.7	15.3	15.8	15.4	12.5	14.7	15.4	14.2	14.7	14.1	14.5	32.9	32.7	14.0	14.5	13.3	13.9	14.6	15.0
Gross replacement rate	**67.7**	**64.9**	**58.4**	**55.8**	**58.6**	**77.3**	**55.8**	**63.9**	**49.9**	**62.0**	**48.1**	**69.0**	**58.7**	**67.0**	**53.7**	**62.9**	**44.1**	**77.4**	**60.8**
Net replacement rate	**71.4**	**67.8**	**60.2**	**56.7**	**61.6**	**96.7**	**58.0**	**67.7**	**50.8**	**65.2**	**48.9**	**76.7**	**66.6**	**70.8**	**54.6**	**69.7**	**45.4**	**79.7**	**61.7**
Replacement rate of housing supplement for pensioners	-	-	-	-	-	15.4	-	-	-	-	-	-	-	-	-	2.9	-	-	-

Source: National Insurance Office and Ministry of Health and Social Affairs

Note: 2005 refers to the pension in 2005 in relation to earnings in 2004. The following preconditions are assumed: 40-year career; productivity and wage development: 1.8 per cent, inflation: 2 per cent, real rate of return: 3 per cent

[1)] Average production worker wage, APW

[2)] Income ten years after pension in 2005 in relation to predicted average earnings 2014

Table 59 – Sweden - Summary table: replacement rates selected assumptions and representativeness

Background information			
Average retirement age of retirees	M	64.8	
	F	64.7	
	Total	64.7	
Effective age of withdrawal from the labour market	M		
	F		
	Total		
Average seniority at retirement of retirees cohort	M	30 years	
	F	24 years	
	Total	28 years	
Coverage of the first pillar (in % of labour force)		100 %	
Active membership of occupational pension schemes (in % of the labour force)	M	n/a	
	F	n/a	
	Total	approx. 90 %	
New retirees receiving occupational pensions (in % of the annual flow of retirees)	M	91 %	
	F	83 %	
	Total	87 %	
Average pension relative to average wage (in %)		60%	
Median pensions (without other social benefits) relative to median earnings [(b)]		61%	
Overall contribution to the first pillar as percentage of individual earnings for private employees		17.21 %	
Overall contribution to occupational schemes as percentage of individual earnings for private employees		13.7 %	
Assumptions			
Type of second pillar provision eventually included in the calculations (DB, defined benefit or DC, defined contribution)		DB and DC	
Overall contribution to social security in % of individual earnings for private employees		17.21 %	
Overall contribution to occupational pensions as % of gross earnings assumed in the RR calculations		ITP = 11.7 % ITPK = 2 %	
GDP growth rate		2005-2030	1.8 %
		2031-2050	1.8 %
Average wage (productivity) growth rate		2005-2030	1.8 %
		2031-2050	1.8 %

5.25. United Kingdom

Description of schemes included

The UK pension system can be divided up into three tiers. The provision of pensions by the State spreads over the first two tiers.

The first tier is public, unfunded and compulsory, and is composed by the Basic State Pension (BSP) and Pension Credit. The BSP is a flat rate pension scheme, which is based on National Insurance (NI) contributions and on credits given in respect of people such as carers, the unemployed and the disabled. Pension Credit, introduced in October 2003 replaced the Minimum Income Guarantee (MIG) as the main form of support for pensioners on low income. It consists of two elements: the Guarantee Credit and the Savings Credit the first providing pensioners on low income with a guaranteed level of income and the second rewarding those pensioners who have set aside additional funds for their retirement.

The second tier is a mix of public unfunded pensions with private funded pensions. This tier is still compulsory, though persons can contract-out from the State Second Pension (S2P) into occupational pensions or personal pensions. S2P is a reform of the State Earnings Related Pension Scheme (SERPS) designed to benefit the low paid, by giving them a better accrual than persons earning above an upper earnings threshold. The third tier is purely private and funded, and comprises annuities and Additional Voluntary Contributions (AVCs).

Calculations include participation in a defined benefit scheme giving 50% replacement after 30 years but with no lump sum, on top of the statutory first tier pensions.

