

CONTENTS

LIST OF TABLES	10
LIST OF GRAPHS	12
SUMMARY AND MAIN CONCLUSIONS	17
1. Macroeconomic assumptions	35
1.1. POPULATION PROJECTION	35
1.1.1. Fertility	35
1.1.1.1. Past trends	35
1.1.1.2. The EUROPOP2008 assumptions	35
1.1.2. Life expectancy	36
1.1.2.1. Past trends	36
1.1.2.2. The EUROPOP2008 assumptions	37
1.1.3. Net migration flows	38
1.1.3.1. Past trends	38
1.1.3.2. The EUROPOP2008 assumptions	39
1.1.4. EUROPOP2008 population projection	40
1.1.5. The role of migration	46
1.1.6. Population ageing in the EU in a global context	47
1.1.7. Comparison with the 2006 population projection	49
1.2. LABOUR FORCE ASSUMPTIONS	49
1.2.1. Overview	49
1.2.2. Main results of the projection of labour market participation rates	52
1.2.2.1. Projection of participation rates	52
1.2.2.2. Projection of labour supply	53
1.2.3. Assumptions on structural unemployment	55
1.2.4. Employment projection	55
1.2.5. The balance of non workers to workers: the economic dependency ratios emerging from the labour force projection	58
1.2.6. Projection of total hours worked	61
1.2.7. Comparison with the 2006 round of projections	61
1.3. LABOUR PRODUCTIVITY AND GDP	62
1.3.1. Main results of the projections	62
1.3.2. Comparison with the 2006 round of projections	66
2. Pension expenditure	69
2.1. MAIN FEATURES OF PENSION SYSTEMS IN THE EU	69
2.2. THE EU FRAMEWORK FOR PENSION PROJECTIONS	70
2.3. PENSION SYSTEMS IN THE EU	71
2.4. PENSION EXPENDITURE PROJECTIONS	78
2.4.1. Public pensions	78
2.4.2. Private pensions	80

2.5.	DRIVERS OF PENSION EXPENDITURE	84
2.5.1.	Peaks and troughs in public pension expenditure	84
2.5.2.	Decomposition of the projected pension expenditure	87
2.5.2.1.	Old age dependency effect	90
2.5.2.2.	Coverage effect	90
2.5.2.3.	Employment effect	94
2.5.2.4.	Benefit effect	95
2.5.3.	Is there a risk of pensions becoming 'too small'?	96
2.6.	SENSITIVITY OF THE PROJECTION RESULTS	99
2.7.	COMPARISON WITH THE 2006 ROUND OF PROJECTIONS	104
3.	Healthcare expenditure	109
3.1.	INTRODUCTION	109
3.2.	DEMAND SIDE FACTORS	110
3.2.1.	Demographic structure of the population	110
3.2.2.	Developments in health status	113
3.2.3.	Individual and national income	114
3.3.	SUPPLY SIDE FACTORS	115
3.3.1.	Technological development	115
3.3.2.	Legal and institutional setting	115
3.3.3.	Human and physical capital	116
3.4.	SHORT OVERVIEW OF THE PROJECTION METHODOLOGY	117
3.4.1.	The model	117
3.4.2.	Scenarios	118
3.5.	PROJECTION RESULTS	121
3.5.1.	The impact of future changes in demography and the health status	121
3.5.2.	The impact of future changes in income and macroeconomic variables	124
3.6.	AWG REFERENCE SCENARIO	126
3.7.	CONCLUSIONS	126
4.	Long-term care	131
4.1.	INTRODUCTION	131
4.2.	PUBLIC EXPENDITURE ON LONG-TERM CARE	132
4.2.1.	Expenditure on home versus institutional care	132
4.2.2.	Public expenditure on cash benefits	133
4.3.	DEPENDENCY RATES	133
4.4.	THE FUTURE NEED FOR LONG-TERM CARE SERVICES AND THE EXPLORATION OF DIFFERENT POLICY SETTINGS	133
4.5.	PROJECTION RESULTS	134
4.5.1.	The impact of future demographic change	134
4.5.2.	The impact of future changes in the prevalence of disability	139
4.5.3.	The impact of future changes in policy: the effect of a shift from informal to formal care	142
4.5.4.	The impact of future changes in the cost of a unit of care	143
4.5.5.	Fast/slow growth in unit cost scenario	143
4.5.6.	AWG reference scenario	144
4.6.	CONCLUSIONS	145

