

Office for
**Budget
Responsibility**

Fiscal risks report

July 2019



Office for Budget Responsibility

Fiscal risks report

Presented to Parliament by the
Exchequer Secretary to the Treasury
by Command of Her Majesty

July 2019



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Foreword

The Office for Budget Responsibility (OBR) was established in 2010 to provide independent and authoritative analysis of the UK's public finances. In the October 2015 update to the *Charter for Budget Responsibility*, Parliament required us to produce a fiscal risks report at least once every two years. The Government has committed to responding formally to each report within a year. We produced our first *Fiscal risks report (FRR)* in July 2017. The Government responded to it in *Managing fiscal risks* in July 2018. We continue the conversation in this report.

We have always placed considerable emphasis on the risks and uncertainties around any assessment of the outlook for the public finances. In our *Economic and fiscal outlooks (EFOs)*, we illustrate the risks to our medium-term forecasts by drawing on the pattern of past forecast errors, estimates of their sensitivity to changes in key parameters, and scenario analysis. We also subject the long-term projections in our *Fiscal sustainability reports (FSRs)* to sensitivity analysis, as well as highlighting specific fiscal risks revealed by the Whole of Government Accounts.

In our *Fiscal risks reports* we draw together and expand on these analyses. We hope that this provides a valuable addition to the material that we produce to help promote an informed public debate about the sustainability of the public finances. Much of that debate focuses on our central medium-term forecasts and long-term projections, despite the wide range of uncertainty that surrounds those central conclusions. By focusing on identifiable risks to the public finances, the *FRR* builds on the sensitivity and scenario analysis that we already present in our *EFOs* and *FSRs*.

The analysis and conclusions presented in this document represent the collective view of the three independent members of the OBR's Budget Responsibility Committee. We take full responsibility for the judgements that underpin them. We have been hugely supported in this by the staff of the OBR, to whom we are as usual enormously grateful.

We have also drawn on the help and expertise of officials across numerous departments and agencies for which we are very grateful. In addition, we have benefitted from insights shared by experts from outside government who have spoken to us about the wide range of topics we cover. In particular, we would like to thank Professor Nicholas Barr, Anita Charlesworth, Adam Corlett, Stuart Adam, Richard Hughes, Professor Andrew Scott, Sir Paul Tucker and Dimitri Zenghelis. We are also grateful to Sarah Breedon and her team at the Bank of England for taking us through their work on climate-related macroeconomic scenario analysis. Finally, we are grateful to staff at the International Monetary Fund (IMF) for their assistance in understanding their no-deal, no-transition Brexit scenarios from the April 2019 *World Economic Outlook*, which we have built upon to produce the fiscal stress test in Chapter 10. We would also emphasise that despite that assistance, all judgements underpinning that stress test are our own and should not be attributed to the IMF.

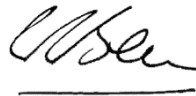
Foreword

We provided the Chancellor of the Exchequer with a summary of our main conclusions on 12 July. Given the breadth and depth of the report, we provided exceptional pre-release access to a near-final version of the full report to a named list of Treasury officials on 15 July. We then provided a full and final copy 24 hours prior to publication. This is in line with pre-release access arrangements set out in the *Memorandum of Understanding between the Office for Budget Responsibility, HM Treasury, Department for Work and Pensions and HM Revenue & Customs*. In accordance with this MoU, emerging findings and draft material were discussed with officials in the Treasury under the auspices of a liaison group set up for the purpose. 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.

We hope that this report is of use and interest to readers. We consider it to be a work-in-progress that will be refined and modified over time. We would therefore be pleased to receive feedback on any aspect of the content or presentation of the analysis. This can be sent to feedback@obr.uk.



Robert Chote



Sir Charles Bean



Andy King

The Budget Responsibility Committee

Executive summary

Overview

- 1 In 2017 we produced our first *Fiscal risks report (FRR)*, an assessment of the shocks and pressures that could threaten our forecast for the public finances over the medium term and fiscal sustainability over the longer term. In this, our second report, we revisit and broaden that assessment in light of recent economic and fiscal developments, including subsequent policy decisions and the Government's welcome and substantive response to our first *FRR*.
- 2 Many of the fiscal risks we discussed two years ago remain. That is not surprising, as in many cases the Government can only seek to manage and mitigate them, not to eliminate them. It is also important to remember that the whole point of much government activity is to pool or manage risks that confront society. So taking on fiscal risk can be welfare-improving and attempts to transfer some fiscal risks back to the private sector may simply create different ones that are less imminent, less transparent and potentially more costly.
- 3 That said, the Government has taken useful steps since 2017 to improve the monitoring and management of fiscal risks, including better management of new contingent liabilities, more transparent reporting on the balance sheet and, thanks to the Office for National Statistics, plans to address the pervasive fiscal illusions in the way student loans are captured in the public finances. It has also further reduced the budget deficit and has begun to lower public sector net debt as a share of GDP. In addition, it is reducing its exposure to inflation surprises by relying less on issuing index-linked debt to finance government borrowing.
- 4 But policy risks to the public finances in the medium term are significant and look greater than they were two years ago. In his recent statements the current Chancellor has all but abandoned the Government's legislated objective to balance the budget by the mid-2020s. And the £27 billion a year NHS settlement announced in June 2018 – unfunded, unaccompanied by detailed plans for reform and outside the normal timetable for spending decisions – has cast doubts over the Treasury's usually firm grip on departmental spending.
- 5 Medium-term policy decisions will of course depend on the incoming Prime Minister and Chancellor, rather than on the current incumbents. The remaining Conservative leadership contenders have made a series of uncosted proposals for tax cuts and spending increases that would be likely to increase government borrowing by tens of billions of pounds if implemented. So all the signs point to a fiscal loosening and less ambitious objectives for the management of the public finances. (The current Chancellor has urged the candidates at least to commit to keeping net debt falling as a share of GDP, which, all else equal, would allow additional borrowing of approaching £25 billion a year over the medium term.)

- 6 To be clear, it is not the role of the OBR to say what the Government's fiscal targets should be nor how much budgetary loosening or tightening it should undertake. But it must be understood that additional tax cuts or spending increases would push government borrowing and debt up from the levels expected in our forecasts and that there is no war-chest or pot of money set aside that would make them a free lunch. The Government does have room for manoeuvre against its 'fiscal mandate' for structural borrowing next year, but that does not provide an anchor for medium term tax and spending decisions. And the headroom is measured against our central forecast in March – over the next 300 pages we outline some of the many risks that might raise borrowing and debt relative to those figures.
- 7 These decisions will of course need to be taken against the unusually uncertain economic and fiscal backdrop created by different possible outcomes to Brexit. Our March forecast was conditioned on the UK securing a deal and exiting smoothly. Given the leadership contenders' willingness explicitly to countenance a 'no-deal' exit on October 31, we use the 'stress test' in this *FRR* to illustrate the potential fiscal impact of a no-deal, no-transition Brexit scenario set out by the International Monetary Fund (IMF) in its April 2019 *World Economic Outlook*. This scenario is not necessarily the most likely outcome and it is relatively benign compared to some (for example, assuming limited short-term border disruptions). But it still adds around £30 billion a year to borrowing from 2020-21 onwards and around 12 per cent of GDP to net debt by 2023-24, compared with our March forecast baseline.
- 8 A more disruptive or disorderly scenario, closer to the stress test we considered two years ago, could hit the public finances much harder. (It is important to remember that the economic and fiscal developments over the past three years – as well our and the IMF's baseline forecasts – already incorporate some impact from the referendum vote, although it is impossible to isolate that from other surprises relative to our pre-vote forecasts. The impact of Brexit itself – once it happens – would also continue to unfold for many years beyond the end of the stress test horizon.)
- 9 As we noted in our previous report, history tells us that the biggest and most frequent fiscal risks in peacetime relate to the economy – even in the absence of specific shocks like Brexit. At the time we finalised this report, these risks appeared to be rising – the latest survey data suggested that growth paused at best in the second quarter. In part, this is likely to be an unwinding of stockpiling by businesses ahead of the previous proposed Brexit date of 29 March, but a more general weakness may persist and intensify as 31 October nears.
- 10 While this may not signal that the economy is currently entering a recession, these occur roughly once a decade in the UK, and are almost always unexpected when they do. Policy can reduce the likelihood of these risks crystallising and their fiscal impact when they do, but the underlying risk cannot be eliminated. In its response to our first report the Government acknowledged the need to seek to reduce debt during more favourable times to ensure that there is room to let it rise when shocks hit, without interest costs rising to undesirable levels.
- 11 Looking at specific risks to receipts and spending points to many ongoing pressures that governments must deal with, while also preparing for inevitable future shocks. There are long-term pressures on revenue from some tax bases, from trends in smoking, drinking and

car efficiency, and from the digitalisation of economic activity. And policy is always a source of risk, given repeated decisions to cancel fuel duty increases, although manifesto commitments on the income tax personal allowance and higher rate threshold have now been met. The large, rising and poorly understood cost of tax reliefs poses risks too.

- 12 As ever, there are significant upward pressures on public spending. Over the longer term, the biggest arise from non-demographic cost pressures in health and social care, and the impact of an ageing population on them and the state pension. The near-term fiscal risk from health spending that we flagged in our previous report crystallised with the June 2018 announcement of an NHS settlement more consistent with historical trends in spending. But long-term pressures remain and this might be seen as just the first down-payment on them. And the Government has chosen to retain a triple lock on pensions uprating that ratchets spending higher as a share of GDP – despite acknowledging the fiscal risk that that poses.
- 13 One issue that we did not address in any detail in our first *FRR* was climate change, which has the potential to inflict both sudden shocks and slower-building pressures on the public finances. Their nature and cost will of course depend hugely on how the climate itself evolves. If global mitigation efforts fail, the risks posed by conflict, mass migration and catastrophic weather events could be severe. But if the targets agreed to in Paris in 2015 are met and there is only modest further warming, the risks would be less severe. In such a world, and when viewed individually, the fiscal risks associated with climate change do not appear especially large relative to others we cover in this report. The effects of extreme weather are not likely to be on the same scale as a major recession – although they might be more frequent. And the cost of adaptation and mitigation measures will probably not be as large as those related to ageing or the cost pressures in health care. But such conclusions might simply reflect the difficulty we all have in foreseeing the full systemic consequences of significant global warming. We intend to draw on the Bank of England’s forthcoming scenario analysis to develop our quantitative assessment of climate-related fiscal risks.
- 14 Throughout this report, we look at the way fiscal risks have evolved partly in the light of the Treasury’s response to our first report – *Managing fiscal risks (MFR)* – which it published a year ago. Several countries produce fiscal risk reports, but the UK is unusual in having it prepared by an independent body and is, we think, unique in having a Government that has promised in legislation to respond. We welcome the substantive nature of that response and hope that over time both our reports and the Treasury’s responses will help improve fiscal risk management both directly and by facilitating more informed debate and discussion.

Our approach

- 15 Chapter 1 sets out our approach. Our goal is to identify risks to the outlook for the UK public finances over two horizons: to our March forecast over the next five years; and to fiscal sustainability over the next 50. We are interested primarily in ‘downside’ risks that would make things look worse rather than better. They are a bigger challenge to policymakers.
- 16 When discussing fiscal risk, it is important to remember that the whole purpose of much government activity is to pool risks that society has decided would better be taken on by the

state than by individuals. For example: the NHS takes on the risk that people would otherwise face not knowing when or how they might fall ill; state pensions remove the risk of pensioners' incomes falling below a certain level, perhaps due to their living longer than expected or receiving lower returns on pension savings than anticipated; and universal credit reduces the financial risks associated with unexpected periods out of work or on low pay.

- 17 Where possible, we try to evaluate the probability that particular risks will crystallise over the medium and long term, and the potential impact if they do. Occasionally these can be estimated with a degree of precision, but more often broad judgements must suffice.
- 18 Finally, we consider what governments do in light of these risks, either managing and mitigating them through different means or tolerating them as developments that will occasionally push the public finances off course. At the end of each chapter we list some issues that the Government may wish to address in its formal response to this report.

Macroeconomic risks

- 19 In Chapter 2 we look at various ways in which macroeconomic risks can affect the public finances. History suggests that these are the high impact risks most likely to crystallise over the medium and longer term. Two years ago, we identified potential output growth as the most important long-term macroeconomic risk. We also noted that the chance of a recession is around one in two over any five-year horizon and virtually certain over 50 years. We also discussed the fiscal risks posed by fluctuations in the relatively tax-rich housing market, and by the fact that employment income is more highly taxed than profits. We highlighted that Brexit-related uncertainties overlay many of these risks.
- 20 The Government's *MFR* response generally agreed with the assessment we provided. It recognised the importance of long-run productivity growth and listed steps it was taking to try to raise it. On cyclical shocks it pointed to previous reforms to the monetary and fiscal policy frameworks that enable macroeconomic policy to play a supportive role in recessions. And it highlighted specific steps taken by the Ministry of Housing, Communities and Local Government to manage the credit risk arising from its exposure to the housing sector.
- 21 As regards Brexit, *MFR* declared that the UK would seek a "deep and comprehensive economic partnership" with the EU, to maximise the benefits and minimise the potential disruption. This would include seeking the establishment by the UK and the EU of a free trade area for goods and the phased introduction of a facilitated customs arrangement.
- 22 Our updated assessment is that the majority of medium-term, non-Brexit related risks are little changed over the past two years in terms of probability and impact. That said:
 - Two years ago we assigned a medium likelihood to **trend productivity growth** persisting at the lower rates seen post-crisis rather than picking up as we then forecast, but noted that the latest data at the time might suggest a gloomier prognosis. So it has proved. In November 2017 we revised productivity growth down further, having reviewed the many candidate explanations for the post-crisis malaise and decided that

it was not central to assume that their effects would pass over the coming five years. But there are still considerable risks. We still assume some pick-up, which might not materialise. Then again, productivity could recover more quickly than we forecast, though that seems unlikely in the near term if Brexit-related uncertainty persists.