Representativeness of the calculations

The average retirement age of the new flow of retirees is 62.3 (slightly higher for males than for females). This is below the age when people start receiving state pension age. These retirees have average seniority (i.e. number of years equivalent of average entitlement to Basic State Pension) at retirement of 42 for males and 26 for females. This is below the maximum seniority of 44 years for males and 39 for women.

Active membership of occupational and private pension schemes stands at 56% (59% for males and 54% for females) of the labour force (including self-employed and part-time workers). 55% of the annual flow of new retirees receives occupational or private pensions, but there is a significant gender divide, 74% of males contrasted to 39% of females.

The contribution to the statutory scheme stands at 19.85% (7.4% from employers and 8.95% from employees). However income below the primary/secondary threshold is exempt and different rates would apply to any income above the Upper Earnings Limit. The contribution covers some social benefits other than pensions – in 2004/05 83% of National Insurance Fund expenditure was on pensions, but does not include the portion spent on the National Health Service.

The overall contribution to occupational schemes stands at 16.6% (4% for members and 12.6% from employers), while assumptions used for projections rely on a level of 23.7%, which corresponds to a projected significant increase, under the common assumptions of rates of return and administrative costs (the contribution to occupational pensions as a percentage of gross earnings is 23.7% in total, 18.7% of which is from employers).

The UK Government is currently looking at ways how to tackle the issue of increasing access to private pensions, especially for those on lower incomes, and also how to improve the pension entitlements of people with breaks in their careers.

Main demographic and economic assumptions

The economic and demographic assumptions have been chosen according to the ISG guidelines and AWG macroeconomic assumptions. The UK's total population is set to continue to rise, while that of the EU25 is projected to start contracting in 2025. The working age population in the EU25 is expected to begin falling in 2011, while projections for the UK show a drop from 2025 onwards.

The United Kingdom is expected to face similar demographic trends to most EU Member States, but the currently favourable situation protects it from the most urgent risks. The old-age dependency ratio, even if growing from 24% in 2003 to 45% in 2050, is still projected to be among the lowest in the EU.

Main results

The gross replacement rates for a worker at the average wage retiring at 65 after 40 years of contributions currently lies at 66% (82% net), 17% from the statutory scheme and 50% from the occupational scheme. This is based on the assumption that the person remains in the scheme for three quarters of their career and is contracted out of the State Second Pension for that time. This replacement ratio is projected to marginally improve, reflecting the increased generosity of the first pillar over the coming years, mainly due to the evolution of Pension Credit. The replacement ratio provided from private pensions (DB schemes), on the other hand, should remain stable, under the assumptions used (notably as regards the evolution of contribution rates).

Entitlement to the basic state pension is also expected to continue to improve over the coming years, as more women get better entitlements and close the existing gap in entitlement compared with men. Pension credit take-up should expand further, as people become more used to the system and the amounts for which they are eligible become higher.

For people with no private pension at all (only with a public State Second Pension) the gross replacement rate is 35% (47% net) and is projected to decline to 25% (41% net) in 2050. Those with interrupted careers receive a gross replacement ratio of 50% (64% net) and is projected to raise to 54% (69% net). Due to the redistributive nature of the state system, which is composed of a flat basic pension and a state-earnings pension that accrues more quickly to low income earners, the replacement ratios faced by high income earners or people with a quicker rate of average wage growth are less generous.

