

To safeguard long-term economic growth and ensure inter-generational fairness it is important that Budget decisions are consistent with the long-term sustainability of the public finances. The illustrative long-term fiscal projections presented in this annex provide an assessment of the long-term sustainability of the Government's fiscal policies over the period up to 2036-37, in line with the requirements of the *Code for fiscal stability*. The key points are:

- the UK remains well placed to deal with potential future spending pressures due to ageing and other factors;
- given the projected profile for tax revenue and transfers, current public consumption can grow at around assumed GDP growth after the medium term while meeting the Government's golden rule; and
- public sector net investment can grow broadly in line with the economy without jeopardising the sustainable investment rule.

This conclusion concurs with the findings of the 2006 *Long-term public finance report*, which provides a more detailed examination of the long-term public finances. The report finds that, on a range of assumptions and using a number of techniques, the UK's fiscal position is sustainable in the long term on the basis of current policies, and that the UK is well placed relative to many other developed countries to face the challenges ahead. However, the Government remains vigilant to future risks and is not complacent about the long-term challenges posed by an ageing population. It will therefore continue to update and report on assessments of long-term fiscal sustainability.

A.1 The Government's fiscal policy framework, as set out in the *Code for fiscal stability*,¹ is designed to ensure transparent, long-term decision-making. Fiscal policy is set to ensure sustainable public finances, with consideration to the short, medium and long term. Long-term fiscal sustainability helps to promote long-term economic growth and ensures that financial burdens are not shifted to future generations.

Illustrative long-term fiscal projections

A.2 To assess the sustainability and inter-generational impact of fiscal policy, the Code requires the Government to publish illustrative long-term fiscal projections. In principle, fiscal projections can be either "top-down" or "bottom-up". A top-down approach imposes high-level constraints on the fiscal aggregates and then shows the combinations of spending and taxation that could meet those constraints. A bottom-up approach does not impose any high-level constraints on expenditure or revenue raising; it looks at how long-term trends, for example projected demographic changes, could affect future spending and revenue if current policy were to remain unchanged. It therefore demonstrates the potential effects of long-term pressures on the fiscal aggregates if no public spending and tax policy assumptions were made.

A.3 The illustrative long-term fiscal projections presented in this annex take a top-down approach, where the Government's fiscal rules are imposed as a constraint. The illustrative projections then show by how much current expenditure and investment will be able to grow, given certain assumptions regarding government revenues, transfer payments and capital depreciation.

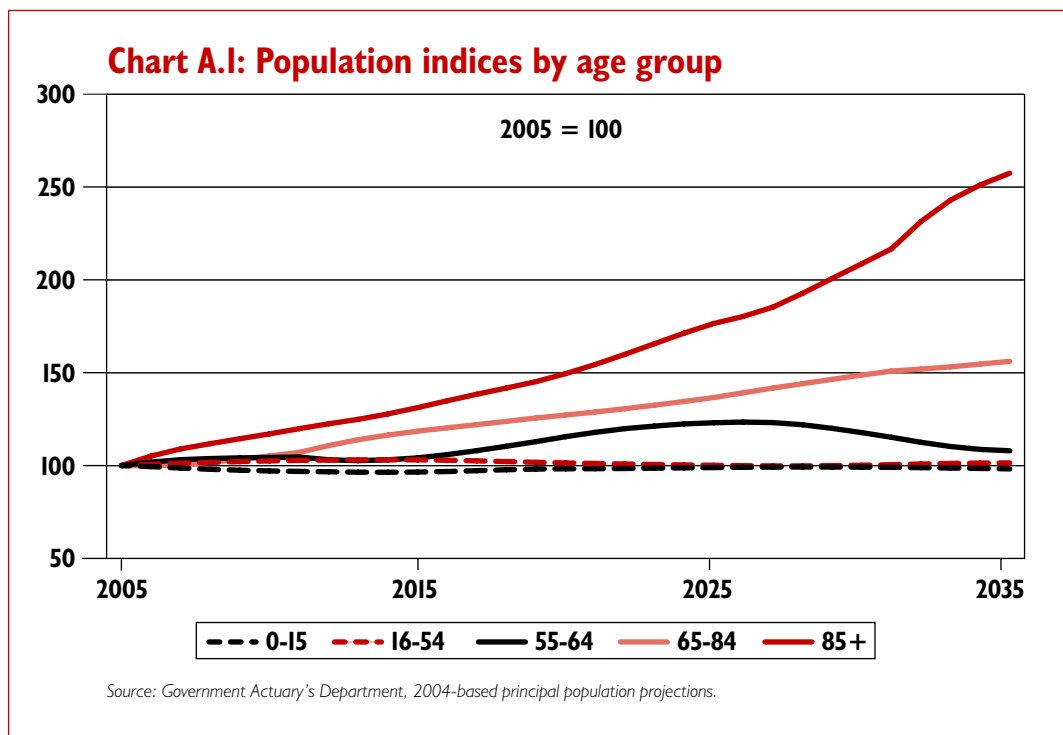
¹ *Code for fiscal stability*, HM Treasury, 1998.

