Office for
Budget Responsibility

Fiscal sustainability report

January 2017

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ISBN 978-1-4741-3989-2

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Presented to Parliament pursuant to
Section 8 of the Budget Responsibility
and National Audit Act 2011

January 2017

This publication is available at www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to us at obrenquiries@obr.gsi.gov.uk

Print ISBN 9781474139892
Web ISBN 9781474139908

ID 10011711 01/17 58199

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the Williams Lea Group on behalf of the Controller of Her Majesty's Stationery Office

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Foreword

The Office for Budget Responsibility (OBR) was created in 2010 to provide independent and authoritative analysis of the UK's public finances. As part of this role, the Budget Responsibility and National Audit Act 2011 requires us to produce "*an analysis of the sustainability of the public finances*" once a year.

Our approach to analysing this issue is twofold:

- first, we look at the fiscal impact of ***past*** **public sector activity**, as reflected in the assets and liabilities that it has accumulated on its balance sheet; and
- second, we look at the potential impact of ***future*** **public sector activity**, by projecting how spending and revenues may evolve over the next 50 years – and the impact this would have on public sector net debt.

In 2016-17, we have departed from our normal publication timetable because of the referendum vote to leave the European Union in June 2016. We cancelled our planned July 2016 *Fiscal sustainability report (FSR)* and, instead, published a series of *Fiscal sustainability analytical papers* in the second half of 2016. We summarise their conclusions in Chapter 2 of this report, alongside new long-term projections and an assessment of fiscal sustainability consistent with our November 2016 *Economic and fiscal outlook*.

Broadly speaking, the fiscal position is unsustainable if the public sector is on course to absorb an ever-growing share of national income simply to pay the interest on its accumulated debt. This notion of sustainability can be quantified in a number of ways, which we discuss in the report. On these measures, the central projection in each of our reports – since the first was published in 2011 – has pointed to an unsustainable fiscal position over the long term.

It is important to emphasise that the long-term outlook for public spending and revenues is subject to huge uncertainties. Even backward-looking balance sheet measures are clouded by difficulties of definition and measurement. The long-term figures presented here should be seen as illustrative projections, not precise forecasts. Policymakers need to be aware of these uncertainties, but should not use them as an excuse for ignoring the challenges that lie ahead.

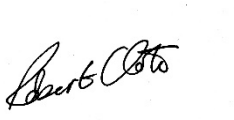
The analysis and projections in this report represent the collective view of the independent members of the OBR's Budget Responsibility Committee (BRC). It was produced during the interval between Professor Sir Stephen Nickell stepping down from the BRC and Professor Sir Charles Bean taking up his position. The BRC takes full responsibility for the judgements that underpin the analysis and projections, and for the conclusions we have reached. We have been supported in this by the full-time staff of the OBR, to whom we are as usual enormously grateful.

We have also drawn on the help and expertise of officials across government, including the Department for Work and Pensions, HM Revenue and Customs, HM Treasury, the Department for Education, the Government Actuary's Department, the Department of Health and the Personal Social Services Research Unit at the London School of Economics, and the Office for National Statistics.

We provided the Chancellor of the Exchequer with a draft set of our projections and conclusions on 9 January, to give him the opportunity to decide whether he wished to make policy decisions that we would be able to incorporate in the final version. He did not. We provided a full and final copy of the report 24 hours prior to publication, in line with pre-release access arrangements set out in an updated section of the *Memorandum of Understanding between the Office for Budget Responsibility, HM Treasury, Department for Work and Pensions and HM Revenue & Customs* that was agreed ahead of our November *EFO*. At no point in the process did we come under any pressure from Ministers, special advisers or officials to alter any of our analysis or conclusions.

In October 2015, the Government updated the *Charter for Budget Responsibility* and the requirements within it that relate to our analysis of fiscal sustainability. These changes have been retained in the draft *Charter* that was published alongside the Autumn Statement and on which Parliament will vote on 24 January. The minimum frequency with which we must publish long-term fiscal projections has been reduced from once a year to once every two years. At the same time, we have now been tasked with producing a report on fiscal risks at least once every two years, to which the Government must formally respond. We will produce our first *Fiscal risks report (FRR)* in 2017. In it, we will analyse the sustainability of the public finances (as required by primary legislation) from the perspective of risks to future sustainability rather than via long-term projections that focus on a central projection and sensitivity analysis around it. We published a discussion paper in October that sought views on the content and presentation of the *FRR* and the research agenda that should underpin it.

We hope that this report is of use and interest to readers. Feedback would be very welcome to OBRfeedback@obr.gsi.gov.uk.



Robert Chote Graham Parker

The Budget Responsibility Committee

Executive summary

Overview

1 In the *Fiscal sustainability report* (*FSR*) we look beyond the medium-term forecast horizon of our twice-yearly *Economic and fiscal outlooks* (*EFOs*) and ask whether the UK's public finances are likely to be sustainable over the longer term.

2 In doing so our approach has been twofold:

- first, we look at the fiscal impact of ***past* government activity**, as reflected in the assets and liabilities on the public sector's balance sheet. This financial year we published this analysis in a *Fiscal sustainability analytical paper* in July 2016; and

- second, we look at the potential fiscal impact of ***future* government activity**, by making 50-year projections of all public spending, revenues and significant financial transactions, such as government loans to students.

3 Our latest projections suggest that the public finances are likely to come under significant pressure over the longer term, due to the effects of an ageing population and further upward pressure on health spending from factors such as technological advancements and the rising prevalence of chronic health conditions. Under our definition of unchanged policy, the Government would end up having to spend more as a share of national income on age-related items such as pensions and in particular health care, but the same demographic trends would leave government revenues roughly stable.

4 In the absence of offsetting tax rises or spending cuts this would widen budget deficits over time and put public sector net debt on an unsustainable upward trajectory. The fiscal challenge from an ageing population and from additional pressures on health spending is common to many developed nations.

5 Viewed on a like-for-like basis, the long-term outlook for the public finances is somewhat less favourable than at the time of our last *FSR* in July 2015. This reflects the fact that the underlying outlook for the public finances over the medium term has deteriorated – thanks largely to a weaker outlook for productivity and GDP growth, which reduces prospective tax revenues. In addition, the Government has increased planned spending on public services, including health spending that we assume will be subject to cost pressures over time. These factors more than offset the impact of the tax increases and cuts to welfare spending that have been announced since the last *FSR*.

6 Long-term projections such as these are highly uncertain and the results we present here should be seen as illustrative, not precise forecasts. We quantify some of the uncertainties through sensitivity analyses, particularly relating to demographic trends and health spending.

7 It is important to emphasise that we focus here on the additional fiscal tightening that might be necessary beyond our medium-term forecast horizon, which currently ends in 2021-22. The report should not be taken to imply that the substantial fiscal consolidation already in the pipeline for the next five years should be made even bigger. We also look at the tightening that would be necessary beyond 2025-26 if the Government were to meet its new fiscal objective to "*return the public finances to balance at the earliest possible date in the next Parliament*" – an objective that appears challenging given the demographic and health spending pressures considered in this report.

8 While not implying a need for further fiscal tightening right away, policymakers and would-be policymakers should certainly think carefully about the long-term consequences of any policies they introduce or propose in the short term. And they should give thought too to the policy choices that will confront them once the current planned consolidation is complete.

Fiscal sustainability analytical papers

9 Following the post-referendum cancellation of our planned July 2016 *FSR*, we published a series of analytical papers covering issues that would have been presented in that *FSR*. These have informed this report – in particular, our working paper on long-term trends in health spending has led us to revise the assumptions used in our new central projection, with a significant effect on our results.

10 In summary, the five *Fiscal sustainability analytical papers* concluded that:

- the 2016 **Whole of Government Accounts** (WGA) and the 2015-16 departmental accounts that will underpin the 2017 WGA report a number of significant increases in different liabilities. While some of these increases reflect actual emerging pressures, more reflected measurement issues – with changes in discount rates having material effects on a number of measured liabilities (and some assets);

- upward pressure on **health spending** – beyond the effects of population ageing – has been evident in most developed economies in recent decades and most institutions that produce long-term projections assume that it will continue. While there is agreement about the direction of this pressure, there are differing views on its extent. We have decided to factor in an assumption about these additional cost pressures in our central projections for the UK, which has had a material effect on the scale of the fiscal challenge future governments can expect over the coming decades;

- updated **population projections** illustrated how the policy link between the State Pension age and expected longevity shares the fiscal risks associated with changes in longevity between future pensioners and future taxpayers. Over the very long term,

one-third of any changes – positive or negative – would be borne by future pensioners and two-thirds by future taxpayers;

- new **student loans policies** announced since the 2015 election have raised the amount by which we expect student loans to add to debt over the long term; and

- the various changes to **private pensions and savings policy** in recent years are likely to have a net cost over the long term that is greater than was apparent when they were announced and costed over a five-year horizon. Taken together, they have made pension saving less attractive – particularly for higher earners – while making non-pension saving more attractive – often in ways that can most readily be taken up by the same higher earners.

Long-term fiscal projections

11 We assess the potential fiscal impact of future government activity by making long-term projections of revenue, spending and financial transactions on an assumption of 'unchanged policy', as best we can define it. In doing so, we assume that spending and revenues initially evolve over the next five years as we forecast in our November 2016 *EFO*. This allows us to focus on long-term trends rather than making fresh revisions to the medium-term forecast. We have not made any further judgements or assumptions about the nature of the UK's departure from the European Union beyond those that underpinned our November *EFO*.

Demographic, economic and health-specific assumptions

12 Demographic change is a key long-term pressure on the public finances. Like many developed nations, the UK is projected to have an 'ageing population' over the next few decades, with the 'old-age dependency ratio' – the ratio of the elderly to those of working age – rising. This reflects increasing life expectancy (particularly among older people), relatively low fertility rates, and the retirement of the post-war 'baby boom' cohorts.

13 We base our analysis on detailed population projections produced by the Office for National Statistics (ONS). In this *FSR* we use its 2014-based population projections – released in October 2015. As in our 2015 *FSR*, we base our fiscal projections on the 'principal' ONS population projection. This assumes net inward migration falls to 185,000 a year by 2021 and remains at that level thereafter. We test the sensitivity of our conclusions to using the different ONS variants. Relative to the 2012-based projections that underpinned our 2015 *FSR*, the main differences are higher net migration and slightly higher mortality at older ages – these both mean that the old-age dependency ratio rises less rapidly than in our previous report.

14 As regards the economy, we assume in our central projection that whole economy productivity growth will average 2.0 per cent a year, weaker than we assumed in our last report following successive downward revisions to our medium-term assumptions. Partly offsetting that, we have revised up employment growth by around 0.1 percentage points a year as we have factored in more years of outturn to the long-term averages that underpin

our labour market cohort model. We assume CPI inflation of 2.0 per cent (consistent with the Bank of England's target) – unchanged from our last report. But we have made small revisions to other price assumptions, including assuming a transitional period of higher RPI inflation as interest rates are assumed to normalise, before it reverts to our long-term assumption of 3.0 per cent (unchanged from our last report).

15 In previous reports, we have presented sensitivity analysis showing how our projections would look if we assumed that productivity growth in the health sector averaged less than in the whole economy, but spending was allowed to rise to keep the volume of health services rising in line with whole economy productivity. That would more closely match past experience and suggested a significantly bigger long-term fiscal challenge.

16 In this year's report, in line with the conclusions of our working paper that reviewed the available evidence and the approaches taken by international institutions and the Congressional Budget Office (CBO) in the US, we have decided to alter our central assumptions about health spending. Specifically, we assume that non-demographic cost pressures – a different, but related, concept to weaker health sector productivity growth – add 1 percentage point a year to health spending growth in the long term, with a transitional period up to 2036-37 during which that excess cost growth falls from the latest available estimates for primary and secondary care (which are higher than 1 percentage point) back to the long-term assumption. This approach and the values that we have chosen are most similar to those used by the CBO. Its adoption has pushed up our long-term health spending projection significantly.

Defining 'unchanged' policy

17 Fiscal sustainability analysis is designed to identify whether and when changes in government policy may be necessary to move the public finances from an unsustainable to a sustainable path. To make this judgement, we must first define what we mean by 'unchanged' policy over the long term.

18 Government policy is rarely clearly defined over the long term. In many cases, simply assuming that a stated medium-term policy continues for 50 years would be unrealistic. Where policy is not clearly defined over the long term, the *Charter for Budget Responsibility* allows us to make appropriate assumptions. These are set out clearly in the report. Consistent with the *Charter*, we only include the impact of policy announcements in our central projections when they can be quantified with "*reasonable accuracy*".

19 In our central projections, our assumption for unchanged policy is that beyond 2021-22 underlying age-specific spending on public services, such as health and education, rises with per capita GDP. Changes in the starting point for our projections are often important. Relative to our 2015 *FSR*, two sources of change are worth noting:

- in the **2016 Autumn Statement**, the Government set medium-term fiscal policy in a way that is expected to leave a small deficit in 2021-22 – that contrasts with the March

2015 Budget that underpinned our last projections, where the budget was expected to be in surplus in the final year (2019-20 at that point); and

- spending on public services has been allocated up to 2019-20 – and in some cases 2020-21 – in the **2015 Spending Review**. From a long-term perspective, the most important decision was to allocate a rising share of departmental spending to health, which is subject to both demographic and non-demographic cost pressures.

20 We assume that most tax thresholds and benefits are uprated in line with earnings growth rather than inflation beyond the medium term, which provides a more neutral baseline for long-term projections. An inflation-based assumption would, other things equal, imply an ever-rising ratio of tax to national income and an ever-falling ratio of benefit payments to average earnings in the rest of the economy.

21 We have assumed in our central projection that the 'triple lock' on state pensions uprating continues to apply – and have assumed that on average it leads to the state pension being uprated by 0.34 percentage points faster than earnings growth. The Chancellor has said that the Government will review whether this commitment will continue into the next Parliament "*in light of the evolving fiscal position at the next Spending Review*" – the date for which has not yet been set. We test the sensitivity of our projections to assuming no triple lock premium.

Results of our projections

22 Having defined unchanged policy, we apply our demographic and economic assumptions to produce projections of the public finances over the next 50 years.

Expenditure

23 An ageing population and health-specific cost pressures will put upward pressure on public spending. We project total non-interest public spending to rise from 35.8 per cent of GDP at the end of our medium-term forecast in 2021-22, to 43.8 per cent of GDP by 2066-67. That would represent an overall increase of 8.0 per cent of GDP – equivalent to £156 billion in today's terms. Of that, 4.5 per cent of GDP (£88 billion) reflects our new assumption about additional non-demographic cost pressures pushing up growth of health spending.

24 The main drivers are upward pressures on key items of age-related spending:

- **health spending** rises from 6.9 per cent of GDP in 2021-22 to 12.6 per cent of GDP in 2066-67, rising smoothly as the population ages and non-demographic cost pressures push spending higher. This profile is much steeper than in our last report. Less challenging demographic trends and a change in our assumption about morbidity in later life reduce growth in spending, but a higher starting point and – most importantly – the inclusion of non-demographic cost pressures, push it up much more;

- **state pension costs** increase from 5.0 per cent of GDP in 2021-22 to 7.1 per cent of GDP in 2066-67 as the population ages. This profile is little changed from our last

report given the relatively small change in the old-age dependency ratio in the latest ONS population projections and that some of the effect of that on spending is offset by the State Pension age being assumed to move with changes in longevity; and

- **long-term social care costs** rise from 1.1 per cent of GDP in 2021-22 to 2.0 per cent of GDP in 2066-67, reflecting the ageing of the population and the previous Government's announcement of a lifetime cap on certain long-term care expenses incurred by individuals. The projections are slightly lower than in our last report as the medium-term decisions that the Government has taken since then imply less spending than in our demand-led assumptions that underpinned that report. As the recent announcement of accelerated increases in council tax-financing for adult social care only affects the profile of spending over the medium term, not the end point, we have not adjusted our projections on that account.

Revenue

25 Demographic factors will have less impact on revenues than on spending. Non-interest revenues are projected to be all-but flat across the projection period as a share of GDP. In our central projections, those revenue streams that are not affected by demographics are explicitly held constant as a share of GDP – even though non-demographic factors may affect them in the future. Given the timing of this year's report, we have not undertaken further analysis of such non-demographic factors.

Financial transactions

26 In order to move from spending and revenue projections to an assessment of the outlook for public sector net debt, we need also to take public sector financial transactions into account. These affect net debt directly, without affecting accrued spending or borrowing.

27 For the majority of financial transactions, we assume that the net effect is zero. Student loans are an important exception. Lending to students adds to net debt immediately through financing the outlays. Repayments then reduce that addition, but not completely because some of the lending is expected to be written-off rather than repaid. The biggest effect on our projections since our last report comes from new policies. Some previous grant-funding has been converted into lending (e.g. for nurses), while eligibility has been broadened (e.g. for postgraduate courses). The Government has also changed repayment terms for some graduates, increasing repayments. The net effect has been to push the peak effect on net debt up to 11.1 per cent of GDP in the late-2030s. By 2066-67, the addition to net debt is projected to fall back slightly to 9.3 per cent of GDP.

28 The Government continues to reduce the assets held by UKAR through active sales and the natural rundown of mortgages. It has also reduced its shareholding in Lloyds Banking Group to the point where it is expected to have sold its entire stake by the end of 2017-18. But it retains a significant stake in RBS. The sale of financial assets is classified as a financial transaction in the public finances data. Sales reduce public sector net debt directly and indirectly via net borrowing (because interest is paid on a smaller stock of debt), but typically (and in the case of these sales) the government also loses a related income stream. Over the

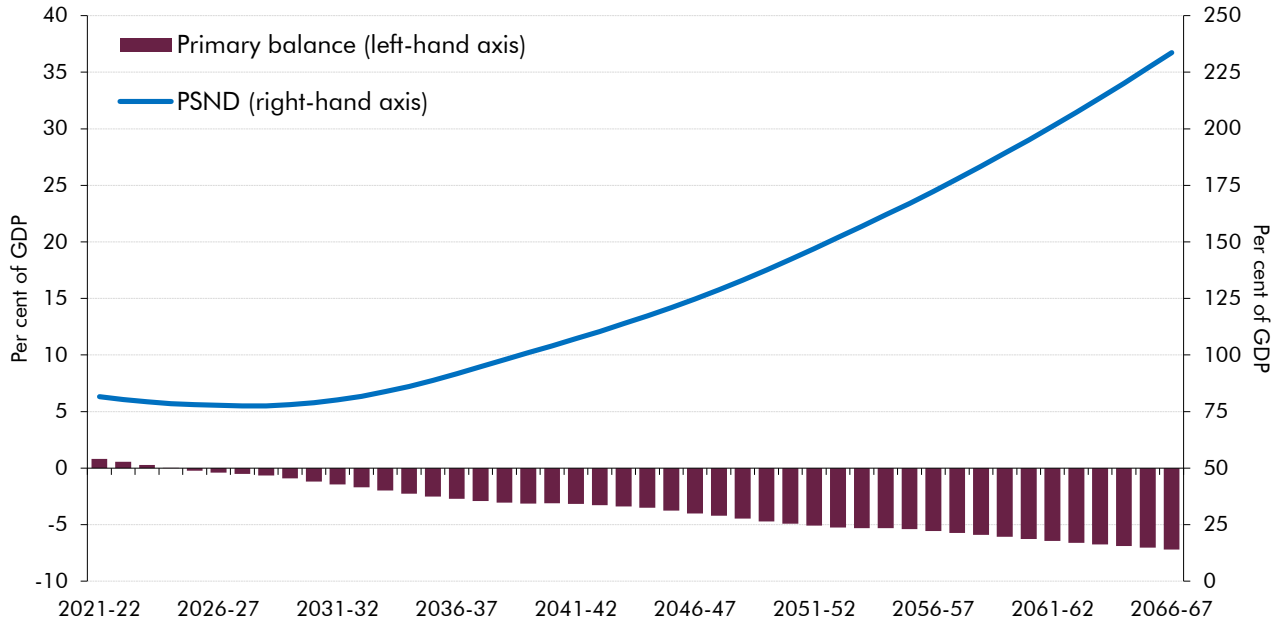
long term, therefore, the net impact of asset sales on net debt is significantly less than the sale price. The effect on broader balance sheet measures that factor in more types of asset is typically close to zero because the sales involve converting one type of asset (mortgages or shares) into another (cash).

Projections of the primary balance and public sector net debt

29 Our central projections show public spending increasing as a share of national income beyond the medium-term forecast horizon, exceeding receipts by increasing amounts over the projection period. As a result, the primary budget balance (the difference between non-interest revenues and spending that is the key to the public sector's debt dynamics) is projected to move from a surplus of 0.8 per cent of GDP in 2021-22 to a deficit by the mid-2020s, with the deficit reaching 7.2 per cent of GDP in 2066-67 – an overall deterioration of 8.0 per cent of GDP, equivalent to £156 billion in today's terms.

30 Taking this and our projection of financial transactions into account, PSND is projected to fall from its medium-term peak of just over 90 per cent of GDP in 2017-18 to below 80 per cent of GDP for most of the 2020s, before rising steadily thereafter and reaching 234 per cent of GDP in 2066-67. Beyond this point, debt would remain on a rising path.

Chart 1: Central projection of the primary balance and PSND



Source: OBR

31 The primary balance and PSND at the end of the projection period are much higher than in our 2015 *FSR* projections. As Table 1 shows, this reflects:

- **classification changes** to housing associations, which have been reclassified to the public sector, have a small effect on the primary balance but a larger effect on net debt in the short term that increases over the projection period;

- our judgement in this year's *FSR* that **health spending will rise to accommodate non-demographic cost pressures** increases the projected budget deficit and public debt since our 2015 *FSR*;

- the **changes to our projections that reflect policy measures and other developments since the 2015 *FSR* are more modest**, but on balance imply yet greater pressure on the public finances over the next 50 years. The underlying outlook for the public finances over the medium term has deteriorated and the Government has also chosen to increase planned public services spending, including on health (to which the mounting cost pressures apply). This puts upward pressure on deficits and debt, more than offsetting the impact of the net welfare cuts and tax increases announced since 2015; and

- taking all these factors into account, if left unaddressed **our latest projections suggest that the primary deficit would rise to 7.2 per cent of GDP and PSND to 234 per cent of GDP in 2066-67 and continue rising thereafter.** The big picture of upward pressure from health costs and ageing is common to many industrial countries.

Table 1: Changes in the primary balance and net debt since *FSR* 2015

	Primary balance 2021-22	Primary balance 2066-67	Net debt 2066-67
FSR 2015	**2.0**	**-2.0**	**91**
Housing Associations reclassification	0.0	0.0	8
Excess cost growth applied after 2021-22 to health spending assumption	0.0	-4.5	89
FSR 2015 restated post-reclassifications and excess health cost growth	**1.9**	**-6.5**	**188**
Weaker medium-term forecast on a pre-measures basis	-1.6	-1.6	54
Other modelling assumptions	0.0	0.6	4
Total pre-policy measures changes	**-1.6**	**-1.0**	**58**
FSR 2017 pre-policy measures	**0.3**	**-7.5**	**247**
Health	-0.3	-0.7	17
Receipts	0.8	0.8	-26
Welfare	0.6	0.6	-21
Other spending	-0.5	-0.4	17
Total policy-related changes	**0.5**	**0.3**	**-13**
FSR 2017	**0.8**	**-7.2**	**234**
Memo: Breakdown of health spending policy change effect:			
Health spending policy changes excluding excess cost growth	*-0.3*	*-0.4*	
Excess cost growth on higher health spending	*0.0*	*-0.3*	

32 We have not attempted to quantify the impact of Brexit on the change in the projections since the 2015 *FSR*, as we did in the November *EFO* for changes in our medium-term forecast since March. Qualitatively, our November judgements about Brexit explain some of the underlying deterioration in the medium-term jumping-off point since our March 2015 *EFO*, while net migration being lower than would otherwise have been the case would push debt higher. The downward revision to our long-term productivity growth assumption is not a Brexit-related judgement, although given the way our long-term projections are produced,

any changes would affect both numerator and denominator in the debt-to-GDP ratio, so would have little effect on the fiscal projections.

33 Needless to say, there are huge uncertainties around any projections that extend this far into the future. Small changes to underlying assumptions can have large effects on the projections once they have been cumulated across many decades. We therefore test these sensitivities using a number of different scenarios.

34 The eventual increase in PSND would be greater than in our central projection if long-term interest rates turned out to be higher relative to economic growth, if the age structure of the population was older, or if net inward migration (which is concentrated among people of working age) was lower than in our central projection.

35 Given the importance of health spending in the long-term challenge to fiscal sustainability, the rate of productivity growth in the sector or the pace at which non-demographic pressures push spending up are important assumptions. Faster or slower excess cost growth would see health spending rise by more or less than in our central projection – by +2.4/-2.0 per cent of GDP in the +/-0.5 percentage point sensitivity analyses we present. If, rather than assuming excess cost growth, we assume productivity growth was weaker in the health sector than in the rest of the economy, and health spending was to be increased more quickly to compensate, then in our illustrative scenario health spending would rise by 4.8 per cent of GDP between 2021-22 and 2066-67 – 1.0 per cent less than in our central projection.

Summary indicators of fiscal sustainability

36 In our central projections, and under the variants we calculate, on current policy we would expect the budget deficit to widen significantly over the long term, putting public sector net debt on a rising trajectory as a share of national income. This would not be sustainable.

37 Summary indicators of sustainability can be used to illustrate the scale of the challenge more rigorously and to quantify the tax increases and/or spending cuts necessary to return the public finances to different definitions of sustainability. We focus on a measure of sustainability that asks how big a permanent spending cut or tax increase would be necessary to move public sector net debt to a particular desired level at a particular chosen date. This is referred to as the 'fiscal gap'.

38 There is no consensus on what would be an optimal level for the public debt to GDP ratio. So for illustration, we calculate the additional fiscal tightening necessary from 2022-23 to return PSND to 20, 40 or 60 per cent of GDP at the end of our projections in 2066-67. In practice, given that expenditure pressures in our projections build up gradually over time, a phased fiscal adjustment might be considered a more realistic illustration. We also calculate what additional fiscal tightening would be necessary to hit these thresholds in 2066-67 if, to begin with, the Government meets its challenging objective of reducing the overall deficit to zero in the next Parliament (i.e. by 2025-26).

39 Under our central projections, a once-and-for-all policy tightening of 4.3 per cent of GDP in 2022-23 (£84 billion in today's terms) would see the debt ratio at 40 per cent of GDP in 2066-67. But this is less than the 7.0 per cent of GDP required to stabilise debt over the longer term and so the debt ratio would continue rising beyond the target date. Tightening policy by 1.5 per cent of GDP a decade would see the debt ratio fall more slowly to begin with, but the overall tightening would be large enough to stabilise the debt ratio at around the target level and prevent it from taking off again. These estimates are significantly bigger than in our last report due to the non-demographic cost pressures factored into our central health spending projection. Targeting debt ratios of 20 and 60 per cent of GDP would require larger and smaller adjustments respectively.

40 If the Government was to meet its objective of reducing the deficit to zero in the next Parliament, a further once-and-for-all policy tightening of 2.8 per cent of GDP in 2026-27 would see the debt ratio reach 40 per cent of GDP in 2066-67. Tightening policy by 1.1 per cent of GDP a decade would also stabilise the debt ratio at that level. But balancing the budget in the next Parliament will be challenging in the face of ageing pressures on health, social care and state pensions spending, and if non-demographic pressures on health spending continue at close to their recent pace. That would be true even if tax and benefit thresholds were uprated in line with inflation rather than earnings over the next Parliament, boosting tax receipts through fiscal drag and reducing welfare spending through the erosion of the average awards relative to average earnings.

1 Introduction

A framework for analysing fiscal sustainability

1.1 This chapter sets out the framework we use in this report to analyse fiscal sustainability. We examine the fiscal consequences of:

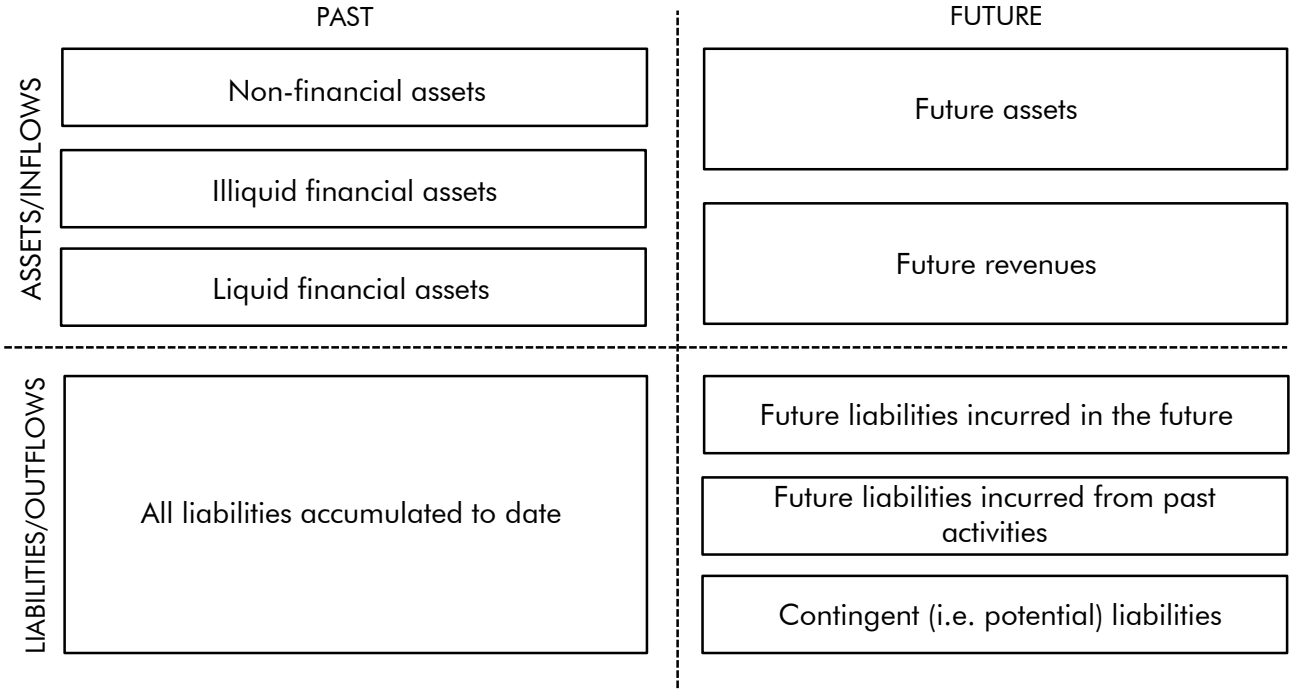
- **past government activity**, as a result of which it has accumulated assets (financial and non-financial) and liabilities. Past activity also creates some reasonably certain future financial flows, for example contractually agreed public service pension payments. The government's past activity also creates 'contingent liabilities', where there is a non-zero but less than 50 per cent probability that it will face some cost in the future, such as making good a loan guarantee; and

- **future government activity**, which will involve future expenditures, some for investment in assets, but mostly to pay for public services and transfer payments. It will also involve receipt of future revenues, mostly from taxation. Governments may also sell, or rent, assets. This may include assets it has not had to pay to accumulate, for example access to the electromagnetic spectrum that it can auction.

1.2 Assessing the long-term sustainability of the public finances in our *Fiscal sustainability reports (FSR)* involves summarising the fiscal consequences of some or all of this past and future activity. Figure 1.1 illustrates the potential elements.[1]

[1] Adapted from HM Treasury (2003) and International Federation of Accountants (2009).

Figure 1.1: Government activity: past and future, stocks and flows



1.3 In summarising the fiscal consequences of government activity, we can focus on flows (future revenues and spending, including those generated by existing assets and liabilities) or stocks (existing assets and liabilities, plus the present value of expected future revenues and spending). In principle, these approaches should tell the same story. In practice it appears they rarely do, because of the widely varying coverage of the different summary stock and flow measures used in policy presentation and discussion. We try in this report to tell a coherent story using both approaches and to warn against drawing inappropriate conclusions from an unrepresentative subset of government activity.

1.4 Our analysis of stocks focuses on measures of the public sector balance sheet. These balance sheet measures provide a snapshot of the fiscal consequences of the government's past activity at any point in time, by providing information on its stock of assets and liabilities. Balance sheets provide interesting information, but their usefulness as an indicator of long-term fiscal sustainability is limited by their backward-looking nature. They exclude the future cost of known expenditure commitments and, crucially, the present value of future revenues. The greatest financial asset of any government is its ability to levy future taxes.