Table 60 - Replacement rates summary table – United Kingdom

	Base case 100% of average earnings (last column: 10 years after retirement; relative to projected average earnings)					2/3 of average earnings		Concave earning profile		Rising earnings from 80% to 120% of average		Rising earnings from 100% to 200% of average		Broken career (30 years of seniority at retirement)		National case without opting out	
	2005	In 10 years	2010	2030	2050	2005	2050	2004	2050	2005	2050	2005	2050	2005	2050	2005	2050
Gross replacement rate 1st pillar	17%	15%	18%	18%	19%	25%	28%	16%	18%	14%	16%	8%	10%	17%	21%	35%	25%
Gross replacement rate 2nd pillar	50%	45%	50%	50%	50%	49%	50%	50%	50%	50%	50%	50%	50%	33%	33%	0%	0%
Total gross replacement rate	**66%**	**61%**	**67%**	**68%**	**69%**	**74%**	**78%**	**65%**	**68%**	**63%**	**66%**	**58%**	**60%**	**50%**	**54%**	**35%**	**25%**
Total net replacement rate	**82%**	**76%**	**83%**	**84%**	**85%**	**91%**	**95%**	**81%**	**84%**	**78%**	**81%**	**71%**	**73%**	**64%**	**69%**	**47%**	**41%**
Of which means-tested benefits in percentage points of total net replacement rate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	6%

Table 61 – United Kingdom - Summary table: replacement rates assumptions and representativeness

		UK
Average retirement age of the new flow of retirees	M	62.7
	F	61.9
	Total	62.3[18]
Average seniority at retirement of the new flow of retirees (1)	M	42 years
	F	26 years
	Total[19]	35 years
Coverage of the first pillar (percentage of persons enrolled in the labour force) (*)		c100%[20]
Active membership of occupational (or private in general) pension schemes (as % of the labour force) (*)	M	59
	F	54
	Total	56[21]
Percentage of the annual flow of new retirees receiving occupational (or private in general) pensions (*)	M	74
	F	39
	Total	55[22]
Overall contribution to the first pillar as percentage of individual earnings for private employees		14.75% of income between £94 and £630, 10.9% above that[23]
Overall contribution to occupational schemes as percentage of individual earnings for private employees		16.6%[24]
Individual pensions for a cohort of people over retirement age relative to individual earnings (in %)		
Average pension relative to average wage (in percentage points)		36% Gross[25]
Assumptions		
Contribution to the 1st pillar as % of gross earnings	Employer	7.4%
	Employee	8.95%
	Total	19.85%[26]
Contribution to occupational pensions as % of gross	Employer	18.7%

[18] 2002 data. Related to year they retire from their job not the year they begin receiving state pension, which cannot be less than 65

[19] Gives the number of years equivalent of average entitlement to Basic State Pension on retirement. Maximum seniority is 44 years for men, 39 for women.

[20] All who earn more than £79 pw week or are registered unemployed are included, so 100% of full time workers and the unemployed, and most of those who work part time are covered either through earnings or credits.

[21] Those who are contributing to a non-state pension scheme, as percentage of those employed (including self employed and part-time workers).

[22] This equates to about 70% of newly-retired couples

[23] The rate for those opting out of the additional pension. It is 5.1% higher between £94 and £630 for those opting in.

[24] Government Actuary's Department, Occupational pension schemes survey 2004, the weighted average contribution rate for all private sector schemes with 12 or more members (4.0 per cent for members and 12.6 per cent from employers)

[25] Nore this is not comparing like with like. Virtually every pensioner will be eligible for some pension, but only about 75% of working-age individuals will be in employment at any one time.

[26] Income below the Primary/Secondary Threshold is exempt and different rates would apply to any income above the Upper Earnings Limit. The contribution covers some social benefits other than pensions – in 2004/05, 83% of National Insurance Fund expenditure was on pensions, but does not include the portion spend on the National Health Service.

earnings	Employee	5%
	other (1)	-
	Total	23.7%[27]
Type of second pillar provision eventually included in the calculations (DB or DC)		DB
GDP growth rate	2005-2030	1.8%
	2031-2050	1.8%
Average wage (productivity) growth rate	2005-2030	1.8%
	2031-2050	1.8%

[27] Relates to the base case in 2005. Note that in reality, UK pension funds achieve significantly higher rates of return and lower administration costs, so contribution rates for this type of pension scheme would be far lower on average over the 30 years.

6. CONCLUSION AND FURTHER DEVELOPMENTS

Theoretical replacement rates enable to shed more light on the objective of adequacy of pensions (as reflected in the second streamlined pension objective) and in particular, to measure the extent to which pension systems enable workers to preserve their previous living standard when moving from employment to retirement.