A.4 To complement and enhance the illustrative projections, the Government has published the Long-term public finance report each year since 2002, most recently alongside the 2006 Pre-Budget Report.² The report primarily takes a bottom-up approach; it examines long-term challenges for the public finances and provides a comprehensive assessment of the sustainability of the public finances.

LONG-TERM SOCIO-ECONOMIC AND OTHER TRENDS

A.5 Declining fertility rates and increases in life expectancy over past decades have led to a general ageing of the population in the UK and throughout most of the developed world. The median age of the UK population increased from 34.1 years in 1971 to 38.8 years in 2005. The latest official UK principal population projections were produced by the Government Actuary's Department (GAD) in October 2005.³ Details of these 2004-based population projections are given in the 2006 *Long-term public finance report*.

A.6 Based on the latest principal projections, the UK's population will increase from around 60 million today to around 68 million by the mid 2030s. The population structure is also projected to change substantially. Chart A.1 shows the wide variations between the projected changes in size of different age groups, with the oldest age group projected to more than double in absolute size over the next 30 years, while the 0-15 years and 16-54 years age groups remain more or less stable. The median age of the UK population is projected to rise to 43.4 years by 2036.



A.7 The composition of the population will change as a result. The share of the population aged 16 to 64 years is projected to fall by around 5½ percentage points between now and 2035. At the same time the share of people aged 65 years and over is projected to rise

² 2006 *Long-term public finance report: an analysis of fiscal sustainability*, HM Treasury, December 2006.

³ <http://www.gad.gov.uk/Population/index.asp>. Also note that on 31 January 2006 responsibility for producing official population projections for the UK passed to the Office for National Statistics (ONS), which intends to issue the next full set of population projections later in 2007.

by around 8 percentage points over this period, and the share of those aged 85 years and over is projected to rise by just over 2 percentage points, from its present level of around 2 per cent. By contrast the share of children (those aged up to 15 years) in the total population is projected to fall.

A high degree of uncertainty **A.8** Any long-term projection is subject to a high degree of uncertainty. To deal with this uncertainty, GAD has produced high and low variants around the principal projections, using alternative fertility, longevity and net migration assumptions. The variants differ markedly from the principal projections, and suggest that governments should attempt to plan for a wide range of potential outcomes. To this end, a cautious approach to assessing the long-term sustainability of the public finances is taken below.

Other long-term trends **A.9** However, demographic change is only one of a number of trends that may have a significant impact upon public finances in the future. In November 2006 the Government published *Long-term opportunities and challenges for the UK: analysis for the 2007 Comprehensive Spending Review*.⁴ That document looks in turn at five areas of change that the Government will have to confront in the decade ahead:

- demographic and socio-economic change, with rapid increases in the old-age dependency ratio on the horizon, and rising consumer expectations of public services;
- the intensification of cross-border economic competition, with new opportunities for growth, as the balance of international economic activity shifts toward emerging markets such as China and India;
- the rapid pace of innovation and technological diffusion, which will continue to transform the way people live and open up new ways of delivering public services;
- continued global uncertainty with ongoing threats of international terrorism and global conflict and the continued imperative to tackle global poverty; and
- increasing pressures on our natural resources and global climate, requiring action by governments, businesses and individuals to maintain prosperity and improve environmental care.

