Analytical support in the setting of EU employment rate targets for 2020

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Abstract

This paper provides an overview of the analysis carried out during 2009 and 2010 with regard to the setting of a new overall employment rate target for 2020 as part of the Europe 2020 strategy, including the reference population to be covered as well as the appropriate value for the target.

As such it provided analytical support leading to the decision of the March 2010 European Council to set an overall employment target for the EU27 in 2020 of 75% for those aged 20-64.

It also summarises the subsequent analysis carried out to investigate possible approaches to translate the common target into specific targets for individual Member States, the results of which provided analytical support to the ensuing dialogue between individual Member States and the Commission in this context during mid-2010.

The paper is essentially methodological and is mainly intended as a historical record of the approach used and considerations taken into account when providing analytical support to the discussions on the Europe 2020 employment target. As such it should be a useful reference of assistance in similar future target setting exercises.

1. Introduction

This paper provides an overview of the analysis carried out in DG Employment, Social Affairs and Equal Opportunities during 2009 and 2010 with regard to providing analytical support to the setting of a new overall employment rate (ER) target for 2020 as part of the Europe 2020 strategy, following on to that set for 2010 as part of the Lisbon Strategy. The paper draws substantially from documents prepared for discussions in the Employment Committee and its indicators sub-group in preparation of the setting of the Europe 2020 employment rate target, and the authors gratefully acknowledge the valuable feedback provided by these groups.

This paper is published now as the first in a newly launched series of technical working papers. It is mainly methodological and is intended as a historical record of the approach used, based on the data available at the time, and the considerations taken into account when providing analytical support to the discussions on the Europe 2020 employment target, and as such should be of assistance in similar future target setting exercises (such as any mid-term review of the Europe 2020 strategy). It provides value as a record of the key considerations then prevalent and to illustrate the debate which occurred at the time.

The focus of the paper is on the employment rate, i.e the capacity of an economy to provide work (employment) for all those who can be considered as wanting to work (in the working age population). The document provides first the contextual setting for employment rate developments over the previous decade and the initial impact of the 2008-2009 recession, which by lowering ER values at the beginning of the new decade conditioned the setting of a new target for 2020.

Following this there is a summary of the review carried out on the format of the ER target, in particular the issue of the appropriate age range to be covered in the calculation of the new headline employment rate. Several developments, including EU objectives for furthering educational attainment, particularly for youth, and extending working lives for older workers, have led to concerns over whether the age range (15-64) used for the overall Lisbon employment rate target remained appropriate. Given the objectives for raising education levels, lowering school dropout rates and taking advantage of higher longevity and improvements in health conditions to extend labour market participation among older workers, the merit of adjusting the current age brackets was investigated, eventually leading to the decision to focus on the new target population aged 20-64.

The following section gives an overview of the analysis on the possible values this new overall target might take, based on demographic projections and economic forecasts available at the time, which took into account not only anticipated future trends and challenges but also the possible negative effects on potential output and employment arising from the severity and duration of the 2008-2009 recession. Finally, a summary of the technical analysis carried out on why and how the overall target might possibly be translated into potential national employment rate targets for Member States is presented.[1]

2. Historical background

2.1 The 2010 employment rate targets

Achieving higher employment rates (ERs) has been at the core of the Lisbon Strategy, the main strategy at EU level for growth and jobs over the first decade of this century. Under the Lisbon Strategy the EU set itself three employment rate targets to be reached

[1] The information set used includes annual LFS data for 2008 and the autumn 2009 European Commission economic forecast.

by 2010: i) an overall target of 70%; ii) a 60% target for women; and iii) a 50% target for older workers[2]. The main rationale for these targets has been to support job creation and economic growth. Furthermore, setting targets is considered to be a good way to keep the focus on the most important political challenges, contributing to evidence-based policy making.

The targets on the overall employment rate and the female employment rate were first set in Lisbon, in March 2000. The target on the employment rate for older workers was set in Stockholm, in March 2001.

Policies should contribute to achieving an average employment rate for the European Union (EU) of 70 % overall, of at least 60 % for women and of 50 % for older workers (55 to 64) by 2010.

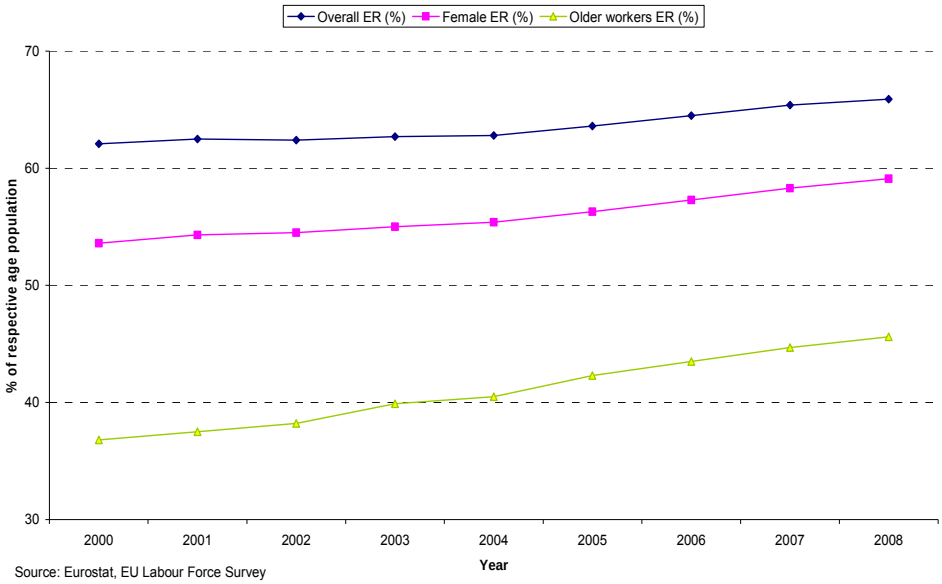
The main indicators to monitor these targets are the *Employment rates* (total population aged 15-64, women aged 15-64) measuring the persons in employment as a proportion of the total population in the same age group (data source: EU labour force survey (LFS)). The *Employment rate for older workers* measures the persons in employment in the age group 55-64 as a proportion of the total population in the same age group (data source: EU LFS).

2.2 ER developments since 2000 and outlook to 2011

2.2.1. Progress between 2000 and 2008

Since the beginning of the Lisbon Strategy, considerable progress had been made in EU labour markets before the crisis in financial markets deepened sharply in autumn 2008 and led to economic recession - the overall employment rate had risen by close to 4 percentage points (pps), reaching 65.9% in 2008 (compared to 62.2% in 2000), reflecting a rise in the total number of people in employment[3] of around 19 million. The ERs for women and older workers in particular showed considerable progress, reaching 59.1% and 45.6% respectively in 2008 (Chart 1).

Chart 1: Developments in overall, female and older workers' employment rates in the EU27 2000-2008



Compared to 2000, by 2008 the overall employment rate in the EU27 had risen 3.7 percentage points, the female employment rate 5.4 pps, and that for older workers by

[2] People aged between 55 and 64.
[3] National concept, based on Eurostat LFS data

8.7 pps (Table 1). As a result, the gaps relative to the targets were respectively 4.1, 0.9 and 4.4 pps in 2008. However, one should bear in mind that the targets were originally set when the EU consisted of just 15 Member States, and with regard to that composition progress towards the targets has been more substantial, to the extent that the gaps in 2008 were a more limited 2.7, -0.4[4] and 2.6 pps respectively. As a result, the mechanical impact of the two recent enlargements has been to reduce average EU employment rates by around 1.4-1.8 percentage points, depending on the specific target.

Table 1: Developments in overall, female and older workers' employment rates, 2000-2008

	EU27			EU25			EU15		
	2000	2008	Change	2000	2008	Change	2000	2008	Change
Overall ER (%)	62.2	65.9	3.7	62.4	66.3	3.9	63.4	67.3	3.9
Female ER (%)	53.7	59.1	5.4	53.6	59.4	5.8	54.1	60.4	6.3
Older workers ER (%)	36.9	45.6	8.7	36.6	45.7	9.1	37.8	47.4	9.6

Source: Eurostat, EU Labour Force Survey

2.2.2. Developments over 2009 – a sharp setback

In contrast to the period of strong labour market performance up to mid-2008, labour markets experienced a sharp setback over 2009. The unprecedented crisis in global financial markets which gathered pace in autumn 2008 led to the most severe recession since the Great Depression, affecting the wider economy and increasingly impacting on labour markets in the EU.

After several years of relatively strong labour market performance, the economic crisis led to a sudden reversal of employment growth which threatened to sweep away much of the success of recent years. By mid-2009 employment in the EU had contracted by 4.3 million (1.9%) compared with a year earlier, resulting in a drop in employment rates, while unemployment rose strongly.

Labour market performance worsened across all Member States, but most notably in the Baltic States, Ireland and Spain. In contrast, in other Member States such as Belgium and Germany, employment showed remarkable resilience to the crisis, in part due to extensive recourse to short-time working arrangements and other (temporary) measures. Indeed, several countries (especially AT, BE, DE, IT and NL) have stepped-up measures to keep workers in employment by adjusting production and working time. Wage moderation and a higher incidence of wage concessions have also helped maintain jobs in several sectors.

2.2.3. Outlook to 2011

According to the autumn 2009 Commission forecast available at the time of analysis, the EU economy was set to emerge from recession with growth turning positive in the second half of 2009 (nevertheless leaving annual growth for 2009 at -4.1 %). This was expected to be followed by a gradual recovery over the following two years, with EU GDP expanding by 0.7 % in 2010 and by 1.6 % in 2011.[5]

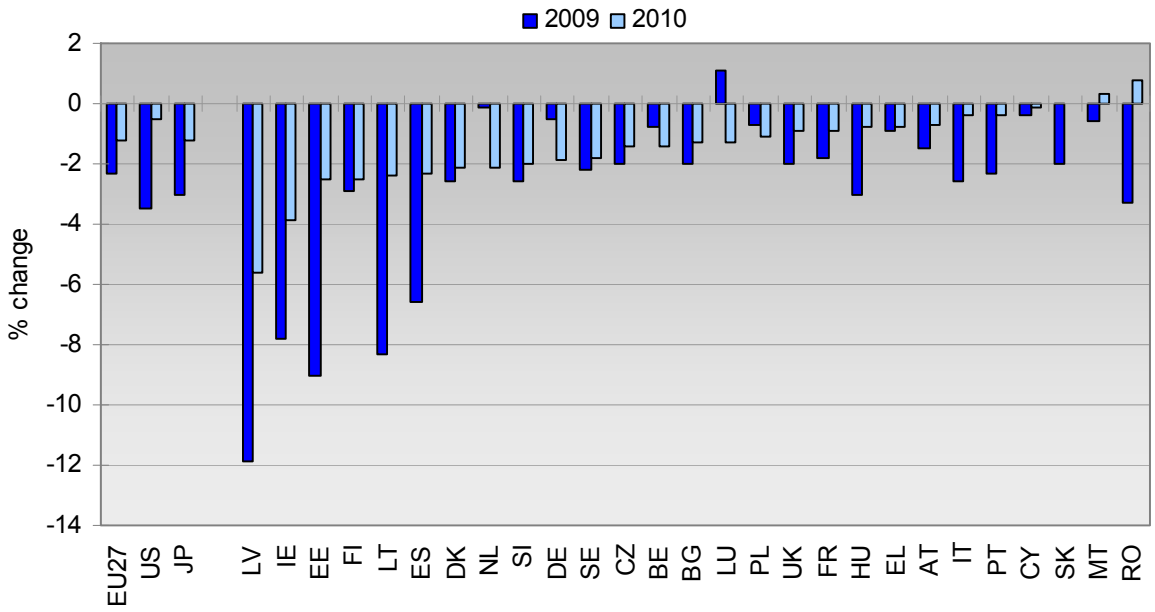
Despite the resilience shown by labour markets to the recession, employment was expected to fall in the EU by 2.3 % in 2009 and by a further 1.2 % in 2010, before a return to marginal growth of 0.3% in 2011. This represented an employment contraction of around 7.5 million jobs over the two years 2009-2010, and would have resulted in

[4] A negative gap meaning that the target had been exceeded.
[5] Note that extrapolations to 2010 or 2011 shown in this paper are those made for discussions in Employment Committee in the first half of 2010, using the Autumn 2009 economic forecast, and they have not been revised using later forecasts.

employment being down around 7 million in 2011 compared to 2008 levels. At the same time, unemployment was forecast to rise significantly, potentially reaching 10.3 % by 2010 and remaining around 10.2 % in 2011, up more than 3 pps on 2008 levels.

Turning to individual Member States, employment growth was expected to be negative in most both in 2009 and 2010 (Chart 2). Particularly strong falls in 2009 (of around 6 to 12 %) were foreseen for the Baltic States, Ireland and Spain. Though declines were set to lessen significantly in 2010 in almost all Member States, employment was set to contract more strongly in Belgium, Germany, Luxembourg, the Netherlands and Poland.

Chart 2: Forecast employment growth rates over 2009 and 2010

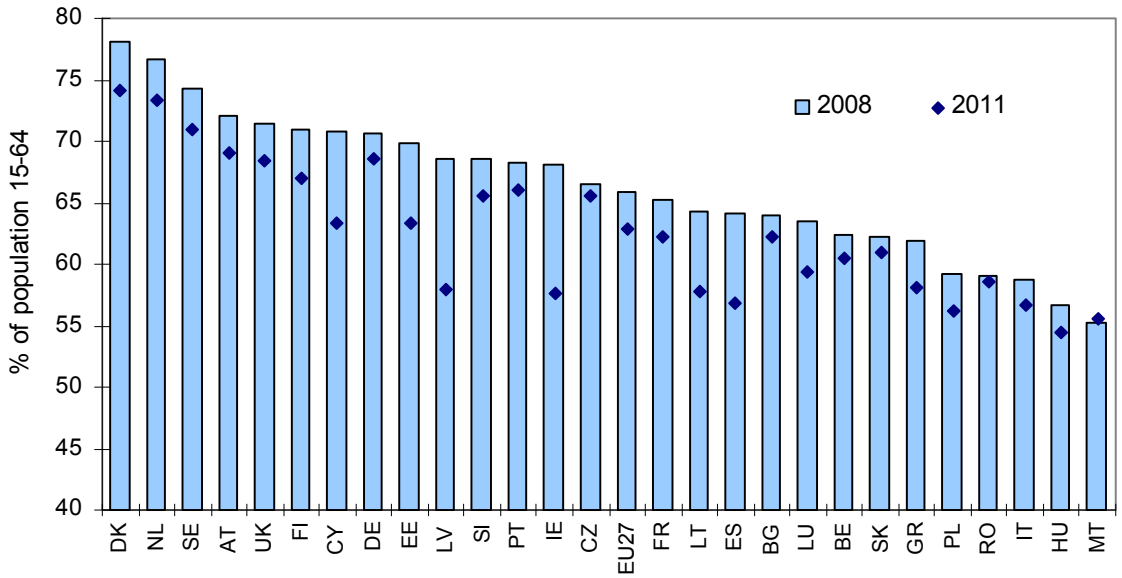


Source: Commission services (ECFIN), 2009 Autumn economic forecast.

The economic recession was therefore expected to largely reverse the progress achieved in raising employment rates since 2000. The overall employment rate was expected to fall by about 3 percentage points between 2008 and 2011, back to around 63% (i.e. almost back to the 2000 level of 62.2%), although the decline in ERs was expected to vary considerably across Member States (Chart 3). Particularly sharp declines were forecast in Cyprus (mainly due to demographic developments), Ireland, Latvia, Lithuania and Spain.

Looking ahead to the economic recovery, because substantial labour hoarding took place during the 2008-2009 recession, particularly in those Member States that relied extensively on short time working arrangements (e.g. Germany) leading to significant declines in labour productivity, the recovery of productivity levels is likely to put a brake on the pace of employment growth at least during the initial phase of the recovery. Indeed, most forecasts expect job creation in the early part of the recovery to be subdued, as the widespread resort to reductions in hours worked is first reversed before employers look to expand staff levels.

Chart 3: Forecast change in ERs across EU Member States between 2008 and 2011



Source: DG EMPL calculations based on Nov 2009 EC Economic Forecasts

Analysis carried out by DG Economics and Finance (ECFIN)[6] of past financial and economic crises provides some tentative indications about the probable longer term impact of the 2008-2009 crisis on the level and growth rate of potential output and the associated implications for employment growth:

- Given the financial nature of the crisis, the analysis points to it having both a large negative impact on output in the short-run and the likelihood of a prolonged period of slow growth as economies adjust to a reduced level of potential output.
- Past episodes of financial distress were characterised by sizeable losses in output - at least twice as large as in more "classical" downturns - and in employment. "Classical crises" in general tend to have a permanent negative effect on the level of GDP, although financial crises can also have a negative impact on long-term growth rates. The employment loss - related to the rise in the NAIRU and to reductions in the size of the labour force - is usually not recouped in the decade following the crisis;
- However, a short recession would not affect the pace of growth of the labour force, leaving potential growth unharmed in the longer run. In contrast, a long and deep recession may cut the potential labour force by discouraging some workers from seeking a job and by reducing migration flows. Moreover, political pressure may grow for implementation of policies that curtail labour market participation (e.g. early retirement, curbs on migration flows).

The historical background of employment rate developments and the possible implications of the 2008-2009 recession for future labour market developments (over the recovery phase and beyond) set the scene for the subsequent analysis of possible ER targets for 2020.

3. Format for the 2020 target

Before proposing any ER target for 2020, it was first necessary to carry out an assessment of the continued appropriateness (of the format) of the existing employment rate indicator, to see whether it needed adjusting. In particular, several developments,

[6] "Impact of the current economic and financial crisis on potential output", European Economy Occasional Papers no. 49 (June 2009)

including EU objectives for furthering educational attainment, particularly for youth, and extending working lives for older workers, have led to concerns over whether the age range (15-64) used for the overall Lisbon employment rate target remained appropriate. Given the objectives for raising education levels, lowering school dropout rates and taking advantage of higher longevity and improvements in health conditions to extend labour market participation among older workers, the merit of adjusting the current age brackets was investigated.

3.1 The impact of rising levels of education

During recent decades, rates of formal educational attainment and the qualifications of the workforce have increased across Europe. Data show that employment rates of individuals with higher levels of education are substantially above those of individuals with lower levels (Table 2). Evidence on the close links between education and labour market outcomes has increased policy awareness and stirred action on these fields - better use of the synergies between education and employment is crucial to foster the goals of more and better jobs.

Table 2: Trends in employment rates by educational attainment (1997-2006)

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
United States	Low level (ISCED 0-2)	55.2	57.6	57.8	57.8	58.4	57.0	57.8	56.5	57.2	58.0
	Medium level (ISCED 3-4)	75.7	75.8	76.2	76.7	76.2	74.0	73.3	72.8	72.8	73.3
	High level (ISCED 5-6)	85.4	85.3	84.6	85.0	84.4	83.2	82.2	82.0	82.5	82.7
EU19 average	Low level (ISCED 0-2)	52.4	54.0	54.4	55.0	55.1	54.8	55.1	54.1	54.6	55.5
	Medium level (ISCED 3-4)	72.5	73.7	74.6	75.0	75.0	74.8	74.5	74.2	74.6	75.3
	High level (ISCED 5-6)	83.8	84.5	85.0	85.1	85.2	84.8	84.5	84.1	84.4	84.8

Source: OECD. Education at a Glance 2008.
Low level: below upper secondary; Medium level:upper secondary and post-secondary non-tertiary;High level:tertiary education
EU19: AT BE CZ DK FI FR DE GR HU IE IT LU NL PL PT SK ES SE UK

With the updating of the Social Agenda[7] and the Communication on New Skills for New Jobs[8], the Commission signalled both the continuity in policy aims and a new emphasis on a number of policy areas, inter alia, the upgrading of skills at all levels, promoting employability, and matching skills to labour market needs. In May 2009 the Council of Education, Youth and Culture approved the strategic framework for European cooperation in education and training for the period 2010-2020 ("ET 2020").[9] This set a series of European targets to guide the policy of cooperation in the education and training fields for the period to 2020, including that by 2020, the share of 30-34 year olds with tertiary education should be at least 40%, and that the share of early leavers from education and training should be less than 10%.

The simultaneous presence of both ER and education objectives raises the issue of their compatibility, particularly given that in a majority of EU Member States it is rare to accumulate education with work (even part-time). Given the upward trend in levels of educational attainment, postponing entry in the labour market, together with the thinking expressed in policy documents favouring furthering education and training objectives, there appeared to be a strong rationale for at least raising the minimum age bracket of the age-range used in the calculation of employment rates.

3.2 The age ranges for the ER target

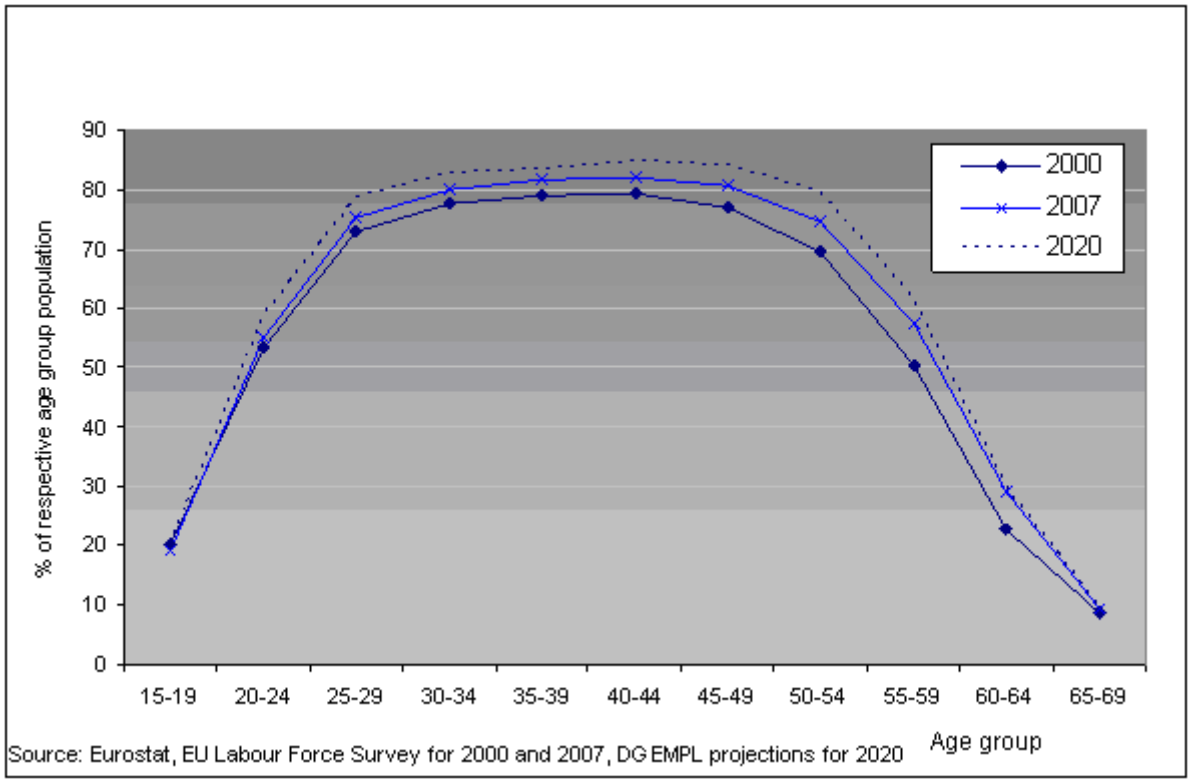
3.2.1. Developments in the age profile of employment rates

Over the last decade there has been a shift to older ages in the age profile of employment rates, and this trend is expected to continue over the next decade, especially for women (Chart 4). While the younger age group 15-19 saw employment rates decline slightly between 2000 and 2007, rates for all other 5-year groupings

[7] COM (2008) 412 final.
[8] COM (2008) 868 final.
[9] Council Conclusions on a strategic framework for European cooperation in education and training ("ET 2020"), 294th Education, Youth and Culture Council meeting (Brussels, 12 May 2009).

increased, most notably for those groups aged 50-54, 55-59 and 60-64. Looking forward to 2020, rates for all age groups are expected to rise, but most substantially for the groups aged between 45 and 59.

