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NOTE

from:	The Social Protection Committee
to:	Permanent Representatives Committee (Part I) / Council (EPSCO)
Subject:	The 2015 Pension Adequacy Report: current and future income adequacy in old age in the EU: Joint SPC and Commission report - Report

Delegations will find attached the full report (Volume I Part 4) on the above subject submitted by the Social Protection Committee, with a view to the Council meeting (EPSCO) on 5 October 2015.

The key messages which are drawn from this report are contained in doc. 12085/15.

For technical reasons the complete Report had to be split in 5 parts which are found in docs 12085/15 ADD 1 (Part 1) + 12085/15 ADD 2 (Part 2) + 12085/15 ADD 3 (Part 3) + 12085/15 ADD 4 (Part 4) and 12085/15 ADD 5 (Part 5).

5.2.3. Prospective TRRs for different career patterns

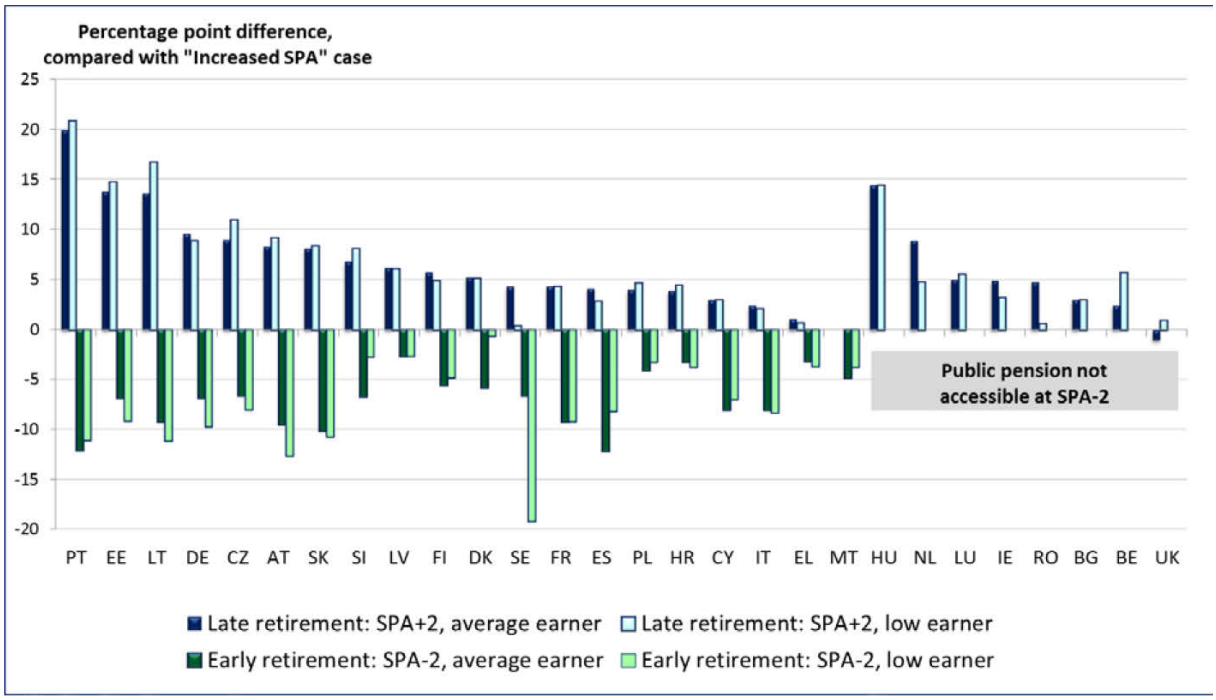
In this section, the impact of different career patterns on future pension adequacy is assessed. A full career from age 25 to the standard pensionable age is used as the reference point in order to illustrate the impact on future replacement rates of three hypothetical possibilities:

- retirement two years before and after the SPA
- forced early retirement five years before the SPA
- a short career of 30 years.

Retirement two years before and after the SPA. In order to assess whether pension systems sufficiently and sensibly reward longer working lives in the future, the monetary incentives or disincentives for retiring early and working longer are illustrated.

Figure 5.17 illustrates the changes in net TRRs for someone retiring two years before the SPA and working two years beyond the SPA, using a career with retirement at SPA as the reference. For the four Member States (Bulgaria, Estonia, Romania, Slovenia) where there are gender differences in future TRRs, comparisons are illustrated for a woman in this section.

Figure 5. 1: Percentage point difference in prospective net TRRs for working two years shorter / longer as compared to the 'increase in SPA' case for low and average wage earners



Data source: Member States and the OECD. Note: A positive difference indicates a higher TRR as compared to the 'increase in SPA' case (career from age 25 to SPA). Sorted by the Retirement at SPA+2 (average earner). TRRs for retirement at SPA-2 are not reported for HU, LU, BG, BE, IE, NL, RO and UK due to ineligibility for public pensions at SPA-2. If gender differences exist, results for women are reported in this figure.

In the majority of Member States, longer working lives provide higher pension entitlements in the future. For those on average earnings, delaying retirement by two years beyond the standard pensionable age is projected to result in an increase in net replacement rates of five percentage points or more in 14 Member States (Portugal, Hungary, Estonia, Lithuania,

Germany, Czech Republic, the Netherlands, Austria, Slovakia, Slovenia, Latvia, Finland, Denmark and Luxemburg).

Whereas longer working lives offer an effective way to improve future pension outcomes in these countries, the incentive structures still appear insufficient in other pension systems. In seven other Member States (Cyprus, Bulgaria, Italy, Belgium, Greece, Malta and the UK[1]), net TRRs are projected to increase by three percentage points or less as a result of working longer. The incentives are very similar for workers on low earnings, although they tend to benefit slightly more in relative terms from postponing retirement than do those on average incomes.

However, the situation turns out to be quite different with respect to premature retirement in the future. Retiring two years *before* the SPA would result in substantial drops in future TRR levels in the majority of Member States. This is mostly explained by eligibility criteria for basic pensions, which cannot yet be drawn two years before the SPA in eight Member States (Hungary, Luxemburg, Bulgaria, Belgium, Ireland, the Netherlands, Romania and the United Kingdom). In contrast, earlier retirement does not have a significant impact on pension levels in some other Member States, with a decrease in TRR levels of less than five percentage points for average earners in five Member States (Greece, Croatia, Latvia, Malta and Poland).

These projections reveal that bonuses for late retirement and penalties for early retirement are often not constructed in an actuarially neutral way. The increments in replacement rates for prolonged working lives by two years tend to be larger than the reductions owing to two years shorter careers. However, since this analysis concerns net replacement rates, some of the apparent imbalances in work incentives may reflect features of the taxation systems, and not just the pension systems.

The impact of forced early retirement. Even if effective pension incentives are in place, the general challenge of providing enough job opportunities for older workers remains. Today, labour market exit ages are usually lower than the pensionable age, and early retirements are far more common than postponements of pension take-up. With increasing standard pensionable ages, people who are forced to stop working prematurely, for whatever reason, may face an increased risk of inadequate pension entitlements in the future.

The impact of forced early retirement as a result of unemployment or disability is assessed with two TRR variants. In this case it is assumed that an average wage earner will leave the labour market five years before the national standard pensionable age, having entered the labour market at age 25 in 2013.

In the unemployment case, it is assumed that there are five consecutive years of unemployment and that the worker concerned claims the pension at the earliest possible point through early-retirement schemes. In the disability case, disability is classed as 100 percent and it is assumed that the individual is eligible for the maximum level of credit. The individual claims the pension at the earliest possible point through available early-retirement

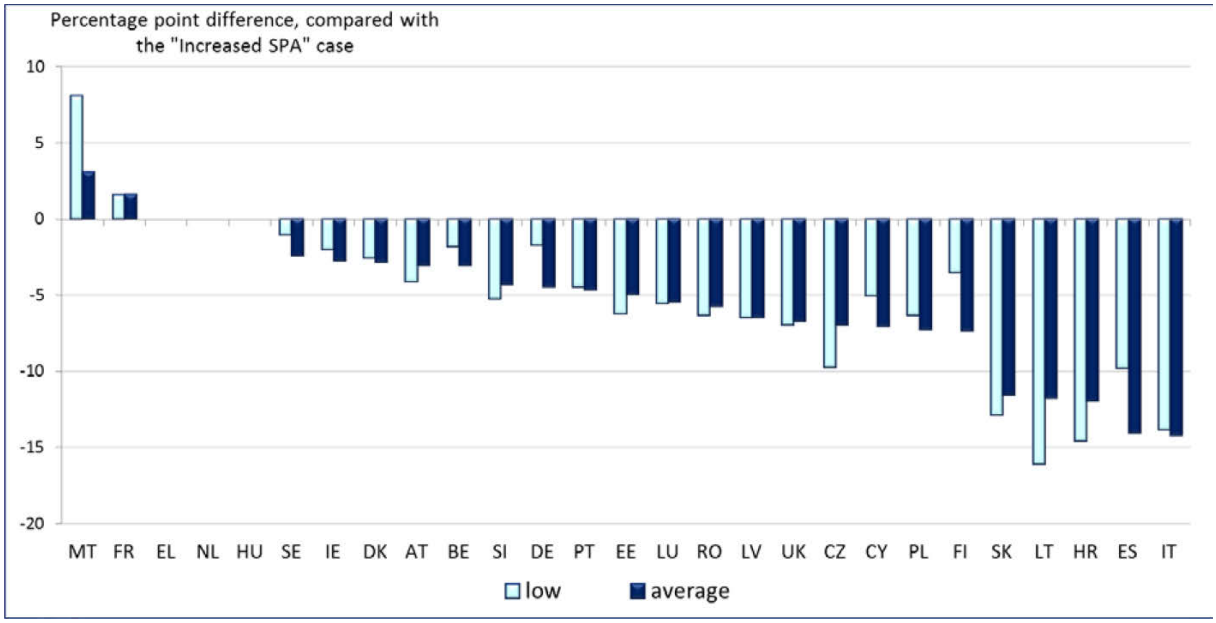
[1] In the UK, those working beyond the SPA would no longer pay National Insurance contributions, which results in higher net income from work in the year SPA+1 than it would have been in SPA-1. As a result, the denominator increases and the net TRR is slightly smaller than the standard 'increase in SPA' case. On a gross basis, those two additional years in employment result in a higher TRR.

schemes. Under both variant cases, the replacement rate is calculated at the national standard pensionable age (and not at the time of labour market exit), with benefit payments indexed where required.

The 'unemployment case' is presented in Figure 5.18, which illustrates the percentage point difference between the net TRR for a worker with a full career and a worker who has to leave the labour market five years prior to the SPA for unemployment reasons. At average earnings, this can have a substantially negative impact on pension levels in the future. In 13 Member States, the net TRR of early retirees is more than five percentage points lower than those of a worker with a full career at average earnings (Italy, Spain, Croatia, Lithuania, Slovakia, Finland, Poland, Cyprus, the Czech Republic, the United Kingdom, Latvia, Romania, Luxemburg).

Pension outcomes of low wage earners tend to be similarly affected by forced early retirement due to unemployment, with an even greater fall in net replacement rates in 11 countries (Lithuania, the Czech Republic, Croatia, Estonia, Slovakia, Austria, Slovenia, Romania, the UK, and Luxemburg). As TRRs are measured against their relatively low wage income, the risk of old age poverty in the future could be substantial (see also section 5.3).

Figure 5. 2: Percentage point difference in prospective net TRRs comparing early retirement due to unemployment to a full career, different earning profiles



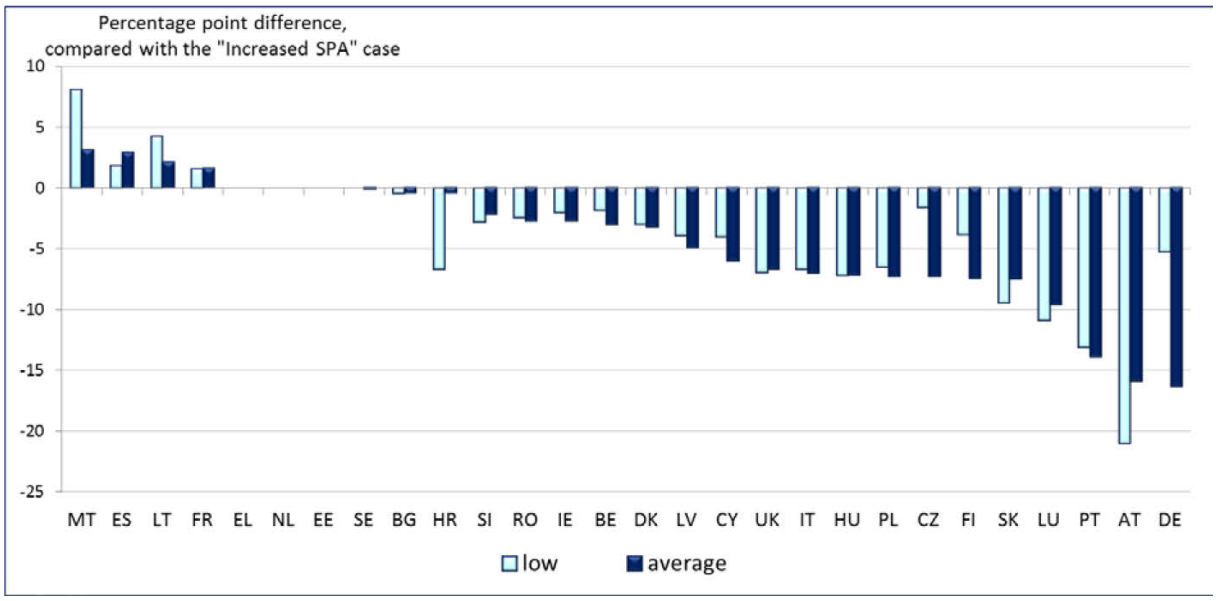
Data source: Member States and the OECD. Notes: A positive difference indicates a higher net TRR for a worker who becomes unemployed five years prior to SPA. Sorted by the average wage profile. Results for EL, NL and HU are equal to zero. If gender differences exist, results for women are reported in this figure. In BG, the old age pension cannot be drawn at SPA under this scenario as the required length of service is not met.

The 'disability case' as presented in Figure 5.19 shows a somewhat different pattern for people who retire five years before the standard pensionable age due to disability. In 18 Member States, a worker with average earnings who has to rely on disability benefits before retirement will receive a relatively lower pension upon reaching the SPA. However, the replacement rate of the disabled worker is projected to be higher compared to someone staying in the labour market up to the SPA in Malta, Spain, Lithuania and France.[2] Almost no

[2] Higher replacement rates for forced early retirement can be explained by the fact that the last wage before early retirement is used as reference for the calculations. As the wage of someone working until the SPA is usually higher

differences in prospective TRRs for the two career scenarios are expected for another five Member States (Spain, the Netherlands, Estonia, Sweden, Bulgaria). Pension levels of low income earners are thereby slightly less affected, or improve slightly more, in the case of early retirement due to disability in a total of nine Member States, whereas the opposite is observed in four Member States.

Figure 5. 3: Percentage point difference in prospective net TRRs comparing early retirement due to disability to a full career, different earning profiles



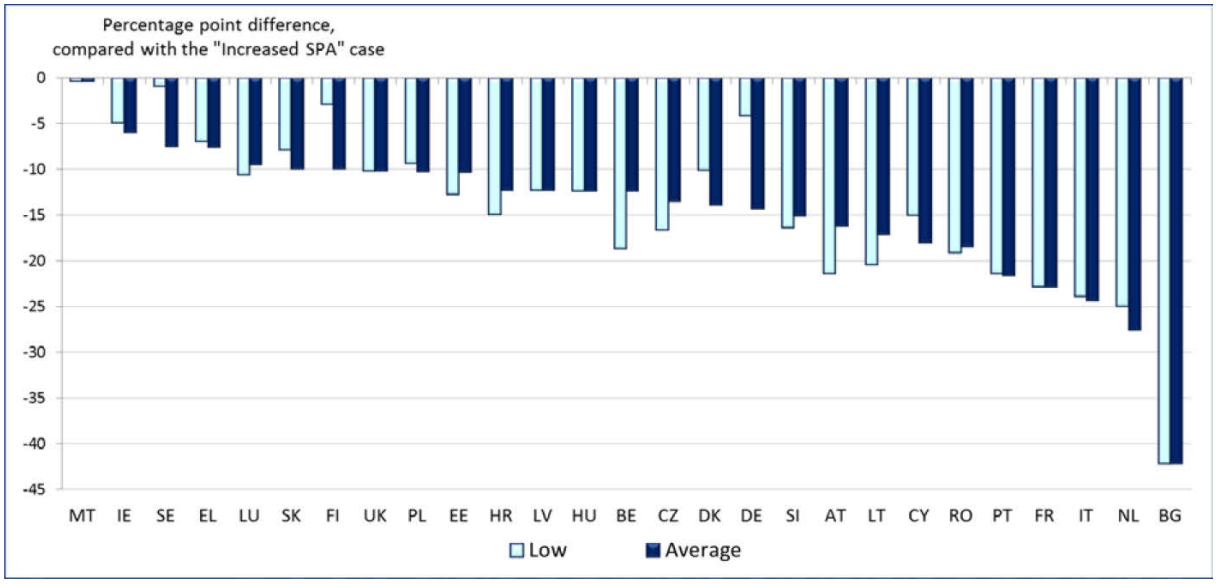
Data source: Member States and the OECD. Notes: A positive difference indicates a higher net TRR for a worker who is classed 100 percent disabled five years prior to SPA. Sorted by the average wage profile. If gender differences exist, results for women are reported in this figure. Results for EL, NL and EE are equal to zero.