METHODOLOGY AND ASSUMPTIONS

A.10 As stated above, the illustrative long-term fiscal projections are generated using a so-called top-down modelling approach. “Top-down” refers to the fact that a number of high-level assumptions are imposed on the model, which constrain the evolution of specific fiscal aggregates. For the illustrative long-term fiscal projections the high-level assumptions are that a) the tax to GDP ratio remains constant after the medium term, b) the Government’s golden rule holds in every year after the medium term and c) the Government’s sustainable investment rule is met in every year over the projection period of 30 years. The golden rule is assumed to hold in every year after the medium term because it is not possible to project an economic cycle beyond the medium-term horizon.

⁴ *Long-term opportunities and challenges for the UK: analysis for the 2007 Comprehensive Spending Review*, HM Treasury, November 2006.

A.II The illustrative projections incorporate long-term social security projections provided by the Department for Work and Pensions, which cover pension and non-pension social transfers. Using this information and projections of debt interest payments to calculate total transfer spending, it is possible to calculate how much money the Government has left out of total current expenditure for current consumption, i.e. current expenditure on goods and services. Current consumption covers, among other things, current spending on health, education, law and order, and defence. These illustrative top-down projections are complemented by the bottom-up projections provided in the Long-term public finance report, which provide an indication of future demand pressures on public spending.

A.I2 Up to and including 2011-12, the end of the medium-term forecast period, the long-term illustrative projections are based on the fiscal forecasts and assumptions presented in Chapter C of the Financial Statement and Budget Report (FSBR). Beyond that, it is assumed that the Government will leave current policy unchanged in the future, in the sense that the tax to GDP ratio will remain constant and Government will meet its fiscal rules. This should not be interpreted as meaning that policy will not change over time; the assumption is used so that the long-term projections do not pre-judge future government policy.

Economic assumptions A.I3 Table A.1 sets out the economic assumptions that underlie the long-term fiscal projections after 2011-12. To deal with the uncertainty involved in projecting long-term trends, cautious assumptions are used. Productivity is assumed to grow by $1\frac{3}{4}$ per cent a year from 2012-13, which is $\frac{1}{4}$ per cent lower than the neutral view of productivity growth. This is in line with the “lower productivity” scenario used in the 2006 *Long-term public finance report*.

Table A.1: Cautious assumptions for real GDP growth and its components

Year	2012-13 to 2016-17	2017-18 to 2026-27	2027-28 to 2036-37
Productivity	$1\frac{3}{4}$	$1\frac{3}{4}$	$1\frac{3}{4}$
Employment	$\frac{1}{4}$	0	0
Real GDP	2	$1\frac{3}{4}$	$1\frac{3}{4}$

Source: HM Treasury.

A.I4 The illustrative projections use the so-called “cohort” method to project gender- and age-specific employment rates and total employment levels beyond the medium term. The growth rates for productivity and employment generate the growth rates for GDP from 2012-13 onwards. The employment projections take into account the increases to the State Pension age proposed in the Pensions Bill currently before Parliament.⁵ Box A.1 gives a summary of how this modelling has been done. For a more detailed explanation of the cohort method and how the proposed pensions reforms have been incorporated, see the 2006 *Long-term public finance report*.