Chart 4: Age profile of employment rates in the EU27 in 2000 and 2007, and 2020 projections

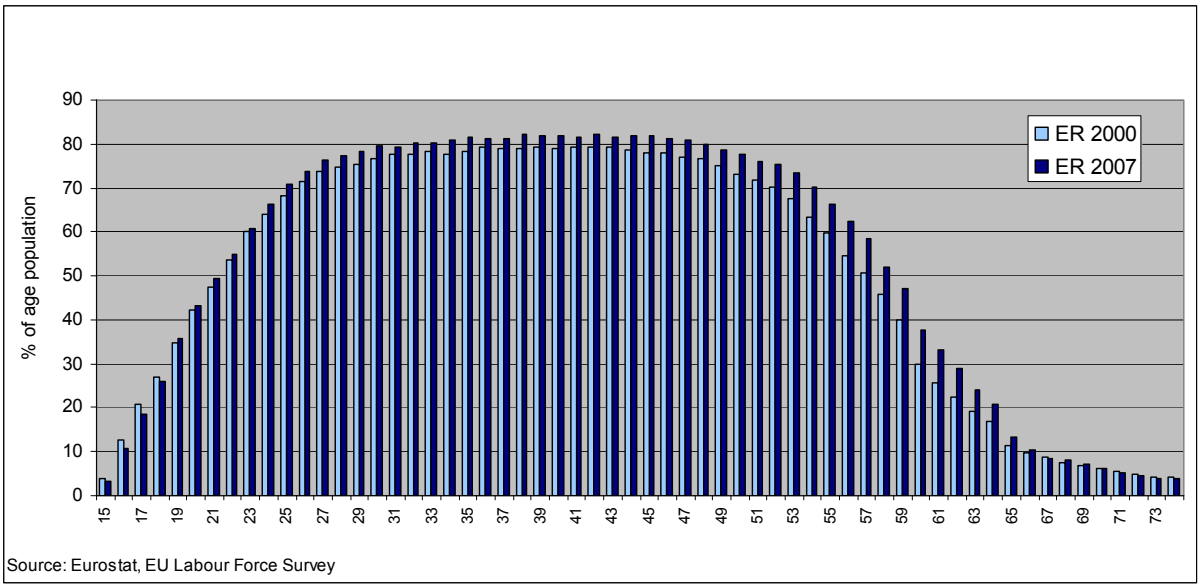


In terms of raising the overall ER, the potential contribution of the age groups 15-19 and 20-24 is relatively limited when compared to that of the age groups between 25 and 54, mainly because of the increasing time spent in education activities by the former. Therefore, in order to raise the overall ER, focus should shift to older age groups (55-59 and 60-64) as potentially the ones where rates are substantially below those for the age group 25-54 and there is real scope for raising them.

Looking in more detail at age-specific employment rates (Chart 5) the distribution of rates by individual year of age highlights certain issues with regard to using the age range 15-64 as the reference population for the employment rate target.

- Of those aged 15 years, only 3.4% were in employment in the EU27 in 2007. This is lower than the share for all other ages, including all older ages up to and including 74 (3.9%), raising questions on the inclusion of the 15 year group when others from 65 to 74 are not included yet have higher rates (especially as with ageing their relative importance in the population will rise in future).
- For age 16, around one-in-ten is in employment, around the same share as those aged 65 or 66
- Employment rates have risen noticeably between 2000 and 2007 in the older age group for all ages up to 65. This trend may well continue over the next decade.

Chart 5: Employment rates in the EU27 by individual year of age, 2000 and 2007



Source: Eurostat, EU Labour Force Survey

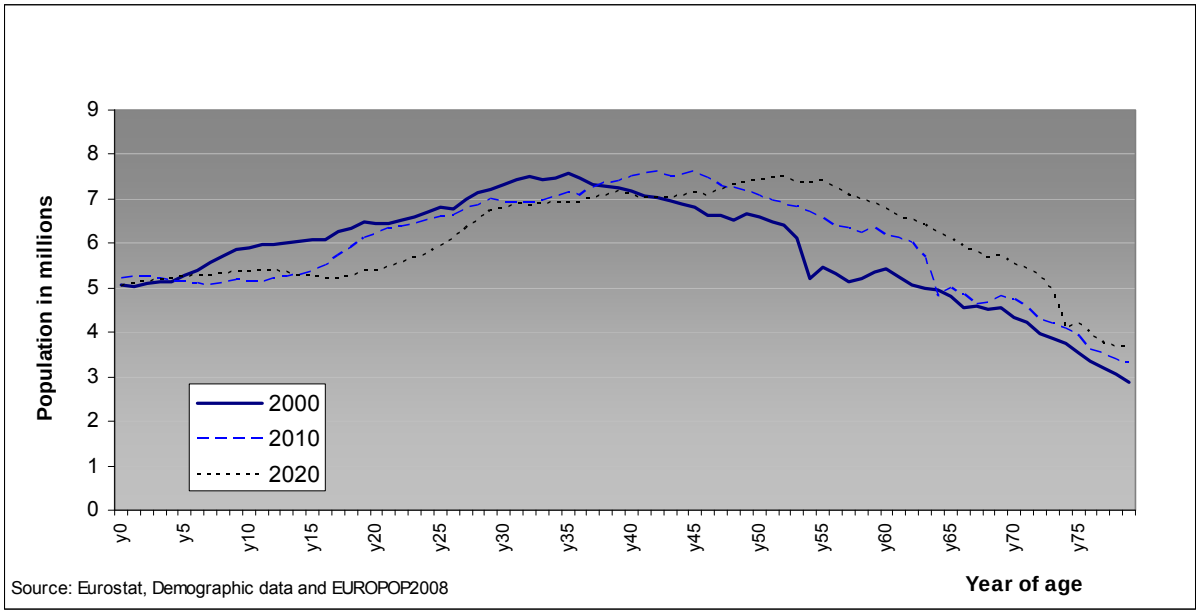
3.2.2. The upper age limit

Demographic developments will continue to have a profound effect on the EU population profile between 2010 and 2020 (Chart 6), with the peak of the age distribution rising from around 32-35 years in 2000, to 42-45 years in 2010 and 52-55 in 2020. In line with this, the age profile of the population aged 15-64 will also change significantly, with young people accounting for a lower share (16.3% in 2020 compared to 18.1% in 2010), and older people aged 55-64 accounting for a considerably larger share (20.5% in 2020 compared to 18.1% in 2010), meaning that developments in the older population will weigh more in the overall employment rate. Furthermore, the number of people aged 65-74 will expand substantially in the next decade, up from 46 million in 2010 to almost 55 million by 2020, thereby increasing their relative importance in the population.

At the same time, the objective to raise the exit age from the labour force as part of the response to demographic ageing calls into question the use of 64 as the appropriate upper limit for the population considered to be of "working age".[10] Figures on the age at which people exit the labour market and become economically inactive show that, on average, people within the EU-25 withdrew from the labour force at the age of 60 in 2001. Yet due to improvements in health and living conditions, by the early 2000s life expectancy at the age of 60 had risen on average to around 20 years for men and 24 years for women. This means that currently people can expect to live substantially beyond the age at which they withdraw from the labour market, which modifies enormously the meaning of retirement. Continuing improvements in longevity are expected to increase the average duration of retirement even further.

[10] The aim to delay the average age of exit from the labour market by 5 years – the Stockholm target – implies an average centred around 65 years, which in turn requires that part of the distribution of active older people be above this age limit.

Chart 6: Demographic profile of EU27 population aged up to 79 in 2000, 2010 and 2020



Furthermore, in response to the need to raise the labour market participation of older workers, many Member States have carried out reforms of their pension systems (or are in the process of doing so), which vary considerably across Member States in terms of the age of eligibility to pension entitlements (see Table I. 1). These reforms have included increases in the age of eligibility for a full pension, bringing retirement ages for women into line with those for men, and tightening the eligibility to early retirement schemes, all of which should have a substantial impact on older workers' employment rates over the next decade.

In light of the above, the scope for raising the upper age limit for the ER target was investigated. Data showed that between 2000 and 2007 the employment rate for the age group 65-69 had risen from 8.8 % to 9.6%. In 2007, the age group 65-69 accounted for 24.3 million people, and employment of 2.3 million, while in 2020 it was projected to account for 29.3 million people and an overall employment level of 2.9 million. This compared with a 2007 employment total of 5.7 million for the age group 15-19, which was projected to decline to 5.6 million in 2020. Although the importance of the age group 65-69 in the working age population will therefore increase somewhat, its impact on overall employment is foreseen to remain relatively limited. It did not therefore seem relevant to extend the age group range to cover the whole age group 65-69.

Nevertheless, consideration was given to possibly extending the upper age range slightly, by one or two years (e.g. to 65 or 66 years), to better encompass changes in the upper part of the distribution of the working age population as older people's working lives are extended and to reinforce the policy message of the importance of active ageing. In the event however, this proposal did not gain the support of Member States in the Employment Committee, who felt it was not the right moment to increase the upper boundary in the definition of working age, and consequently this issue was not explored further.

3.2.3. The lower age limit

A much stronger case for changing the age boundary applied to the lower age limit – for example a clear argument in favour of raising the lower age bracket is provided by the very low participation rates for young cohorts (Table 3).

Table 3: Participation and employment rates in 2007 in the EU27

Age Brackets	PR	ER
15-17	0.14	0.11
18-19	0.38	0.31
20-24	0.64	0.55
25-29	0.83	0.75
30-34	0.86	0.80
35-39	0.87	0.82
40-44	0.87	0.82
45-49	0.85	0.80
50-54	0.79	0.75
55-59	0.61	0.57
60-64	0.31	0.29
65-66	0.12	0.12
67-69	0.08	0.08

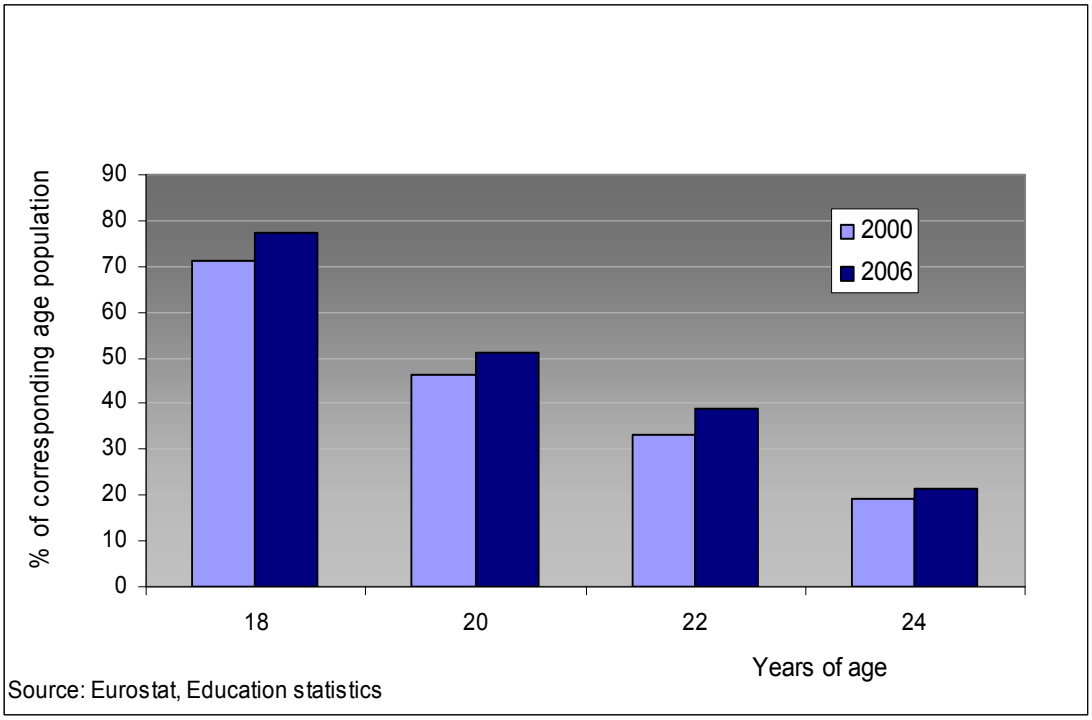
Source: DG EMPL

As people stay longer in education, and as the normal age to which people stay in full-time compulsory education may rise in future in some if not all Member States, this calls into question the appropriateness of 15 as the lower bound for the definition of working age. Already, in only 7 EU Member States does full-time compulsory education end by 15 years of age (see Table I. 2). In most (18 Member States), it is already at 16 years of age, while in 2 Member States it is up to 18 years of age. This would suggest a need to raise the lower age limit to at least 16, which would also be more comparable with the lower age boundary used in the US to define the working age population.

At the same time the share of young people participating in education beyond the age of 16 is on the rise and very high for ages below 20 (Chart 7). Indeed, in 2006 around 77% of 18 year-olds were enrolled in education, and just over half of 20 year-olds, while among the 16-18 age group just under 86% were in education. With such extremely high levels of participation in education for those still in their teens, this raises the question of the appropriateness of their inclusion in the bounds of the working age population. One consequence of retaining this age group in the definition for the working age range is that increasing participation in education (a positive trend) would automatically lead to falls in the employment rate (at least in the short-term).

The above suggests that inclusion of the age group 15-18 in the definition of the working age population, and for practical purposes even the standard 5-year age band 15-19 often reported in statistical data, is becoming increasingly inappropriate. Consequently, consideration was given to raising the lower age limit for the employment rate indicator to 20 years, so that the trend in participation in formal education would not affect employment rates so much. For the age group 15-19 no longer included in the reference employment rate, it was recommended to develop a complementary indicator for youth neither in employment, nor education nor training (NEET).

Chart 7: Participation/enrolment in education in the EU27 by age in 2000 and 2007



Source: Eurostat, Education statistics

3.2.4. The practical effect of adjusting age bands on employment rates and coverage of total employment

Using annual results from the EU Labour Force Survey, the impact on employment rates and coverage of total employment of changing the age bands used in determining the reference population for employment rates was investigated, with the results shown in Table 4. The following points are highlighted:

- Adjusting the working age population by dropping the 15-year age group and focussing on the range 16-64 increases the ER by just over 1 percentage point with no significant change in the overall coverage of the employed population.
- Similarly, raising the lower age bound to 18 raises the ER by 3 percentage points, again with no significant change in the overall coverage of the employed population (still 97.6% of employment 15-74).
- Raising the lower age band to 20 raises the ER by around 5 pps (to 70%), and still covers 96% of total employment 15-74.
- Extending the upper limit to 66 years while retaining the current lower bound (15-66) reduces the ER by 1.5 pps, but combined with the dropping of the 15 year age group (16-66) only leads to a 0.5 pps reduction, in both cases with a marginal improvement in overall coverage of employment.
- Extending the upper limit further to 69 has a more marked impact in driving down the ER (by around 4-5 pps compared to ending the range at 64 years).
- In all cases, the level of coverage of total employment does not vary substantially.

Table 4: Effects of using adjusted age bands for the working age population, EU27 in 2007

Age band	ER	% of total employment (of age group 15-74)
15-64	65.3	98.5
15-66	63.8	99.0
15-69	61.5	99.5
16-64	66.4	98.4
16-66	64.8	98.9
16-69	62.5	99.5
18-64	68.4	97.6
18-66	66.7	98.1
18-69	64.2	98.6
20-64	70.0	95.9
20-66	68.1	96.4
20-69	65.4	96.9

Source: Eurostat, EU Labour Force Survey, 2007 annual results

Based on the preceding arguments and the estimates for the impact on employment rates and total employment coverage of the different age bands considered, the Employment Committee indicated a preference for the age band 20-64 as the reference population for the 2020 employment rate target. Consequently, Commission Services focused further analysis on that specific age group.

4. Possible values for the 2020 target

Following the direction of the Employment Committee, the age range 20-64 was used to explore appropriate/feasible values for the employment rate target in 2020.[11] The analysis took into account not only long-term trends and challenges, but also the expected impact of the 2008-2009 recession, which may lead to lasting negative effects on output and employment throughout the next decade.

4.1 Approach

The scope of the progress already achieved up to 2008, the scale of the demographic challenge in coming decades, and the furthering of educational objectives particularly for youth all seemed to call for setting even more ambitious targets for 2020 in order to support adequate labour input to the economy. However, while being ambitious it is still necessary to remain credible, especially in light of recent events. The 2008-2009 recession was the most severe since the Great Depression. Significant shortfalls in production have emerged and may only be partially recoverable in the coming years.[12] As a result, both the level and growth rate of potential output may be affected in the coming years, reflecting inter alia a rise in structural unemployment and/or a reduction in participation rates.[13]

Based on a supply-side methodology developed by the AWG[14], and using Eurostat's baseline demographic projections published in 2008 and the Commission's autumn 2009 economic forecast (the latest available at the time of the analysis), an outlook for major

[11] However, other age bands (e.g. 15-64) were also used to provide a link to the historical/current situation and carry out sensitivity analysis.
[12] Bruegel (2009), 'Europe's economic priorities 2010-2015 – Memos to the new Commission'
[13] DG ECFIN (2009), 'Impact of the current economic and financial crisis on potential output', Occasional Papers 49.
[14] Jointly produced by the Ageing Working Group (AWG) of the Economic Policy Committee and DG ECFIN in the framework of the Ageing Report.

labour market variables up to 2020 was generated. Given the uncertainty surrounding the pace of economic recovery and labour market developments (e.g. the emergence or not of unemployment hysteresis), three possible scenarios for labour markets outcomes in the period up to 2020 were considered, based on the baseline AWG projections adjusted to the latest data available at the time of the analysis: i) EU labour markets revert to best historical performance in terms of unemployment rates in the 2000s; ii) emergence of hysteresis unemployment; and iii) unemployment rates by 2020 decline to minimum (or 'frictional') levels i.e. even below best historical outcomes.

4.2 Eurostat's 2008 baseline scenario for demographic variables

Eurostat's demographic projections were released in April 2008 (under the reference "EUROPOP2008"). These projections indicate that in coming decades, the age-structure of the European workforce will undergo dramatic changes due to low fertility, continuous rises in life expectancy and the retirement of the baby-boom generations. Apart from the impact on the labour force, ageing will also have profound economic, budgetary and social consequences.

Changes in the size and age profile of the population depend upon assumptions regarding fertility rates, life expectancy and migration. As far as fertility and mortality rates are concerned, the projections assume that country-specific rates will converge to that of 'forerunners' over the very long-term i.e. by 2150.[15] Furthermore, life expectancy gains are projected.[16] As regards migration, Eurostat's demographic projection assumes a continued but decelerating inward net migration to the EU.[17]

According to Eurostat's baseline scenario, in the EU27 the working age population (aged 15-64) is expected to decrease by around 1 million people by 2020 (see Table 5). Table 5 and Chart 8 show that the expected evolution of the working age population (WAP) depends on the choice of age brackets, and that the decline in the WAP only begins around the middle of the next decade; first at a slow pace but accelerating after 2020. In fact, the moderate decline in the WAP until 2020 is misleading regarding expected developments after 2020.

Table 5: Working age population in the EU27 by age bands (millions)

	15-64	15-66	20-64	20-66
2008	330.4	339.9	301.2	310.7
2020	329.6	341.6	303.8	315.8
2040	305.6	318.6	280.3	293.3
2060	281.2	293.0	256.9	268.7
2020-2008	-0.7	1.7	2.6	5.1
2040-2008	-24.8	-21.3	-20.9	-17.4
2060-2008	-49.2	-46.9	-44.3	-42.0

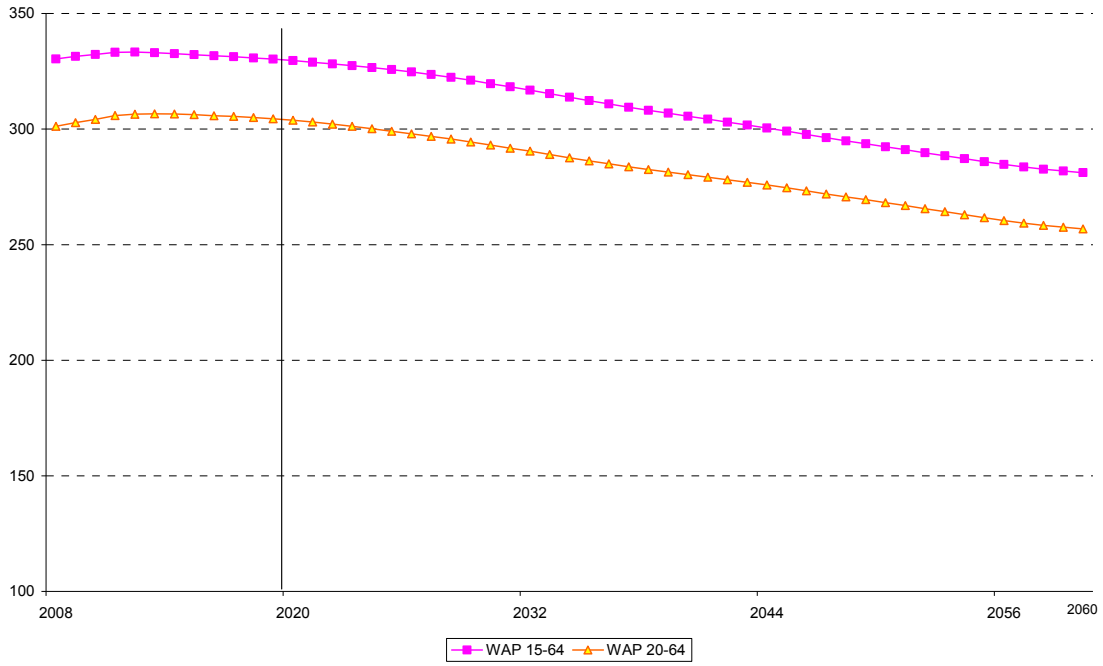
Sources: LFS and Eurostat's 2008 demographic projections.

[15] Forerunners concerning fertility are: DK (2006:1.83), FI (2006: 1.84), SE (2006: 1.85) as well as UK (2006: 1.84). France, Ireland and Norway are above 1.9. The theoretical convergence of Total Fertility Rate (TFR) was set to 1.85 to be achieved by 2150. For mortality rates, the forerunners are France, Italy, Spain and Sweden.

[16] In the EU, life expectancy at birth for males is projected to increase by 8.5 years from 76 in 2008 to 84.5 in 2060. For females, life expectancy at birth is projected to increase by 6.9 years for females, from 82.1 in 2008 to 89 in 2060, implying a narrowing gap between males and females life expectancy.