1.5 Transparency regarding the public sector balance sheet is very important. But in assessing fiscal sustainability, we place more emphasis on our analysis of future flows. We make projections of future government expenditure, revenues and financial transactions, and we assess their implications for fiscal sustainability, taking into account the initial balance sheet position. We then consider indicators that can be used to summarise fiscal sustainability on the basis of such projections.

1.6 Another advantage of looking at flows of spending and revenue is that they provide a more intuitive guide to the nature of the potential policy response: the bulk of any adjustment to

move the public finances from an unsustainable path to a sustainable one is likely to take the form of increasing revenues and/or reducing spending rather than selling assets or directly reducing the value of liabilities.

1.7 In analysing these stocks and flows, there is a trade-off between completeness and certainty. Balance sheets provide reasonably reliable estimates of assets and liabilities related to past activity (though even here there are a number of difficulties with estimation and data availability). But they are incomplete, as they do not account for many elements of future activity. Long-term projections paint a fuller picture, but are extremely uncertain.

1.8 The remainder of this introduction explains in more detail the analytical framework that we use. It first covers the backward-looking balance sheet analysis that is usually presented in Chapter 2 of each *Fiscal sustainability report (FSR)*, but was presented in a standalone analytical paper in July following the post-referendum cancellation of our July 2016 *FSR*. It then covers the forward-looking projections that are presented in Chapter 3 and the indicators of fiscal sustainability considered in Chapter 4.

Past activity: the public sector balance sheet

1.9 Our July 2016 *Fiscal sustainability analytical paper: Public sector balance sheet* examined the impact of past government activity using measures of the public sector balance sheet. We considered three alternative presentations of the public sector balance sheet – two from the National Accounts framework and one from the private-sector-style Whole of Government Accounts (WGA). In Annex C of our November 2016 *Economic and fiscal outlook (EFO)* we also considered a new balance sheet measure that is drawn from the National Accounts framework and that the Government has now asked us to forecast.

1.10 National Accounts measures are produced by the Office for National Statistics (ONS) and have been used by the current and previous governments to assess the fiscal position. Public sector net debt (PSND) has been used in particular as a key target indicator of fiscal health. This is defined as the public sector's consolidated gross debt less its liquid financial assets – that is, those assets that could be readily sold. A broader balance sheet measure is public sector net worth (PSNW), which compares the public sector's liabilities with *all* its assets, so including the non-financial and illiquid financial assets that are excluded from PSND. Public sector net financial liabilities (PSNFL) sits between these, including all financial assets and liabilities recognised in the National Accounts but still excluding non-financial assets.

1.11 The importance of a more comprehensive measure can be seen when considering the effect of the government selling an illiquid asset for what it is worth: PSND would fall, because the sale converts an illiquid asset (which is excluded) into a liquid asset (which is included); PSNW or PSNFL would be unchanged.

1.12 As shown in Figures 1.2, 1.3 and 1.4, these measures capture to varying degrees an entirely backward-looking subset of the government's activities. In particular, PSND has been criticised as a measure of the public sector's financial health (and a similar criticism

would apply to PSNW and PSNFL) because it excludes future liabilities and contingent liabilities arising out of past activity. These include:

- **future public service pension payments**, where the liability to pay the pension was incurred as a result of past employment;
- **capital payments to PFI providers and other payments from previous long-term contracts**, where the National Accounts classify most PFI deals as 'off balance sheet';
- **the future costs of student loans**, to the extent that previous loans or the costs of servicing those loans are not fully recovered; and
- **provisions, contingencies, guarantees and other risks of future costs** that might materialise as a result of past activities.

Figure 1.2: Coverage of public sector net debt

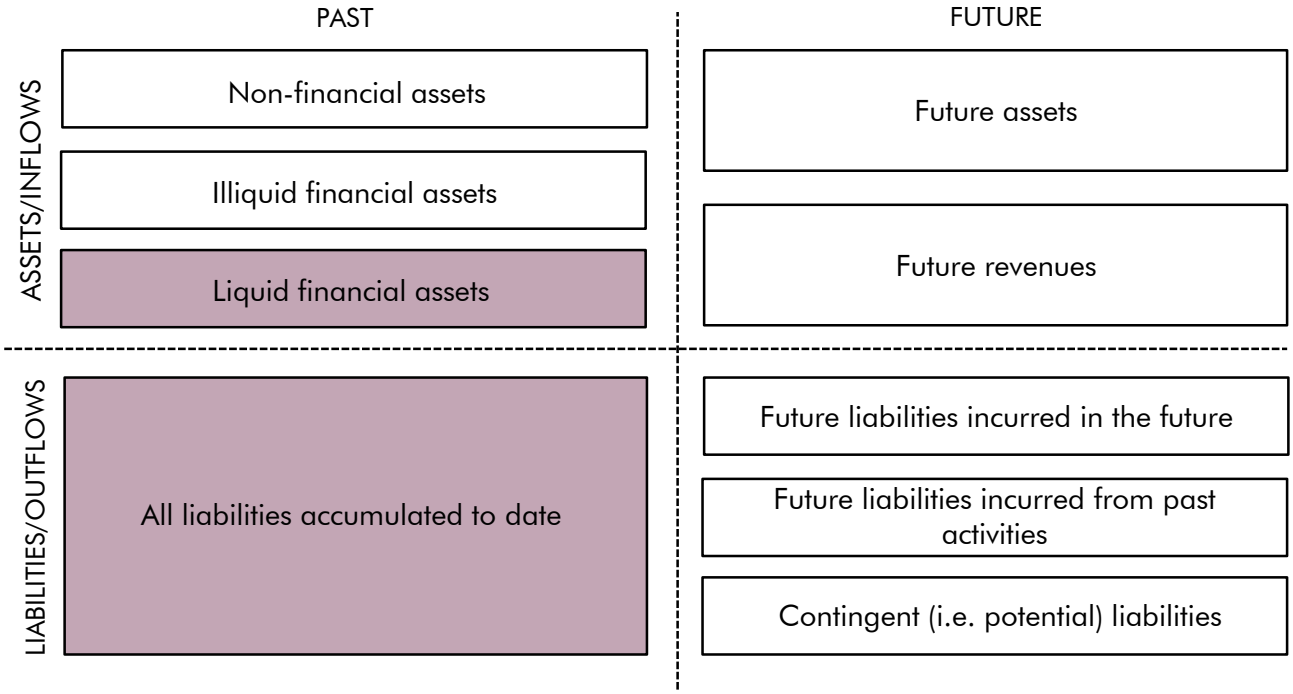


Figure 1.3: Coverage of public sector net financial liabilities

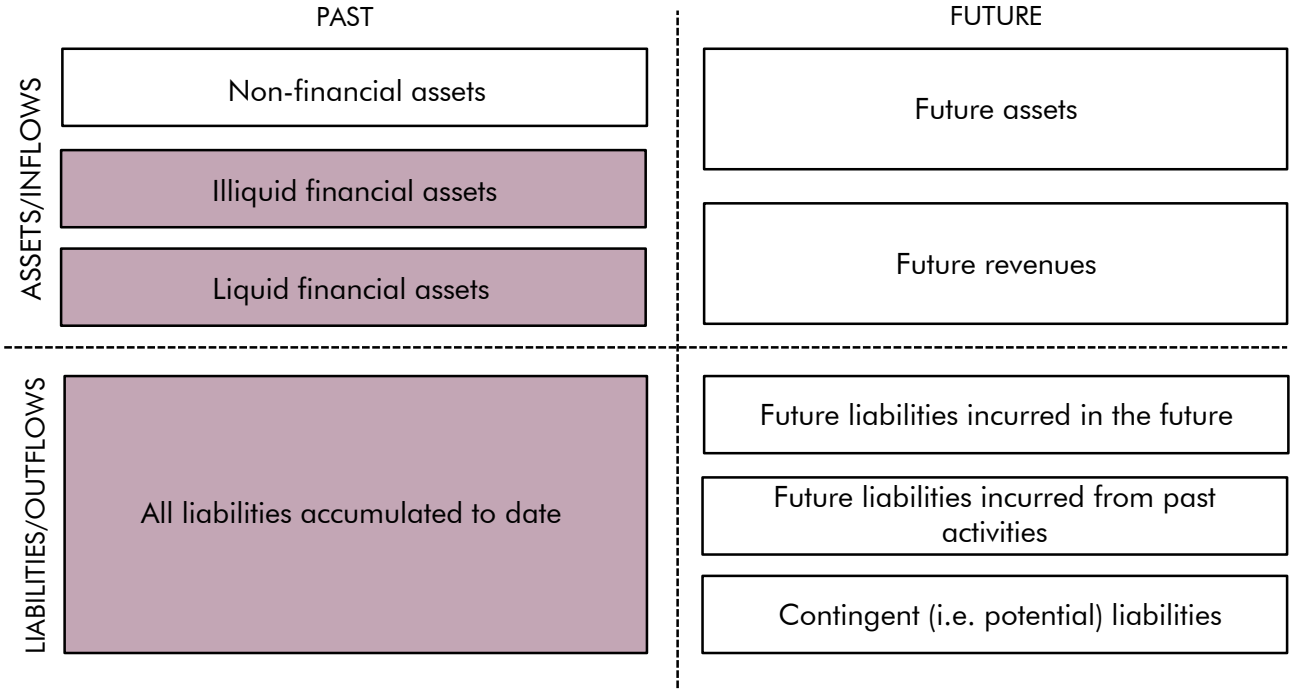
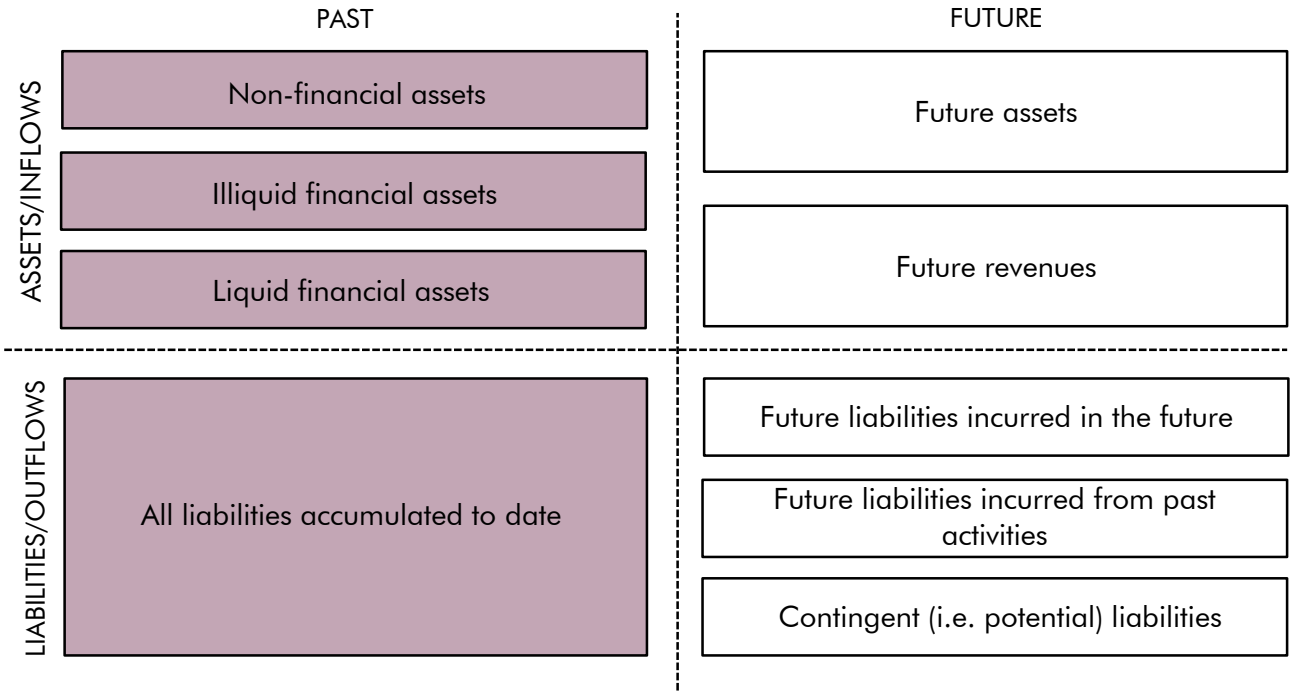


Figure 1.4: Coverage of public sector net worth



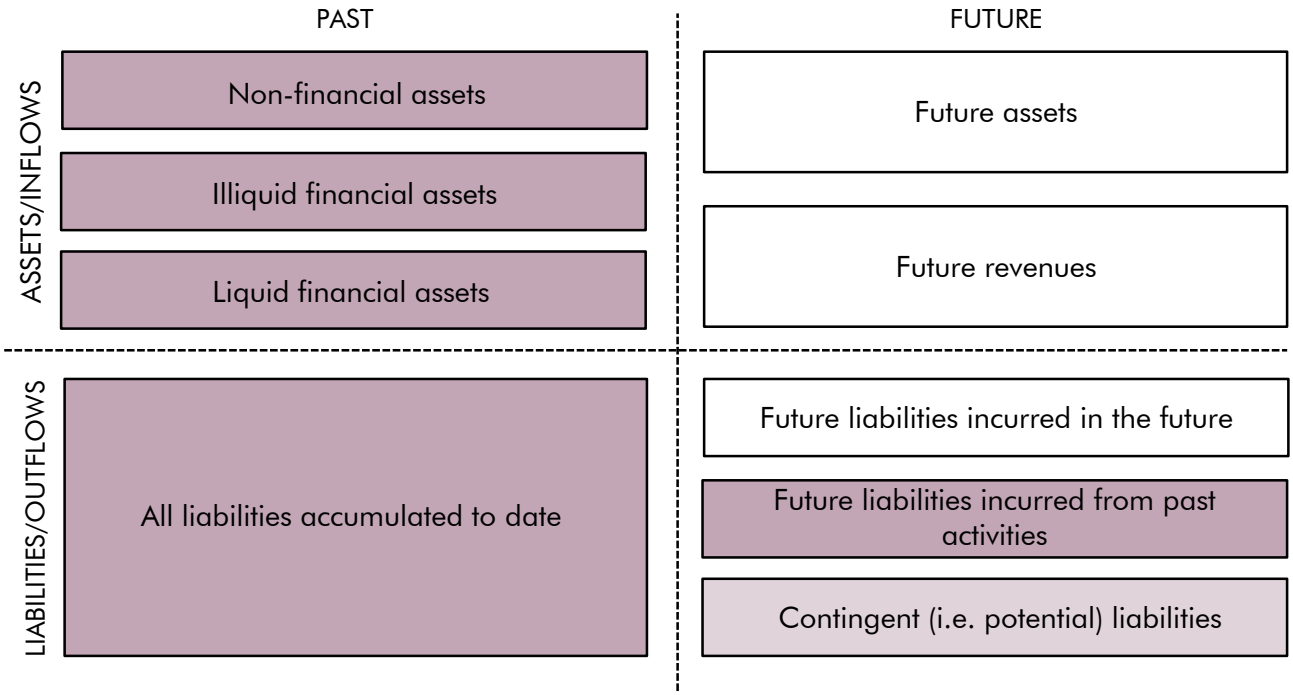
1.13 Some of these gaps are addressed in the WGA. These are consolidated financial statements for the public sector, compiled in line with international financial reporting standards as adapted for the public sector. They include an accruals-based balance sheet.

1.14 As Figure 1.5 shows, the WGA capture a wider – but still incomplete – range of the activities identified above. They include financial and non-financial assets and liabilities, plus some

costs incurred in the past for which the payments will occur in the future. In particular, they take account of net pension liabilities, provisions and commitments for finance leases such as PFI.

1.15 Our July *FSAP* focused on the latest WGA figures for 2014-15 and the restated figures for 2013-14. Prior years have not been restated, so results from previous years are not fully comparable. When considering the evolution of WGA measures, it is important to bear in mind that present value estimates of future financial flows, such as those in the WGA, are very sensitive to the choice of discount rates used to convert the projected flows into one-off upfront values on the balance sheet. Changes to discount rates between WGA publications can significantly change estimates of assets and liabilities, even in the absence of changes to underlying cash flows. Moreover, because the WGA balance sheet presents discounted future liabilities, but not discounted future assets (such as future tax revenues), when discount rates are very low – as is currently the case, meaning future flows are valued more highly as upfront values – the balance sheet will appear to have weakened more than a flow-based assessment would suggest.

Figure 1.5: Coverage of the WGA measure of net liabilities



Future activity: long-term spending and revenue projections

1.16 Balance sheets contain useful information on the fiscal consequences of past government activity, including its implications for some future cash flows. But to assess long-term sustainability, we also need to understand how future government activity might affect the balance sheet. In doing so, we focus on the effect of these flows on the future path of PSND. We also provide illustrative projections of the broader PSNFL measure, while noting that the further assumptions necessary to generate those projections add another layer of uncertainty to already highly uncertain estimates.

1.17 In Chapter 3, we analyse future flows by undertaking a bottom-up analysis, aggregating long-term projections of different spending and revenue streams as shares of GDP, plus future financial transactions, on the presumption of unchanged government policy. This is a similar approach to the one taken by the Treasury prior to 2010 in its *Long-term public finance reports* and by a number of other fiscal bodies around the world.

1.18 The first five years of our projections are consistent with the November 2016 *EFO*, so as to focus on longer-term influences rather than fresh revisions to our assessment of the short and medium-term outlook. We have not made any further assumptions about how the UK's exit from the European Union will unfold, so these projections are also based on the broad-brush policy assumptions set out in that *EFO*.

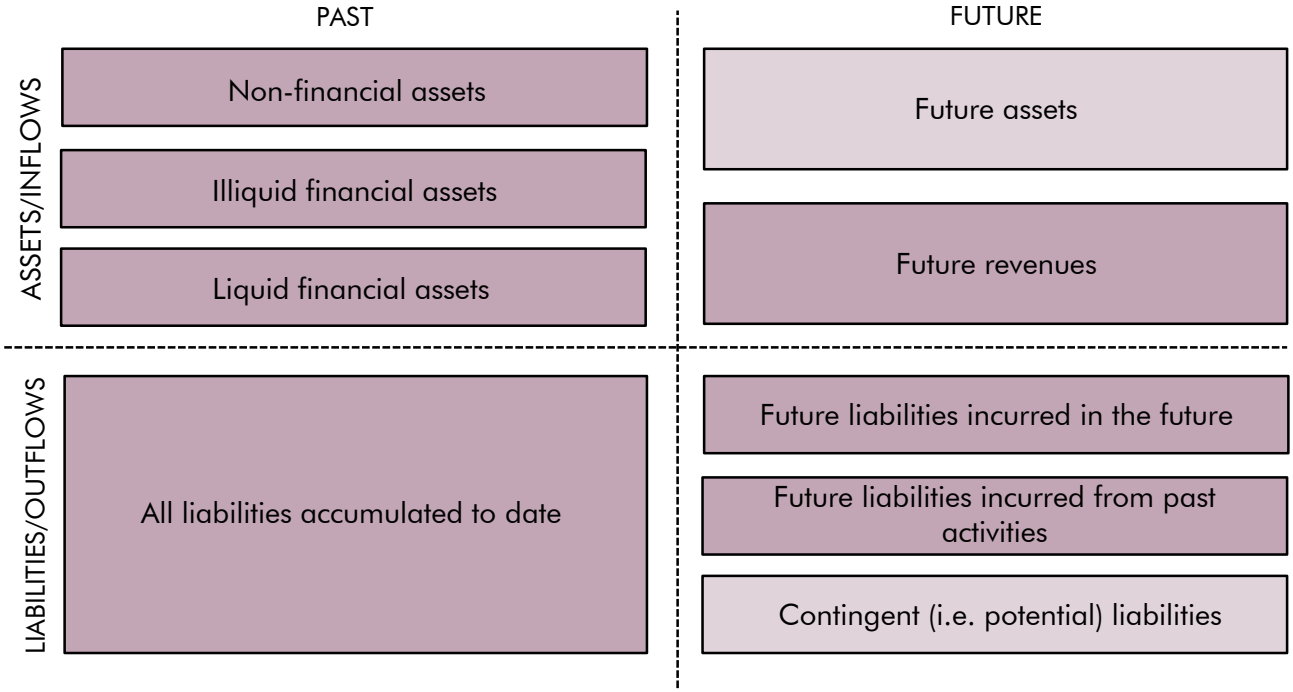
1.19 Using long-term projections of this type provides a relatively comprehensive way of assessing fiscal sustainability. It takes into account items such as the cost of public service pensions, but without the same sensitivity to the choice of discount rate as in the balance sheet approach. It also takes into account the government's many non-contractual but nonetheless meaningful ongoing spending commitments. For example, while not contractually obliged to do so, the government is likely to wish to continue providing state education and health care. Crucially, the approach also recognises that the government has the ability to raise future tax revenues.

1.20 Figure 1.6 shows the coverage of our revenue and spending projections. They are more comprehensive than the backward-looking balance sheet measures, although there are still potential inflows and outflows that it is impossible to incorporate fully. These are lightly shaded in the diagram.

1.21 It is important to emphasise that, given the huge range of uncertainty around the issues and timescales covered in this report, the figures presented should be treated as illustrative projections, not precise forecasts. That is, they show how we would expect PSND to evolve if various assumptions about demographics and other factors were to hold over a number of decades; they are not our central expectation of what *will* happen. In this way, our long-term projections are qualitatively different from the medium-term forecasts we publish in our *EFOs*. But of course all predictions are subject to uncertainty – a fact we illustrate in our *EFOs* via fan charts, sensitivity analysis and illustrative scenarios.

1.22 Our projections focus on the implications of future changes in the age structure of the population for particular broad categories of spending. We extend the analysis to take account of non-demographic drivers of spending and of long-term influences on different revenue streams. These include a number of non-demographic factors that might affect the size of particular revenue streams over the long term and have been the subject of detailed analyses in previous *FSRs*. We also look at the impact of policy changes that can alter the size of these expected flows between *FSRs*.

Figure 1.6: Content of our revenue and spending projections



Summary indicators of fiscal sustainability

1.23 In Chapter 4, we discuss various approaches to summarising the implications of our long-term projections for fiscal sustainability. We consider definitions of fiscal sustainability that aim to be both rigorous and comprehensible.

1.24 Most definitions of fiscal sustainability are built on the concept of solvency: the ability of the government to meet its future obligations. A formal solvency condition can be given by the government's inter-temporal budget constraint (IBC). The IBC will be satisfied if the projected outflows of the government (determined by the current level of public debt and the discounted value of all future expenditure) are covered by the discounted value of all future government revenue. This means that over an infinite horizon the primary balance (government receipts less spending on items other than debt interest) must be sufficient to service and pay off the government's debt.

1.25 In some respects, the IBC is an unrealistic constraint to apply in practice. It is based on the premise that governments will eventually wish to eliminate their debts entirely, which relatively few have expressed a desire to do. And it permits a government to run large budget deficits for a significant period in the short and medium term as long as they hold out the promise of surpluses in the potentially far-distant future. For these reasons, we place greater emphasis on fiscal gap indicators that measure the immediate and permanent adjustment in the primary balance needed to bring the debt-to-GDP ratio to a particular level at a particular future date. We also look at more gradual ways to fill the same gaps, including if the Government was to meet its new objective of balancing the budget in the next Parliament (which we assume to mean by 2025-26).

Assumptions regarding Government policy

1.26 The goal of this report is to identify whether government policies are likely to be sustainable in the long term or whether there is likely to be a need to spend less and/or tax more in order to make them sustainable. To reach such a judgement, we first need to set out the assumptions we use regarding long-term policy.

1.27 Over the five-year horizon of our *EFOs,* the Government's tax and spending policies are usually publicly announced and reasonably well defined. But assuming that governments would maintain the same policies over decades is sometimes unrealistic and would paint a misleading picture of fiscal sustainability. In the absence of a well-defined long-term policy, we have to make an appropriate assumption about what 'unchanged policy' would look like. The *Charter for Budget Responsibility* requires that "*where a long-term policy has not yet been set by the Government, the OBR will set out the assumptions it makes in its projections regarding policy transparently*". Given the importance of these assumptions, we aim to be fully transparent about them and our reasons for choosing them. The key policy assumptions are set out in Chapter 3.

1.28 As well as these assumptions about long-term tax and spending policies, we also need to make assumptions about the policies that will be in place when the UK leaves the EU. Given the legal requirement for the OBR to produce its forecasts on the basis of current Government policy, ahead of our November *EFO* we asked the Government for "*a formal statement of Government policy as regards its desired trade regime and system of migration control, as a basis for our projections*". The Government directed us to two public statements by the Prime Minister that it stated were relevant and that are set out in full in the Foreword to that *EFO*. Having established that we would not be able to forecast on the basis of fully specified Government policy in relation to the UK's exit from the EU, we made a number of broad-brush conditioning assumptions. We have neither added to nor amended these:

- **the UK leaves the EU in April 2019** – two years after the date by which the Prime Minister has stated that Article 50 will be invoked;
- **the negotiation of new trading arrangements with the EU and others slows the pace of import and export growth for the next 10 years**. We calibrated this slowdown on the basis of a range of external studies of different trade regimes;
- **the UK adopts a tighter migration regime than that currently in place**, but not sufficiently tight to reduce net inward migration to the desired 'tens of thousands';
- any reduction in **expenditure transfers to EU institutions** are recycled fully into extra domestic spending. This assumption is fiscally neutral; and
- there are no changes to the structure or membership of **tax systems for which there are common EU rules** (such as VAT and the EU emissions trading scheme or the customs duties that are deemed to be collected on behalf of the EU).

1.29 In making long-term spending and revenue projections, we also need to decide how to deal with policies that are currently being considered by the Government but where no final, detailed announcement has yet been made. We use the same principle as in our medium-term forecast, consistent with the *Charter,* that we should include policies in our projections where final details have been announced that allow the fiscal impact to be quantified with "*reasonable accuracy*". We note significant policy commitments and aspirations not included in the central projections as fiscal risks, and where possible set out the potential impacts of such policies. This includes announced policies that are likely to give rise to contingent liabilities or guarantees in WGA in the future.

Structure of the report

1.30 We use the analytical framework set out above to structure the report as follows:

- Chapter 2: summarises the main conclusions from the five *FSAPs* that have been published since our 2016 *FSR* was cancelled, and Annex C of our November *EFO*. This includes analysis of the fiscal consequences of past government activity through alternative measures of the public sector balance sheet;

- Chapter 3: analyses the fiscal consequences of future government activity through long-term projections of revenue and expenditure; and

- Chapter 4: considers summary indicators of fiscal sustainability.

2 Fiscal sustainability analysis

Introduction

2.1 Following our decision after the June 2016 EU referendum result to cancel publication of our planned July *Fiscal sustainability report (FSR)*, we undertook to publish elements of the analysis that it would have contained where the conclusions were less sensitive to assumptions that might be affected by that result. Between July and October, we published five *Fiscal sustainability analytical papers (FSAPs)* that addressed various issues. In addition, our November 2016 *Economic and fiscal outlook (EFO)* set out an initial medium-term projection for a new balance sheet metric – 'public sector net financial liabilities' – that is broader in scope than public sector net debt, although still somewhat narrower than public sector net worth or the Whole of Government Accounts (WGA) balance sheet.

2.2 This chapter summarises the conclusions from our:

- analysis of the **public sector balance sheet** in the July *FSAP* that reviewed the latest WGA results and from our November *EFO*;
- working paper that explored different assumptions about long-term prospects for **health spending**;
- review of how the latest population projections affect **state pension spending**;
- analysis of the long-term implications of new **student loans** policies announced by the Government since the 2015 election; and
- assessment of the long-term effects of various **private pensions and savings policies** announced over the past six years – one of which has since been abandoned.

Public sector balance sheet

2016 Whole of Government Accounts

2.3 In July 2016, we published an *FSAP* on the *Public sector balance sheet*. It reviewed recent evidence on National Accounts and WGA measures of the public sector balance sheet, following the approach usually contained in Chapter 2 of our *FSRs*. The key conclusions from that paper related to the WGA. The paper highlighted a number of large changes in the 2016 WGA and the 2015-16 departmental accounts that will form the basis of the 2017 WGA. While some of these reflect actual emerging pressures, more are explained by measurement effects – in particular changes to the discount rate. Understanding the reasons

for changes in provisions and contingent liabilities is important for our future work on fiscal risks. In particular the paper found that:

- the **net public service pension liability** had increased by £190 billion, which included the effects of a lower discount rate. But the WGA do not split out the discount rate from other measurement changes making this a large but opaque change;

- the value of England-only **student loan assets** in 2015-16 was pushed up by £5.5 billion as the discount rate was lowered considerably, explaining about three-quarters of the reduction in the 'RAB charge' – a measure of the extent to which discounted future payments fall short of total outlays on student loans – from 45 per cent in the 2014-15 accounts to 20 to 25 per cent in the latest accounts;

- the **provision for nuclear decommissioning** also increased by £5.5 billion in 2014-15. In the then Department for Energy and Climate Change's 2015-16 accounts, the value of the provision increased by a further £91 billion, mostly because a much lower discount rate was applied to the provisions for 10 years ahead and beyond;

- HMRC's **provisions and contingent liabilities for oil and gas decommissioning** have been subject to repeated and significant measurement changes; and

- there is **a risk that the probabilities of some contingent liabilities crystallising are likely to be positively correlated**, particularly in the event of an economic downturn that was focused on the housing and financial sectors. The more serious the downturn, the greater the likelihood of a larger proportion of contingent liabilities crystallising.

National Accounts balance sheet measures

2.4 Our November 2016 *EFO* set out our latest forecast for public sector net debt (PSND), which remains the Government's target measure for the balance sheet. It also set out two alternative metrics that the Government asked us to forecast. First, a measure of PSND that excludes the Bank of England's balance sheet – which is expanding further following monetary policy announcements made in August 2016. Second, a broader measure of public sector net financial liabilities (PSNFL) that includes all financial assets and liabilities recognised in the National Accounts.

2.5 In terms of PSND, our latest forecast shows that PSND peaks as a share of GDP in 2017-18 at 90.2 per cent. In March we expected PSND to have peaked in 2015-16 at 83.7 per cent. The difference reflects weaker nominal GDP growth at the start of the forecast, which pushes the debt-to-GDP ratio up in 2016-17 and particularly 2017-18. Higher borrowing adds increasing amounts across the forecast period. There are further increases from lower asset sales proceeds and, in particular, the Bank of England's August monetary policy package. The only significant factor that reduces our forecast is much higher gilt premia.

2.6 When the Bank of England's balance sheet is excluded, our forecast shows that the path of the debt-to-GDP ratio is smoother across years. It peaks lower at 82.4 per cent of GDP, and

a year earlier than PSND in 2016-17. In this measure debt peaks earlier because the build-up of illiquid financial assets in the Bank's Asset Purchase Facility and the accounting effect of the Bank purchasing gilts at a premium to their nominal value are excluded.