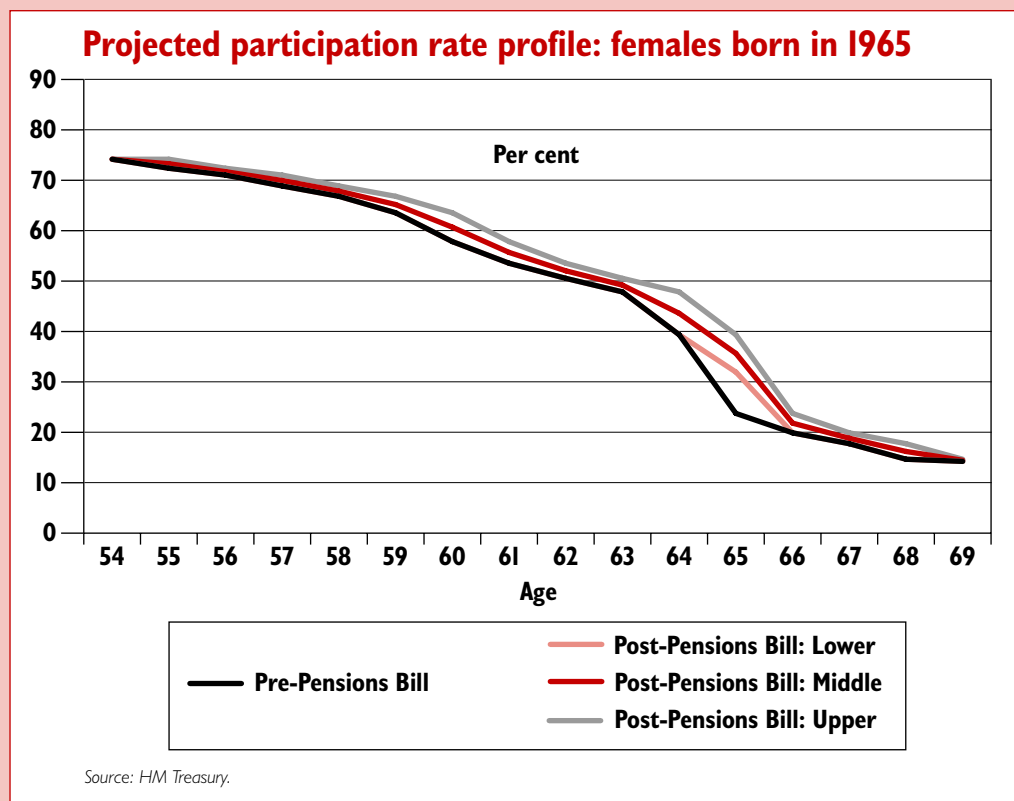
A.I5 After combining the productivity assumption and employment projection, the resulting GDP projection is substantially lower than that which has been recorded on average over the last ten years, reflecting a cautious approach to projecting long-term fiscal aggregates. Indeed, it is significantly lower than the cautious assumption of trend growth of $2\frac{1}{2}$ per cent over the medium term used for the medium-term public finance projections.

⁵ For further details see the White Paper *Security in retirement: towards a new pensions system*, Department for Work and Pensions, May 2006.

Box A.1: Adjusting for the proposed increase in the State Pension age

The increase in the State Pension age proposed in the Pensions Bill currently before Parliament could be expected to have some effect on labour market behaviour. On the one hand, it might be that the increase influences the behaviour of people only at the age where they would previously have been eligible for a state pension. On the other hand, people could adjust their behaviour at younger ages, in anticipation of having to wait longer to claim the State Pension.^a The chart below shows these two possible behavioural responses (the lower and upper profiles respectively), compared to the participation rate profile without any reform.

The middle variant represents an average of these two possible behavioural responses, and therefore provides a reasonable estimate of the likely labour market effect of the proposed increase in the State Pension age.^b This middle variant is used for the GDP projection underlying the illustrative long-term fiscal projections.



^a Historical data indicate that participation rates typically begin to fall significantly from the age of 55 onwards. It is therefore reasonable to assume that this is the earliest age at which the State Pension age begins to affect behaviour.

^b The effect of the State Pension age on labour market participation using the middle variant is broadly in line with estimates of the labour market effect of the State Pension age produced in a study by the Office for National Statistics. See *Labour Force Projections 2006-2020*, Office for National Statistics, January 2006.