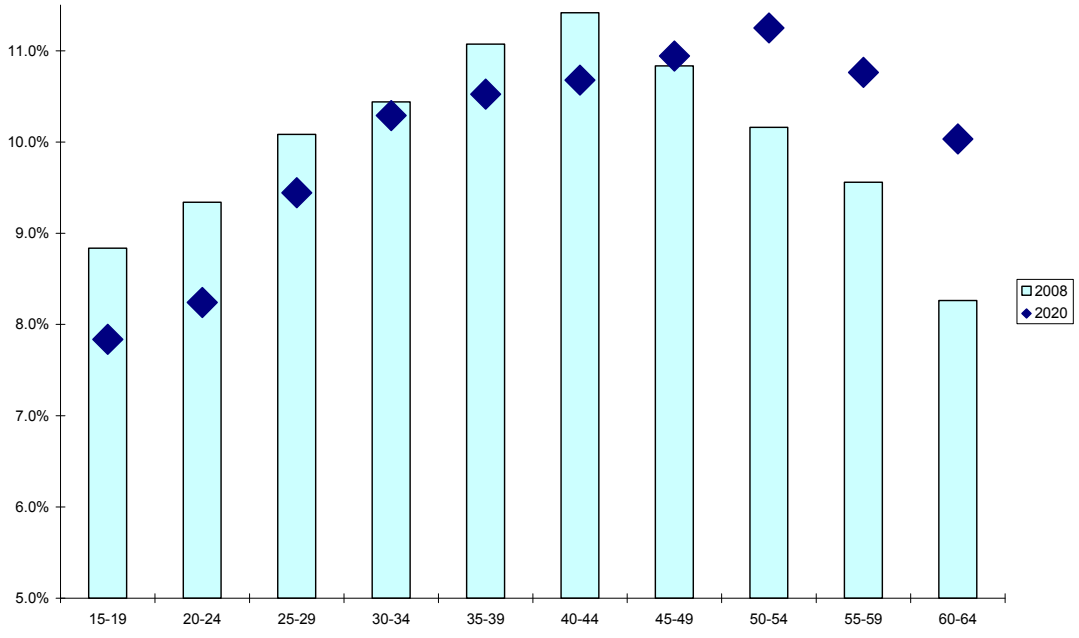
[17] For the EU as a whole, annual net inflows are projected to fall from about 1.7 million people in 2008 (equivalent to 0.33% of the EU population) to just under 1 million by 2020 and thereafter to some 0.8 million people by 2060 (0.16% of the EU population).

Chart 8: WAP in the EU27 (millions)



The evolution of the total WAP is, however, an inappropriate indicator of the impact of ageing on socio-economic variables. The structure (or composition) of the WAP gives a much better measure of the potential impact of ageing (Chart 9). In fact, while the WAP (15-64) declines between 2008 and 2020 by only 0.2% in the EU27, the age distribution of the population changes significantly: the percentage of younger people (15-29) falls from 28.2% in 2008 to 25.4% in 2020, while that of older people (50-64) increases from 28.1% to 32.0%. These changes in the structure of the population are significant, particularly given the short period considered.

Chart 9: Age distribution of the working age population (15-64)



4.3 The methodology for projecting labour market variables

Three labour market projections for 2020 were calculated based on the 'supply-side' methodology developed by the AWG[18] for the 'Ageing Report'.[19]

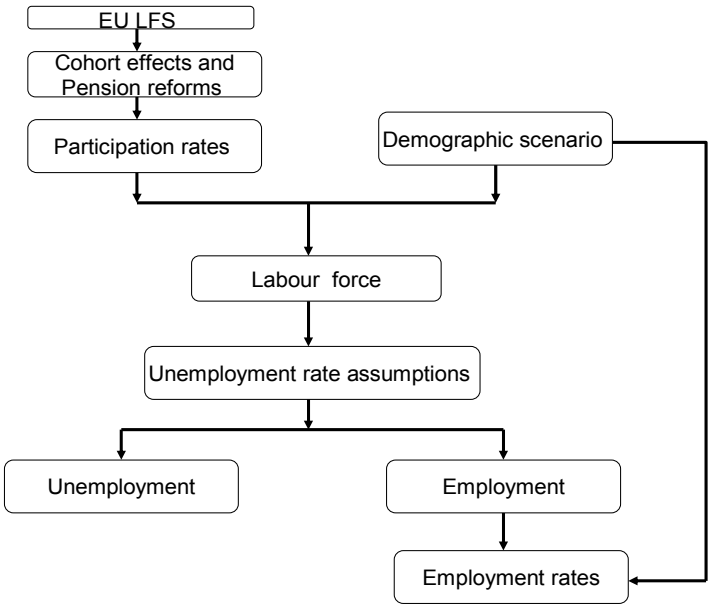
The AWG's labour market projections follow the age cohort methodology first developed by the OECD[20], with one modification, which is the use of single year of age instead of five-year age groups. Compared with standard projections based on the invariance of participation rates, the cohort-based projection contains an autonomous increase for the participation of women – referred to as the 'cohort effect' – corresponding to the gradual replacement of currently older women, with relatively low participation rates, by younger women with a much stronger attachment to the labour force[21], but also incorporates a negative 'cohort effect' for men because, according to long term trends, their participation rates have decreased across generations in a large majority of countries, contrary to what is observed for women.

Labour market projections were carried out by country, gender and age group. The following 13 age groups were considered: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-66, 67-68, and 69-70.

4.3.1. Participation rates

The first step in calculating employment rates is to project participation rates (Chart 10).

Chart 10: Labour market projections (the main steps in colour/darker)



Specifically, the methodology to project participation rates makes the following major assumptions:

[18] The Ageing Working Group was established by the Economic and Policy Committee.
[19] 'The 2009 Ageing Report: Underlying assumptions and projection methodologies for the EU-27 Member States (2007-2060)', European Economy 7/2008.
[20] Burniaux, Duval, and Jaumotte (2003), 'Coping with ageing: a dynamic approach to quantify the impact of alternative policy options on future labour supply in OECD countries', OECD Economic Department WP n°371.
[21] The model used in the AWG's projection is based on the assumption that lifetime participation profiles in the future parallel those observed in the past. This implies the assumption that the entry and exit rates calculated for the latest available cohorts (1998-2007) are kept constant in the future. Compared with a static baseline, this method implies a gradual increase of future participation rates for women, particularly for those aged 35 and over.

- Participation rates are calculated by single age and sex, by using the entry/exit rate calculated on the basis of the average of participation rates observed over the period 1998-2007. Therefore, participation rates should be interpreted as averages over a 'normal' economic cycle.
- The exit rates of older workers (aged 55-71) were adjusted to take into account recent and lagged effects of pension reforms in 20 EU Member States.

In fact, a very important feature of the AWG's labour market projection is that it takes into consideration the potential effects of recently enacted pension reforms in EU Member States, including measures to be phased in only gradually, on the participation of older workers (aged 55-71).

Table 6 presents the resulting participation rates. Values for 2008 are historical EU LFS data. Values for 2011 reflect the European Commission's autumn 2009 forecast (using 2008 as baseline). Values for 2020 are taken from the AWG projection. These indicate that in the EU27 participation rates are expected to increase by 2.6 percentage points (pp) between 2011 and 2020 (age band 15-64), reflecting increases of 4 pp and 10 pp, respectively, in the participation of women and older workers (aged 55-64). The latter reflects both cohort effects and the impact of pension reforms.

Table 6: Participation rates

		Age band 15-64			Age band 20-64			Age band 55-64		
COUNTRY	YEAR	Men	Women	Total	Men	Women	Total	Men	Women	Total
AT	2008	81.4	68.6	75.0	84.5	71.2	77.8	52.8	31.6	41.9
	2011	80.2	67.6	73.9	83.2	70.0	76.6	51.5	30.8	40.9
	2020	80.8	71.0	75.9	83.2	73.4	78.3	55.5	43.8	49.6
BE	2008	73.3	60.8	67.1	79.7	66.2	73.0	44.4	27.9	36.1
	2011	73.4	60.7	67.1	79.5	65.8	72.7	44.0	27.6	35.7
	2020	74.1	65.2	69.7	80.0	70.5	75.3	52.5	45.0	48.7
BG	2008	72.5	63.1	67.8	80.3	69.3	74.7	58.7	40.2	48.7
	2011	73.7	63.7	68.7	80.2	68.9	74.5	57.8	38.4	47.3
	2020	73.7	66.3	70.0	80.0	71.4	75.6	54.0	41.4	47.3
CY	2008	82.0	65.7	73.6	88.0	71.2	79.5	73.0	41.0	56.6
	2011	80.2	64.2	72.1	85.8	69.3	77.4	70.7	39.4	54.7
	2020	85.9	73.7	79.7	90.1	78.1	84.1	75.8	50.3	62.8
CZ	2008	78.1	61.0	69.7	84.9	66.1	75.6	64.2	36.1	49.5
	2011	78.6	61.3	70.0	84.6	65.9	75.3	62.9	35.0	48.5
	2020	81.1	66.8	74.0	86.5	71.4	79.1	67.7	48.4	57.9
DE	2008	82.1	70.8	76.5	86.7	74.6	80.6	67.3	50.6	58.8
	2011	82.1	70.7	76.4	86.1	74.0	80.1	66.7	50.1	58.3
	2020	83.8	74.1	79.0	87.7	77.4	82.6	77.7	62.2	69.9
DK	2008	84.4	77.1	80.8	86.5	78.2	82.4	66.0	51.5	58.7
	2011	82.3	75.2	78.8	84.4	76.4	80.4	64.6	50.3	57.4
	2020	82.3	77.0	79.7	84.3	78.4	81.4	67.2	58.4	62.8
EE	2008	78.3	70.1	74.0	86.5	76.5	81.3	68.8	62.3	65.1
	2011	79.2	70.2	74.5	85.4	75.1	80.0	67.3	60.2	63.2
	2020	79.6	71.6	75.4	85.2	76.4	80.7	63.6	62.3	62.9
ES	2008	81.8	63.2	72.6	86.2	66.6	76.5	65.1	34.2	49.2
	2011	80.3	61.6	71.1	84.5	64.8	74.8	63.8	33.5	48.2
	2020	81.5	69.6	75.7	86.1	73.9	80.1	68.7	58.5	63.5
FI	2008	77.9	73.9	76.0	82.8	77.7	80.2	60.6	58.8	59.7
	2011	76.7	72.6	74.7	81.4	76.2	78.8	58.6	56.7	57.6
	2020	79.7	77.0	78.3	84.0	80.5	82.3	65.0	67.4	66.2
FR	2008	74.8	65.6	70.1	80.8	71.0	75.8	42.6	37.6	40.0
	2011	74.5	65.2	69.8	80.1	70.2	75.1	40.5	35.7	38.0
	2020	74.6	66.7	70.6	80.5	72.2	76.3	48.5	43.1	45.7
GR	2008	79.1	55.1	67.1	84.6	59.2	71.9	60.9	28.6	44.2
	2011	80.2	55.5	67.9	85.6	59.5	72.6	61.5	28.8	44.7
	2020	78.7	59.9	69.4	83.8	64.2	74.1	58.6	38.1	48.1
HU	2008	68.3	55.0	61.5	74.6	59.9	67.0	40.5	27.0	33.1
	2011	69.0	55.3	62.0	75.0	59.9	67.3	41.0	27.4	33.6
	2020	72.2	61.3	66.7	77.7	65.9	71.7	51.4	44.1	47.4
IE	2008	80.7	63.1	72.0	86.4	67.0	76.7	68.6	42.2	55.5
	2011	73.9	57.5	65.8	78.7	60.8	69.8	62.3	38.2	50.3
	2020	82.0	69.6	75.8	87.3	74.0	80.7	70.2	61.0	65.6
IT	2008	74.4	51.6	63.0	79.6	55.1	67.3	47.0	24.7	35.5
	2011	74.4	51.4	62.9	79.4	54.7	67.0	46.1	24.0	34.8
	2020	76.6	56.0	66.4	81.8	59.7	70.8	65.8	42.7	54.0
LT	2008	71.4	65.5	68.4	80.3	72.8	76.4	63.0	50.0	55.6
	2011	74.2	67.7	70.9	82.0	74.3	78.0	64.3	50.8	56.6
	2020	73.0	69.2	71.1	78.1	73.8	75.9	59.7	59.1	59.4
LU	2008	74.8	58.7	66.8	80.7	63.7	72.3	39.6	30.0	34.9
	2011	74.0	58.0	66.1	80.0	63.2	71.7	39.0	29.7	34.4
	2020	73.2	61.4	67.3	79.2	66.6	73.0	40.7	40.9	40.8
LV	2008	78.6	70.5	74.4	86.5	77.4	81.8	68.7	59.3	63.3
	2011	75.9	67.9	71.8	81.8	73.1	77.3	64.4	55.4	59.3
	2020	79.6	71.3	75.3	84.4	75.5	79.8	61.4	56.2	58.5
MT	2008	76.9	40.2	58.8	82.0	41.6	62.1	47.9	13.3	30.4
	2011	77.7	40.7	59.5	82.5	42.0	62.6	46.5	13.0	29.6
	2020	80.7	43.6	62.5	84.6	44.8	65.1	56.9	17.2	37.1
NL	2008	85.3	73.3	79.3	87.4	74.2	80.8	65.9	43.5	54.7
	2011	85.1	73.0	79.1	87.1	73.8	80.5	65.1	42.9	54.0
	2020	82.5	76.2	79.3	84.5	77.3	80.9	60.6	51.2	55.9
PL	2008	70.9	57.0	63.8	78.0	62.2	69.9	46.8	21.6	33.3
	2011	71.6	56.9	64.1	77.8	61.5	69.5	45.5	20.9	32.4
	2020	71.7	60.2	65.9	76.5	64.0	70.2	45.2	25.2	34.6
PT	2008	79.5	68.9	74.2	85.1	73.7	79.3	63.0	46.6	54.4
	2011	77.8	67.3	72.5	83.0	71.8	77.4	61.3	45.4	53.0
	2020	79.6	72.8	76.2	84.9	77.8	81.3	68.1	59.4	63.6
RO	2008	70.6	55.2	62.9	76.5	60.0	68.2	55.1	34.7	44.2
	2011	71.9	56.1	64.0	76.6	60.0	68.3	54.5	34.4	43.8
	2020	71.0	58.8	64.9	75.4	62.6	69.0	56.7	38.5	47.1
SE	2008	81.7	76.9	79.3	87.8	81.5	84.7	76.5	69.0	72.8
	2011	80.9	76.1	78.6	86.7	80.4	83.6	75.5	68.0	71.7
	2020	84.5	79.7	82.1	89.7	83.8	86.8	81.0	69.7	75.4
SI	2008	75.8	67.5	71.8	80.6	71.9	76.4	46.4	22.2	34.2
	2011	75.4	66.9	71.3	79.6	70.7	75.3	45.4	21.9	33.6
	2020	75.8	70.7	73.3	79.8	74.8	77.4	50.1	48.1	49.1
SK	2008	76.4	61.3	68.8	84.2	67.5	75.8	59.9	26.4	41.9
	2011	77.8	62.1	69.9	84.7	67.6	76.1	59.3	26.0	41.6
	2020	79.1	66.7	72.9	84.6	71.2	77.9	57.3	44.0	50.3
UK	2008	82.4	69.4	75.8	86.3	71.9	79.0	69.9	50.2	59.9
	2011	81.9	68.9	75.3	85.5	71.2	78.3	68.9	49.2	58.8
	2020	82.3	72.2	77.2	85.6	74.5	80.0	68.2	59.8	63.9
EU27	2008	78.0	63.9	70.9	83.1	67.9	75.5	57.9	38.8	48.1
	2011	77.7	63.5	70.6	82.5	67.1	74.8	56.6	37.7	46.8
	2020	78.8	67.5	73.2	83.3	71.3	77.3	63.7	50.2	56.8

Sources: EU LFS (2008), DG Ecfin autumn 2009 forecast (2011), and AWG projections (2020).

4.3.2. Unemployment rate assumptions for 2020

In order to carry out some sensitivity analysis, the following three scenarios for the unemployment rate in 2020 were considered (Table 7):

- Scenario 1 (moderately optimistic): the unemployment rate reverts to the historical minimum value of the structural unemployment rate. The latter is the lowest value between the country's and the EU-15's structural unemployment rates in the period 2000-2010.[22] This scenario was inspired by the AWG methodology. It combines reversion to best past performance, with the notion that countries with NAIRU rates still above the EU15 average will converge to this average by 2020.
- Scenario 2 (pessimistic): the unemployment rate in 2020 stays at the reference level for the NAIRU reached in 2011. The latter is the minimum between the country's and the EU-15's NAIRU in 2011. This scenario assumes that the deterioration in structural unemployment reached at the end of the recession (i.e. 2011) becomes permanent, leading to unemployment hysteresis.
- Scenario 3 (strongly optimistic): the unemployment rate declines uniformly across countries to 4% in 2020.[23] This scenario was inspired by a note produced by the Netherlands CPB.[24]

Table 7: Unemployment rate assumptions for 2020 (age band 15-64)

	SCENARIOS		
COUNTRY	Scenario 1: Revert to best outcome (AWG)	Scenario 2: Hysteresis unemployment	Scenario 3: Lowest possible UR (CPB)
AT	4.0	5.5	4.1
BE	7.7	9.4	4.1
BG	6.8	6.8	4.1
CY	4.2	6.6	4.1
CZ	6.6	7.2	4.1
DE	7.8	8.6	4.1
DK	4.1	4.1	4.1
EE	7.9	9.5	4.1
ES	7.8	9.4	4.0
FI	7.6	8.3	4.1
FR	7.8	9.1	4.0
GR	7.8	9.4	4.1
HU	5.5	9.4	4.1
IE	3.8	9.5	4.1
IT	7.8	7.9	4.0
LT	7.9	9.5	4.1
LU	2.8	6.8	4.0
LV	7.8	9.4	4.0
MT	6.9	7.1	4.0
NL	2.8	4.6	4.0
PL	7.8	8.4	4.1
PT	5.3	9.0	4.2
RO	6.1	8.6	4.2
SE	5.6	8.5	4.1
SI	5.9	8.0	4.1
SK	8.0	9.6	4.1
UK	5.1	7.5	4.1
EU27	6.8	8.3	4.1

Sources: DG Empl calculations and AMECO.

Notice that unemployment rate assumptions are country-specific. In order to avoid that the overall level of unemployment changes over time as a result of composition effects due to the size of different age bands/gender cohorts, unemployment rates by age band and gender are calculated as (u_{igct}):

[22] Defined as DG Economic and Financial Affair's (Ecfin) NAIRU.
[23] Unemployment rates set at 4% in 2020 for the age group 15-70. Figures in Table 7 refer to the age group 15-64, thereby they slightly differ from 4%. Note that for a few MS the UR figure is higher than that for scenario 1.
[24] Lejour (2009), 'Lisbon post 2010: employment rate goals', *CPB Netherlands Bureau for Economic Policy Analysis*.

$$u_{igct} = \frac{u_{ct} * l_{ct}}{\sum_{ig}\left\{u_{igcb} * l_{igct}\right\}} * u_{igcb} \Rightarrow \sum_{ig}\left\{u_{igct} * l_{igct}\right\} = u_{ct} * l_{ct} = une_{ct}$$

where

i : age band; g : gender; c : country; t : period; b : base period

u : unemployment rate; l : labour force; une : unemployment level

The base period chosen is 2008, which was the last year for which historical data (EU LFS) was available.

Box 1: Reconciling various data sources in order to project both employment rates and employment levels

The labour market projections use four major data sources: i) the EU LFS for 2008; ii) DG Ecfin's autumn forecast for 2009-2011; iv) Eurostat's demographic projections for the population in 2009-2020; and iii) data from the AWG for PRs for 2012-2020.

It should be noted that employment rate (ER) projections do not require reconciling various data sources. Reconciling/linking different population levels is only necessary in order to estimate employment levels/growth rates.

In fact, ERs are independent of population levels, depending only on participation rate (PR) and unemployment rate (UR) assumptions:

$$ER = (1 - UR) * PR$$

Obviously, actual employment levels (EMP) (and growth rates) depend on actual population levels (POP):

$$EMP = ER * POP$$

In order to reconcile the different data sources, the following two operations were carried out:

- Population levels from the EU LFS and Eurostat's demographic projections were linked by gender and age group i.e. EU LFS population values for 2008 were extended forward by applying the corresponding annual growth rates in Eurostat's demographic projections.
- DG Ecfin's autumn economic forecast for 2009-2011 was used. First, total employment and unemployment rates were set at forecast values.[i] Second, in order to avoid that total employment growth and the unemployment rate change over time as a result of composition effects due to the size of different age bands/gender cohorts, employment and participation rates by age band and gender are calculated respectively as (er_{igct}, pr_{igct}):

$$er_{igct} = \frac{er_{ct} * pop_{ct}}{\sum_{ig}\left\{er_{igcb} * pop_{igct}\right\}} * er_{igcb} \Rightarrow \sum_{ig}\left\{er_{igct} * pop_{igct}\right\} = er_{ct} * pop_{ct} = emp_{ct}$$

$$pr_{igct} = \frac{pr_{ct} * pop_{ct}}{\sum_{ig}\left\{pr_{igcb} * pop_{igct}\right\}} * pr_{igcb} \Rightarrow \sum_{ig}\left\{pr_{igct} * pop_{igct}\right\} = pr_{ct} * pop_{ct} = l_{ct}$$

where

i : age band; g : gender; c : country; t : period; b : base period

er : employment rate; pr : participation rate; pop : population ; emp : employment levels; l : labour force

4.3.3. Employment Rate projections for 2020

Following the methodology presented in Chart 10, all elements were in place to calculate detailed labour market projections for 2020. For the EU27, the main results are presented in Tables 8 to 10. It should be stressed that projections were made on the basis of a 'no policy change' assumption i.e. reflecting only enacted legislation and, hence, participation rate developments in line with the base AWG reference projection. It should be noted in particular that further important policy measures to raise participation could lead to greater rises in participation rates than currently included in the projections. As such, therefore, these projections act as a sort of 'floor' for ER rises corresponding to current and already announced policies.[25]

Depending on the unemployment rate scenario, employment rates in the EU27 for the working age population (age band 15-64) vary from 67.1% to 70.2% in 2020 (Table 8). For the age band 20-64, employment rates vary from 71.3% to 74.3%, and for older workers (age band 55-64) from 53.3% to 55.1%.

Table 8: Employment rates in the EU27 for the working age population

COUNTRY:	EU27					
GENDER:	Men and Women					
Base period - Pre-crisis		2008				
	Age bands	PR	UR	ER	EMP	POP
	15-64	70.9	7.1	65.9	217751.3	330386.2
	20-64	75.5	6.7	70.5	212190.2	301190.8
	55-64	48.1	5.1	45.6	26852.0	58874.2
		2011				
Base period - Post-crisis	Age bands	PR	UR	ER	EMP	POP
	15-64	70.6	10.3	63.3	211082.2	333250.8
	20-64	74.8	9.9	67.3	205991.6	305867.2
	55-64	46.8	8.4	42.9	26853.4	62589.8

END PERIOD OF LABOUR MARKET PROJECTIONS		2020				
Projection scenario	Age bands	PR	UR	ER	EMP	POP
Scenario 1: Revert to best outcome (AWG)	15-64	73.2	6.8	68.2	224687.0	329641.9
	20-64	77.3	6.5	72.3	219631.5	303808.6
	55-64	56.8	5.2	53.8	36904.9	68550.5
Scenario 2: Hysteresis unemployment	15-64	73.2	8.3	67.1	221215.1	329641.9
	20-64	77.3	7.8	71.3	216515.3	303808.6
	55-64	56.8	6.2	53.3	36529.3	68550.5
Scenario 3: Lowest possible unemployment rate (CPB)	15-64	73.2	4.1	70.2	231355.7	329641.9
	20-64	77.3	3.8	74.3	225877.4	303808.6
	55-64	56.8	3.0	55.1	37741.7	68550.5

Sources: EU LFS, DG Ecfin autumn 2009 forecast, and AWG projections.

Depending on the unemployment rate scenario, employment rates in the EU27 for women aged 15-64 vary from 61.6% to 64.6%. For the age band 20-64, employment rates vary from 65.4% to 68.4% (Table 9). Employment rates in the EU27 for men aged 15-64 vary from 72.6% to 75.7%, and for men in the age band 20-64 from 77.2% to 80.3% (Table 10).

[25] The cut-off date of policy measures included can be put around early 2009.