- **Short-term cyclical risks** appear to have risen this year. The latest data and surveys suggest the economy flatlined at best in the second quarter. Some of this is likely to be a 'pay-back' after Brexit-related stock building in the first quarter. But surveys were particularly weak in June, suggesting that the pace of growth is likely to remain weak. This raises the risk that the economy may be entering a full-blown recession. The fiscal risks posed by recessions depend on their depth and persistence, the sectors most deeply affected, and the pace at which the economy subsequently recovers. The fiscal risk posed by a cyclical downturn is increased by the proximity of Bank Rate to its effective lower bound and by doubts that some have expressed about the effectiveness of unconventional monetary policy, both of which suggest that the authorities may rely more heavily on fiscal stimulus measures than would previously have been the case.

23 We also take a more in-depth look at the fiscal risks from mismeasurement of the output gap – the extent to which activity in the economy lies above or below the sustainable level consistent with stable inflation. Uncertainty surrounding the output gap – which would be particularly acute if Brexit were to disrupt economic activity – means that our central estimate could provide the Chancellor with a misleading steer as to the size of the structural budget deficit. In principle this risk should be symmetric, but evidence around recessions is that estimates can worsen significantly over time as forecasters tend to conclude that they were over-optimistic ahead of the downturn. To put the size of this risk in context, in real-time the Treasury, IMF and OECD all estimated output to be close to potential just before the onset of the 2008-9 recession. Current estimates of the output gap are now in the range 1 to 3 per cent. This represents an average change in the estimated size of the structural deficit in 2008 of a little over 1 per cent of nominal GDP – around £26 billion in today's terms.

Financial sector risks

24 In Chapter 3 we consider the fiscal risks associated with the financial sector. Last time we focused not only on the potential costs of financial crises, but also how the public finances might be affected if this tax-rich sector were to shrink as a share of the economy. We also presented a fiscal stress test that modelled a period of synchronised domestic and global economic weakness coupled with financial market stress. This increased public sector net debt by 34 per cent of GDP by the stress test horizon, relative to the baseline forecast.

25 The Government's *MFR* response focused on post-crisis changes to the regulatory policy framework, notably the new macro- and micro-prudential regulators, to reduce financial stability risks, and steps to reduce taxpayer exposure in the event of an institution failing. In

respect of Brexit and the 'passporting regime',¹ it pointed to the time afforded by the Withdrawal Agreement 'implementation period' for firms to plan and to steps it had taken to allow European firms temporary permission to access the UK market in a no-deal Brexit.

- 26 Given that many of the reforms the Government cited preceded our previous *FRR*, and with the Financial Policy Committee's own assessment of stability risks little changed, our assessment of the fiscal risks posed by the financial sector is little changed too. So we see a low, but not negligible, risk of another crisis over the next five years. Over the longer term, based on the Independent Commission on Banking's estimate of the historical probability of crises occurring, we might expect the UK to suffer one around once in every 20 years.
- 27 One lesson from history is that when risk is suppressed in one part of the financial system, it often migrates to some other less heavily regulated part. So in this report we take a closer look at the shadow banking sector and the fiscal risks it might pose. Identifying and measuring shadow banking activity is not straightforward, but, on the measures available, the recent rapid growth in shadow banking is somewhat reminiscent of the build-up to the global financial crisis. While steps have been taken to increase the oversight and regulation of shadow banking entities, some former policymakers have warned that the present 'monitor and respond' approach to shadow banking risks is likely to prove insufficient. For these and other reasons, we believe it is appropriate to remain cautious in our assessment of the potential risks from shadow banking. Moreover, experience suggests that a financial sector that appears to be adequately regulated may turn out not to be so. Vulnerabilities that appear obvious with hindsight are often much harder to discern in real time.
- 28 The fiscal risks that a shadow banking-led crisis might pose include calls on the public purse to bail out institutions and to compensate retail investors, as well as absorbing the fiscal consequences of any economic fallout. Contagion to the core banking system is possible too.

Revenue risks

- 29 In Chapter 4 we consider specific risks to revenues. Two years ago, we highlighted several sources of risk to tax bases (from trends in smoking, drinking and driving, as well as the depletion of North Sea oil and gas reserves) and to the amount of tax raised from a given base (from non-compliance and from people choosing self-employment or working for their own company over employee status). We also discussed tax policy risks (aspirations not yet factored into forecasts, non-implementation of stated policies, and the disparity between the relatively certain costs of giveaways and the relatively uncertain yields from measures to tackle tax avoidance and evasion). And we discussed the increasing concentration of receipts among a small number of taxpayers (notably for income tax and stamp duty land tax).
- 30 The Government's *MFR* response generally concurred with our assessment of where the risks lay, but had less to say about its view of those risks or how it manages them. It recognised

¹ The 'passporting' regime allows firms authorised in one country within the Single Market to sell certain financial products into any other country within the Single Market. Outside the Single Market, UK regulation would need to be recognised as equivalent by the European Commission for UK-based firms to continue selling particular types of financial services into the Single Market.

pressures on tax bases, while noting other objectives (for example, the public health gains from reduced smoking), and set out more concrete steps in respect of managing and reducing North Sea decommissioning costs. It heralded the declining trend in the measured 'tax gap' and highlighted the many measures taken to try to reduce it further, including through digitalisation. On policy risks, it set out its rationale for policy decisions taken, but did not address the fiscal risks associated with the approach of stating one policy but following another. And it had little to say about the concentration of receipts.

- 31 Our assessment of revenue-related fiscal risks is little changed from two years ago. Long-term pressures on excise duty tax bases and the North Sea continues. The tax gap has ticked up, while Brexit is placing greater burdens on HMRC. Fuel duty continues to be frozen year by year, although manifesto commitments on the income tax personal allowance and higher rate threshold have now been met. And the concentration of tax receipts remains an issue, with the large rise in the personal allowance exacerbating the trend in income tax.
- 32 Our deeper look at the issues of tax reliefs and digitalisation raises some new issues. Tax expenditures – those reliefs designed to promote another policy objective, like investment in R&D – cost around 8 per cent of GDP, a cost that has been rising and which receives less scrutiny than conventional public spending. A modest upside surprise to growth in their cost could be fiscally material. Risks posed by digitalisation are more balanced, particularly over a longer horizon. While digitalisation of the economy poses challenges in terms of what can be taxed and where, the potential gains in terms of tax administration could be material.

Primary spending risks

- 33 In Chapter 5 we consider risks to primary spending – i.e. everything other than debt interest. This is spending over which governments have some direct control – for example, via what they choose to spend on a public service or the way they structure the welfare system.
- 34 The two largest medium-term spending risks we highlighted two years ago were the unquantifiable pressure posed by 'austerity fatigue' and the more quantifiable shortfall in prospective health spending growth relative to history. We also noted the declining proportion of spending subject to departmental expenditure limits (and the spending control risk that might pose), the risks of local authorities tapping their reserves and their commercial property investments, and welfare spending risks from ongoing reforms and court cases. Over the long term, primary spending is the largest risk to fiscal sustainability – thanks to non-demographic cost pressures in health and social care, and the impact of an ageing population on them and the state pension. The long-term cost of the triple lock is large too.
- 35 Before the Government had published *MFR* it had already announced a multi-year, multi-billion pound settlement for the NHS that crystallised the largest medium-term risk we had identified. This was not accompanied by a detailed reform plan explaining how the extra money would be used or by the announcement of any measures to help pay for it.
- 36 In *MFR* the Government noted the risks to health and social care spending, promising a delayed green paper on the latter by autumn 2018, though in the event it is still pending. Its

approach to the risks from litigation included a strategy to address the rising costs of clinical negligence, also slated for publication in autumn 2018 and also still pending, and to improve the management and reporting of legal risks within the welfare system, which has now been reflected in DWP's accounts. On the triple lock, it noted the ratchet effect it had on spending as a share of GDP, but nonetheless committed to retain it *"for the rest of this Parliament"*. And with respect to local authorities' borrowing for commercial purposes, it pointed to new guidance and that it would *"monitor how local authorities respond to the revised guidance, and take appropriate further action if this is necessary"*. Given continued growth in such investments, the Treasury has told us that further steps are being considered.

- 37 Risks to our medium-term forecast have probably declined relative to two years ago, largely because the forecast now includes stronger real growth in health spending. But there has been little change in many other sources of risk. The spending control framework seems to be under pressure, with major announcements being made outside fiscal events, and the Conservative leadership candidates making pledges that would prove expensive if pursued.
- 38 The likely cost of the BBC's recent decision to means-test free TV licences for the over-75s by linking it to pension credit – thereby potentially prompting a material number of those currently not taking it up to do so – poses a fiscal risk that we had not previously envisaged. It is unusual for a government to delegate parameters of welfare policy to a broadcasting company to save money. The unintended consequence is likely to be that the link to pension credit receipt will raise welfare spending by more than bearing the remaining cost of free licences reduces BBC spending, so the budget deficit will rise not fall.
- 39 Other developments include the Government's aspiration to increase the National Living Wage further after 2020, and the intention to impose a more restrictive immigration system after Brexit, both of which would generate additional costs for the health and social care sectors. By contrast, HMRC's victory in the landmark Littlewoods tax litigation over the application of compound interest to repayment of past taxes has removed one major risk.

Balance sheet risks

- 40 In Chapter 6 we look at risks that could affect the balance sheet directly, via balance sheet transactions (e.g. lending to the private sector or issuing debt to purchase assets), balance sheet transfers (when government assumes the liabilities of a private sector entity, either in the real world or through statistical reclassification) and valuation effects (e.g. the effect of currency movements on the foreign exchange reserves). In our 2017 report, we noted a wide range of balance sheet risks, including those arising from: an incomplete understanding of the balance sheet and the associated fiscal illusions; the management of the government's assets and liabilities (including uncertainty about the scale and timing of financial asset sales); the growing use of government guarantees; and the potential for reclassifications.
- 41 The Government's MFR response showed more progress in respect of balance sheet management than in many other areas. It outlined plans to improve measures of the balance sheet (all of which have since been delivered or are about to be), steps being taken to increase transparency around asset sales (with guidance since published) and to manage

guarantees and contingent liabilities (with a new approval regime in place). Its 'Balance Sheet Review' aims to improve the information on assets and liabilities held across government, identify opportunities for the disposal of assets, improve the return on retained assets, and reduce associated risks. It also encouraged the ONS to publish clearer information on the pipeline of classification decisions that flow from its own work plan.

- 42 Overall, our assessment is that balance sheet risks are largely unchanged, though they are now better monitored. The greatest risk remains the possibility that the Government will feel compelled to respond to some unexpected future event or crisis, triggering a step change in the level of public debt. Fiscal illusions, especially with respect to public sector net debt, and the incentives they create for policymakers wishing to hide public sector activity off the balance sheet remain a risk. Changes to the accounting treatment of student loans will remove a particularly obvious illusion, but the steps taken by the Government to secure the reclassification of housing associations to the private sector reinstates another.
- 43 Concrete steps have been taken to improve how the public sector's assets (including intangible ones) and liabilities are recorded or understood, which should improve the Government's management of them and facilitate our scrutiny of them. We will survey any examples of this transparency affecting decision-making in future editions of this report.

Debt interest risks

- 44 In Chapter 7 we consider risks associated with debt interest spending and debt dynamics. These are affected by the scale and composition of public sector debt – its maturity and the balance between inflation-linked and conventional government bonds ('gilts') – and the interest rates paid. In our 2017 report, we highlighted the increased medium-term risks since the crisis arising from a higher debt stock, including a much higher stock of index-linked gilts, and the increase in the Bank of England Asset Purchase Facility's gilt holdings, which are financed by creating reserve deposits on which commercial banks earn only Bank Rate, so making net payments to the private sector more sensitive to short-term interest rates. We also highlighted the risk of interest rates rising relative to nominal GDP growth.
- 45 The Government's *MFR* response largely concurred with this assessment. It discussed the actions being taken to address various risks, including reducing the extent to which the Government's financing requirement would be met by issuing index-linked gilts and setting fiscal policy to ensure that debt continued to fall relative to GDP.
- 46 Overall the picture is little changed from two years ago, as might be expected with risks to a stock that is typically slow-moving. The reduction in index-linked gilt issuance has reduced the sensitivity of future spending to RPI inflation somewhat, but – with interest rates at historic lows, and having fallen further since our March forecast – interest rates still seem more likely to overshoot our forecast materially than they are to undershoot it over the medium term. Market participants also appear to be pricing in some chance of a no-deal Brexit and the likely monetary policy response, so a smooth outcome could see interest rates rise again.

- 47 Our deeper look at the ‘growth-corrected interest rate’ (or ‘R-G’ for short), a key factor driving the evolution of the debt-to-GDP ratio, highlights its variability over the past 120 years, and hence the highly uncertain outlook. While a continuation of the current unusually low R-G would make it less risky to allow increases in debt in response to adverse shocks, it is important not to overstate its importance to future fiscal sustainability. The more salient challenge is how demographic trends and other cost pressures in health and social care provision will affect spending over the longer run. The favourable effect of a lower R-G would make the sustainability challenge posed by these pressures less daunting, but the chance of it being sufficiently large or persistent to offset them altogether is negligible.