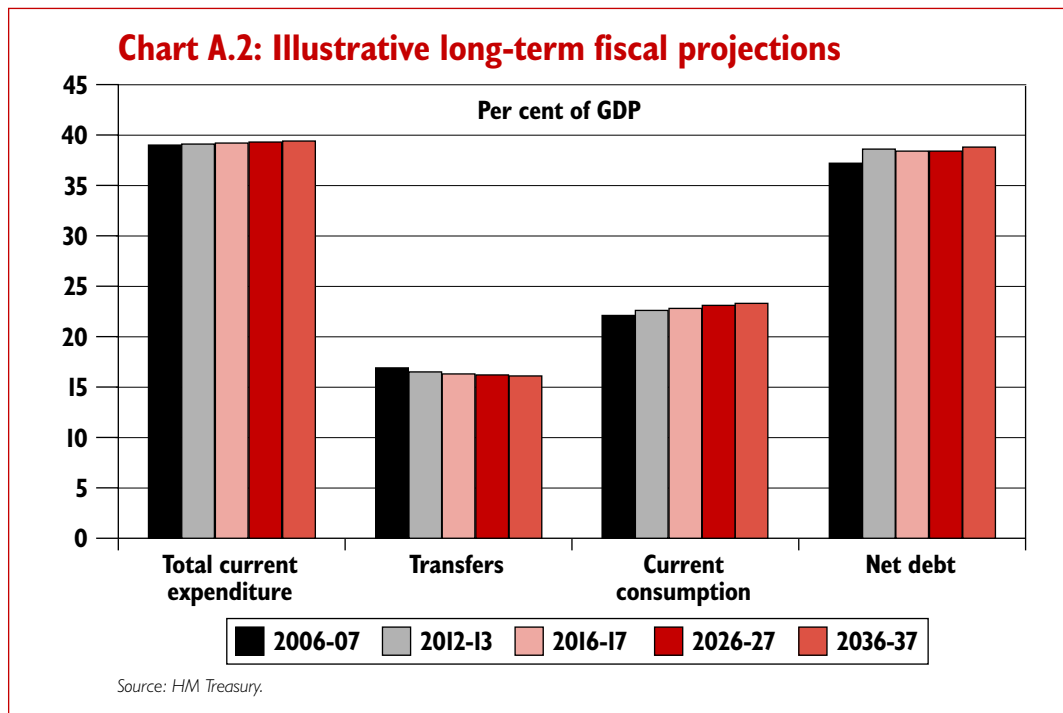
Taxation and spending assumptions A.16 For the period up to and including 2011-12, the illustrative long-term fiscal projections are based on the forecasts and assumptions presented in Chapter C of the FSBR. Beyond the medium-term horizon, the projections could be described as a “what if” scenario. They describe what might happen if high-level policy settings in 2011-12 were to continue throughout the rest of the projection period. For example, it is assumed that the Government continues to raise the same amount of revenue as a proportion of GDP as in 2011-12, offsetting possible changes in tax bases by changing policy in a revenue-neutral way. By

assumption, the golden rule is met, with the current budget in balance at all times. This implies that the sum of total current expenditure and depreciation is also assumed to be constant, as a share of GDP, from 2012-13 onwards.

A.17 Current public consumption is calculated as total current expenditure less transfers. Transfers mainly consist of social security spending (e.g. basic State Pension and Disability Living Allowance) and debt interest payments. The latter are calculated using the projected debt stock and a long-term interest rate, which is assumed to equal the implicit average interest rate between 2007-08 and 2011-12. Under the assumption that the current budget is in balance, the change in the absolute level of public sector net debt reflects changes in public sector net investment. As in previous illustrative long-term projections, the share of public sector net investment in GDP is reset at 1.8 per cent beyond the medium term.

ILLUSTRATIVE PROJECTIONS

A.18 Chart A.2 shows the projected evolution of total current expenditure, transfers, current consumption and net debt as a share of GDP between 2006-07 and 2036-37, given the assumptions stated above.