Short career of 30 years. Even larger falls in future replacement rates are projected for those with long-term career breaks as illustrated in Figure 5.20. Here the career break is assumed to begin at age 45 after 20 years of uninterrupted employment, with an assumed return to full time work 10 years before the national standard pensionable age, resulting in a total 30-year career. During the career break, the worker is assumed to have not contributed to the pension system and to have not received any social benefit or contribution credits.

In such cases the net replacement rates are expected to decrease by more than 10 percentage points in 23 Member States (the exceptions being Malta, Ireland, Sweden, Greece and Luxemburg) and by more than 20 percentage points in five Member States (Bulgaria, the Netherlands, Italy, France and Portugal). A similar drop in replacement rates is projected for low wage earners with a short career, but with a decrease of less than five percentage points observed in only four Member States (Malta, Sweden, Finland, Germany).

(due to positive real wage growth), replacement rates for a full career can be lower whereas pension entitlements might still be higher in absolute terms.

Figure 5. 4: Percentage point difference in prospective net TRRs between a short career (30 years) and a full career from age 25 to SPA, average and low wage earner



Data source: Member States and the OECD. Notes: A negative difference indicates a lower net TRR for persons with a long-term career break. Sorted by the average wage profile. If gender differences exist, results for women are reported. For ES - not eligible (TRR case of short career of 30 years).

5.3. Alternative approaches to assess future pension adequacy

The theoretical replacement rate (TRR) is the main concept used in this report to assess future pension adequacy, but this approach, and its findings, can be complemented by alternative measures and additional analysis. This section presents such alternative indicators where they are available, identifies knowledge gaps where they exist, and discusses analytical approaches that could be developed in order to further our understanding of the future evolution of pension adequacy.

For example, by comparing the projected pension entitlements to average earnings levels in the future, career scenarios that risk resulting in inadequate pension incomes and old-age poverty can be identified (as in 5.3.1). Microsimulation techniques can also be used to draw a more fine-grained picture of the evolution in particular of old-age poverty in the future (as in 5.3.2), while the concept of pension wealth can enable the length of retirement to be taken into account in the assessment of aggregated pension entitlements (5.3.3).

5.3.1. Future pensions levels for different career scenarios

In the previous section, theoretical replacement rates were used to illustrate the difference between pre-retirement levels of income and pension incomes, thereby providing a proxy of the standard of living that individuals might expect upon retirement, compared to their situation when working.

In this section, the same TRR projections are used to illustrate the relationship between future pension entitlements and the projected *overall* standard of living in a given country. For this purpose, the net pension in the first year of retirement is compared to economy-wide *average* net earnings in the same year. The use of average earnings as the common denominator

allows a direction comparison across different TRR cases and helps identify career patterns that are likely to result in comparably low pension outcomes in the future. Table 5.4 presents future pension levels under the various TRR scenarios for a low wage earner while Table 5.5 summarises the same projections for an average wage earner.[3]

Table 5. 1: Prospective net pension levels for different career variants, low wage earner

MS	LOW WAGE EARNERS								
	Short	Forced early retirement due to..		Career break			Full career from age 25 with retirement at…		
	30 years	*Disability*	*Unem-ployment*	*Unemploym. 3 years*	*Unemploym. 1 year*	*Childcare 3 years*	*SPA-2*	*SPA*	*SPA+2*
BE	47.0	56.5	56.5	59.9	60.4	59.7		60.7	64.9
BG	23.4	48.4		47.2	51.4	51.4		52.7	54.8
CZ	41.8	48.8	43.6	49.7	52.0	53.3	47.7	53.3	60.9
DK	62.1	63.6	64.0	67.2	68.3	67.2	68.4	68.9	72.3
DE	51.5	48.3	50.7	53.6	54.0	53.8	47.6	54.5	60.9
EE	34.8	40.3	36.4	40.5	41.9	42.3	37.2	43.3	53.2
IE	56.1	54.4	54.4	55.3	59.1	58.3	25.9	59.6	61.9
EL	31.4	33.7	33.7	36.4	36.4	36.4	33.8	36.4	36.9
ES		58.6	51.1	60.2	61.1	61.0	55.5	61.2	63.2
FR	31.2	45.1	45.1	46.0	46.4	51.6	40.4	46.6	49.6
HR	26.5	30.0	24.9	34.3	36.1	35.8	34.3	36.9	40.1
IT	45.8	54.5	49.8	60.2	62.3	61.2	56.6	62.4	63.9
CY	40.5	45.2	44.5	49.6	51.0	50.3	46.1	51.0	53.1
LV	27.5	31.1	29.5	34.7	35.6	33.3	34.2	36.1	40.3
LT	46.1	59.5	46.2	58.1	59.9	59.5	52.6	60.3	72.0
LU	56.8	53.2	57.0	62.9	64.3	64.5		64.5	68.7
HU	45.9	46.3	50.7	50.9	53.0	54.0		54.0	63.5
MT	57.2	59.3	59.3	51.3	51.3	56.3	54.9	57.5	57.5
NL	48.4	62.3	62.3	64.8	65.5	64.8		66.0	69.4
AT	46.1	43.9	55.4	59.8	61.0	65.3	52.4	61.5	68.1
PL	22.5	22.8	22.9	26.9	28.4	28.7	26.5	28.7	31.8
PT	44.1	46.8	52.7	56.3	56.5	56.3	51.6	59.7	74.9
RO	15.1	24.6	22.1	24.4	25.3	28.4		28.4	28.8
SI	34.2	41.2	39.6	53.2	51.3	42.3	43.7	45.7	51.4
SK	44.9	41.0	38.8	47.3	49.5	49.2	42.9	50.3	56.1
FI	43.1	40.0	40.2	44.7	45.1	45.0	41.7	45.2	48.7
SE	46.4	44.3	43.7	44.0	44.3	47.1	34.0	47.1	47.3
UK	58.6	57.2	57.2	63.2	64.8	63.2		65.6	66.3

Data source: Member States & OECD; EC calculations. Reference: Average net earnings in the first year of retirement (in the cases of forced early retirement, the reference year is at SPA). If gender differences exist, results for women are reported. No results are reported for career scenarios under which a pension cannot yet be drawn at the assumed exit age.

[3] Note that for the calculation of TRRs, the denominator (earnings from work in the last year *before* retirement; e.g. in SPA-1) is adjusted for one year of inflation assumed at 2 percent. Instead, average net earnings in the year of retirement (e.g. SPA) are used as denominator for the calculation of pension levels. The assumption of positive *real* growth in average earnings results in higher average earnings in the year of retirement as compared to the inflation-adjusted average earnings of the previous year. The denominator used for the pension level calculations is hence larger than the one used for the TRR calculations, which results in slightly lower pension levels as compared to TRRs. Under the forced early retirement cases, the denominator for the pension level calculations is the average net earnings at SPA, whereas the TRR calculations are based on the net earnings in the last year before the unemployment/disability period (SPA-6) as reference.

In the majority of Member States, a *low wage earner* with a full career (gross income at two-thirds of the average gross wage across the entire working life) can expect a net pension close to 50 per cent of the net average wage in the future. After an uninterrupted career from age 25 to the country-specific SPA, his or her pension is projected to lie between 50 per cent and 65 per cent of net average earnings in 14 Member States, and between 40 per cent and 50 per cent in five Member States, respectively. A pension of more than 65 percent of net average earnings for a low wage earner is projected for Denmark, the Netherlands and the United Kingdom, which is explained by the combination of good basic pensions and the important contribution of funded schemes in these countries. In four Member States, prospective pension levels are found to be below 40 per cent of the average net wage.

Career breaks tend to worsen still further the income prospects of future pensioners with a working life on low earnings. However short career breaks due to spells of unemployment or childcare usually lead to comparably small reductions in future pension levels. In 18 Member States, for instance, pension levels are still above 50 per cent of average earnings after a low earnings career with three consecutive years of unemployment.

By contrast, early retirement appears to pose a major risk to the pension adequacy of low wage earners in the future. Whether the labour market exits are the result of unemployment or disability five years before the SPA, or take place two years before the SPA, this can result in a drop in pension levels of more than five percentage points in the majority of Member States, with a decrease of more than 10 percentage points in Lithuania, Italy, Slovakia and Spain in the case of unemployment, and in Austria, Portugal and Luxemburg in the case of disability.

In terms of short careers, someone who retires after 30 years of work at low earnings will receive benefits of less than 40 per cent of average earnings in nine Member States. When compared to a full career at low earnings, the drop in pension levels as a result of a short career exceeds 10 percentage points in 13 Member States while it only leads to losses of below five percentage points in Malta, Sweden, Finland, Germany and Ireland.

As expected, higher pension levels are projected for future retirees with a career at average earnings, with Table 5.5 showing that such a career would be expected to lead to a pension level of more than 60 per cent in 20 Member States, and more than 80 per cent in eight Member States. As with low wage earners, short career interruptions have a rather minor impact on future pension levels, with three year breaks due to unemployment or childcare resulting in a decrease in pension levels of less than five percentage points in all but a few Member States.

More substantial drops in pension levels are projected for different forms of early retirement. After a full career at average earnings until five years prior to the SPA, a premature exit from the labour market results in pension levels of less than 60 per cent of average earnings in twelve Member States (due to unemployment) and eleven Member States (due to disability). Even at average earnings, a short career of 30 years will result in comparably low pension entitlements, with pension levels of below 50 per cent for 12 Member States and below 40 per cent in six. Likewise, retirement two years before the SPA leads to a drop in pension levels of more than five percentage points in 15 Member States and, in another seven Member States, the public pension cannot be drawn two years prior to the SPA.

Table 5. 2: Prospective net pension levels for different career variants, average wage earner

MS	AVERAGE WAGE EARNERS									
	Short	Forced early retirement due to..		Career break			Full career from age 25 with retirement at…			Indexation
	30 years	*Disability*	*Unempl.*	*Unempl. 3 years*	*Unempl. 1 year*	*Childcare 3 years*	*SPA-2*	*SPA*	*SPA+2*	*SPA+10*
BE	61.8	67.9	67.9	71.8	72.5	72.0		74.1	76.4	66.7
BG	33.1	68.8		66.9	72.8	72.8		74.6	77.7	63.8
CZ	47.3	50.2	50.5	57.0	59.4	60.7	54.1	60.7	69.6	57.1
DK	67.2	74.1	74.5	78.4	80.0	78.6	75.2	80.9	86.1	79.4
DE	59.5	70.3	66.1	73.4	73.4	78.1	67.0	73.7	83.2	69.7
EE	45.0	51.3	46.8	51.7	53.5	54.5	48.4	55.1	68.8	49.9
IE	64.6	63.7	63.7	67.8	69.5	67.8		70.5	75.4	68.3
EL	38.9	43.1	43.1	46.4	46.4	46.4	43.2	46.4	47.5	37.3
ES		83.5	67.8	84.0	85.7	85.3	60.6	85.8	89.8	76.0
FR	45.7	66.0	66.0	67.4	67.9	75.6	59.1	68.2	72.5	59.2
HR	30.8	39.7	29.1	39.9	41.9	41.4	39.7	42.9	46.8	41.4
IT	64.3	77.0	70.4	84.8	88.2	84.6	80.4	88.3	90.7	76.0
CY	56.3	64.2	63.2	71.2	74.1	68.2	66.2	74.1	77.1	69.0
LV	38.4	42.9	41.5	48.8	50.0	46.4	47.9	50.6	56.7	45.3
LT	53.6	68.4	55.5	67.7	69.9	69.2	61.4	70.5	83.9	65.7
LU	73.4	69.4	73.4	80.7	82.5	82.8		82.8	87.8	77.7
HU	68.8	69.4	76.0	76.4	79.5	81.0		81.0	95.3	68.3
MT	72.6	71.6	71.6	72.9	72.9	72.9	68.2	72.9	73.0	62.0
NL	64.3	86.7	86.7	88.7	90.5	88.7	47.1	91.5	100.3	90.5
AT	69.2	66.0	78.2	83.6	84.7	86.6	75.8	85.2	93.5	74.1
PL	32.8	33.4	33.5	39.5	41.8	42.1	38.8	42.9	46.8	39.1
PT	61.9	65.3	73.9	78.5	78.6	78.4	71.3	83.2	102.9	69.7
RO	20.4	33.2	30.5	31.2	32.6	38.6		38.6	43.3	33.5
SI	48.0	57.4	55.4	67.7	67.4	59.0	56.3	62.9	69.6	59.0
SK	59.0	57.5	53.8	61.4	67.5	67.2	58.8	68.7	76.8	62.4
FI	48.7	48.5	48.5	57.1	58.2	57.9	52.9	58.5	64.1	53.8
SE	47.3	51.5	49.4	53.5	54.3	54.8	48.1	54.7	58.9	50.4
UK	69.5	68.7	68.7	75.8	78.2	75.8		79.5	78.4	74.8

Data source: Member States & OECD; EC calculations. Reference: Average net earnings in the first year of retirement (in the cases of forced early retirement, the reference year is at SPA). If gender differences exist, results for women are reported. No results are reported for career scenarios under which a pension cannot yet be drawn at the assumed exit age.

In contrast, postponing retirement by two years results in an increase in pension levels of more than 10 percentage points in Portugal, Hungary, Estonia and Lithuania although incentives to work beyond the standard pensionable age appear less strong in the 14 Member States where pension levels would increase by less than five percentage points as compared to retirement at SPA.

In short, the projections reveal a wide spread of future pension level outcomes across Member States and according to career patterns or experiences. In terms of the adequacy of pensions in the future, it appears that a substantial part of today's workforce and tomorrow's pensioners might be faced with an increased risk of old-age poverty as pensions become increasingly contingent on less interrupted and longer careers.

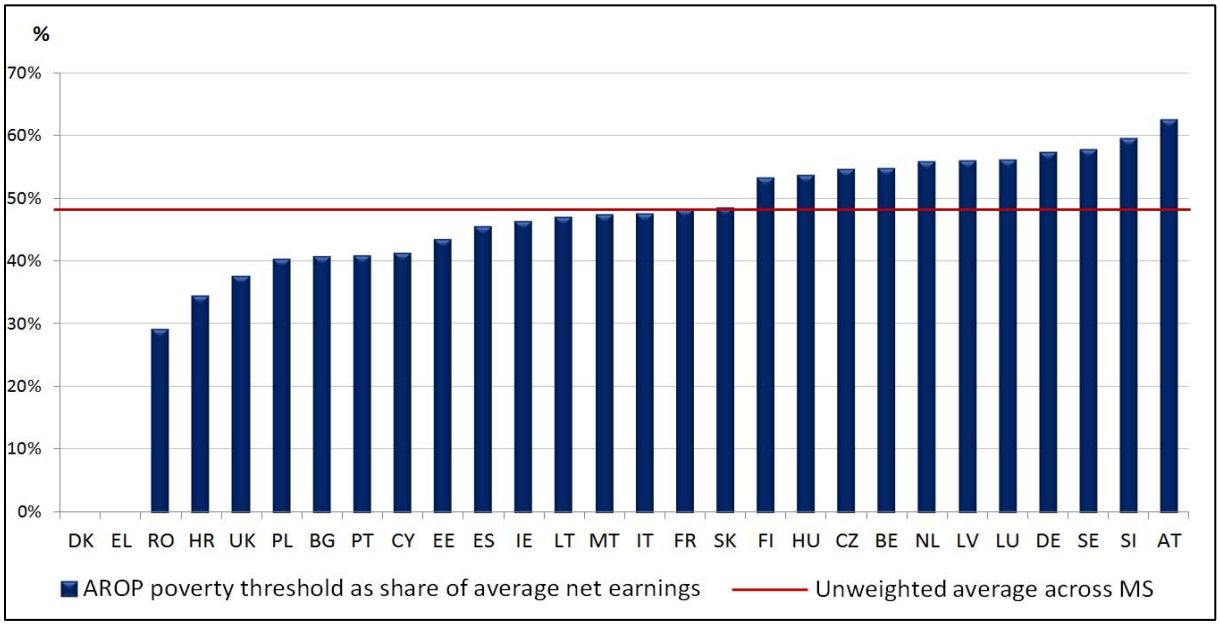
5.3.2. The potentials of microsimulations to assess future risks of old-age poverty

Given the uncertainty inherent to long-term projections, the links between the projected pension levels and the future poverty risks are difficult to assess. However, as a first general indication of potentially vulnerable career patterns, the current relationship between average earnings and the poverty line may be used as a benchmark.