Policy risks

- 48 In Chapter 8 we look at potential sources of fiscal policy risk and the drivers of fiscal policy over the past decade. We consider the extent to which governments (of different hues) tend to stick to their stated fiscal objectives and policy announcements and how they respond to changes in our underlying forecast of the fiscal position. The risk here is that self-imposed rules are revised to accommodate changes in the forecast, rather than policy being adjusted in order to meet them. In such a scenario, the profile of debt would be expected to be higher than if governments adhered to their rules rather than altering them when convenient. This seems to be borne out by recent history, notably following the EU referendum.
- 49 At the same time, the Government has engaged in sometimes remarkably precise medium-term fine-tuning of its policy measures to meet informal objectives for the public finances – borrowing falling on a particular measure in a particular year, the precise headroom against the formal fiscal rules, or the profile of the debt-to-GDP ratio to one decimal place. The margins by which these objectives were met were rarely fiscally or statistically significant.
- 50 Unsurprisingly, there is a similar pattern of accommodative revisions to already announced policy, particularly to spending plans that lie outside Spending Review periods. These have tended to contain fiscal tightening when first announced, but have been relaxed as time proceeds and plans have to be firmed up. Given that the bulk of departmental spending plans for 2020-21 onwards have not yet been set, past behaviour would suggest this is a material source of policy risk to our central forecast. The spending pledges being made during the Conservative Party leadership contest only make that more likely.
- 51 The Government’s current formal fiscal objective is to balance the budget by the mid-2020s. But the current Chancellor’s recent statements suggest that the Government has all but abandoned that goal in favour of the less stretching target of ensuring that debt falls relative to GDP. He told the Treasury Select Committee that balancing the budget was “a choice”, while asking Conservative Party leadership candidates to commit only to “keeping our national debt falling”. Despite that, both remaining candidates have set out proposals with potential costs in the low tens of billions of pounds, with few accompanying suggestions of ways to cut other spending or to raise revenue. It remains to be seen what the winner and his Chancellor will implement in future fiscal events, which will presumably depend in part on near-term Brexit developments. But from their statements, it seems highly likely that the new administration will loosen fiscal policy and adopt less ambitious fiscal objectives.

52 In this context, we look at how far primary borrowing could rise and still keep debt falling on the assumptions underpinning our March forecast – which include assuming a smooth path to a Brexit deal. Abstracting from the uneven effect on net debt of Bank of England schemes (notably the £121 billion Term Funding Scheme), primary borrowing would have to rise by around £22 billion in 2020-21 for debt not to fall relative to GDP in that year. Given the £11.6 billion loss of headroom that will follow forthcoming changes to the accounting treatment of student loans, this would lead to the current fiscal mandate being missed by a significant margin. Between 2021-22 and 2023-24, primary borrowing would have to rise by between £21 billion and £25 billion for debt not to fall in any of those years.

Climate change

53 In Chapter 9 we survey some of the climate-related risks to the economy and the nature of climate-related fiscal risks. We noted this issue in 2017, but did not analyse it in any depth. Understandably, the Government did not address it in its *MFR* response. Here we note that:

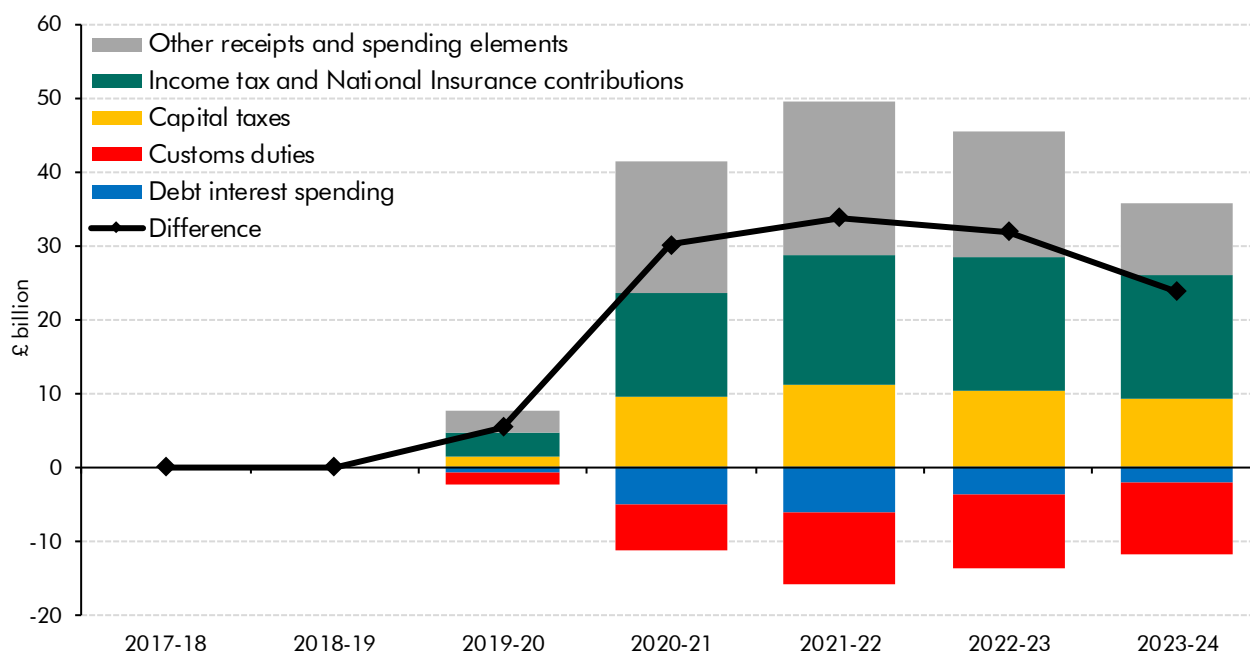
- **The scale of the risks associated with climate change will depend hugely on the extent to which global temperatures rise.** If the most ambitious of the goals agreed in Paris in 2015 are met and temperatures stabilised at 1.5°C above pre-industrial levels – and therefore only around 0.5°C higher than temperatures witnessed in recent years – then the scale and frequency of climate-related events is likely to increase, but perhaps not significantly compared to what we have already experienced. By contrast, if global mitigation efforts were to fail and temperatures reach 4°C above pre-industrial levels, the risks could be much greater and more difficult to assess, with mass international migration and induced periods of conflict, as well as extreme weather events.
- A useful **framework for the analysis of climate-related fiscal risks** is provided by the approach adopted by the Bank of England (and other central banks and financial regulators) for analysing climate-related risks to financial stability. This splits them into physical risks – those related to extreme weather events and gradual global warming – and transition risks – those related to the shift to a low-carbon economy. And it proposes four high-level scenarios that capture different settings along two important dimensions: the strength of the greenhouse gas mitigating policy response – whether Paris targets are met or not; and how smoothly and foreseeably those actions are taken – whether the transition to either end point is orderly or disorderly.
- **Climate-related risks to the economy** are not particularly well understood or modelled, but they will clearly be an important indirect source of fiscal risk. Extreme weather events could disrupt economic activity. Diverting investment to adaptation needs could impinge on investment in productive capital. The same could be true of investment in lowering greenhouse gas emissions, although as green technologies advance, the greater risk may be in foregone output growth if the economy is not well placed to capitalise on those advances or is locked into outdated infrastructure.

- **Direct fiscal implications** from changes to tax revenues and spending can arise through all the channels we consider. Extreme weather events can generate calls on public spending to repair damage to private and public assets. Investment in adaptation measures – for example, in flood defences and to manage the consequences of coastal erosion – require public spending. And mitigation policies will typically have either fiscal costs in terms of public spending or fiscal gains where taxes are used to discourage particular activities. In a world in which global warming proceeds as envisaged by the Paris targets, these direct effects currently appear relatively modest.

A no-deal Brexit stress test scenario

- 54 In Chapter 10 we carry out a fiscal ‘stress test’ that quantifies the impact on the public finances of a particular no-deal, no-transition Brexit scenario, namely the less disruptive of the two presented by the IMF in its April 2019 *World Economic Outlook*. While it is a scenario, rather than a forecast, it is nevertheless useful for exploring the channels through which the public finances might respond in the case of a no-deal Brexit.
- 55 Heightened uncertainty and declining confidence deter investment, while higher trade barriers with the EU weigh on exports. Together, these push the economy into recession, with asset prices and the pound falling sharply. Real GDP falls by 2 per cent by the end of 2020 and is 4 per cent below our March forecast by that point. Higher trade barriers also slow growth in potential productivity, while lower net inward migration reduces labour force growth, so potential output is lower than the baseline throughout the scenario (and beyond). The imposition of tariffs and the sterling depreciation raise inflation and squeeze real household incomes, but the Monetary Policy Committee is able to cut Bank Rate to support demand, helping to bring output back towards potential and inflation back towards target.
- 56 Borrowing is around £30 billion a year higher than our March forecast from 2020-21 onwards. Lower receipts – in particular income tax and NICs (due to the recession) and capital taxes (due to weaker asset prices) – explain most of the deterioration. These are partly offset by lower debt interest spending (thanks to lower interest rates and RPI inflation) and the revenue raised customs duties (which are treated as EU rather than UK taxes in the baseline). Higher borrowing and the assumed rollover of Term Funding Scheme loans leave public sector net debt around 12 per cent of GDP higher than our March forecast by 2023-24.

Chart 1: Stress test vs March forecast: sources of differences in PSNB



Source: ONS, OBR

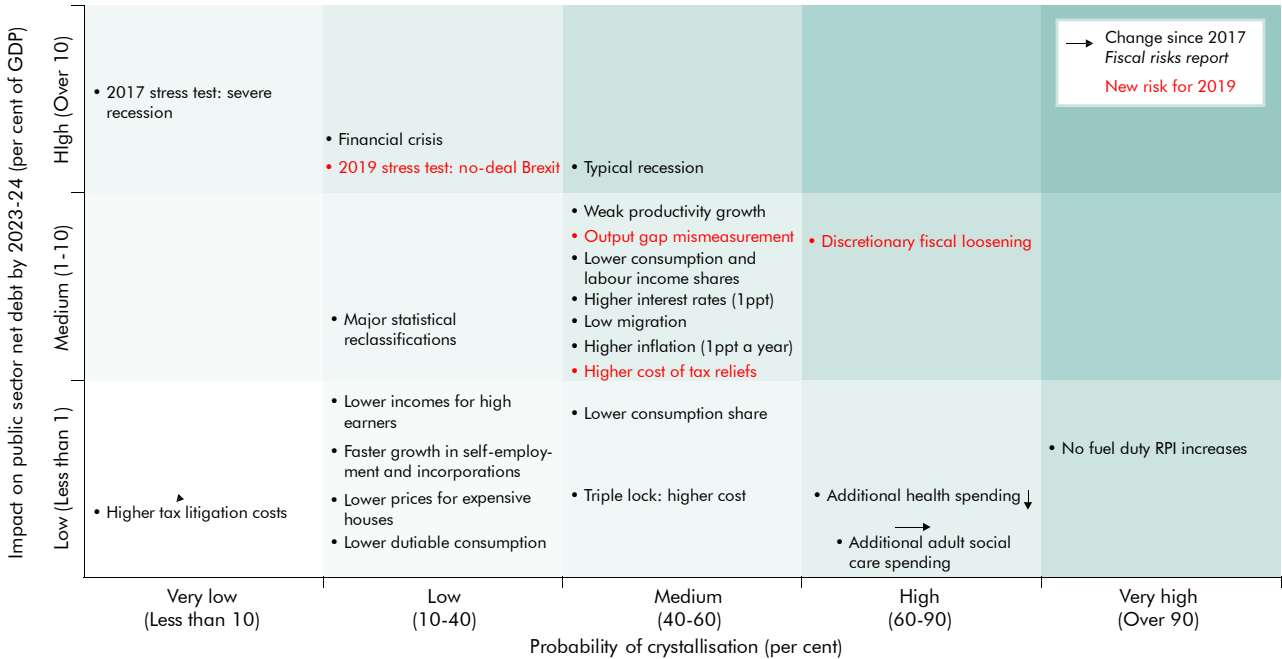
- 57 The fiscal mandate is met with a slightly smaller margin of £22.7 billion, but the debt target is missed. Meeting the mandate by only a slightly smaller margin than in March reflects two features of the scenario: first, the near-term hit to the economy is largely cyclical; and second, higher customs duties generate a near-term structural improvement to receipts. The Government's objective of returning the budget to balance by 2025-26 is further out of reach than in our March forecast, with borrowing standing at almost £40 billion in 2023-24.
- 58 The stress test is by no means a worst-case scenario under a no-deal, no-transition Brexit. Neither the cyclical downturn nor the medium-term loss of potential output are as large as those considered in the Bank of England's disruptive and disorderly Brexit scenarios that were published last year. Most important from the perspective of fiscal sustainability would be if lower trade intensity were to generate adverse dynamic effects on productivity and potential output. These would be relevant in any Brexit scenario.

Summary of medium and long-term fiscal risks

- 59 Figures 1.1 and 1.2 show a stylised illustration of the main risks to our medium-term fiscal forecasts and to long-run sustainability, by size and likelihood. For the medium-term risks, because we aim to factor into our central forecast any event or trend that we consider more likely than not to crystallise, most forecast risks are deemed to be medium or low probability almost by definition. The exceptions are policy risks, since our forecasts are conditioned on the Government's current stated policy rather than a judgement about the *most likely* path for policy. For the long run, there are more risks that we consider highly likely to occur and to be relatively high impact if they do. This is true of both potential shocks and pressures.