A.19 Total current expenditure is projected to increase between 2006-07 and 2011-12. Given the assumptions stated above, total current expenditure remains more or less stable beyond the medium term. Transfers are projected to fall from 16.9 per cent in 2006-07 to 16.1 per cent by 2036-37, while current consumption is projected to increase from 22.6 per cent in 2012-13 to 23.3 per cent in 2036-37. Hence current consumption can grow at around assumed GDP growth, after the medium term, while still meeting the fiscal rules.

A.20 Starting from 38.6 per cent in 2012-13, net debt is projected to remain broadly stable, reaching 38.8 per cent by 2036-37, consistent with the sustainable investment rule.

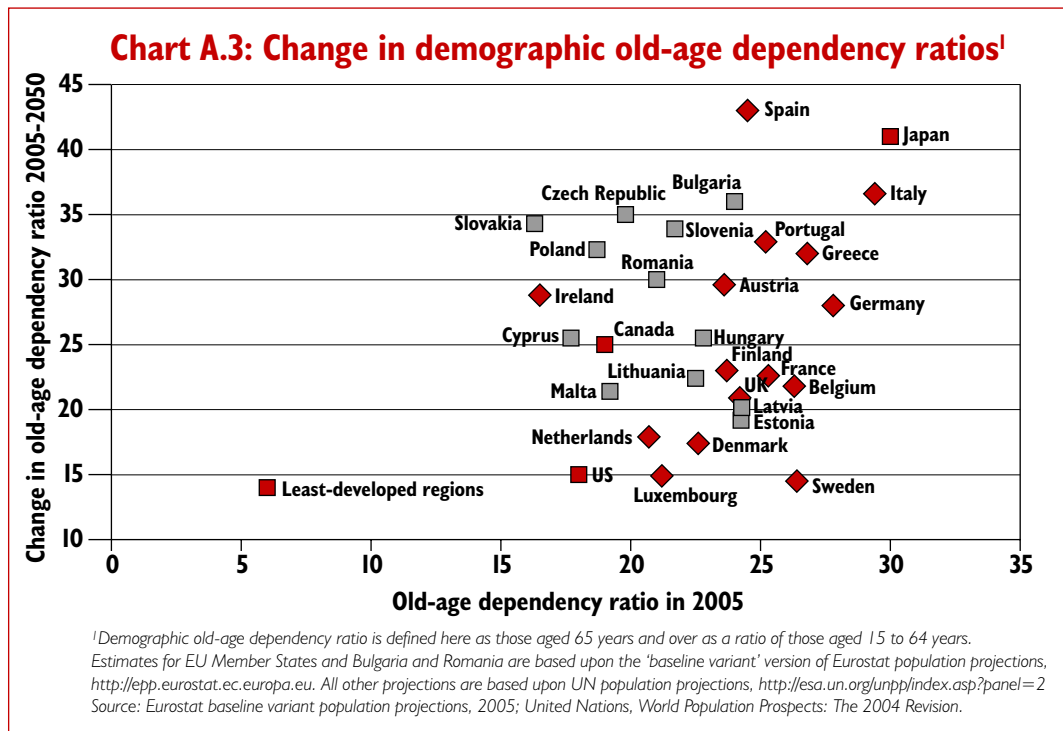
A.21 The illustrative long-term fiscal projections presented here complement the analysis presented in the 2006 *Long-term public finance report*. The report projects the independent evolution of individual age-related spending items such as state pensions and long-term care, and then uses a broad range of techniques, assumptions and modelling approaches to assess long-term sustainability based on the bottom-up projections. The report demonstrates that the UK fiscal position is sustainable in the long term on the basis of current policies and that the UK is well placed relative to many other developed countries to face the challenges ahead. In reality, spending on individual items does not grow independently or without constraints, as governments impose high-level fiscal policy decisions. The top-down approach used in the illustrative long-term fiscal projections presented here reflects the way in which Government draws up its budget, taking into account its fiscal rules. In this sense the bottom-up and top-down projections are complementary.