5. Education	147
5.1. INTRODUCTION	147
5.2. GENERAL CHARACTERISTICS OF THE NATIONAL EDUCATION SYSTEMS	147
5.2.1. Enrolment rates in the EU	147
5.2.2. Teacher/students ratio	149
5.2.3. Staff compensation	150
5.2.4. Total expenditure on education	150
5.3. METHODOLOGY AND RESULTS – BASELINE SCENARIO	151
5.3.1. Short overview of the methodology	151
5.3.2. Projection results	152
5.3.3. Decomposition of results	153
5.4. SENSITIVITY TESTS: TWO POLICY-CHANGE SCENARIOS	155
5.4.1. Impact of a higher teacher/students ratio	155
5.4.2. Impact of a higher compensation in the education sector	156
5.5. INCREASING TERTIARY LEVEL ATTAINMENT: "LISBON TARGET SCENARIO"	156
5.5.1. Tertiary level attainment	157
5.5.2. Early school leavers	158
5.5.3. Projection results	158
6. Unemployment benefit expenditure	161
6.1. MAIN FEATURES OF THE PROJECTION METHODOLOGY	161
6.2. PROJECTIONS OF UNEMPLOYMENT BENEFIT EXPENDITURE	161
7. The Total Cost of Ageing and the potential impact of the current economic crisis	165
7.1. THE IMPACT OF AN AGEING POPULATION ON PUBLIC SPENDING	165
7.1.1. The total impact of population ageing on public expenditure	165
7.2. UNCERTAINTY WITH LONG-TERM PROJECTIONS	168
7.2.1. Sensitivity of changes to demographic and macro-economic variables	168
7.3. THE POTENTIAL LONG-TERM IMPACT OF THE CURRENT ECONOMIC CRISIS	169
7.3.1. Defining additional macro-economic scenarios	170
7.3.2. Estimating the budgetary impact of the financial and economic crisis	172
8. ANNEX 1: Pensions	177
8.1. OVERVIEW OF PENSION SYSTEMS IN THE MEMBER STATES	177
8.2. COVERAGE OF THE PENSION PROJECTION IN THE MEMBER STATES	186
8.3. INDEXATION RULES IN THE MEMBER STATES	192
8.4. ADDITIONAL PENSION PROJECTION RESULTS	200
8.5. DEFINITIONS USED IN THE PROJECTIONS	207
9. ANNEX 2: Quantifying the impact of technology on health care expenditure: econometric analysis of past trends and projections	211
9.1. INTRODUCTION	211
9.2. THE OECD METHOD TO PROJECT THE IMPACT OF TECHNOLOGY	212
9.2.1. Methodology	212
9.2.2. Results	212

9.3. ASSESSING THE IMPACT OF MEDICAL TECHNOLOGY ON HEALTH CARE SPENDING – ECONOMETRIC ANALYSIS	216
9.3.1. Econometric model: detailed specification	216
9.3.2. Technology trend estimation	218
9.3.3. Main findings	220
9.4. BUDGETARY IMPACT OF MEDICAL TECHNOLOGY DEVELOPMENTS - APPLYING ECONOMETRIC ESTIMATES TO THE STANDARD AWG HEALTH CARE PROJECTION MODEL.	220
9.5. CONCLUSIONS	222
9.6. ADDITIONAL TABLES	223
10. Annex 3: Long-term care	225
10.1. SUMMARY OF THE METHODOLOGY USED TO PROJECT LONG-TERM CARE EXPENDITURE	225
10.2. INPUT DATA USED TO PROJECT LONG-TERM CARE EXPENDITURE	226
10.2.1. Age-related expenditure profiles per beneficiary	226
10.2.2. Dependency rates	228
10.3. PROJECTION RESULTS	230
11. Annex 4: Unemployment benefit expenditure	233
12. Annex 5: potential long-term implications of the economic crisis.	237
13. References	241