Table 9: Employment rates in the EU27 for women

COUNTRY:	EU27					
GENDER:	Women					
Base period - Pre-crisis		2008				
	Age bands	PR	UR	ER	EMP	POP
	15-64	63.9	7.6	59.1	97819.9	165567.5
	20-64	67.9	7.2	63.0	95349.7	151307.8
	55-64	38.8	5.1	36.8	11192.9	30379.9
		2011				
Base period - Post-crisis	Age bands	PR	UR	ER	EMP	POP
	15-64	63.5	10.7	56.7	94650.6	166955.9
	20-64	67.1	10.4	60.2	92384.1	153576.3
	55-64	37.7	8.3	34.5	11168.1	32334.8

END PERIOD OF LABOUR MARKET PROJECTIONS		2020				
Projection scenario	Age bands	PR	UR	ER	EMP	POP
Scenario 1: Revert to best outcome (AWG)	15-64	67.5	7.3	62.6	103169.4	164737.6
	20-64	71.3	6.9	66.4	100935.4	152098.2
	55-64	50.2	5.2	47.7	16785.5	35223.6
Scenario 2: Hysteresis unemployment	15-64	67.5	8.7	61.6	101530.6	164737.6
	20-64	71.3	8.3	65.4	99453.4	152098.2
	55-64	50.2	6.1	47.2	16619.4	35223.6
Scenario 3: Lowest possible unemployment rate (CPB)	15-64	67.5	4.3	64.6	106472.5	164737.6
	20-64	71.3	4.0	68.4	104050.2	152098.2
	55-64	50.2	3.0	48.7	17168.2	35223.6

Sources: EU LFS, DG Ecfin autumn 2009 forecast, and AWG projections.

Table 10: Employment rates in the EU27 for men

COUNTRY:	EU27					
GENDER:	Men					
Base period - Pre-crisis		2008				
	Age bands	PR	UR	ER	EMP	POP
	15-64	78.0	6.7	72.8	119931.4	164818.7
	20-64	83.1	6.2	78.0	116840.5	149883.0
	55-64	57.9	5.1	55.0	15659.1	28494.3
		2011				
Base period - Post-crisis	Age bands	PR	UR	ER	EMP	POP
	15-64	77.7	9.9	70.0	116431.6	166295.0
	20-64	82.5	9.6	74.6	113607.4	152290.9
	55-64	56.6	8.4	51.8	15685.3	30254.9

END PERIOD OF LABOUR MARKET PROJECTIONS		2020				
Projection scenario	Age bands	PR	UR	ER	EMP	POP
Scenario 1: Revert to best outcome (AWG)	15-64	78.8	6.5	73.7	121517.6	164904.2
	20-64	83.3	6.1	78.2	118696.1	151710.4
	55-64	63.7	5.2	60.4	20119.4	33327.0
Scenario 2: Hysteresis unemployment	15-64	78.8	7.9	72.6	119684.5	164904.2
	20-64	83.3	7.4	77.2	117061.9	151710.4
	55-64	63.7	6.2	59.7	19909.9	33327.0
Scenario 3: Lowest possible unemployment rate (CPB)	15-64	78.8	3.9	75.7	124883.1	164904.2
	20-64	83.3	3.6	80.3	121827.1	151710.4
	55-64	63.7	3.1	61.7	20573.5	33327.0

Sources: EU LFS, DG Ecfin autumn 2009 forecast, and AWG projections.

4.4 Considerations in setting potential ER targets for 2020

4.4.1. Criteria for setting ambitious yet feasible targets

Setting employment rate targets for 2020 is a delicate exercise, and eventual targets ideally should reflect the following features:

- **Credibility** (i.e. possible to be achieved given evidence-based analysis focussing on past and especially expected future trends).
- **Challenging** (they should mobilise stakeholders and policy authorities to implement necessary structural reforms).

- **Send a strong policy message while remaining consistent with other policies**, especially in the areas of education and training. In this context, adjusting the age limit of the overall ER target from 15-64 to 20-64 conveys an important political message in terms of highlighting the importance of fostering education and skills/competences among the young.
- **Be a good communication tool**. ER targets are largely a 'communication device' that facilitates policy making. For that reason, ER targets should be clear and memorable, and consequently should as far as possible be set as 'round figures' e.g. multiples of 5. Furthermore, the temptation to make small changes in the targets in order to 'engineer' or 'fine-tune' them, should be resisted given the high degree of uncertainty in labour market projections.

4.4.2. Further considerations for setting targets

In setting realistic targets, in addition to the projections presented above the following considerations also needed to be borne in mind since they might also have an impact on future employment growth and consequently potential employment rate increases:

- The economic recession was expected to largely reverse the progress achieved in raising ERs since 2000. The overall ER was expected to fall by about 3 pps between 2008 and 2011, back to around 63% (i.e. almost back to the 2000 level of 62.2%).
- Signs pointed to substantial labour hoarding in the 2008-2009 recession, given that much of the adjustment had been made in the intensive margin (i.e. reduction in hours worked) rather than in the extensive margin (i.e. reduction in employment levels). Such an adjustment strategy was made possible due to the creation of new, or the extension of existing, short-time working or partial unemployment compensation schemes, and basically assumes that the shortfall in demand facing firms is temporary. According to most forecasts, a likely consequence of such a strategy might be subdued job creation in the recovery phase, at least initially, as firms first reverse reductions in hours worked before looking to expand staff levels.
- Whether the economic recovery will result in job creation at a normal pace i.e. according to historical trends, or will basically be 'jobless' will also depend on the successful implementation of exit strategies, preparing individuals and companies to meet structural challenges, and on the efficiency of public policies in modernising labour markets, within the framework provided by flexicurity principles.
- The EU population is currently undergoing an accelerated process of ageing which will bring with it a considerable shift in the age distribution of the working age population. Ageing essentially leads to a decline in the proportion of young people aged 15-24 in the working age population (down 2.1 pps by 2020) and to a rise in the share of older persons aged 55-64 (up 3 pps), together with a slightly lower share of people of prime working age (25-54).
- With ERs already fairly high in many Member States, raising rates further will rely on integrating those population elements which are furthest from the labour market (e.g. the low-skilled, migrants and ethnic minorities etc.). Greater efforts will be needed to reach these harder to integrate elements and help them into employment.
- A final consideration is that the effect of the rise in employment over 2000-2008 (some 19 million among those aged 15-64) on employment rates was dampened by the fact that the working age population also rose (by some 11 million for those aged 15-64). Equivalent rises for the population aged 20-64 were 20 million (employment) and 12 million (population). However, the situation to 2020 would be rather different in that the population aged 15-64 is set to decline (and that aged 20-64 to rise by only around 2 million), and hence any rise in employment would this time be more fully reflected in ER rises.

4.5 Exploring the implications of setting particular targets

A preliminary investigation was carried out to look at what the implications (in the sense of the effort required) of setting particular employment rate targets for 2020 would be in terms of average rates of employment growth and rises in employment rates. This was then compared with the progress achieved over the period 2000-2008 (i.e. taking a retrospective view). The subsequent section reports on a similar exercise but taking a prospective outlook i.e. comparing the required changes with the results of the labour market projections.

In both the retrospective and prospective analyses, the three existing employment rate targets were covered, namely the overall, female and older workers' (aged 55-64) employment rates. For the overall and female employment targets, the retrospective analysis examined two age ranges: 15-64 and 20-64, while the prospective analysis focuses only on the 20-64 age group.

The effort required to attain particular targets by 2020 are shown relative both to 2008 and 2011. The (statistical) base year is 2008, i.e. the latest year for which official annual average figures were available at the time of drafting this note. The year 2008 can also be seen as setting the pre-crisis benchmark. The year 2011 was used to define a kind of post-crisis starting point, incorporating the European Commission economic forecast of autumn 2009.[26]

4.5.1. Original target population 15-64

Table 11 shows the effort required to reach various overall employment rate targets for the age-range 15-64. Referring to the pre-crisis situation (i.e. ER figures from 2008), a target of 75% by 2020 might have been feasible, especially in the light of the employment growth witnessed over 2000-2008 (average growth of 1.2%), but the expected impact of the current crisis on employment suggests that, relative to the forecast situation in 2011, the original target of 70% would likely still be the most appropriate when considered against historical developments, given the implied average annual growth of 1.0% between 2011 and 2020.

[26] Similar to what is done in section 4.3, 2008 LFS values for employment and population were extended to 2011 using, respectively, DG Ecfin's autumn 2009 economic forecast and Eurostat's EUROPOP 2008 population projections. However, the procedure used in section 4.3 to reconcile/link the different data sources and age/sex groups is not used in section 4.5. Specifically, while in section 4.3 growth rates over 2008-2011 vary by age and gender groups (using the labour market structure in terms of employment/unemployment/participation rates of the last year for which data is available - 2008, see Box 1), section 4.5 adopts a simplified approach in which growth rates over 2008-2011 are assumed to be the same for all age and gender groups, the assumption being that all groups are equally affected by employment declines (this is somewhat unrealistic given that data show that certain population subgroups (e.g. men and youth) have been more affected by employment declines than others, therefore not necessarily complying with the labour market structure of the last year for which data is available). Nevertheless, the two methods produce identical results for population (where differences are due to rounding errors) and very similar and comparable results for employment data, thus overall providing an added level of robustness and allowing checking of the results regarding methodological assumptions.

Table 11: Total population aged 15-64

WAP 15-64	Historical			Empl change 2000-2008 19.4	Av % growth 2000-2008 1.2	ER change (pps) 3.7	Av annual ER change (pps) 0.5
	Pre-crisis (reference period 2008-2020)	ER 2008 65.9	Empl 2008 217.8		Popn 2020 329.0		
		ER tgt 2020	Empl 2020	Empl change	Av annual % growth (12 yrs)	ER change (pps)	Av annual ER change (pps)
		70	230.3	12.6	0.5	4.1	0.3
		75	246.8	29.0	1.0	9.1	0.8
		80	263.2	45.5	1.6	14.1	1.2
	Post crisis (2011) (reference period 2011-2020)	ER2011 63.3	Empl 2011 210.8	Popn 2011 333.0	Popn 2020 329.0		
		ER tgtg 2020	Empl 2020	Empl change	Av annual % growth (9 yrs)	ER change (pps)	Av annual ER change (pps)
		70	230.3	19.5	1.0	6.7	0.7
		75	246.8	36.0	1.8	11.7	1.3
		80	263.2	52.4	2.5	16.7	1.9

Source: ERs and employment from Eurostat, EU LFS, population from EU LFS adjusted to ESTAT EUROPOP2008 population projections
Note: ER as % of relevant population age group, employment and population levels in millions, ER changes in percentage point (pps)

Similarly, Table 12 shows the effort required to reach various female employment rate targets for the age-range 15-64. Whereas before the crisis a target of 70% might have been feasible (implying employment growth at similar levels as in 2000-2008), the impact of the crisis suggests the more conservative target of 65% as being more realistic in comparison with historical developments.

Table 12: Female population aged 15-64

Female WAP 15-64	Historical			Empl change 2000-2008 11.8	Av % growth rate 2000-2008 1.6	ER change 5.4	Av annual ER change (pps) 0.7
	Pre-crisis (reference period 2008-2020)	ER 2008 59.1	Empl 2008 97.8		Popn 2020 164.5		
		ER tgt 2020	Empl 2020	Empl change	Av annual % growth (12 yrs)	ER change (pps)	Av annual ER change (pps)
		65	106.9	9.1	0.7	5.9	0.5
		70	115.1	17.3	1.4	10.9	0.9
		75	123.3	25.5	2.0	15.9	1.3
	Post crisis (2011) (reference period 2011-2020)	ER2011 56.8	Empl 2011 94.7	Popn 2011 166.8	Popn 2020 164.5		
		ER tgtg 2020	Empl 2020	Empl change	Av annual % growth (9 yrs)	ER change (pps)	Av annual ER change (pps)
		65	106.9	12.2	1.4	8.2	0.9
		70	115.1	20.4	2.2	13.2	1.5
		75	123.3	28.6	3.0	18.2	2.0

Source: ERs and employment from Eurostat, EU LFS, population from EU LFS adjusted to ESTAT EUROPOP2008 population projections
Note: ER as % of relevant population age group, employment and population levels in millions, ER changes in percentage point (pps)

4.5.2. Revised target population 20-64

Table 13 shows the effort required to reach various overall employment rate targets for the age-range 20-64. Before the crisis, a target of 80% might have been feasible, but the estimated effects of the crisis suggest that the 75% target is now more appropriate, being more in line with historical employment growth developments during the period 2000-2008.

Table 13: Total population aged 20-64

WAP 20-64	Historical			Empl change 2000-2008 19.9	Av % growth rate 2000-2008 1.2	ER change (pps) 3.9	Av annual ER change (pps) 0.49
	Pre-crisis (reference period 2008-2020)	ER 2008 70.5	Empl 2008 212		Popn 2020 303		
		ER tgt 2020	Empl 2020	Empl change	Av annual % growth (12 yrs)	ER change (pps)	Av annual ER change (pps)
		70	212.3	0.1	0.0	-0.5	0.0
		75	227.4	15.3	0.6	4.5	0.4
		80	242.6	30.4	1.1	9.5	0.8
	Post crisis (2011) (reference period 2011-2020)	ER2011 67.2	Empl 2011 205.4	Popn 2011 305.6	Popn 2020 303.3		
		ER tgtg 2020	Empl 2020	Empl change	Av annual % growth (9 yrs)	ER change (pps)	Av annual ER change (pps)
		70	212.3	6.8	0.4	2.8	0.3
		75	227.4	22.0	1.1	7.8	0.9
		80	242.6	37.2	1.9	12.8	1.4

Source: ERs and employment from Eurostat, EU LFS, population from EU LFS adjusted to ESTAT EUROPOP2008 population projections
Note: ER as % of relevant population age group, employment and population levels in millions, ER changes in percentage point (pps)

Similarly, Table 14 shows the effort required to reach various female employment rate targets for the age-range 20-64. For women in this age group, whose ER was already 63% by 2008 and is estimated to remain above the 60% level by 2011, a target of 70% by 2020 does not appear unrealistic compared to historical developments (again, implying annual employment growth along the lines of that achieved in 2000-2008).

Table 14: Female population aged 20-64

Female WAP 20-64	Historical			Empl change 2000-2008 12.0	Av % growth rate 2000-2008 1.7	ER change 5.7	Av annual ER change (pps) 0.7
	Pre-crisis (reference period 2008-2020)	ER 2008 63.0	Empl 2008 95.3		Popn 2020 151.9		
		ER tgt 2020	Empl 2020	Empl change	Av annual % growth (12 yrs)	ER change (pps)	Av annual ER change (pps)
		65	98.7	3.4	0.3	2.0	0.2
		70	106.3	10.9	0.9	7.0	0.6
		75	113.9	18.5	1.5	12.0	1.0
	Post crisis (2011) (reference period 2011-2020)	ER2011 60.2	Empl 2011 92.3		Popn 2020 151.9		
		ER tgtg 2020	Empl 2020	Empl change	Av annual % growth (9 yrs)	ER change (pps)	Av annual ER change (pps)
		65	98.7	6.4	0.7	4.8	0.5
		70	106.3	14.0	1.6	9.8	1.1
		75	113.9	21.6	2.4	14.8	1.6

Source: ERs and employment from Eurostat, EU LFS, population from EU LFS adjusted to ESTAT EUROPOP2008 population projections
Note: ER as % of relevant population age group, employment and population levels in millions, ER changes in percentage point (pps)

4.5.3. Older workers target population 55-64

Table 15 shows the effort required to reach various employment rate targets for older workers (aged 55-64). For this age group, whose ER reached close to 46% in 2008 and is estimated to possibly decline to around 42% by 2011, a target of 55% by 2020 does not appear unrealistic when compared with the employment growth achieved in the period 2000-2008. A target of 60% could also be considered, given the only slightly higher employment growth rate required, if further measures to encourage active ageing would be introduced (e.g. pension reforms), bringing about a rise in the average labour market exit age.

Table 15: Older workers population aged 55-64

Older Workers 55-64	Historical			Empl change 2000-2008 7.6	Av % growth rate 2000-2008 4.3	ER change 8.7	Av annual ER change (pps) 1.1
	Pre-crisis (reference period 2008-2020)	ER 2008 45.6	Empl 2008 26.9		Popn 2020 68.5		
		ER tgt 2020	Empl 2020	Empl change	Av annual % growth (12 yrs)	ER change (pps)	Av annual ER change (pps)
		50	34.2	7.4	2.0	4.4	0.4
		55	37.7	10.8	2.9	9.4	0.8
		60	41.1	14.2	3.6	14.4	1.2
	Post crisis (2011) (reference period 2011-2020)	ER2011 41.6	Empl 2011 26.0	Popn 2011 62.5	Popn 2020 68.5		
		ER tgtg 2020	Empl 2020	Empl change	Av annual % growth (9 yrs)	ER change (pps)	Av annual ER change (pps)
		50	34.2	8.2	3.1	8.4	0.9
		55	37.7	11.7	4.2	13.4	1.5
		60	41.1	15.1	5.2	18.4	2.0

Source: ERs and employment from Eurostat, EU LFS, population from EU LFS adjusted to ESTAT EUROPOP2008 population projections
Note: ER as % of relevant population age group, employment and population levels in millions, ER changes in percentage point (pps)

4.6 Comparison of required progress to meet targets from the labour market projections

The required effort to reach the respective targets for the overall employment rate for the age group 20-64, for females aged 20-64 and for older workers aged 55-64 was also checked against the reference projection for future expected developments i.e. the results of the labour market projections, as opposed to the simplified calculations and historical reference of the previous section.

The three labour market scenarios for 2020 were used to check the required progress to reach particular targets. Table 16 compares the resulting annual employment growth rate during the 2011-2020 period with the minimum annual growth rate necessary to meet a 'feasible' and 'round' ER target. The last column in Table 16 reports the ratio between the 'required' and the 'projected' annual growth rate of employment, with high values indicating that a significant additional policy effort would be needed to raise employment levels to meet the respective target.

The results suggest that a rounded overall target of 75% for those aged 20-64, of 70% for women in the same age group, and of 55% or 60% (given the proximity of the projected older workers' ERs to 55%) for older people aged 55-64 look appropriate/feasible for all three scenarios. These targets are generally the next highest rounded figures above the projected "no policy change" scenario values, and are not excessively higher while still reflecting some scope for additional new policy measures to drive ERs further so that the targets could feasibly be reached.[27]

[27] One should bear in mind that the projections reflect a no policy change assumption; therefore there is scope for further actions to raise ERs.

Table 16: Efforts required to reach round ER targets in 2020

	Employment rates				Av. % annual EMP growth rate (2020-2011)		Ratio
	Pre-crisis - 2008	Pos-crisis - 2011	Projections - 2020	Round target - 2020	(1) Projections	(2) Round target	(2)/(1)
Scenario 1: Revert to best outcome (AWG)							
Men+Women (20-64)	70.5	67.3	72.3	75	0.7	1.1	1.6
Women (20-64)	63.0	60.2	66.4	70	1.0	1.6	1.6
Older workers (55-64)	45.6	42.9	53.8	55/60	3.6	3.8/4.9	1.1/1.3
Scenario 2: Hysteresis unemployment							
Men+Women (20-64)	70.5	67.3	71.3	75	0.6	1.1	2.0
Women (20-64)	63.0	60.2	65.4	70	0.8	1.6	1.9
Older workers (55-64)	45.6	42.9	53.3	55/60	3.5	3.8/4.9	1.1/1.4
Scenario 3: Lowest possible UR (CPB)							
Men+Women (20-64)	70.5	67.3	74.3	75	1.0	1.1	1.1
Women (20-64)	63.0	60.2	68.4	70	1.3	1.6	1.2
Older workers (55-64)	45.6	42.9	55.1	55/60	3.9	3.8/4.9	1.0/1.3
Sources: EU LFS, DG Ecfin autumn 2009 forecast, and AWG projections.							

While both historical trends and prospective developments can help in setting (or revising) ER targets for 2020, given the potentially far reaching and protracted implications of the current recession, the ongoing process of rapid population ageing, and the implementation of ambitious pension reforms, it can be argued that breaks in (labour market) series are likely to have occurred at the end of the first decade of the 21st century. Therefore, it seemed advisable in setting new targets to give more weight to prospective scenarios than to historical trends.

However, it is reassuring to report that there was a high degree of agreement between the results of the retrospective and prospective analyses as regards the possible choice of ER targets for 2020 that are both 'feasible' and 'round' numbers.

4.7 Proposed common ER targets for 2020

Based on the analysis carried out, the following appeared as feasible ER targets for the age group 20-64 for 2020:

- An average overall ER of 75%
- An average female ER of 70%

For the older workers age group (55-64), a target of 55% should be in reach and reasonably challenging, but setting a more ambitious target of 60% could be considered if important structural reforms and new policy measures focused on extending working lives and supporting active ageing could be envisaged:

- An average older worker's ER of 55% or 60%.

These targets were discussed in several fora and were generally seen as appropriate and feasible by Member States, although in the event it was decided only to set a common target for the overall employment rate. In culmination of this activity, in March 2010 the Spring European Council agreed on the overall employment target for the EU27 in 2020 as a "*75% employment rate for women and men aged 20-64, including through the greater participation of youth, older workers and low skilled workers and the better integration of legal migrants*".

5. Setting complementary and differentiated targets - options for setting national employment rate targets for 2020

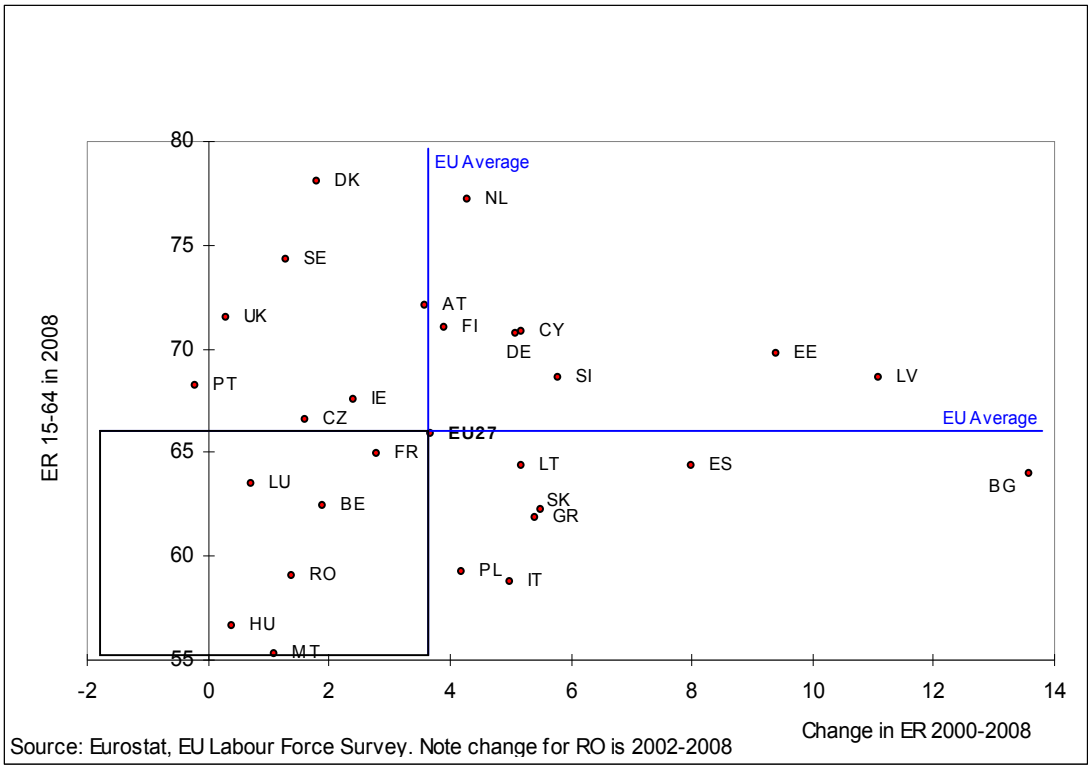
5.1.1. Rationale for complementary differentiated targets

Historically, employment rate targets have been set exclusively in the form of averages for the EU as a whole. However, there are large variations in the actual level and evolution in employment rates across Member States (Chart 11), particularly since the

last two enlargements. In 2008, overall ERs for the age group 15-64 ranged from a low of 55.3% in Malta to a high of 78.1% in Denmark.