Figure 5.21 illustrates the ratio between the poverty threshold (set at 60 per cent of the median disposable household income) of a single person[4] and average net earnings[5] in 2013. This provides a rough indication of the income level at which people are at risk of poverty– measured as a share of the average net earnings in a given Member State.

This ratio varies substantially across Member States, ranging from 29 per cent in Romania to 62 per cent in Austria, with an unweighted average of 48 per cent. These differences across Member States reflect different forms of income inequality, with a lower value indicating higher *average* earnings as compared to the *median* household income.[6]

Figure 5. 5: Ratio between AROP threshold (single person) and net average earnings, 2013



Data source: EU-SILC (AROP threshold) and Member States (net average earnings).

Given the long projection period and the unknown evolution of labour markets, income distributions and overall living standards, no bold conclusions on *future* old-age poverty should be drawn based on the pension level projections. Indeed it would be a strong assumption to claim that the relationship between average individual earnings and the distribution of household incomes below the median remains constant over time. Nevertheless the results do show how low earnings careers, with long career breaks or early retirement, will result in comparably low pension levels in the future.

The overall development for the population as a whole cannot be estimated from the TRR calculations alone. For a projection of poverty levels in the 2050s, it is also necessary to

4 Based on EU-SILC data, see also section 2.2.

5 As used for the calculation of current net TRRs. Source: Member States.

6 This might in particular be driven by high incomes at the top of the income distribution which pull up the average, but have no impact on the median household income.

understand how frequently different TRR profiles are likely to be found in the aged population. Here, micro-simulation models can provide a valuable complement to the case study based TRR calculations.

Micro-simulations take a different approach, eschewing detailed analyses based on individual cases. Instead, they follow a representative sample approach and focus on maintaining a consistent view of changes over the whole population. They can thereby seek to ensure consistency with other relevant scenarios, such as the demographic and economic projections in the Ageing Report. An additional advantage of microsimulations is their capacity to simulate the medium-term impact of different factors that contribute to the final situation, be they pension reforms, economic assumptions, demographic projections, as well as interactions between them.

Although the microsimulation capacity in the area of pensions has been strengthened in recent years, gaps in coverage mean that comparable and comparative assessment across the EU are not yet possible. However three examples of dynamic microsimulation pension modelling from Belgium, Sweden and Hungary are indicative and illustrative of the possibilities (see Box 5.1).[7] These results show the potential in extending this kind of analysis to other countries, many of which already have their own microsimulation models.

Box 5. 1: The use of microsimulation models to project old-age poverty – examples from Belgium, Sweden and Hungary

In preparation of the 2015 Pension Adequacy Report, three Member States offered to use their dynamic microsimulation models to simulate possible developments of pension adequacy while taking into account the projections and hypotheses of the AWG as much as possible. Contrary to static microsimulation models, of which EUROMOD is the most well-known, the models used in this project are of the "full" dynamic type in that they include a notion of time. In particular, dynamic microsimulations allow assessing the impact of pension reform or changing economic circumstances on pension adequacy in a prospective setting.

Not only was the idea to show the consequences of the AWG hypotheses and projections on prospective income distributions and poverty risks, but also to demonstrate the potential value of using dynamic microsimulation on the EU level. For the study, three indicators were selected (at-risk-of-poverty rate, Gini coefficient, S80/S20) and computed for four subgroups (total population, pensioners, population 65+ and working-age population). A main objective of the exercise was to assess the consequences of the AWG projections and hypotheses on the adequacy of pensions and, in particular, the risk of old-age poverty in the future. Figure 5.22 illustrates the projected AROP for the population 65+ for Belgium, Hungary and Sweden.

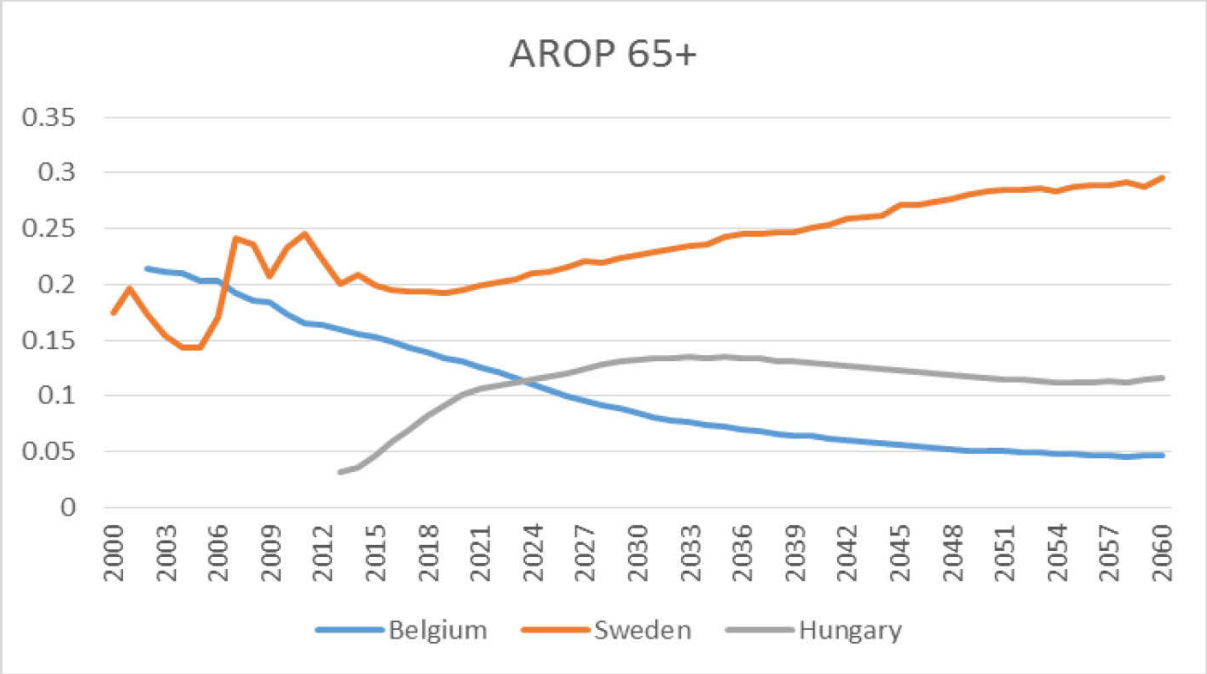
In Belgium, public pension expenditure rises by 3.5 percentage point due to an increasing dependency ratio (+5.8 percent); projected decreases in the coverage ratio and benefit ratio do not offset this. According to the microsimulations, the poverty risk (as well as inequality) among pensioners will decrease, mainly because of increases in the minimum pensions, in the employment rate of women and of decreases in the productivity growth rate.

[7] Gijs Dekkers, Raphaël Desmet, Ádám Rézmovits, Olle Sundberg, Krisztián Tóth (2015): On using dynamic microsimulation models to assess the consequences of the AWG projections and hypotheses on pension adequacy: Simulation results for Belgium, Sweden and Hungary. Report Federal Planning Bureau 27/05/2015.

In Sweden, the rise of the contribution of the demographic dependency ratio is more than offset by the decreasing benefit ratio and employment effect, and projected gross public pension expenditure is expected to decrease by 1.5 percentage points. The benefit ratio and replacement ratio decrease because the AWG assumes an unchanged retirement age. This assumption also causes the risk of poverty among the elderly population to increase by roughly 10 percentage points over the simulation period, from around 20 to 30 percent. The effect on the pensioners' disposable income can be however mitigated by a rise in occupational and private pensions.

In Hungary, gross pension expenditures would decrease by 0.1 percent point over the whole simulation period. The interplay between increasing dependency and decreasing coverage (especially among those aged below 65 due to a rising pension age) would however create a U-shaped pension expenditure and benefit trend in the projection period. Simulations point to shorter careers in the short run. These gradually reduce the replacement rate and the benefit ratio, thereby resulting in increasing poverty risks among the elderly in the short run. In the long run, however, the average career length will increase with a decreasing early age coverage ratio. Hence the poverty risk will stabilize and even show a minor decrease.

Figure 5. 6: Projected at-risk-of-poverty rates, age 65 and above



Source: Dekkers et al. (2015).

Besides depicting poverty scenarios, microsimulations can be used to explore the roots of changes. In Belgium, for instance, the rise in the labour market participation of women has an impact on pensions. More women accruing more pension rights over longer working lives increase pension benefits and thus decrease the AROP for older people. This interacts with an increase in single households; since the pension benefits for singles are reduced less than the equivalent income, poverty among older people decreases.

These results are designed to be complementary to TRR analysis. Whereas the latter focuses on the "consumption smoothing dimension" of pension adequacy, Figure 5.22 depicts the "income security" dimension. Due to this complementary nature, a summary comparison is in order. Taking as an example the TRR case of a 40 year career up until the country's SPA, Hungary's high and slightly increasing value (net TRR 80 percent) seems to mirror the relatively low poverty among the population 65+, followed by Belgium (net TRR rising from 75 to 78 percent) and Sweden (net TRR decreasing from 70 to 55 percent). There is thus at least a qualitative consistency between the TRR

trends and the poverty impact trends as projected in the microsimulations. Finally, the simulation results on the various AWG scenarios for Belgium and Sweden show that increasing the employment of older workers not only results in a reduction of pension expenditures, but also reduces old age poverty risks. Careful policy design can therefore reinforce both sustainability and adequacy.

5.3.3. From TRRs to pension wealth: getting a fuller picture of financial pull factors

Analysis of replacement rates at different ages of retirement do not capture the full impact of public pension schemes in terms of the incentives to retire or remain in work. The comparisons between in and out of work incomes presented in the TRR cases are 'static' ones with a focus on a given point in time. But as decisions about continuing to work or retire also affect the sum of future pension entitlements, a comprehensive analysis should take account of the impact of work decisions on future pension entitlements across the entire retirement period. In economic jargon, the retirement-income system affects the individual's 'inter-temporal budget constraint'.

The concept of pension wealth offers such a more complete measure of retirement incentives. Pension wealth describes the present value of the expected lifetime flow of pension benefits, usually measured at the point of retirement. The present value of these flows depends on the probability of being alive to claim the pension in a given period, which is inferred from mortality tables. The adjustment of pensions in payment that reflect changes in costs or standards of living should also be taken into account ("indexation" or "uprating" policy).[8]

Gruber and Wise (1998, 1999) argue that it is possible to interpret the change in pension wealth that results from working an additional year as an implicit tax or subsidy. This measure directly compares the present value of two alternative flows of income, one from retiring immediately, the other from working an additional year and then claiming the pension. The difference between the two income flows is earnings during the year, adjusted for the implicit tax or subsidy in the pension system, since this is measured relative to individual earnings.

In other words, pension wealth does not change if the additional pension contributions from working another year and the foregone pension are matched by an equal increase in the value of the pension received over the remaining (shorter) retirement period. Such a system offers no incentive to retire earlier, as the discounted value of the additional future pension flows is equal to the (monetary) 'costs' of working one year longer . In contrast, if an additional year of work causes pension wealth to decline, continuing working carries an implicit tax, which is a financial (dis-)incentive that may influence retirement behaviour. Conversely, if pension wealth increases by working an additional year, there is a subsidy to delay retirement.

There have been various attempts to measure the importance of pension wealth when explaining retirement behaviour (see Blondal and Scarpetta, 1999; Gruber and Wise, 1999; Burtless, 2004; d'Addio et al. 2010) and, in each case, the effect has been shown to be statistically significant. However, since the pension wealth implications of retiring early or continuing to work are neither transparent nor easy to calculate, pension wealth should not necessarily be seen as the determining factor in retirement behaviour, where work place and

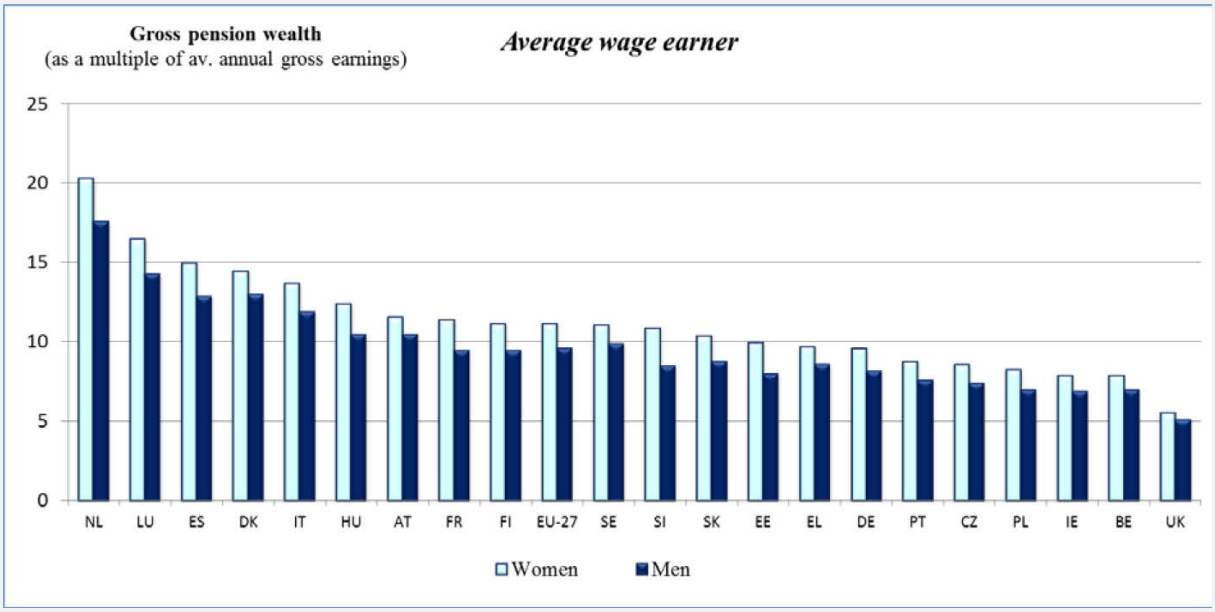
[8] This is defined formally in Queisser and Whitehouse (2006) and OECD (2007, Part I). See also d'Addio, Blanchet, Roger and Savignac (2015) for a more recent analysis.

labour market factors play a large role. Nevertheless it is important to seek to better understand hidden financial incentives in a rational and equitable way. Unfortunately, the data for the EU-28 countries that would allow us to test the importance of pension wealth in retirement patterns are not available. Box 5.2 provides an introduction to the pension wealth calculations based on the OECD pension models, which help illustrate the magnitude of cross-country differences in projected pension wealth.[9]

Box 5. 2: Pension wealth calculations based on OECD pension models

In 'Pensions at a Glance 2013', the OECD provides estimates of prospective pension wealth based on the TRR calculations and country-specific mortality rates by age and sex projected for the year 2060. Using a uniform discount rate of 2 percent and assuming a career from age 20 to the standard pension-eligibility age, the "discounted value of the lifetime flows of pension benefits measured at the point of retirement" is calculated. Figure 5.23 illustrates the prospective **gross pension wealth** for an average wage earner for a selection of EU Member States for which results are available. Gross pension wealth reflects the lump sum that would be needed to buy a flow of pension payments equivalent to that promised by the mandatory pension system in each country. It is affected by life expectancy and by the age at which people take their pensions, as well by as indexation rules. This indicator is measured as a multiple of annual gross earnings by gender.

Figure 5. 7: Prospective gross pension wealth by sex, average wage earner



Source: OECD: Pensions at a glance 2013. A discount rate of 2 percent is applied.