LIST OF TABLES

TABLE 1 - Age-related government expenditure, 2007-2060, percentage points of GDP	26
TABLE 2 - Peaks and troughs for the size of the total population and the working-age population	42
TABLE 3 - Estimation of net migration needs by 2020	47
TABLE 4 - Peaks and troughs for the size of the working-age population and the persons employed	57
TABLE 5 - Decomposition of GDP growth, 2007-60 (in percentage)	65
TABLE 6 - Pension schemes in EU Member States	72
TABLE 7 - Legal indexation rules in EU Member States	73
TABLE 8 - Indexation rules applied in the projection exercise (when different from the legal rules)	75
TABLE 9 - Statutory retirement age and average exit age	76
TABLE 10 - Projected trough and peak years for pension expenditure (% of GDP)	85
TABLE 11 - Development of the ratio of public pension expenditure to GDP (in percentage points)	87
TABLE 12 - Decomposition of the public pension spending to GDP ratio over 2007 - 2060 (% of GDP)	89
TABLE 13 - Contribution of the dependency ratio to the change in the ratio of public pension expenditure to GDP (in percentage points)	91
TABLE 14 - Coverage ratio (% of population at the age of 65 or more)	92
TABLE 15 - Contribution of the coverage ratio to the change in the ratio of public pension expenditure to GDP (in percentage points)	94
TABLE 16 - Contribution of the employment effect to the change in the ratio of public pension expenditure to GDP (in percentage points)	95
TABLE 17 - Contribution of the benefit ratio to the change in the ratio of public pension expenditure to GDP (in percentage points)	96
TABLE 18 - Benefit ratios and replacement rates (in %)	97

TABLE 19 - Decomposition of the public and other pension spending to GDP ratio over 2007-60	98
TABLE 20 - Description of the sensitivity scenarios	100
TABLE 21 - Decomposition of the public pension/GDP ratio over 2007-50 in the 2006 and 2009 projections (in percentage points)	107
TABLE 22 - Past trends in public health spending (including health and long-term care) in the EU	110
TABLE 23 - Overview of different scenarios used to project health care spending	118
TABLE 24 - Pure demographic scenario (public spending on health care, % of GDP)	122
TABLE 25 - High life expectancy scenario (public spending on health care, % of GDP)	122
TABLE 26 - Constant health scenario (public spending on health care, % of GDP)	123
TABLE 27 - Death-related costs scenario (public spending on health care, % of GDP)	123
TABLE 28 - Income elasticity scenario (public spending on health care, % of GDP)	124
TABLE 29 - Cost convergence scenario (public spending on health care, % of GDP)	125
TABLE 30 - Labour intensity scenario (public spending on health care, % of GDP)	126
TABLE 31 - AWG reference scenario (public spending on health care, % of GDP)	127
TABLE 32 - Pure demographic scenario – increase of public expenditure on long-term care, 2007-60	135
TABLE 33 - Number of older people receiving informal or no care in the pure demographic scenario, 000s	137
TABLE 34 - Number of people receiving formal care and informal or no care in the pure demographic scenario, in thousands	138
TABLE 35 - Number of older dependent people in the constant disability scenario, 000s, % change and difference relative to the pure demographic scenario	140
TABLE 36 - Constant disability scenario – public expenditure on long-term care, % of GDP	141
TABLE 37 - Shift from informal to formal care by different types of care – public expenditure on long-term care, % of GDP	142
TABLE 38 - Demand-driven expenditure scenario – public expenditure on long-term care, % of GDP	143
TABLE 39 - Fast/slow growth scenario – public expenditure on long-term care, % of GDP	144
TABLE 40 - AWG reference scenario – Public expenditure on long-term care, % of GDP	145
TABLE 41 - Results of the baseline scenario (public education expenditure as % of GDP)	153
TABLE 42 - Decomposition of the change in education expenditure according to the baseline scenario	154
TABLE 43 - Results of the scenario on increased tertiary attainment rate (public education expenditure as % of GDP)	159
TABLE 44 - Different kinds of unemployment benefit expenditure, % of GDP, 2006	162
TABLE 45 - Total unemployment benefit expenditure and unemployment rate projection	163
TABLE 46 - Projected unemployment benefit expenditure, % of GDP, 2007-2060, baseline scenario	163
TABLE 47 - Sensitivity of the projection results	169
TABLE 48 - GDP per capita developments in EU27, difference from the AWG baseline	172
TABLE 49 - Age-related government expenditure under the AWG baseline and difference to the alternative scenarios, p.p. change of GDP	175
TABLE 50 - Public pension expenditure (% of GDP)	200
TABLE 51 - Number of pensioners in public pension schemes (in 1000)	201