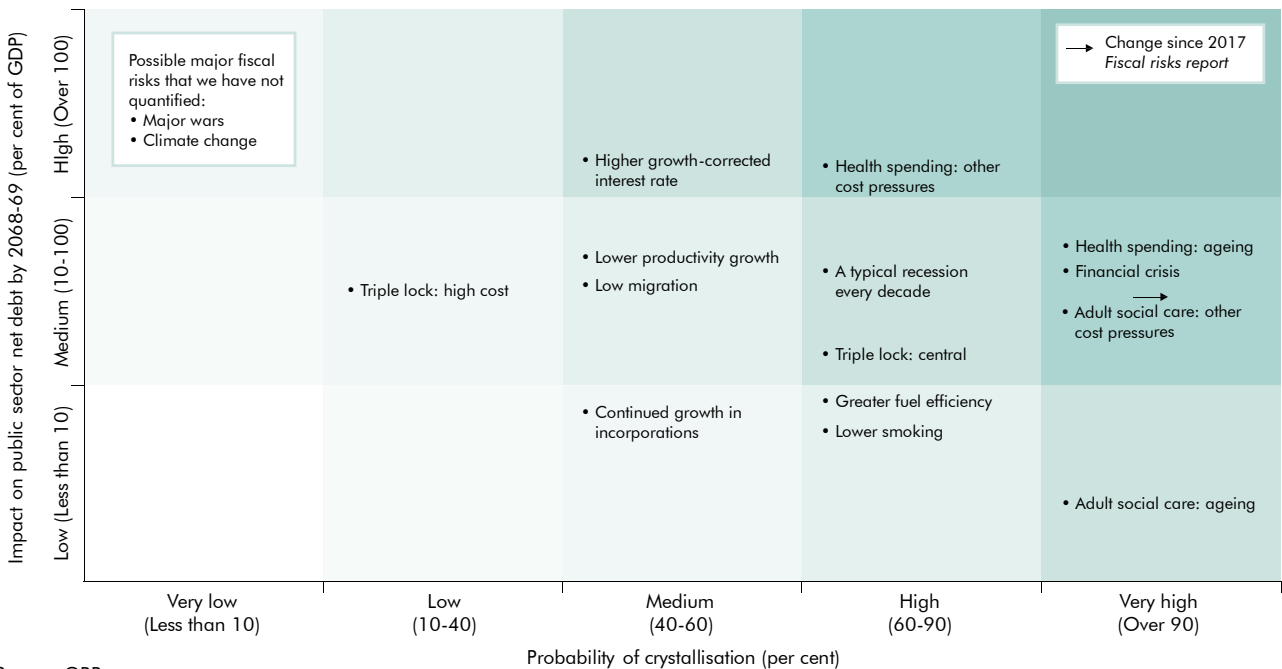
60 Alongside this report we are also publishing a comprehensive risk register on our website, which lists all the fiscal risks discussed in this report, our assessment of their size and likelihood, and, for those identified in our 2017 report, any changes since then.

Figure 1: Sources of fiscal risk over the medium term



Note: The 'Income tax policy commitments' risks related to the 2017 Conservative Party manifesto pledges we included in 2017 has crystallised and therefore been removed.
Source: OBR

Figure 2: Sources of risk to fiscal sustainability



Source: OBR

1 Introduction

- 1.1 The OBR is tasked with producing a biennial report on *“the main risks to the public finances, including macroeconomic risks and specific fiscal risks”*. Several countries produce regular fiscal risk assessments, but in most cases these are undertaken by finance ministries or cabinet offices; the UK is unusual in outsourcing it to an independent fiscal institution, thereby boosting transparency around the Government’s management of those risks.
- 1.2 Fiscal risk assessment is a potentially huge subject. There are few activities in the economy or in the public sector without some implications for the public finances – and each may be subject to risks and uncertainties. In this report, we look first at fiscal risks related to developments in the macroeconomy and the financial sector, and then at a variety of specific revenue, spending and balance sheet risks, before pulling several of them together in a fiscal ‘stress test’. We also consider fiscal risks associated with climate change and the operation of fiscal policy. Throughout the report we look at how well our 2017 risk assessment has held up against developments over the past two years, and how the Government’s formal response to that assessment addressed the issues we raised.
- 1.3 This chapter introduces the framework we use to analyse fiscal risks. It starts by stepping back to consider the role of government in managing the risks faced by society. It then explains what we consider as fiscal risks and how they affect the public finances, our approach to analysing specific fiscal risks, and the Government’s approach to managing them. It ends by raising some overarching issues for the Government’s next response.

Government’s role in managing risks society faces

- 1.4 The definition of fiscal risk we use in this report (described below) focuses on surprises relative to forecasts and pressures on fiscal sustainability. But it is important to remember that the whole purpose of much government activity is to pool risks that society has decided (via the political process) would better be taken on by the state than by individuals, either directly or through participation in private insurance markets. For example: the NHS takes on the risk people would otherwise face not knowing when or how they might fall ill; state pensions remove the risk of pensioners’ incomes falling below a certain level, due to their living longer than expected or receiving disappointing returns on pension savings; and universal credit reduces the risks associated with periods out of work or on low pay.
- 1.5 One way to split the risks that society confronts is into individual and collective risks. The rationale for government intervention is different in each case. For example, take pensions:
 - **Individual risks:** in principle, risks to an individual’s retirement income can be insured against, with financial markets allowing them to be spread through pooling. For

example, providers of annuities can offset the higher cost of payments to those who live longer than average with the lower cost of payments to those who die earlier than average. The probability attached to different outcomes, and the cost were they to materialise, can be calculated – making them quantifiable risks rather than unquantifiable uncertainties. But other information problems mean that markets of this type do not function well – for various reasons many people are unwilling to buy an annuity voluntarily. This ‘market failure’ creates a rationale for government intervention. Until reforms announced in Budget 2014, it was in effect compulsory for most individuals with a defined-contribution pension to buy an annuity on retirement.

- **Collective risks:** unlike individual risks, it is impossible even in principle to insure against collective risks – risks that affect everyone if they crystallise. This type of risk cannot be shared within generations, at best only across them (even that may not be possible), and doing that requires government intervention. These risks are often compounded in practice by unquantifiable uncertainty – for instance, in the case of pensions, while past trends can provide a guide, prospects for longevity a generation hence are largely unknowable. In theory, the government could try to establish a market (for example, by issuing longevity bonds as it does with inflation-linked bonds), but this would not be straightforward. In practice, the Government has chosen to provide a state pension, currently uprated by the ‘triple lock’, and tax relief on individuals’ pension contributions. As a result, government holds the inflation risk in respect of the state pension. But it has passed some longevity risk back to individuals by linking the state pension age to projections of life expectancy.

- 1.6 Given this distinction, when considering long-term risks to health spending posed by population ageing and other cost pressures, we are talking about risks to the cost of providing health care, taking as given society’s choice that such costs should be shared within and across generations via government, rather than falling to the individuals affected.
- 1.7 In some cases, the appropriate allocation of responsibility between the individual and the state is highly contentious. That is illustrated by the continuing discussions around who should meet the costs of adult social care. The appropriate balance between individual and state has been reviewed repeatedly and another Green Paper is pending. Moreover, this is an area where unquantifiable uncertainty is rife: for instance, regarding the changing probability of needing care as life expectancy rises; and the scope for future medical and technological advances to affect care costs.

What do we consider a fiscal risk?

When is a risk a fiscal risk?

- 1.8 The International Monetary Fund (IMF) defines a fiscal risk as “*the possibility of deviations of fiscal outcomes from what was expected at the time of the Budget or other forecast*”.¹ On this basis, we would define a fiscal risk as a potential deviation from the 5-year-ahead

¹ IMF Fiscal Affairs Department, *Fiscal risks – sources, disclosure and management*, 2009.

central forecasts for public sector spending, receipts, borrowing and debt contained in our *Economic and fiscal outlooks (EFO)*, and from the corresponding 50-year-ahead projections in our *Fiscal sustainability reports (FSR)*. We are required by Parliament to base these forecasts and projections on current stated Government policy, although in most cases current policy is much less clearly defined over the long term than over the medium term. Where appropriate, we consider policy risks – areas where government statements or past behaviour point to likely policy changes (see also Chapter 8 in this report).

- 1.9 On this definition, however, what constitutes a fiscal risk depends crucially on which developments in the public finances are incorporated into the central projection and which are regarded as potential deviations. Given the sensitivity of long-term projections to these sorts of judgements, we focus on risks around our central forecast over the medium term, but on risks to fiscal sustainability (rather than to our latest central projection) over the longer term. This ensures that we do not end up ignoring some of the most important – notably pressures on health spending – simply because we already assume they crystallise.
- 1.10 Our focus on risks to sustainability also implies an asymmetry of approach – we are more (although not exclusively) interested in potential ‘bad news’ than ‘good news’. Experience over time and across countries suggests that shocks to the public finances (especially big ones) are more likely to be adverse than beneficial – the cost of wars being the most dramatic example – and that governments are usually quicker to spend unexpected windfalls from good news than they are to address unexpected costs from bad news.

Fiscal risks and the public finances

Stock and flow measures of the public finances

- 1.11 Once we have decided what to treat as a fiscal risk, we need to assess how likely it is to crystallise and how big an impact it would have on the public finances. For the latter, we employ the fiscal metrics that are reported by the Office for National Statistics (ONS) in the National Accounts, supplemented with other information. We are interested both in flows of spending and receipts, and in the stocks of assets and liabilities on the balance sheet.
- 1.12 Starting with the flows, governments spend money every year on things like public services, capital investment, pensions and benefit payments, and they raise money, mainly from taxes. Governments also have to pay interest on their financial liabilities, while they receive interest and dividend income from their financial assets. Public sector net borrowing (PSNB) – the headline measure of borrowing – is the difference between total spending and total receipts.² The ‘primary’ balance excludes interest and dividend payments and receipts.
- 1.13 Turning to the balance sheet, the National Accounts recognise a variety of public sector financial liabilities and assets. The former include ‘debt liabilities’ (notably gilts), plus other liabilities (such as accounts payable). The latter include ‘liquid assets’ (notably the foreign exchange reserves), plus illiquid ones (such as student loans or accounts receivable). Public

² Specifically, ‘public sector net borrowing excluding public sector banks’.

sector net debt (PSND) – the headline summary measure of the public sector balance sheet – is the difference between the government’s debt liabilities and its liquid assets.³ Public sector net financial liabilities (PSNFL) is a newer and broader measure than PSND, including all financial assets and liabilities in the National Accounts. On both measures, the government’s liabilities exceed its assets by a considerable margin. But they both exclude the government’s fixed assets (such as roads and buildings) and by far its greatest financial asset – its ability to levy future taxes – which some broader measures do reflect.⁴

- 1.14 When looking at the evolution of both stock and flow measures of the public finances over time, it usually makes most sense to look at them relative to GDP. For, as the economy grows over time, so too does the pool of potential tax revenue that governments can draw on to finance public spending.

How fiscal risks can have both stock and flow effects

- 1.15 Viewed through this stock-and-flow accounting framework, we can think of most fiscal risks as potential events or trends that would result in:

- a one-off or persistent increase in **spending** (such as the cost of fighting a war or the need to spend a higher proportion of GDP on health because of cost pressures);
- a one-off or persistent loss of **revenue** (such as the sharp falls in stamp duty when house prices fall or a structural decline in excise duty as a result of reduced smoking);
- a **balance sheet transaction**, in which the government issues debt to buy an asset or to lend to the private sector (such as the purchase of shares in RBS during the crisis);
- a **balance sheet transfer**, in which the government directly absorbs assets and liabilities from the private sector (this can be a real-world event, like the transfer of Royal Mail’s historic pension liabilities and associated assets to the public sector in 2012, or a purely statistical one, as when the ONS reclassified English housing associations from the private to the public sector in 2015 and back again in 2017); or
- a **change in the value of existing assets and liabilities** (such as the impact of exchange rate changes on the sterling value of the UK’s unhedged foreign exchange reserves).

These last three developments are referred to together as ‘stock-flow adjustments’.

- 1.16 Most balance sheet transactions or transfers between the public and private sectors have a persistent impact on public sector spending and/or revenue flows, via the income that the assets generate or the interest or other payments that must be made on the liability.

³ Unless otherwise stated, when we refer to PSND in this report we are referring to ‘public sector net debt excluding public sector banks’.

⁴ See, for example, Box 1.1 of our 2017 *Fiscal risks report* on broader measures of the public sector balance sheet.

- 1.17 When we think about fiscal sustainability, stocks and flows can both be sources of fiscal risk, but it is ultimately the flows that matter. A risk threatens sustainability if its crystallisation would move the public finances onto, or closer to, a trajectory in which the government would eventually be unable or unwilling to raise sufficient revenue to deliver core public services and to meet its financial obligations. If a government does find itself on a trajectory of this sort, eventually a fiscal crisis will result.⁵
- 1.18 Governments will typically seek to take action that gets them off – or avoids them getting onto – an unsustainable trajectory before a crisis breaks. Indeed, they may deem it prudent to act even if the outlook appears sustainable on a central projection, for example if debt reaches a share of GDP where a government feels vulnerable to a shift in market sentiment that would raise its borrowing costs and/or result in a disruptive currency depreciation.
- 1.19 There is no consensus in the academic literature or policy world as to what levels of debt are optimal or, relative to some subjective view of tolerable risk, safe. Even if there were, there is no reason to believe that these would be constant over time or consistent across countries. Some studies suggest that policymakers should aim to have the debt-to-GDP ratio falling in normal times so as to make room to accommodate the cost of large adverse future shocks.