The results reveal substantial differences across countries. For the EU-27, the pension wealth of an average male earner is projected at 9.6 times the average annual earnings. Pension wealth is thereby projected to be highest in the Netherlands with gross pension wealth equal to 17.6 times average earnings, whereas this value is found below 10 in the majority of countries included in this analysis. The figures are generally higher for women, simply because of their higher life expectancy. Pension wealth also tends to be higher for low wage earners than for average earners. It is important to note, however, that these estimates are based on the assumption of a full career, which not all men and women will be able to achieve.

[9] In section 3.5., the information on the current gender pension gap is combined with gender-disaggregated data on the average length of retirement. This allows for a rough indication of current gender differences in pension wealth (see Box 3.5).

The results of a related analysis of pension wealth dynamics (d'Addio et al., 2010) are summarised in Figure 5.24. For a number of countries, the interplay between two factors is assessed: the *level* of net pension wealth at age 60 (for a worker who entered the labour market in 2008 with an uninterrupted career at average earnings) and the *change* in net pension wealth from working an additional five years until age 65. The analysis suggests that, in some countries, the pension system provides a powerful incentive to leave work at the earliest possible opportunity while in others the retirement-income regime is relatively neutral with respect to the age of retirement. In countries where pension entitlements accrued at 60 are high, and pension wealth hardly changes (or even declines) if people work beyond age 60, this suggests a need to review the penalties and rewards built into the system.

Figure 5. 8: Net pension wealth as indicator for incentives to work longer

		Change in net pension wealth from age 60 to 65		
		Low	*Middle*	*High*
Level of net pension wealth at age 60	*Low*		Germany, Ireland. Sweden, the United Kingdom	Czech Republic, Poland
	Middle	Belgium, Estonia	Denmark, Finland	Austria
	High	Greece, Italy, Luxembourg, Portugal, Slovenia	France, Hungary, Spain	The Netherlands, Slovakia

Source: OECD (2011). Pensions at a Glance 2011. Based on OECD Pensions models; see also D'Addio et al. (2010) "Population ageing and labour markets", Oxford Review of Economic Policy.

While financial rewards obviously matter, and getting the retirement incentives 'right' is a central concern in pension reforms, there are many other factors in work places and labour markets that influence the retirement behaviour of older workers. Thus, although appropriate financial incentives to keep people working are likely to be a necessary part of the solution - even if only for equity reasons - they are unlikely to be sufficient to solve the problems of early retirement alone given both the practical workplace problems and the occasional negative perceptions of older workers by employers.

5.4. Comparing PAR projections with those of the 2015 Ageing Report on employment, public expenditure and pension adequacy

The results of theoretical replacement rate and pension level projections depend very much on the assumed evolution of economies and labour markets. The aim of this section is to shed light on some of these assumptions and to then compare the TRR calculations with the 2015 Ageing Report (AR) projections of pension adequacy. The AR projections of employment participation and labour market exit ages constitute crucial parameters for the projection of pension sustainability and adequacy, and are reviewed in sub-section 5.4.1. This is followed by an overview of the AR pension expenditure projections and its components in the light of the TRR calculations. Such comparisons allow the consistency of the findings of the two reports to be compared, and for the trade-off between adequacy and sustainability to be discussed on a comparable methodological basis.

5.4.1. The Ageing Report projections of employment rates and labour market exit ages

Prepared jointly by the Ageing Working Group of the Economic Policy Committee (EPC-AWG) and the European Commission, the Ageing Report provides long-term budgetary projections of age-related public expenditures in the areas of pensions, health care, long-term care, education and unemployment benefits. The demographic and macroeconomic assumptions used for the Ageing Report also served as a basis for the calculation of prospective TRRs. The focus of this sub-section is on the assumed future evolution of employment rates and labour market exit ages.

The Ageing Report projections of labour market participation are based on the so-called 'Cohort Simulation Model' (CSM), which essentially consists of carrying over current employment rates along cohorts as they age (see Box 3.3 in section 3.1.2 for a more detailed introduction to the methodology). Some of the key results of the AR employment projection exercise are presented and discussed below.

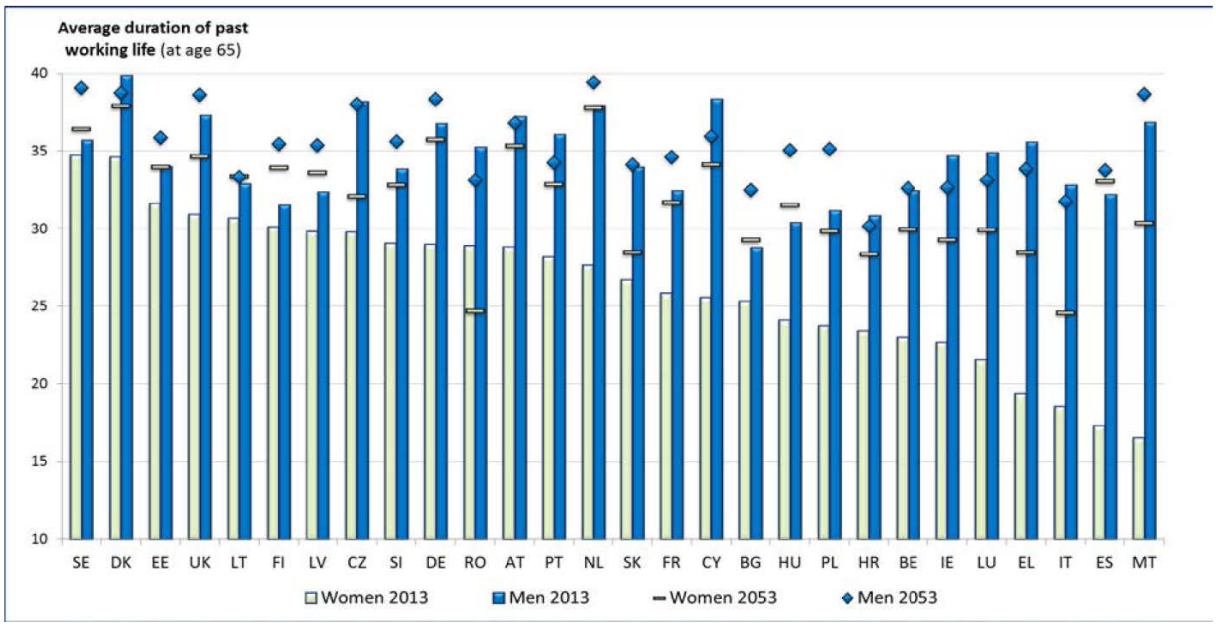
In general, employment rates have been increasing in recent decades, especially among women and, more recently, older workers (see section 2.5 on recent employment trends), and the Ageing Report projects that this trend will continue in the next 40 years. Figure 5.25 illustrates the estimated average duration of past working lives for men and women in 2013 and 2053, respectively.[10] The assumption of overall rising employment rates leads to longer working lives and more contribution years, notably as employment rates after age 65 are also projected to increase.

Among men the increase is moderate and in most countries its impact on the average duration of past average working life at age 65 (AWL-65) is limited. However, an increase by three or more years is projected for six Member States (Hungary, Poland, Finland, Bulgaria, Sweden and Latvia). In 2053, the AWL-65 for men ranges from slightly above 30 years in Croatia to around 39 years in the Netherlands, Sweden and Denmark. The AWL-65 in 2053 is thereby influenced by the current low youth employment rates in countries most affected by the

[10] Note that the indicator only takes worked periods into account and represents averages for the total population, meaning that both those who have worked and those who have been inactive are included. Thus, these figures are likely to differ from administrative data from national sources, as they tend to underestimate the working period behind the average pension request. In addition, these estimates take only employment rates into account, not working time. In as far as some periods are worked part-time, the estimates below overestimate accrued pension rights.

recession, which partly explains the decrease among men in Ireland, Greece, Cyprus and Portugal.

Figure 5. 9: Average duration of past working life at age 65 in 2013 and 2053, by gender



Source: Eurostat, lfsa_ergan, lfsa_ergacob, migr_imm3ctb (<2013); 2015 Ageing report (>=2013); European Commission calculations. Sorted by the value for women in 2013.

Among women, the AWL-65 in 2053 is projected to range between less than 25 years in Romania and Italy to more than 35 years in Denmark, the Netherlands, Sweden, Austria and Germany. The projected increase between 2013 and 2053 is often substantial, as is the case in Spain and Malta, where the past work career is projected to almost double from current low levels. A main driver behind the expected increase in female labour market participation is the assumption of *constant* cohort-specific and gender-specific labour force participation probabilities, which results in an increase in women's employment rates over time as older cohorts with lower labour market attachment are replaced by younger ones with fuller careers.

The calculations of prospective TRRs illustrate how pension adequacy will increasingly depend on longer contributory periods and later retirements in line with rising pensionable ages in many Member States. In order to reflect the impact of pension reforms on incentives to undertake longer working lives, labour market exit probabilities for people aged 55 to 70 were adjusted upwards on a country-by-country basis (see also section 5.2.1 on the prospective AWG TRR case). The resulting projections of the 'average effective exit age from the labour market' confirm that the gaps between pensionable ages and average exit ages are likely to expand over the projection period.

The Ageing Report projections of labour market exit ages do not foresee a continuous increase in the effective retirement ages of people through the linking of pensionable ages to life expectancy. Table 5.6 provides an overview of the future evolution of average effective exit ages from the labour market of men and women. In the EU-28, the average effective exit age is expected to increase by 1.7 years for men and 2.2 years for women between 2014 and 2060. The calculations suggest a major increase in the effective exit ages in the short period from 2014 to 2020, but with average exit ages tending to remain rather stable thereafter. In

particular, constant average exit ages of both women and men are projected in 19 and 18 Member States respectively over the period 2040 to 2060.

Table 5. 3: Average effective exit age from the labour market, by gender

MS	Men					Women				
	2014	Change between			2060	2014	Change between			2060
		2014-2020	2020-2040	2040-2060			2014-2020	2020-2040	2040-2060	
EU	63.6	0.8	0.6	0.3	65.3	62.6	1.0	0.9	0.3	64.8
BE	61.9	0.2	0.0	0.0	62.1	62.1	0.2	0.1	0.0	62.4
BG	63.8	1.0	0.0	0.0	64.8	62.0	0.5	0.0	0.0	62.5
CZ	63.1	0.3	1.5	1.4	66.3	60.7	0.7	3.0	1.9	66.3
DK	65.6	0.6	1.1	0.6	67.9	63.4	1.9	0.8	1.6	67.7
DE	65.1	0.3	0.3	0.0	65.7	64.2	0.4	0.7	0.0	65.3
EE	64.4	0.3	0.7	0.0	65.4	64.2	0.4	0.4	0.0	65.0
IE	64.9	0.4	0.7	0.0	66.0	64.8	0.6	0.7	0.0	66.1
EL	64.4	0.5	2.0	0.6	67.5	64.5	0.3	1.5	0.8	67.1
ES	62.8	2.0	1.3	0.1	66.2	64.1	1.7	0.8	0.1	66.7
FR	60.8	1.5	0.8	0.0	63.1	60.9	1.4	0.8	0.0	63.1
HR	62.4	0.2	1.4	0.0	64.0	61.4	0.5	1.8	0.0	63.7
IT	62.4	3.5	0.5	0.9	67.3	62.1	3.4	0.9	1.1	67.5
CY	64.9	1.5	0.6	0.7	67.7	62.8	2.8	0.8	1.0	67.4
LV	64.6	0.4	0.3	0.0	65.3	64.0	0.7	0.6	0.0	65.3
LT	62.8	0.8	0.7	0.0	64.3	61.9	0.9	1.0	0.0	63.8
LU	60.2	0.0	0.0	0.0	60.2	60.9	0.0	0.0	0.0	60.9
HU	63.0	1.7	0.6	0.0	65.3	63.0	1.4	0.5	0.0	64.9
MT	62.0	1.1	0.9	0.0	64.0	61.0	1.0	0.6	0.0	62.6
NL	65.5	1.1	0.9	0.6	68.1	63.7	0.9	0.9	0.7	66.2
AT	62.5	1.5	0.2	0.0	64.2	61.0	1.2	1.0	0.0	63.2
PL	63.9	2.1	0.0	0.0	66.0	60.2	1.8	3.8	0.0	65.8
PT	64.3	1.0	1.2	0.2	66.7	63.9	1.2	0.9	0.2	66.2
RO	64.0	0.0	0.0	0.0	64.0	62.3	0.1	0.2	0.0	62.6
SI	62.5	1.6	0.0	0.0	64.1	60.0	3.6	0.0	0.0	63.6
SK	61.6	0.3	1.7	2.6	66.2	59.7	2.0	1.6	2.6	65.9
FI	63.6	0.5	0.0	0.0	64.1	63.1	0.8	0.0	0.0	63.9
SE	65.8	-0.2	0.0	0.0	65.6	64.5	-0.1	0.0	0.0	64.4
UK	64.9	0.0	0.7	0.2	65.8	63.6	0.6	1.6	0.0	65.8

Source: The 2015 Ageing Report.

The expected moderate increase in effective labour market exit ages for the majority of Member States reflect the underlying assumptions of constant cohort-specific labour force participation probabilities and a country-specific shift in the distribution of exit ages according to legislated changes in early and standard retirement ages. As a consequence, the model predicts rather constant (or even declining) labour market exit ages for countries with no changes in pensionable ages in the projection period.

As a result, the gap increases between the average exit ages predicted by the Cohort Simulation Model and the legislated pensionable ages for most Member States between 2014 and 2060. This is particularly clear for men[11] as illustrated in Table 5.7, where the progression in pensionable ages from the 2015 Ageing Report is listed next to the calculated gap with respect to the average effective labour market exit age.

[11] A table for women would show similar results.

In 2014, the gap between average exit age and pensionable age ranged from more than three years in Belgium, Italy, Luxemburg and France to average exit ages *above* the pensionable age in seven Member States (Latvia, Estonia, Hungary, Denmark, the Netherlands, Czech Republic and Bulgaria). CSM-based average exit age probabilities that exceed the pensionable age are thus not always consistent with the retirement patterns actually observed in the countries. Hungary, for instance, reports one of the lowest duration of working live and very low older workers employment rate.

Table 5. 4: Evolution of average effective exit ages (EEA) and standard pensionable ages (SPA) between 2014 and 2060, men

MS	2014		2020		2040		2060		Change in gap 2014-60
	SPA	Gap: SPA-EEA	SPA	Gap: SPA-EEA	SPA	Gap: SPA-EEA	SPA	Gap: SPA-EEA	
BE	65.0	3.1	65.0	2.9	65.0	2.9	65.0	2.9	-0.2
BG	63.7	-0.1	65.0	0.2	65.0	0.2	65.0	0.2	0.3
CZ	62.7	-0.4	63.7	0.3	66.5	1.6	69.3	3.0	3.4
DK	65.0	-0.6	66.0	-0.2	70.0	2.7	72.5	4.6	5.2
DE	65.3	0.2	65.8	0.4	67.0	1.3	67.0	1.3	1.1
EE	63.0	-1.4	63.8	-0.9	65.0	-0.4	65.0	-0.4	1.0
IE	66.0	1.1	67.0	1.7	68.0	2.0	68.0	2.0	0.9
EL	67.0	2.6	65.8	0.9	69.9	3.0	71.9	4.4	1.8
ES	65.0	2.2	67.0	2.2	67.0	0.9	67.0	0.8	-1.4
FR	65.8	5.0	67.0	4.7	67.0	3.9	67.0	3.9	-1.1
HR	65.0	2.6	66.8	4.2	67.0	3.0	67.0	3.0	0.4
IT	66.3	3.9	66.8	0.9	68.4	2.0	70.0	2.7	-1.2
CY	65.0	0.1	65.0	-1.4	67.0	0.0	69.0	1.3	1.2
LV	62.0	-2.6	63.8	-1.2	65.0	-0.3	65.0	-0.3	2.3
LT	63.0	0.2	64.1	0.5	65.0	0.7	65.0	0.7	0.5
LU	65.0	4.8	65.0	4.8	65.0	4.8	65.0	4.8	0.0
HU	62.0	-1.0	64.5	-0.2	65.0	-0.3	65.0	-0.3	0.7
MT	62.0	0.0	63.0	-0.1	65.0	1.0	65.0	1.0	1.0
NL	65.1	-0.4	66.3	-0.3	69.3	1.8	71.5	3.4	3.8
AT	65.0	2.5	65.0	1.0	65.0	0.8	65.0	0.8	-1.7
PL	65.3	1.4	67.0	1.0	67.0	1.0	67.0	1.0	-0.4
PT	65.0	0.7	66.4	1.1	67.7	1.2	68.8	2.1	1.4
RO	64.7	0.7	65.0	1.0	65.0	1.0	65.0	1.0	0.3
SI	65.0	2.5	65.0	0.9	65.0	0.9	65.0	0.9	-1.6
SK	62.0	0.4	62.4	0.5	65.1	1.5	66.8	0.6	0.2
FI	65.0	1.4	65.0	0.9	65.0	0.9	65.0	0.9	-0.5
SE	65.0	1.2	65.0	1.4	65.0	1.4	65.0	1.4	0.2
UK	65.0	0.1	66.0	1.1	66.7	1.1	68.0	2.2	2.1