2.7 We described the key features of PSNFL and detailed our approach to generating an initial PSNFL projection in Annex C of the *EFO*. Key points included:

- **PSNFL is a broader measure than PSND** but narrower than the less well-known public sector net worth (PSNW). It covers more assets and liabilities than PSND but, unlike PSNW, it does not cover non-financial assets (like roads or public sector buildings);

- the ONS has published a methodology paper describing how it has compiled initial estimates of PSNFL. It notes **data quality issues and the need for development in parts of the outturn data**. We therefore labelled this an 'illustrative projection' of PSNFL rather than a forecast;

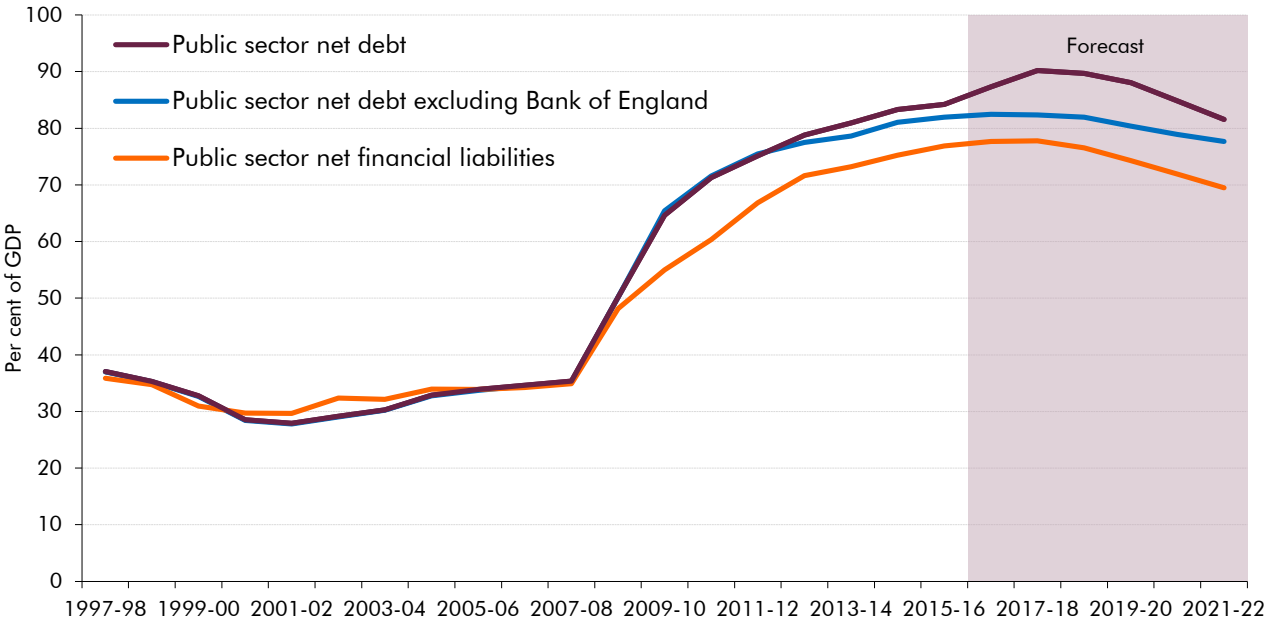
- to produce an illustrative projection of PSNFL we exploited the fact that PSNFL is in broad terms the stock equivalent to PSNB and use that to forecast **yearly changes in PSNFL** from the latest ONS estimate of the level. We chose this method as it requires fewer new assumptions;

- **prior to the financial crisis and recession of the late 2000s, PSND and PSNFL were of similar size**. While both measures increased sharply during and after the financial crisis, PSND rose much faster than PSNFL; and

- **we expect PSNFL to peak relative to GDP in 2017-18**, the same year as for PSND. But unlike PSND, our projection for PSNFL as a share of GDP is fairly flat between 2015-16 and 2018-19. It would therefore only require relatively small changes in any part of the projection for the peak to move. Given the uncertainties around the measure, there is a clearly a strong possibility of revision.

2.8 Chart 2.1 shows our medium-term forecasts for the Government's target balance sheet measure and the two alternatives that it asked us to forecast. All three are on a declining path by 2020-21, with PSND and PSND excluding the Bank converging as loans issued under the Bank's Term Funding Scheme are paid back. PSNFL remains lower than PSND as the build-up of student loans assets continues to reduce this measure relative to PSND. Box 3.2 in Chapter 3 sets out illustrative long-term projections for PSNFL.

Chart 2.1: Medium-term forecasts for alternative balance sheet measures



Source: ONS, OBR

Public spending on health

2.9 In September we published a working paper on *Fiscal sustainability and public spending on health* that reviewed the assumptions underpinning our long-term fiscal projections. It showed that:

- **health spending has risen as a share of GDP in most OECD countries**, including the UK over the past 40 years. Consistent with the projections of various international institutions, we project that health spending in the UK will continue to rise as a share of GDP in the future; and

- **while there is agreement about the direction of this challenge, there is disagreement over its scale**. The biggest source of that disagreement relates to the effect of cost pressures beyond those related to demographics and to the fact that rising incomes are associated with rising spending on health care.

2.10 A major conclusion of our working paper was that when defining 'unchanged policy' health spending should increase to reflect growth in other costs in our central projection. In order to include other cost pressures in our long-term central projection, we have made assumptions about the effect of such pressures in the medium term and whether they will remain constant or will vary over the longer term. These assumptions are described in Chapter 3 (see Box 3.1 in particular). Factoring in an assumption about these cost pressures in our central projections has had a material effect on the scale of the fiscal challenge governments can expect over the coming decades. Given the uncertainty and significance of these assumptions, we test the sensitivity of our results to different assumptions.

Population projections and state pensions spending

2.11 In July we published an *FSAP* on *Population projections and pensions spending update* that focused on how the October 2015 update of the Office for National Statistics' population projections would affect our long-term projections for state pensions spending. The key judgements underpinning how changes in the projected age-profile of the population affect projected spending include our interpretation of how the longevity link on the State Pension age (SPA) would operate and the effect of changes in the SPA on labour market participation and GDP growth.

2.12 The main conclusions of our *FSAP*, which underpin the projections set out in Chapter 3 of this *FSR*, included:

- **the ONS projections assume higher mortality rates**, which reduces spending by 0.1 per cent of GDP in 2065-66. The cumulative impact of lower spending would reduce public sector net debt by 3.0 per cent of GDP by the same date;
- under our interpretation of the longevity link on the SPA, **the downward revision to life expectancy due to higher mortality rates would push back the profile of SPA rises**; and
- **the effects of the longevity link play out over an even longer horizon than covered by our projections**. Over a 50-year horizon, counter-intuitively the longevity link would actually increase spending by more than higher expected mortality would reduce it. But over the very long term, the third-of-life principle would have the effect one might assume, with around a third of the effect on spending of changes in expected mortality being offset by changes in the assumed path of SPA rises.

Student loans

2.13 In July we published a short *Student loans update* that focused on the effects of nine student loans policies that had been announced by the new Government in the period since our June 2015 *FSR*. Among these were three relatively large policies whose biggest effect is to increase lending and one whose biggest effect is to increase repayments:

- **'additional maintenance loans for students'**. This converts maintenance grants paid to lower-income students into loans from 2016-17 onwards, reducing public spending on grants and increasing student loan outlays;
- **'health education: funding reform'**. This replaces tuition and living cost bursaries for students in certain health-related courses – e.g. nurses and allied health professionals – with loans from 2017-18;
- **'higher education: part-time maintenance loans'.** This extends maintenance loans to part-time students from 2018-19; and

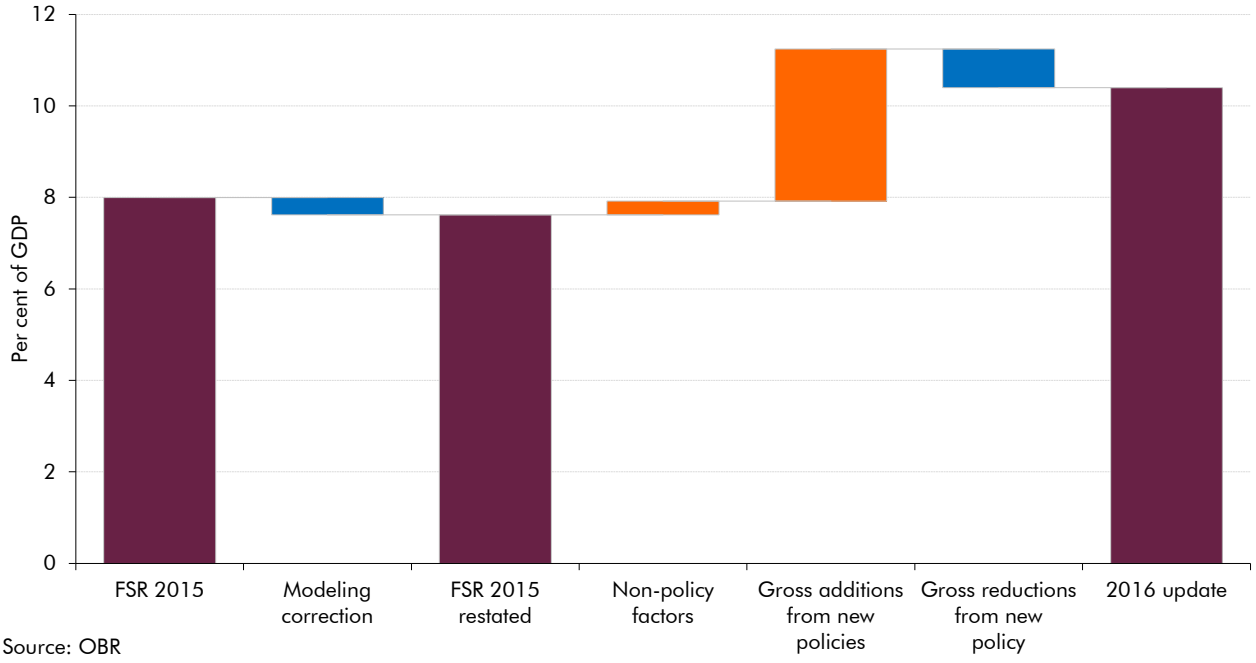
- **'student loans: repayment threshold freeze'**. This freezes the repayment income threshold for those in receipt of post-2012 loans at £21,000 for five years from 2016-17 onwards, thereby increasing repayments relative to the previous policy setting. It also freezes the threshold at which the maximum rate of interest of RPI + 3 per cent is charged, increasing accrued interest receipts relative to the previous policy setting.

2.14 Chart 2.2 shows the main steps that explain why our updated projection for additions to net debt from student loans in 2065-66 was higher than our 2015 *FSR*:

- **a modelling correction** that ensured our medium-term student numbers forecast was consistently factored into the long-term projection lowered it by 0.4 per cent of GDP;
- **other changes to our pre-policy-measures assumptions** including for non-English loans added 0.3 per cent of GDP;
- **gross additions from new policies** total 3.3 per cent of GDP, with the largest effects coming from the policies listed above; and
- **gross reductions from new policy** total 0.8 per cent of GDP, entirely explained by the repayment freeze.

2.15 We have made further revisions to these estimates in the projections set out in Chapter 3, reflecting updated medium-term assumptions from our November *EFO* and other factors.

Chart 2.2: Changes to additions to net debt from student loans in 2065-66



Source: OBR

Private pensions and savings policy measures

2.16 In October we published a working paper on *Private pensions and savings: the long-term costs of recent policy measures*. It explored the effects of five policy measures affecting private pensions and five affecting savings. The Government has since dropped one of the pensions policies, announcing in the 2016 Autumn Statement that it would no longer seek to establish a secondary market into which existing annuitants could convert their annuity income into cash. This was one of the smaller policies covered in the paper, so the decision to abandon it does not have a material effect on the conclusions we reported.

2.17 The paper noted that:

- in recent years, **the Government has made a number of significant changes to the tax treatment of private pensions and savings** and introduced a variety of government top-ups on specific savings products. In doing so, it has generally shifted incentives in a way that makes pensions saving less attractive and non-pension savings more attractive;

- over the five-year periods covered in Budgets and Autumn Statements, **the estimated medium-term yield from reducing generosity on private pensions slightly exceeds the estimated cost of increasing it for other savings.** But some of the private pensions measures only brings forward receipts from the future, whereas the cost of some of the savings giveaways will continue to rise over the long term;

- our central estimates of **the long-term effects of these policies show a small net cost** – i.e. the small net gain to public finances from these measures within the medium-term forecast horizon reverses once we consider the long-term effects;

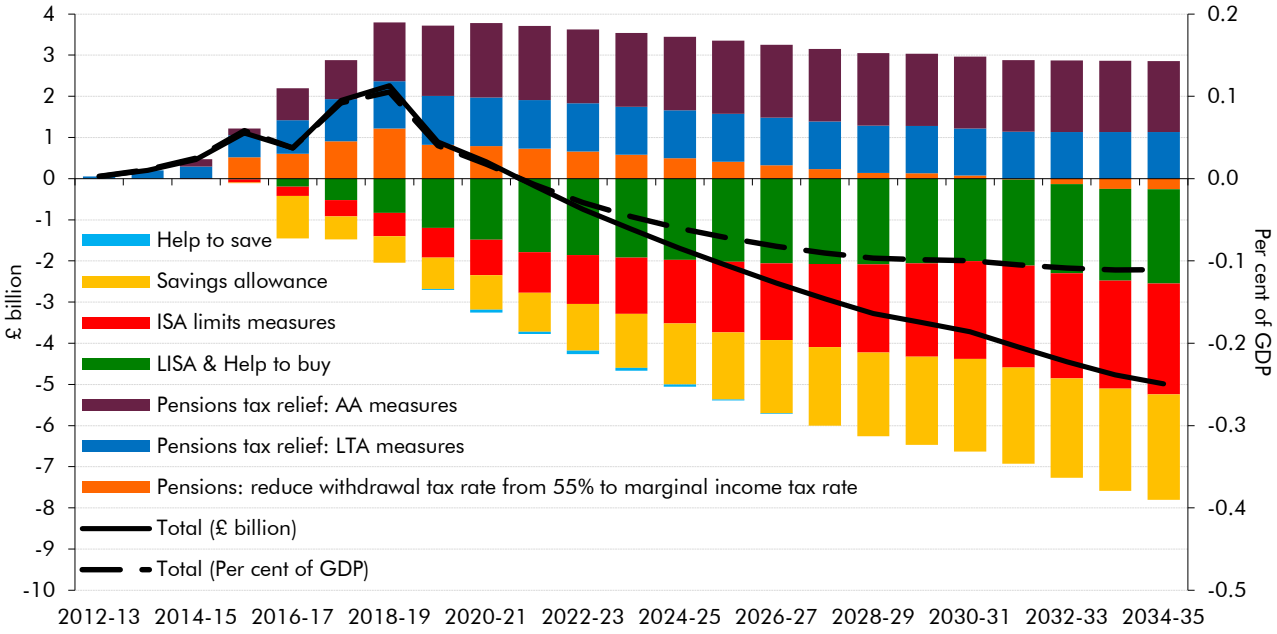
- the medium-term **costings of these measures are often assigned our highest uncertainty ranking**. Over the longer term, the uncertainties will be even greater; and

- as with our analysis of long-term pressures on the public finances, **the relatively slow pace at which they would affect the public finances would allow future governments to adjust policy if they felt that was necessary**. But the conclusions presented in this paper do show how the effect of decisions on the public finances over the medium term may be different over longer horizons.

2.18 Chart 2.3 summarises the results of the long-term costings presented in the paper, with the secondary market measure removed. Since the effects of that would have been greatest in the medium term, the paper's results and conclusions are essentially unchanged. The chart shows that the net effect on the public finances is positive in the early years, peaking at £2.3 billion in 2018-19 before turning negative from 2021-22. This net cost continues to rise in cash terms, reaching £5 billion by 2034-35. Expressed as a share of GDP the net cost builds up until it reaches a steady state toward the end of the period of just over 0.1 per cent of GDP. If that steady-state effect was to continue to the end of our usual long-term projection horizon of 50 years, that seemingly small cost would add 3.7 per cent of GDP to

public sector net debt. This effect is not included in the central projections presented in Chapter 3, where we take a simpler demographic approach to projecting receipts.

Chart 2.3: Combined long-term costs and yields of pensions and savings measures



Source: HM Treasury, HMRC, OBR

3 The fiscal impact of future government activity: long-term fiscal projections

3.1 Chapter 2 summarised the five *Fiscal sustainability analytical papers (FSAPs)* that we published after cancelling our planned July 2016 *Fiscal sustainability report (FSR)*. One of these contained our usual *FSR* analysis of the fiscal impact of *past* government activity, including some future cash flows, as reflected in measures of the public sector balance sheet. To assess long-term sustainability, we also need to estimate the potential fiscal impact of *future* government activity. In this chapter, we do this by making long-term projections for public spending, revenues and financial transactions, and then assessing their implications for the potential path of public sector net debt.

3.2 Long-term projections of this type allow a relatively comprehensive assessment of fiscal sustainability. They take into account items such as the future cost of public service pensions, but without the same sensitivity to the choice of discount rate as the balance sheet approach. They also recognise that the government has many non-contractual – but nonetheless meaningful – ongoing spending commitments. For example, it is likely to continue to provide state education and health care. Crucially, it recognises that the government has the ability to levy taxes in the future.

3.3 Given the significant uncertainty inherent over the extended time horizons that we consider here, our results should be treated as illustrative projections, not detailed forecasts. The first five years of the projections are consistent with the medium-term forecasts to 2021-22 that we published in the November 2016 *Economic and fiscal outlook* (*EFO*), so as to focus on longer-term influences rather than fresh revisions to our medium-term assessment.

3.4 This chapter first outlines the policy, demographic and economic assumptions required to generate our projections, pointing out where these have changed since our last *FSR* was published in June 2015. We then explain how we make our central projections of spending and revenue, and present our results, noting significant changes since the previous report. These changes include the cumulative effect on the starting point of our projections of the Government's policy changes and our updated forecast judgements in the four Budgets and Autumn Statements delivered since the new Government took office. This is followed by sensitivity analysis, focusing on the medium-term starting point, interest rates, demographic influences and health spending.

Key assumptions

Policy assumptions in the long-term projections

3.5 The projections in this report assume that government policy is unchanged from that which underpinned our November 2016 *EFO* forecast. But Chapter 1 explained that it is often far from straightforward to define unchanged policy over a 50-year horizon. Table 3.1 sets out the major policy assumptions we make.

Table 3.1: Policy assumptions in the long-term projections

Policy	Long-term assumptions in the central projections
Taxes	Direct and indirect taxes uprated in line with earnings from 2022-23. All tax escalators to end by 2021-22.
Departmental spending	Spending by function is consistent with the latest spending review plans out to 2019-20 (2020-21 for health). Functional education current spending in 2020-21 and 2021-22 and health spending in 2021-22 are based on changes in general government consumption. From 2020-21 onwards (2022-23 for health and education), spending by function is grown in line with nominal GDP, apart from items subject to demographic influences.
Pensioner benefits	State Pension age (SPA) equalised at 65 by November 2018, before reaching 66 by October 2020 and 67 between 2026 and 2028. Subsequent SPA changes are based on changes in life expectancy. Qualifying ages for other state pensions spending, such as pension credit, and pensioner-related benefits, such as the attendance allowance, rise in line with SPA. Single-tier pension introduced for people reaching SPA from April 2016. Basic state pension and single-tier pension uprated using the 'triple lock' mechanism. Additional pension uprated in line with CPI.
Other benefits (e.g. working age benefits)	All working age benefits uprated with earnings from 2022-23. Universal credit is rolled out to the timetable assumed in our November 2016 forecast.
Student loans	The cap on tuition fees is uprated in line with earnings from 2022-23. The repayment threshold is uprated in line with earnings from 2021-22. The pre-2012 loan book is sold, with the sale of the first tranche taking place in 2017-18. No changes to real interest rate applied to fees and maintenance loans (i.e. 3 per cent during study and between 0 to 3 per cent after graduation, depending on earnings).
Public service pensions	Incorporates previous policy reforms: to increase employee contributions; uprate payments with CPI; and amend scheme benefits in line with the Public Service Pensions Act 2013, including linking pension age to the SPA.

3.6 Since our previous report, the Government has made a number of policy announcements relevant to our long-term projections, including:

- a number of changes to **departmental spending on public services, grants and administration** (known as resource departmental expenditure limits or RDEL), including substantial increases announced in the July 2015 Budget for which detailed plans were set out in the November 2015 Spending Review. Smaller changes in the March 2016 Budget and in Autumn Statement 2016 reduced RDEL spending as a share of GDP relative to the Spending Review plans for 2019-20. Our 2015 *FSR* projections were

based on the March 2015 forecast where the Coalition Government had set out a 3.0 per cent of GDP fall in RDEL spending between 2015-16 and 2019-20. In our November 2016 forecast, after the Government's various changes to its spending plans, RDEL is expected to fall by just over half that amount – 1.7 per cent of GDP – over that period. However, a further 0.6 per cent of GDP fall has been pencilled in for the subsequent two years, to give a total fall over six years of around three-quarters of the amount that the March 2015 Budget had targeted over four years;

- significant **cuts to working-age welfare spending**, in particular a 4-year freeze on the uprating of most benefits and tax credits and cuts to the generosity of universal credit. Some cuts to tax credits announced in the July 2015 Budget were subsequently reversed, while cuts to disability benefits announced in the March 2016 Budget were subsequently dropped. In Autumn Statement 2016, the Government decided to taper away universal credit awards less aggressively. Taken together, these measures are estimated to reduce welfare spending by 0.7 per cent of GDP in 2021-22;

- **net tax increases** are estimated to amount to £14 billion in 2021-22 (0.6 per cent of GDP) from the four Budgets and Autumn Statements. Among the larger tax increases are the introduction of a new apprenticeship levy, raising the dividend tax rate and doubling the rate of insurance premium tax. Partly offsetting these, the Government has also announced cuts to corporation tax and frozen the rate of fuel duty;

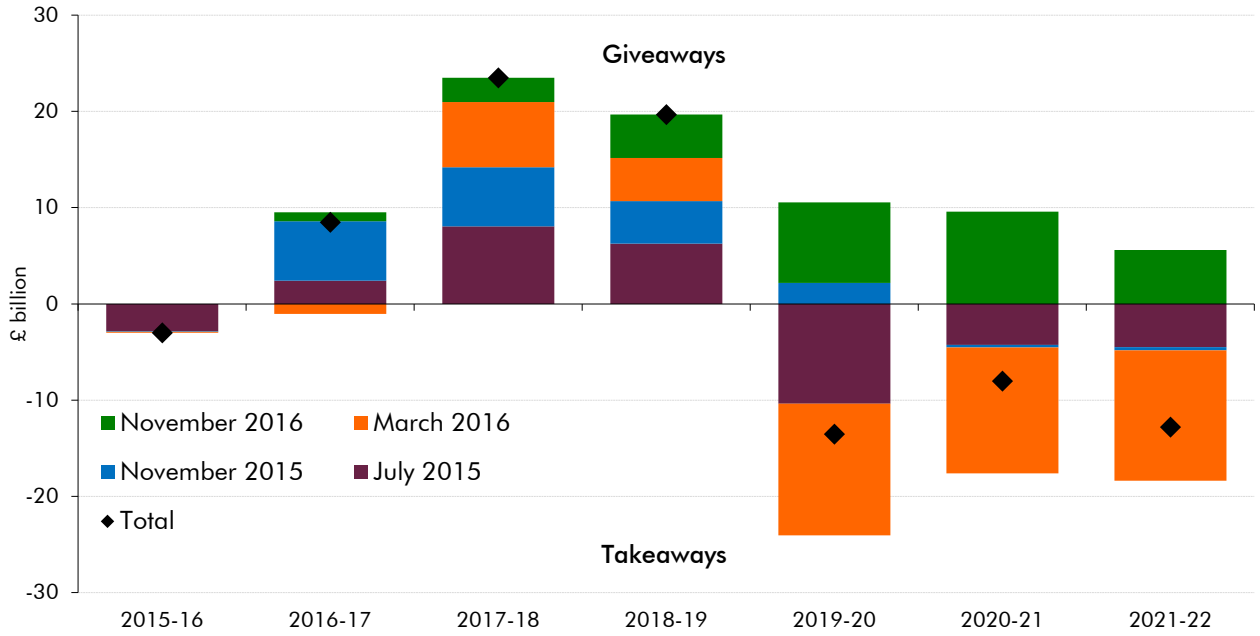
- significant **financial asset sales**, including its entire shareholding of Lloyds Banking Group and a large sale of mortgage assets of UK Asset Resolution in addition to the natural rundown of its loan book. It has also sold its remaining stake in the Royal Mail and its shares in the King's Cross Central Partnership; and

- a number of policies that increase outlays on **student loans** over the next five years and that will therefore increase repayments and write-offs over the long term. It also confirmed its intention to sell the pre-2012 student loan book, but we now expect the first sale in 2017-18 instead of the 2015-16 assumption used in our last report.

3.7 The projected longer-term impacts of these policies are discussed in more detail below.

3.8 As shown in Chart 3.1, in total Government decisions imply a fiscal tightening of 0.5 per cent of GDP by 2021-22 relative to the tax and non-departmental spending policies that underpinned our March 2015 *EFO*, and a neutral baseline of departmental spending being held flat as a share of GDP beyond that forecast's horizon of 2019-20. This starting point is a key driver of our long-term projection for the primary balance. The profile by which this tightening is achieved, which involves short-term giveaways followed by takeaways from 2019-20, does not affect the long-term primary balance projection, but it does affect net interest payments via its effect on the starting point for debt.

Chart 3.1: Total effects of Government decisions since *FSR* 2015



Source: OBR

State Pension age

3.9 The Government has legislated for a review of the State Pension age (SPA) to take place at least once every six years; in effect once in each Parliament. The first is due to report by May 2017. To inform the review, the Government has commissioned two reports:

- an **independent report on the SPA**, which will report to the Secretary of State for Work and Pensions early in 2017.[1] The review is forward-looking and will not cover the existing arrangements before April 2028, which have already been legislated. An interim report into how the SPA rules could look beyond 2028 was published in October 2016; and

- a report from the **Government Actuary's Department**, to produce an indicative SPA timetable based on trends in life expectancy and the Government's view on the proportion of adult life people retiring between 2028-29 and 2064 should spend in receipt of state pension.[2] It has been asked to consider two scenarios, in which people spend 33.3 or 32 per cent of their adult life in receipt of state pension.

3.10 The proportions that the Government has commissioned a report on are consistent with the core principle announced by the Coalition Government in Autumn Statement 2013, that an individual should spend, on average, 'up to one third of their adult life' (beginning from age 20) over the State Pension age, with at least ten years' notice provided and changes being phased in over two years.[3] This principle is often described as a 'longevity link'. We

[1] For more detail see Department for Work and Pensions (2016), 'State Pension age independent review: terms of reference', March.
[2] For further detail see Department for Work and Pensions (2016), 'Terms of reference for the Government Actuary's report', November.
[3] For further detail on the Government's announcement, see Department for Work and Pensions (2013), 'The core principle underpinning future State Pension age rises: DWP background note', December.

have reflected it in our central projections since our 2014 *FSR* by assuming a value of one-third. As neither of the alternatives is yet Government policy, we continue to base our projection on the interpretation of the core principle that we have used previously.

3.11 Table 3.2 sets out our projections of what this core principle would imply if life expectancy evolved in line with the Office for National Statistics' (ONS) latest 2014-based principal (central), old age or young age population projections. These projections have been updated since our 2015 *FSR*, as described in the demographics section below. Under these updated projections, the increases in the SPA beyond 67 would be implemented later than implied by the 2012-based population projections that underpinned our previous report. The increase in the SPA to 68 currently legislated to take place between 2044 and 2046 would still be brought forward, but only to the early-2040s rather than the mid-2030s.[4] A further increase to 69 would follow in the mid-2050s, but there would be no rise to 70 within a 50-year horizon. These changes reflect the downward revisions to age-specific life expectancy, which mean that the third-of-life criterion would be met at younger ages than under the previous projections. These changes were discussed in more detail in our July 2016 *FSAP: Population projections and pensions spending update*.

3.12 As in our previous report, under the young age variant projection lower life expectancy would imply no further increases in the SPA beyond 67 over the next 50 years. By contrast, under the old age variant the longevity link would imply a succession of additional increases in the SPA from the 2030s onwards, reaching 74 by the end of our projection period. In this variant, life expectancy for a 74-year old in 2066 is projected to have reached 100, while the population would contain over 1 million people aged 100 and over, an increase from the current level of around 15,000.

Table 3.2: Projected changes to the State Pension age over the next 50 years

State Pension age	Year within which the rise is fully implemented			
		Population variant		
	Legislated	Young age	Central	Old age
66	2020	2020	2020	2020
67	2028	2028	2028	2028
68	2046		2041	2031
69			2055	2034
70				2037
71				2044
72				2050
73				2056
74				2063

Expenditure on public services

3.13 One of the main sources of change in the fiscal position over our long-term projections is the path of spending on public services, such as health and education. We factor in two

[4] Under the Pensions Act 2007, the SPA will increase from 67 to 68 between 2044 and 2046, but the timetable for this increase could change as a result of a future review. Before any future changes could become law, Parliament would need to approve them.

main sources of pressure on such spending: demographics (e.g. population ageing affecting health spending or growth in the number of children affecting education spending) and, for the first time in this report, non-demographic cost pressures in the health sector.

3.14 For public services, we assume an underlying real increase in expenditure per capita in line with average earnings and whole economy productivity growth (i.e. 2.0 per cent a year from 2026-27 onwards, described below). This implies that – absent changes in the demographic profile or assumptions about non-demographic cost pressures in the health sector – spending would remain flat as a share of GDP. By locking in that position, we take no account of any potential cyclical swings in output in later years, which may be expected to result in spending temporarily rising or falling as a share of GDP. (Box 3.2 of our 2015 *FSR* discussed the sensitivity of our long-term projections to economic fluctuations.)

3.15 The starting point is an important assumption for our long-term projections. The Government set out detailed spending plans in the November 2015 Spending Review, but then announced unspecified cuts to departmental spending in 2019-20 and 2020-21 in the March 2016 Budget that were subsequently offset in part in the 2016 Autumn Statement. In our central projection, we start from the departmental spending totals at the end of our November 2016 forecast period in 2021-22.

3.16 From our 2021-22 starting point, we apply our demographic projections to capture the effect of changes in the population structure on expenditure. We do not make an explicit assumption about the level of service this implies, which will depend on factors such as public sector productivity and the demand for public services. For health spending, we now assume that non-demographic cost pressures – e.g. technological advances that allow more health conditions to be treated or increased demand to treat chronic conditions – place spending on a steeper upward trajectory than would be implied by population ageing alone. This is described more fully later in this section.

Tax and benefit uprating

3.17 In our medium-term forecasts, we base the uprating of income tax and NICs allowances and thresholds on stated Government policy – including its default uprating assumptions set out alongside each Budget (typically that they will rise in line with inflation) and any other policies announced in Budgets or Autumn Statements. But because earnings are expected to rise more quickly than prices in the long term (due to productivity growth), inflation uprating would result in the average tax rate rising steadily over time as more income moves into higher tax bands. This is known as 'fiscal drag'. It would not be realistic to assume that this would be allowed to continue indefinitely. Indeed, estimates of the long-run relationship between tax revenues and GDP suggest that in practice other factors have, on average, offset fiscal drag.[5]

3.18 As in previous reports, we therefore assume that allowances and thresholds rise in line with earnings rather than prices beyond the medium-term horizon, turning off fiscal drag after

[5] See Table 1 of Belinga *et al* (2014).

five years. If income tax and NICs thresholds were raised in line with inflation rather than earnings between 2021-22 and 2036-37, fiscal drag would increase tax revenues by 2.5 per cent of GDP. Income tax revenues would be raised by 2.1 per cent of GDP and NICs by 0.3 per cent of GDP. The effect of fiscal drag on NICs liabilities is much smaller than for income tax, since the marginal tax rate for employee NICs falls to 2 per cent above the upper earnings limit. Fiscal drag therefore leads to lower receipts from employee NICs, which is offset by higher employer NICs where there is no upper limit.

3.19 A similar issue arises for welfare spending. Uprating working-age benefits with prices rather than average earnings would see the value of those benefits shrink steadily relative to the living standards of the bulk of the population. As in previous reports, we therefore assume that working-age benefits rise in line with earnings in the long term. If benefits and tax credits were uprated by inflation rather than earnings between 2021-22 and 2036-37, spending on working-age benefits would be 1.0 per cent of GDP lower and spending on those pensioner benefits not uprated by earnings or the 'triple lock' in the medium term would be 0.2 per cent of GDP lower.

Demographics

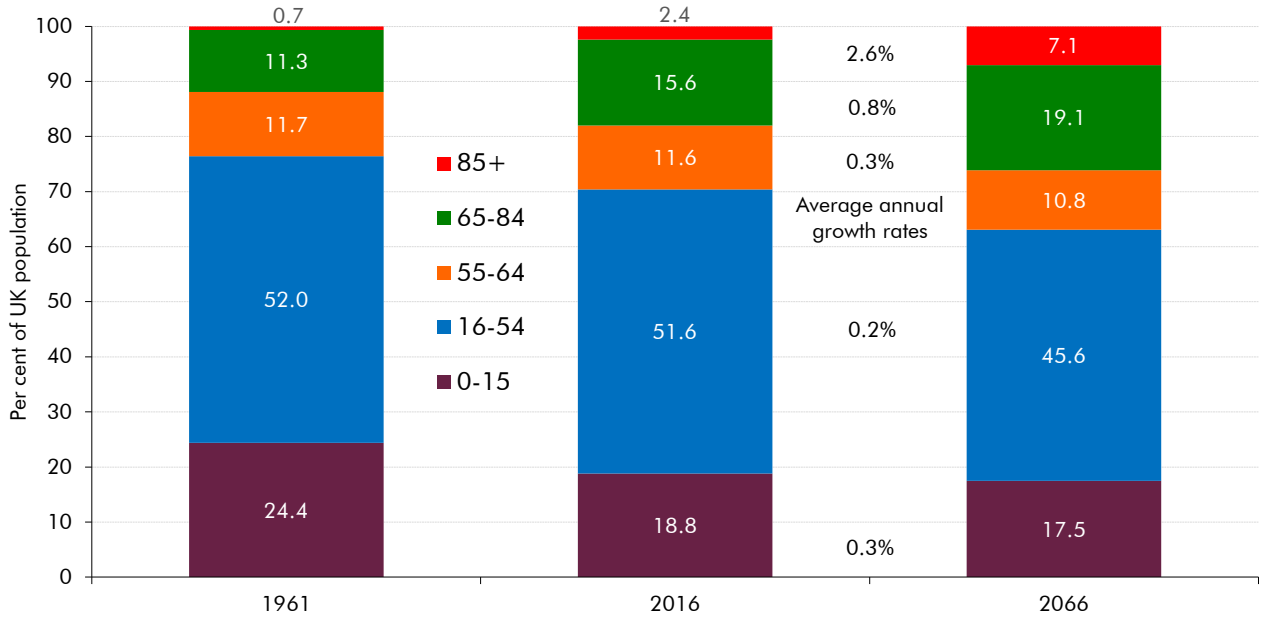
3.20 One of the most important inputs into our long-term public finance model is a projection of the size and structure of the future population. This has significant implications both for the future size of the economy and for the future of the public finances. The projected size and structure of the population are determined by assumptions regarding longevity, fertility and net migration. As illustrated in Box 3.3 of our 2014 *FSR*, changes in these assumptions cumulated over a period of decades can have big effects, with important implications for the public finances. We therefore test the sensitivity of our projections to alternative population projections later in the chapter.