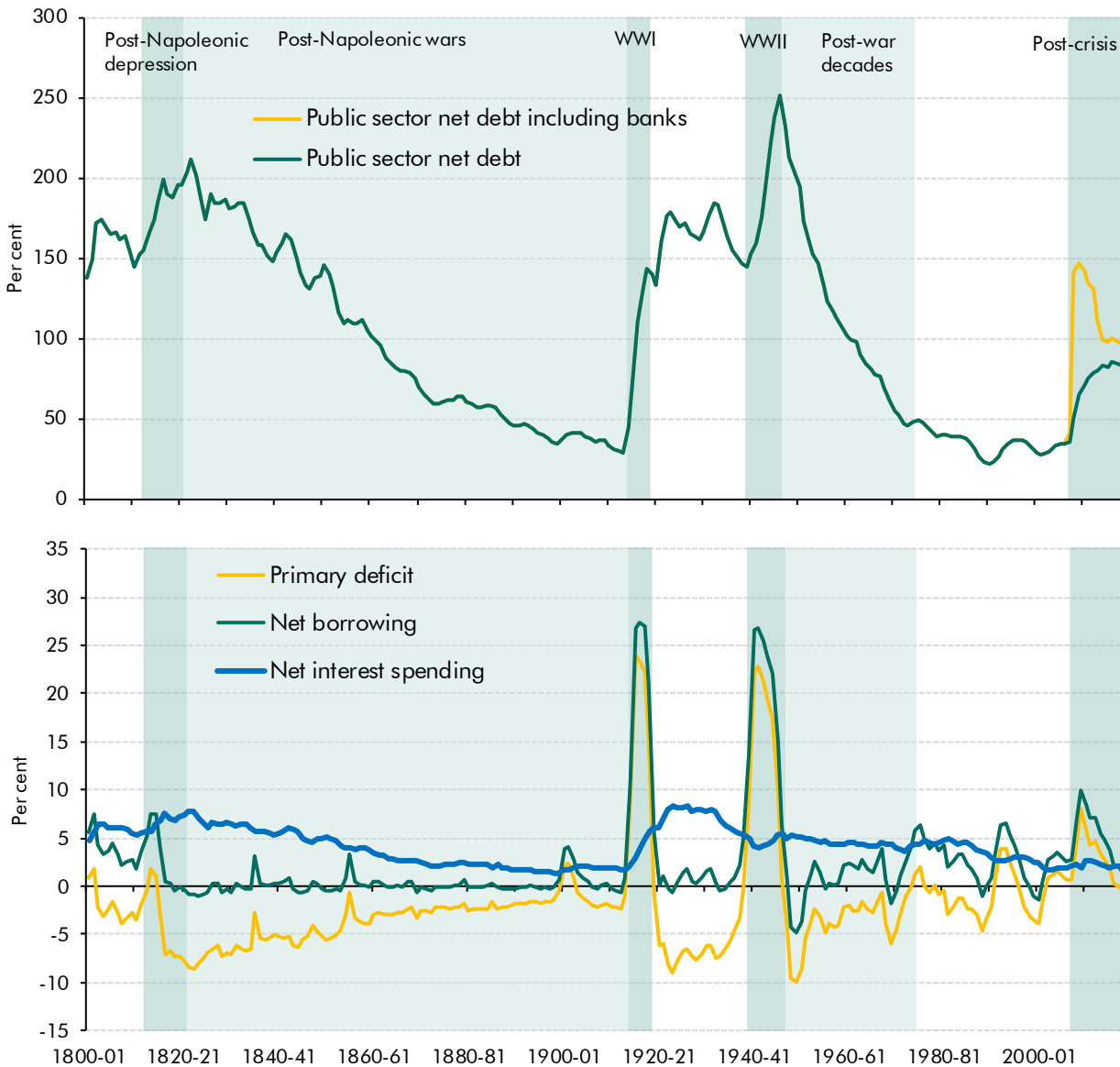
The evolution of public sector debt and interest payments

- 1.20 Changes in the debt-to-GDP ratio reflect the size of the primary budget balance (and therefore any revenue and spending shocks), the impact of any stock-flow adjustments and the difference between the interest rate on the government's debt and the growth rate of output (the 'growth-corrected interest rate'). The last matters because interest payments add to debt, raising the debt-to-GDP ratio, while growth adds to GDP, lowering it. We explore the role of the growth-corrected interest rate in Chapter 7.
- 1.21 As Chart 1.1 shows, the historical experience in the UK has been one of sharp rises in public debt as fiscal risks crystallise – typically due to wars, but also as a result of the financial crisis and ensuing recession a decade ago – followed by long periods of gradual declines.⁶ Up to the Second World War, debt reduction typically relied on the running of primary surpluses. Since then, securing a favourable growth-corrected interest rate, thanks to unanticipated inflation and/or financial repression, has played a more prominent role.

⁵ A fiscal crisis could involve explicit default, resort to an IMF 'bailout', implicit default on domestic liabilities via unanticipated inflation or accumulation of arrears, or loss of access to capital markets. A study published by the IMF in 2017 estimated that on this definition 15 out of 35 advanced economies experienced at least one fiscal crisis between 1970 and 2015, including the 1976 UK crisis in which the then government borrowed \$3.9 billion (around 1.7 per cent of GDP at the time) from the IMF. Gerling *et al*, *Fiscal crises*, IMF, 2017.

⁶ Compiling very long time series inevitably requires judgements to be made about how to splice together different data sources and how to fill any gaps in the available data. We have used the Bank of England's 'a millennium of macroeconomic data' to produce these charts.

Chart 1.1: Public sector debt and borrowing since 1800



Source: Bank of England, ONS

1.22 In some respects, the challenge facing governments in reducing debt is greater now than in the past: the population is ageing at a time when public spending has already been tilted towards the old; financial repression is harder to achieve when inflation is low, the central bank is independent and capital flows freely across borders; and expectations for public services and the welfare state – plus resistance to higher taxation – make primary surpluses harder to sustain. Against that, the growth-corrected interest rate is historically low and likely to remain so for at least the immediate future, making debt burdens more sustainable.

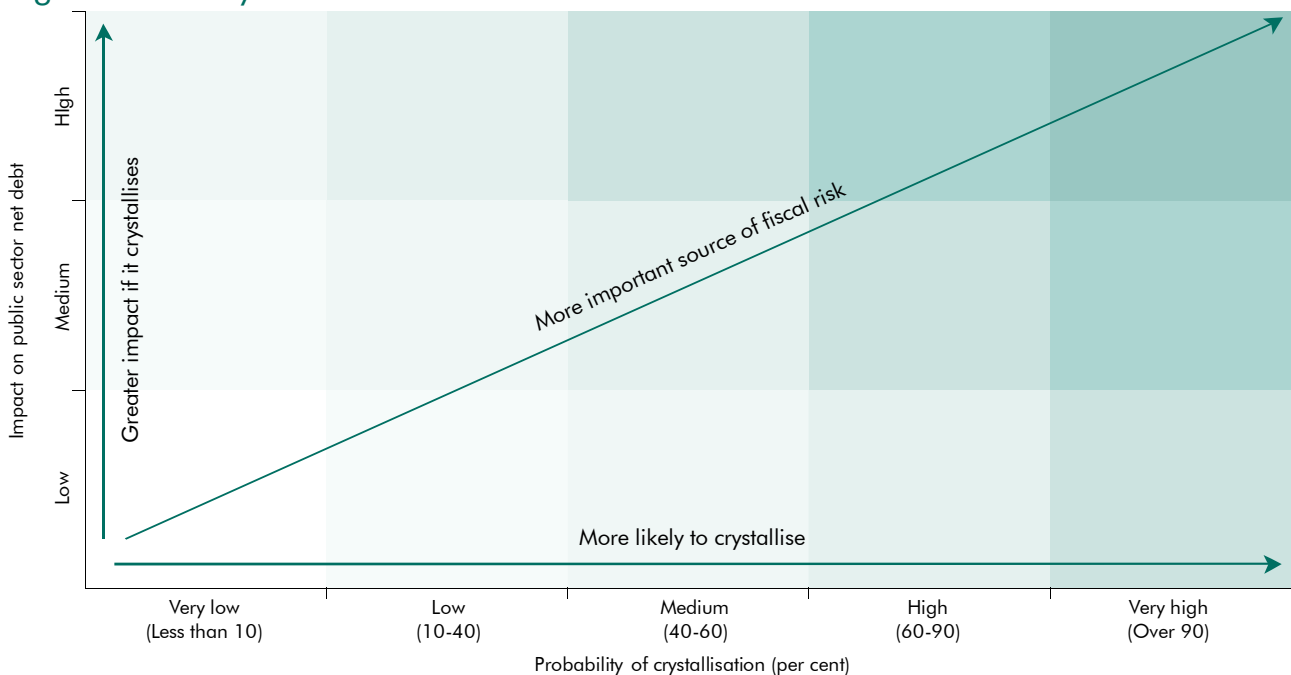
Identifying the characteristics of specific fiscal risks

1.23 When identifying and assessing a source of fiscal risk, we start by asking:

- **What is the nature of the risk?** Is it discrete (i.e. an unexpected event or shock) or continuous (i.e. an unexpected trend or pressure). Is it isolated or is it correlated with other risks? Is it exogenous (i.e. largely unaffected by policy) or endogenous (i.e. if the likelihood or impact of crystallisation is affected by policy). Was it taken on by choice?
- **How likely is it to crystallise?** This will depend to a significant degree on the time horizon – most are more likely to crystallise over 50 years than they are over five years. The probability of a risk crystallising also depends on how it is defined – recessions are fairly common, but deep ones like that of 2008 to 2009 happen only infrequently.
- **What impact would crystallisation have on the public finances?** We are interested in the potential impact on both stock and flow measures of the public finances. We noted above that adverse shocks to flows can be either one-off or persistent. The latter tend to be a greater threat to sustainability than the former. Persistent sources of risk can also be divided into those that strike abruptly and those that mount gradually.

1.24 Answering these questions about individual risks to our forecasts and to fiscal sustainability allows us to assess their relative importance. Quantifying this is not straightforward. Rare events or emerging sources of risk offer little hard evidence from which to estimate probability or impact. And for many, the likelihood and impact of crystallisation interact. So we draw on what evidence is available, complemented by our own broad judgements, to place individual risks into one of five categories for likelihood and one of three for impact. This provides a stylised illustration of their relative importance. Figure 1.1 shows the grid used for this purpose. Populated versions were presented in the executive summary.

Figure 1.1: A stylised fiscal risk matrix



1.25 To complete our risk assessment, we also ask:

- **How is the risk currently recognised in official data and forecasts (if at all)?** Some fiscal risks considered in this report are regularly discussed and quantified in our *EFOs* and *FSRs*, either in the central forecasts and projections or in our analysis of the uncertainty around them (including sensitivity analysis and alternative scenarios). Some are recognised in the Treasury's Whole of Government Accounts.
- **What is the Government doing to manage the risk?** Is it a risk the Government has chosen to take on? Does it wish to limit its exposure or is it taking on the 'tail risk'? Can it influence the likelihood of crystallisation or just the impact were it to crystallise? These and other issues are discussed in the next section.

How does the Government manage fiscal risks?

1.26 In *Managing fiscal risks (MFR)*, the Government's 2018 response to our 2017 *Fiscal risks report (FRR)*, the Government described its strategy for managing fiscal risk as follows:

"...to be aware of the risks it is facing, to reduce risks where this can be done in a cost-effective way and without detracting from its wider policy objectives, and to ensure the overall position of the public finances is resilient to risks that remain. In doing so the government seeks to set clear expectations regarding the limits of the state's responsibility if and when risks materialise. However, it also recognises that actively taking on risk at certain times can minimise overall costs in the future."

1.27 It stated that its approach to managing fiscal risks was based on the five-stage approach advocated by the IMF: identifying the source of risks; disclosing them to Parliament and the public; mitigating them where that can be done cost-effectively; provisioning against those that remain and can be quantified with reasonable certainty; accommodating those that cannot.⁷ It deploys a range of tools to manage risks at different stages in the process.

1.28 *MFR* did not provide a statement of risk appetite: a baseline against which one could assess whether changes in fiscal risk move the Government closer to or further from its desired position. What it did say is that the Government believes that public debt is currently "too high". It argued that this leaves the public finances more vulnerable to economic shocks, unfairly passes financial burdens onto the next generation and increases spending on debt interest. We asked again about risk appetite when gathering background material for this report, but the Government did not provide any further information.

1.29 As regards its fiscal targets, the Government set out its objective in the *Charter for Budget Responsibility*: to "return the public finances to balance at the earliest possible date in the next Parliament".⁸ In practice, in line with the Conservative Party's 2017 manifesto, this objective has been thought of in terms of balance by 2025-26. But more recently, the

⁷ The IMF's approach is set out in IMF, *Analyzing and managing fiscal risks: best practices*, June 2016.

⁸ The most recent version of the *Charter* was passed by Parliament in January 2017. This and all previous versions are available on the 'Legislation and related material' page of our website.

Chancellor has stated that *“it will be a policy decision at successive fiscal events how to balance whatever available fiscal headroom there is between reducing the deficit, reducing taxes [or] increasing spending”*.⁹ We explore fiscal policy as a source of risk in Chapter 8.

1.30 The *Charter* also sets out targets for borrowing, debt and welfare spending that require:

- the **structural deficit** to be below 2 per cent of GDP by 2020-21;
- **public sector net debt** to fall as a percentage of GDP in 2020-21; and
- selected **welfare spending** items to lie below a ‘welfare cap’ set for 2022-23.

1.31 In terms of individual risks, the Treasury’s recently updated ‘Orange Book’ guidance states that *“risk evaluation should involve comparing the results of the risk analysis with the nature and extent of risks that the organisation is willing to take to determine where and what additional action is required.”* The options it sets out include:

- **avoiding the risk, if feasible**, by stopping or not starting whatever gives rise to the risk;
- **taking or increasing the risk** in order to pursue an opportunity;
- **retaining the risk** by informed decision;
- **changing the likelihood**, where possible;
- **changing the consequences**, including planning contingency activities; and
- **sharing the risk** (e.g. through commercial contracts).

1.32 In Chapter 2 of our 2017 *FRR*, we outlined the Treasury’s risk groups and reporting processes. Box 1.1 describes developments in fiscal risk management since then.