TABLE 52 - Number of contributors to public pension schemes (in 1000)	201
TABLE 53 - Pension system dependency ratio: number of pensioners relative to contributors in public pension schemes (in %)	202
TABLE 54 - Pension contributions to public pension schemes as a share of GDP (in %)	202
TABLE 55 - Social security pension contributions relative to public pensions (in %)	203
TABLE 56 - Assets in public pension schemes as a share of GDP (in %)	203
TABLE 57 - Assets in public, occupational and private pension schemes as a share of GDP (in %)	204
TABLE 58 - Decomposition of the public pension to GDP ratio by country in different sub periods	204
TABLE 59 - Comparison of the public pension expenditure to GDP between 2006 and 2009 projections	207
TABLE 60 - Decomposition of growth in public health spending	213
TABLE 61 - Results of the OECD projections of health spending	214
TABLE 62 - Results of the OECD assumptions scenario (OECD residual added to EC/AWG methodology) – health care spending as % of GDP	215
TABLE 63 - Augmented Dickey-Fuller test	217
TABLE 64 - Cointegration test (Dickey-Fuller two stage approach)	218
TABLE 65 - Single equation estimates	219
TABLE 66 - Pooled fixed effect regression estimates	220
TABLE 67 - Results of the technology scenario (convergence by 2060) – HC spending as % of GDP	221
TABLE 68 - Results of the technology scenario (convergence over 30 years), HC spending as % of GDP	222
TABLE 69 - Phillips-Perron unit root test	223
TABLE 70 - Number of cointegrating relations using Johansen’s cointegration test	223
TABLE 71 - Dependency rates	229
TABLE 72 - Increase of public expenditure on long-term care over the period 2007 to 2060 and difference relative to the pure demographic scenario	231
TABLE 73 - Unemployment benefit expenditure projections, % of GDP, baseline scenario	235
TABLE 74 - Unemployment benefit expenditure projections under the alternative scenarios	236
TABLE 75 - Difference in the potential growth rate (p.p.): Baseline - alternative ‘crisis’ scenarios	238
TABLE 76 - Public pension expenditure: AWG baseline and difference to the alternative crisis scenarios	239

LIST OF GRAPHS

GRAPH 1 - Overview of the 2009 projection of age-related expenditure	18
GRAPH 2 - Potential GDP growth under different shocks (annual growth rate)	31
GRAPH 3 - Potential budgetary impact of the economic crisis	32
GRAPH 4 - The Cost of Ageing in ‘09 and ‘06 compared, p.p. of GDP, 2007-50	33
GRAPH 5 - Projection of total fertility rates in EUROPOP2008 (number of births per woman)	36
GRAPH 6 - Projection of life expectancy at birth in EUROPOP2008, men (in years)	37
GRAPH 7 - Projection of life expectancy at birth in EUROPOP2008, women (in years)	37