Given the wide diversity in employment rates across EU Member States, the utility of having just an overall employment rate target for the EU has been questioned, in that a single target may not be challenging or relevant for some Member States, while being unrealistically demanding for others. In the discussions (held in the Employment Committee) on setting the overall employment rate target consideration was therefore also given to the need to complement it with differentiated targets for individual Member States, to take into account their particular circumstances and distinct starting positions. For example, in addition to a common, overall average for the EU as a whole (i.e. a collective target), one might consider setting differentiated targets for Member States to encourage them to make progress in raising their employment rates. Such targets should emphasise more the need for weaker performers to improve, eventually contributing to reducing cross-country disparities.

Chart 11: Evolution in overall employment rates (15-64) across EU Member States, 2000-2008



Source: Eurostat, EU Labour Force Survey. Note change for RO is 2002-2008

In Chart 11, Member States are classified (in four quadrants) according to their relative position against the EU27 employment rate average in 2008 and the average change in the employment rate between 2000 and 2008. The lower left quadrant of Chart 11 identifies a group of countries where, with respect to overall developments in the EU, employment rates in 2008 remained far from the common target and where progress towards the common target had been relatively limited. This consists of those countries (namely Belgium, France, Hungary, Luxembourg, Malta and Romania.) where the employment rate remained below average for the EU and the rise in employment rates since 2000 had been below average, thus acting as a drag on the overall EU aggregate. In the lower right quadrant, another group consists of those Member States which, despite having made relatively good progress in raising their employment rates over 2000 to 2008, had rates in 2008 still well below the EU average, especially Italy and Poland.

This emphasises the need to address the situation of the poorer performers simultaneously with the situation of the EU as a whole, and supports the view that a common ER target for the EU should be accompanied by complementary targets taking

into account Member States' very different initial conditions and the desirable improvement in their performance.

As a result of the discussions on this issue, at the same time as the Spring 2010 European Council agreed on the overall employment target for the EU27 in 2020, it also decided that this overall target should be translated into national targets for each Member State – "*In the light of the headline targets, Member States will set their national targets, taking into account their relative starting positions and national circumstances. They will do so according to their national decision-making procedures, in a dialogue with the Commission in order to check consistency with the EU headline targets".*

5.1.2. Possible approaches to setting national ER targets for 2020

In order to provide a point of departure for the dialogue with Member States on setting national targets, analysis was carried out to look into possible approaches to setting such targets, in line with the proposed format for the overall employment rate target of 75% for the population aged 20-64.

In deciding on the eventual approach to setting national targets, it was helpful to consider some key basic principles which should apply, namely:

- all MS should be required to make an effort (i.e. all should raise rates by a minimum amount)
- those with the largest gaps to the aggregate target should do more
- the combined efforts should be (at least broadly) consistent with reaching the aggregate 75% target

These principles reflect the fact that all Member States should contribute to raising the aggregate EU rate, while recognising that those where the employment rate is already high face greater difficulties to raise rates further.

When calculating the national efforts required to meet the EU target, 2010 was used as the base year (using the forecast employment growth for 2009 and 2010 from the Commission's autumn 2009 economic forecasts and applying these to the 2008 employment data from the EU labour force survey). This reflects the fact that 2010 would in any case be taken as the year for the implementation of the new Europe 2020 strategy, and hence the reference year for progress to the 2020 targets, but also takes into account the important impact on labour markets of the 2008-2009 crisis, instead of just using the latest available annual data from the LFS then available which referred to 2008 i.e. before the crisis. This was important as correcting the employment situation to 2010 has a large influence on the calculated efforts (e.g. especially for countries such as the Baltic States, Ireland and Spain whose ERs had in the meantime plummeted). Furthermore, 2010 corresponded for most Member States (19) to the year in which employment contraction was forecast to come to an end, with employment growth resuming in 2011. For most it would therefore coincide with the low point expected in employment rates. For those Member States where some further employment contraction was forecast in 2011, this was in all cases relatively minor, with the majority of the contraction already having taken place by the end of 2010.

5.1.3. Options examined

Several options for setting indicative national employment rate targets for 2020 were examined. In addressing this issue, it was instructive first to examine what would be the possible boundaries for setting the rates. These are in essence set by two reference cases: (a) that all Member States are required to raise their rates by the same amount, and (b) that all Member States are required to fully close their individual gaps to the 75% target (i.e. all are to achieve a 75% target by 2020). The results of these "boundary

cases" are herein presented alongside those for more realistic options, since they act as useful reference points.[28]

'Boundary cases':

- *Boundary case 1*: All Member States (MS) raise their ERs (20-64) by the average gap to the 75% target (estimated at 7.6 percentage points)
- *Boundary case 2*: All Member States achieve a 75% target in 2020

However, more realistic options for setting indicative national ER targets were as follows:

- *Option 1*: Member States at least halve their gaps to the 75% target.

Rationale: Only presented for information/reference (as the resulting aggregate ER of 71.2 % is inconsistent with an aggregate EU target of 75%).

- *Option 1a*: Member States halve their gaps to the 75% target (for those below the target), plus add a standard rise of 4 percentage points applicable to all MS.

Rationale: Securing consistency of national targets with an EU aggregate target can be achieved through different combinations of a standard rise for all and a percentage reduction in the initial gap. In option 1a, the 'halve the gap' rule is made consistent with the aggregate EU target by complementing it with an additional standard rise of 4 pps for all MS.

- *Option 2*: Member States close their gaps to the 75% EU target by three-quarters (for those below the target), plus add a standard rise of 2 percentage points applicable to all MS.

Rationale: Consistency of national targets with the aggregate EU target is now secured by giving more weight to the percentage reduction in the ER gap, offsetting this by a reduction in the common rise. Obviously (and compared with option 1a), this increases the effort required from underperforming Member States.

- *Option 3*: ER rises for Member States are the average of the EU gap to the aggregate target and the closing of the individual gap to the target (i.e. the average of the boundary cases 1 and 2).

Rationale: This option is (mathematically) almost identical to option 1a (see Table II. 1). It highlights the fact that (all linear) combinations of the boundary cases 1 and 2 are compatible with an aggregate EU ER target of 75%. However, different weighting of the two components shifts the distribution of effort across MS. Giving a higher weight to the boundary case 2 component shifts more of the required effort towards underperforming Member States.

- *Option 3a*: ER rises for Member States are a weighted average of the EU gap to the aggregate target (weighted 2/3) and the closing of the individual gap to the target (weighted 1/3), i.e. a weighted average of 'boundary cases' 1 and 2.

Rationale: Option 3a corresponds to lowering the weight for boundary case 2, thereby reducing the required effort from underperforming Member States, while remaining consistent with an aggregate EU target of 75%.

- *Option 3b*: ER rises for Member States are a weighted average of the EU gap to the aggregate target (weighted 1/3) and the closing of the individual gap to the target (weighted 2/3), i.e. again a weighted average of 'boundary cases' 1 and 2.

Rationale: Option 3b corresponds to increasing the weight for 'boundary case' 2, thereby increasing the effort required by underperforming Member States, while remaining consistent with an aggregate EU target of 75%.

[28] All the options being examined are in essence combinations of these two boundary cases, using different weights to place different emphasis on the two aspects of "closing the individual gap to the target" and a "standard rise applicable to all Member States").

- *Option 4*: ER rises for Member States reflect equal employment growth rates across all Member States sufficient to meet the aggregate EU target of 75% (which corresponds to average annual employment growth in the years 2011 to 2020 of 1.1%).

Rationale: There is a need for annual average employment growth of 1.1% at EU level in order to reach the target. This could be required from every Member State (= equal effort on labour demand side).

- *Option 4a*: ER rises for Member States are a weighted average of equal employment growth (weighted ½) and all MS raising their rates by the EU average gap to the 75% target (weighted ½).

Rationale: This option looks at combining the common employment growth approach of option 4 (demand side constraint) with the common ER rise approach of boundary case 1 (supply side constraint).

- *Option 5*: A 'quadratic' term is added to the two components considered in options 1 to 3b, i.e. a standard rise and a percentage reduction in the ER gap (see Annex III).

Rationale: Although depending on the exact calibration used, consideration of a 'quadratic' term would tend to increase the demands put on underperforming MS. For a 10 pp ER gap, option 5 increases by 20% the required effort of reducing the ER gap (relative to option 3). Option 5 does not look to overburden underperforming MS. In fact, option 3b implies a higher rise in ERs for underperforming MS than option 5.

- *Option 6*: Similar to option 5, but the calibration used increases by 50% the effort required for reducing an ER gap of 10 pp (relative to option 3).

Rationale: Providing some sensitivity analysis for the introduction of a 'quadratic' term. Among the 10 options considered, option 6 is the most challenging for underperforming MS.

5.1.4. Reference employment rates

It is useful to have reference points against which to assess what might be credible national targets for 2020. In this regard, information is presented firstly on what has historically been achieved in terms of the highest ER attained by Member States in recent years (i.e. in the period 2000-2008) before the crisis led to the sharp downturn in labour markets, and secondly what might be expected based on labour market projections to 2020. For the latter the same projections previously described (see section 4.3) based on a supply-side methodology developed by the AWG, and using Eurostat's baseline demographic projections published in 2008 and DG Ecfin's latest autumn 2009 economic forecast, were used to provide an outlook for major labour market variables up to 2020. Again, given the uncertainty surrounding the pace of economic recovery and labour market developments (e.g. the emergence or not of unemployment hysteresis), three scenarios for the 2020 structural unemployment rate were considered.[29]

It should be stressed that these scenarios for 2020 are made on the basis of a 'no policy change' assumption i.e. reflecting only enacted legislation approved at the time of publication of the Ageing Report (early 2009). As such, these projections act as a sort of 'floor' for ER rises which can be improved upon by taking additional measures.[30]

The employment rates from these scenarios, together with the best historical rates in the period 2000-2008, are presented in Table 17.

[29] First, EU labour markets revert to their best historical performance in terms of unemployment rates in the 2000s; second, emergence of unemployment hysteresis; and third unemployment rates by 2020 decline to minimum (or 'frictional') levels i.e. even below best historical outcomes.
[30] It is interesting to note that in some countries particularly hard hit by the recession (the three Baltic States, Ireland and Spain) the ER projections show a strong turn around in the labour market situation.

Table 17: Employment rates (age group 20-64) from projection scenarios and the best historical rate in the period 2000-2008

	Comparison reference values for ERs(20-64)			
	Best historical ER (in period 2000-2008)	ER Projection scenario 1: Revert to best structural UR outcome	ER Projection scenario 2: Persistent high unemployment (hysteresis)	ER Projection scenario 3: Lowest possible UR (all URs at 4%)
AT	75.1	75.5	74.4	75.4
BE	68.0	69.7	68.4	72.3
BG	70.7	70.7	70.7	72.7
CY	76.8	80.6	78.6	80.7
CZ	72.4	74.0	73.5	75.9
DE	74.6	76.2	75.6	79.3
DK	79.9	78.4	78.4	78.5
EE	77.0	74.7	73.4	77.6
ES	69.5	74.3	73.1	77.1
FI	75.8	76.8	76.3	79.4
FR	70.4	70.7	69.7	73.4
GR	66.5	68.5	67.3	71.2
HU	62.6	67.8	65.1	68.9
IE	73.8	77.9	73.6	77.6
IT	63.0	65.6	65.5	68.1
LT	72.9	70.0	68.8	72.8
LU	69.6	71.1	68.3	70.2
LV	75.8	73.9	72.6	76.7
MT	59.1	61.3	61.2	62.9
NL	78.9	79.0	77.6	78.1
PL	65.0	64.8	64.4	67.4
PT	73.9	77.2	74.3	78.1
RO	64.8	65.0	63.4	66.3
SE	80.4	82.7	80.6	83.8
SI	73.0	72.9	71.3	74.3
SK	68.8	71.9	70.6	74.8
UK	75.2	76.5	74.8	77.2
EU27	**70.5**	**72.3**	**71.3**	**74.3**

Source: DG EMPL calculations based on Eurostat, EU LFS and AWG projectic
Note: 1). For RO best ER refers to period 2002-2008. 2). Best ER over 2000-2 generally in 2008 except CY, ES, HU, IE, LU, LT (2007), RO (2006) and PT (2(

5.1.5. Results of options examined

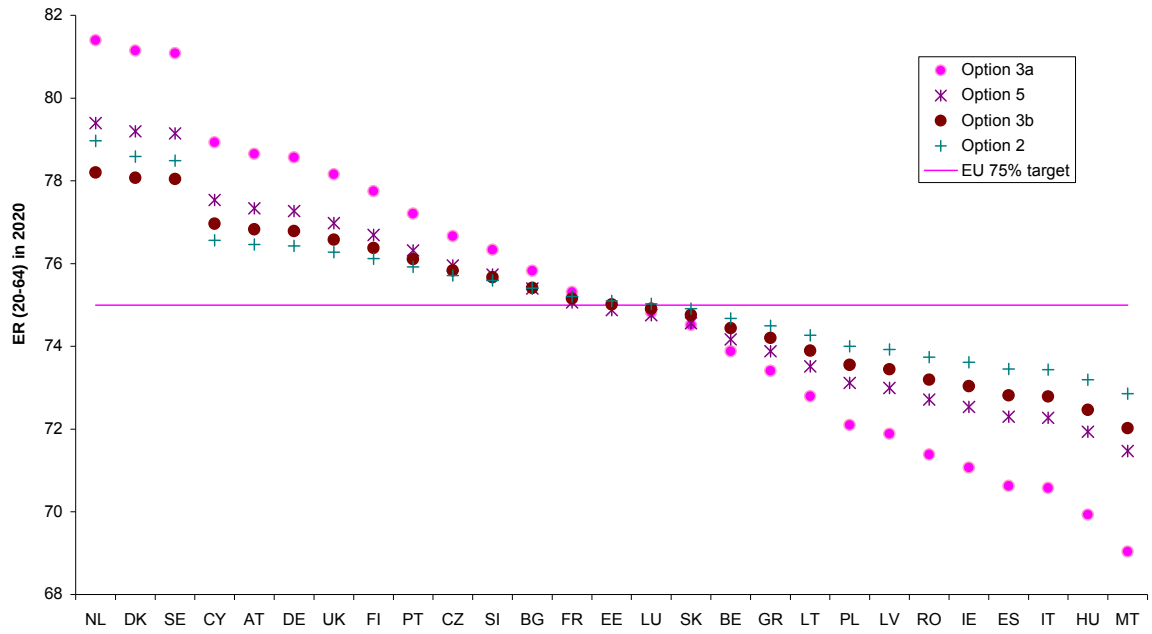
The national ER targets calculated for the reference population 20-64 under the 10 options identified in section 5.1.3 are presented in Table 18, which presents the employment rate values, and Table 19, which shows the required change compared to the estimated initial ER in 2010. These results can be compared with the reference points provided by the best historical employment rate for the age group 20-64 achieved in the period 2000-2008 (i.e. pre-crisis) and the projected ERs (20-64) in 2020 for the three scenarios based on the labour market projections presented in Table 17.

5.1.6. Initial examination of results

In essence, what differentiates the various options is the amount of redistribution of the overall effort across MS, which is determined through deciding by how much those with

the largest gaps below the aggregate target should do more than the better performers. As a result, most options end up being essentially different parameterisations of the same equation. This is achieved through adjusting the two basic components - a standard rise and a fractional reduction in the ER gap. In practice, raising (lowering) the standard rise element, and offsetting this by a lowering (raising) of the fractional reduction in the ER gap shifts the effort required away from (towards) underperforming MS. This can be seen clearly in Chart 12, which shows for various options the effects of the distribution of the effort required on Member States' ERs.

Chart 12: Different Options shift the effort across MS



The results in Table 18 show that options 4 and 4a clearly lead to problematic results (Chart 13), with very implausible changes in the rankings of Member States' ERs between 2010 and 2020. However, this simply reflects that fact that applying constant employment growth across all Member States, and hence disconnecting it from country-specific labour supply/population growth rates, leads to less useful results. These options were therefore discarded.

Table 18: ER implications of various options for distributing the required effort to reach an EU average ER (20-64) target of 75% in 2020

	Base ER	Preliminary information		Options for setting national ER targets									
	Estimated ER(20-64) in 2010	**Boundary case 1**: All MS raise rates by EU average gap to 75% target (i.e.by 7.6 pps)	**Boundary case 2**: All MS achieve a 75% ER in 2020 (i.e. fully close individual gap to 75% target)	**Option 1**: All MS halve their individual gap to 75% target (no change for those already above target)	**Option 1 a**: Halve individual gap to 75% target (for those below the target) plus add a standard rise of 4 pps across all MS	**Option2**: Close gap by 3/4 to 75% target (for those below the target), plus add a standard rise of 2 pps across all MS	**Option 3**: Average of absolute rise of av EU gap to 75% target and full closing of individual gap to 75% target	**Option 3 a**: Weighted average of rise of av EU diff to tgt (2/3) and full closing of gap to 75% (1/3)	**Option 3 b**: Weighted average of rise of av EU diff to tgt (1/3) and full closing of gap to 75% (2/3)	**Option 4**: Equal employment growth across all MS suffient to meet target (equal effort on labour demand side)	**Option 4a**: Weighted combination of equal empl growth (0.5) and all MS raising rates by av of the ER gap to 75% target (0.5)	**Option 5**: Quadratic formula ; extra requirement on under-performers, 20% further adjustment at 10 pp ER gap to option 3	**Option 5a**: Quadratic formula; extra requirement on under-performers, 50% further adjustment at 10 pp ER gap to option 3
AT	72.8	80.5	75	73.9	77.9	76.5	77.7	78.7	76.8	78.3	79.4	77.3	76.7
BE	65.7	73.3	75	70.3	74.3	74.7	74.2	73.9	74.4	71.5	72.4	74.2	74.2
BG	68.6	76.2	75	71.8	75.8	75.4	75.6	75.8	75.4	83.9	80.1	75.4	75.1
CY	73.3	80.9	75	74.1	78.1	76.6	77.9	78.9	77.0	71.0	76.0	77.5	76.9
CZ	69.9	77.5	75	72.4	76.4	75.7	76.2	76.7	75.8	81.7	79.6	76.0	75.5
DE	72.7	80.3	75	73.9	77.9	76.4	77.7	78.6	76.8	82.4	81.4	77.3	76.7
DK	76.6	84.2	75	76.6	80.6	78.6	79.6	81.1	78.1	85.6	84.9	79.2	78.6
EE	67.4	75.0	75	71.2	75.2	75.1	75.0	75.0	75.0	79.3	77.2	74.9	74.7
ES	60.8	68.4	75	67.9	71.9	73.5	71.7	70.6	72.8	63.9	66.2	72.3	73.2
FI	71.5	79.1	75	73.2	77.2	76.1	77.1	77.7	76.4	83.2	81.1	76.7	76.1
FR	67.8	75.5	75	71.4	75.4	75.2	75.2	75.3	75.2	76.0	75.7	75.1	74.8
GR	65.0	72.6	75	70.0	74.0	74.5	73.8	73.4	74.2	73.0	72.8	73.9	74.0
HU	59.8	67.4	75	67.4	71.4	73.2	71.2	69.9	72.5	69.6	68.5	71.9	73.0
IE	61.5	69.1	75	68.2	72.2	73.6	72.1	71.1	73.0	60.6	64.8	72.5	73.3
IT	60.7	68.4	75	67.9	71.9	73.4	71.7	70.6	72.8	67.6	68.0	72.3	73.1
LT	64.1	71.7	75	69.5	73.5	74.3	73.3	72.8	73.9	72.5	72.1	73.5	73.8
LU	67.1	74.7	75	71.1	75.1	75.0	74.9	74.8	74.9	67.7	71.2	74.8	74.6
LV	62.7	70.3	75	68.8	72.8	73.9	72.7	71.9	73.4	74.0	72.2	73.0	73.5
MT	58.4	66.1	75	66.7	70.7	72.9	70.5	69.0	72.0	65.7	65.9	71.5	72.9
NL	77.0	84.6	75	77.0	81.0	79.0	79.8	81.4	78.2	86.9	85.8	79.4	78.8
PL	63.0	70.6	75	69.0	73.0	74.0	72.8	72.1	73.5	73.1	71.9	73.1	73.5
PT	70.7	78.3	75	72.8	76.8	75.9	76.7	77.2	76.1	77.6	77.9	76.3	75.8
RO	61.9	69.6	75	68.5	72.5	73.7	72.3	71.4	73.2	71.8	70.7	72.7	73.3
SE	76.5	84.1	75	76.5	80.5	78.5	79.6	81.1	78.0	83.2	83.6	79.1	78.5
SI	69.4	77.0	75	72.2	76.2	75.6	76.0	76.3	75.7	80.4	78.7	75.7	75.3
SK	66.6	74.3	75	70.8	74.8	74.9	74.6	74.5	74.8	75.5	74.9	74.6	74.4
UK	72.1	79.7	75	73.5	77.5	76.3	77.4	78.2	76.6	77.2	78.4	77.0	76.4
EU27	67.4	**75.0**	**75.0**	**71.2**	**75.2**	**75.2**	**75.0**	**75.0**	**75.0**	**75.0**	**75.0**	**75.0**	**75.0**

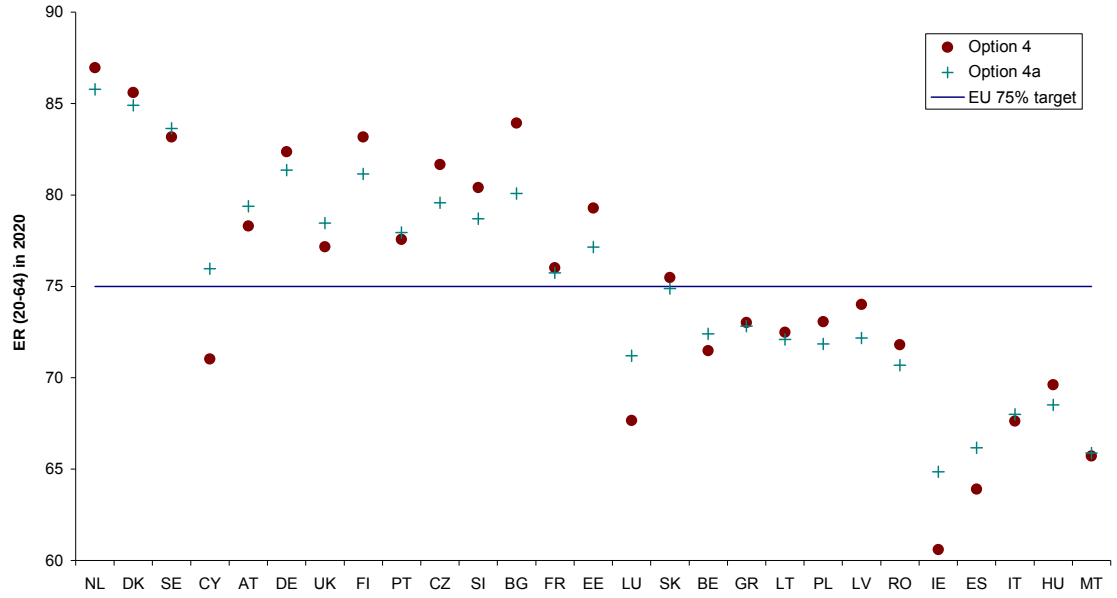
Source: DG EMPL calculations based on Eurostat, EU LFS and demographic projections.