Box 1.1: Developments in fiscal risk management since our previous report

The Treasury’s approach to risk management remains broadly the same as two years ago: a number of internal management groups sit beneath its ‘Fiscal Risks Group’ and a spending control framework makes accounting officers responsible for remaining within spending limits. But several initiatives, including those pursued as part of the Treasury’s ‘Balance Sheet Review’ (BSR), have deepened these arrangements. These include:

- The Treasury has issued new guidance on disclosing the fiscal impact of **asset sales** on the deficit and a variety of balance sheet measures. This might reduce the focus on PSND, which suffers from fiscal illusions in respect of asset sales because the proceeds net off whereas the asset being sold does not, so the balance sheet appears to improve.

⁹ Oral evidence on Budget 2018 from the Chancellor to the Treasury Committee, 5 November 2018.

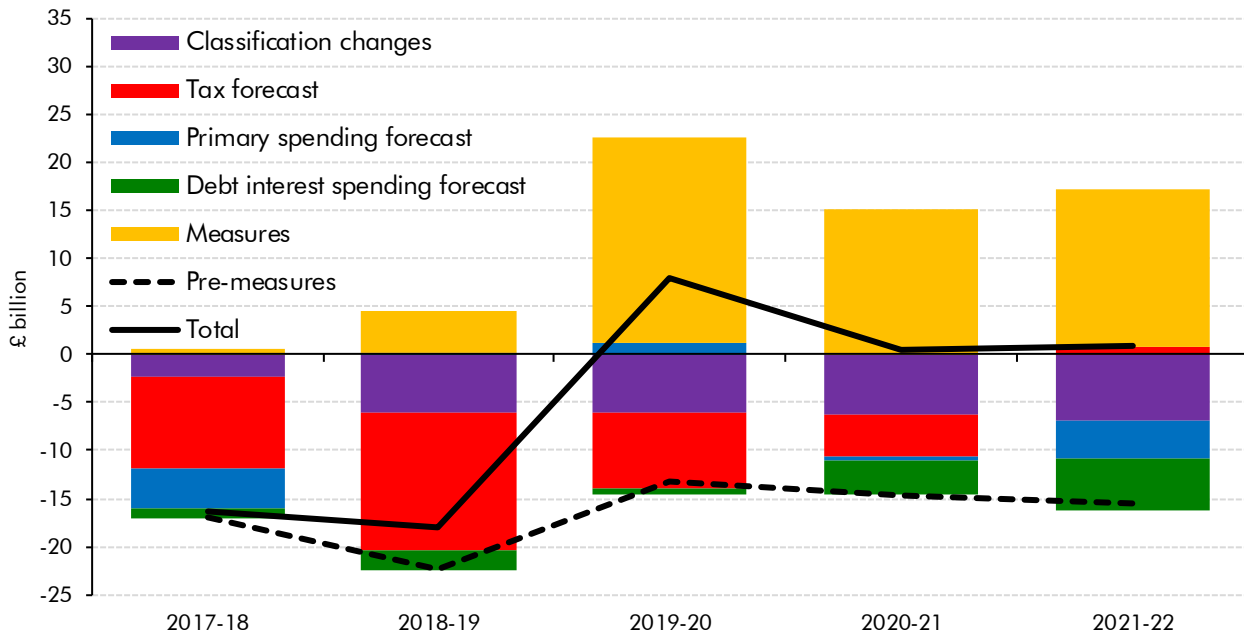
- BSR work to identify **government assets**, dispose of those no longer required and increase the utilisation or returns on those that remain.
- Stricter controls on the creation of new **contingent liabilities** have been introduced, with greater scrutiny of new liabilities and greater emphasis on government being compensated for taking on risk. The Treasury plans to introduce greater oversight of the stock of existing contingent liabilities as its next step in this process.
- Steps have been taken to reduce the growth in **clinical negligence claims**, which the Whole of Government Accounts identifies as the fastest growing contingent liability. One such step is the production of a new patient safety strategy by the NHS.
- BSR work on **intangible assets**, including the publication of a report at Budget 2018 and the establishment of a knowledge assets team in the Treasury. We look more closely at intangible assets in Chapter 6.
- The Government publishes its risk management concepts and principles in the '**Orange Book**'. The Government Finance Function has published an updated version in July 2019. The Government wants risk management to become more integral to departmental planning, including via revised Single Departmental Plan guidance, the design of Spending Review guidance and enhanced risk disclosures in Annual Reports.

We have a particular interest in the Treasury's work to investigate the stock of contingent liabilities. It would be useful for the Whole of Government Accounts to include more systematic information of the nature of the stock of contingent liabilities and the public sector's ultimate exposure to different sources of underlying risk.

Forecast revisions and our 2017 fiscal risk assessment

- 1.33 When we published our first *FRR*, our most recent medium-term forecast was from our March 2017 *EFO*. Since then, we have updated our forecasts four times. What do the revisions over that period tell us about the risk assessment we made two years ago? Did we correctly identify the risks that have crystallised? Did we miss any important ones?
- 1.34 Chart 1.2 compares our March 2017 five-year forecast against outturns for 2017-18 and 2018-19, and our March 2019 forecast for 2019-20 to 2021-22. Borrowing came in lower than expected in outturn, but we have revised up our forecast materially in 2019-20 and by modest amounts in 2020-21 and 2021-22. (We cover debt briefly at the end of the section.)
- 1.35 As the chart shows, classification changes have lowered measured borrowing in all years. In outturn, unexpectedly strong tax receipts pushed borrowing below our March 2017 forecast. This better starting point fed through to our forecasts in the short term, but was eventually offset by other factors (described below). Pre-measures spending forecast changes were generally small, although lower interest rates pulled down our debt interest forecast in the medium term. These favourable forecast and classification changes are outweighed by policy giveaways from 2019-20 onwards, dominated by the June 2018 NHS settlement.

Chart 1.2: Changes to the OBR's borrowing forecast since our March 2017 EFO



Source: OBR

- 1.36 The effect of classification changes on borrowing over the past two years is dominated by the reclassification of housing associations back into the private sector. We flagged this as the largest medium-term balance sheet transfer risk, since at the time of our previous report the Government was engaged in a legislative process to give up just enough of its control over them to justify their reclassification back into the private sector.
- 1.37 Table 1.1 breaks down the difference between our March 2017 tax forecast and the latest outturns and forecasts on a like-for-like basis, but excluding the effects of subsequent policy measures. This shows positive news on effective tax rates in the early years, but the negative effect of a lower trend productivity assumption building over time and eventually outweighing the good news from outturns. As regards weaker productivity growth, we assigned such a development a medium likelihood in our previous report, although noted that the latest data at the time “*might suggest a gloomier prognosis*”. In the event, we revised our assumption down materially in the November 2017 EFO. As regards the positive news, this has included income tax and NICs being stronger than expected as a share of labour income and corporation tax being stronger as a share of profits. On the labour income side, one factor has been strength in pay growth among high earners – a positive crystallisation of the concentration risk we discussed. On the corporate side, many factors have played a role, including unexpectedly strong outturns and technical modelling issues.

Table 1.1: Like-for-like pre-measures changes in receipts since our March 2017 EFO

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Total change	9.5	14.3	7.8	4.4	-0.8
Lower productivity growth	-9.3	-14.6	-18.1	-22.8	-26.5
Higher average hours worked	2.6	4.1	5.1	6.4	7.6
Lower unemployment	0.5	3.6	4.1	4.9	5.6
Other economy forecast changes	6.6	10.5	3.6	1.4	-0.5
Higher effective tax rate on labour income	5.1	7.6	6.2	8.6	8.2
Higher effective tax rate on corporate profits	0.9	2.1	3.4	4.2	4.8
Other changes in effective tax rates	3.0	1.1	3.6	1.8	0.0

1.38 Presented with an improved underlying fiscal position, Government policy measures have added to borrowing in all years – particularly from 2019-20 onwards. As Table 1.2 shows:

- The largest of these was the **boost to health spending** announced in June 2018 and factored into our forecast in Budget 2018, added to in Spring Statement 2019. We flagged higher health spending as a high likelihood medium-term risk in *FRR 2017*.
- **Other departmental spending** was also topped up, particularly at Budget 2018.
- **Universal credit giveaways** – largely completing the reversal of cuts announced in Summer Budget 2015 – have come at a significant cost. This was not a risk we flagged. Instead, we focused on risks to rollout plans, which have indeed been pushed back further since our previous report, but with little effect on public spending.
- Continued **fuel duty freezes** and further **increases in the income tax personal allowance and higher rate threshold** were deemed a near certainty in our previous report – due to past experience and manifesto commitments respectively. This has proved to be the case. Alcohol duties were also frozen again.
- The aggregate effect of a range of **other decisions** follows a familiar profile: near-term giveaways followed by takeaways from 2020-21 onwards (the fiscal mandate year).

Table 1.2: The effect of policy measures on borrowing since our March 2017 EFO

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Total effect of Government decisions	0.7	4.3	21.3	15.2	16.4
Higher health spending	0.0	0.0	7.7	11.5	16.9
Higher other current and capital departmental spending	0.5	3.7	7.3	4.7	1.2
Universal credit giveaways and policy reversals	0.0	0.3	1.0	1.4	1.7
Fuel and alcohol duty freezes	0.0	1.1	2.1	2.1	2.2
Income tax manifesto commitments	0.0	0.0	2.8	1.9	1.4
Avoidance and evasion measures	0.0	-0.2	-1.3	-1.8	-1.8
Other	0.2	0.8	5.3	-0.9	-1.0
Indirect effects	-0.1	-1.4	-3.6	-3.8	-4.2

Note: Consistent with the presentation of measures' effects in our EFOs, we have reported the October 2018 pensions contributions measure on a net basis, amongst other adjustments. We have also presented the PSNB effects of business rates pilot measures on a net basis as they have large, and largely offsetting, gross effects on DEL and AME, but a small net effect on PSNB.

1.39 Overall, most of the large risks that crystallised – reclassification of housing associations, extra health spending and lower productivity growth – were identified in our first report, but we did not discuss universal credit giveaways. These same factors also represent most of the significant drivers of changes in PSND. But in addition to these, it has been revised up due to the amount of lending under the Term Funding Scheme (TFS) being higher than we had assumed. We discussed some risks relating to the TFS, but not higher initial lending.

For the Government's response

1.40 In the rest of this report, we set out various issues the Government might wish to note in its fiscal risk management strategy and, if it agrees, ask what approach it takes to them. In doing so we update our assessment of the 57 issues set out in our first report, and add a handful of new ones.¹⁰ It is not for us to recommend particular policy responses, but, as in 2017, this hopefully provides an opportunity for the Government to explain its choices.

1.41 The discussion in Box 1.1 about steps the Government has taken to improve its fiscal risk management prompts two issues that the Government may wish to consider in its response:

- **How to embed planned risk management changes** in departments' decision-making?
- How to ensure that **large or complex risks are escalated and managed** appropriately?

1.42 We also raised several overarching issues in our 2017 report:

- The **need to review risks** that governments choose to expose themselves to.
- The need to prepare for near-inevitable **future shocks**.
- The need to deal with many **slow-building pressures**.
- The challenges of **dealing with those needs while negotiating Brexit**.
- The challenges of **doing so in an environment of apparent 'austerity fatigue'**.
- The **more vulnerable starting fiscal position** from which all of this is faced.
- **Sources of fiscal risk that we had not analysed** – such as wars and climate change.

1.43 In *Managing fiscal risks*, the Government noted the need to review its exposure to risk, and set out how it assesses individual risks, but was less concrete about assessing aggregate exposure. It explained that it would deal with future shocks via macroeconomic stabilisation policy, and claimed that productivity-boosting measures would help tackle slow-building pressures, such as the costs of ageing and non-demographic cost pressures in health.

¹⁰ These are documented in an online 'risk register' published on our website.

- 1.44 The Government provided less assurance on how it would address these issues while negotiating Brexit (although it discussed its Brexit plans themselves in some detail). On the issue of apparent ‘austerity fatigue’, it argued that it had “*reformed its fiscal framework to enable it to more actively support the economy*” and pointed to the slower planned pace of consolidation from 2015-16 onwards. It had more to say on the fiscal position from which all this is faced, which it used to motivate its plans to reduce public sector debt. Perhaps understandably, it had almost nothing to say on sources of risk we had not analysed.
- 1.45 With the exception of climate change, which we now cover in Chapter 9, the overarching issues we raised two years ago remain pertinent to the Government’s next response.

Structure of the report

- 1.46 We use the analytical framework set out above to structure the report as follows:
- Chapter 2: considers **macroeconomic risks**;
 - Chapter 3: assesses **financial sector risks**;
 - Chapter 4: analyses **specific revenue risks**;
 - Chapter 5: discusses **specific non-interest spending risks**;
 - Chapter 6: looks at **the balance sheet**;
 - Chapter 7: discusses **debt interest spending** and its relationship with economic growth;
 - Chapter 8: discusses the potential risks from **policy changes**;
 - Chapter 9: considers how we might analyse fiscal risks from **climate change**; and
 - Chapter 10: details the results of **an illustrative fiscal stress test**.

2 Macroeconomic risks

Introduction

2.1 Macroeconomic developments constitute one of the largest and highest probability sources of fiscal risk. Economic shocks come in many shapes and sizes and propagate through the public finances in complex ways. As elsewhere in this report, our main focus is the various downside risks to our latest medium-term forecast and to longer-term fiscal sustainability.

2.2 This chapter sets out our current macroeconomic risk assessment, updating our 2017 assessment in the light of new economic data and revisions to historical data, our latest forecast judgements, and policy changes. It covers:

- risks to the outlook for **potential output growth**;
- risks associated with **cyclical shocks**;
- a deeper review of **output gap mismeasurement and the public finances**;
- risks associated with **the composition of GDP**;
- risks from **sector net lending positions and balance sheets**; and
- a summary of our main **conclusions** and issues **for the Government's response**.