This second round of ISG calculation of theoretical replacement rates provides an important insight on the evolution of adequacy of pensions over the coming decades. Following first results of the 2004 exercise, calculations of theoretical replacement rates calculations for the base case indicate that reforms of statutory schemes will often lead to a decrease of replacement rates at given retirement ages, which also reflects the trend towards an increase of life expectancy at 60 or 65.

These results also highlight that two major policies have been developed by Member States to cater for this projected decline in replacement rates at a given age, on the one side the strengthening of incentives to work longer and on the other side, the development of private pensions, which relies on the effectiveness of coverage and contributions to these schemes.

Variants suggest that trends may be more unfavourable for more modest pensioners in some Member States. Besides, the decline may also be greater for ascending career profiles, notably for more rapid ones. Furthermore, incentives to extend active life appear to be significant, though it is difficult at this stage to assess the extent to which they will develop.

Qualifications and interpretation of the results

By construction, theoretical replacement rates are best used for a given Member State for assessing the evolution of replacement rates in different cases (base case and variants, as well as specific country cases). Comparability between Member States of current and theoretical replacement rates strongly depends on the representativeness of the base theoretical case (which can differ considerably between Member States), and on the use of common assumptions. In order to facilitate the interpretation of results, theoretical replacement rates need therefore to be analysed in the light of background information and information on representativeness.

Differences in the representativeness of the base case suggest that comparisons of levels of theoretical replacement rates among Member States should only be made with caution and taking into account differences in both representativeness and the types of assumptions made. For the sake of a more accurate and interpretable interpretation of results, levels of theoretical replacement rates are thus not displayed in the general analysis of the results for the base case and the variants, but are provided only for country sections, while general sections provide an analysis of ongoing general trends among Member States.

Theoretical replacement rates should then be complemented by other indicators reflecting the current income situation of older people (such as poverty rates and their evolution, but also relative living standard of older people or median pension as a ratio of median earnings). However, while the latter type of indicator informs on the current situation of adequacy of pensions, the former provides essential information on the likely evolution of adequacy of pensions. Besides, theoretical replacement rates enable an evaluation of

the prospective income of older people, which complements information on future sustainability of pensions provided by projections of pension expenditures.

Analysis of replacement rates to support more effectively policy development

This report has shown that with the analysis of replacement rates it is possible to show the effects of policy reforms and to answer pertinent policy questions. As such, they should usefully feed in the policy debate. This raises the importance of a more systematic assessment of the evolution of theoretical replacement rates. The changing composition of pensions also leads to the need for a more in depth analysis. Though current calculations for the base case and variants enable to have insights of the evolution of theoretical replacement rates for different typical situations, further developments would indeed be needed to assess more systematically trends at play in order to improve the comparative policy analysis at the Social Protection Committee. Further developments should in particular:

- Develop a more systematic analysis, notably through of sensitivity tests as regards key factors affecting replacement rates, such as age of retirement, wage profile, level of earnings and wage growth, length of contribution, real net long run rates of return (and contribution rates for second pillar defined benefit schemes) or life expectancy.

- Assess more in detail the contribution of different types of schemes to theoretical replacement rates. In this regard, different dimensions can be developed including: giving a more careful account in the base case of all types of contributions (and not only gross replacement rates), splitting the contribution of statutory schemes between a public and a privately managed tier; providing a case including only mandatory schemes with large coverage; identifying more in detail the role of means tested benefits (not only minimum pensions).

- Examine more in detail changes associated to different variants, such as different levels of wages, types of career development (and career breaks for broken careers or differences between men and women) and also incentives to work longer (at different ages, under different circumstances, such as for instance partial retirement) or also better reflect different steps in the calculation of theoretical replacement rates, such as annuitisation, contribution rates to the pension system.

- Examine more in detail the evolution of the balance between contributions made and benefits. This could notably be done by introducing a more life cycle dimension of replacement rates, through an extension of the reference used in the calculation of the reference pension and the calculation of lifetime contributions.