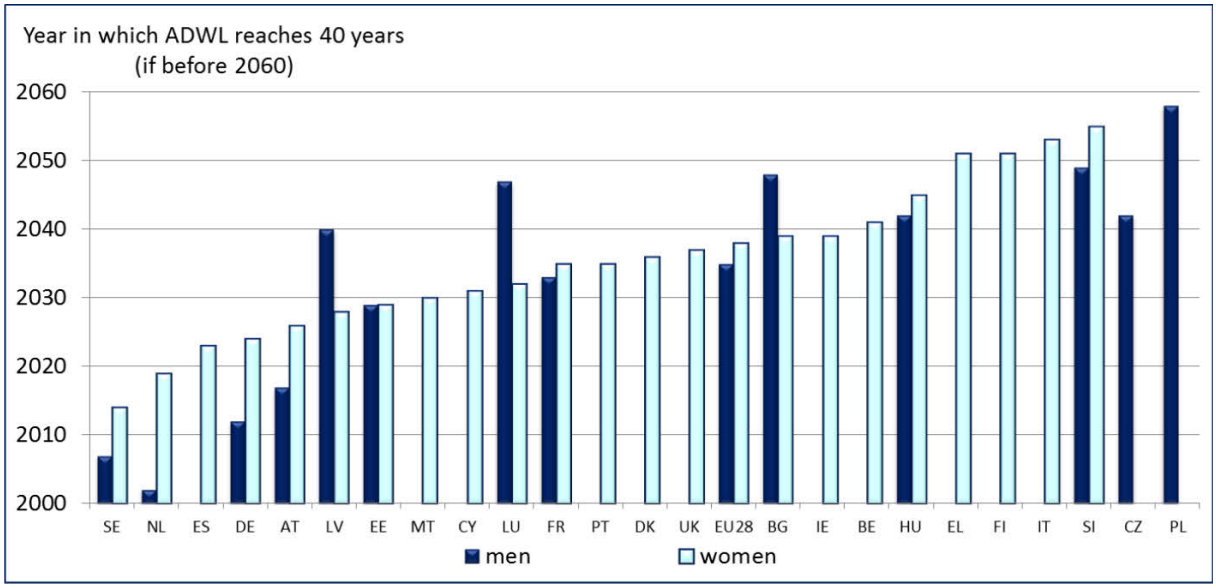
Source: The 2015 Ageing Report (average effective exit ages) and Member States (SPA)

The projected change in the gap between the average effective exit age and the pensionable age over the period 2014 to 2060 is displayed in the last column of Table 5.7. In eight Member States (Austria, Slovenia, Spain, Italy, France, Finland, Poland and Belgium), the gap is predicted to decrease over the coming decades, which would bring the average age of labour market exit closer to the (in some countries increasing) pensionable age. In 12 Member States, however, the gap is projected to increase by more than one year between 2014 and 2060, with a widening of the gap by more than two years in the United Kingdom, Latvia, the Czech Republic, the Netherlands and Denmark.

Member States that have linked the pensionable age to life expectancy appear to be in particular difficulties.[12] As the pensionable age continues to increase in line with life expectancy, they seem to be achieving little beyond a widening of the gap. Consequently, the data suggest that there will be sizeable increases in the 'length of retirement' for women (+2.7 years) and men (+3.7 years) as effect of people continuing to exit the labour market a number of years before they reach the pensionable age.

Projecting career lengths based on recent trends. The trend in labour market exit behaviour projected by the Cohort Simulation Model tends to deviate from the observed evolution of older workers' employment in the recent past. As outlined in detail in section 2.5, the last decade has been a period with continuous and rapid increases in the employment rates of older workers, and subsequently in the average duration of working lives. Between 2000 and 2013, the working lives of men and women lengthened on average in the majority of European countries, with the increases observed being larger for women (3.3 years) relative to men (1.3 years). However, women exhibited working lives almost seven years shorter than those of men in 2000 (29.2 years relative to 36.4 years in EU-28), and still had working lives that were five years shorter in 2013.

Figure 5. 10: Year in which the average duration of working life (ADWL) reaches 40 years if the trend in the period 2000-2013 is continued, by sex



Source: European Commission. Note: If the 2000-2013 trend is assumed, ADWL would reach 40 years only after 2060 in ES, BE, FI, IT, LT, SK (men) and CZ, LT, HR, PL, SK (women), respectively. No results are reported for MT, PT, E, EL, HR and RO for men due to a negative employment trend in the 2000-2013 period. In CY, DK and UK, the AWDL was above 40 years already in 2000.

In order to obtain an alternative estimate of the length of working careers that people would manage to achieve in the future, a computation was made concerning the year in which the duration of working life for EU28 would reach 40 years, if it continued to lengthen at the same annual speed as it had done between 2000 and 2013 (Figure 5.26). If this past trend continues into the future, an average duration of working life of 40 years would be reached in 2035 for men and in 2038 for women in the EU-28. However, differences across Member States are substantial, driven also by the very different evolution of employment participation of older workers in the past decade. Encouragingly the present gender gaps in the duration of

[12] Only Italy manages to decrease the gap between effective and pensionable ages.

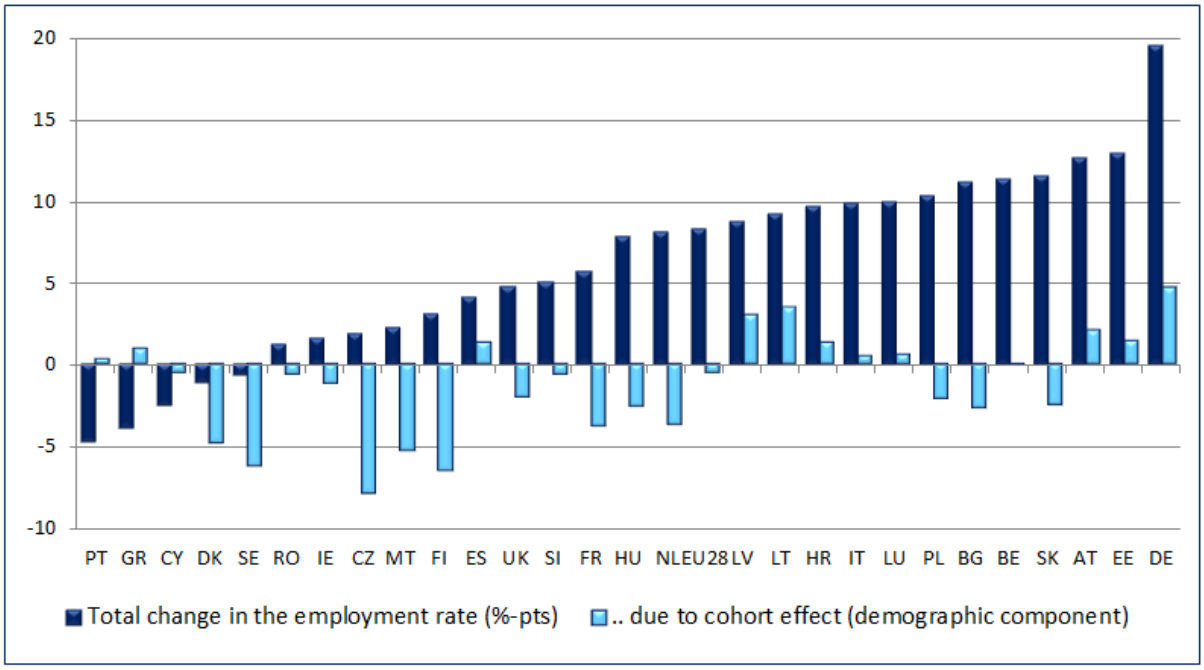
working life has reduced markedly over the last decade (see Figure 2.39) and the convergence in the length of careers is also reflected when the past trend is extrapolated into the future.

Structural factors in the evolution of older workers' employment. However, simply assuming that past trends in the employment rates of older workers can be carried forward neglects the importance of structural factors (i.e. cohort and composition effects) that have played a key role in the recent evolution of older workers labour market participation, but are unlikely to continue for the next 40 years.

As a case in point, the impact of the age composition of older workers on past employment trends is illustrated here. Employment rates of older workers are usually assessed for the age group 55-64 years, which are, however characterised by big differences between the employment rates of cohorts aged 55-59 and cohorts 60-64. If cohorts passing through the 55-59 age range become substantially larger, then the share of younger cohorts within the group of older workers becomes larger, thereby causing the older-workers' employment rate to rise. Such a shift would not imply a genuine increase in the employment rate for every single age-cohort, but be due only to the transitional change of the age-composition towards younger ages within the 55-64 age group.

Figure 5.27 illustrates the change in the employment rates of older workers between 2002 and 2013, expanding the age-range in question to those aged between 50 and 69 years of age. Countries are ordered in terms their observed increase in the employment rate of the age cohort 50 to 69 years, which was particularly remarkable in Germany (close to 20 percentage points). On the other hand, in the Nordic countries which have all had above-average employment rates in absolute terms, the increase since 2002 has been either very moderate or even negative.

Figure 5. 11: Change in the employment rate from 2002 to 2013 and demographic component in employment (50-69 year-olds)



Source: DG EMPL calculations based on Eurostat Europop 2013 population projection, Main scenario, and Eurostat LFS.

In fact the seemingly less favourable development in these countries was in fact due to a structural cohort effect. The light blue bars indicate the impact of the age composition effect on the overall change in the employment rate observed between 2002 and 2013.[13] For instance, it shows that Germany was helped by demographic 'wind on its back' as a quarter of the overall increase in the older-workers' employment rate has been due to the cohort age composition effect. France, on the other hand, would have seen a considerably stronger increase were it not for the demographic 'wind in its face'. In countries like Sweden and Denmark the head-wind was so strong that it turned an upward shift in the older-workers employment rate into a decline.

This age component is a transitional phenomenon of shorter duration, though. As particularly large cohorts from the peak of the post WWII baby-boom pass through the age-range of 50-69, the structural effect related to cohort size is expected to level out. Hence countries that have benefited from favourable demographic conditions would have to make an extra effort to carry forward the currently impressive employment profile of older people into the future.

Annex 5 provides a detailed analysis of how four factors - the age composition; the gender composition; the structure of the economy; and the educational attainment of older workers - have all shaped the rise in older workers' employment rates and exit ages in the past decade, and how these effects will also impact on future labour market developments beyond policy changes and incentives from pension reforms.

In summary, the employment projections of the Ageing Report, as well as alternative attempts to predict the future evolution of labour markets, all point to increasing threats to pension adequacy as a result of insufficient contributory records. While these scenarios suggest that a reasonable alignment between the duration of working life and the contribution period requirements could emerge, the differences between Member States and population groups are large. Even Member States with benign scenarios overall face serious risks of misalignment, which call for work places and labour market changes in order to enable and encourage women and men to work to higher ages before they take-up a pension.

5.4.2. Comparison of TRR calculations with adequacy projections from the Ageing Report

Based on the employment projections outlined above, the Ageing Report provides projections of the fiscal sustainability and adequacy of public pension schemes. This section outlines the Ageing Report projection of public pension expenditure over the next four decades for all 28 Member States, and compares the resulting pension adequacy projections to the prospective TRR calculations.

For EU-28 as a whole, gross public pension expenditure as a share of GDP is projected to be at about the same level in 2055[14] as it was in 2013. However, the projections differ substantially across Member States, ranging from declines of 3.8 p.p. of GDP in Croatia to increases of 3.8 p.p. of GDP in Slovenia (Figure 5.28). Apart from these global projections,

[13] If one keeps the age-specific employment rates for every single-age cohort between 50 and 69 years constant at 2002 levels, this would leave any change in the overall employment rate for the total age-range 50-69 to structural changes of the age-composition within that range.

[14] The Ageing Report does not have data for 2053, the final year in the TRR cases, therefore the closest year that is covered is chosen for our comparisons.

the Ageing Report also provides a decomposition of the main drivers of pension expenditure as set out in Box 5.3, namely the dependency ratio, the coverage ratio, the benefit ratio, and the labour market effects. In this respect, recent pension reforms have aimed at mitigating the expenditure-increasing impact of the first determinant by reducing the effects of the other three.

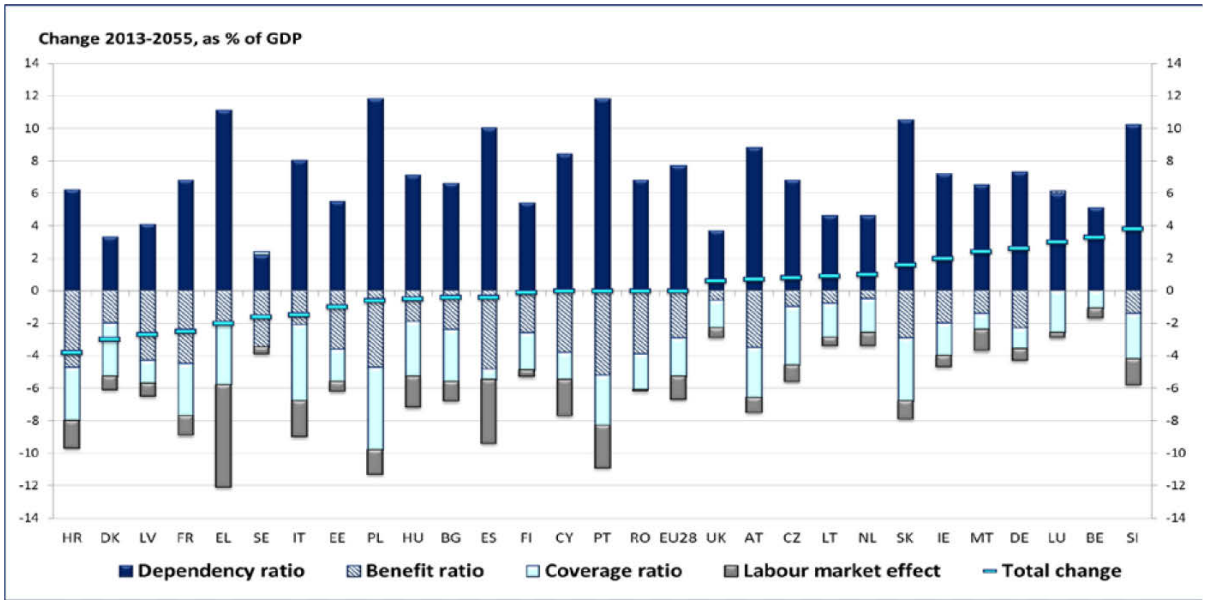
Box 5. 3: Decomposition of public pension expenditure (source: The 2015 Ageing Report)

Changes in public pension expenditure are decomposed into the following four main effects:

- The **dependency ratio effect** reflects changes in the population structure (population 65+ vs. pop. 20-64).
- The **coverage ratio effect** is defined as the number of pensioners (all ages) relative to the population 65+, reflecting (i) the evolution of effective retirement ages; and (ii) future coverage of public pension systems.
- The **labour market effect** describes the impact of LM behaviour on pension expenditure, consisting of the three sub-components (i) labour intensity (hours worked by the working-age population); (ii) employment rate of people aged 20-64; and (iii) career prolongation effect (capturing the effect of working above the age of 65).
- The **benefit ratio effect** reflects the development of the average pension relative to the average wage.

The contribution of these four effects to the future change in pension expenditure is disentangled in Figure 5.28. In all Member States, the increasing share of elderly people relative to the working-age population (the rising dependency ratio) is projected to drive up pension expenditure with the isolated effect of population ageing expected to increase public pension expenditure by 7.7 percent of GDP in 2055.