Sensitivity analysis A.22 Long-term projections of any type are inevitably subject to a high degree of uncertainty. The outcome of any projection exercise depends on the underlying assumptions. These include population projections and assumptions regarding, among other things, productivity, revenue, labour market participation and social security spending. It is important to determine the sensitivity of baseline projections to changes in the assumptions. The 2006 *Long-term public finance report* illustrates the effect of different interest rate and productivity assumptions and includes a more detailed discussion of the uncertainty surrounding long-term projections.

INTERNATIONAL COMPARISONS

Population ageing: a global phenomenon A.23 The UK is not alone in facing an ageing population, and many countries are projected to age more rapidly than the UK. Chart A.3 shows that a number of EU Member States are projected to observe an increase in the demographic old-age dependency ratio⁶ between 2005 and 2050 in excess of 30 percentage points. This includes four of the new Member States that joined the EU in 2004 (Czech Republic, Poland, Slovakia and Slovenia), as well as Bulgaria and Romania, who joined in 2007.

⁶ The demographic old-age dependency ratio shows the number of people aged 65 years and over relative to the number of people aged 16 to 64 years.



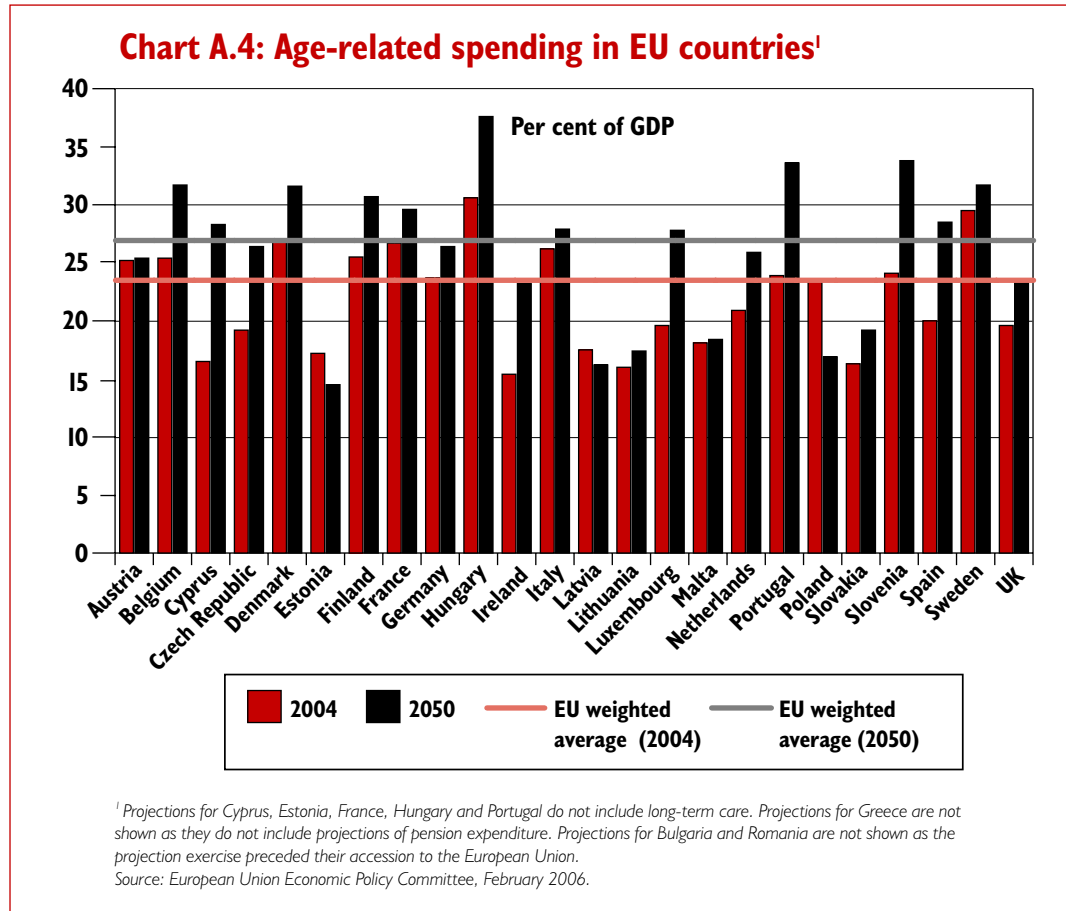
A.24 Similar trends are expected for most other developed countries. Chart A.3 shows that Japan's population is projected to age significantly, with the old-age dependency ratio increasing by 41 percentage points between 2005 and 2050. By contrast, the US population is projected to age relatively moderately. The chart also shows the projected change for least developed regions,⁷ illustrating that population ageing is not a phenomenon limited to developed countries. Many developing and middle-income countries will also experience substantial population ageing over the coming decades, albeit, in many cases, from a lower starting point. For example, India's demographic old-age dependency ratio is projected to rise from 8 per cent in 2005 to 22 per cent by 2050.