ANNEX – FRAMEWORK USED

Assumptions for prospective replacement rates

1. Earnings data

Data on **nominal compensation per wage and salary employee** should as far as possible be used (these are based on the National Accounts).
The attached Excel workbook "Compensation_NA" includes data from the AMECO databank of DG Ecfin, which uses Eurostat data and makes some estimations and backward projections to fill the gaps in the time series. It is also available on the internet web site of DG ECFIN:
http://europa.eu.int/comm/economy_finance/indicators/annual_macro_economic_database/ameco_contents.htm
Nominal compensation per employee is calculated by dividing aggregate D.1 of National Accounts - Compensation of Employees – by the number of salaried employees in each country. The following definitions apply to each of the two aggregates (see box).

Compensation of employees (D.1) is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during the accounting period.
Compensation of employees is broken down into:
a) wages and salaries (D.11): wages and salaries in cash + wages and salaries in kind;
b) employers' social contributions (D.12): employers' actual social contributions (D.121) + employers' imputed social contributions (D.122).
Employees are defined as all persons who, by agreement, work for another resident institutional unit and receive a remuneration (recorded as D.1 compensation of employees).

Furthermore, in the denominator, it would more appropriate to use data on **full-time equivalent** wage and salary employees, since the structure of employment in terms of hours worked differs greatly across countries. However, data on full-time wage and salary employees are only available for a limited number of countries in the Eurostat database. It can be noticed that the AMECO databank of DG Ecfin estimates time series for full-time equivalents for all EU countries, but only in relation with total employment, including the self-employed.

Note that "national compensation of employees" includes employers' social security contributions, which should be netted out by imputation from the calculation of both gross and net replacement ratios. In this sense, a more appropriate aggregate as basis for calculation would be the sub-component of compensation of employees "wages and salaries" (D.11), which does not include employers' social contributions. Data on "wage and salaries", however, are only available for a limited number of countries before 1995 in the Eurostat databank. Country delegates are invited to check if the provided data are consistent with national sources based on the same definitions (in principle, there should be no or only minor differences). They are also invited to choose between the two options of i) netting out by imputation employers' social contributions from the aggregate "nominal compensation per employee" or ii) using the series on "wages and salaries" (D.11), using either national sources or Eurostat sources.

As for the reference population, the Secretariat suggests to use economy-wide averages, with no breakdown by gender or sector. The purpose, in fact, is not to reflect very accurately average earnings or cross-sectoral differences in average earnings in a given country at a given point in time, but to have a consistent image of cross-country differences in levels and past trends of earnings. However, if the pension scheme to which the calculations refer only concerns a particular section of the economy for which average earnings are significantly different from the economy-wide average, then it is possible to use earnings relating to that section of the economy, provided they are available based on NA definitions.

2. *Future growth in earnings*

Macroeconomic and demographic projections agreed in the AWG should be used in the replacement rate exercise. Detailed elements on AWG assumptions are available at the following link: http://ec.europa.eu/economy_finance/publications/european_economy/2005/eesp405annexen.pdf

Due to the late endorsement by the AWG and EPC, when MSs had major problems with the current state of projections, the past Eurostat projections could be used, or UN projections if these are not available (typically for new MSs). However, if a MS had more recent national projections, national projections could be used instead. When macroeconomic assumptions were not available, previous ones could be used, or national ones if it appeared preferable. In this case, Member States were asked to inform for the reasons for doing so (in particular by providing yearly rates used).

3. *Inflation*

An inflation rate of 2% should be assumed. Different rates may be used if there are "good" reasons for doing so (*e.g.* a different target rate of inflation in the home country), but the Secretariat must be informed of the reasons for any departure from this assumption.

Concerning discretional increases of pensions, in calculating the pension – wage ratio after 10 years, only legislated or automatic increases of pensions should be considered, not discretional ones. If one MS feels it relevant to also consider some discretional increase, this should be declared and done only if the same discretional increase is expected to be considered in the pension expenditure projection exercise.

4. *Real rates of return and annuitisation*

For funded pension schemes, the calculation of prospective rates of return asks for an assumption on future real rates of return. This enables to set the rhythm of accumulation of assets, but also determines the level of annuities. Moreover, an assumption on future real rates of return is important to calculate the level of benefits in DC schemes (these are particularly important in several of the new Member States), as well as to calculate the contribution rate in DB schemes. Both benefit levels and contribution levels are probably extremely sensitive to interest rate assumptions.