2.3 First, we look back at our 2017 discussion and the Government's 2018 response.

Summary of previous *FRR* discussion and the Government's response

2.4 In our 2017 *Fiscal risks report (FRR)*, we highlighted several issues that we felt the Government might wish to consider when managing its fiscal risks, including:

- the sources of weak post-crisis **productivity growth** and the risk of this continuing;
- the **inevitability of future recessions** and the risk of persistent effects from them;
- the different **effective tax rates** that apply to the various **components of GDP**;
- the Government's fiscal exposure to the **housing sector** in particular; and
- the economic risks associated with **Brexit**.

2.5 In *Managing fiscal risks*, the Government:

- Recognised the importance of long-run **productivity growth** and listed several policy measures to raise it, including: providing additional investment through the National Productivity Investment Fund to areas viewed as important to economic growth; launching a ‘modern’ industrial strategy committed to increasing R&D investment; and improving technical education through apprenticeships.
- Highlighted previous reforms to the monetary and fiscal frameworks, enabling policy to play a more supportive role in **future recessions**. It also pointed to the new capital and income framework agreed with the Bank of England, which it felt would “*ensure [the Bank’s] policy credibility even in the most stressed environment*”.
- Noted actions taken to address macroeconomic vulnerabilities from **high household and government debt and a large current account deficit**. This included use of macro-prudential policy by the Financial Policy Committee.
- Recognised its growing exposure to the **housing sector** and noted that the Ministry of Housing, Communities and Local Government (MHCLG) had taken steps to manage the credit risk arising from its loan, guarantee and equity loan products.
- Declared that, to maximise the benefits and minimise the potential disruption from **Brexit**, the UK would seek a “*deep and comprehensive economic partnership*” with the EU. This would include seeking the establishment by the UK and the EU of a free trade area for goods and the phased introduction of a facilitated customs arrangement.

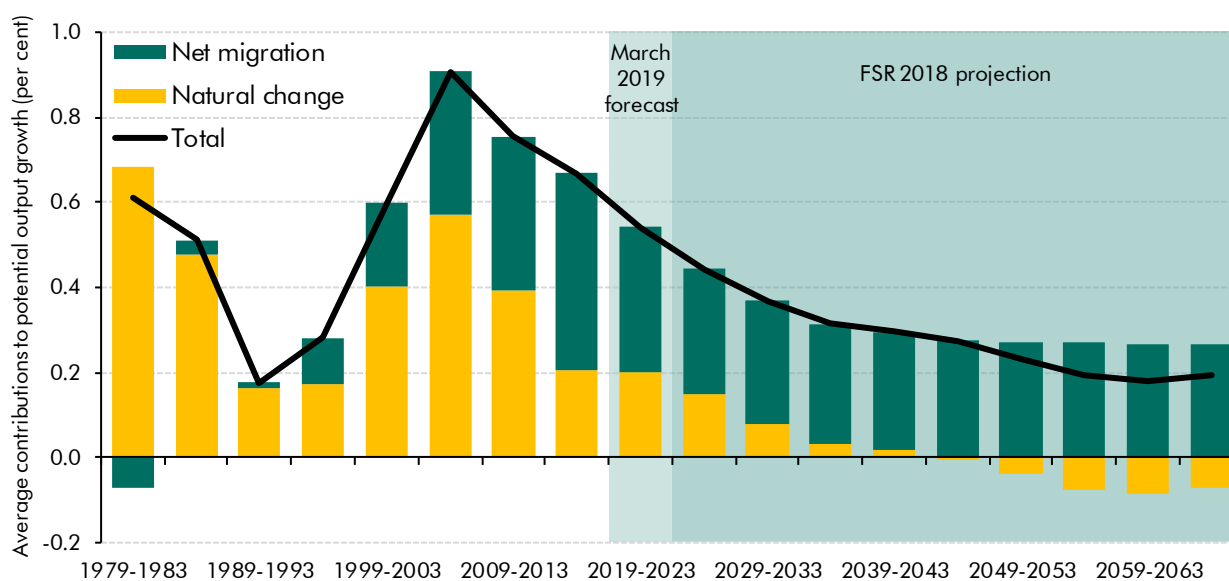
Risks to potential output growth

- 2.6 The path of potential output – the amount that can be produced sustainably, abstracting from the temporary ups and downs of the economic cycle – is the ultimate driver of living standards and a central determinant of the sustainability of any given set of tax and spending plans. Potential output can in turn usefully be decomposed into the available labour and how much output each unit of that labour can produce (i.e. labour productivity).
- 2.7 It is important to recognise that potential output is a theoretical construct that cannot be directly observed. Instead, it must be inferred indirectly from other indicators. The same is necessarily true of the output gap – the difference between output and potential output – which is our primary measure of the cyclical position of the economy. Risks associated with its mismeasurement are discussed from paragraph 2.33 onwards.
- 2.8 Potential labour input is defined as the total hours of work available when the economy is operating at a sustainable capacity. It is determined by: the size of the adult population; the fraction of those adults that are participating in the labour market; the proportion of those that in turn can be employed sustainably; and the average hours worked by those in employment. There are risks and uncertainties surrounding projections of each of these.

Adult population growth

- 2.9** Growth in the adult population increases the potential size of the economy. It has a clear positive relationship with total tax revenues, but its effect on revenues per head or as a share of GDP is ambiguous (dependent on the characteristics of the population). The population's contribution to revenues is greatest in age groups where employment rates are highest – i.e. the 'working-age' population, aged between 16 and the state pension age, and within that 'prime age' adults, since employment rates are lower for young adults (many of whom are students) and older adults (some of whom leave the labour market before the state pension age). But population growth also increases the demand for public services. And in an ageing society like the UK's, this places upward pressure on spending as a share of GDP.
- 2.10** The risks to our medium-term forecast from working-age population growth are relatively small. Excluding the effects of migration, 'natural change' is relatively slow-moving and predictable, with the lower growth over the next five years reflecting a fall in the birth rate in the late 1990s and early 2000s (Chart 2.1). There are greater uncertainties surrounding our projection of net migration, especially in relation to the consequences of the UK's prospective exit from the EU and related changes to migration policy (see Chapter 10).
- 2.11** The fiscal consequences of net migration depend on the age and, if working, productivity of migrants. Recent net migration to the UK has been concentrated among those of working age, boosting employment and tax revenues proportionately more than spending. We assume that migrants are on average as productive as natives, although this will not be true of every migrant. This assumption seems appropriate for the type of net migration to the UK seen over the past decade, but might not be the case if all inward migrants are subject to a migration regime focused on skills or earnings.¹

Chart 2.1: Contributions of adult population growth to potential output growth



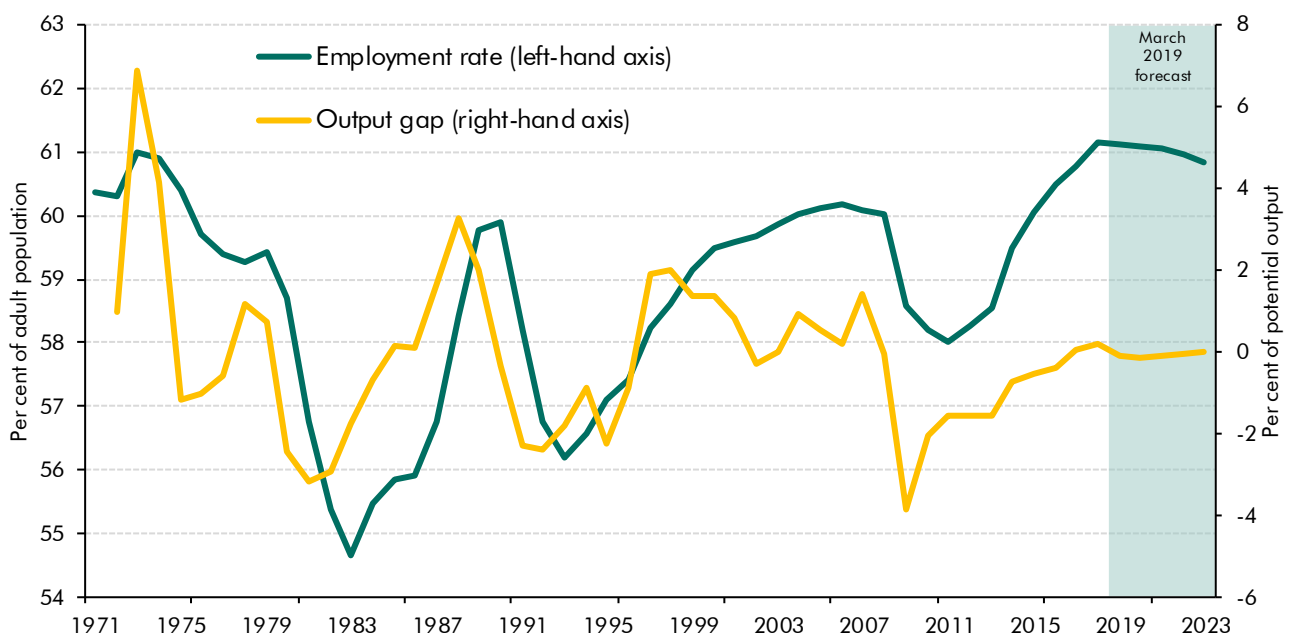
Source: ONS

¹ We tested the assumptions underpinning how we factor the fiscal effects of net migration into our long-term projections in Annex A of our 2013 *Fiscal sustainability report*, and returned to the subject in Box 3.4 of the following year's report. We looked at potentially relevant considerations for any post-Brexit changes to the migration regime in *Brexit and the OBR's forecasts*, OBR Discussion Paper No.3, October 2018. For external analysis, see Oxford Economics for MAC, *Fiscal Impact of Immigration in the UK*, 2018.

Employment rate

- 2.12 The outlook for the employment rate depends on trends in participation rates, the equilibrium unemployment rate and the state of the business cycle. Participation rates for older people have been rising. For people aged 65 or over, the rate has almost doubled over the past 15 years, from 6.0 to 11.1 per cent. But participation remains much lower than among working-age adults (for whom the rate is currently 79.2 per cent), so ageing puts downward pressure on the average participation rate for the whole adult population. This compositional effect is expected to dominate over the medium term.
- 2.13 The proportion of those active in the labour force that would be able to find employment sustainably is governed by the equilibrium unemployment rate – another unobservable theoretical construct that we need to form a judgement about. Our medium-term assumption is informed by an assessment of past trends in the actual unemployment rate, as well as other labour market developments. In October 2018, with wage growth still muted but actual unemployment having fallen below our previous assumption, we lowered our estimate to 4.0 per cent of the labour force. We have not changed it since.
- 2.14 The proportion of the labour force that actually find work depends on the state of the business cycle. Chart 2.2 shows that fluctuations in the employment rate have typically followed those in the output gap quite closely, although the post-crisis experience has seen unusually strong employment growth given our estimate of the more modest pace at which the output gap closed. This pattern reflects the fact that as output grows, demand for goods and services increases and thus so does the demand for labour, raising the employment rate.

Chart 2.2: The employment rate versus the output gap



Source: ONS, OBR

- 2.15 One source of risk to both the potential and actual employment rate – both to the upside and downside – is the impact of government policy: changes in taxes, in- or out-of-work benefits, active labour market policies, and minimum wages could all affect the proportions of people that participate in the labour market and find employment.
- 2.16 Policies announced over the past two years are unlikely to have had a material effect in this respect. These include rises in the income tax personal allowance and higher-rate threshold and to universal credit. A potentially more significant announcement relates to the National Living Wage, where the Chancellor has indicated an ambition to raise it from the planned 60 per cent of median earnings by 2020 to two-thirds at an unspecified date beyond that. We discussed possible effects of this in Box 3.3 of our October 2018 *EFO*, while in March 2019 the Government asked Arindrajit Dube to review international evidence in this area.

Average hours worked

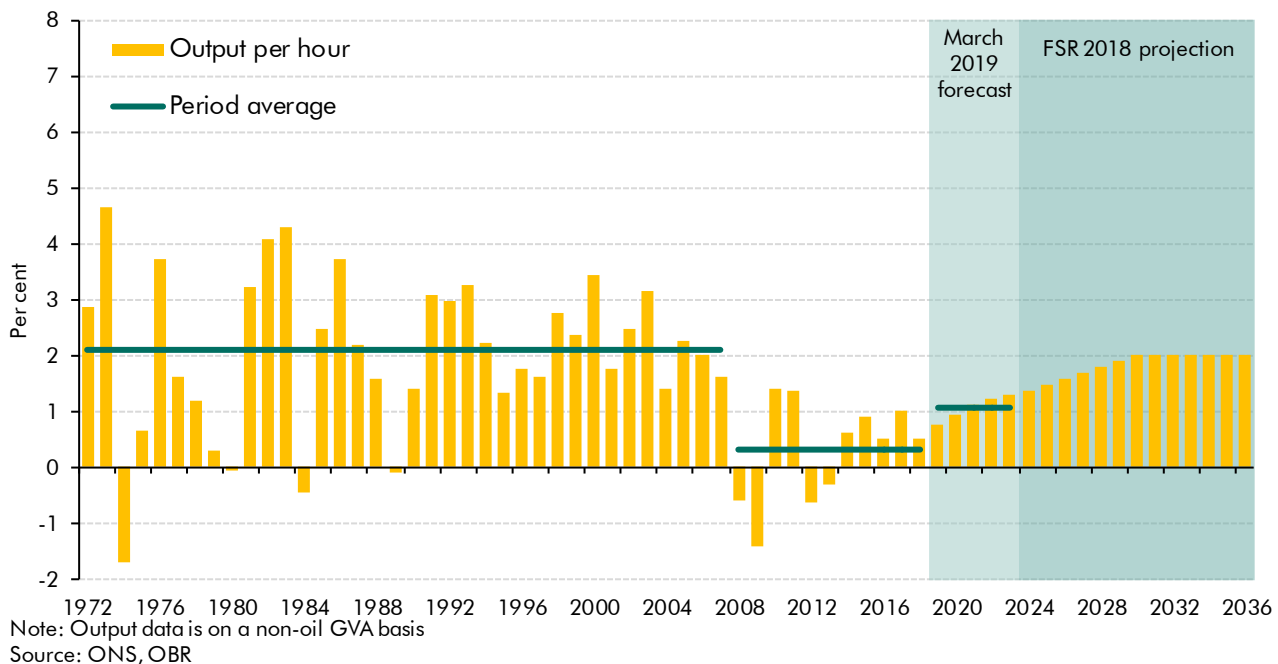
- 2.17 In 1860, full-time workers on average worked more than 60 hours a week. They now work less than 40.² In our medium-term forecasts, we typically assume that the historical downward trend in average hours will continue. But, over the past few years, average hours have been relatively flat. In November 2017, we moved to assuming that will continue across the forecast. So, our forecasts are subject to the risk that the downward trend does reassert itself – or alternatively that average hours start to rise.
- 2.18 Taken in isolation, the effect of average hours rising rather than remaining flat would be to improve the public finances. If, however, this reflected a supply response to continued weakness in real income growth, then the fiscal effect would be less clear. Income tax receipts are more sensitive to changes in total hours worked when they reflect changes in average hours than changes in the number of people employed. That is because an extra hour worked is taxed at the marginal rate – 20, 40 or 45 per cent – whereas an extra person employed is taxed at their average or effective rate, which will be lower mainly because of the tax-free personal allowance that currently stands at £12,500.