Figure 5. 12: Change in public pension expenditure projections between 2013 and 2055, total and decomposed into main effects (from the 2015 Ageing Report)



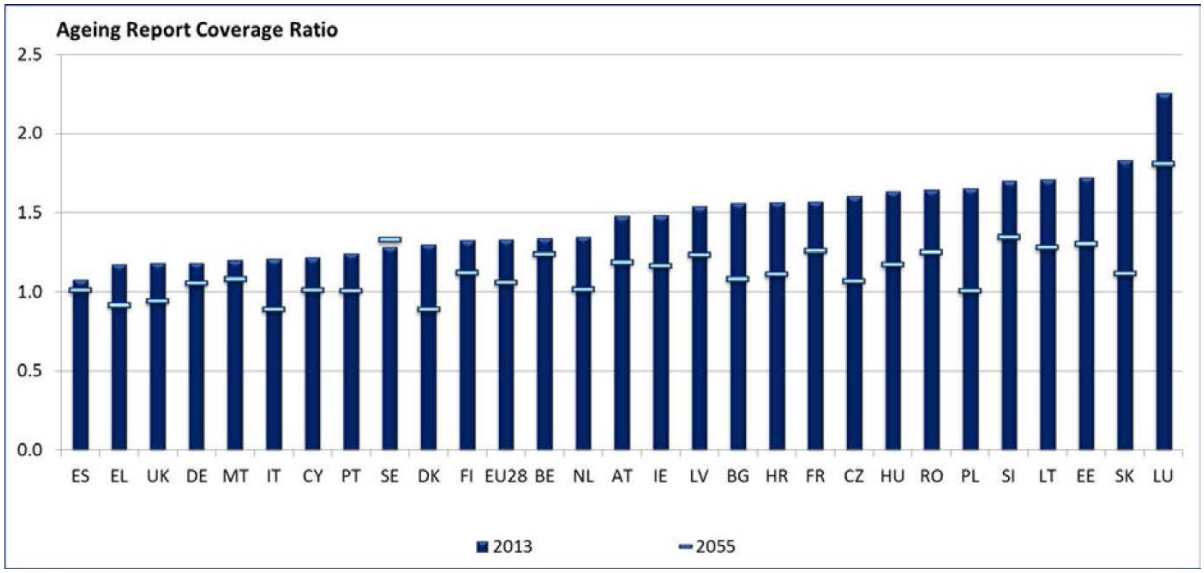
Source: The 2015 Ageing Report.

This rise in expenditure is slightly offset by changes in labour market behaviour, such as overall higher participation rates or increased employment beyond the age of 65, but this is only expected to reduce the pressure on public pension expenditure by 1.4 percentage points

of GDP over the period. The main contribution to the overall stable evolution of public pension spending over the next four decades is found in the substantial decreases in the coverage ratio (-2.4 p.p. of GDP) and in the benefit ratio (-2.9 p.p. of GDP).[15]

Changes in the coverage ratio. The coverage ratio concerns the proportion of people who are supported by the pension system. One way to contain a rise in expenditure is by reducing the number of people who depend on it. Figure 5.29 illustrates the evolution of the ratio between pensioners and residents aged 65 and over between 2013 and 2055. As shown by the horizontal lines, almost all EU Member States are expected to see a reduction in the coverage ratio, despite the fact that the increase in female labour participation will result in a higher proportion of women having accrued pension rights and thereby have a positive impact on the coverage ratio.[16]

Figure 5. 13: Ratio between the total number of pensioners and residents aged 65+, in 2013 and 2055



Source: The 2015 Ageing Report. Note: sorted by the decrease in coverage ratio over time.

The decrease in the coverage ratio is mainly driven by rising exit ages from the labour market, leading to more people around the age of 65 relying on work income. While this is a welcome development, there could be a rise in the take-up of social benefits to bridge the time from labour exit to the pension age if rising SPAs are not matched by an equivalent increase in the duration of working lives. As shown in the previous section, the gap between the average labour market exit age and the standard pensionable age is projected to increase substantially in a number of Member States.

Finally, the trend towards a decreasing coverage ratio could also be due to more restricted access to benefits, including disability pensions, or to an increase in the proportion of people who do not have access to old-age benefits at all. For instance, section 5.1 indicated how, in

[15] Note that the difference between the total change in public pension expenditure and the contributions of the four main effects is explained by interaction effects equal to -0.4 p.p. of GDP for the EU-28.

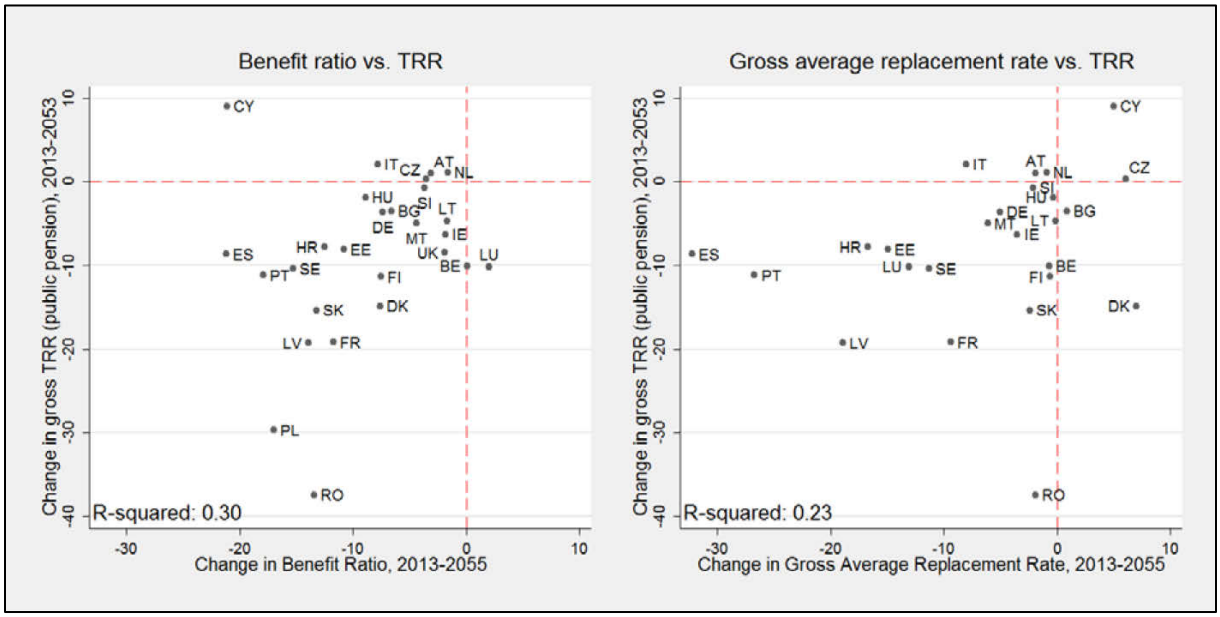
[16] Note that the picture below is not necessarily comparable across Member States as the number of pensioners is from the viewpoint of national pension systems. For instance, these will have to pay also for foreign workers who might have returned to their country of origin after a career abroad. Luxembourg is a clear case in point, as it will be paying about 3 pensions for each two residents aged 65+, due to the large number of people who work in the countries and live in neighbouring countries.

several Member States, the proportion of older migrants is set to rise substantially and hese people are less likely to have acquired rights to a pension through contributions or residence requirements.

Changes in the benefit ratio. The second substantial factor that contributes to containing pension expenditure in the EU-28 in the future are reduced benefits relative to average wages. In the Ageing Report, two indicators of pension adequacy are provided: the Benefit Ratio (BR), which is defined as the average pension benefit relative to the economy-wide average wage, and the Gross Average Replacement Rate (GaRR), which relates the average first pension to the economy-wide average wage at retirement (See Box 3.1 for a more detailed introduction).

In EU-28, the benefit ratio is projected to decrease by 8.8 percentage points from 44.0 in 2013 to 35.2 in 2055, while the gross average replacement ratio is expected to decline by 6.6 percentage points from 42.5 in 2013 to 35.9 in 2055. The fact that most Member States have enacted reforms that are expected to reduce benefit levels from the public pension system is reflected in both of the adequacy indicators from the Ageing Report. Dependent on the replacement indicator, the only exceptions are Bulgaria, the Czech Republic (GaRR), Belgium and Luxemburg (BR), where the ratio is projected to increase slightly in the next 40 years.

Figure 5. 14: Changes in the Benefit ratio (2013-2055) and the Gross average replacement rate for earnings related public pensions (2013-2060), compared to the change in the gross TRR (public pension) under base case II (2013-2053)



Source: Member States and OECD (TRR), 2015 Ageing Report (BR and GaRR).

In Figure 5.30, the projected changes in both AR adequacy indicators are compared to the 2013-2053 change in the gross theoretical replacement rate for public pension schemes.[17] The three different measures of future changes in pension adequacy provide a generally consistent picture.[18] Despite the different concepts behind the indicators with regard to their coverage of

[17] TRR for mandatory DB and NDC schemes under base case II (40 year career up to the SPA).

[18] "Outliers", such as Cyprus under the benefit ratio or Romania under the gross average replacement rate, can be explained by different schemes that are included under the different indicators

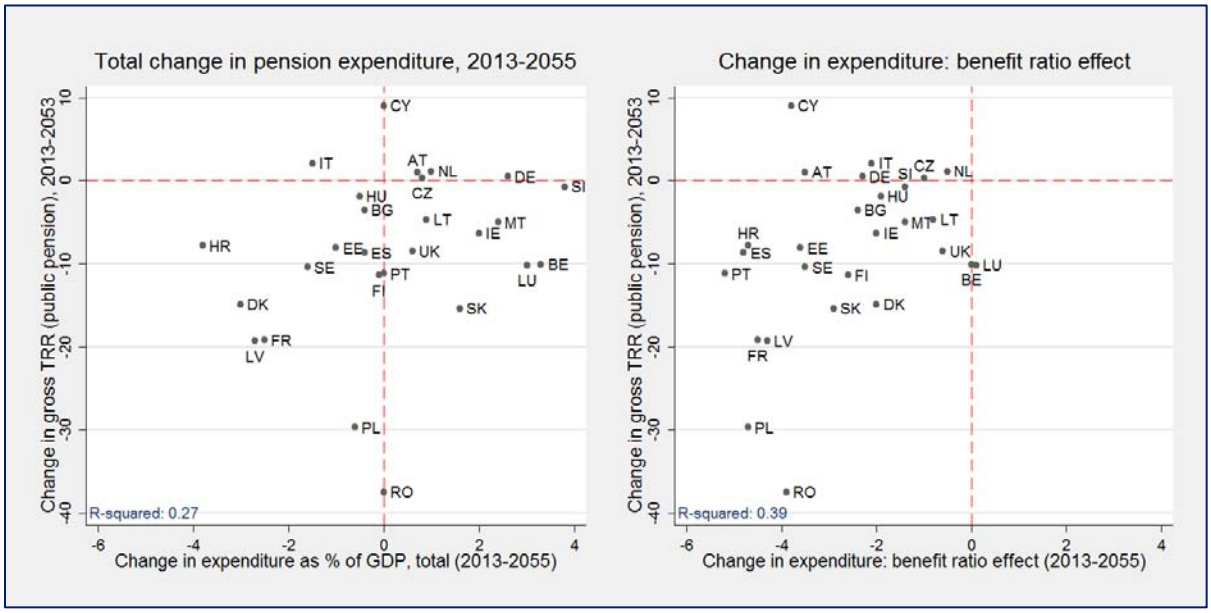
pension schemes and their time horizons, a downward trend of future pension levels is foreseen for the majority of Member States.

Consistently across all three replacement rate concepts, future pensioners are expected to receive relatively lower pensions from public pension schemes compared to the current generation of retirees. The expected decline in theoretical replacement rates for public pensions is of a similar overall magnitude as the decline in the two AR adequacy indicators, with an average (unweighted) decrease of 8.7 percentage points across the 28 Member States.

Success in containing public pension expenditure in the long run, as projected by the Ageing Report, is thus mainly achieved through reduced benefit levels in the future. This is confirmed when comparing the projected evolution of public pension expenditure with the change in the gross TRR from public schemes. The left panel of Figure 5.31 compares the total change in pension expenditure between 2013 and 2055 to the evolution of gross TRRs for public pension schemes between 2013 and 2053.

There is no clear link between the change in replacement rates and the projected evolution of pension expenditure, with the latter being also dependent on demographic and labour market developments. Thus Member States with a projected increase in pension expenditure might still be confronted with a projected reduction in public pension adequacy (United Kingdom, Lithuania, Slovakia, Ireland, Malta, Luxemburg, Belgium, Slovenia).

Figure 5. 15: Projected changes in public pension expenditure 2013-2055, total and benefit ratio effect, compared to the change in the gross TRR (public pension), base case II



Source: Member States and OECD (TRR), 2015 Ageing Report (expenditure projections).

However, the decrease in future replacement rates is clearly mirrored in the projected development of the benefit ratio (see right panel). Reductions in expenditure from curbing the benefit ratio go hand-in-hand with projected TRR decreases. Generally speaking, replacement rates tend to decrease more in Member States in which reductions in future pension expenditure are achieved through a decline in the benefit ratio.

Changes in the Labour Market. As illustrated in the previous subsection, labour participation is projected to increase in almost all Member States, but with complex

consequences for pension expenditures and adequacy. More labour participation means that more people (and, in these projections, especially more women) will gain the right to a pension on the basis of longer contributory periods. This increases adequacy but it also increases expenditure in the future. Since this impact on pension expenditure is expected to be more than compensated by an increase in GDP caused mainly by an increase in manpower, though, pension expenditure as a proportion of GDP is expected to decrease.

The employment scenarios in the 2015 Ageing Report (AR) also point, however, to increases in the number of pensioners whose working lives will have been short, thereby potentially increasing poverty and inequality at older ages. If women continue to be the main drivers of fuller and longer working lives, as the scenarios suggest, the gender gap in pensions will decrease, making up for the expected weakening of the derived benefits (survivors pension) that hitherto have helped mitigate female poverty at older ages.

Overall, the results from the 2015 Ageing Report indicate that, when it comes to raising effective exit ages, pension reforms alone cannot achieve this. These results thus point to the need for further reforms, with a particular focus on changes at the workplace and within labour markets more generally in order to encourage and enable women and men to work to higher ages and earn entitlements to adequate pension benefits.

5.5. Major risks to future pension adequacy

All pension arrangements entail exposure to internal and external risks. Different types of pension schemes - pay-as-you-go versus pre-funded schemes, or flat-rate versus earnings-related schemes - differ in their risk profiles, with particular sensitivities and inherent weaknesses. Beyond such differences in the overall conception and design, risks in pension arrangements will depend on their detailed features, the quality of their implementation, and how well they match key aspects of the national context.

Importantly, many risks cannot be removed, but only mitigated or balanced against each other. Reforms that aim to remove or reduce risks in present arrangements – such as ageing leading to excessive increases in public pension expenditure - may also introduce new or higher risks in other areas. Chapter 4 discussed some of the political risks associated with the reductions in pensions, including some of the major risks to future pension adequacy emanating from the direction of longer-term reforms in many Member States.

For instance, when reforms seek to take the pressure off public pensions, to diversify risks or maintain or raise the overall adequacy of pension provisions by promoting prefunded private pensions, they also make pension adequacy far more dependent on the volatilities in financial markets. Chapter 4 and the country profiles highlighted how different national pension arrangements – whether pay-as-you-go or pre-funded - have been affected by the financial, economic and fiscal crisis since 2008 with special attention paid to the risks associated with the financing and organisation of mandatory private pensions in some Member States.

Similarly, when reforms strengthen the links between pension entitlements and contributions based on earnings from work by increasing the contribution period and raising the pensionable age, they import some of the risks associated with workplace practices and labour markets. The analyses in chapters 5.2 and 5.3.1 specified the magnitude of how replacement

rates and benefit levels for certain income patterns and career types may be affected by the risks inherent in reformed national pension systems.

Pension schemes also differ in the extent to which they pass some of the risks to which they are exposed onto their beneficiaries. Classical DB schemes - whether pay-as-you-go or pre-funded - shielded individual beneficiaries from important parts of the risks in labour and/or financial markets. The more entitlements become defined by contributions, however, the more beneficiaries come to share in, or fully bear, some of these risks.

What is important is to detect the new risk profiles that result from reforms and to take appropriate measures to mitigate such risks and/or develop instruments to address them should the problems actually occur. In that respect the two main risks to future pension adequacy from recent reforms are

1. those that emanate from the reduction in the relative value of pension benefits due to tighter links with contributions and weaker valorisation and indexing; and
2. those that result from career patterns that fail to match rising pensionable ages and comply with increases in contribution periods.

Since the latter results from a key trend in recent reforms (see section 4.4) it is given particular attention in the following analysis.

5.5.1. Risks linked to reductions in the relative value of pension benefits

In the 2015 Ageing Report, the decomposition of factors that reduce the impact of ageing on public pension expenditure demonstrate that an important part of the gains in sustainability can be explained by reductions in the 'benefit ratio', which measures the relative value of pension benefits compared to average wages.