Table 19: Implied ER rises on 2010 values under the various options

	Base ER	Preliminary information		Options for setting national ER targets									
	Change in ER(20-64) between 2000 and 2008[1]	**Boundary case 1**: All MS raise rates by EU average gap to 75% target (i.e.by 7.6 pps)	**Boundary case 2**: All MS achieve a 75% ER in 2020 (i.e. fully close individual gap to 75% target)	**Option 1**: All MS halve their individual gap to 75% target (no change for those already above target)	**Option 1 a**: Halve individual gap to 75% target (for those below the target) plus add a standard rise of 4 pps across all MS	**Option2**: Close gap by 3/4 to 75% target (for those below the target), plus add a standard rise of 2 pps across all MS	**Option 3**: Average of absolute rise of av EU gap to 75% target and full closing of individual gap to 75% target	**Option 3 a**: Weighted average of rise of av EU diff to tgt (2/3) and full closing of gap to 75% (1/3)	**Option 3 b**: Weighted average of rise of av EU diff to tgt (1/3) and full closing of gap to 75% (2/3)	**Option 4**: Equal employment growth across all MS suffient to meet target (equal effort on labour demand side)	**Option 4a**: Weighted combination of equal empl growth (0.5) and all MS raising rates by av of the ER gap to 75% target (0.5)	**Option 5**: Quadratic formula ; extra requirement on under-performers, 20% further adjustment at 10 pp ER gap to option 3	**Option 5a**: Quadratic formula; extra requirement on under-performers, 50% further adjustment at 10 pp ER gap to option 3
AT	3.7	7.6	2.2	1.1	5.1	3.6	4.9	5.8	4.0	5.5	6.5	4.5	3.9
BE	2.2	7.6	9.3	4.7	8.7	9.0	8.5	8.2	8.8	5.8	6.7	8.5	8.5
BG	15.4	7.6	6.4	3.2	7.2	6.8	7.0	7.2	6.8	15.3	11.5	6.8	6.4
CY	4.2	7.6	1.7	0.9	4.9	3.3	4.7	5.7	3.7	-2.2	2.7	4.3	3.6
CZ	1.4	7.6	5.1	2.6	6.6	5.9	6.4	6.8	6.0	11.8	9.7	6.1	5.6
DE	5.8	7.6	2.3	1.1	5.1	3.7	5.0	5.9	4.1	9.7	8.6	4.6	3.9
DK	1.9	7.6	-1.6	0.0	4.0	2.0	3.0	4.6	1.5	9.0	8.3	2.6	2.0
EE	9.6	7.6	7.6	3.8	7.8	7.7	7.6	7.6	7.6	11.9	9.8	7.5	7.3
ES	7.6	7.6	14.2	7.1	11.1	12.6	10.9	9.8	12.0	3.1	5.4	11.5	12.4
FI	4.2	7.6	3.5	1.8	5.8	4.6	5.6	6.3	4.9	11.7	9.7	5.2	4.6
FR	2.6	7.6	7.2	3.6	7.6	7.4	7.4	7.5	7.3	8.2	7.9	7.2	7.0
GR	4.6	7.6	10.0	5.0	9.0	9.5	8.8	8.4	9.2	8.0	7.8	8.9	9.0
HU	0.7	7.6	15.2	7.6	11.6	13.4	11.4	10.2	12.7	9.9	8.7	12.2	13.3
IE	1.9	7.6	13.5	6.8	10.8	12.2	10.6	9.6	11.6	-0.9	3.4	11.1	11.8
IT	5.6	7.6	14.3	7.1	11.1	12.7	11.0	9.8	12.1	6.9	7.3	11.5	12.4
LT	6.4	7.6	10.9	5.5	9.5	10.2	9.3	8.7	9.8	8.4	8.0	9.5	9.7
LU	1.4	7.6	7.9	3.9	7.9	7.9	7.8	7.7	7.8	0.6	4.1	7.7	7.5
LV	12.3	7.6	12.3	6.2	10.2	11.2	10.0	9.2	10.7	11.3	9.5	10.3	10.8
MT	1.9	7.6	16.6	8.3	12.3	14.4	12.1	10.6	13.6	7.3	7.5	13.1	14.5
NL	4.6	7.6	-2.0	0.0	4.0	2.0	2.8	4.4	1.2	10.0	8.8	2.4	1.8
PL	4.0	7.6	12.0	6.0	10.0	11.0	9.8	9.1	10.5	10.1	8.8	10.1	10.5
PT	-0.4	7.6	4.3	2.2	6.2	5.2	6.0	6.5	5.4	6.9	7.3	5.6	5.1
RO	1.1	7.6	13.1	6.5	10.5	11.8	10.3	9.4	11.3	9.9	8.7	10.8	11.4
SE	2.7	7.6	-1.5	0.0	4.0	2.0	3.1	4.6	1.6	6.7	7.2	2.7	2.0
SI	4.5	7.6	5.6	2.8	6.8	6.2	6.6	7.0	6.3	11.0	9.3	6.4	6.0
SK	5.3	7.6	8.4	4.2	8.2	8.3	8.0	7.9	8.1	8.8	8.2	7.9	7.8
UK	1.2	7.6	2.9	1.5	5.5	4.2	5.3	6.1	4.5	5.1	6.3	4.9	4.3
EU27	3.9	7.6	7.6	3.9	7.9	7.8	7.6	7.6	7.6	7.6	7.6	7.6	7.6

Source: DG EMPL calculations based on Eurostat, EU LFS and demographic projections.
Note: 1). For RO rise refers to period 2002-2008. Cells highlighted in grey show required ER rises > 10 percentage points

Chart 13: Options involving equal employment growth (4 and 4a)



Note: Countries sorted in descending order of their ERs in 2010

5.1.7. Statistical comparison of the options

For all options considered in section 5.1.3, Table 20 compares the resulting national ER targets for 2020 to the historical best outcome during the period 2000-2008 and the results from labour market projections for 2020. The comparison is based on the following three 'statistics':

1. The absolute deviation of the national ER targets under the options from the reference points given by the historical best 2000-2008 and the projection scenario ERs (lower values are better)
2. The root mean of squared deviations of the national ER targets under the options from the reference points given by the historical best 2000-2008 and the projection scenario ERs (lower values are better)
3. The maximum deviation to the reference points for any individual MS (it could be argued that there should be a limit to the maximum rise required of any individual MS, keeping it for example to under 10 pps if possible).

Based on this, three options appeared to give better outcomes in terms of the combination of aspects mentioned above, namely

- *Option 1a*: Member States halve their gaps to the 75% target (for those below the target), plus add a common rise of 4 percentage points applicable to all MS.
- *Option 3*: ER rises for Member States are the average of the EU gap to the aggregate target and the closing of the individual gap to the target.
- *Option 3a*: ER rises for Member States are a weighted average of the EU gap to the aggregate target (weighted 2/3) and the closing of the individual gap to the target (weighted 1/3). In addition, Option 3a has the property of being close to an 'optimal' solution (see Annex II), in the sense it minimises the weighted sum (by population levels) of total deviations of national ER targets from reference values.

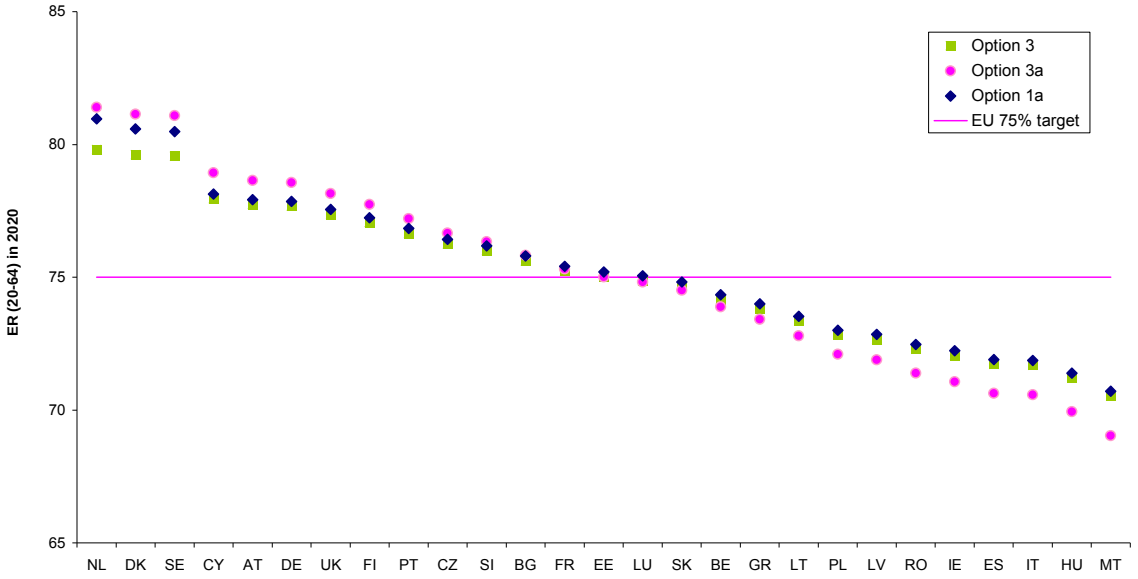
Table 20: Statistical analysis of the ER results from the options

	Options for setting national ER targets									
	Option 1: All MS halve their individual gap to 75% target (no change for those already above target)	**Option 1 a**: Halve individual gap to 75% target (for those below the target) plus add a standard rise of 4 pps across all MS	**Option2**: Close gap by 3/4 to 75% target (for those below the target), plus add a standard rise of 2 pps across all MS	**Option 3**: Average of absolute rise of av EU gap to 75% target and full closing of individual gap to 75% target	**Option 3 a**: Weighted average of rise of av EU diff to tgt (2/3) and full closing of gap to 75% (1/3)	**Option 3 b**: Weighted average of rise of av EU diff to tgt (1/3) and full closing of gap to 75% (2/3)	**Option 4**: Equal employment growth across all MS suffient to meet target (equal effort on labour demand side)	**Option 4a**: Weighted combination of equal empl growth (0.5) and all MS raising rates by av of the ER gap to 75% target (0.5)	**Option 5**: Quadratic formula ; extra requirement on under-performers, 20% further adjustment at 10 pp ER gap to option 3	**Option 5a**: Quadratic formula; extra requirement on under-performers, 50% further adjustment at 10 pp ER gap to option 3
(a) Gaps between national ER targets and historical best										
MIN	0.0	0.1	0.1	0.3	0.1	0.2	0.4	0.2	0.5	0.1
MAX	7.6	11.6	13.8	11.4	9.9	12.9	13.2	9.4	12.4	13.8
RANGE	7.6	11.5	13.7	11.1	9.8	12.8	12.8	9.2	11.9	13.7
Absolute deviations	2.9	4.2	4.2	4.1	4.1	4.2	5.8	4.9	4.1	4.1
RMS of deviations	3.5	5.1	5.6	5.0	4.8	5.4	6.6	5.4	5.2	5.4
(b) Gaps between ER targets and projected values in scenario 1										
MIN	0.0	0.4	0.0	0.2	0.0	0.1	0.1	0.1	0.1	0.0
MAX	9.6	9.4	11.5	9.2	7.7	10.7	17.3	13.0	10.1	11.5
RANGE	9.6	9.0	11.5	8.9	7.7	10.6	17.1	12.9	10.0	11.5
Absolute deviations	2.9	3.5	3.6	3.4	3.4	3.5	5.4	4.4	3.4	3.4
RMS of deviations	3.8	4.2	4.7	4.1	4.0	4.5	6.8	5.3	4.3	4.5
(c) Gaps between ER targets and projected values in scenario 2										
MIN	0.2	0.1	0.0	0.0	0.3	0.0	0.6	0.5	0.4	0.1
MAX	5.5	9.5	11.6	9.3	7.9	10.8	13.2	9.4	10.2	11.7
RANGE	5.3	9.4	11.6	9.3	7.7	10.7	12.6	8.9	9.9	11.6
Absolute deviations	2.5	4.0	4.1	3.9	4.0	3.9	6.0	5.1	3.9	3.8
RMS of deviations	3.0	4.9	5.3	4.7	4.5	5.0	6.8	5.5	4.8	5.0
(d) Gaps between ER targets and projected values in scenario 3										
MIN	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1
MAX	9.4	7.8	9.9	7.6	6.6	9.1	17.0	12.8	8.6	10.0
RANGE	9.2	7.7	9.8	7.5	6.5	9.1	17.0	12.7	8.5	9.9
Absolute deviations	3.7	2.9	3.2	2.8	2.8	3.0	4.4	3.4	2.9	3.1
RMS of deviations	4.6	3.5	3.9	3.4	3.3	3.7	6.1	4.7	3.6	3.8

Source: DG EMPL calculations based on Eurostat, EU LFS, demogrphic projections and EPC/AWG projections
Note: Absolute deviation = $\sum | ER^{tgt}-ER^{ref} | /$no. obs. RMS of deviations = $\sqrt{(\sum(ER^{tgt}-ER^{ref})^2/\text{no. obs})}$

The ER targets obtained from these 'better outcomes' options are shown in Chart 14. It should be noted that options 1a and 3 are very similar, differing only in the sense of the wording of the formulation (including that option 1a rounds the common increase element up to 4 percentage points) and in the treatment of those Member States who start with an ER already above the 75% target in 2010.

Chart 14: Better Overall Outcomes Options



Countries sorted in descending order of their ERs in 2010

5.1.8. Better outcomes options' ER targets versus historical values and LM projections for the reference population 20-64

ER targets under the 'better outcomes' options were compared in more detail with the highest ER attained by the respective Member State in recent years (i.e. in the period 2000-2008), and secondly what might be the expected ERs based on the labour market projections to 2020 (under the base assumption of no further policy changes). For example, for option 1a (Chart 15), the comparison gave the following results:

- Historical best: for most Member States, the target ER is well above the historical best ER achieved over 2000-2008. The required improvement is particularly strong (above 8 pps) in Hungary, Italy, Malta and Poland. However, note that for Estonia, Ireland and Latvia the required ERs in 2020 are actually lower than the historical best ER, and for Denmark, Lithuania and Sweden very similar to it (i.e. within the order of a percentage point). Hence although the target ERs are particularly high for Denmark and Sweden, they are not much higher than the historical highs already achieved.
- Scenario 1: Only Malta and Poland have targets more than 8 pps from the projected scenario ERs. Cyprus, Estonia, Finland, Ireland, Latvia, Portugal Spain and Sweden have target ERs below or close to projected ERs.
- Scenario 2: Only Malta, Poland and Romania have targets more than 8 pps from the projected scenario ERs. Cyprus, Finland, Ireland, Latvia, Spain and Sweden have target ERs below or close to projected ERs.

- Scenario 3: No Member States have targets more than 8 pps from the projected scenario ERs. 13 countries have target ERs below or close to projected ERs.

Results for the other options (Charts Chart 16 and Chart 17) are broadly similar, but do indicate a shift in positions of some MS with regard to the groupings according to the size of the required ER rise (Table 21). Those MS which change groups compared to option 1a appear in bold text.

Table 21: Target ERs under the preferred options coompared to reference ERs from historical performance and projection scenarios

	Best historical ER (in period 2000-2008)	ER Projection scenario 1: Revert to best structural UR outcome	ER Projection scenario 2: Persistent high unemployment (hysteresis)	ER Projection scenario 3: Lowest possible UR (all URs at 4%)
Option 1a				
Target ER:				
Below or close to ref	DK, EE, IE, LT, LV, SE	CY, EE, ES, IE, FI, LV, PT, SE	CY, ES, FI, IE, LV, SE	CY, CZ, DE, EE, ES, IE, FI, LT, LV, PT, SE, SK, UK
1-4 pps above	AT, CY, CZ, DE, ES, FI, NL, PT, SI, UK	AT, CZ, DE, DK, HU, LT, LU, NL, SI, SK, UK	AT, CZ, DE, DK, EE, NL, PT, UK	AT, BE, BG, DK, FR, GR, HU, IT, NL, SI
4-8 pps above	BE, BG, FR, GR, LU, RO, SK	BE, BG, FR, GR, IT, RO	BE, BG, FR, GR, HU, IT, LT, LU, SI, SK	LU, MT, PL, RO
> 8 pps above	HU, IT, MT, PL	MT, PL	MT, PL, RO	
Option 3				
Target ER:				
Below or close to ref	DK, EE, IE, LT, LV, **NL**, SE	CY, EE, ES, IE, FI, LV, **NL**, PT, SE, **UK**	CY, ES, FI, IE, LV, SE	CY, CZ, DE, EE, ES, IE, FI, LT, LV, PT, SE, SK, UK
1-4 pps above	AT, CY, CZ, DE, ES, FI, PT, SI, UK	AT, CZ, DE, DK, HU, LT, LU, SI, SK	AT, CZ, DE, DK, EE, NL, PT, **SK**, UK	AT, BE, BG, DK, FR, GR, HU, IT, NL, SI
4-8 pps above	BE, BG, FR, GR, LU, **PL**, RO, SK	BE, BG, FR, GR, IT, RO	BE, BG, FR, GR, HU, IT, LT, LU, SI	LU, MT, PL, RO
> 8 pps above	HU, IT, MT	MT, PL	MT, PL, RO	
Option 3a				
Target ER:				
Below or close to ref	EE, IE, LT, LV, SE	CY, EE, ES, IE, FI, LV, PT, SE	CY, ES, IE, LV, SE	CY, CZ, DE, EE, ES, IE, FI, LT, LV, PT, SE, SK, UK
1-4 pps above	AT, CY, DE, **DK**, ES, FI, NL, PT, SI, UK	AT, CZ, DE, DK, HU, LT, LU, NL, SI, SK, UK	CZ, DE, DK, EE, **FI**, **LT**, NL, PT, **SK**, UK	AT, BE, BG, DK, FR, GR, HU, IT, NL, SI
4-8 pps above	BE, BG, **CZ**, FR, GR, **HU**, **IT**, LU, **PL**, RO, SK	BE, BG, FR, GR, IT, **MT**, **PL**, RO	**AT**, BE, BG, FR, GR, HU, IT, LU, **MT**, **PL**, **RO**, SI	LU, MT, PL, RO
> 8 pps above	MT			

Source: DG EMPL calculations
Note: Highlighted MS shows changed group compared to option 1a.

Chart 15: Option 1a - ER targets (20-64) and reference values

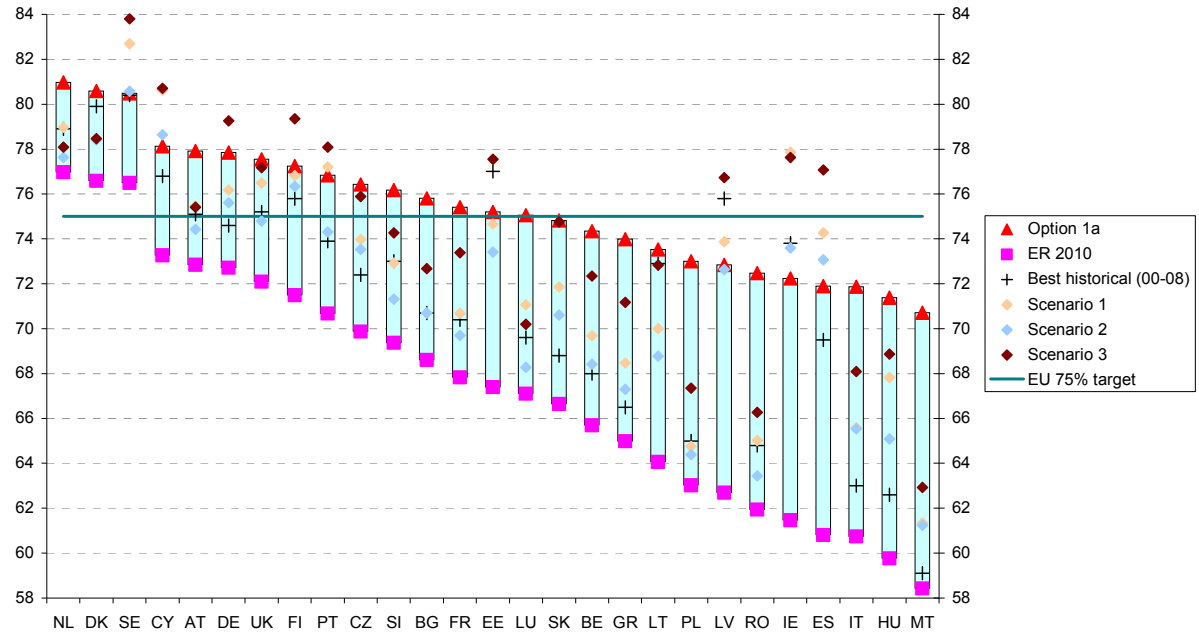


Chart 16: Option 3 - ER targets (20-64) and reference values

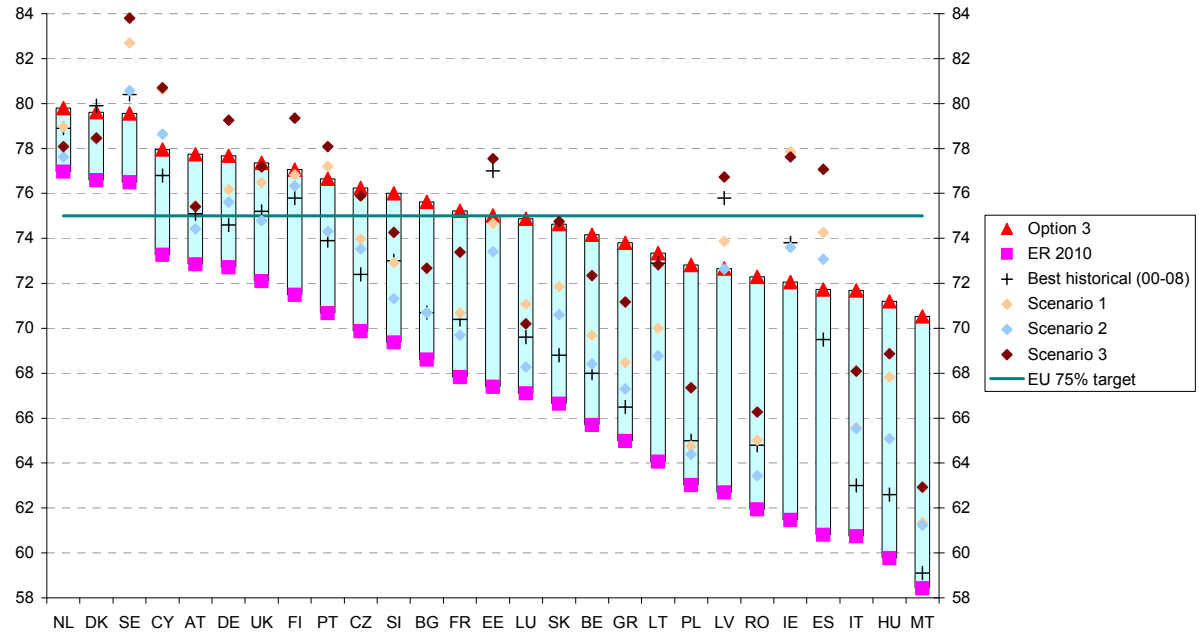
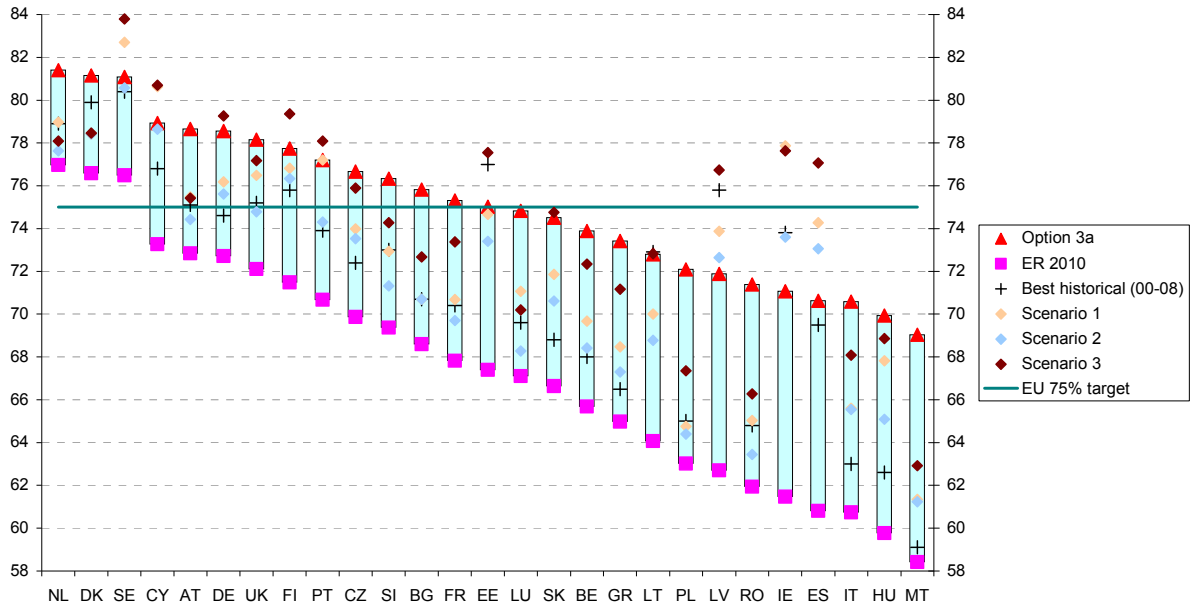


Chart 17: Option 3a - ER targets (20-64) and reference values



5.1.9. Comparisons in terms of employment growth

There are limitations to focusing solely on employment rate changes, and it may be more informative/appropriate to focus on average annual employment growth, which in any case may be more relevant due to the differences in population trends between 2010-2020 and 2000-2008. As mentioned earlier, the effect of the rise in employment over 2000-2008 (some 19 million among those aged 15-64) on employment rates was dampened by the fact that the working age population also rose (by some 11 million). Equivalent rises for the population aged 20-64 were 20 million (employment) and 12 million (population). However, the situation to 2020 is projected to be rather different in that the population aged 20-64 is set to rise by only around 2 million, and hence any rise in employment would this time be more fully reflected in ER rises.