GRAPH 8 - Projection of life expectancy at 65 in EUROPOP2008, men (in years)	38
GRAPH 9 - Projection of life expectancy at 65 in EUROPOP2008, women (in years)	38
GRAPH 10 - Projection of net migration flows in EUROPOP2008 over the period 2008-2060	39
GRAPH 11 - Projection of the total population (percentage and absolute change for the period 2008-2060)	40
GRAPH 12 - Population pyramids (in thousands), EU27/EA, in 2008 and 2060	41
GRAPH 13 - Projected change of main population groups (in % change over the period 2008-2060)	43
GRAPH 14 - Projection of population by main age groups, EU27, Euro area (in 000s)	44
GRAPH 15 - Projection of changes in the structure of the population by main age groups, EU27 (in %)	44
GRAPH 16 - Dependency ratios (in percentage)	45
GRAPH 17 - Change in overall population: natural change and net migration, EU27, in thousands	46
GRAPH 18 - Population of main geographic areas and selected countries as percentage of the world population, 1950, 2000, 2050	48
GRAPH 19 - Old-age dependency ratios by main geographic areas and selected countries (in percentage), 1950, 2000, 2050	49
GRAPH 20 - Impact of pension reforms on the average exit age from the labour force	51
GRAPH 21 - Estimated impact of pension reform on participation rates (2020), in percentage points (comparison of projections with and without incorporating recent pension reforms)	51
GRAPH 22 - Estimated impact of pension reform on participation rates (2060), in percentage points (comparison of projections with and without incorporating recent pension reforms)	51
GRAPH 23 - Participation rates (in percentage)	52
GRAPH 24 - Participation rates by gender, projected change over the period 2007-2060 (in percentage)	53
GRAPH 25 - Participation rates by main age groups, projected change over the period 2007-2060 (in %)	53
GRAPH 26 - Participation rates of the older workers (55-64), projected change over the period 2007-2060 (in %)	54
GRAPH 27 - Labour force projections, 2007-2060 (percentage change of people aged 15 to 64)	54
GRAPH 28 - Employment rates and Lisbon targets in the EU27 (in percentage)	55
GRAPH 29 - Employment projections, changes in percentage	56
GRAPH 30 - Population of working-age and total employment, EU27	56
GRAPH 31 - Employment projections, composition of employment by age groups	58
GRAPH 32 - Share of older workers (labour force aged 55 to 64 as a percentage of the labour force aged 15 to 64)	59
GRAPH 33 - Effective economic old-age dependency ratio (inactive population aged 65 and above as a percentage of employed population aged 15 to 64)	60
GRAPH 34 - Total inactive population (both aged 14 and below and aged 65 and above) as a percentage of employed population aged 15 to 64)	60
GRAPH 35 - Hours worked projections, annual growth rate	61
GRAPH 36 - Projected potential growth rates (annual average growth rates), EU aggregates	62
GRAPH 37 - Projected potential growth rates (annual average growth rates), all Member States	62

GRAPH 38 - Labour productivity per hour, annual average growth rates, EU aggregates	63
GRAPH 39 - Labour input (total hours worked), annual average growth rates, EU aggregates	63
GRAPH 40 - Determinants of labour productivity, EU aggregates	64
GRAPH 41 - Projected GDP per capita growth rates (period averages)	65
GRAPH 42 - Decomposition of GDP growth, EU15, EU10	66
GRAPH 43 - Average gross wage and average gross public pension benefit in 2007 (1000 euros)	77
GRAPH 44 - Average Gross public pension expenditure in 2000 and 2007 (% of GDP)	77
GRAPH 45 - Gross and net public pension expenditure in 2000 and 2007 (% of GDP)	78
GRAPH 46 - Gross old-age and other public pension expenditure in 2007 and 2060 (% of GDP)	79
GRAPH 47 - Gross and net public pension expenditure in 2007 and 2060 (% of GDP)	80
GRAPH 48 - Expenditure of non-public occupational, private mandatory and non-mandatory pension	81
GRAPH 49 - Contributions to occupational, private mandatory and non-mandatory pension (% of GDP)	81
GRAPH 50 - Occupational, private mandatory and non-mandatory pension assets (% of GDP)	83
GRAPH 51 - Change in the Public Pension/GDP over 2007-60 (in percentage points)	86
GRAPH 52 - Decomposition of the public pension spending to GDP ratio over sub periods for EU27	89
GRAPH 53 - Contribution of the dependency ratio to the change in the ratio of the public pension expenditure to GDP over 2007-60 (in percentage points)	90
GRAPH 54 - Contribution of the coverage ratio to the change in the ratio of the public pension expenditure to GDP over 2007-60 (in percentage points)	93
GRAPH 55 - Contribution of the employment rate to the change in the ratio of the public pension expenditure to GDP over 2007-60 (in percentage points)	94
GRAPH 56 - Contribution of the benefit ratio to the change in the ratio of the public pension expenditure to GDP over 2007-60 (in percentage points)	95
GRAPH 57 - Difference between the higher life expectancy and the baseline scenario (in percentage points)	100
GRAPH 58 - Difference between the higher labour productivity and the baseline scenario	101
GRAPH 59 - Difference between the higher employment of older workers and the baseline scenario	102
GRAPH 60 - Difference between the higher total employment and the baseline scenario	102
GRAPH 61 - Difference between the higher interest rate and the baseline scenario (in percentage points)	103
GRAPH 62 - Difference between the zero migration and the baseline scenario (in percentage points)	103
GRAPH 63 - Change in the public pension to GDP (2007-50) compared: 2006 Ageing Report and current projection (in percentage points)	104
GRAPH 64 - Change in the public pension to GDP (2007-50) compared: 2006 Ageing Report and current projection (in percentage points)	106
GRAPH 65 - Age-related expenditure profiles of health care provision (spending per capita as % of GDP per capita)	111
GRAPH 66 - Schematic presentation of the projection methodology	117
GRAPH 67 - Stylized illustration of the different scenarios on future morbidity/disability and longevity using age-profiles of health care costs	119