3.21 We can be reasonably certain about some developments in population structure. In particular, we can be confident that the demographic bulge created by the post-WWII baby boom will continue to pass through the projections as these cohorts age. In addition, past trends of declining fertility and increasing longevity have created what is usually termed an 'ageing population'.

3.22 Combining population estimates with the latest ONS population projections, Chart 3.2 demonstrates this phenomenon by showing how the population structure has evolved since the early 1960s and how it is projected to evolve over the next 50 years.[6] As our central projection assumes that spending on non-health public services is held constant as a share of GDP for people of particular ages and that age-specific health spending rises as a share of GDP due to non-demographic cost pressures, this ageing of the population has a significant impact on long-term prospects for the public finances.

[6] For more detail see Office for National Statistics (2015), 'National Population Projections: 2014-based Statistical Bulletin', October.

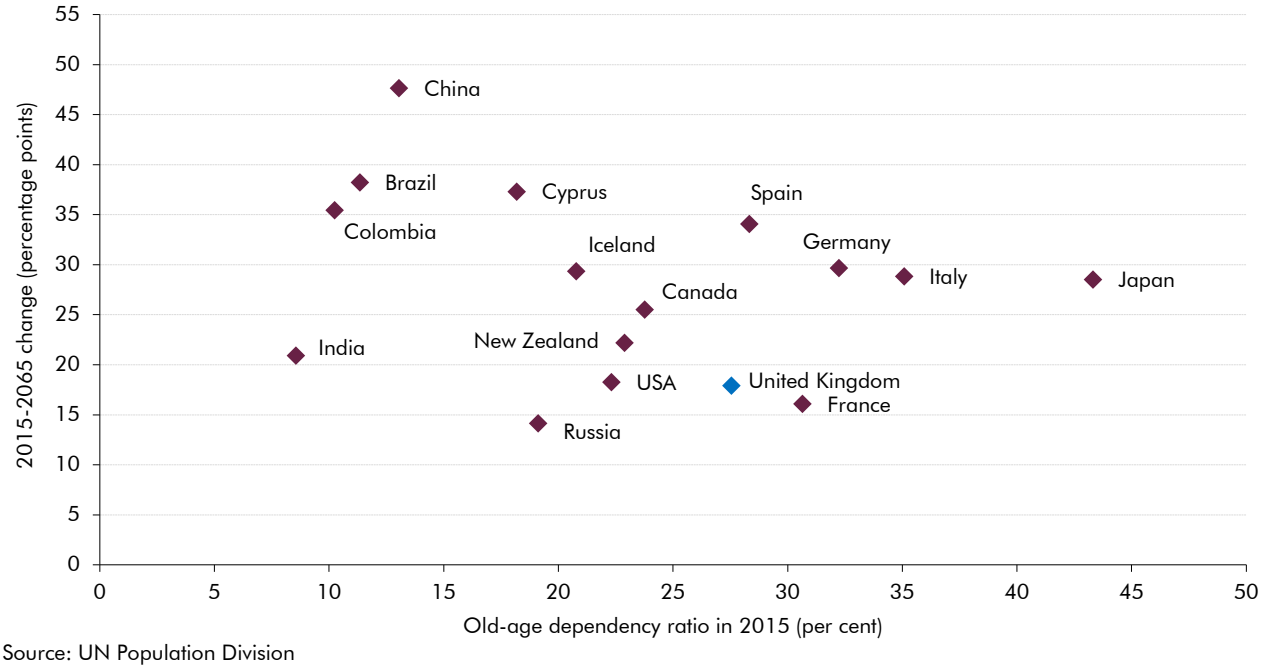
Chart 3.2: Population structure in 1961, 2016 and 2066



Note: 1961 is England and Wales only.
Source: ONS

3.23 The UK is not alone in having an ageing population. Many advanced economies will face similar pressures. Chart 3.3 shows the projected changes in the old-age dependency ratio, defined as the number of people aged over 65 as a percentage of those aged between 15 and 64, for various countries, derived from UN population projections. The chart shows that a number of countries currently have higher dependency ratios than the UK and that many are projected to see those ratios rise more quickly over the coming 50 years.

Chart 3.3: UN projections of the old-age dependency ratio



Source: UN Population Division

3.24 Since our last report, the ONS has produced new population projections based on 2014 population data and updated assumptions. We discussed the uncertainty of population projections and why they should not be treated as precise forecasts in Box 3.3 of our 2014 *FSR*. Estimates of the base population come from the 2011 census, but were updated for the latest estimates of births, deaths and net migration. As in our 2015 *FSR*, our projections are based on the ONS 'principal' population variant. In the latest principal variant, the UK population is projected to increase to 81.5 million in 2066, up nearly 650,000 compared to the 2012-based projection. This partly reflects the base population in 2014 being 86,000 higher than in the 2012-based projections. The effects of these changes on the assumed age structure of the population are shown in Chart 3.4.

3.25 Table 3.3 summarises the latest long-term assumptions for the population variants of interest to us, while Table 3.4 highlights the changes since the previous set of projections. They show that:

- **fertility rates** are unchanged at 1.89 over the long term, although they have been revised down in the near term. This long-term assumption remains below the 'replacement level' fertility rate of around 2.1 required for the population to replace itself in the long term in the absence of migration;

- **life expectancy** levels have been revised down slightly. For example, life expectancy at birth in 2039 is projected to be 0.2 years lower for men (at 84.1 years) and 0.6 years lower for women (at 86.9). This reflects higher recent mortality rates, which the ONS has reflected in its long-term assumptions. Between the 1975 and 2008 population projections, deaths were systematically overestimated as a result of the trend rise in longevity. But since then, the ONS has started to revise deaths upwards slightly in the near term, while leaving its long-run assumptions broadly unchanged; and

- **net migration** has been revised up. This has tended to be the largest contributing factor to errors in population projections. It has also been systematically underestimated in the past, which may in part be attributable to the difficulty in measuring the true level of immigration. The ONS has revised up long-term net migration in its principal variant from 165,000 a year in the 2012-based projections to 185,000 in the latest projections. That figure reflects average net migration over the past 23 years, but remains well below the most recent levels: in the year to June 2016, net migration reached 335,000. The ONS has assumed that the increase in net migration is skewed more towards children than those of working-age, but the overall age structure of net migration continues to reduce the old-age dependency ratio.

Table 3.3: Population variant assumptions

	Fertility rate	Life expectancy at birth in 2039 (years)		Long-term average annual net migration (thousands)	Size of population in 2066 (million)	
		Males	Females		16-65	Total
OBR central[1]	1.89	84.1	86.9	185	46.8	81.5
High migration	1.89	84.1	86.9	265	50.6	87.4
Low migration	1.89	84.1	86.9	105	42.9	75.6
Young age structure	2.09	82.2	85.2	265	53.0	89.2
Old age structure	1.69	86.0	88.7	105	40.3	73.7

[1] Equivalent to the ONS's 'principal' population variant.

Table 3.4: Changes in population assumptions since the 2012-based projections

	Fertility rate	Life expectancy at birth in 2039 (years)		Long-term average annual net migration (thousands)	Size of population in 2066 (million)	
		Males	Females		16-65	Total
OBR central[1]	0.00	-0.2	-0.6	20	0.4	0.6
High migration	0.00	-0.2	-0.6	40	1.4	2.1
Low migration	0.00	-0.2	-0.6	0	-0.5	-0.9
Young age structure	0.00	0.3	-0.3	40	0.5	1.3
Old age structure	0.00	-0.7	-0.9	0	-0.1	-0.7

[1] Equivalent to the ONS's 'principal' population variant.

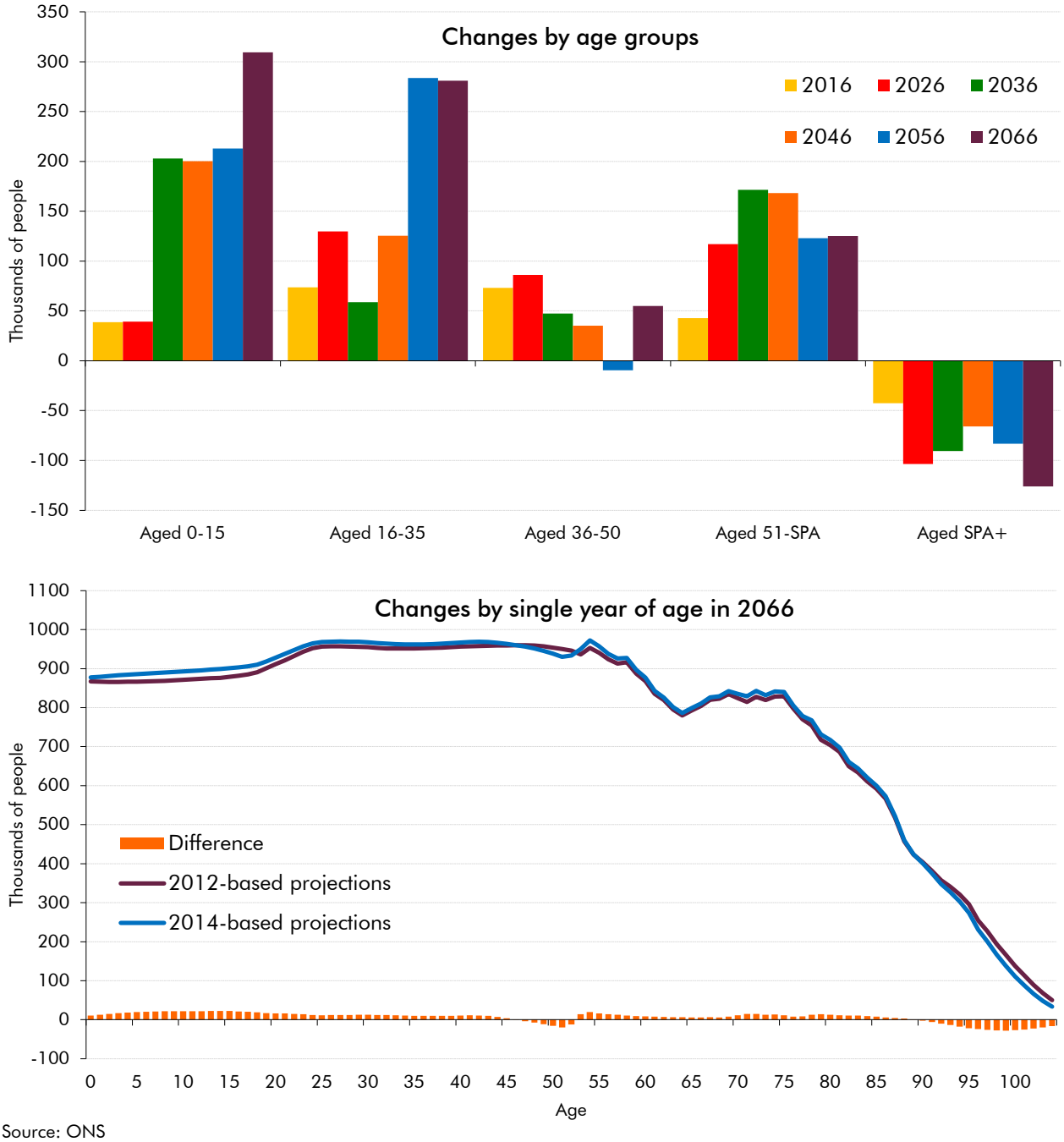
3.26 Chart 3.4 shows how the latest population projections compare with the previous projections for different age groups and what they imply for the population structure 50 years ahead. Overall, the total population is 0.8 per cent larger by 2066, with the working-age population 1.0 per cent larger but the population aged 65 and over 0.5 per cent smaller. This means the old-age dependency ratio is slightly lower at 46.3 per cent in 2066, down from 47.0 per cent in the previous projections. The main drivers of changes over the 50-year projection period we use in this report include:

- for **children aged 0-15**: an upward revision that increases over time. That reflects higher net inward migration of young families;
- for **young adults aged 16-35**: an upward revision, also reflecting higher net inward migration and cohort effects resulting from a higher number of children gradually reaching adulthood. By 2066, the population in this age group is 1.5 per cent bigger than assumed in the previous population projections;
- for **prime-age adults aged 36-50**: an upward revision, but much smaller than for other age groups. By 2066, the population in this age group is just 0.4 per cent bigger than assumed in the previous projections. As prime-age adults are the most tax-rich age group (see Chart 3.7), this has consequences for our receipts projections;

- for **older working-age adults aged 51 to the State Pension age** (SPA): also an upward revision, but resulting more from the cohort effects of upward revisions to younger age groups as net migration at these ages has not been revised significantly; and

- for **pensioners** aged above the SPA: a downward revision due to higher mortality, especially for the over 80s. That is consistent with recent data showing more deaths than had been assumed in the previous population projections. By 2066, at which point we assume the SPA would have been raised to 69 on the basis of the longevity link, the population in this age group is 0.7 per cent smaller than previously assumed.

Chart 3.4: Revisions to the population age-structure in the latest ONS projections



Source: ONS

Non-demographic cost pressures in health spending

3.27 In our *Working paper No. 9*: *Fiscal sustainability and public spending on health*, we reviewed the assumptions that underpin our health spending projections against historical evidence on the drivers of health spending and against the assumptions used by international organisations and the US Congressional Budget Office (CBO).

3.28 Box 3.1 sets out some of the evidence we reviewed, showing that non-demographic cost pressures have been an important driver of past health spending growth. We concluded that not including an explicit assumption about non-demographic cost pressures in our central projection was unusual relative to the approaches taken by other institutions, and that it would be appropriate to make such an assumption in future projections.

3.29 In order to include other cost pressures in our long-term central projection, we need to make assumptions about the effect of such pressures in the medium term and whether they will remain constant or vary over the longer term. We have used a recent NHS England estimate for non-demographic cost pressures in 2015-16 – of 2.7 and 1.2 per cent a year for primary and secondary care respectively – for the starting point of our projections.[7] This estimate is illustrated in Box 3.1. We have then assumed that these pressures will decline over time, as might be expected as health spending takes up an ever larger share of national income. Specifically, we have assumed a linear convergence for both primary and secondary care to a 1 per cent a year increase from 2036-37 onwards. This is the same steady-state growth rate used by the CBO in order to consider both the average excess cost growth over the past 30 years and the flexibility to restrain costs in the future (see Box 3.1 of our *Working paper No. 9*). Given the huge uncertainty and significance of these assumptions, we test the sensitivity of our results to different assumptions.

Box 3.1: Other cost pressures in the health sector

In *Working paper No. 9: Fiscal sustainability and public spending on health,* we investigated the latest evidence on demographic and non-demographic determinants of health spending in the UK and its implications for our long-term health spending projection.

Most notably, in the UK public spending on health has increased by 3.8 per cent a year on average in real terms since 1978-79, while the economy has grown by an average of just 2.2 per cent a year. Health spending in the UK has also increased steadily in real per capita terms, but demographic change alone cannot explain these rising trends, with other factors generating further upward pressures on health spending. Key findings from our review included:

- **demographic effects** have explained only a small part of the increase in health spending over past decades and they are likely to remain a relatively small, although growing, driver of spending in the future;

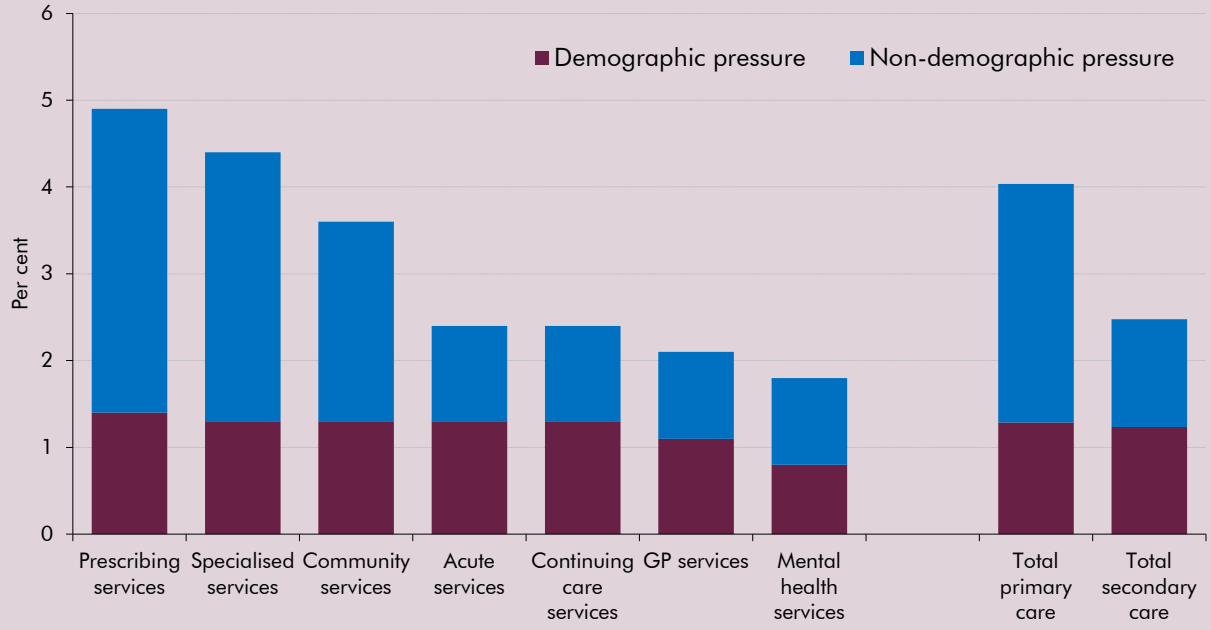
[7] NHS England (2016), 'NHS Five Year Forward View: Recap briefing for the Health Select Committee', May.

- **income effects** are an important driver of changes in real health spending, though not of spending as a share of GDP; and
- **other cost pressures** (for example increasing relative health care costs and technological advances) have been bigger contributing factors over the past and are likely to remain important drivers of spending in the future.

Our past *FSR* projections have not included explicit adjustments for these other cost pressures in the health sector. By contrast, international institutions such as the IMF and OECD consider these other cost pressures to be a key source of future spending growth. For example, the OECD (2013) has assumed in its 'cost-pressure scenario' that other cost pressures increase spending by 1.7 per cent a year beyond what would result from demographic change and income effects. The IMF (2010, 2012) has estimated an additional cost pressure for the UK of about 1.5 per cent a year between 1980 and 2008 and 2.2 per cent a year between 1995 and 2008.

One conclusion of our working paper was that when defining 'unchanged policy' health, spending should increase to reflect growth in other costs in our central projection. NHS England (2016) has recently estimated non-demographic cost growth pressures for the NHS up to 2020-21 by stripping out an estimate of demographic cost pressures from activity in 2015-16. As shown in Chart A, this suggests that on average other cost pressures added 2.7 and 1.2 percentage points to growth in primary and secondary care spending in 2015-16 respectively. (Secondary care makes up the majority of total spending.[a]) The size of the effect varies significantly by spending category, being particularly large for prescribing and specialised services. By contrast, demographic factors are similar across most services, contributing on average around 1.3 percentage points to growth in total activity.

Chart A: Demographic and non-demographic pressures (2015-16)



Source: NHS England, OBR

[a] The weights are based on spending on clinical commissioning group service, NHS England service and other service in 2014.

Economic assumptions in the long-term projections

3.30 Our projections for GDP are informed by our view of the average trend growth in productivity (informed by its historical path) and labour supply (based on age-specific labour market participation trends and the ONS's population projections). Over longer time horizons, the difference between output growth and the real interest rate paid on government debt is also crucial in determining the dynamics of debt sustainability.

3.31 Table 3.5 lists the underlying long-term assumptions used in our projections. Our latest economic forecast shows the gap between actual and potential output closing by the end of the medium term, and we assume the output gap remains closed thereafter. In reality, actual output will fluctuate around its potential as the economy is hit by unexpected shocks, but we do not attempt to forecast the scale and timing of such shocks. We illustrated the potential impact on our projections of a number of stylised economic cycles in Box 3.2 of our 2015 *FSR*, and will explore the issue more fully in our forthcoming *Fiscal risks report*.

Table 3.5: Long-term economic determinants

	Annual growth rate, unless otherwise stated	
Labour productivity	2.0	OBR assumption
Prices and earnings		
Average earnings	4.3	Product of labour productivity and GDP deflator
Public sector earnings	4.3	Assumed to grow in line with private sector
GDP deflator	2.3	Constant from end of forecast
CPI	2.0	Constant from end of forecast at inflation target
RPI	3.0	Calculated as CPI plus 1.0 percentage points
RPIX	2.8	Calculated as CPI plus 0.8 percentage points
'Triple lock'	4.6	Calculated as average earnings plus 0.34 percentage points
Interest rates (per cent)		
Gilt rate	4.9	OBR assumption
Bank Rate	4.9	OBR assumption
Employment growth		
Public sector workforce growth	0.35	Broadly in line with total employment growth
Memo: average real GDP growth	*2.4*	*Product of labour productivity and employment growth*
Memo: average nominal GDP growth	*4.7*	*Product of real GDP growth and GDP deflator*

3.32 Our latest medium-term forecast runs to 2021-22, so these long-term assumptions are now applied from 2022-23 onwards. The exceptions to that are:

- **interest rates**, which are assumed to stabilise in 2036-37;
- **RPI inflation**, which is assumed to stabilise at the rate determined by the long-term wedge relative to CPI once interest rates reach a steady state in 2036-37;
- **productivity growth**, which is assumed to converge to its steady-state rate by 2026-27; and

- **average earnings growth**, which is assumed to stabilise once productivity growth reaches a steady state in 2026-27.

3.33 Relative to our last *FSR*, we have revised down our long-term assumption for productivity growth. That reflects successive downward revisions to the assumptions underpinning our medium-term forecasts. In March 2016, we revised down trend productivity growth in light of disappointing data, deciding to place a little more weight on the recent period of weak productivity growth rather than assuming productivity would return to its pre-crisis trend within five years. In our latest forecast, we revised it down again due to the effects of uncertainty on investment and therefore productivity growth in the run-up to – and in the transition phase after – the UK's exit from the EU.

3.34 By 2020, we assume that trend hourly productivity growth will reach 1.8 per cent, down from 2.0 per cent in March and 2.2 per cent in our November 2015 forecast. Since our latest revision is associated with an extended transition period, for the purposes of our long-term projections we assume that productivity growth will return to the 2.0 per cent that underpinned our March forecast, but not until 2026-27. That is down from 2.2 per cent in our 2015 *FSR*. There is greater-than-usual uncertainty around any judgements made about the path of potential output when we do not yet know post-exit policy settings or the impact of those arrangements on productivity in the long term.

3.35 We project long-run employment growth by combining ONS population projections with our participation and employment rate projections. We calculate an employment rate consistent with an assumed non-accelerating inflation rate of unemployment (NAIRU) of 5.35 per cent of the labour force. We adjust participation rates for changes in the SPA set out in Table 3.2, which have been revised since our last report due to the updated population projections. Although most individuals will choose to exit the labour market either before or after they reach the SPA, exit rates do spike around that point. In order to capture the effect on participation rates of raising the SPA, we assume in effect that exit rates move with changes in the SPA, so that a 65-year old when the SPA is 66 has the equivalent exit rate to a 64-year old when the SPA is 65. As in our previous *FSRs*, we smooth this transition over earlier periods, as individuals would be expected to adapt their labour market participation choices over a longer period. Annex A of our 2014 *FSR* discussed a number of labour market trends in more detail, including employment trends among older workers.

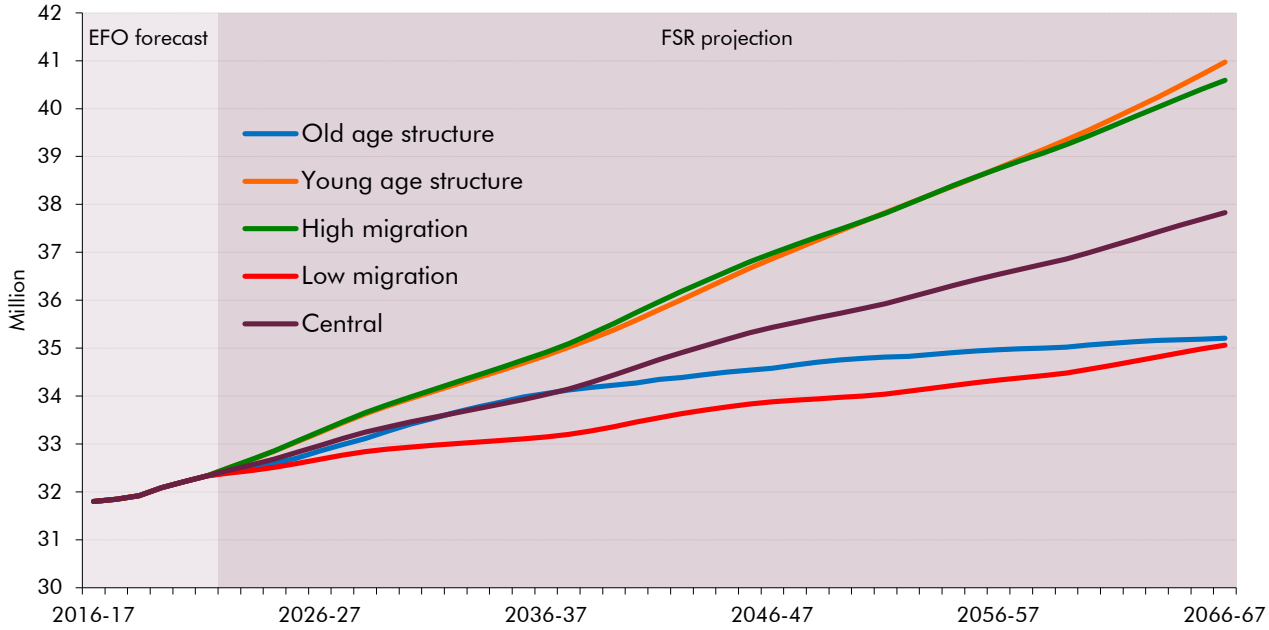
3.36 Combining the population projections with our participation and employment rate projections, we can then project future employment levels as the population ages and cohort sizes vary accordingly, as shown in Chart 3.5. The biggest factor driving these projections is the size of the population rather than the smaller differences in employment rates between the variants, as shown in Chart 3.6. The employment rate is projected to decline over time, as the proportion of older people in retirement increases.

3.37 We have also updated the methodology we use for modelling entry and exit rates in our cohort model. The most important change has been to base entry and exit rates on averages from the 19-year period up to 2015, rather than a pre-crisis average from 1997 to 2008. This has led to an upward revision to the employment rate. When combined with

the latest population projections, it has meant that employment growth has been revised up by around 0.1 percentage points a year compared with our previous report, despite a slower pace of future SPA rises reducing employment growth in some years.

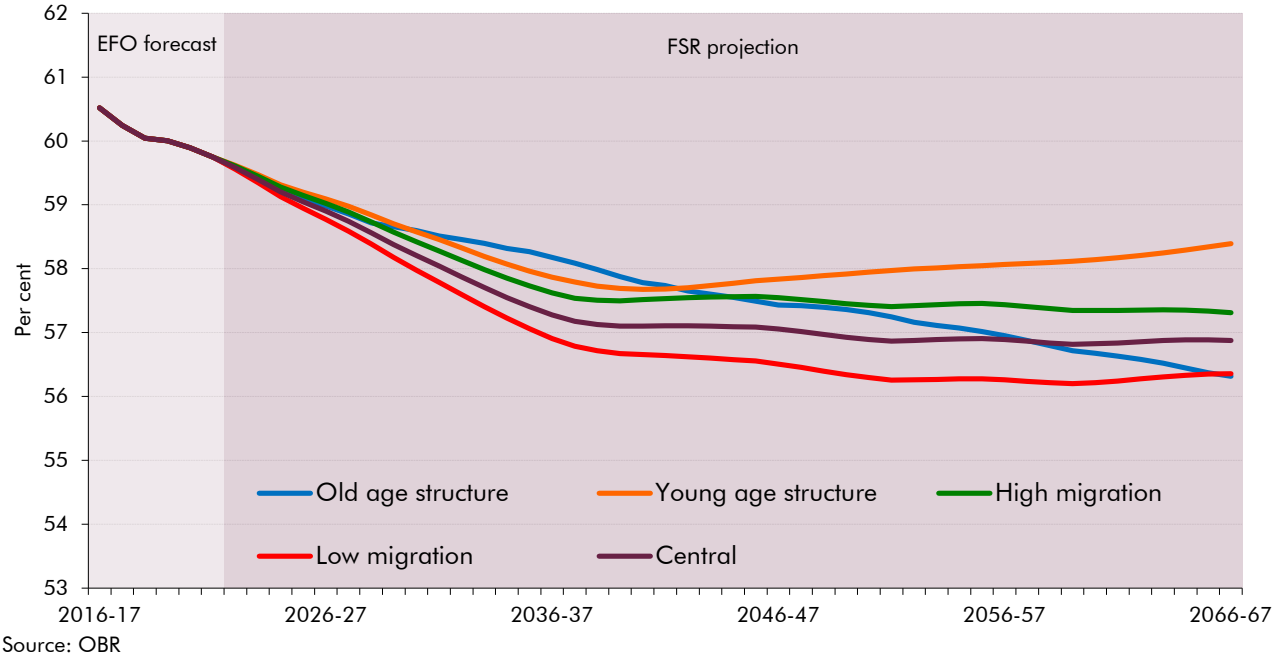
3.38 Table 3.6 summarises the long-term real GDP growth projections consistent with different population variants. (Annual projections are available on our website.) Our central GDP growth projections are a little weaker than in our last report, since the downward revision to productivity growth is less than offset by the upward revision to employment growth.

Chart 3.5: Employment projections (16+ population)



Source: OBR

Chart 3.6: Employment rate projections (16+ population)



Source: OBR

Table 3.6: Real GDP growth projections

	Annual GDP growth, per cent				
	2016-17 to 2026-27	2026-27 to 2036-37	2036-37 to 2046-47	2046-47 to 2056-57	2056-57 to 2066-67
OBR central	2.1	2.3	2.4	2.3	2.3
High migration	2.2	2.5	2.6	2.5	2.5
Low migration	2.0	2.1	2.2	2.1	2.2
Young age structure	2.2	2.5	2.6	2.5	2.6
Old age structure	2.1	2.4	2.2	2.1	2.1

3.39 We have not changed our assumption for long-term growth in the GDP deflator of 2.3 per cent a year. This figure is constructed bottom-up using assumptions relating to each of the expenditure components of GDP. We also continue to assume that CPI inflation remains at 2.0 per cent in the long term, consistent with the Bank of England's inflation target, and a long-run wedge between RPI and CPI inflation of 1.0 percentage point, giving a long-term assumption for RPI inflation of 3.0 per cent a year.

3.40 We assume that the labour share of national income is constant in the long run. As a consequence, average earnings growth is equal to the product of labour productivity growth and whole economy inflation. It rises at 4.3 per cent a year from 2026-27 onwards. We have revised down slightly the extent to which the triple lock on pensions uprating will on average exceed earnings growth, as explained in the state pensions section of the chapter.