Reductions in the indexation of pension benefits. This evidence fits with the results of the review of recent pension reforms in chapter 4 which revealed the high frequency of reductions in the indexation, and the widespread move towards contribution-determined benefits. In the current low-growth low-inflation environment, the risks resulting from weak indexation are small. If economic growth were to accelerate, however, indexation linked to prices will not offer sufficient protection. The ‘10 years after retirement’ TRR case shows that inadequate indexation arrangements present an increasing risk to income adequacy for pensioners as they age. Over a short period of years with high rates of economic growth, the relative value of pension benefits can be significantly diminished by wage developments.

Lower replacement rates from public pension schemes. The decomposition of the changes in TRR levels (presented in Figures 5.15-5.17) confirms that, in a majority of Member States, the net TRRs for public pensions will decline in the future. However, across the EU there are many differences foreseen with regard to the evolution of net TRRs for public pensions between 2013 and 2053. For a male worker with average earnings and a 40-year career up to the national SPA, changes range from a drop of more than 30 percentage points in Romania and Poland to an increase of 9 percentage points in Cyprus. There are a total of 22 Member States where such a career would lead to a lower net TRR for public pensions in the future, and 5 where it would result in a higher.

High income earners will be more affected than workers with average and low income as net TRRs for them will be declining in 24 Member States. The least affected tend to be average income earners, while net TRRs under a full career scenario will be declining for low income earners to a greater extent than foreseen for average earners in 14 Member States. Hence it would seem that many recent reforms have paid only limited attention to maintaining the net replacement rate and poverty protection for low-income earners.

The extent to which people will be able to compensate for the reduction in net TRRs from 2013 to 2053 by working some years longer is not fully clear from the TRR case examples. While working two years beyond the SPA and postponing pension take-up will be rewarded by extra entitlements in most Member States, such an extension of working life will not, in general, be sufficient to compensate for the decline in net TRRs for a 40 career up to the SPA.

A greater role for pre-funded pension schemes increases the risks for individual beneficiaries. The decline in net TRRs from public pay-as-you-go schemes in 22 Member States is projected to be largely, or somewhat, compensated by rising entitlements in statutory funded schemes in eight Member States and by occupational and other supplementary schemes in four others. A further four Member States envisage that the share of benefits from occupational schemes will decrease. Overall this implies that pension income will become more dependent on developments in financial markets in almost half of the Member States. The analysis of theoretical replacement rates in this report is based on the assumption of a uniform real rate of return of 3 percent from 2017 onwards (see Annex 3 for further details). Exemplary evidence on the degree to which future pension entitlements will depend on investment returns is presented in Box 5.4.

Box 5. 4: Private pension funds and the degree of investment risk: historical evidence applied to selected OECD countries

The OECD has analysed the past distribution of real rates of return for an illustration of the investment risk inherent to private pension funds.[19] Based on historical data from eight OECD countries (Canada, France, Germany, Italy, Japan, Sweden, the United Kingdom and the United States), the analysis revealed a median real rate of return of 4.3 percent annually for a portfolio equally split between equities and government bonds. Some 10 percent of the time, the real return is expected to be less than 2.5 percent, whereas it is found at more than 6.0 percent in the top decile of the distribution of returns.

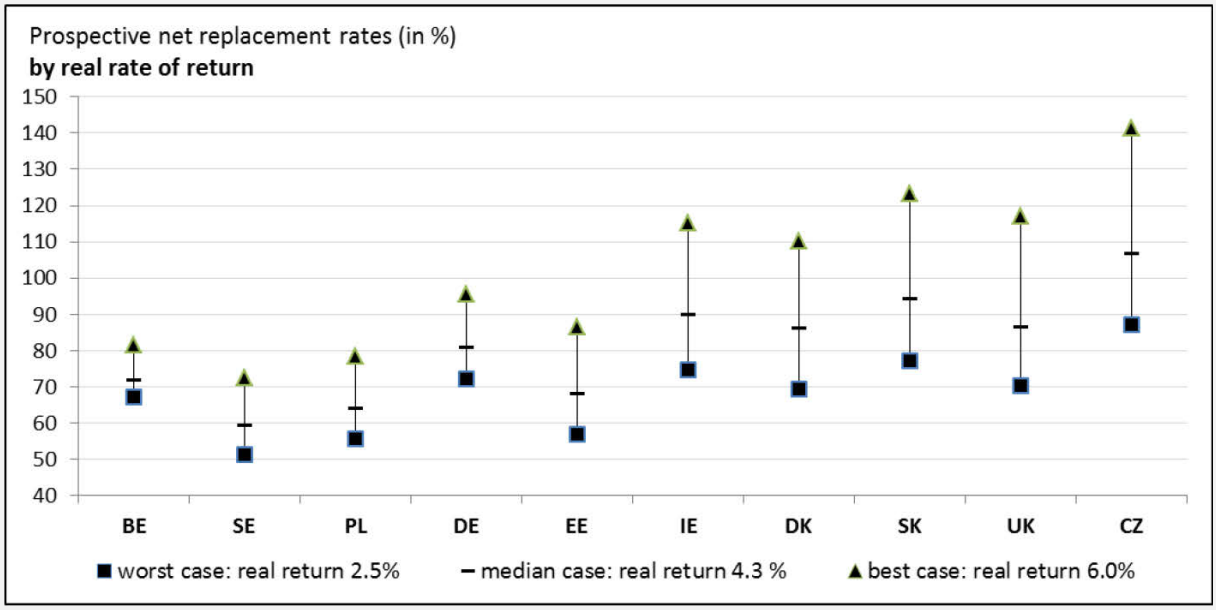
The way in which the investment risk impacts on retirement incomes then also depends on the structure of the retirement-income package as well as the taxation system in place. Private pensions often represent only a fraction of the overall retirement-income package, with many benefits (in particular from public earnings-related schemes or basic pensions) being unaffected by investment returns. Further, progressive tax systems function as an automatic stabiliser of retirement incomes, as lower returns from funded schemes would result in a more than proportionate reduction in tax liability.

To illustrate how different investment outcomes would affect future pension income, the historical rates of return are applied using the OECD pension models. For the three different rates of return described above, Figure 5.32 reports the net replacement rates for an average wage earner[20] for 10 EU Member States with mandatory DC schemes or a wide coverage of voluntary private plans.

19 OECD, 'Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries', p. 144 ff.

20 It is assumed that the worker started his career in 2012 and will retire after a full career at average earnings from age 20 to the standard pension-eligibility age.

Figure 5. 16: Selected net prospective replacement rates, average earner, by rate of return



Source: OECD Pensions at a Glance 2013. Note: Sorted by the range in replacement rates for different real rates of return.

It is important to note that the results from the OECD 'Pensions at a Glance' are not directly comparable to the prospective TRRs reported in this report, as different macro-economic assumptions and career profiles are used. Rather, the results shown in Figure 5.32 help illustrate the degree to which future pension incomes will depend on financial market developments. The projected net replacement rates can differ substantially between different rates of return, depending in particular on the importance of funded schemes in retirement incomes and the stabilising impact of the tax system.

A greater role for occupational schemes is also liable to raise the exposure to labour market risks. The degree to which projections expect the decline in public pay-as-you-go entitlements to be compensated by the growth in benefits from funded schemes varies. In six Member States the growth in net replacement rates from funded benefits will fail to match the decline in net TRRs from public pay-as-you-go schemes, and at least seven Member States do not envisage expanding funded schemes to limit the effects of the drop in net TRRs from public schemes.

Regulatory reforms have generally improved the internal risk mitigation and shock absorption mechanisms in pre-funded schemes. Moreover, many private schemes are seeking to lower their sensitivity to market volatilities by moving from DB to DC designs and thus shifting the investment risk to scheme members. Nevertheless the costs of funded schemes are generally challenged by the perspective of a long-term continuation of the current low interest climate in the main financial markets.

European initiatives and recommendations to expand cost-effective complementary retirement savings have so far been much less successful than efforts to stimulate pension reform and longer working lives. Before the crisis most Member States envisaged a significantly larger role for pre-funded pensions in their overall pension provision. However the crisis has compelled a number of them to scale back or abolish their earlier ambitions. Moreover, together with the impact of the financial crisis on funded pensions, this roll-back of mandatory private pensions seems to have soured the political climate for complementary retirement savings in a number of Member States.

Overall the economic climate for expanding pre-funded pensions has become rather difficult. Households have little room for extra savings, public budgets have very limited room to take on tax subsidies for complementary retirement savings, longer term interest rates are at a historic low, and national economies are seen to be far more in need of greater spending than more savings.

5.5.2. Risks linked to obstacles to longer working lives in work places and labour markets

The subchapter on TRRs confirmed the importance of attaining a full contributory record and working until the pensionable age. The analysis of pension levels identified where the key risks lie, and which career profiles are most likely to be affected. In many Member States, forced early retirement five years before the SPA, and short careers of 30 years, will entail a major risk of inadequate incomes in old age for low wage earners, just as it will imply significant replacement rate reductions for average wage earners. By contrast, short career interruptions due to unemployment or maternity are foreseen to mostly have a rather minor impact on future pension levels in most Member States.

To gauge the severity of these risks it is important to know more about the prevalence with which they are likely to occur as result of current and future practices at the workplace and in labour markets more generally. Building scenarios, which could serve as projections of the likely future incidence of these risks of forced early retirement and short careers, is beyond the scope of this report but it is still possible, on present trends, to identify the profiles of people most likely to be affected, including the relative risks to women and men.

Unemployment and atypical work risks resulting in insufficient contributory periods. In several Member States young people have, since the onset of the crisis, been among those most affected by long-term unemployment. Moreover, when they do get a foothold in the labour market it is often through short-term or otherwise precarious work contracts involving low wages and no pension coverage, with consequent longer term implications for their pension entitlements. In chapter 5.1 non-EU migrants were also identified as a population group that was increasing and also particularly exposed to the risk of developing only a shorter contribution record. For first generation non-EU migrants this may both be due to a late arrival and the length of time required to secure entry to the regular pension covered parts of the labour market. For second generation cohorts general problems with educational, social and economic integration can also lead to the danger of developing only shorter contribution histories.

Gender differences in labour markets narrow only slowly. Chapter 3.5 documented how gender gaps in remuneration, working hours and duration of working lives in combination with pension system features have led to major gender gaps in the pension entitlements among the present population of retirees. Chapters 2.5 and 5.3 emphasised how, in the past 15 years, employment rates (notably among the 55-64 year olds), exit ages, and the duration of working lives of women, have increased far faster than for men in nearly all Member States. However, while some gender disparities in employment and retirement are narrowing, gender gaps in remuneration and working hours are persisting. Hence, on present trends, the risk of ending working life with a pension entitling career of only 30 years is something that would apply to far more women than men, with the higher risks for women stemming from a larger frequency and length of career interruptions due to caring duties.

Beyond shorter careers, the gender division of labour in relation to caring and housework also leads to a much higher frequency of part-time work and hence to significantly lower earnings-related pensions. Experiences from Member States show that, even where incentives to work full-time are strong and well-publicised, a significant share of women continues to work part-time. Thus, even if many more women build entitlements in contributory schemes as a result of their increasing employment rates, a sizeable proportion may end up not having accrued rights that entitle them to anything more than a minimum pension. Moreover, though the risk of forced early retirement five years before the SPA may occur with the same frequency for both women and men, women are more likely on present trends to be low-wage earners and therefore more affected by the resulting risks of low pension levels and poverty.

In more general terms, the obstacles to longer working lives in workplaces and labour markets can be indicated by factors on both the supply and demand side. Supply side factors that may make it difficult for older workers to continue working until the pensionable age include reduced 'workability' (perhaps for reasons of life-style or work-related health problems) and reduced 'employability' (perhaps due to outdated skills, seniority pay, stagnating productivity and reduced adaptability). In most Member States the extent of awareness of supply side obstacles and the scale of policy efforts to address them have been much greater than those addressing hindrances on the demand side, despite their common, and often joint, importance.

Difficult demand side factors can include a lack of flexibility in working arrangements, negative perceptions of older workers and general age discrimination affecting processes of hiring, firing and promotion, or simply the absence of appropriate age-friendly workplace practices. A relatively overlooked, but important obstacle on the demand side concerns different experiences and practices with respect to the retention and rehiring of older workers. Having reviewed OECD research of policy initiatives to promote longer working lives across a number of countries, Anne Sonnet from the OECD's employment unit drew the following conclusions at a recent workshop on Delivering on longer working lives[21]:

- *It is timely in the wake of the recent economic crisis, and the rise in the unemployment among older workers, to pay particular attention to demand-side issues…*
- *In particular, if individuals lose their job in their late 50s, they are most at risk of long-term joblessness. They will likely face a chaotic transition to retirement, being too "young" to retire but too "old" to find a new job.*
- *Therefore, more focus should be been given to improving the hiring of older workers…*

Much of the documentation for these points is condensed in Figure 5.33, which shows that, while retention rates after the age of 60 differ between Member States, the hiring rate of workers aged 55-64 is low in all countries. On the one hand, longer working lives are fully possible as long as they occur through retention, with employers being satisfied to employ older workers who they had hired at a younger age, and with the age threshold for laying-off

[21] http://ec.europa.eu/social/main.jsp?langId=en&catId=88&eventsId=1020&furtherEvents=yes

people, who have been on the payroll for a long time being relatively high. On the other hand, thresholds for recruiting older workers are much higher than for prime-age workers.

Figure 5. 17: Retention and hiring as a percentage of employees in the reference group, 2013

Source: OECD (2015), Working Better with Age: Poland, OECD Publishing, Paris. Notes: The retention rate refers to employees currently aged 60-64 with tenure of 5 years or more as a percentage of all employees aged 55-59 5 years previously. The hiring rate refers to employees aged 55-64 with job tenure of less than 1 year as a percentage of all employees aged 54-63 the year before.

The results indicate that labour markets are often largely closed for people aged 55 or older in all the 21 Member States represented. Moreover, there is nothing in the employment data for the seven EU Member States not included to indicate that the situation is any better there. This de facto absence of a late-career labour market (i.e. one where people 55+ can be hired) in most Member States presents a major obstacle to efforts to promote longer working lives and higher employment rates of older workers.

5.6. Mitigating future risks to pension adequacy

The reduction in the relative value of pension benefits, rising pensionable ages, and increases in contribution periods, have been identified as the major risks to future pension adequacy from recent reforms. This section provides a brief overview of available options in pension and labour market policies to address these risks.

5.6.1. Mitigating adequacy risks linked to reductions in benefit levels

Minimum income provision in old age. As demonstrated in the '10 year after retirement' TRR case, insufficient indexation present an increased risk of income adequacy to retirees as they age. If Member States are to avoid the relative value of pension benefits dropping below acceptable levels, they will need to both monitor developments and develop appropriate fiscal space for possible action. To the extent the risks associated with changed and reduced indexation mechanisms turn into poverty risks for older pensioners, notable those with low incomes in their active years, Member States might be able to compensate the worst affected by income-tested pension supplements and special allowances.

Actuarially fair incentives for longer working lives. Regarding the general decline in net replacement rates in many countries, it will be important to give people the opportunities to

recoup the loss. In this respect, a first priority should be to ensure that working longer and delaying pension take-up will be rewarded. Member States could, for instance, develop examples that illustrate how declines in net TRRs could be recouped by working a number of years beyond the SPA/required contribution period and deferring the pension claim.

Cost-effective provision of pre-funded schemes. In several countries it would also be important to create better opportunities for people to make up for some of the decline in the net TRRs of public pension benefits through complementary retirement savings. Notwithstanding present difficulties for the promotion of pre-funded schemes, policy makers wishing to go down this route could draw on the experience of those Member States that have developed cost-effective vehicles for retirement savings in occupational and third pillar pension schemes.

Facilitate employment after retirement. Easing limits on combing work income with pension benefits represents another way to enhance opportunities for people to acquire supplementary income in old age that can help compensate the declining value of public pension benefits. As discussed in section 2.5, the differences across Member States are still large when it comes to the possibilities to combine pension benefits with earned income or the degree to which public pensions can be deferred beyond the standard statutory retirement age.

In order to enable people to make **the right choices** on how long to work and how much to save for an adequate pension income, it is important to have easy-to-understand information on what they can expect. Efforts at making European pension systems transparent and easy to understand for future pensioners are often taking place in parallel to reforms of the same systems. The changing rules pose a challenge for communication. Awareness of pension rights is of particular relevance in a context of a growing shift away from traditional defined-benefit schemes, as the risk is at least partially transferred to members, and growing labour mobility that will result in more workers having pension rights in multiple schemes. Box 5.5 provides an overview of pension information policies in Member States.