An assumption of real rate of return of 2.5% should be used in the base case. This corresponds to a 3.0% gross real rate of return, from which are deducted 0.5% reflecting administrative charges. Such return is gross of taxes, thus Member States where returns on private schemes are taxed, should also as far as possible take this into account.

Countries with strong justification for different administrative costs may calculate replacement rates with the rates they find more relevant provided their national characteristics, provided they justify the reasons for doing so.

Any lump sum paid at the moment of retirement whose aim is, according to national circumstances, of providing resources for the old age should be annuitised and this annuity is to be included in the pension income. However, it is not always clear what purpose a lump sum serves. In the case of the Italian Trattamento di fine rapporto (TFR), a cash payment that is due at the end of an employment contract, regardless of the employees age, it was decided to consider this neither as income from work (because it is not sufficiently regular), nor as a pension (because most of the TFR payments may be received long before retirement)

Annuities should be calculated in such a way that benefits increase every year by the assumed inflation rate, i.e. 2%.[28] Annuity coefficients used should take into account the increase of life

[28] Annuities should not be calculated in nominal term because this would inflate initial RR, while significantly reducing the real value of actual benefits in the following retirement period. On the other side, price indexed annuities are not always available (or they are very costly) while some countries explicitly requires at least some coverage for inflation. It seems thus the case not to assume a price indexed annuity,

expectancy as stated by the demographic projections, and thus should not remain the same over the entire period of simulation.

If the cost of buying the annuity is not already taken into account in the coefficients used to calculate the pension, one should consider, as in the case of the private pension scheme, administrative and managing expenses amounting to 0.5% on the returns on the residual capital. Moreover, a lump sum deduction of 1% from the accrued capital should be made to take into account the price of the annuity. Moreover, survivor's pension should not exceed the maximum between the minimum law requirement and 60%, depending on national circumstances (corresponding assumptions used should be stated and briefly documented).

Finally, Member States that consider defined benefit private schemes should as far as possible guarantee the coherence of the overall framework, thus private schemes accrual rates should decrease with the raise of life expectancy or contribution rates should increase accordingly.

5. Life expectancy

Eurostat's demographic projections should be used, as will be the case for the EPC projections. Until final endorsement by the AWG and EPC, MSs should use the new demographic projections. If a MS has major problems with the current state of projections, the past Eurostat projections should be used, or UN projections if these are not available (typically for new MSs). However, if a MS have more recent national projections, national projections could be used instead.

6. Tax and social insurance thresholds

Like in the previous exercise, in the absence of a clear legislative commitment to conduct a different policy, Member States should raise income tax and social insurance thresholds in line with earnings so as to avoid a reduction in net replacement rates resulting from an increasing tax burden or a gradual reduction in the scope of social insurance. Departures from this assumption had to be duly justified.

---

but rather asking calculations to be based on an annuity offering benefits rising every year by the particular inflation rate assumed in the RR exercise (i.e. 2%).

Presentation of results

Member States were asked to present results according to the following structure

Table - Calculation of the replacement ratio

Country:			Full year before retirement	Full year after retirement
Year:				
Case:				
	Compensation per employee		A	
–	Employer contribution to the first pillar pension scheme (B_1), to the other pension schemes (B_2) and other employer's social contributions (B_3).		B_1	
			B_2	
			B_3	
=	Gross earnings and pension (first – J_1, second - J_2, third pillar - J_3 schemes)		C	J_1
				J_2
				J_3
%	**Gross replacement rate**			**ΣJ/C**
–	Employee and pensioner contributions to pension schemes (first - D_1, second - D_2, third pillar schemes - D_3)		D_1	K
			D_2	
			D_3	
=	Income net of contributions to pension schemes		E	L
%	Pension scheme replacement rate			L/E
–	Social insurance contributions other than for pension schemes		F	M
–	Taxes		G	N
+	Means-tested benefits		H	O
=	Net income		I	P
%	**Net replacement rate**			**P/I**