3.41 Market expectations for interest rates continue to lie well below our projections for nominal GDP growth. As in the last *FSR*, we have kept the difference between the long-term nominal interest rate and nominal output growth at 0.2 percentage points, leaving interest rates close to but above our growth rate projections. As a result, we have revised down our assumption for the long-term nominal interest rate to 4.9 per cent. We also assume that the stock of gilts held by the Bank of England's Asset Purchase Facility will naturally run down over time, as the gilts mature and are not replaced.

How we project the public finances

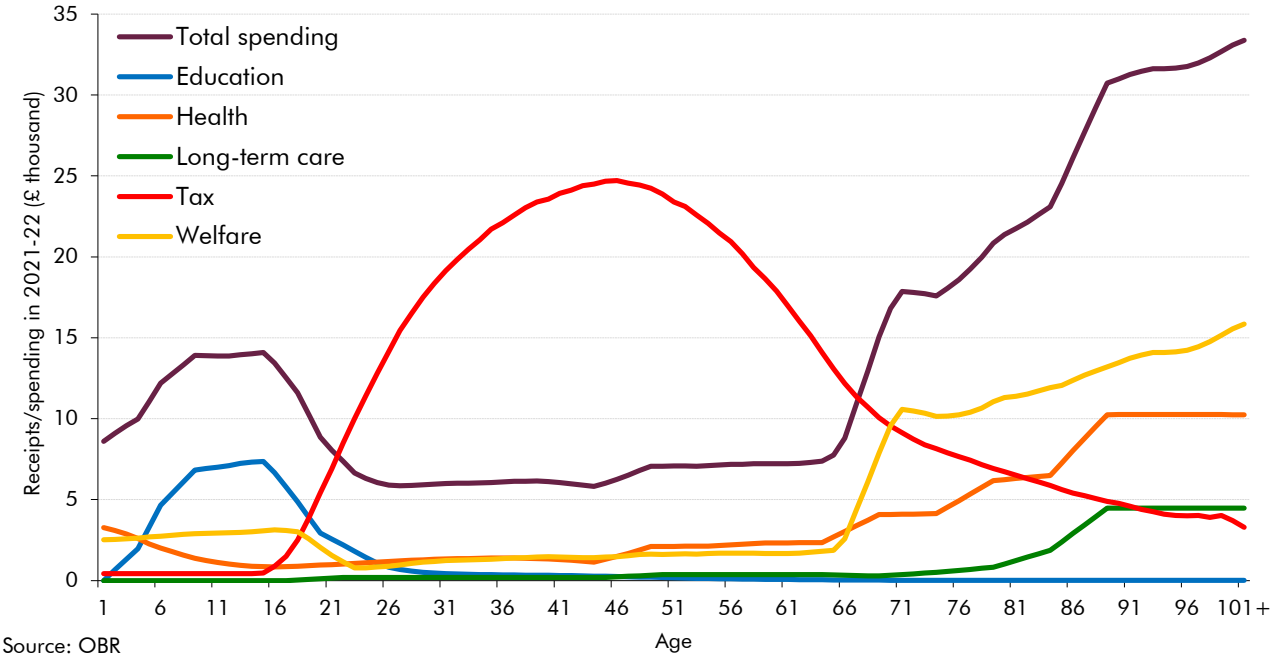
3.42 Our projections up to 2021-22 are consistent with our November 2016 *EFO* forecast. From 2022-23, we construct long-term projections of spending and revenue streams through an unconstrained 'bottom-up' analysis. By holding spending and tax revenues per person fixed as a share of their earnings, borrowing would remain unchanged as a share of actual GDP in the absence of demographic changes.

3.43 Key spending and revenue items are sensitive to both the size and age structure of the population, and our approach to projecting the public finances allows us to isolate the changes in both spending and revenue that would be caused by demographic changes. We make use of individual spending and revenue profiles for males and females, each capturing the age distribution of spending or revenue over a representative individual's lifetime. By applying profiles and population projections to spending and revenue it is possible to calculate the total spending per person of a given gender and age, and it is this

calculation that forms the basis of our projections of the public finances. For all but health spending, these per capita allocations are raised in line with real earnings over the projection horizon and combined with population projections to generate future spending and revenue streams. For health spending, per capita allocations are also increased each year to reflect our assumption that non-demographic cost pressures will also persist.

3.44 Chart 3.7 shows representative profiles for public service spending items and for tax and welfare spending. This has been achieved by applying the relevant profiles to the disaggregated forecast in 2021-22. It shows that in early life, children consume a relatively large amount of health care and state-funded education, while parents can claim child benefit and child tax credits on their account. At the same time they will be making little contribution to tax revenues through their income and spending. During working age, people consume fewer public services while also paying more tax, and receiving welfare benefits in some cases. In later life, they consume more health care and long-term care and claim pensioner benefits, in particular the state pension, but pay less tax as their incomes and spending decline. The application of non-demographic cost pressures to our health spending projections means that by the end of the projection period, the amount spent per person on health will broadly equal the amount spent on welfare at most ages.

Chart 3.7: Representative profiles for tax, public services and welfare spending



Source: OBR

3.45 Although we show profiles for welfare and long-term care spending, these are not used directly in our projections. The Department for Work and Pensions (DWP) projects social security payments using our economic and policy assumptions. This allows us to incorporate the additional complexities of these benefits explicitly, including changes in the SPA that affect eligibility for many working-age and pensioner benefits. Projections for long-term care spending are provided by the Department of Health on the basis of Personal Social Services Research Unit projections of demand for long-term care. Similarly, the Government

Actuary's Department has projected unfunded public service pension payments, which will add to the spending covered in Chart 3.7.

3.46 As a result of using different modelling inputs, there are varying degrees of detail for different items within our projections. However, this does not mean that the results are any less subject to the uncertainties inherent in any projection looking over such a long horizon.

Spending and revenue projections to 2066-67

3.47 In this section, we present the results of our bottom-up spending and revenue projections, using the methodology and modelling assumptions outlined above. These projections do not represent a precise forecast of the expected evolution of spending or revenue. Rather they show what might happen if policy was to remain unchanged on the basis of the assumptions we have chosen and if our other illustrative assumptions were to hold true. If the projections show the public finances on an unsustainable path, and were to prove accurate, we would expect policymakers to take corrective action.

Classification changes

3.48 Since our last *FSR*, the ONS has reclassified private registered providers of social housing – which includes most housing associations (HAs) and some other private sector providers – into the public sector.[8] The ONS estimated that reclassifying HAs in England increased public sector net borrowing by £3.9 billion and net debt by £63.9 billion (3.3 per cent of GDP) in 2015-16. Reclassifying HAs in Scotland, Wales and Northern Ireland is expected to increase public sector net borrowing by £0.4 billion and net debt of between £6.5 and £7.0 billion in 2015-16.[9] In our November 2016 *EFO*, we forecast the effect of HAs on the public finances in 2021-22 to be £4.2 billion higher borrowing and £101 billion (4.2 per cent of GDP) higher net debt. For simplicity, we have assumed that the effect on the primary balance remains constant as a share of GDP and, as a result, the effect on PSND rises.

Public spending

3.49 Table 3.7 shows our central spending projections as a percentage of GDP, excluding interest payments on government debt. The full annual series are available on our website. The big picture is that we project total non-interest public spending to rise from 35.8 per cent of GDP at the end of our medium-term forecast in 2021-22 to 43.8 per cent of GDP in 2066-67. That would represent an overall increase of 8.0 per cent of GDP – equivalent to £156 billion in today's terms. The main drivers of the increase in non-interest spending are health, state pensions and long-term care costs, due mainly to the ageing population and non-demographic cost pressures on health spending.

[8] Office for National Statistics (2015), *'Classification announcement: "Private registered providers" of social housing in England'*, October.
[9] *Public sector finances*, ONS, October 2016.

3.50 Since our 2015 *FSR*, there have been a number of changes to departmental spending on public services, grants and administration, most significantly the big increases announced in the July 2015 Budget and detailed plans set out in the November 2015 Spending Review.

3.51 Table 3.8 shows changes since our 2015 *FSR*. We have extended the projections from that report out to 2066-67 to facilitate comparison between the two sets of figures. Non-interest spending is higher as a share of GDP than projected in our last report, with the increase between the end of the medium-term forecast and the end of the long-term projection around 4.1 per cent of GDP larger. The main drivers of these changes are:

- the inclusion of **non-demographic cost pressures on health spending** in our long-term projection, in line with the analysis presented in *Working paper No. 9*: *Fiscal sustainability and public spending on health*;

- significantly higher spending on **health care** at the start of the projection, where the Spending Review allocated a rising share of departmental spending to the NHS over the Spending Review period. In the absence of detailed spending plans, our 2015 *FSR* central projection assumed health spending would fall at the same pace as overall departmental spending;

- lower spending on **long-term care**, where the level of spending implied by the Spending Review and other policy changes is lower than the demographically driven medium-term forecast that formed the basis of our last report. The new population projections also reduce the pace at which long-term care spending is projected to rise, due to the lower projected increase in the 85+ population (which drives spending) relative of those of working age (which drives GDP growth);

- lower spending on **state pensions**, driven by a combination of lower spending at the start of the projection, higher projected mortality and the assumed effects of the longevity link on future rises in the State Pension age. In addition, changes to earnings outturns and forecasts imply that the triple lock will be slightly less costly. The profile of changes to state pensions spending relative to our 2015 *FSR* projections is uneven across years, reflecting the assumed operation of the longevity link as we discussed in *Population projections and pensions spending update* in July 2016;

- significant cuts to **working-age welfare spending**, in particular a 4-year freeze on the uprating of most benefits and tax credits and a package of cuts to the generosity of universal credit. Similar cuts to the generosity of tax credits were announced in July 2015, but reversed in November 2015, so do not affect these projections. Subsequent welfare spending measures have little overall effect on our projections; and

- higher spending on **public service pensions**, reflecting higher assumed workforce growth consistent with the Government's decisions to increase departmental spending relative to the amounts that underpinned our previous projections.

3.52 The new ONS population projections had a relatively small effect on total spending as a share of GDP. Lower spending on health and long-term care (due to higher mortality) is broadly offset by higher education spending (due to more children). Relative to our last report, the projected dependency ratio is slightly lower (but still rising) over the long term.

Table 3.7: Non-interest spending projections

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Health	7.3	6.9	7.6	9.1	10.3	11.5	12.6
Long-term care	1.0	1.1	1.3	1.6	1.8	2.0	2.0
Education	4.4	3.9	4.0	3.9	3.8	3.8	3.8
State pensions[2]	5.2	5.0	5.3	6.2	6.3	6.5	7.1
Pensioner benefits	0.9	0.8	0.8	0.9	0.9	0.9	0.9
Public service pensions	2.0	2.1	2.0	1.7	1.5	1.4	1.3
Total age-related spending	**20.8**	**19.8**	**21.0**	**23.4**	**24.6**	**26.1**	**27.7**
Other welfare benefits	5.1	4.5	4.5	4.4	4.3	4.4	4.3
Other spending	11.9	11.5	11.5	11.5	11.7	11.8	11.8
Spending[3]	**37.8**	**35.8**	**37.0**	**39.3**	**40.6**	**42.3**	**43.8**

[1] Spending consistent with the November 2016 *Economic and fiscal outlook*.

[2] Includes many items in addition to the basic state pension and single-tier pension, such as pension credit, winter fuel payments and the Christmas bonus.

[3] Excludes interest and dividends.

Table 3.8: Changes in non-interest spending projections since *FSR* 2015

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Health	0.5	0.6	1.0	1.9	2.6	3.6	4.6
Long-term care	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1
Education	-0.1	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3
State pensions[2]	-0.1	0.0	-0.2	0.0	-0.6	-0.6	-0.3
Pensioner benefits	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Public service pensions	0.0	0.1	0.1	0.1	0.1	0.2	0.2
Total age-related spending	**0.2**	**0.2**	**0.5**	**1.6**	**1.8**	**2.8**	**4.3**
Other welfare benefits	0.0	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
Other spending	1.7	2.1	2.0	2.0	2.1	2.2	2.1
Spending[3]	**1.9**	**2.0**	**2.2**	**3.2**	**3.4**	**4.5**	**5.9**

[1] Spending consistent with the November 2016 *Economic and fiscal outlook*.

[2] Includes many items in addition to the basic state pension and single-tier pension, such as pension credit, winter fuel payments and the Christmas bonus.

[3] Excludes interest and dividends.

Health

3.53 The key assumptions section of this chapter sets out our new central assumption that health spending will be subject to continuing non-demographic 'other cost pressures' over the long term, on top of the demographic pressures that we have considered in previous reports.

Table 3.7 shows spending on health rising from 6.9 per cent of GDP in 2021-22 to 12.6 per cent of GDP in 2066-67. This is around 4.6 per cent of GDP higher than our 2015 *FSR* projection, thanks largely to the inclusion of an assumption about other cost pressures.

3.54 Other factors have also affected our health spending projection:

- **spending in 2021-22 is higher than assumed in our previous report**, which was consistent with the limited information about departmental spending known at the time of the March 2015 Budget. Our projections are now consistent with the 2015 Spending Review plans up to 2020-21, which we have rolled forward a year in line with our latest forecasts for overall government consumption and investment. The Government allocated a rising share of departmental spending over the Spending Review period to health. Relative to our 2015 *FSR* projections health spending in 2021-22 is 0.6 per cent of GDP higher. This feeds through to the projection period;

- **new ONS population projections assume higher mortality at older ages**, which reduces spending relative to our 2015 *FSR*, but the effect of a lower proportion of older people in the population is partly offset by a higher proportion of children. The ageing of the population pushes health spending steadily higher, but the process slows towards the end of the projection as the proportion of the population aged 80 and above (who consume relatively more health services) stabilises; and

- **we have changed how we model costs associated with morbidity**. In previous *FSRs* we assumed a constant health status for a person of a specific age and gender as the population aged. Implicitly this meant that increases in life expectancy projected by the ONS would not be accompanied by increases in healthy life expectancy (i.e. there would be an expansion of morbidity). But as shown in our *Working Paper No. 9*, international institutions typically assume some compression of morbidity.[10] For this projection, we have assumed that increases in life expectancy are split between extra time spent in good health and in ill health. The ONS population projections imply that life expectancy at 65 increases by one year every eight years. Assuming that the proportion of life spent in good health is around half the total life expectancy at 65, this implies that healthy life expectancy increases by one year every sixteen years.[11] This change means that health spending is around 0.7 per cent of GDP lower in 2066-67 than it would have been under our previous methodology.

3.55 Including other cost pressures in our central projection has had a very big effect on our health spending projection. There is significant uncertainty over the level at which these cost pressures will converge in the future and the speed at which they will reach that level. The

[10] For example, the OECD (2013) assumes in its cost-pressure and cost-containment scenarios that all of a one year gain in life expectancy will be spent in good health, with morbidity being pushed back a year and the period of ill health falling slightly as a proportion of total life.
[11] According to the latest ONS estimates of healthy life expectancy, the proportion of life expectancy at 65 spent in 'good' health is around 0.5. See Office for National Statistics (2016), 'Health state life expectancies, UK: 2013 to 2015', November.

sensitivity of our debt projections to different assumptions is explored from paragraph 3.122, while Chart 3.8 shows the sensitivity of our central projection for health spending:

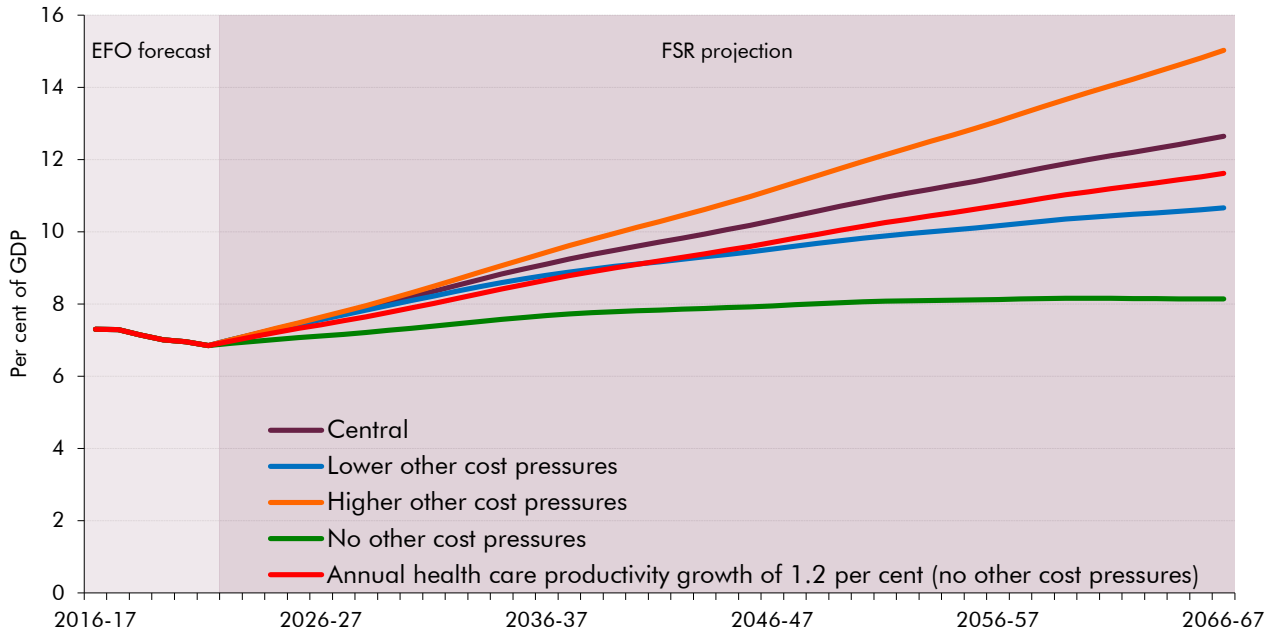
- under **'lower other cost pressures'**, we have assumed a linear convergence towards a 0.5 per cent a year increase by 2036-37 in each activity. This is lower than assumed in our central projection, but reaches steady-state over the same time period. Under this scenario, health spending reaches 10.7 per cent of GDP by 2066-67, 2.0 per cent of GDP lower than in our central projection;

- under **'higher other cost pressures'**, we have assumed a linear convergence towards a 1.5 per cent a year increase by 2036-37 in each activity. Under this scenario, health spending reaches 15.0 per cent of GDP by 2066-67, 2.4 per cent of GDP higher than our central projection; and

- under **'no other cost pressures'**, health spending follows a much flatter path over the projection horizon, reaching 8.1 per cent of GDP by 2066-67, 4.5 per cent of GDP lower than our central projection. This is the equivalent assumption to the central projections for health spending in our previous *FSRs*.

3.56 Chart 3.8 also illustrates the path of health spending under an alternative assumption that health sector productivity lags the rest of the economy and spending is increased to maintain growth in health output, but that there are no other cost pressures on top. We have tested the sensitivity of our projections to this assumption in previous *FSRs*. In particular, the long-term average rate of health sector productivity growth of 1.2 per cent a year would imply that real health spending per person would need to rise by 2.8 per cent a year to increase health output by 2.0 per cent a year (in line with real earnings growth assumed in this *FSR*).

Chart 3.8: Health care spending under alternative other cost pressure assumptions



Source: OBR

Long-term care

3.57 Spending on long-term care is expected to increase from 1.1 per cent of GDP in 2021-22 to 2.0 per cent of GDP by 2066-67 (see Table 3.7). The increase over time reflects the combination of an ageing population and reforms announced by the Government, in particular a lifetime cap on the costs that individuals should have to pay towards their long-term care, with the state paying for the costs to meet eligible needs after the cap is reached.

3.58 Projections for long-term care spending in England are provided by the Department of Health on the basis of the 2015 Spending Review settlements and Personal Social Services Research Unit (PSSRU) projections of demand for long-term care. The biggest source of change to our projections since our previous report has been to move from using PSSRU's demand-driven projections in the medium term (in the absence of detailed spending plans) to assuming levels of spending over the next five years that are consistent with the Spending Review plans and other factors affecting local government financing of social care such as the faster council tax rises announced alongside the Spending Review.

3.59 Our medium-term social care spending projection assumes that underlying local government spending on adult social care remains flat in nominal terms between 2015-16 and 2019-20. On top of that, we assume that the additional council tax raised as a result of the 2 per cent 'precept' announced alongside the Spending Review is all spent on adult social care. Additional funding through the Better Care Fund – a programme spanning both the NHS and local government – has been included in our health projections.

3.60 The Government recently announced that it will bring forward flexibility over the social care precept, so that councils can choose to raise it by 3 per cent for two years, rather than the 2 per cent for three years originally planned.[12] As this will only alter the profile of spending in the medium term, not the level it reaches in 2021-22, this announcement has no effect on our long-term projections as the starting point for them is unchanged.

3.61 Shortly after our 2015 *FSR*, the Government announced that it would delay the introduction of a cap on care costs from April 2016 to April 2020.[13] The precise details of the policy to be implemented have not yet been agreed, so in this report we have simply pushed the costs of the policy back by four years. As current policy is to implement the reforms at the same level of generosity in 2020, we have assumed that they cost the same cash amount as in our 2015 *FSR*. Taking into account updated assumptions about the population and unit costs that would imply implementing a higher cap. The long-term effect of these changes is small, with the reform still expected to increase spending by 0.3 per cent of GDP in the long term, close to previous estimates.

[12] Department for Communities and Local Government (2016), 'Dedicated adult social care funding forms key part of continued long-term funding certainty for councils', December.
[13] Department of Health (2015), 'Delay in the implementation of the cap on care costs', July.

3.62 Since our 2015 *FSR*, we have changed the methodology of scaling up the DH projections for England to the UK level by applying a time-varying uplift based on population projections, rather than past expenditure. The impact of this modelling change is small.

3.63 Our updated medium-term assumption shows long-term care spending in 2021-22 to be about 0.2 per cent of GDP lower than in our 2015 *FSR*. Over the longer term, the new population projections reduce growth in demand for social care due to the lower projected increases in the 85+ population (due to higher mortality rates at older ages), slightly offset by changes to the working-age population.

3.64 We have not made any explicit assumptions about the increased pressures on care providers resulting from the introduction of the 'National Living Wage' (NLW). A significant proportion of employees in the care sector will be affected by the above average earnings increases in the NLW between now and 2020. Our November 2016 *EFO* forecast assumed that the NLW would rise by 22 per cent from its current level of £7.20 an hour to £8.80 an hour in 2020, which compares with the 31 per cent rise in adult social care spending between 2016-17 and 2020-21 assumed in these projections.

Education spending

3.65 While education spending is a substantial component of the spending that is driven by demographics, it is not projected to be a source of spending pressure over the coming decades. Spending in 2021-22 is now consistent with the 2015 Spending Review plans up to 2019-20, beyond which we have assumed that it grows in line with our forecasts for overall government consumption and investment.

3.66 The latest population projections imply slightly higher spending growth over the long term, mainly due to higher net inward migration of young families. The 2015 Spending Review has also increased overall spending on education relative to what we assumed in our 2015 *FSR*. But that additional spending pressure is more than offset by a methodological change in PESA (2016), which means that student loans impairments are no longer classified as education spending. In our projections, this methodological change moves spending from education into 'other spending' resulting in a lower starting point than in our 2015 *FSR*.[14]

3.67 Funding for student loans is treated as a financial transaction rather than spending (because the loans themselves are financial assets for government), so is not included in the education line in Table 3.7. We discuss student loans later in this chapter.

State pensions

3.68 Spending on state pensions is projected to rise over the long term, from 5.0 per cent of GDP in 2021-22 to 7.1 per cent of GDP in 2066-67, driven largely by demographic trends.

3.69 The Government has committed to review the triple lock on uprating the state pension before the next Parliament. Since that review has not yet taken place, as in previous *FSRs* we

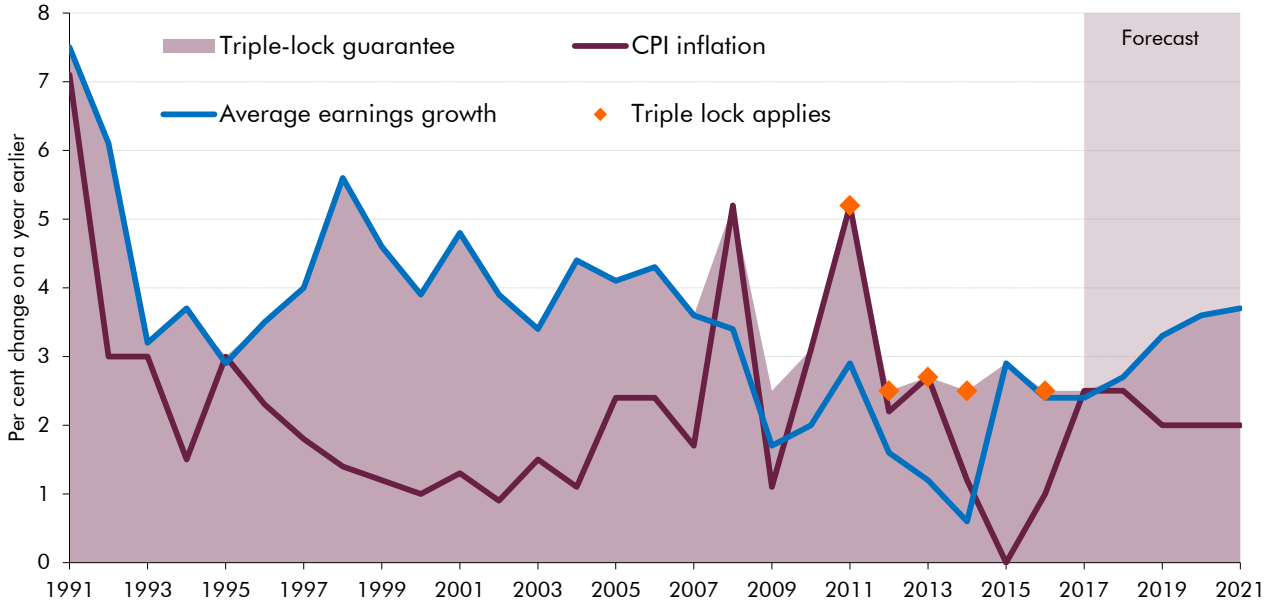
[14] See Annex E of HM Treasury (2016), 'Public Expenditure Statistical Analyses 2016', July.

assume that the basic state pension and then the single-tier pension are uprated using the triple lock. It states that the basic state pension will rise by the highest of earnings growth, CPI inflation or 2.5 per cent. We assume that it applies throughout the projection period. In our central projection, we assume that the triple lock also applies to the single-tier pension, legislated to rise by at least average earnings.

3.70 The triple lock would see pension spending rise as a share of GDP if earnings growth was higher than nominal GDP growth or if both earnings and GDP growth were low relative to CPI inflation, as we have seen in recent years. So we assume that *on average* it will push state pension awards up faster than earnings growth, which would be the highest of the three parameters in steady-state given our productivity assumption.

3.71 In this projection, the effect of the triple lock over the projection period is assumed to be equivalent to earnings growth plus 0.34 per cent a year. This figure is calculated as the average additional uprating each year if the triple lock had been applied rather than earnings from 1991 to the end of our medium-term forecast in 2021. As shown in Chart 3.9, it is in effect a weighted average of 16 years of zero premium between 1991 and 2007 (with a premium of 0.1 per cent in 1995), ten years in which the premium averaged 1.0 per cent between 2008 and 2017 (of which in five years it was actually in place, pushing state pensions spending up as a share of GDP) and four more years of zero in the remainder of our medium-term forecast period, when we assume productivity growth will recover sufficiently to keep earnings growth above CPI inflation and 2.5 per cent. The premium is also lower than our previous assumption of 0.39 per cent, reflecting slightly higher-than-forecast earnings growth in 2015, as well as extending the period being averaged by two more years where our forecast for earnings growth exceeds CPI inflation and 2.5 per cent.

Chart 3.9: Triple lock premium



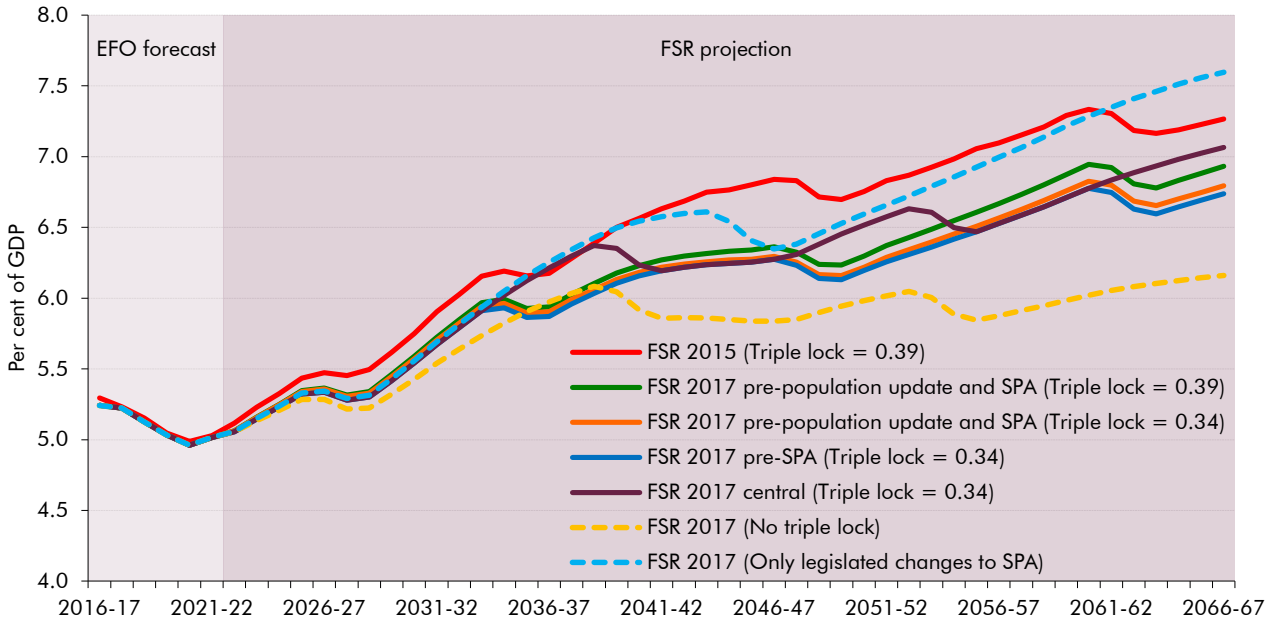
Note: these figures are used to uprate state pensions in the following financial year.
Source: ONS, OBR

3.72 In our 2015 *FSR*, our pension spending estimates included DWP's transfers to the BBC to cover the provision of free TV licences for the over-75s. In National Accounts terms, this money moves between two public sector entities, so does not affect total public spending. We therefore strip it out of our medium-term forecasts. Since our last report, the Government has announced that DWP's transfers to the BBC will stop by 2020-21. To facilitate comparisons between *FSRs*, in the rest of this section the 0.03 per cent of GDP a year of spending up to 2020-21 on free TV licences included in the 2015 *FSR* projections has been removed.

3.73 The central projections presented in Table 3.7 are based on the latest population projections and triple lock assumption. Chart 3.10 shows pensions spending projections using a variety of different assumptions. It shows:

- our **2015 central projection**, with spending on over-75s' free TV licences removed;
- our **2017 projection based on the 2012-based population projections and before changing the triple lock uprating assumption**. This shows how the downward revision to state pensions spending in our medium-term forecast, plus other modelling changes, reduces spending by 0.3 per cent of GDP in 2066-67;
- our **2017 projection based on the new triple lock assumption, but still with the 2012-based population projection**. This shows that the small downward revision to our triple lock assumption has reduced spending by 0.1 per cent of GDP by 2066-67;
- our **2017 projection under the new population projections, but without applying the longevity link to change the SPA profile**. This shows that the effect of the new population assumption lowers spending by 0.1 per cent of GDP in 2066-67;
- our **2017 central projection under the new population projections and the resulting SPA profile**. This shows that the effect of the new population projections in 2066-67 is more than offset by the effect of the new SPA path, which adds 0.3 per cent of GDP to spending in that year. The effect on spending of the longevity link on SPA changes is uneven across years, but over the very long term (beyond even our 50-year horizon) offsets around a third of the effect of changes in demographics. This was described in our July 2016 *FSAP: Population projections and pensions spending update*; and
- our **2017 projection excluding the triple lock**. This shows that the total cost of the triple lock relative to earnings uprating is estimated to be 0.9 per cent of GDP by 2066-67.