GRAPH 68 - Impact of demographic change on public expenditure on health care (% of GDP, 2007-2060)	121
GRAPH 69 - Impact of demography and health status. Comparison between scenarios	124
GRAPH 70 - Impact of income and macroeconomic variables – HC spending in 2060, different scenarios	126
GRAPH 71 - Range of results from different scenarios on health care, EU27	129
GRAPH 72 - Range of results from different scenarios on health care,	129
GRAPH 73 - Pure demographic scenario – public expenditure on long-term care as % of GDP	135
GRAPH 74 - Projected expenditure according to the different scenarios, EU27, % of GDP	146
GRAPH 75 - Enrolment rates, % of population of a given age cohort in primary education (ISCED 1)	148
GRAPH 76 - Enrolment rates, % of population of a given age cohort in lower secondary education (ISCED 2)	148
GRAPH 77 - Enrolment rates, percentage of population of a given age cohort in upper secondary education (ISCED 3 and 4)	149
GRAPH 78 - Enrolment rates (percentage of population of a given age cohort) in tertiary education	149
GRAPH 79 - Students/Teacher ratio in different levels of education	150
GRAPH 80 - Average compensation per member of staff, different educational levels, % of GDP per capita	151
GRAPH 81 - Structure of public education expenditure in 2007 (% of GDP)	151
GRAPH 82 - Changes in public spending on respective levels of education 2007-2060 (% of GDP)	153
GRAPH 83 - Impact of the factors illustrated by the alternative scenarios, 2007-60 (in % points)	156
GRAPH 84 - Evolution of education spending in EU15 and EU12 according to three alternative scenarios (in % of GDP)	157
GRAPH 85 - Extra increase in spending due to meeting the tertiary attainment rate target as compared to the initial distance from the target	159
GRAPH 86 - Cost of Ageing in EU27, % point change of GDP	165
GRAPH 87 - Member States with high ageing costs, % of GDP	166
GRAPH 88 - Member States with medium ageing costs, % of GDP	167
GRAPH 89 - Member States with low ageing costs, % of GDP	168
GRAPH 90 - Potential GDP growth under different shocks	171
GRAPH 91 - Potential GDP under different shocks	172
GRAPH 92 - The potential budgetary impact of the crisis	174
GRAPH 93 - Model structure	225
GRAPH 94 - Age-related expenditure profiles of long-term care provision (spending per beneficiary as % of GDP per capita)	227
GRAPH 95 - The impact of an improvement in the disability status, projected expenditure for the period 2007-2060, as % of GDP	230
GRAPH 96 - The impact of a policy change: a shift from informal to formal care, projected expenditure on long-term care for the period 2007-2060, as % of GDP	230
GRAPH 97 - Average elasticity (2007-2060) of public pension expenditure with respect to GDP: labour productivity growth shock	239
GRAPH 98 - Average elasticity (2007-2060) of public pension expenditure with respect to GDP: structural unemployment rate shock	240