EU A.25 In February 2006, the EU's Economic Policy Committee (EPC) published detailed findings on the impact of an ageing population on future spending trends.⁸ It found that age-related spending is projected to rise substantially in some EU Member States if existing policies remain unchanged (see Chart A.4).⁹ Across the EU as a whole, age-related spending is projected to increase to around 27 per cent of GDP by 2050. Chart A.4 indicates that projected spending pressures are not confined to the existing EU15, with many of the recently acceded Member States projected to observe increases in age-related expenditure between now and 2050. Based on the EPC projections, age-related spending for the UK is projected to remain below the EU average throughout the projection period, reaching just over 23 per cent of GDP by 2050. As can be seen from the chart, this is broadly equal to the current EU average.

⁷ As defined by the United Nations. See <http://esa.un.org/unpp/definition.html>.

⁸ *The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care and unemployment transfers (2004-2050)*, European Union Economic Policy Committee, February 2006. The ECOFIN Council has given a mandate to the EPC to update its age-related expenditure projections by the autumn of 2009.

⁹ Age-related spending comprises spending on pensions, health, long-term care, education and unemployment benefits in these projections.



Other developed countries **A.26** Many other developed countries will also have to deal with the fiscal challenges that arise from an ageing population. For example, projections published by the Japanese Ministry of Finance suggest a rise in social security benefits from 23.9 per cent to 26.1 per cent of GDP between 2006 and 2025.¹⁰ Its already high level of debt makes Japan's sustainability challenge more difficult. A report published by the New Zealand Treasury uses both the top-down and bottom-up approaches to assess New Zealand's long-term fiscal position.¹¹ It projects a public spending increase of 7 percentage points between 2005 and 2050. Rising health spending drives most of the increase. Similarly, the Australian Government Productivity Commission has projected an increase in fiscal pressure (the extent to which government spending outpaces revenue growth) in Australia of 5.7 percentage points of GDP between 2003-04 and 2044-45.¹²

CONCLUSIONS

A.27 The illustrative fiscal projections presented in this annex complement the detailed findings presented in the 2006 *Long-term public finance report*, which show that the UK's public finances are broadly sustainable over the long term. The UK is also well placed to face future challenges relative to many other developed countries. The Government can continue to meet the golden rule and the sustainable investment rule throughout the projection period, while allowing current public consumption and public sector net investment to grow at around the assumed rate of GDP growth.

¹⁰ See *Current Japanese Fiscal Conditions and Issues to be Considered*, Ministry of Finance, Japan, 2006.

¹¹ *New Zealand's Long-term Fiscal Position*, New Zealand Treasury, June 2006.

¹² *Economic Implications of an Ageing Australia*, Australian Government Productivity Commission, March 2005.

A.28 However, even with the use of prudent and cautious assumptions, a wide range of unforeseen developments and spending pressures could arise over the projection period. The Government will therefore continue to update and report on its assessments of long-term fiscal sustainability, both through regular publication of the Long-term public finance report alongside the Pre-Budget Report and through the illustrative long-term fiscal projections presented with each Budget, so as to ensure that all fiscal policy decisions are set within a sustainable long-term framework.