Chart 3.10: State pensions spending projections



Source: OBR

3.74 As discussed from paragraph 3.9, in this report we have not fully modelled the path of spending under the parameters that the Government has commissioned a report on, as neither is yet Government policy. But the sensitivity of our spending projections to changes in the SPA path can be illustrated using the results of our July 2016 pension spending *FSAP*. We concluded that delaying the SPA rise from 69 to 70 as a result of the applying the our existing interpretation of the third-of-life principle to the new population projections would, other things equal, add 0.3 per cent of GDP to pensions spending in 2065-66. Under our interpretation of the 32 per cent variant, we would expect the SPA to have already reached 70 at the end of the projection (rather than 69 as we currently project), therefore having an offsetting effect on spending relative to our central projection. Prior to that, SPA rises would occur earlier, also affecting the profile of spending over the projection period.

Public service pensions

3.75 Gross public service pension expenditure (i.e. before offsetting member contributions) is projected to fall from 2.1 per cent of GDP in 2021-22 to 1.3 per cent of GDP in 2066-67. To a large extent, this decline reflects reforms that have been introduced since 2010 and the reductions to the public sector workforce associated with ongoing cuts to departmental spending (although these are less severe than were factored into our 2015 projections).

3.76 Our projections for cash spending are significantly higher than in our previous report. This is mainly due to our revised workforce growth assumption. In previous *FSRs*, in the absence of detailed public spending plans beyond 2015-16 we applied a uniform assumption for medium-term growth across all pension schemes. This year we have used disaggregated figures consistent with the 2015 Spending Review settlements. We continue to assume that the public sector workforce will rise in line with total employment growth over the long term, so have revised it up from 0.25 to 0.35 per cent a year in line with higher projected overall

employment growth (see paragraph 3.37). As a result of these and other smaller modelling changes, we project spending on public service pensions to be 0.2 per cent of GDP higher in 2066-67 than in our last report.

3.77 Employee member contributions to public service pension schemes, which are treated as negative spending, are included in the 'other spending' line of Table 3.7. Contributions fall as a share of GDP over time, with net contributions moving from 1.7 per cent of GDP in 2021-22 to 0.8 per cent of GDP in 2066-67. In cash terms, member contributions are projected to be higher than in our previous projection, mainly reflecting higher assumed workforce growth.

3.78 The public service pensions line in our *EFO* forecasts also nets off employer contributions. Employer contributions are a transfer from one part of the public sector to another and are therefore fiscally neutral, showing up as positive departmental spending and negative public sector pensions spending.

Other welfare benefits

3.79 We project spending on other welfare benefits – largely working-age social security and tax credits plus the marginal saving associated with the move to universal credit – to fall from 4.5 per cent of GDP in 2021-22 to 4.3 per cent of GDP in 2066-67. Changes to our medium-term forecast since our last report imply a lower starting level than in our 2015 projections, with spending revised down by 0.3 per cent of GDP in 2021-22.

3.80 Relative to our 2015 projections, reductions in spending increase over time and stabilise at around 0.5 per cent of GDP in the early 2060s. The main explanatory factors are:

- an increase in spending on **disability benefits** averaging about 0.2 per cent of GDP over the projection, reflecting a higher proportion of the population expected to be in receipt of such benefits and higher average awards among them; and

- a more than offsetting effect from **cuts to working-age welfare spending** announced in the four Budgets and Autumn Statements since our last report, with the biggest contributions coming from the 4-year cash freeze in uprating most working-age benefits and tax credits and cuts to the generosity of universal credit.

3.81 The relatively flat profile of other welfare benefits reflects our assumption that most working-age benefits will essentially move in line with the share of the population that is of working age. The revision to our employment growth assumption has also affected these projections, with the employment rate higher and inactivity rate lower than in our 2015 projections. A disaggregation of these projections by type of benefit is available on our website.

Other spending

3.82 Other non-age-related spending includes spending on items such as defence and transport, where we do not assume age-specific profiles. We assume that spending on such items is constant as a share of GDP from 2022-23 onwards. The medium-term path for implied

departmental spending is higher than in our previous projections, reflecting the 2015 Spending Review. That in turn translates into a higher amount of spending on debt interest.

3.83 The 'other spending' category also includes write-offs on student loans, which only affect spending once they crystallise. Under the current student loans system, debts unpaid after 30 years will be written off, and so increase spending at that point. We project that this will increase write-offs from small amounts at present to around 0.3 per cent of GDP from the mid-2040s. That figure is higher than in our 2015 *FSR* due to new policies, as set out in our July 2016 *Fiscal sustainability analytical paper: Student loans update*.

Receipts

3.84 As with spending, the revenue projections from 2021-22 presented in Table 3.9 reflect changes in the absolute size and age composition of the population. Non-interest revenues are projected to be relatively flat at 36.6 per cent of GDP on average over the projection period. This profile depends crucially on our assumption that tax allowances and thresholds are uprated in line with earnings rather than prices over the longer term. Other things equal, an ageing population may be expected to lead to a modest increase in the receipts-to-GDP ratio, as older groups usually continue to pay income tax (on pensions), VAT, capital taxes and council tax, even though they are not directly contributing to GDP via earnings.

3.85 Compared to our 2015 projections, receipts are around 0.7 per cent of GDP higher across the projection. That reflects the net effect of downward revisions to income and capital taxes that are more than offset by upward revisions to VAT, corporation tax and other receipts. These relate almost entirely to changes in our medium-term forecast that affect the starting point for the projections:

- **income tax** is 0.8 per cent of GDP lower. This is mainly driven by a lower effective tax rate on earnings in our medium-term forecast. The new population projections have a small negative effect, while the upward revision to employment growth has had a broadly neutral effect (increasing both income tax receipts and GDP);

- **National Insurance contributions** (NICs) are little changed as a share of GDP. Although the number of working-age people has been revised up in the new population projections, the increase was concentrated in the age brackets that are less tax-rich. Most notably, the proportion of the working-age population in the 36-55 age bracket has been revised down in most years (see also Chart 3.4). As people above the SPA do not pay employee NICs, the change in the SPA path that brings forward the time from which people can retire also reduces the amount raised via NICs;

- **capital tax receipts** are 0.1 per cent of GDP lower, although they are still expected to rise in the medium and longer term. The near-term profile reflects changes in asset prices – for example, house prices are assumed to rise faster than earnings in our medium-term forecast. Over the longer term, capital taxes are also affected by the ageing of the population, as those nearing or in retirement are assumed to sell businesses and other financial assets;

- **VAT receipts** are 0.3 per cent of GDP higher. Stronger-than-expected receipts and the correction of a modelling error identified in our 2015 *Forecast evaluation report* led us to revise up our medium-term forecast;

- **corporation tax receipts** are 0.2 per cent of GDP higher. Again, stronger-than-expected receipts led us to revise up our medium-term forecast; and

- a bigger increase of 1.1 per cent of GDP on average in **other receipts**. Our medium-term forecast has been revised up due to the imposition of new taxes – the apprenticeship levy and soft drinks industry levy are together worth around 0.1 per cent of GDP by 2021-22 – and the reclassification of housing associations to the public sector, which adds 0.3 per cent of GDP to receipts in 2021-22. Other notable sources of upward revision include council tax, insurance premium tax (reflecting the doubling in the tax rate) and environmental levies.

Table 3.9: Non-interest receipts projections

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Income tax	8.9	9.0	9.0	9.0	9.0	9.1	9.1
NICs	6.4	6.5	6.4	6.3	6.3	6.3	6.3
Corporation tax	2.4	2.3	2.3	2.3	2.3	2.2	2.2
VAT	6.1	6.3	6.3	6.4	6.4	6.4	6.3
Capital taxes	1.4	1.6	1.7	1.7	1.7	1.7	1.7
Other receipts	10.9	10.8	10.9	10.9	11.0	11.0	10.9
Receipts[2]	**36.1**	**36.6**	**36.6**	**36.6**	**36.6**	**36.7**	**36.6**

[1] Receipts consistent with the November 2016 *Economic and fiscal outlook*.

[2] Excludes interest and dividends.

Table 3.10: Changes in non-interest receipts projections since *FSR* 2015

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Income tax	-0.4	-0.7	-0.8	-0.8	-0.8	-0.8	-0.8
NICs	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Corporation tax	0.1	0.2	0.2	0.2	0.2	0.2	0.2
VAT	0.1	0.3	0.3	0.3	0.3	0.3	0.3
Capital taxes	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2
Other receipts	0.7	1.1	1.1	1.1	1.1	1.1	1.1
Receipts[2]	**0.5**	**0.8**	**0.8**	**0.7**	**0.7**	**0.7**	**0.7**

[1] Receipts consistent with the November 2016 *Economic and fiscal outlook*.

[2] Excludes interest and dividends.

3.86 In our long-term projections, the profile for receipts is generated using age profiles that capture the effects of ageing. We do not adjust our projections for the large number of possible non-demographic factors that are likely to affect receipts over time. In past *FSRs*,

we have explored a number of these issues, some of which have also featured in our medium-term forecasts. These have included:

- the **structure of the tax system** and its interaction with long-run trends. We look at the implications of fiscal drag on the income tax and NICs regimes in paragraph 3.18;
- **technological developments** could affect fuel duty as innovation improves fuel efficiency and reduces the demand for fuel and hence fuel duty receipts;
- **long-term behavioural change** may affect taxes such as tobacco and alcohol duties. Other taxes (e.g. landfill tax, carbon price floor) are designed to discourage particular behaviour, so if successful in changing behaviour would generate less revenue;
- **globalisation** could affect taxes such as corporation tax and VAT. Increased mobility of capital could affect decisions by multinationals on where to declare profits, while VAT could be affected by changing consumption patterns or relative prices;
- **oil and gas revenues** are likely to be affected as production continues its long-run decline. The path of revenues will be dependent on volatile oil and gas prices but we expect declining production from the UK Continental Shelf as it moves towards its ultimately recoverable capacity;
- **compliance with the tax system** can affect the sustainability of revenues; and
- the **structure of the economy** will affect the tax richness of activity. This could reflect changes in the sectoral splits of industry, trends in the labour and capital shares of national income and the structure of the labour market.

The implications for the public finances

The central projections

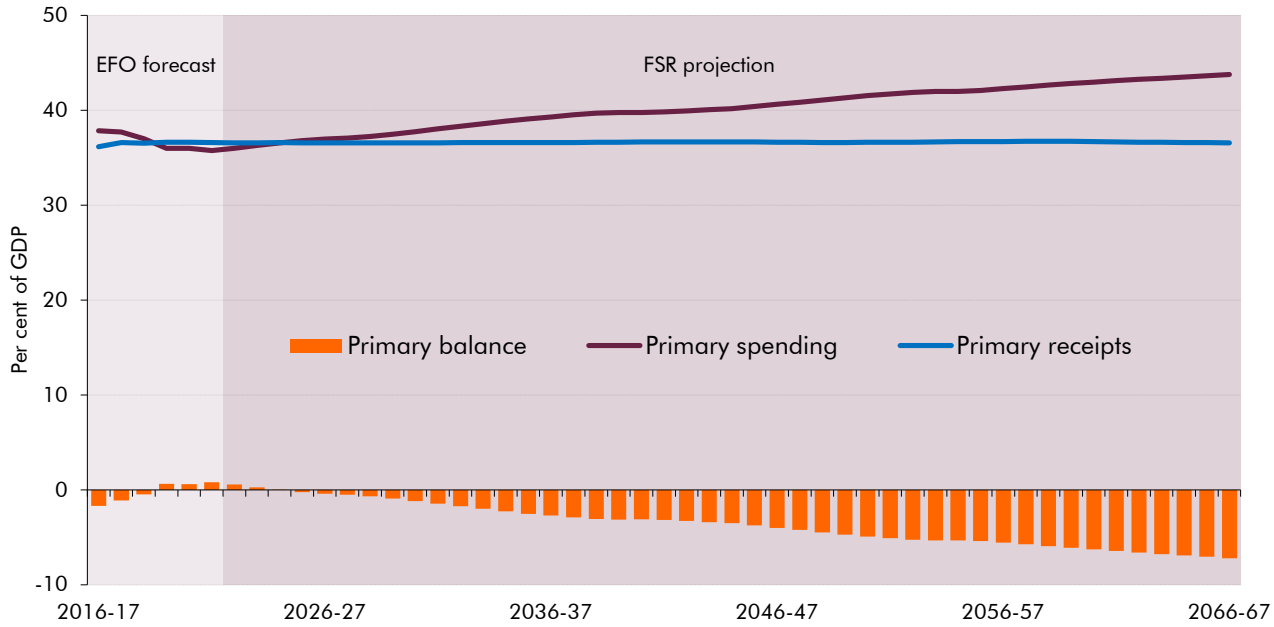
Primary balance

3.87 Our central projections show public sector non-interest spending increasing as a share of GDP beyond the medium-term forecast horizon, quickly rising towards and then exceeding non-interest receipts. As shown in Chart 3.11, the primary balance (the difference between non-interest or 'primary' receipts and spending) is projected to move from a surplus of 0.8 per cent of GDP in 2021-22 to roughly zero in the mid-2020s and then to a deficit of 7.2 per cent of GDP in 2066-67.

3.88 That overall deterioration of 8.0 per cent of GDP is equivalent to £156 billion in today's terms. Of that, 4.5 per cent of GDP (£88 billion) reflects our new assumption about additional non-demographic cost pressures pushing up growth of health spending. In addition, primarily demographic pressures cause the primary balance to deteriorate by about 3.5 per cent of GDP or £68 billion in today's terms.

3.89 In effect, we project that over the best part of five decades these pressures together would reverse most of the improvement to the primary balance of 9.4 per cent of GDP that we expect to see between 2009-10 and 2021-22, which includes the reversal of the Labour Government's fiscal stimulus package followed by the fiscal consolidations of the Coalition and then Conservative Governments.

Chart 3.11: Non-interest receipts and spending and the primary balance



Source: OBR

Student loans and other financial transactions

3.90 In order to see how this projected deterioration in the primary balance would feed through to public sector net debt, we also need to take into account future financial and other transactions. These affect net debt via their effect on the government's cash requirement, even though they do not affect public sector net borrowing.

3.91 For the majority of financial transactions we assume that there is a net zero effect over the projection period, with the main exception being student loans. We also allow for the winding down of Bradford & Bingley (B&B) and NRAM plc, historic gilt premia and the Asset Purchase Facility (APF) including the recent package of measures announced in August 2016 to provide additional monetary stimulus. These measures included further gilt purchases, the new 'Term Funding Scheme' to offer funding to UK banks and building societies (assumed to be redeemed before the end of the medium-term forecast) and the 'corporate bond purchase scheme' to purchase up to £10 billion of sterling non-financial investment-grade corporate bonds.

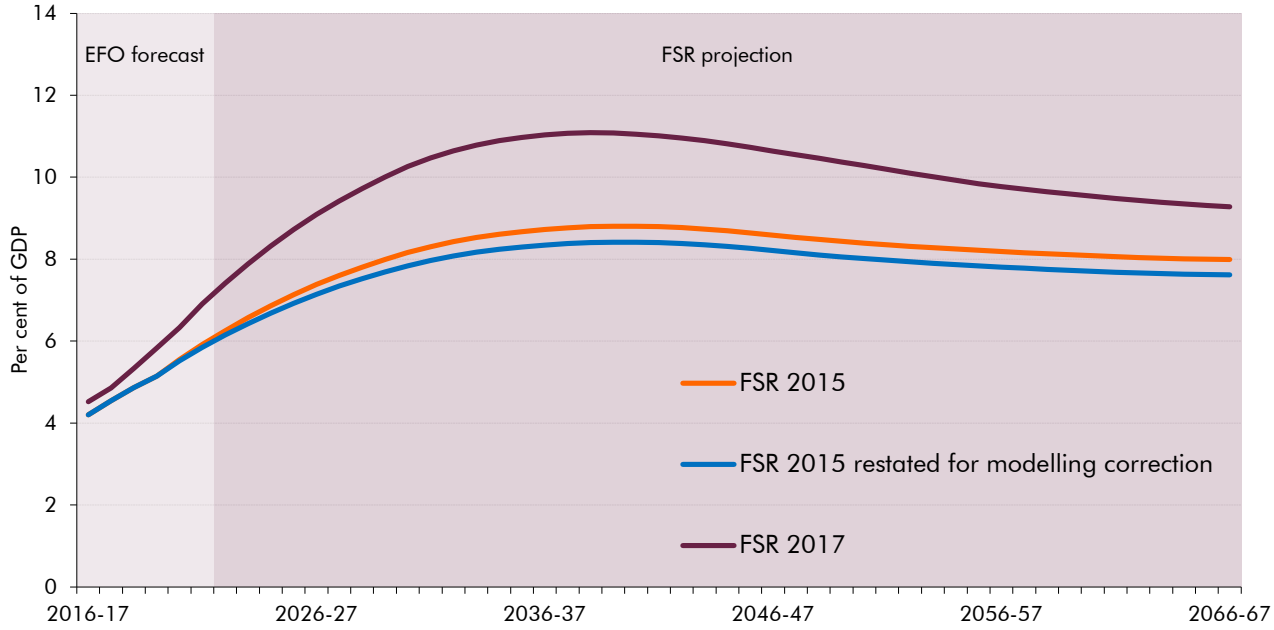
3.92 A number of accounting rules affect net borrowing, but not net debt, and so we have also introduced some accruals adjustments to offset these. (Projections for these other financial transactions are available in the supplementary tables on our website.)

3.93 At Autumn Statement 2013, the Government announced its intention to sell part of the student loan book, which at the time it expected would raise around £12 billion over five years from 2015-16. Selling the loan book affects the flow of cash to the Exchequer, with more recorded upfront as sales proceeds, and less in future years, as future loan repayments will flow to the private sector instead. In effect this crystallises losses on the loans sold: the level of debt is permanently higher relative to no loans having been issued, because sale prices will reflect the interest rate and write-off subsidies implicit in student loans. Our latest medium-term forecast assumes that sales will not start until 2017-18, but that they will still amount to £12 billion in total.

3.94 Chart 3.12 shows our latest projections for the addition to net debt from student loans, reflecting loans issued, cash payments of interest and principal and the proceeds from loan sales. Projections for English loans have been modelled bottom-up, and we assume that other loans and repayments grow broadly in line with English flows. As explained in our *Student loans update*, the biggest factor explaining the upward revision to this projection is the net effect of a significant number of new student loans policies announced over the past two years. Most of the previous grant-funding has been converted into lending (e.g. for nurses), while eligibility has been broadened (e.g. for postgraduate courses). The Government has also changed repayment terms for some graduates, increasing future repayments. The net effect has been to push the peak effect on net debt up to 11.1 per cent of GDP in the late-2030s. By 2066-67, the addition to net debt is projected to fall back slightly to 9.3 per cent of GDP.

3.95 We have also made a modelling correction as previously our medium-term assumptions had not been reflected correctly in the long-term projections. The main effect of that was to underestimate future repayments and overstate the addition to net debt by 0.5 per cent of GDP on average. Chart 3.12 shows our 2015 projection restated for this correction. Relative to that restated projection, the peak effect on debt in our latest projection is 2.7 per cent of GDP higher – and comes a little earlier. It remains 1.7 per cent of GDP higher in 2066-67. These figures are lower than those presented in last year's *Student loans update* due to changes in our medium-term forecast – e.g. due to lower student numbers – and some other small modelling changes.

Chart 3.12: Additions to net debt from student loans



Source: OBR

Public sector net debt and net interest

3.96 With a projection of financial transactions, we can now project public sector net debt and net interest. Interest receipts that are netted off include the accrued interest on student loans, although as an accrued measure it does not directly affect net debt.

3.97 Relative to our 2015 *FSR*, our medium-term forecasts for net interest have been revised down, mainly as a result of lower debt interest payments following further falls in government bond yields. In 2021-22, net interest is about 0.2 per cent of GDP lower than in our 2015 *FSR,* but the deterioration in the primary balance has more than offset this improvement. That means that there is an overall deficit of 0.7 per cent of GDP in 2021-22 – the end of our latest medium-term forecast, but the second year of the demographically driven projections in our previous *FSR* – rather than the small surplus shown in our 2015 *FSR* projections.

3.98 The stock of debt is higher at the end of the medium-term forecast than we projected in 2015 and it rises faster. Together with our assumption that the low interest rates prevailing at the end of the medium-term forecast will rise to 4.9 per cent by 2036-37, the medium-term reduction in interest payments soon reverses. Net interest is 0.1 per cent of GDP lower than in our previous report by 2026-27, but about 2.4 per cent of GDP higher in 2046-47 and 6.0 per cent of GDP higher by the end of the projection. Those big changes reflect the debt interest that would be paid due to the higher primary deficit, in turn due to our new assumption that non-demographic pressures will push up health spending on top of the demographic pressures previously factored in to our central projections.

3.99 Interest and dividend receipts have also been revised down due to lower interest rates and financial asset sales reducing the stock of assets on which government earns a return.

3.100 As Table 3.11 shows, the combined effect of a bigger primary deficit and much higher net interest costs causes the deficit to move above 10 per cent of GDP by the early 2050s and 15 per cent by the early 2060s. Outside wartime, the UK has only run a deficit in excess of 10 per cent of GDP in one year: 2009-10 as a result of the financial crisis. In reality, a government could not run such large deficits over such a sustained period – policy would have to change to ensure that the deficit could be financed. That highlights the difference between long-term projections, which illustrate the path of borrowing and debt on the basis of a set of conditioning assumptions to identify whether certain pressures will need addressing over time, and forecasts that attempt to say what *will* happen in the future. In Chapter 4 we illustrate some of the ways that the 'fiscal gaps' implied by our latest projections might be closed.

Table 3.11: Central projections of fiscal aggregates

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Primary spending	37.8	35.8	37.0	39.3	40.6	42.3	43.8
Primary receipts	36.1	36.6	36.6	36.6	36.6	36.7	36.6
Primary balance	-1.7	0.8	-0.4	-2.7	-4.0	-5.6	-7.2
Net interest	1.8	1.6	1.6	3.1	4.5	6.6	9.4
Total managed expenditure	39.9	37.8	39.3	43.5	46.4	50.1	54.4
Public sector current receipts	36.4	37.1	37.3	37.8	37.9	38.0	37.8
Public sector net borrowing	3.5	0.7	2.0	5.8	8.5	12.2	16.6
Public sector net debt	87	82	78	92	125	172	234

[1] Estimates are consistent with the November 2016 *Economic and fiscal outlook*.

Table 3.12: Changes in the central projections of fiscal aggregates since *FSR* 2015

	Per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Primary spending	1.9	2.0	2.2	3.2	3.4	4.5	5.9
Primary receipts	0.5	0.8	0.8	0.7	0.7	0.7	0.7
Primary balance	-1.4	-1.1	-1.4	-2.5	-2.7	-3.8	-5.2
Net interest	0.1	-0.2	-0.1	1.3	2.4	4.0	6.0
Total managed expenditure	1.8	1.7	2.1	4.8	6.1	8.7	12.2
Public sector current receipts	0.4	0.7	0.7	0.9	1.0	1.0	1.0
Public sector net borrowing	1.5	1.0	1.4	3.9	5.2	7.7	11.2
Public sector net debt	8	15	20	37	63	98	143

[1] Estimates are consistent with the November 2016 *Economic and fiscal outlook*.

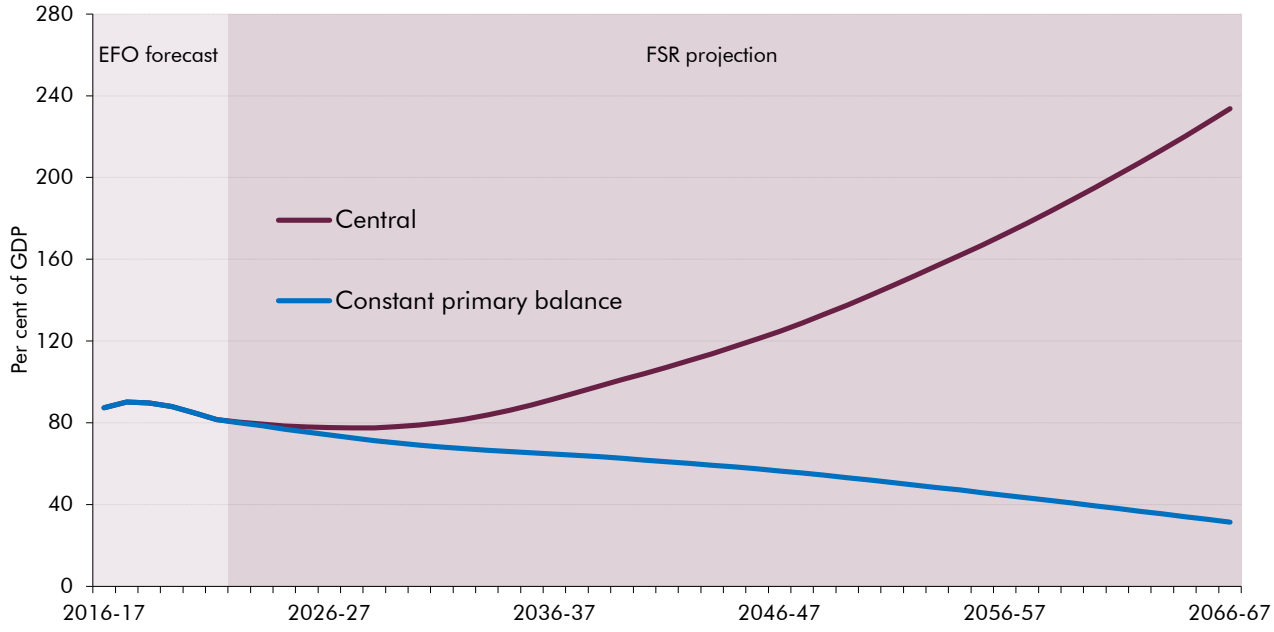
3.101 Charts 3.13 and 3.14 show the paths of public sector net debt and net interest as a share of GDP in our central projection, comparing them to their paths if the primary balance were to remain constant at its 2021-22 level.

3.102 Our central projection of public sector net debt falls from its peak of around 90 per cent of GDP in 2017-18 to around 78 per cent of GDP in the mid-2020s, before rising to 234 per

cent of GDP after 50 years. The inclusion of other cost pressures in our long-term health spending projection accounts for the majority of the increase (see Box 3.1). Excluding these cost pressures from our central projection, our projection of public sector net debt would reach 133 per cent of GDP by 2066-67. Over the comparable 50-year period, our 2015 *FSR* projections showed debt peaking at almost 80 per cent of GDP in 2014-15, bottoming out at around 54 per cent and then rising to 91 per cent of GDP in 2066-67. (We have rolled forward those projections by two years to facilitate comparisons between reports.)

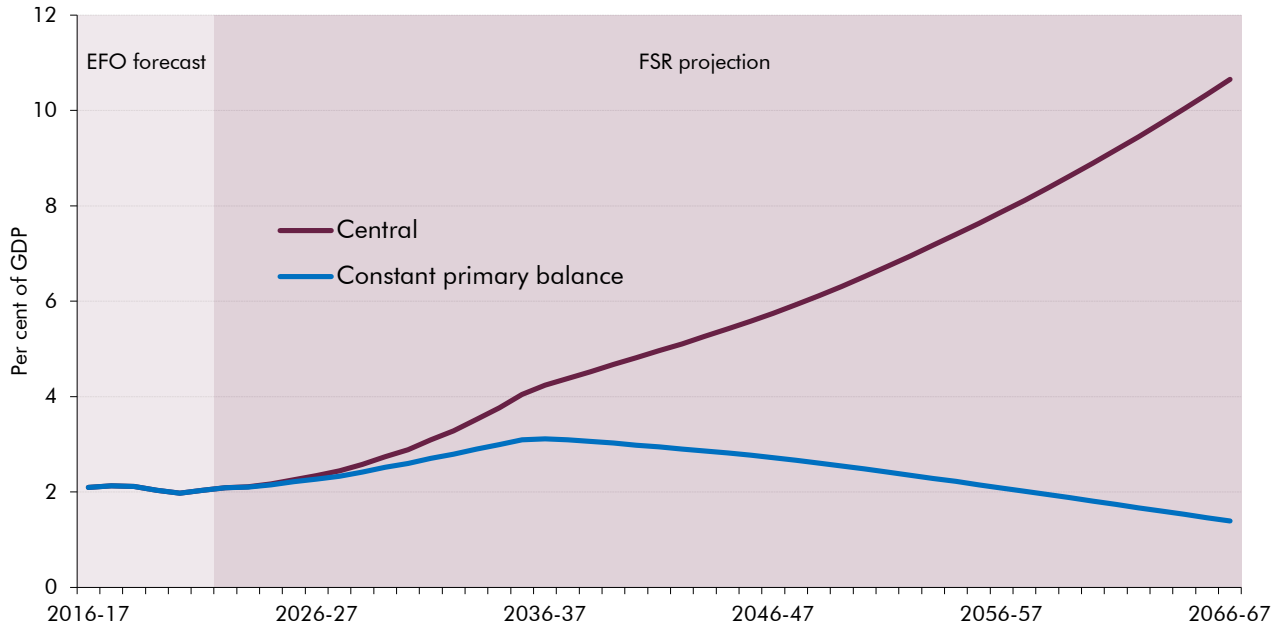
3.103 If the primary surplus remained constant at 0.8 per cent of GDP, net debt would only return back to the pre-crisis levels of around 40 per cent of GDP by 2060-61. But in our central projection, longer-term spending pressures, if unaddressed, would put the public finances on an unsustainable path. Public sector net debt would be close to the historical peak of public debt after World War II – and still be rising – at the end of the projections. We quantify this 'unsustainability' more formally in Chapter 4. However, as we always stress, there are huge uncertainties around projections over this time horizon. Below we examine how sensitive our latest projections are to some of the key assumptions we have made. Before turning to the sensitivity analysis we explain the factors driving the change in our projections compared to our previous report.

Chart 3.13: Projections of public sector net debt



Source: OBR

Chart 3.14: Projections of interest payments



Source: OBR

Box 3.2: Public sector net financial liabilities

At Autumn Statement 2016 the Government asked us to forecast two new balance sheet metrics: PSND excluding the Bank of England and public sector net financial liabilities (PSNFL), a broader measure covering all the public sector's financial assets and liabilities recorded in the National Accounts. PSNFL is described in detail in Annex C of our November 2016 *EFO*.

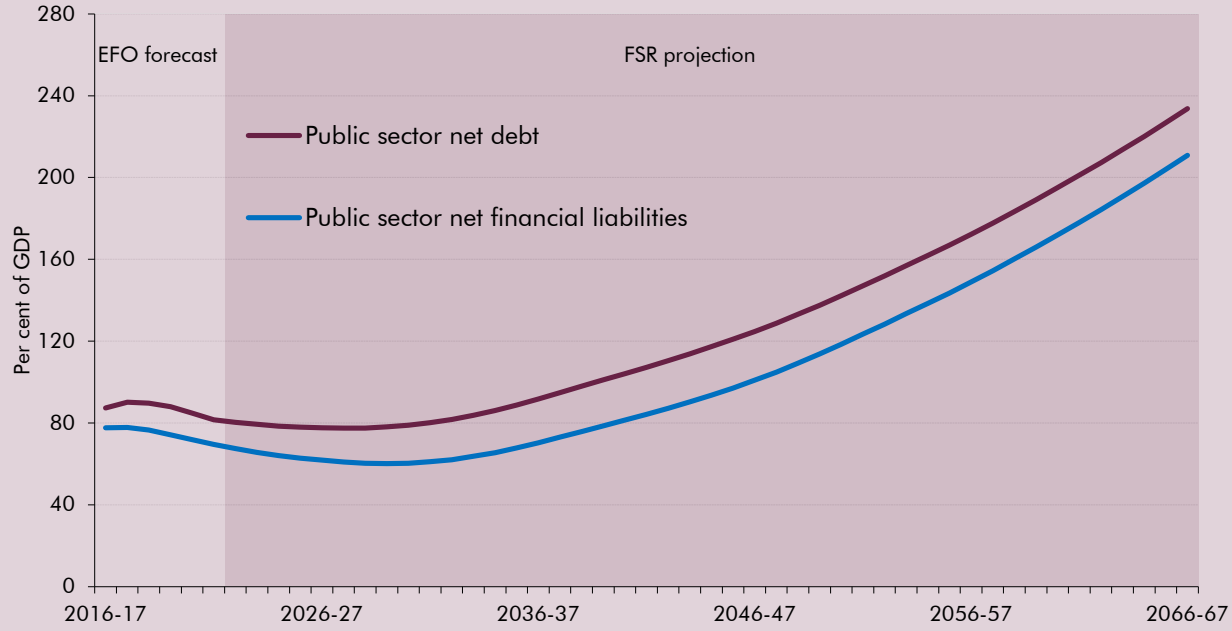
The measures of PSND with and without the Bank of England were already converging in our medium-term forecasts as the assets in the Term Funding Scheme were run off. Over the longer term this continues as the Bank's gilt and corporate bond holdings are assumed to run down.