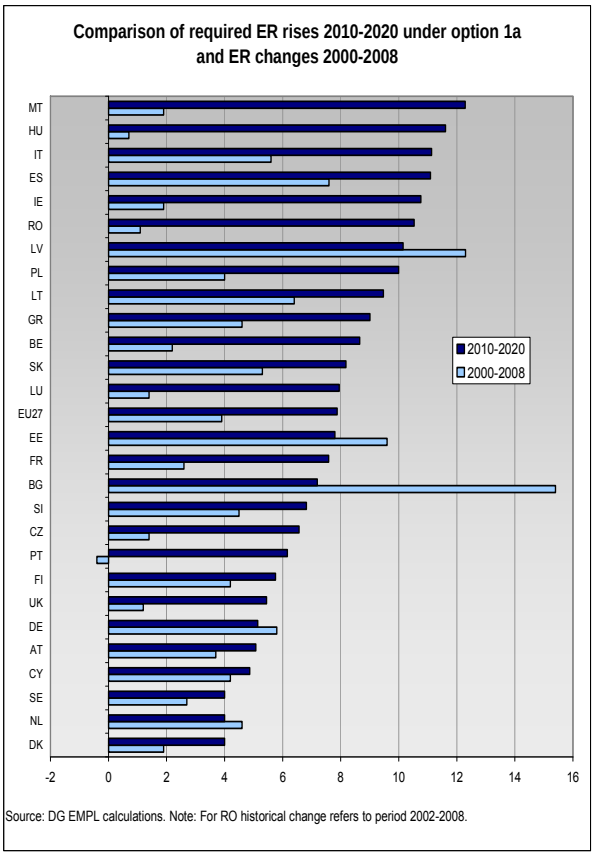
For the three 'better outcomes' options identified in the previous section, Chart 18 shows for each Member State and for the reference population aged 20-64:

a) the ER rises from 2010 to 2020 required under each option to reach the target compared to ER changes from 2000 to 2008

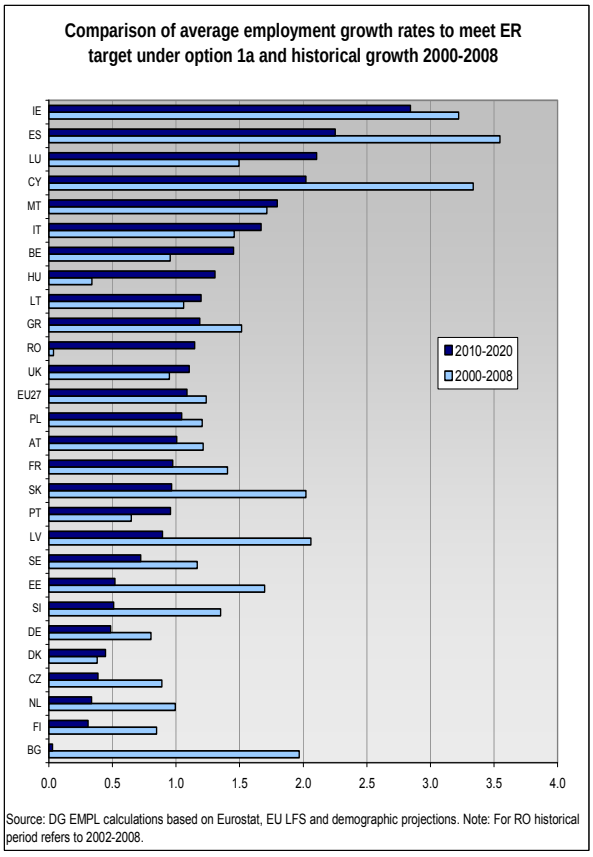
b) the average annual employment growth rates between 2010 and 2020 required to reach the national ER targets under the options, compared to the historic average growth rate in employment of those aged 20-64 over 2000-2008.

Chart 18: Comparison of required ER rises and average employment growth rates

Option 1a

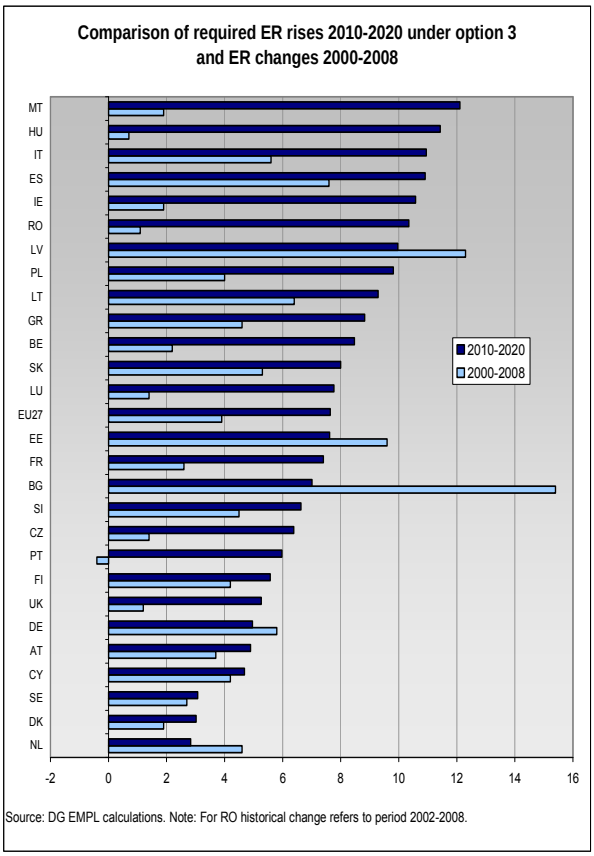


Source: DG EMPL calculations. Note: For RO historical change refers to period 2002-2008.

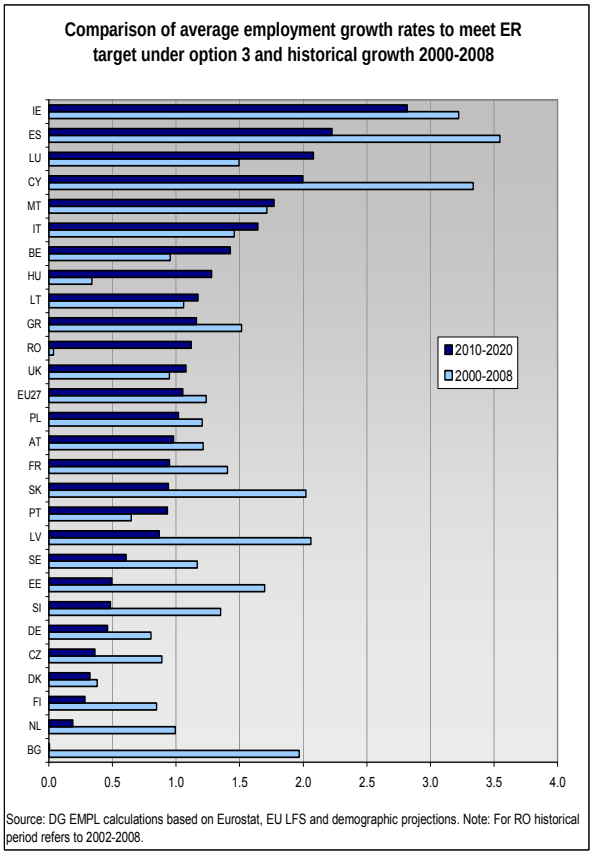


Source: DG EMPL calculations based on Eurostat, EU LFS and demographic projections. Note: For RO historical period refers to 2002-2008.

Option 3

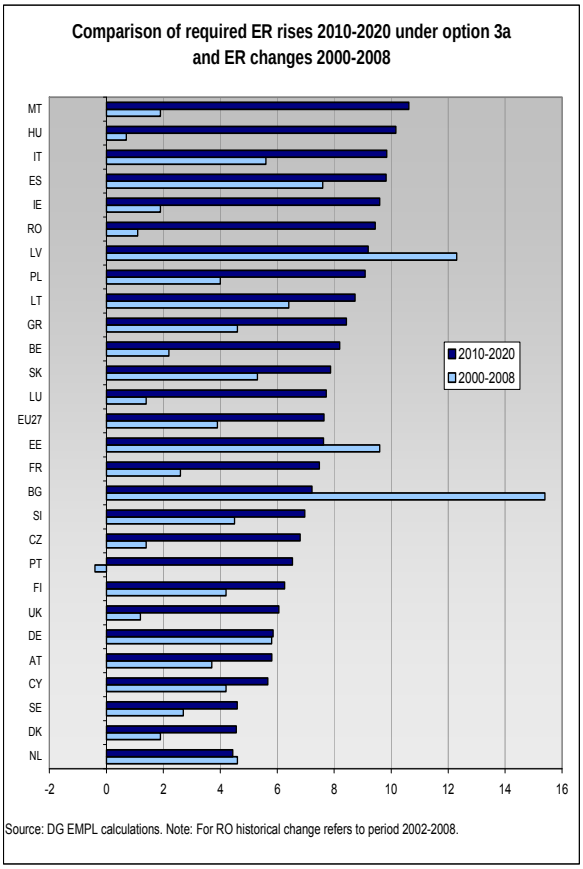


Source: DG EMPL calculations. Note: For RO historical change refers to period 2002-2008.

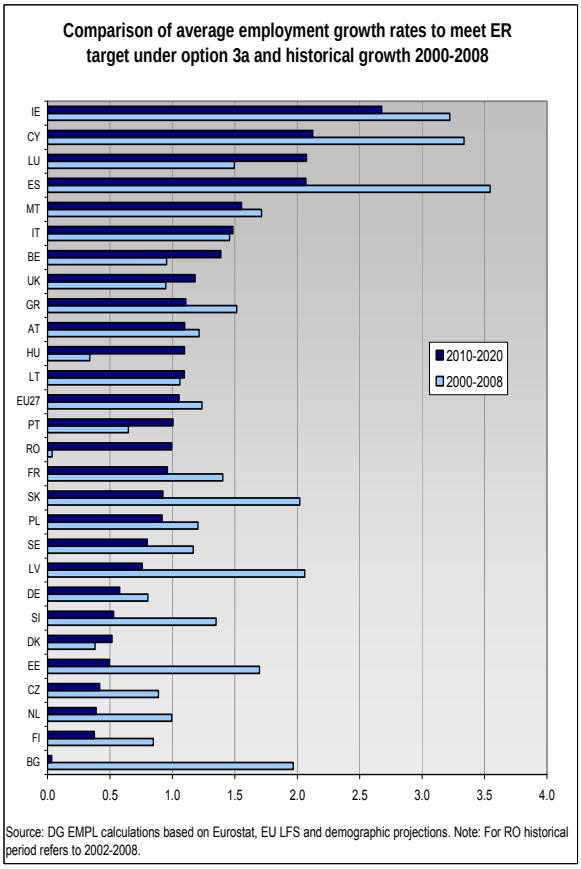


Source: DG EMPL calculations based on Eurostat, EU LFS and demographic projections. Note: For RO historical period refers to 2002-2008.

Option 3a



Source: DG EMPL calculations. Note: For RO historical change refers to period 2002-2008.

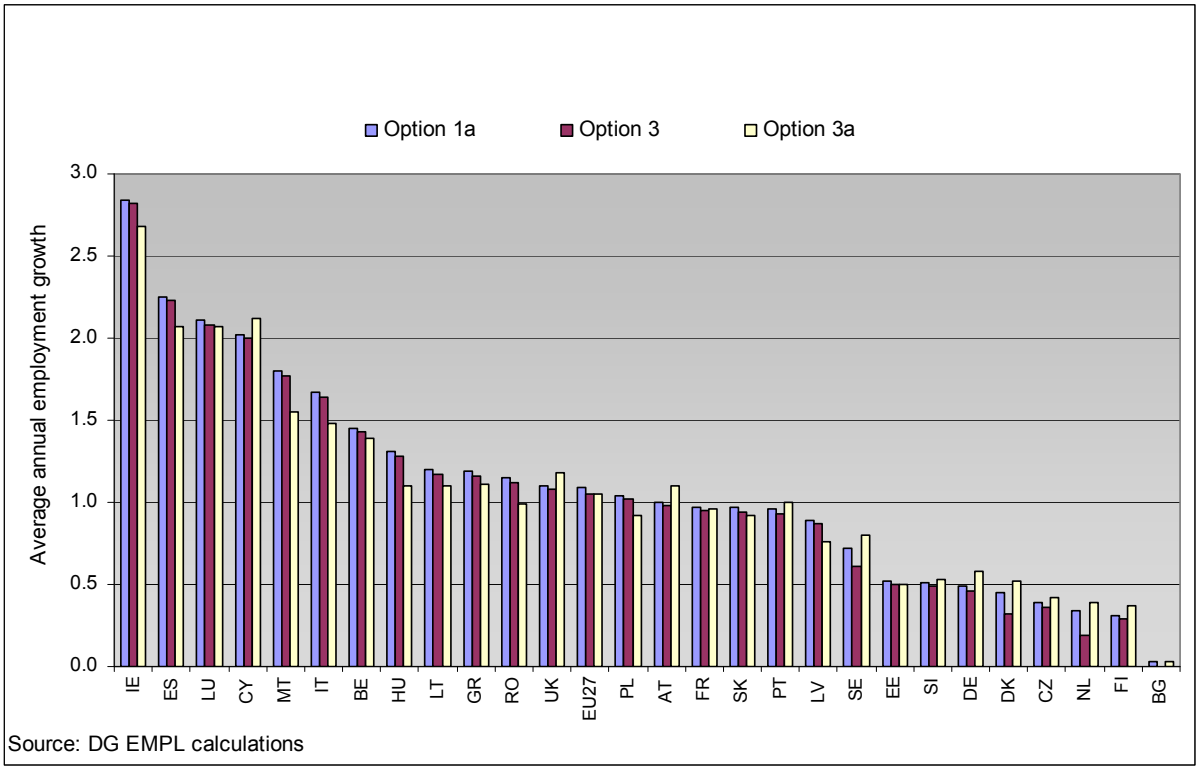


Source: DG EMPL calculations based on Eurostat, EU LFS and demographic projections. Note: For RO historical period refers to 2002-2008.

These results tend to show that, compared to the historical growth rates in employment, the efforts to attain the national targets under the options are considerably less daunting than implied purely in terms of ER changes. Under all three options for most Member States the required annual rate of employment growth would generally be at or below that achieved over 2000-2008. Only in Belgium, Hungary, Luxembourg, Portugal and Romania would required annual growth be significantly above the historical reference.

As stated previously, there is little difference between the results for options 1a and 3, as they represent very similar underlying parameters, although packaged with a different formulation (option 1a being much more understandable and user friendly). In terms of implied employment growth, differences between the two options are only noticeable for Denmark, the Netherlands and Sweden, where the growth rates are marginally higher under option 1a, although still well below historical growth rates for the Netherlands and Sweden and broadly similar for Denmark (Chart 19).

Chart 19: Average employment growth rates in 2011-2020 to achieve the ER targets under options 1a, 3 and 3a



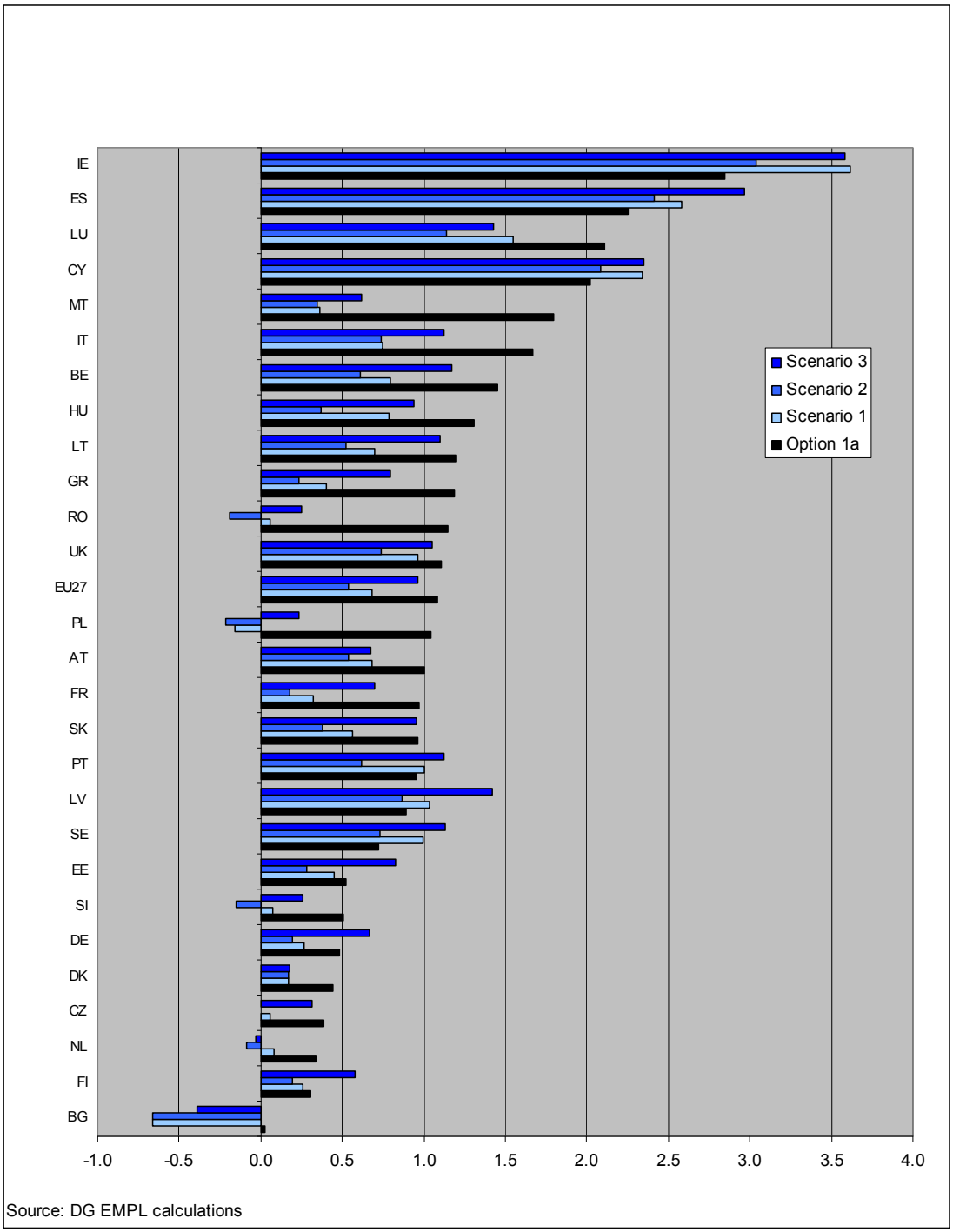
Option 3a has more noticeable variations in growth rates across MS compared to the other two options. Growth rates are slightly higher in Austria, Cyprus, Denmark, Finland, Germany, the Netherlands, Portugal, Sweden and the UK (i.e those MS with higher starting ERs), and slightly lower in Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Romania and Spain (i.e. those with lower starting ERs).

A similar comparison was conducted between the implied employment growth for Member States to reach the employment rate target set under the different options and that in the projection scenarios, which are more forward looking and take into account the expected demographic developments in the coming decade and the expected impacts of already enacted legislation. The results of such a comparison for options 1a and 3a are shown in Charts Chart 20 and Chart 21 (option 3 is not shown as results are essentially the same as for option 1a).

As regards option 1a (Chart 20), it can be seen that:

- The employment growth rates of the LM projections exceed the necessary minimum to meet the ER targets for Cyprus, Ireland, Latvia, Portugal, Spain and Sweden, while being generally equivalent in Estonia, Finland and the UK.
- The largest gaps between LM projections and the necessary minimum are for Italy, Malta, Poland and Romania, but are also significant in Belgium, Bulgaria, France, Greece, Hungary and Luxembourg.

Chart 20: Annual employment growth rate required to meet targets under option 1a compared to that under the projection scenarios

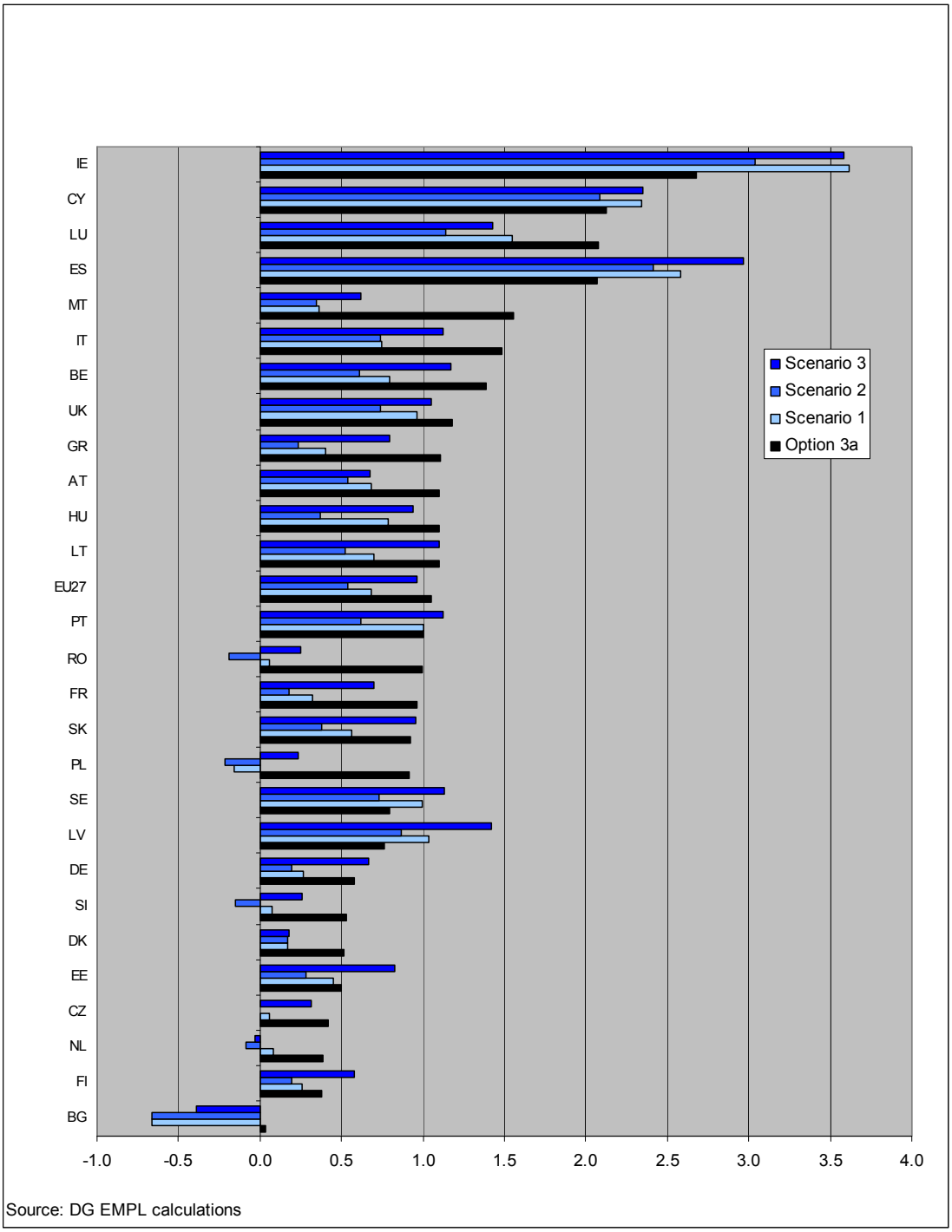


As regards option 3a (Chart 21), which shifts the required effort slightly away from underperformers, it can be seen that:

- The employment growth rates of the LM projections exceed the necessary minimum growth rates required to meet the ER targets for Cyprus, Ireland, Latvia, Spain and Sweden, while being generally equivalent in Estonia, Finland, Portugal and the UK.