Box 5. 5. Pension information and pension awareness

All Member States have put in place legislative provisions that ensure the right to information about the rules governing pensions and, increasingly, the state of individual entitlements, however the approach varies significantly from country to country.

In the majority of Member States, members of statutory pension schemes are entitled to individual information about the prospective pension amount. While some countries make it available from the early stages of working life, others only start providing it at 50 (Finland), 55 (Germany, France) or 59 (Malta) years of age. Most countries provide such information only upon request, while some include it in pension statements that are circulated to insured persons. The frequency of pension statements varies from annual (Germany, Sweden) to every five years (France). In Belgium, the statement is automatically only sent upon reaching age 55. At the same time, future pensioners typically can also receive their individualised projections at any time upon request or on-line.

In a majority of Member States, pension information is provided by the public social security agency. Private providers are responsible for first-pillar pension information in Denmark and Finland, while in such countries as Italy, Latvia, the Netherlands, Sweden and UK public and private actors have developed joint pension information tools.

Some Member States, such as Germany, France, Poland, Sweden and the Netherlands, communicate two or more scenarios of the prospective retirement income, reflecting such variables as take-up age

and wage development. In addition to pension statements, a growing number of Member States provide an on-line pension calculator, allowing interested users to test the impact of different variables on their future benefits.

Developing pension communication policies include continuous efforts to balance the level of detail, which can be useful for some recipients but confusing for others. Thus, in Sweden, different wage development scenarios were removed from the pension statement after being evaluated as too confusing. Evaluations carried out in different Member States also suggest shorter, reader-friendly pension statements, with limited use of special terminology. Layered information and pension calculators are used to offer more nuanced information to those looking for it.

Pension information does not however automatically translate into high pension awareness. The latter can be measured, for instance, by surveying how well informed future pensioners feel, checking "read" rates of provided information, more profound regular or ad-hoc surveys or through qualitative research such as focus groups. While surveys often show the respondents' high self-assessment of their pension knowledge, more in-depth questions typically reveal much weaker understanding of pension information and, frequently, lack of interest and will to improve it. E.g., a survey in Sweden showed that only four in five recipients of the highly-recognised "orange envelope" (pension statement) actually open it, while as few as one in five reads all of its contents. Some surveys suggest that women on average tend to be less informed about and interested in their pensions than men.

These indications raise concerns about the overall level of pension awareness as well as a gap between self-perceived and real awareness, which could be a factor undermining pension adequacy by limiting individuals' ability to take corrective action. However, the empirical impact of pension information on pension behaviour is even more complicated to measure. In a survey in Finland, only 20 percent of respondents said they "planned to act" on the information. Against this background, some Member States try to identify and reach out to groups considered at a high risk of pension inadequacy, through pro-actively offering consultation and advice. Such groups can be people with incomplete career record (France, Slovenia), new entrepreneurs and self-employed (Sweden, Finland), young parents, minorities and low-earners (Sweden).

5.6.2. Mitigating adequacy risks linked to the uncertain ability of labour markets to align with requirements about later retirement and longer contribution records

Policy makers in pensions and employment have a mutual interest in delivering on longer working lives.[22] In pensions this is needed in order to secure future adequacy. In employment it is needed to counteract the decline in labour supply from a shrinking working age population.

Those aged 50+ represent the only group of working age that is set to grow over the next decades. For many Member States 40 percent of potential labour supply will soon be in that age group. Thus, unless employers are able to employ the 50+ and 60+ productively, they will face major constraints in terms of labour supply. In addition, given the rise in pensionable ages in many Member States by 2050, people at age 50 will have close to another 20 years of work ahead of them before they can retire with a pension. Thus, in some Member States, their employability and workability will have to be maintained for up to a decade more than today.

[22] Recognition of a common interest in raising effective retirement ages by enabling and motivating women and men to work to higher ages formed the basis for the joint workshop with the OECD of the SPC and EMCO on 13-14 November 2014, at which the chairs of the two committee pledged to intensify collaboration on the goal of 'Delivering on longer working lives and higher retirement ages'.

http://ec.europa.eu/social/main.jsp?langId=en&catId=88&eventsId=1020&furtherEvents=yes

Mitigating future risks to pension adequacy from early retirement or short careers is likely to be primarily focused on underpinning pension reforms with measures to encourage the development of workplaces and labour markets that enable and encourage women and men to have longer and less interrupted working careers. To deliver on longer working lives, policy makers will need to work on both the demand and the supply side of late-career labour markets in close cooperation with the social partners. This implies a complex agenda of interrelated policies and measures.

Financial incentives in the pension system are important, but not sufficient. There is no doubt that the occasional presence of 'positive' retirement options, combined with 'negative' experiences of age management in workplaces and labour markets have created incentives to retire early. The removal or restriction of early retirement incentives through pension reforms has most likely contributed to the rise in older workers' employment rates and exit ages in recent years, but, in several Member States, the higher employment rates for people aged 55-64 have also been driven by the structural changes in the gender, educational and employment sector composition of this age group.[23] If improvements in exit and pension take-up ages are to be continued, however, it will require more than the removal of early retirement options and the strengthening of incentives to work longer.

Further changes in age management in workplaces and labour markets will be required. As highlighted by the SPC in the Main Messages of the 2012 PAR: "There are clear limits to how much age management practices at work can be influenced by incentive structures in pensions. Tackling the pension adequacy challenge will require determined efforts to promote longer and healthier working lives through employment and industrial relations policies."

As benefits that reflect contributions based on earnings from work are set to constitute a significantly larger part of the overall pension package, the agenda for adequate income maintenance in old age will increasingly overlap with the overall agenda for employment and adequate income in working age. Box 5.6 provides an overview of the most important barriers to longer working lives in working conditions.

Box 5. 6: Tackling barriers to longer working lives in working conditions

While older workers are more likely to have health problems that can impair their workability and employability and physical strength and dexterity do indeed decline over working life, older workers usually make up for this thanks to their experience and resilience (including less overall absence due to sickness), particularly when offered the right working arrangements.

Thus, as extensively documented in the research of Eurofound[24] the barriers to longer working lives are usually found more in working time, the organisation of work and the distribution of work load and responsibilities than in the physical lay-out and demands of work places. Yet the latter may be a major factor in arduous working conditions and thus represent a part of the factors blocking the ability of people to work to higher ages.

Flexibility in working arrangement (e.g. working hours, working time, degree of autonomy in work organisation, job rotation etc.) including to improve the reconciliation of work and family can be

[23] See Annex 6 on the impact of structural factors in the recent development of older workers employment.

[24] For a recent overview and summary see Eurofound (2014): 'Sustainable work – towards better and longer working lives', Foundation Focus issue 16, Dec 2014.

important for workers of many ages, but has proved itself a particularly useful instrument for enabling and encouraging labour force participation to higher ages.

Adapting workplaces is also about prevention. Workplaces and work processes can be designed in such a way that occupational illnesses can be avoided. Indeed, early labour market exit for health reasons is often the result of decades of work under unhealthy conditions. Moreover, lots of the adaptations in the organisation of work including working time that can be helpful for workers as they age would also be conducive to the continued employment of people of all working ages. This kind of workplace adaptation should therefore be seen as part of a life course oriented occupational health and safety strategy.

Avoiding arduous working conditions is part of the route to longer working lives and this may also involve changes to the physical layout of workplaces. In recent years the auto-industry has substantially pro-longed the ability of workers to be highly productive at the assembly-line by investing in the re-engineering of the conveyor belt and the adjacent work organisation. While auto-assembly line workers earlier had to retire in their mid-fifties they are now able to continue for up to a decade longer. The physical layout of work places and the physical and mental demands of work processes can certainly be important for the ability to continue working to higher ages.

Adaptations of working arrangements thus have an important role to play in helping older workers stay longer in the labour market, either by preventing occupational diseases and premature erosion of work ability or by offering reasonable accommodation in working arrangements to fit the evolving needs and preferences of workers. It is one of the key measures required to encourage and enable women and men to extend their working lives.

Measures that lower longer term unemployment among youth and ensures early labour market integration on normal contractual conditions including social protection coverage will also represent a key avenue for lowering risks to pension adequacy. By opening better opportunities for young people to complete full contribution records before reaching the pensionable age, policies to combat youth unemployment also mitigate risks to pension adequacy. Likewise, the agenda for the earlier and better integration of non-EU migrants into labour markets and society is also an essential part of a programme for reducing risks to income maintenance in old age. Moreover policies for reducing gender gaps in pay, working hours and career length are equally key policies for narrowing the gender gap in pension entitlements.

Extending working lives at the 'upper end', i.e. late in people's careers, presents a challenge that is not quite covered by the general employment agendas. Ideally, Member States should transform 'early retirement cultures' into 'working longer cultures'. Obviously, such a shift cannot be achieved overnight. However, it could conceivably be brought about if policy makers in employment and in social protection work together with the social partners in addressing and achieving it (see Box 5.7).

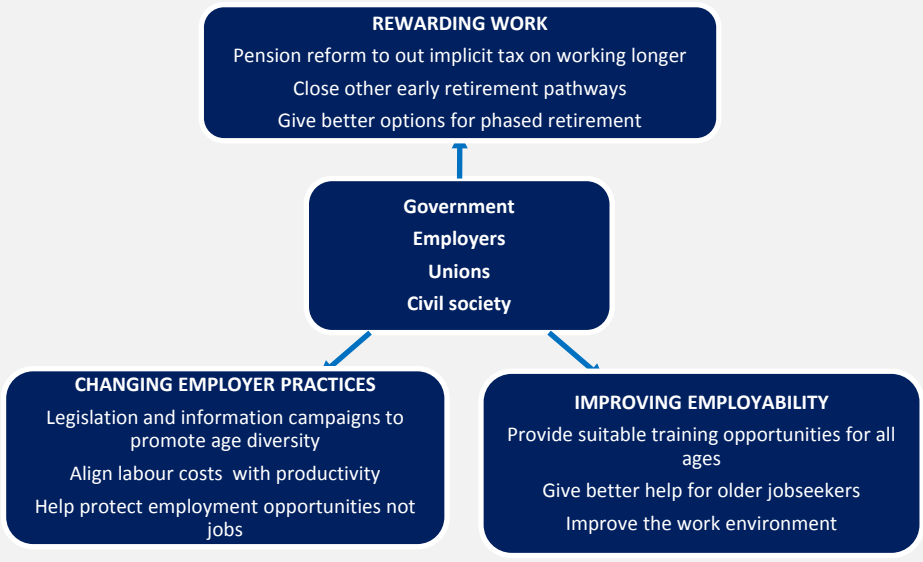
Safeguards in pension systems will still be needed to protect against old-age poverty. Even where reasonably successful, however, these agendas for employment and adequate income in active years are unlikely to remove the future need for safeguards in pension systems that can protect people from the risk of poverty. Forecasting the extent to which people will be well served by opportunities to build adequate pension entitlements, or end up having to rely on social protection safeguards in order to avoid or mitigate poverty risks in old age, goes beyond the scope of this report. However, a scenario for 2053 could be that, across the Member States, somewhere between two thirds and three quarters of a cohort manage to

meet the requirements for a decent earnings-related pension by completing working and contributory careers, while between a quarter and a third will need access to early, possibly part-time, retirement and/or some kind of basic defined benefit pension.

In other words, while a major section of society will have the ability to earn adequate earnings-related pensions, there will also be a growing group of women and men for whom access to minimum or basic pensions as well as some form of survivor's benefits will be necessary in order to protect them from poverty. In addition some form of crediting of involuntary absence from employment will also be called for in order to reduce the impact on entitlement accruals of illness, unemployment, caring duties etc.

Box 5. 7: Key directions for longer working lives

Figure 5. 18: Policy mix needed to deliver longer working lives and higher pension ages



Source: According to the OECD, Older workers reviews (2014, 2015).

This policy mix, which in many ways corresponds to key points in the Guiding Principles for the employment aspects of Active Ageing jointly developed by EMCO and the SPC, basically highlight that for longer working lives to develop rewards from working must be sufficient to compete with the benefits of retirement, while workers in terms of employability and workability must be enabled to and in terms of attitudes motivated to continue working, and in parallel, employer perceptions and practices must be changed so managers become far more willing to recruit and more able to manage and retain older workers.

To overcome the **barriers** to longer working lives **in work place and working arrangements** the EU's guiding principles of Active Ageing recommend that measures focus on the following issues:

Continuing vocational education and training: Offer women and men of all ages access to, and participation in, education, training and skills development allowing them (re-)entry into and to fully participate in the labour market in quality jobs.

Healthy working conditions: Promote working conditions and work environments that maintain workers' health and well-being, thereby ensuring workers' life-long employability.

Age management strategies: Adapt careers and working conditions to the changing needs of workers as they age, thereby avoiding early retirement.

Transfer of experience: Capitalise on older workers' knowledge and skills through mentoring and age-diverse teams.

In relation to **demand side issues** the EU's guiding principles of Active Ageing suggest concentrating on the following matters:

Prevent age discrimination: Ensure equal rights for older workers in the labour market, refraining from using age as a decisive criterion for assessing whether a worker is fit for a certain job or not; prevent negative age-related stereotypes and discriminatory attitudes towards older workers at the work place; highlight the contribution older workers make.

Age management strategies: Adapt careers and working conditions to the changing needs of workers as they age.

Employment services for older workers: Provide counselling, placement and reintegration support to older workers who wish to remain on the labour market.

To ensure that the **wider context is conducive to longer working lives** the Guiding Principles finally advise addressing the issues of:

Employment-friendly tax / benefit systems: Review tax and benefit systems to ensure that work pays for older workers, while ensuring an adequate level of benefits.

Reconciliation of work and care: Adapt working conditions and offer leave arrangements suitable for women and men, allowing them as informal carers to remain in employment or return to the labour market.

With regard to this need for some form of 'work-to-pension-bridges' it is necessary to avoid re-installing work disincentives or early retirement traps that have been experienced in the past. Forms of social protection that strikes the right balance between protection and disincentives will have to be developed. The instruments in the social protection arsenal that are presently available to most Member States and which come closest to serving the purpose would seem to be a form of carefully scrutinised access to disability pensions, combined with access to protected jobs possibly with in-work benefits. Organising access to minimum or basic pensions without undermining work incentives in earnings-related pensions will likewise be challenging. However, incentive problems with respect to minimum income provisions for older people and supplementary allowance are likely to be far smaller as these are likely to be needs-, income- or means-tested.

In summary, what would be called for in order to mitigate the risks inherent in higher pensionable ages is a combination of better and more determined underpinning in labour markets of permanently rising pensionable ages and social protection measures for those groups and individuals, who cannot fully follow / live up to the rise in the pensionable age and the extension of contributory periods by working longer.

Pension policy makers in Member States that have 'linked' pensionable ages to developments in life expectancy should take into account the fact that adequate pensions in the future depend on the ability of labour markets to employ people far beyond recent effective exit ages and traditional pensionable ages. At the same time as this report has focused on the various dimensions of pension adequacy over the longer term, its analysis has pointed to the counterpart challenge for Member States of developing more capacious and better functioning

workplaces and labour markets for women and men aged 55 and over as part of their wider labour market reforms.

Unless employment policy makers, working with the social partners, make determined efforts to improve age management practices in workplaces and labour markets, and prepare workers better for longer working lives (including through health and safety and skills maintenance/upgrading) there is a real risk that labour markets will be unable to align with pension arrangements as pensionable ages rise. As pensionable ages rise, the need for some form of premature retirement benefit, and for minimum and basic pensions, is also likely to increase. Hence pension policy makers may need to devote more attention and greater resources to poverty protection functions in the future.

Two main messages to policy makers thus emerge from the analysis with respect to the challenges to age management in workplaces and labour markets and the risks to pension adequacy from recent pension reforms:

- Employment policy makers and the social partners should prepare for rising pension ages and the phasing out of early retirement and take determined measures to align working lives with reformed pensions through changes in age management in workplaces and labour markets. Together they are well-placed to establish more capacious and better functioning labour markets for people aged 55+. De facto extension of the working age can help counteract the decline in labour supply emanating from population ageing and ensure opportunities for a larger share of people to acquire pensions that offer *adequate income maintenance* in old age.
- Social protection policy makers should prepare for the fact that not all groups and individuals can work to higher ages and have long and uninterrupted careers. While a large majority may be able to meet the new requirements – or at least be enabled and motivated to do so – there will be some who be unable to do so. For these it will be necessary to continue some form of 'work-to-pension-bridges' in social protection, and to provide some poverty avoiding pension benefits as well.