For PSNFL we produce a long run projection by adjusting PSND to include those assets and liabilities not recognised in PSND. Where assets or liabilities are not being run up or down in the medium term, notably RBS shares and other equity and liabilities to the IMF, we grow these in line with GDP. Where they are being run down, such as UKAR assets or the liabilities for funded pension schemes, we run them off completely. We also run off the Bank's Asset Purchase Facility assets as described in paragraph 3.91. The stock of loans held by the government equals 10.9 per cent GDP in 2021-22. This rises to more than 21 per cent of GDP by the mid-2040s as new loans and accruing interest outweigh repayments of principal and cash interest. After this, loans stabilise as government begins to write off post-2012 student loans. The total stock of loans is estimated to remain around 21 per cent GDP in 2066-67, of which most are student loans.

Chart B shows our projections for PSNFL compared to PSND. As with our medium-term forecasts we estimate the additional assets to be greater than the liabilities, so PSNFL is lower than PSND in all years. Most of the difference comes from loan assets, which explain the vast majority of the 23 per cent GDP difference between the measures in 2066-67. As the stock of loans increases

up to the mid-2040s, PSNFL and PSND diverge slightly, but as the stock of loans then stabilises the two measures run roughly parallel from then onwards.

Chart B: Public sector net financial liabilities and public sector net debt



Source: OBR

Changes since the 2015 *FSR* projections

3.104 Chart 3.15 provides a stylised decomposition of the changes in the primary balance over the projection period relative to our 2015 *FSR*, while Chart 3.16 shows the impacts on debt. Table 3.13 shows a more detailed split for the first and final years of the projection and the impact on debt by the end of the period.

3.105 Before turning to the explanation, it is worth noting that when decomposing the effects of large changes that interact with each other in a multiplicative way, it is not possible to present simple additive diagnostics. We have ordered and allocated the decomposition in the tables and charts in this section in the way that we feel most usefully describes the changes that we have made, but it should be noted that applying the assumptions in a different order would yield different results. The residual interaction terms have been grouped in the 'Other modelling assumptions' line of the table.

3.106 The main sources of changes to our projections relative to our 2015 *FSR* are:

- **classification changes** to housing associations, which have been reclassified to the public sector, worsen the primary balance and increase debt. We assume that their primary deficit is constant as a share of GDP from 2021-22 onwards, which leads to an increasing impact on debt;

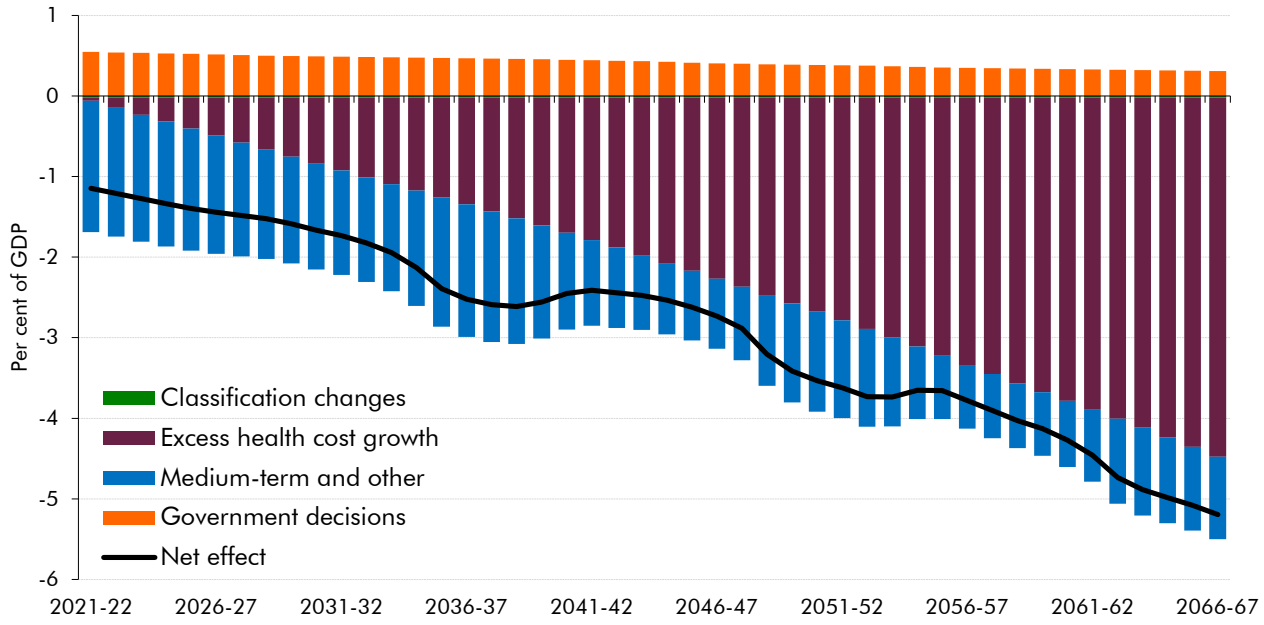
- including **other cost pressures in the health sector** has had the largest effect on the primary deficit, increasing it by 4.5 per cent of GDP by the end of the projection period. This adds 89 per cent of GDP to debt by 2066-67;

- the downward revision to trend productivity growth in our March 2016 *EFO* and November 2016 *EFO* led to a significant deterioration in our **underlying medium-term forecast** for the primary balance due to its effect on household incomes, consumer spending and company profits. Assuming this remains constant at 1.6 per cent of GDP, this add 54 per cent of GDP to our projection of debt in 2066-67;

- the **total effect of the Government's policy decisions** over the four Budgets and Autumn Statements that have taken place since our 2015 *FSR* has been to improve the primary balance in the last year of our medium-term forecast and by diminishing amounts over the long-term projection period. This effect is driven by cuts to working-age welfare spending and net tax rises that more than offset the net increase in other spending. The Spending Review allocated a higher share of spending to health, which means that the improvement in the primary balance due to Government decisions diminishes over time due to the pressures of an ageing population and other non-demographic cost pressures on that higher health spending. Together these policy decisions partly offset the increased debt projection from other causes; and

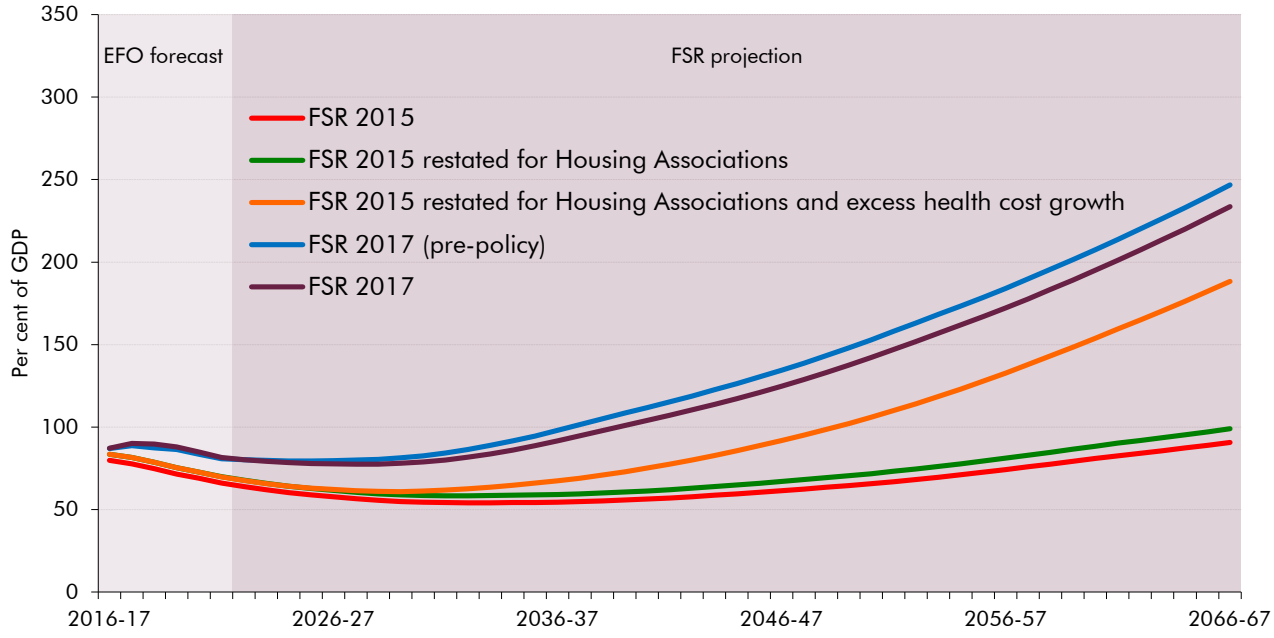
- all **other modelling assumptions** have a small net impact. This includes the impact of switching to the new 2014-based ONS population projections, which has small and uneven effects on the primary balance, and the knock-on effect to the assumed path of future SPA rises via the longevity link, which reduces the amount of state pensions spending that would otherwise have been saved due to higher assumed mortality rates. This line also includes the effect of our new morbidity assumption on health spending and changes to our employment growth assumption on working-age welfare spending. Any interactions between changes are also captured here.

Chart 3.15: Decomposition of changes in the primary balance since *FSR* 2015



Source: OBR

Chart 3.16: Decomposition of changes in the net debt projection since *FSR* 2015



Source: OBR

Table 3.13: Changes in the primary balance and net debt since *FSR* 2015

	Primary balance 2021-22	Primary balance 2066-67	Net debt 2066-67
FSR 2015	**2.0**	**-2.0**	**91**
Housing Associations reclassification	0.0	0.0	8
Excess cost growth applied after 2021-22 to health spending assumption	0.0	-4.5	89
FSR 2015 restated post-reclassifications and excess health cost growth	**1.9**	**-6.5**	**188**
Weaker medium-term forecast on a pre-measures basis	-1.6	-1.6	54
Other modelling assumptions	0.0	0.6	4
Total pre-policy measures changes	**-1.6**	**-1.0**	**58**
FSR 2017 pre-policy measures	**0.3**	**-7.5**	**247**
Health	-0.3	-0.7	17
Receipts	0.8	0.8	-26
Welfare	0.6	0.6	-21
Other spending	-0.5	-0.4	17
Total policy-related changes	**0.5**	**0.3**	**-13**
FSR 2017	**0.8**	**-7.2**	**234**
Memo: Breakdown of health spending policy change effect:			
Health spending policy changes excluding excess cost growth	*-0.3*	*-0.4*	
Excess cost growth on higher health spending	*0.0*	*-0.3*	

3.107 We have not attempted to quantify the impact of Brexit on the change in the projections since the 2015 *FSR*, as we did in the November *EFO* for changes in our medium-term forecast since March. Qualitatively, our November judgements about Brexit explain some of the underlying deterioration in the medium-term jumping-off point since our March 2015 *EFO*, while net migration being lower than would otherwise have been the case would push debt higher. The downward revision to our long-term productivity growth assumption is not a Brexit-related judgement, although given the way our long-term projections are produced, any changes would affect both numerator and denominator in the debt-to-GDP ratio, so would have little effect on the fiscal projections.

3.108 Our long-term projections do not assume the crystallisation of any of the contingent liabilities that the Government has accumulated over the recent past. In isolation, each contingent liability is judged to have a less than 50 per cent probability of being called, but it is certainly possible that some will crystallise over the longer term. We will explore this possibility further in our first *Fiscal risks report* later this year.

Sensitivity analysis

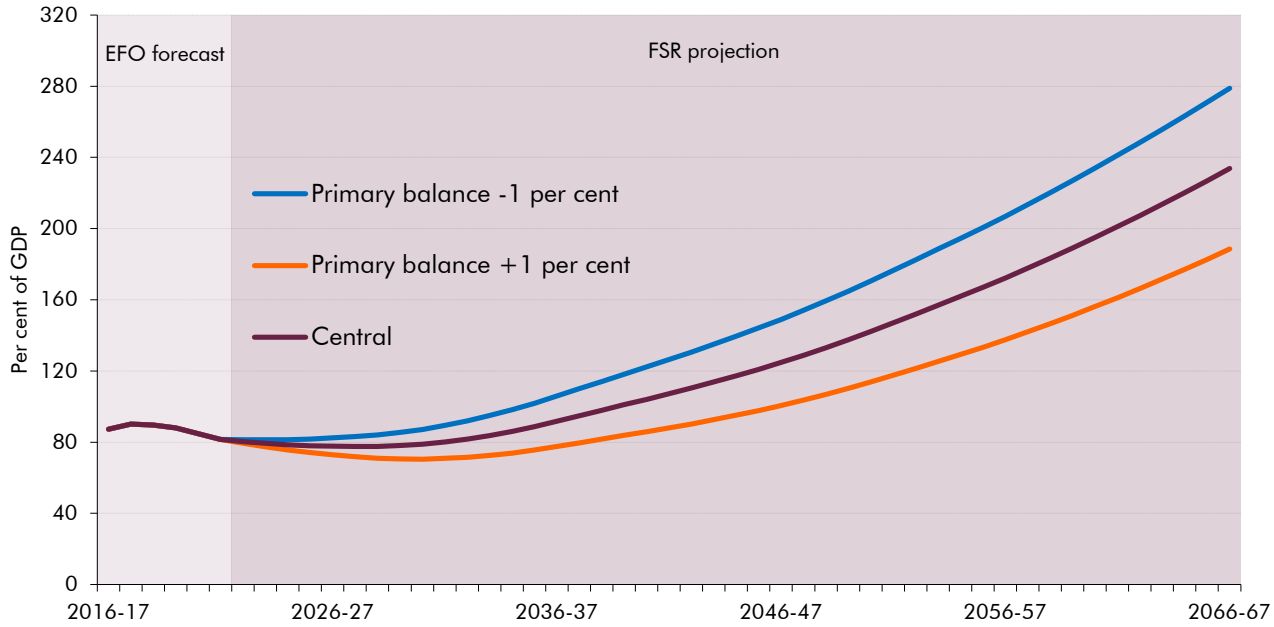
3.109 This section analyses the sensitivity of our central projections to the medium-term fiscal position and to our key demographic, health spending and economic assumptions.

Sensitivity to the medium-term primary balance

3.110 Our November 2016 *EFO* forecast for 2021-22 is the starting point for our long-term projections. The gap between spending and receipts at that point is locked into the long-term projections, as we assume that the economy is operating at trend thereafter.

3.111 Chart 3.17 illustrates the sensitivity to the primary balance from 2022-23 onwards. If the balance was worse by 1 per cent of GDP, then by the end of the period net debt would increase to 279 per cent of GDP rather than the 234 per cent of GDP in our central projections. Conversely, a structural primary balance that was 1 per cent of GDP better would see debt fall to around 70 per cent of GDP before beginning to rise again.

Chart 3.17: Sensitivity of net debt projections to the primary balance in 2022-23



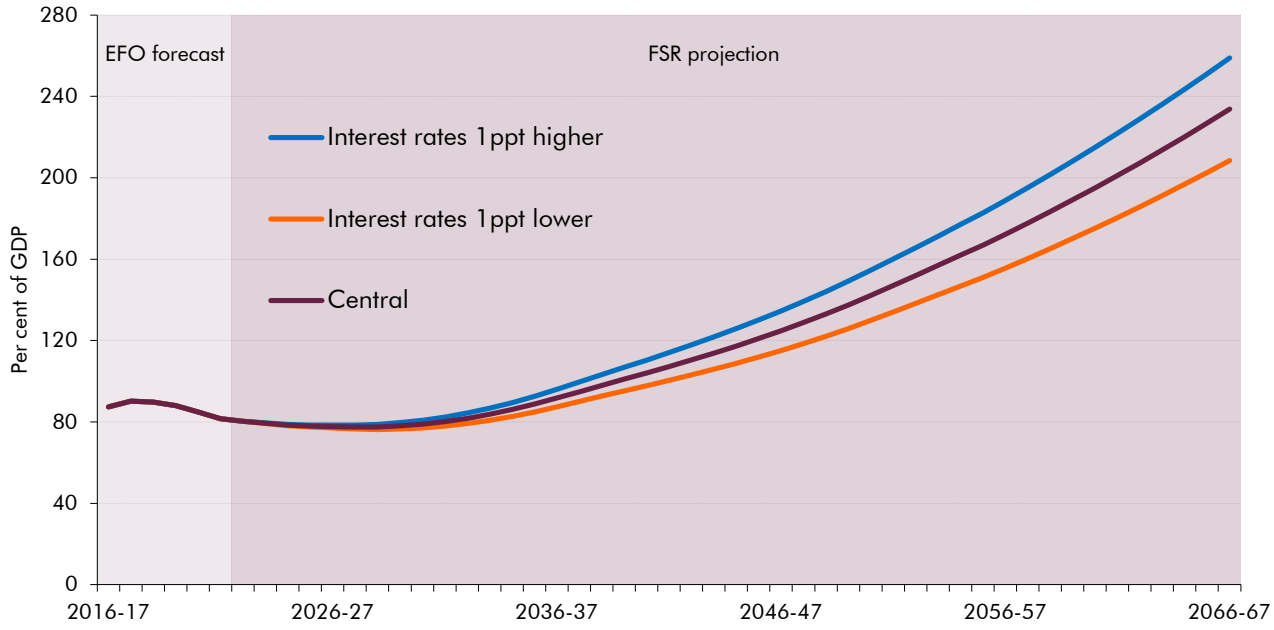
Source: OBR

Sensitivity to interest rates and growth

3.112 Another key assumption is that the interest rate the government pays on its newly issued debt gradually rises to 4.9 per cent in the long term, slightly above the rate of nominal GDP growth. Rather than the level of either, it is the gap between the two that is a key determinant of long-run debt dynamics. Our projected interest rates are higher than market expectations currently imply over the long term. But gilt rates could end up higher than assumed, for example if demand for safe assets was to fall if economic uncertainty receded. There is also uncertainty surrounding our central GDP growth projection.

3.113 Chart 3.18 illustrates the path of net debt if gilt rates were 1 percentage point higher or lower from 2022-23 onwards, but GDP growth remained the same. Over a short time horizon, the impact is relatively small, as changes would only apply to new debt issuance and the UK has a relatively long average debt maturity. But as the stock of debt matures, and the primary balance deteriorates, the effects would increase. A 1 percentage point change in interest rates in the long term would add or subtract around 25 per cent of GDP to net debt over 50 years, with debt climbing more steeply or slowly thereafter.

Chart 3.18: Sensitivity of net debt projections to interest rates



Source: OBR

Sensitivity to demographic assumptions

3.114 Table 3.3 outlined the alternative population assumptions produced by the ONS, while Chart 3.5 showed our associated employment projections. The sensitivity of our results to these assumptions is presented in Table 3.14, which shows the differences in non-interest receipts and spending compared to our central projection, and in Chart 3.19, which shows the impact on public sector net debt.

3.115 The demographic variants we use are the ONS 'young age structure' and 'old age structure' scenarios. We also show the ONS migration variants – 'high migration' and 'low migration'. As Box 3.3 of our 2014 *FSR* illustrated, net migration has proved one of the biggest sources of errors in recent population projections. In the year to June 2016, net migration reached 335,000, which is considerably above even the high migration variant, let alone the principal and low migration variants. Uncertainty over prospects for net migration may currently be even greater following the UK vote to leave the European Union.

3.116 The old age structure scenario combines lower fertility and higher life expectancy with lower net migration than under our central projection. Linking SPA changes to life expectancy would imply that successive increases would be necessary in the 2030s in order to catch up to the third-of-adult-life principle, and that the SPA would rise to 74 by the end of our projection period. Our assumptions on the labour market response to SPA changes would imply a higher employment rate for relevant cohorts than in our central projection. We also assume that being in employment does not affect demand for public services, so that spending per person of a given age and gender is unchanged.

3.117 Given the lower fertility, spending on education would be lower, while the SPA rises would mean welfare payments to pensioners (mainly state pensions) would be lower as a share of

GDP compared to our central projection. However, the relative improvement would eventually dissipate, as costs associated with ageing became larger, and debt would consequently rise faster from a lower level. The primary deficit would be bigger than in our central projection in 50 years and net debt would be higher. In effect, extending working lives over this period would be a partial down-payment on a higher public services bill in the very long term.

3.118 The young age structure scenario combines a high migration assumption with lower life expectancy and higher fertility to yield a larger working-age population. This boosts receipts growth, with receipts rising gradually as a share of GDP and reaching a level higher than in our central projection. Although the increase in the number of children adds to education costs, and working-age benefits also rise, total spending is lower, in line with reduced pressures on health, long-term care and pensions. The primary deficit is under 5 per cent by the end of the projection period and so net debt is lower as a share of GDP, although it still reaches 192 per cent of GDP by 2066-67.

3.119 The migration scenarios illustrate that inward migration reduces upward pressure on debt over our 50-year projection period. Inward migrants are assumed to be more concentrated among those of working age than the population in general, therefore reducing the dependency ratio slightly. We discussed the impact of net migration on our long-term projections – and the simplifying assumptions on which that impact is based – in detail in Annex A of our 2013 *FSR* and in Box 3.4 of our 2014 *FSR*. For example, we assume that, on average, migrants have the same age- and gender-specific labour market participation rates and productivity as the native population. No doubt that assumption would not hold for all migrants – for example, average labour market characteristics of migrants from different countries can differ substantially – but we think it provides a reasonable guide to the aggregate effects of net migration in our long-term projections.

3.120 Our central projection assumes long-term average net inward migration of 185,000 a year. If net inward migration was in line with the ONS high migration scenario at 265,000 a year – more in line with the average flows seen over the past decade – then we estimate that this would reduce the primary deficit by 0.6 per cent of GDP and net debt by 26 per cent by 2066-67, relative to our central projection. If instead net inward migration was in line with the low migration scenario at 105,000 a year, the primary deficit would increase by 0.8 per cent of GDP and net debt by 31 per cent by 2066-67 relative to our central projection.

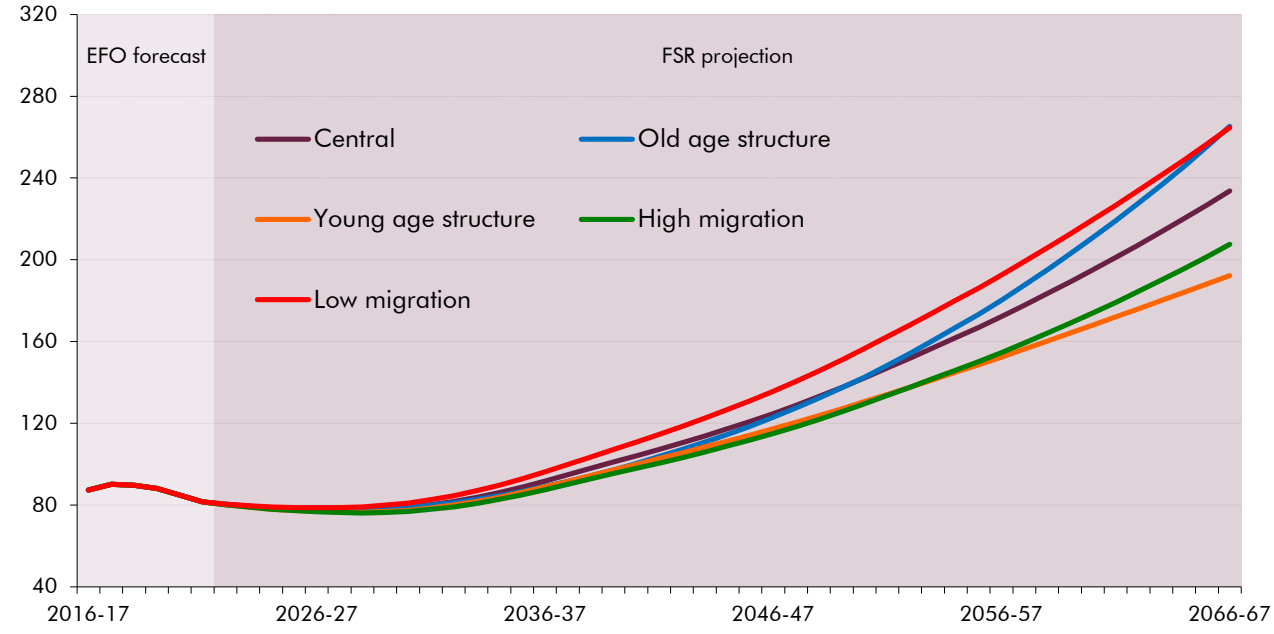
3.121 These scenarios should not be construed as an argument that the Government needs to pursue a particular policy towards immigration in order to achieve (or avoid) a particular outcome for the public finances. Governments doubtless choose their policies towards immigration for a whole variety of social and economic reasons and they could choose to offset their direct fiscal impact with tax and spending policy decisions. Such choices are likely to represent an important source of uncertainty over the next few years.

Table 3.14: Non-interest receipts and spending for demographic variants

	Difference from central projection, per cent of GDP						
	Estimate[1]		FSR projection				
	2016-17	2021-22	2026-27	2036-37	2046-47	2056-57	2066-67
Old age structure							
Receipts	0.0	0.0	-0.2	-0.8	-0.7	-1.0	-1.1
Spending	0.0	0.0	-0.1	-1.4	-0.4	0.3	1.3
Young age structure							
Receipts	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Spending	0.0	0.0	-0.1	-0.2	-0.6	-1.2	-2.0
High migration							
Receipts	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Spending	0.0	0.0	-0.1	-0.3	-0.5	-0.7	-0.7
Low migration							
Receipts	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Spending	0.0	0.0	0.1	0.3	0.6	0.8	0.8

[1] Estimates are consistent with the November 2016 *Economic and fiscal outlook*.

Chart 3.19: Sensitivity of net debt projections to demographic variants



Source: OBR

Sensitivity to other cost pressures in the health care sector

3.122 Spending on health is the largest component of age-related spending in our projections – even more so now that we have decided to allow for non-demographic cost pressures in our central projections. Given its importance, in previous reports we have shown a number of alternative scenarios using different assumptions about productivity growth in the health sector, morbidity and other cost pressures. We discussed these in more detail in our *Working paper No. 9: Fiscal sustainability and public spending on health*, which led us to change the assumption used in our central projections. One conclusion of that paper and of our

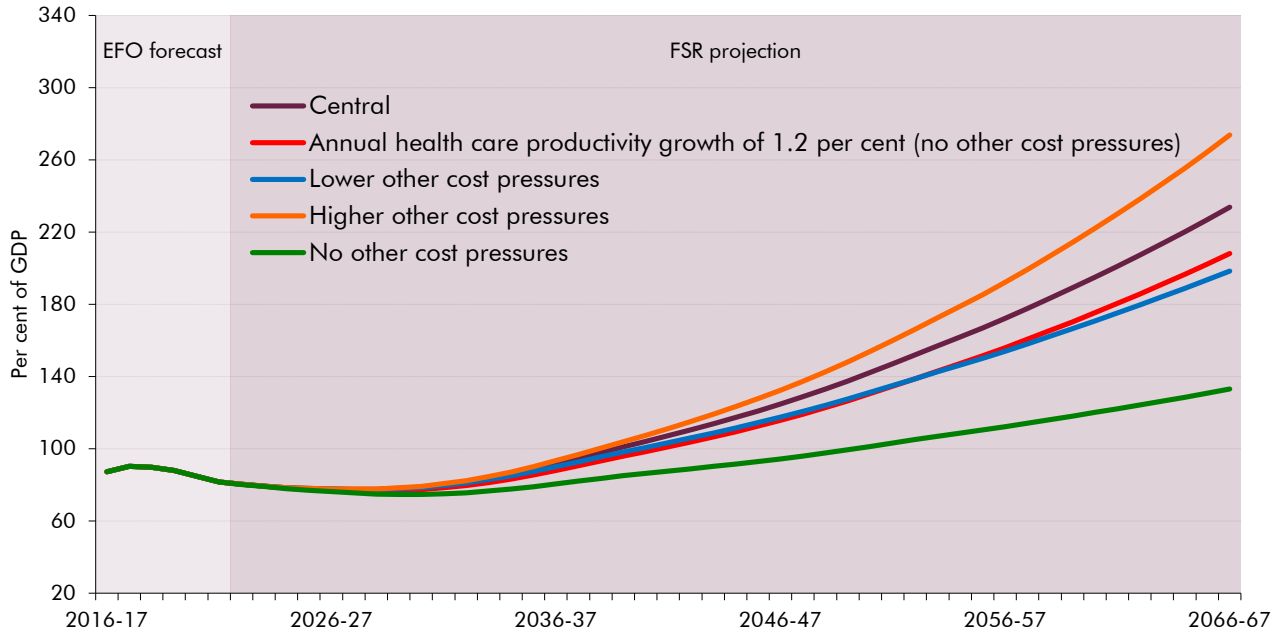
previous sensitivity analysis is that the effect of alternative morbidity assumptions on health spending is much smaller than the effect of alternative assumptions about productivity or other cost pressures.

3.123 Chart 3.20 illustrates the sensitivity of our debt projection to assumptions about the pace at which non-demographic cost pressures push health spending up (see Chart 3.8). Under the 'higher other cost pressures' scenario, PSND would increase to 274 per cent of GDP by 2066-67, 40 per cent of GDP higher compared to our central projection as the relative difference in annual growth compounds over time. Similarly, under the 'lower other cost pressures' scenario PSND would reach just under 200 per cent of GDP in 2066-67, 35 per cent of GDP lower than in our central projection. All three scenarios demonstrate that our inclusion of other cost pressures in the central projection has had a material impact on the overall results: in the 'no other cost pressures' scenario, PSND rises to 133 per cent of GDP by 2066-67, some 101 per cent of GDP below our central projection.

3.124 Chart 3.20 also includes a low health care productivity scenario, which follows the same methodology that we have used in previous *FSRs*. We do not assume any non-demographic cost pressures on top of low productivity growth, since it is likely that it would double-count the true drivers of upward pressures on health spending – to some extent, at least. The premise behind this scenario is that since health care provision is relatively labour intensive we might expect productivity growth to be slower in this sector than in the economy as a whole. Indeed, available estimates suggest that productivity in the sector has risen by about 1.2 per cent a year on average between 1979 and 2014. Rolling this forward would imply that real health spending per person would need to rise by 2.8 per cent a year to increase health output by 2.0 per cent a year, in line with real earnings growth. Interpreting unchanged policy towards health spending in this way would see PSND in 2066-67 around 26 per cent of GDP lower than in our central projection, but 75 per cent of GDP higher than if we did not assume any non-demographic cost pressures. It would imply a similar path for net debt over the projection period to our 'lower other cost pressures' scenario.

3.125 This result is somewhat similar to the various cost pressures scenarios, but the mechanism behind these variants is slightly different. The non-demographic cost pressures scenarios are less reliant on the hard-to-measure productivity series that are heavily influenced by the cyclicality of input growth. Both scenarios nevertheless point to a significant upward pressures on long-term on health resulting from non-demographic drivers of spending.

Chart 3.20: Sensitivity of net debt projections to health-specific assumptions



Source: OBR

The budget balance in the next Parliament

Implications for the Government's new fiscal objective

3.126 In the draft *Charter for Budget Responsibility* that was published alongside the 2016 Autumn Statement, the Government set out a new fiscal objective to "*return the public finances to balance at the earliest possible date in the next Parliament*". On the basis that the next Parliament runs from 2020-21 to 2025-26, our updated long-term projections provide a guide to the challenge that the Government might face in meeting its new objective. We can also illustrate what might happen if we interpreted 'unchanged policy' over the next Parliament in a manner that is more akin to our medium-term forecasts.

Borrowing in the next Parliament: long-term projections approach

3.127 As described earlier in this chapter, our long-term projections are built around demographic drivers of spending and receipts, with most other features of the tax and spending system assumed to evolve in a way that would lead to them neither rising nor falling as a share of GDP in the absence of demographic pressures. One exception is the triple lock on state pensions uprating, which we assume pushes spending up as a share of GDP on average. In this *FSR* we have also introduced an assumption that non-demographic cost pressures will raise health spending further.