- The largest gaps between LM projections and the necessary minimum are for Malta, Poland and Romania, but are also significant in Belgium, Bulgaria, France, Greece, and Italy.

Chart 21: Annual employment growth rates required to meet targets under option 3a compared to that under the projection scenarios



Source: DG EMPL calculations

It is clear from these results that many Member States would have to make substantial further policy efforts aimed at raising employment growth beyond the levels currently foreseen in the projections if an aggregate EU employment rate of 75% is to be achieved by 2020. This would be especially the case for countries such as

Italy, Poland and Romania which have a large influence on the EU aggregate employment rate and whose employment rates are currently among the lowest in the EU.

5.1.10. Overall assessment of the three 'better outcomes' options for setting national targets

When contemplating the relative merits of the three 'better outcomes' options indentified in the analysis for setting national targets, it is useful to refer back to the key basic principles formulated in section 5.1.2. While all three options fully meet the criterion of coherence with the overall target of 75%, they reflect to varying extents the other two principles, which require both shared and differentiated efforts from the MS. These could be expressed in slightly modified terms as (i) setting a reasonable ceiling on the maximum efforts required and (ii) limiting the danger of excessive requirements on the already strongly performing MS. Moreover, ease of communication of the selected method to a broader public could serve as another guiding principle.

With reference to the above, the three 'better outcomes' options display the following relative advantages/disadvantages:

1. Reasonable ceiling on the maximum efforts required
Referring to Table 19, option 3a displays the strongest merit (with only 2 MS required to increase their ER on 2010 values by more than 10 percentage points), followed by options 3 and 1a.

2. Limiting requirements on the strongly performing MS
Referring again to the Table 19, this principle is best reflected by option 3, followed by options 1a and 3a.

3. Communication merits
The most user-friendly and understandable method appears to be option 1a, followed by options 3 and 3a.

Given that there is little difference in outcomes between options 1a and 3, it would appear that option 1a would be preferable in that its formulation is much simpler and the rationale easier to communicate. Ultimately therefore the choice boils down to a preference between options 1a and 3a. Again, the results are not very different, but option 3a does slightly shift the effort required across Member States compared to 1a (slightly reducing the effort required from underperformers), and achieves slightly more optimal results in terms of the statistical outcomes examined in this note. However, a drawback remains its relatively more complex formulation compared to that for 1a.

The results of the analysis on possible approaches to setting national targets, along with the options which resulted in better overall outcomes, was reported to Member States and acted to provide analytical support to the subsequent dialogue between individual Member States and the Commission during mid-2010 in view of translating the overall EU employment rate target into national targets. As a framework for this subsequent dialogue, the Employment Committee suggested that Member States focus only on the options 1a and 3a as providing guidance in the setting of their targets.

6. Summary

This paper provides an overview of the analysis carried out during 2009 and 2010 with regard to the setting of a new overall employment rate target for 2020 as part of the Europe 2020 strategy, including the reference population to be covered as well as the

appropriate value for the target. As such it provided analytical support leading to the decision of the March 2010 European Council to set an overall employment target for the EU27 in 2020 of 75% for those aged 20-64. It also summarises the subsequent analysis carried out to investigate possible approaches to translate the common target into specific targets for individual Member States, the results of which provided analytical support to the ensuing dialogue between individual Member States and the Commission in this context during mid-2010.

Epilogue

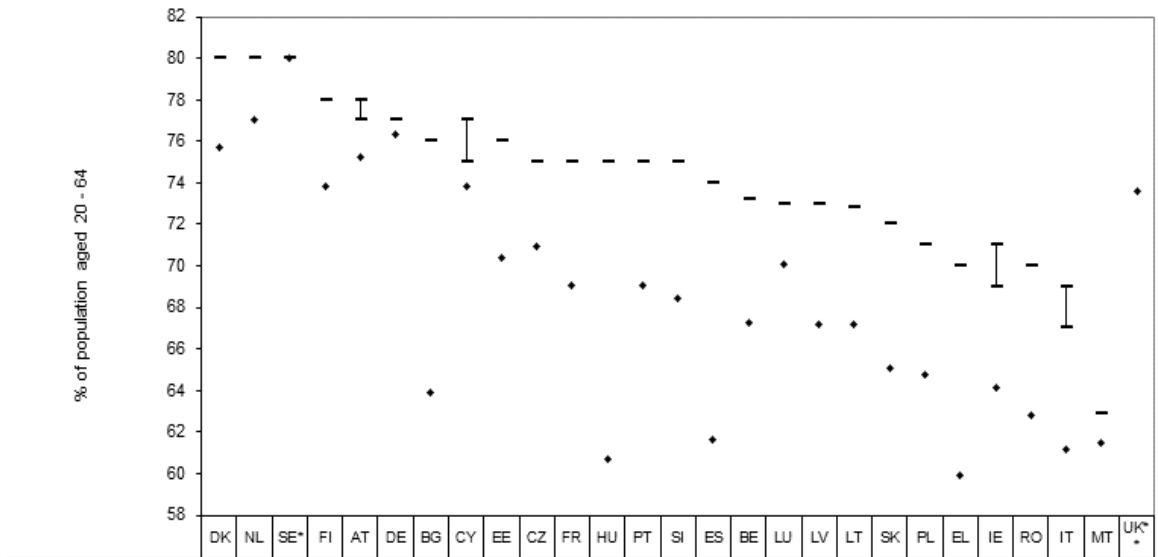
Since the analysis reported in this paper was carried out the context has changed considerably. There has been a significant change since 2009 in the EU labour market outlook and the recession may have altered the country specific contributions to the growth of the overall EU employment rate. Furthermore there may be more pronounced effects of the recession on long-term trends than assumed, most notably on the extension of past trends in light of the specific characteristics of the 2007-2008 crisis and the ensuing weak and uncertain economic outlook. For example, so far there does not appear to have been a massive reduction in the participation rate, but persistently weak labour market prospects may induce workers to exit early. On the positive side, past welfare reforms and the long term rising trend in participation by women may counteract this.

If the target is to be met, recent estimates suggest that employment in the EU will have to increase by over 17 million from its current level. This reflects the fact that, following the crisis, the employment rate had fallen to 68.6 % in 2011, with EU unemployment remaining persistently above the 9.5% mark since early 2010 and climbing to 10.2 % in February 2012. Although employment gains of 1.5 million were recorded by mid-2011, these have done little to offset the 6 million job losses incurred in the EU since 2008. The deceleration of growth since mid-2011, with a less favourable outlook for 2012[31] and widening divergences between Member States and regions, have only increased the challenge in terms of employment, social inclusion and combating poverty.

The following chart shows the latest annual employment rate figures (2011) for each of the Member States. The national employment rate targets actually set by Member States (as recorded in their 2011 National Reform Programmes) are also shown (for some Member States the target was set in the form of a range), and this provides a summary of the current situation with regard to the position of countries relative to their respective employment targets.

[31] According to the Commission services' February 2012 Interim Forecast: the EU is set to experience stagnating GDP in 2012, and the euro area will undergo a mild recession.

Chart 22: National employment rates in 2011 and targets set by Member States in their 2011 National Reform Programmes



	DK	NL	SE*	FI	AT	DE	BG	CY	EE	CZ	FR	HU	PT	SI	ES	BE	LU	LV	LT	SK	PL	EL	IE	RO	IT	MT	UK**
– Target range (upper value)					78.0			77.0															71.0		69.0		
– Target range (lower value)					77.0			75.0															69.0		67.0		
– Point target	80.0	80.0	80.0	78.0		77.0	76.0		76.0	75.0	75.0	75.0	75.0	75.0	74.0	73.2	73.0	73.0	72.8	72.0	71.0	70.0		70.0		62.9	
♦ 2011 employment rate	75.7	77.0	80.0	73.8	75.2	76.3	63.9	73.8	70.4	70.9	69.1	60.7	69.1	68.4	61.6	67.3	70.1	67.2	67.2	65.1	64.8	59.9	64.1	62.8	61.2	61.5	73.6

Sources: National Reform Programmes 2011, EU Labour Force Survey for 2011 employment rate.
* Sweden has defined a national emplyoment rate target of "well over 80%".
** The United Kingdom has not set a national employment rate target.

Although the situation has changed noticeably compared to when the analysis reported on in the paper was carried out, the methodological approach and underlying considerations nevertheless remain relevant for the current debate. In particular, it provides a sound basis as a starting point for an updated analysis of where we stand with regard to the headline target and national targets two years into the process, and how feasible it is to still achieve the target(s). This would be particularly relevant for example in the context of any mid-term review of the Europe 2020 strategy and the employment rate target.

Annex I

Table I. 1: Ages of entitlement to standard and early retirement pensions across EU Member States, 2006

	Men	Women	Comments
Standard pension			
Belgium	65	64	For women the age will be raised to 65 in 2009
Czech Republic	61.5	59 years and 8 months*	*Women's retirement age depends upon the number of child raised, and ranges from 55 years and 8 months (5 or more children) to 59 years and 8 months (no children). The retirement age shall be gradually increased by 2 months for men and 4 months for women each year until it reaches 63 years for men and women without children and 59 - 62 years for women with children.
Denmark	65	65	Social Pension (Folkepension): 65 (67 for those who had reached the age of 60 on 1.7.1999).
Germany	65	65	
Estonia	63	59.5	Pensionable age is gradually increasing and shall be equalised for men and women by 2016 at the age of 63.
Ireland	65	65	
Greece	65	60	Persons insured before 1.1.1993: Men 65 years, women 60 years. Persons insured since 1.1.1993: Men 65 years, women 65 years
Spain	65	65	
France	60	60	General scheme for employees (Régimegénéral d'assurance vieillesse des travailleurs salariés, RGAVTS): 60 years.
Italy	65	60	Persons insured before 1.1.1996: Men 65 years, women 60 years. Persons insured since 1.1.1996: Flexible retirement age between 57 and 65 years.
Cyprus	65	65	
Latvia	62	60.5	For women, 60.5 years by 1 July 2005 (gradually increasing by 6 months every year until it reaches 62 years).
Lithuania	62.5	60	
Luxembourg	65	65	
Hungary	62	62	
Malta	61	60	
Netherlands	65	65	
Austria	65	60	Progressive increase of age limit for women until the same retirement age as for men will have been reached between the years 2024 and 2033.
Poland	65	60	
Portugal	65	65	
Slovenia	61	60	Due to gradual increase the final retirement age will be reached in 2008 for women at 61 and in 2009 for men at 63. In 2005 full retirement age is 60/61.
Slovak Republic	62	60*	Old-Age Pension (Starobný dôchodok): 62 years retirement age will be reached in 2014 for all population groups. Retirement ages for women currently vary according to the number of children raised (from a current age of 60 for those with no children to 56 years for those with 5 or more children)
Finland	65	65	National pension (Kansaneläke): 65 years.
Sweden	61-67	61-67	Flexible retirement age from 61 to 67 years. Possibility to work thereafter with employer's consent.
United Kingdom	65	60	State Pension age: Men 65 years, women 60 years (gradually rising to 65 over period 2010 to 2020).
Early retirement pension			
Belgium	60	60	After 35 years of professional activity.
Czech Republic	58.5	56 years and 8 months*	Permanently Reduced Early Pension available up to three years prior to the normal retirement age. The claimant must have an insurance record of at least 25 years.
Denmark	none	none	No retirement possible before the statutory pensionable age of 65 years.
Germany	63	63	From the age of 63 (or 60 for severelyhandicapped persons) after 35 years of pension insurance periods. From 60 for those born before 1952 under specific conditions.
Estonia	60	56.5	Early Retirement Pension (ennetähtaegne vanaduspension): Available up to 3 years before the legal retirement age.
Ireland	none	none	No early pension.
Greece	55	55	Varies according to specific conditions
Spain	60	60	60 years of age for certain persons who were insured according to the system abolished on 1 January1967. 61 years of age for employees in certain cases.
France	56	56	General scheme for employees (Régime général d'assurance vieillesse des travailleurs salariés, RGAVTS):Since the age of 56 for the insured that started their professional activity at the age of 14 and under a triple condition (duration of insurance, duration of contribution and retirementage). Since the age of 55 for the insured with severe disability who fulfils the minimum periods of insurance and contribution.
Italy	57	57	Early retirement pension (pensione di anzianità): at the age of 57 with 35 years of contributions or after 37 years of contributions regardless of age. Pensions awarded to employees of companies in economic difficulties (pre-pensionamento): Early retirement is possible up to 5 years before normal retiring age.
Cyprus	63	63	
Latvia	60	58.5	Early pension available 2 years before standard pensionable age
Lithuania	57.5	55	Persons are eligible for early retirement pension if they have an insurance period of 30 years, they are registered as unemployed for at least 12 months, the age is less than 5 years to retirement age.
Luxembourg	57	57	Early retirement pension (pension de vieillesse anticipée): From 60 years of age (on conditionthat 480 months of effective insurance), From 57 years of age (on condition that 480 months of effective insurance)
Hungary	varies	varies	Varies according to specific conditions
Malta	none	none	No early pension.
Netherlands	none	none	No early pension.
Austria	62	62	General legislation: 62 years for men and women. 60 years of age for heavy workers at the earliest (depending on the number of months of heavy work)
Poland	60	55	Persons born before 1.1.1949, early pensions for specific cases. Person born after 1.1.1949, no provisions.
Portugal	55	55	Unemployed: from the age of 60. For those who have contributed 20 calendar years and are aged 50 or more when unemployed, it is also possible from the age of 55. In case of heavy or unhealthy work as a rule, from the age of 55 (only for professions legally foreseen).
Slovenia	none	none	No special early pension. Possibility of exceptions (no malus) in the case of retirement at the age of 58 provided that a person has completed 40 years (men) or 38 (women) years of service.
Slovak Republic	varies	varies	Varies according to specific conditions, but not related to any age limits
Finland	62	62	National pension (Kansaneläke) and Statutory earnings-related pension (Työeläke): Early old-age pension from the age of 62 (60 if born in 1944 or earlier).
Sweden	none	none	No early pension.
United Kingdom	none	none	No early State Pension.

Source: MISSOC (Mutual information system on soscial protection, situation as at 1/1/2006) database, DG Employment, social affairs and equal opportunities, and national sources

Table I. 2: Compulsory education in Europe 2007/08

	Full-time compulsory education		Part-time compulsory education	Duration of full-time compulsory education (in years)
	Starting age	Ending age	Ending age	
BE fr	6	15	18	9
BE de	6	15	18	9
BE nl	6	15	18	9
BG	7	16	na	9
CZ	6	15	na	9
DK	7	16	na	9
DE	6	16	19	10
EE	7	16	na	9
IE	6	16	na	10
EL	5	15	na	10
ES	6	16	na	10
FR	6	16	na	10
IT	6	16	na	10
CY	4 years and 8 months	15	na	10 years and 4 months
LV	5	16	na	11
LT	7	16	na	9
LU	4	16	na	12
HU	5	18	na	13
MT	5	16	na	11
NL	5	18	na	13
AT	6	15	na	9
PL	6	16	18	10
PT	6	15	na	9
RO	6	16	na	10
SI	6	15	na	9
SK	6	16	na	10
FI	7	16	na	9
SE	7	16	na	9
UK-ENG/WLS	5	16	na	11
UK-NIR	4	16	na	12
UK-SC	5	16	na	11
IS	6	16	na	10
LI	6	15	na	9
NO	6	16	na	10
TR	6	14	na	8

Source: Eurydice

Annex II

Criteria to choose among different Options

Options presented in this note (excluding 4 and 4a) for setting the minimum improvement in the ER of Member State (MS) *p* between 2010 and 2020 can be calculated using the 'quadratic' equation:[32]

$$\Delta^p = a + b*\left(\bar{x} - x_0^p\right) + c*\left(\bar{x} - x_0^p\right)^2$$

Where Δ^p is the minimum improvement in the ER of MS *p* between 2010 and 2020; x_0^p is the ER in country *p* in 2010; $\bar{x}$ is the EU aggregate ER target for 2020 (i.e. 75%); and *a*, *b*, and *c* are parameters.

Subject to constraint that MS increases in ERs add-up to the EU target:

$$\bar{x} = \sum_p \left(x_0^p + \Delta^p\right)* w_p = \sum_p \left(x_0^p + a + b*\left(\bar{x} - x_0^p\right)\right)* w_p$$

Where w^p is the fraction of country *p* population in the total EU population in 2020.

The question is then how to choose among the countless combinations of parameters *a* and *b?* What combination would in some well defined sense be optimal?

Consider a set of reference values for ERs in 2020, which for instance could be the best historical ER (in the period 2000-2008) or one of the three ER projection scenarios (see Table II. 1). A possible criterion to use in order to choose an 'optimal' Option could be the minimisation of total employment losses resulting from deviations of national targets from reference values (weighted by population sizes) i.e. $\min \sum_p \left(\bar{x}^p - x_r^p\right)^2 * w^p$

where $\bar{x}^p$ is the national ER target for country *p* in 2020; and x_r^p is the reference value for country *p* in 2020.

Reference values can differ from national targets for a number of reasons. Reference values can be seen as ER projections made assuming unchanged policies, while national targets would take into account national circumstances, such as political economy limitations, structural reforms, and the requirement to contribute to the aggregate EU target. According to this interpretation, national targets should be set in order to minimise the 'cost/difference' relatively to an unchanged policies scenario, thereby reducing the overall costs of reform implementation.

In the derivation of an optimal rule for the minimum improvement of ERs, a linear specification is assumed:

$$\Delta^p = a + b*\left(\bar{x} - x_0^p\right)$$

The minimum improvement has two components: i) a common minimum floor (given by *a*), and; ii) a proportional reduction in the ER gap (between the aggregate EU target and the initial ER in the MS).

[32] Calibration of the quadratic equation is discussed in Annex II. However, as discussed in the main text, the distribution among MS of the overall burden of meeting the aggregate EU ER 75% target can be achieved by a linear equation (i.e. *a* and *b*) not requiring the presence of the quadratic term (*c*), which is set to zero in the rest of Annex I.

The minimisation problem can be set as:

$$\min \sum_p \left(x_0^p + a + b\left[\bar{x} - x_o^p\right] - x_r^p\right)^2 * w_p$$

$$\{a, b\}$$

$$st$$

$$\bar{x} = \sum_p \left(x_0^p + a + b\left[\bar{x} - x_o^p\right]\right) * w_p$$

The optimal solution is given by:

$$a = \bar{x} - \sum_p x_0^p * w_p - \sum_p b\left[\bar{x} - x_o^p\right] * w_p$$

$$b = \frac{\left\{\sum_p \left[\bar{x} - x_o^p\right] * \left[x_r^p - x_0^p\right] * w_p\right\} - \left\{\sum_p \left[x_r^p - x_0^p\right] * w_p\right\} * \left\{\sum_p \left[\bar{x} - x_o^p\right] * w_p\right\}}{\left\{\sum_p \left[\bar{x} - x_o^p\right]^2 * w_p\right\} - \left\{\sum_p \left[\bar{x} - x_o^p\right] * w_p\right\} * \left\{\sum_p \left[\bar{x} - x_o^p\right] * w_p\right\}}$$

Table II. 1 presents the 'optimal' values for *a* and *b* calculated using the 4 reference values in Table 1.

Table II. 1: 'Optimal' parameters for various reference values

	Best historical ER (2000-2008)	ER Projection scenario 1: Revert to best structural UR outcome	ER Projection scenario 2: Persistent high unemployment (hysteresis)	ER Projection scenario 3/ Lowest possible UR (all URs at 4%)
a	6.36	5.41	5.26	4.83
b	0.17	0.29	0.31	0.37

Table II. 2: Actual parameterisation of some Options presents the actual parameterisation of some Options.

Table II. 2: Actual parameterisation of some Options

Parameters	Option 1a	Option 2	Option 3a	Option 3	Option 3b
a	4	2	5.097817	3.82336	2.548908
b	½	¾	1/3	½	2/3

The ER projection scenario 1 can be considered as representing the most likely set of reference values. Having the projection scenario 1 as reference values, Option 3a is the closest to the 'optimal' rule for setting the minimum improvement of MS ERs.

Annex III

Formula used to calculate the 'quadratic' Options

'Quadratic' options to setting national ER targets require MS furthest away from the 75% EU aggregate target to make an additional effort compared with other options where the effort is proportional to the distance to the aggregate target. In a 'quadratic' option, the effort required in terms of raising ERs, increases at a positive rate with the distance to the EU aggregate target. All else being equal, a 'quadratic' option could be justified in countries with initial low ERs, which are likely to be facing large rigidities, because in these circumstances reforms might be easily implemented and better results obtained.

'Quadratic' options use the formula:

$$\Delta^p = a + b*\left(\bar{x} - x_0^p\right) + c*\left(\bar{x} - x_0^p\right)^2$$

Where Δ^p is the minimum improvement in the ER of MS *p* between 2010 and 2020; x_0^p is the ER in country *p* in 2010; $\bar{x}$ is the EU aggregate ER target for 2020 (i.e. 75%); and *a*, *b*, and *c* are parameters.

How to set/interpret the parameters *a*, *b* and *c*? The parameter (*a*) sets the minimum improvement in (national) ERs equal across MS. Parameter (*b*) could be interpreted as the fraction (i.e. between zero and one) of the initial gap (between the EU aggregate target and the national ER) that should be eliminated by 2020. Parameter (*c*) calibrates the additional effort required from underperforming countries with large gaps.

Parameter (*c*) is calibrated in the following way. At a given distance from the EU aggregate target (*d*), MSs have to make an additional effort of (*p*) relatively to the situation where the effort would be entirely proportional the gap (i.e. where c=0). This corresponds to imposing the condition:

$$b*(1+p) = b + 2*c*d \Leftrightarrow c = \frac{b*p}{2*d}$$

Where $d = \left(\bar{x} - x_0^p\right)$

The two 'quadratic' options presented in this note assume additional efforts (*p*) of 20% and 50% at a 10 pp ER gap (*d*).

Table III. 1: Actual parameterisation of Quadratic Options

Parameters	Option 5	Option 5a
a	3.38917	2.73788
b	0.5	0.5
c	0.005	0.0125
p	0.2	0.5
d	10	10