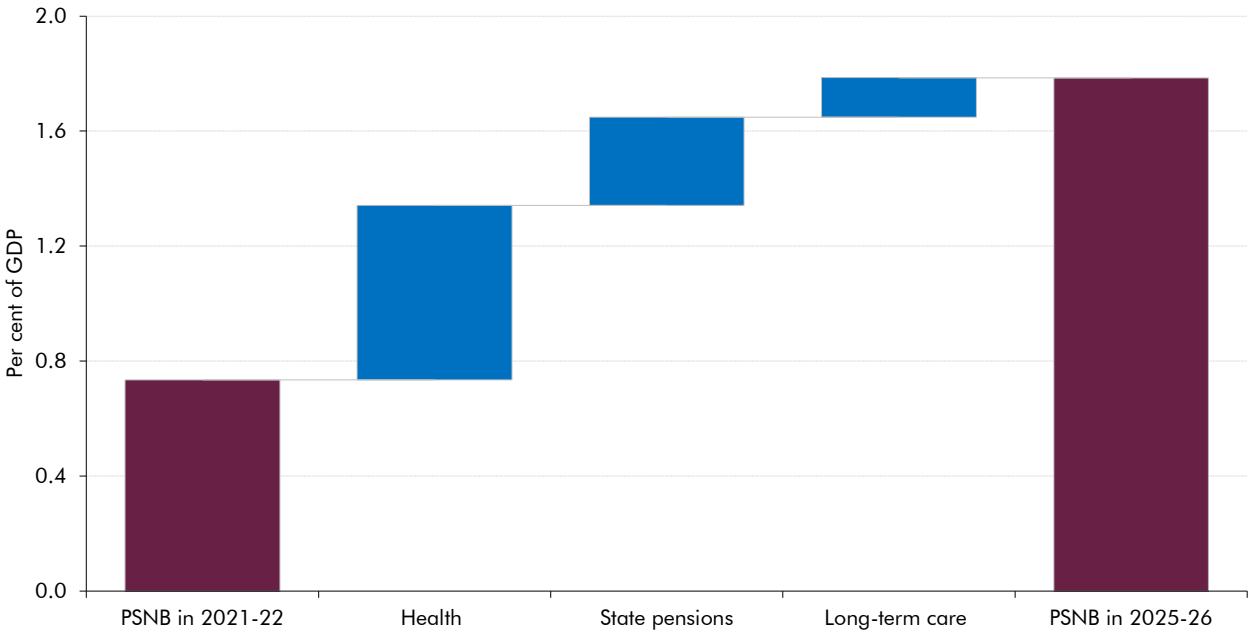
3.128 Chart 3.21 shows that on this basis, the deficit is projected to rise from 0.7 per cent of GDP in 2021-22 (the final year of our November 2016 forecast period) to 1.8 per cent of GDP by 2025-26. The sources of the 1.1 per cent of GDP deterioration include:

- **health spending** rises by 0.6 per cent of GDP. This reflects the ageing population (adding 0.2 per cent) and non-demographic cost pressures (0.4 per cent);

- **state pensions spending** rises by 0.3 per cent of GDP. The State Pension age is due to remain stable at 66 for men and women throughout the next Parliament, having reached 66 in October 2020. The rise to 67 is legislated to take place between 2026 and 2028. As a result, whereas the number of people being paid state pensions is expected to fall 2.6 per cent during the current Parliament, it is set to rise by 9.1 per cent in the next. Ageing adds 0.3 per cent of GDP to pensions spending, with less than 0.1 per cent in 2025-26 reflecting our assumption that the triple lock will on average push up state pension awards faster than earnings growth; and

- **long-term care spending** rises by 0.1 per cent of GDP, also due to ageing.

Chart 3.21: Central projection for borrowing in the next Parliament



Source: OBR

Borrowing in the next Parliament: extended medium-term forecast approach

3.129 While we consider our long-term assumptions to be the most appropriate way of assessing fiscal sustainability over a 50-year horizon, they may be less suited to assessing prospects just a few years beyond our medium-term forecast horizon. If we interpreted 'unchanged policy' over that period in a manner more in keeping with our medium-term forecasts, would the Government be on course to meet its new objective?

3.130 Chart 3.22 shows how the 1.8 per cent of GDP deficit in our central *FSR* projection would be affected by using alternative assumptions about unchanged policy over the next Parliament. One set of assumptions that we have not changed are the demographic and other cost pressures pushing up spending on health, long-term care and state pensions,

since to do so would be to assume away the challenge that we seek to illustrate. Not all the effects of different assumptions help the Government to meet its objective, but on balance they would reduce the expected deficit in 2025-26 by more than half. That is driven by:

- if **income tax and NICs** allowances and thresholds are assumed to rise in line with current policy (the personal allowance and higher rate threshold rising by CPI inflation and the additional rate threshold fixed at £150,000), receipts would be 0.6 per cent of GDP higher. But that would also see the share of all taxpayers subject to the higher and additional rates continuing to rise. This process of fiscal drag is also a key driver of our medium-term receipts forecast, with almost half the growth in income tax liabilities over our November 2016 forecast period accounted for by just 1.5 per cent of taxpayers that are expected to earn more than £150,000 a year;

- if non-pensioner **social security and tax credits** awards were uprated in line with CPI rather than average earnings, spending would be 0.3 per cent of GDP lower. At the same time, average awards of benefit recipients would fall by around 10 per cent relative to average earnings in the next Parliament, on top of the 14 per cent drop expected in the current Parliament (relative to average earnings), which is larger due to the cash freeze on most working-age awards in the four years to 2019-20;

- if **capital taxes** thresholds are uprated in line with current policy for the end of the medium-term forecast – flat in cash terms for stamp duty land tax and rising by CPI inflation for most of the thresholds in inheritance tax and capital gains tax – receipts would be 0.2 per cent of GDP higher. In our medium-term forecasts, we assume that capital gains tax receipts rise as a share of GDP, reflecting the gearing of receipts to rising asset prices. Such rises determine the likelihood that a taxpayer will dispose of an asset as well as the value of the gain itself, so receipts move more than one-for-one with asset prices. This effect would also boost receipts out to 2025-26;

- due to lower borrowing and lower interest rates assumed in our medium-term forecast, **debt interest spending** would also be lower – by 0.2 per cent of GDP;

- if the **triple lock on state pensions uprating** is assumed not to be applied in the next Parliament – the alternative interpretation of the Government's commitment to review it before then – spending would rise by less than 0.1 per cent of GDP less; and

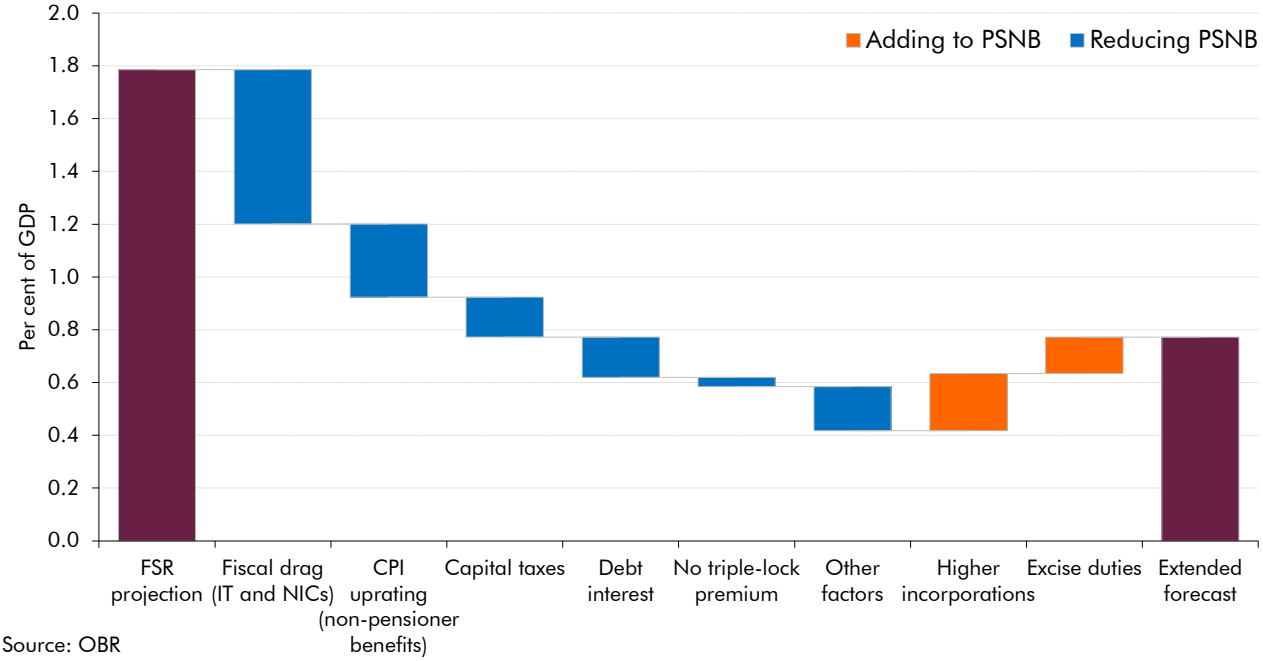
- **other factors** reduce borrowing by around 0.2 per cent of GDP. These include both methodological and other policy differences between our bottom-up, medium-term approach and our demographically driven *FSR* projection.

3.131 Partly offsetting these effects:

- if the trend towards **incorporations** was assumed to continue – even at half the pace assumed in our medium-term forecast – the shift from higher-taxed employment income to lower-taxed corporate income would reduce receipts by 0.2 per cent of GDP; and

- if the tax bases for **excise duties** were assumed to fall relative to GDP as we assume in our medium-term forecasts (due to rising fuel efficiency of cars and the reduced propensity to smoke and consume some forms of alcohol), receipts would be 0.1 per cent of GDP lower by 2025-26.

Chart 3.22: Extended forecast for borrowing in 2025-26



Source: OBR

3.132 Even under this alternative approach to defining 'unchanged policy' the Government would still have a deficit of 0.8 per cent of GDP to close in order to meet its new objective. That reflects the demographic and other cost pressures on health, long-term care and state pensions spending offsetting the boost from fiscal drag and less generous welfare awards. There are many choices that this or a future Government could make in order to address demographic pressures or to offset them with other tax or spending policy changes. But this does illustrate the value of considering these longer-term pressures sooner rather than later.

Conclusion

3.133 The long-term projections in this chapter are highly uncertain and the results we present here should be seen as illustrative projections, not precise forecasts. We have quantified some of the uncertainties through sensitivity analyses.

3.134 The biggest difference between this and our previous *FSRs* is that our central projection now factors in the impact of other non-demographic cost pressures on our health spending projection. As we discussed in *Working paper No. 9: Fiscal sustainability and public spending on health*, other cost pressures (for example increasing relative health care costs and technological advancements) have been bigger contributing factors over the past and are likely to remain important drivers of spending in the future. A major conclusion of our

working paper was that when defining 'unchanged policy' health spending should increase to reflect growth in other costs in our central projection.

3.135 As with our projections in previous *FSRs*, the uncertainties to which our assumptions and projections are subject should not be used to disguise the fact that the public finances are projected to come under pressure over coming decades. This is primarily as a result of an ageing population and the non-demographic pressures that have pushed up health spending over the past and we assume will continue to do so. These conclusions are unrelated to any assumptions about how the UK exits the EU. Under our definition of unchanged policy, the Government would end up having to spend more as a share of national income on age-related items such as health, pensions and long-term care – particularly so on health with the inclusion of an assumption about non-demographic cost pressures in our central projection. But demographic trends would leave government revenue stable as a share of national income.

3.136 In the absence of offsetting tax increases or spending cuts, the pressures we have identified would increase the budget deficit sufficiently to put public sector net debt on an unsustainable upward path. As discussed in previous *FSRs*, such a path could lead to lower long-term economic growth and higher interest rates, worsening the fiscal position further. Indeed, the much higher path for the deficit and debt in this *FSR* would be likely to precipitate some of these wider effects sooner than would have been the case in previous projections, potentially triggering an earlier policy response from future governments.

3.137 The analysis in this chapter does not tell us the size or timing of the policy adjustment needed to put the public finances back on a sustainable path in the face of these pressures. For that we need to look at some more formal indicators of fiscal sustainability, which is the subject of Chapter 4.

4 Summary indicators of fiscal sustainability

Introduction

4.1 In Chapter 3, we set out illustrative long-term projections for UK public spending and revenues, and the implications that these would have for the health of the public finances. On current policies, our central projection shows that public sector net debt and debt interest would eventually rise continuously as a share of GDP, due largely to the prospective ageing of the population and the upward pressure on health spending resulting from other non-demographic cost pressures.

4.2 This trajectory would clearly be unsustainable, but it would also probably be common to most advanced economies. In this chapter, we discuss two widely used indicators that define the concept of sustainability more rigorously and quantify the scale of tax increases and/or spending cuts that might eventually be required to move the public finances back onto a sustainable path.

Indicators of sustainability

The inter-temporal budget gap

4.3 Most definitions of fiscal sustainability are built on the concept of solvency – the ability of the government to meet its future obligations. In formal terms, this solvency condition is given by the government's inter-temporal budget constraint. Satisfying this condition requires that, over an infinite time horizon, the government raises enough revenue to cover all its non-interest spending and also to service and eventually pay off its outstanding debt. This requirement is normally expressed in stock rather than flow terms, namely that the present value of future government receipts should be equal to or greater than the sum of its existing debt plus the present value of all its future spending.

4.4 In the event that a government is not on course to satisfy the inter-temporal budget constraint, the 'inter-temporal budget gap' is a measure of the immediate and permanent increase in taxes and/or cut in public spending as a share of GDP that would put the government back on course.

4.5 The primary balance required to satisfy the inter-temporal budget constraint depends on the gap between the interest rate that the government has to pay on its debt and the long-run growth rate of the economy. The higher the interest rate, the quicker debt will accumulate; the higher the growth rate, the easier it is to service and pay it off.

4.6 If the interest rate paid on government debt remains below the rate of growth, then net debt could still fall as a share of GDP even if the government were to run a primary budget deficit. Conversely, if the interest rate exceeds the economic growth rate (as it is normally assumed to do) then in the long run the government will need to raise more in revenue than it spends on things other than debt interest (i.e. to run a primary budget surplus) in order to service and pay off the debt it has already accumulated. The greater the amount by which the interest rate exceeds the growth rate, the bigger the primary surplus required.

4.7 In our central projections, we assume that the long-run interest rate is close to the long-term growth rate of the economy (4.9 per cent versus 4.7 per cent). We also assume that financial transactions are small. This implies that an adjustment close to the size of the primary deficit at the end of our projection would be sufficient to stabilise the debt-to-GDP ratio in the long term.

4.8 As the inter-temporal budget gap is calculated from revenue and spending flows over an infinite time horizon, we have to make some assumptions about their behaviour beyond our 50-year projection horizon – for simplicity, we hold them constant as proportions of GDP after 2066-67.

4.9 In the projections we report here, we assume that tax and spending policy evolves as currently announced over the five years of our latest medium-term forecast. So we calculate the inter-temporal budget gap for a policy change implemented immediately thereafter, in 2022-23. On this basis, the UK's inter-temporal budget gap is currently equal to 7.0 per cent of GDP. In other words, under our central projections the Government would need to increase taxes and/or cut spending by 7.0 per cent of GDP (£137 billion in today's terms) from 2022-23 onwards to satisfy the inter-temporal budget constraint with an immediate and permanent adjustment. This is much larger than the 1.9 per cent of GDP reported in our 2015 *FSR* in large part due to the introduction of an assumption about non-demographic health spending pressures in our central projection. On a like-for-like basis, the equivalent figure for our 2015 *FSR* would have been 6.5 per cent of GDP, so the gap has increased slightly.

4.10 The inter-temporal budget constraint has the advantage of theoretical rigour, but it also has limitations as a practical guide to policy. For example, it assumes that governments will eventually wish to eliminate their debt entirely, which relatively few have expressed a desire to do. Revenue and spending projections over 50 years are uncertain enough; projections over an infinite horizon are clearly even more so. The inter-temporal budget constraint might also be thought insufficiently constraining, because rather than being met through an immediate and permanent adjustment, it would allow governments to run large fiscal deficits for extended periods provided there were sufficiently large fiscal surpluses assumed at some point in the potentially far distant future. No government could credibly commit itself and its successors to such a path of long-deferred virtue. As a result, alternative criteria are usually used to judge sustainability, the most common being the 'fiscal gap'.

Fiscal gaps

4.11 Rather than looking over an infinite horizon, as the inter-temporal budget gap does, fiscal gaps are judged over a pre-determined finite horizon. The fiscal gap is the immediate and permanent change in the primary balance needed to achieve a chosen debt-to-GDP ratio in a given year.

4.12 One of the main strengths of fiscal gaps is that they are intuitive and can be interpreted easily in the context of any policy rules on the level of government debt relative to GDP. But there is no consensus regarding the optimal debt ratio and how quickly one should aim to return to it if the public finances move off course. Indeed, since the last Labour Government dropped its 'sustainable investment rule' in 2008, no UK government has targeted a specific debt-to-GDP ratio – except that specified in the Stability and Growth Pact, which applies to all EU member countries. The Coalition and Conservative Governments have instead targeted the profile of that ratio from year to year. It is also important to remember that while a fiscal gap of zero implies that the public finances are sustainable for a given debt target and timetable, this does not necessarily mean that the fiscal policy setting is optimal or is sustainable after the target date.

4.13 In the absence of a policy rule that dictates the choice of target year, the aim is normally to pick a date far enough ahead to capture the most significant (typically demographic) future influences on the public finances, but not so far ahead that the projections are subject to any greater uncertainty than necessary.

4.14 Table 4.1 shows fiscal gap calculations for the demographic and health care variants discussed in Chapter 3. As with the inter-temporal budget gap calculation, the primary balance necessary to achieve a given level of debt as a share of GDP depends on the difference between the interest rate and the long-term economic growth rate. We therefore show the gaps not only for our central assumption that the long-run interest rate exceeds the long-term economic growth rate by 0.2 percentage points, but also under alternative assumptions where the difference between the interest rate and the growth rate is 1 percentage point higher or lower.

4.15 We also calculate what would be necessary from 2026-27 if the Government were to meet its fiscal objective of reducing the overall deficit to zero in the next Parliament. In Chapter 3 we showed how that objective is ambitious relative to our central projection or to an alternative extended forecast – with assumptions more in keeping with those used in our 5-year forecasts – that includes the favourable effects on the public finances of fiscal drag in the tax system and the erosion of the real value of welfare payments.

Table 4.1: Fiscal gap estimates

	Adjustment in primary balance, per cent of GDP			
Target year	2066-67	2066-67	2066-67	2056-57
Target debt to GDP ratio (per cent)	20	40	60	40
Central projection	4.7	4.3	3.8	3.8
Gradual progress[1]	1.7	1.5	1.4	1.7
Interest rate 1 percentage point higher	4.7	4.3	3.9	3.9
Interest rate 1 percentage point lower	4.7	4.2	3.7	3.7
Old age structure	5.2	4.8	4.3	3.9
Young age structure	4.0	3.5	3.0	3.3
High net migration	4.3	3.8	3.4	3.4
Low net migration	5.2	4.8	4.4	4.3
No other cost pressures in health care	2.5	2.1	1.6	2.1
Lower health productivity growth[2]	4.2	3.7	3.3	3.3
Lower other cost pressures in health care[3]	3.9	3.5	3.1	3.3
Higher other cost pressures in health care[4]	5.6	5.2	4.7	4.4
Overall deficit reduced to zero in 2025-26	3.3	2.8	2.4	2.4
Gradual progress from 2026-27[1,5]	1.3	1.1	0.9	1.2

[1] Adjustment required each decade.

[2] Real health spending per capita growth of 2.8 per cent a year, equivalent to annual productivity in the health care sector of 1.2 per cent. Does not include any other cost pressures.

[3] Other cost pressures converging to 0.5 per cent annual growth by 2036-37.

[4] Other cost pressures converging to 1.5 per cent annual growth by 2036-37.

[5] Assuming overall deficit reduced to zero in 2025-26.

4.16 Table 4.1 shows that to return the debt-to-GDP ratio to its pre-crisis level of around 40 per cent of GDP in 2066-67 would require a permanent increase in taxes and/or cut in spending of 4.3 per cent of GDP (£84 billion in today's terms) in 2022-23. Since it is very unlikely that a government would try to offset decades worth of future demographic and other cost pressures via a single upfront adjustment, a more realistic alternative adjustment is illustrated via the 'gradual progress' variant, which would require a series of tax increases or spending cuts worth an additional 1.5 per cent of GDP (£30 billion) each decade. These estimates are much bigger than in our previous report, reflecting the deterioration in the primary deficit at the end of the projection period. This is driven primarily by the inclusion of other cost pressures in our health spending projection (see paragraph 3.55). Targeting debt ratios of 20 and 60 per cent of GDP would require larger and smaller adjustments respectively.

4.17 It should be emphasised that this would be an additional tightening after and on top of the fiscal consolidation that is already in train up to 2021-22, which is expected to improve the primary balance by 9.4 per cent of GDP between the peak deficit in 2009-10 and 2021-22. It would also be in addition to announcements that are expected to affect the public finances over a longer time horizon and that are included in our central projection, such as linking changes to the State Pension age to life expectancy.

4.18 The adjustment to hit any given debt target would be larger if the pace of excess cost growth in the health sector was greater than we assume in our central scenario, if the long-term

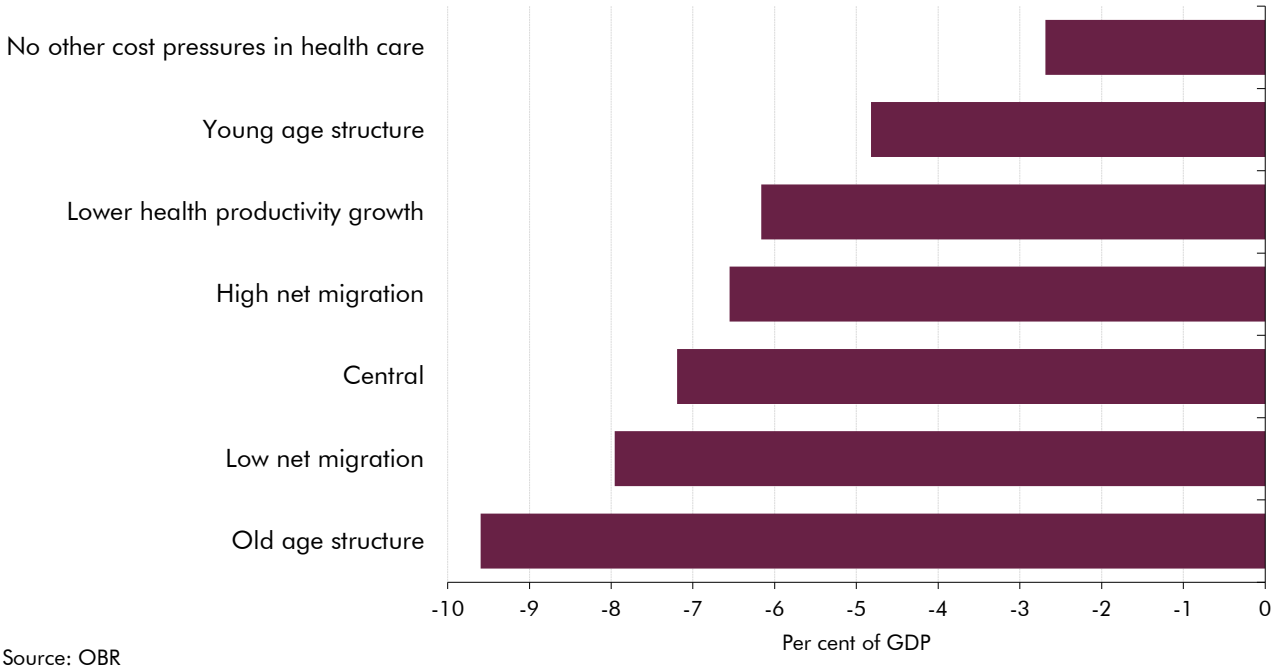
interest rate were to exceed the economic growth rate by more than we assume, or if migration flows were lower than in our central projection. Of the scenarios we show in Table 4.1, by far the biggest adjustment would be required where we assume that 'unchanged policy' is consistent with other cost pressures in the health sector growing at 1.5 per cent a year in the long term rather than the 1.0 per cent in our central projection. In this case, the required adjustment to get debt back to 40 per cent of GDP would be a one-off 5.2 per cent of GDP from 2022-23. Conversely, under the 'no other cost pressures' scenario, the one-off adjustment required to bring debt down to 40 per cent of GDP by 2066-67 is equal to 2.1 per cent of GDP from 2022-23.

4.19 If the Government were to meet its objective of reducing the deficit to zero in the next Parliament, a further once-and-for-all policy tightening of 2.8 per cent of GDP in 2026-27 would see the debt ratio reach 40 per cent of GDP in 2066-67. Tightening policy by 1.1 per cent of GDP a decade would stabilise the debt ratio at that level. But balancing the budget in the next Parliament will be challenging in the face of ageing pressures on health, social care and state pensions spending, and if non-demographic pressures on health spending continue at close to their recent pace.

4.20 Table 4.1 also shows what would be required to achieve a debt to GDP ratio of 40 per cent ten years earlier, in 2056-57. This would generally require a smaller adjustment, but debt would continue to rise as a share of GDP in subsequent years so would be above 40 per cent in 2066-67. More broadly, the focus on a particular target year means that the path of the primary balance and net debt beyond this point is ignored. Ultimately, given our assumptions on interest rates and GDP growth, a small primary surplus is required to prevent net debt continuing on an upward trajectory.

4.21 Chart 4.1 shows the primary balances at the end of the projection period under the different variants, ordered from high to low. The ranking shown in the chart is similar to that implied by the fiscal gap calculations. Comparing Chart 4.1 and Table 4.1 shows that none of the one-off fiscal gap estimates to bring debt down to 40 per cent of GDP would be sufficient to keep the ratio at that level further ahead.

Chart 4.1: Primary balance in 2066-67



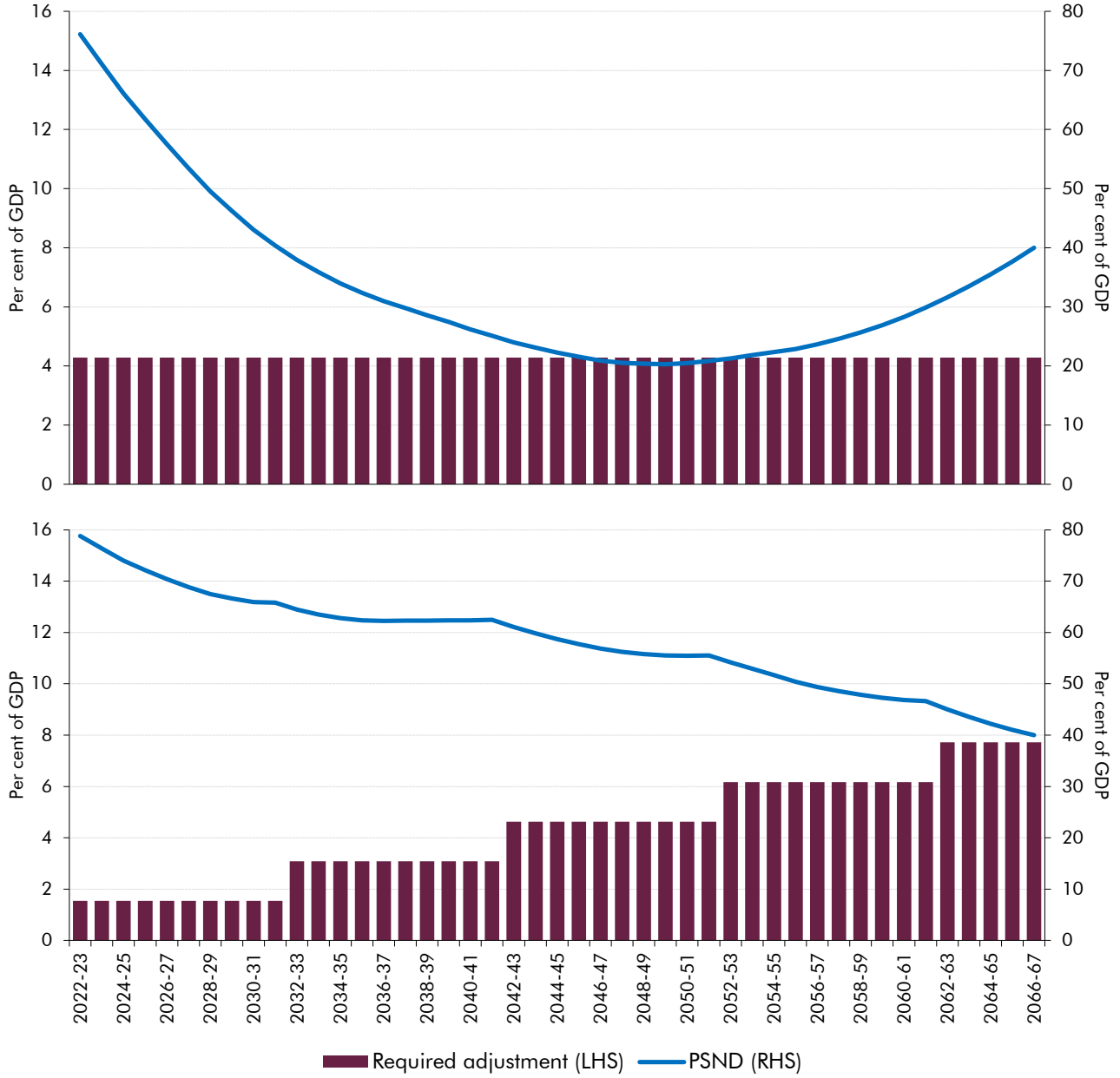
Source: OBR

4.22 Chart 4.2 illustrates the difference that the choice between a one-off permanent adjustment and an initially smaller, but ultimately larger, cumulative decade-by-decade adjustment makes to the path of net debt en route to the target date. It shows that:

- a **once-and-for-all policy tightening** of 4.3 per cent of GDP in 2022-23 would see the debt ratio fall below 40 per cent of GDP in the early-2030s, reach a trough of 20 per cent of GDP towards the end of the 2040s and then rise back to 40 per cent of GDP in 2066-67. But the tightening would be smaller than the 7.0 per cent of GDP required to stabilise the debt ratio over the longer term and so the debt ratio would continue rising beyond the target date; and

- a **cumulative policy tightening** of 1.5 per cent of GDP a decade would see the debt ratio fall more slowly, reaching 40 per cent near the end of the projection period. By the target date, the cumulative tightening since 2022-23 would have reached 7.7 per cent of GDP.

Chart 4.2: Alternative adjustments to the primary balance and the implied path of net debt if targeting a debt to GDP ratio of 40 per cent in 50 years



Source: OBR

4.23 These differences highlight the fact that even if policymakers have chosen where they want the debt ratio to end up, there are further choices to be made about the desirable path to get there. They also illustrate the challenge of trying to capture long-term fiscal sustainability in a single measure or gap. In the run-up to the late 2000s financial crisis, several countries endeavoured to 'pre-fund' the costs of an ageing population by tightening fiscal policy sufficiently to bring their net debt to GDP ratios considerably lower. The intention was that, when the costs of ageing materialised, they could allow the debt ratio to rise again rather than having to impose much bigger spending cuts and tax increases.

Conclusion

4.24 In our central projection and the many variants we consider in Chapter 3, we would eventually expect to see public sector net debt on a continuously rising trajectory as a share of GDP. This would be unsustainable.

4.25 The inclusion of other non-demographic cost pressures in our health spending projection has had a material impact on the effort required to bring debt down to sustainable levels in the long term. But, as shown in our working paper '*Fiscal sustainability and public spending on health*', the fiscal challenges of an ageing population and non-demographic pressures on health spending are common to many economies and our conclusions are similar to those of a variety of international institutions and other bodies.

4.26 In this chapter, we have examined the scale and timing of potential policy responses that could return the UK's public finances to a sustainable position, given different definitions of what a sustainable position might be. There is no consensus regarding an optimal ratio or how quickly a government should try to return to it when the public finances move off course. So the targets and paths that we have set out here should be regarded as purely illustrative, rather than recommendations. As we have demonstrated, even if policymakers do have a target for a particular debt ratio in a particular year, they have many options for the timing of the response and the path of debt in the meantime.

4.27 Clearly it would be unrealistic for any government to set out a fiscal strategy for 50 years and have anyone expect that it would be in a position to implement it all. The main lesson of our analysis is that future governments are likely to have to undertake some additional fiscal tightening beyond the current consolidation planned for the next five years in order to address the fiscal costs of an ageing population and upward pressures on health spending.

4.28 Our findings should not be taken to imply that the Government needs to achieve a bigger tightening over the next five years than already planned. Rather, policymakers and would-be policymakers will need to think carefully about the long-term consequences of any policies they introduce in the short term. And they should give thought too to the policy choices that will confront them once the current planned consolidation is complete.

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