Potential productivity growth

- 2.19 Potential productivity is the amount of output produced from each hour of work when businesses are operating at a sustainable capacity. This can be split into contributions from capital deepening (investment in more equipment and technology per unit of labour) and ‘total factor productivity’ (the efficiency with which labour and capital are combined to produce output). Productivity growth is usually the biggest risk we highlight in each *EFO*.
- 2.20 Chart 2.3 shows how actual productivity growth (as opposed to the unobservable growth in potential productivity) has varied over time. While there have been other periods of weakness, productivity growth has been persistently weak since around the time of the financial crisis. Since 2008, the annual growth rate of productivity has averaged just 0.3 per cent, compared to around 2 per cent beforehand. It edged up to 1 per cent in 2017, but fell back to just 0.5 per cent in 2018.

² Speech given by Martin Weale, External Member of the MPC, Bank of England: ‘What’s in a week’s work?’, January 2016.

Chart 2.3: Productivity growth



2.21 There are several competing explanations for the post-crisis weakness in productivity growth. Most commentators assume that it reflects a combination of factors, with views differing on their relative importance.³ Until November 2015, our medium-term forecasts assumed that potential productivity growth would return to its pre-crisis average rate of 2.2 per cent by the end of the forecast. In March 2016, we put more weight on the post-crisis weakness, taking our medium-term assumption down to 2.0 per cent. And in November 2016, we revised it down further to 1.8 per cent to incorporate the expected effects of the Brexit vote on investment. In November 2017, we revised it down further to reflect the persistent weakness in productivity growth following the crisis, with trend productivity growth assumed to recover more gradually, reaching 1.3 per cent at the five-year forecast horizon.

2.22 Despite this much weaker medium-term productivity growth forecast, there are still considerable risks. It may become apparent that the current period of low productivity growth is permanent, or, alternatively, productivity could recover more quickly than we forecast, though that seems unlikely in the near term if Brexit-related uncertainty persists.

Implications for the public finances

2.23 We have identified risks around each of the components of potential output: population, employment, hours and productivity – with the prospects for productivity growth particularly uncertain. But what are the implications for the public finances? That depends on how revenues and public spending respond as GDP and GDP per head rise.

2.24 In our long-term projections, we assume that most thresholds in the tax and benefit systems rise in line with living standards (specifically, average earnings). Other things being equal,

³ For a fuller discussion see Barnett *et al*, *The UK productivity puzzle*, Bank of England Quarterly Bulletin, June 2016.

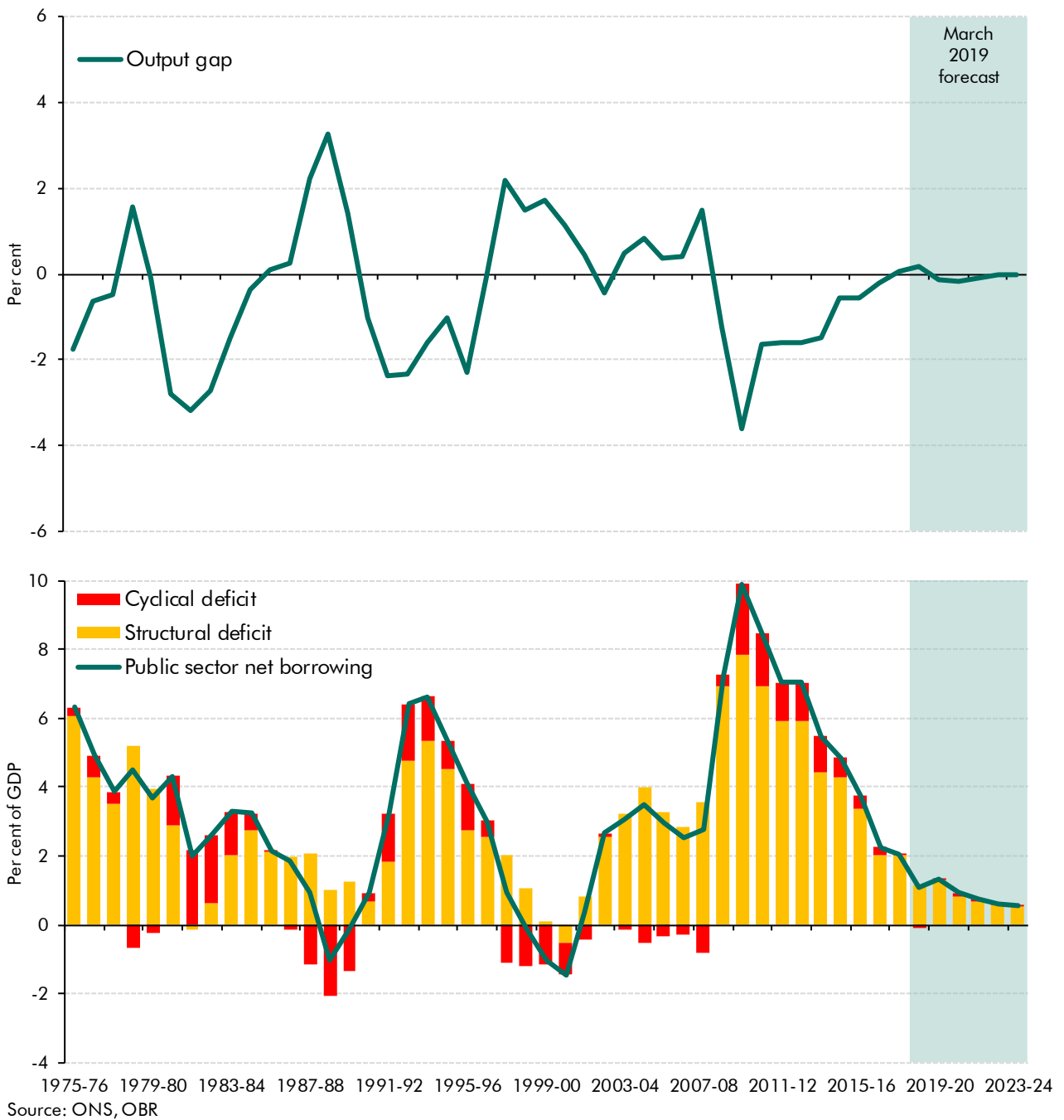
this implies no long-term upward or downward trend in receipts or welfare spending as a share of GDP, which is in line with long-run historical experience though, of course, there are likely to be plenty of transitory cyclical, policy-related and other swings. The amount the Government spends on public services is a political choice, but a reasonable benchmark is to assume that this too will be a roughly constant fraction of GDP (adjusted for the changing age structure of the population, and particular cost pressures affecting health and adult social care services, as discussed in Chapter 5).

- 2.25 All this means that if a downside risk to potential GDP per head were to crystallise over the long term – say because of continued weak productivity growth – this would reduce both receipts and spending in cash terms, but would have a smaller effect on them (and on the gap between them) relative to GDP. The impact on the quality and quantity of public services would depend on whether the productivity shortfall across the whole economy was mirrored in those services. This explains why the long-term projections in our *FSRs* are relatively insensitive to different productivity growth assumptions. We are all poorer if the downside risk materialises, in both the private and public goods we consume, but this does not translate into a significant threat to fiscal sustainability.
- 2.26 The impact of unexpectedly weak potential GDP growth is greater over our medium-term forecast, because the Government has set its policy parameters over this horizon and most are not linked to changes in earnings and GDP per head. For example, public services spending totals are planned in cash terms and many tax allowances and thresholds rise with inflation. In this setting, weaker GDP growth reduces cash revenues significantly and increases cash spending on debt interest and means-tested benefits somewhat. Receipts fall less as a share of GDP (with both lower, but receipts more so), but spending rises more, as unchanged cash plans for public services spending are higher as a share of that lower GDP.

Risks from cyclical shocks

- 2.27 In addition to the fiscal risks arising from the path of potential GDP, it is highly likely that actual GDP will diverge from potential – from time to time, significantly so – creating further fiscal risks.
- 2.28 Cyclical fluctuations in GDP matter fiscally because of their impact on both revenues and spending. When economic activity weakens, this reduces tax revenues (because tax bases are smaller), increases welfare spending (with higher unemployment and more households on low incomes) and also increases the share of GDP devoted to spending on public services (because it is largely fixed in cash terms, so as a share of unexpectedly weak GDP it rises). The opposite happens when activity strengthens. Chart 2.4 shows the fluctuations of the economic cycle over the past 40 years, based on our estimates of the output gap.

Chart 2.4: The economic cycle and its impact on the budget balance



2.29 Based on the average relationship between the output gap and the budget balance since the 1970s, we assume that for each 1 per cent that activity falls below potential, the budget deficit worsens by 0.5 per cent of GDP in the same year and by an extra 0.2 per cent in following year.⁴ Most of the deterioration comes about through spending rising as a share of GDP (because reasonably stable cash spending rises relative to weaker GDP), with receipts falling slightly as a share of GDP (because they weaken slightly more than GDP).

⁴ Helgadóttir *et al*, *Cyclically adjusting the public finances*, OBR Working Paper No. 3, 2012.

2.30 The average cyclical balance in Chart 2.4 is a deficit of 0.3 per cent of GDP – reflecting the fact that, almost by definition, cyclical surpluses and deficits balance out over time. But the average *absolute* cyclical balance is 0.9 per cent of GDP. This suggests that cyclical movements in the economy can pose significant risks to the fiscal position over a medium-term horizon, but not over longer periods when they tend to wash out. In practice, however, effects on the public finances can and do persist as:

- **Cyclical shocks can have a lasting impact on the future path of potential output** through their impact on investment or scarring effects in the labour market, so could be associated with any of the risks described in the previous section of this chapter.
- **Cyclical deficits during downturns generate persistent additions to public debt.** Chart 2.4 also shows that the cyclical component of the deficit persists. For example, cumulative cyclical borrowing in the decade from 2008-09 to 2017-18 totalled 8.4 per cent of GDP. The effect on the debt-to-GDP ratio will be amplified if cycles are skewed to the downside or if the fiscal benefits of booms are not as big as the costs of recessions. Non-linearities in the tax and benefit system can also play a role. A striking example is the triple lock on state pensions, which means that spending rises as a share of GDP in a recession but is very unlikely to fall as a share of GDP in a boom.
- **A cyclical shock can have permanent effects on prices and nominal GDP** even if real GDP returns to the same potential path after the shock has dissipated. This can have long-term implications for the public finances, with the extent influenced by the type of inflation caused by the shock. A shock that generates higher inflation that then feeds through into wages will be better for the public finances than one that has little effect on wages. This is due to ‘fiscal drag’ on income tax receipts, as wage growth increases income tax receipts by more than the indexation of thresholds reduces them.⁵

Cyclical shocks in UK post-war history

2.31 The ONS publishes consistent quarterly real GDP data from 1955. Defining a recession as at least two consecutive quarters of falling output, the latest vintage shows seven recessions in the past 63 years. That implies the chance of being in recession at some point in any given five-year period – the horizon for our medium-term forecasts – is around one in two.⁶ The recessions differed in length, depth and duration of the subsequent recovery (Table 2.1). There have been four ‘major’ recessions in the past 50 years: in the 1970s (with the two periods in the 1970s that meet the ‘two consecutive quarters’ definition considered together), the early 1980s, the early 1990s and the late 2000s.

⁵ See Chapter 5 of our March 2018 *Economic and fiscal outlook*, in which we considered two scenarios that generated higher inflation.

⁶ This is the cumulative probability of a recession occurring in at least one of the five years. This is based on the probability of a recession in any given year (11 per cent) and a Bernoulli distribution, assuming that probability of a recession is independent in each year. The probability would be sensitive to changes in the average growth rate, since, for a given output variability, lower average growth would increase the probability of it falling below zero.

Table 2.1: UK recessions since 1955

	Number of quarters unless otherwise stated						
	Mid 1950s	Early 1960s	Early 1970s	Mid 1970s	Early 1980s	Early 1990s	Late 2000s
First quarter of falling output	1956Q2	1961Q3	1973Q3	1975Q2	1980Q1	1990Q3	2008Q2
Number of quarters till trough	2	2	3	2	5	5	5
Peak-to-trough fall in output (per cent)	0.4	0.7	4.1	2.0	4.2	2.0	6.3
Quarters for output to regain pre-recession peak from trough	1	2	11	2	8	6	16

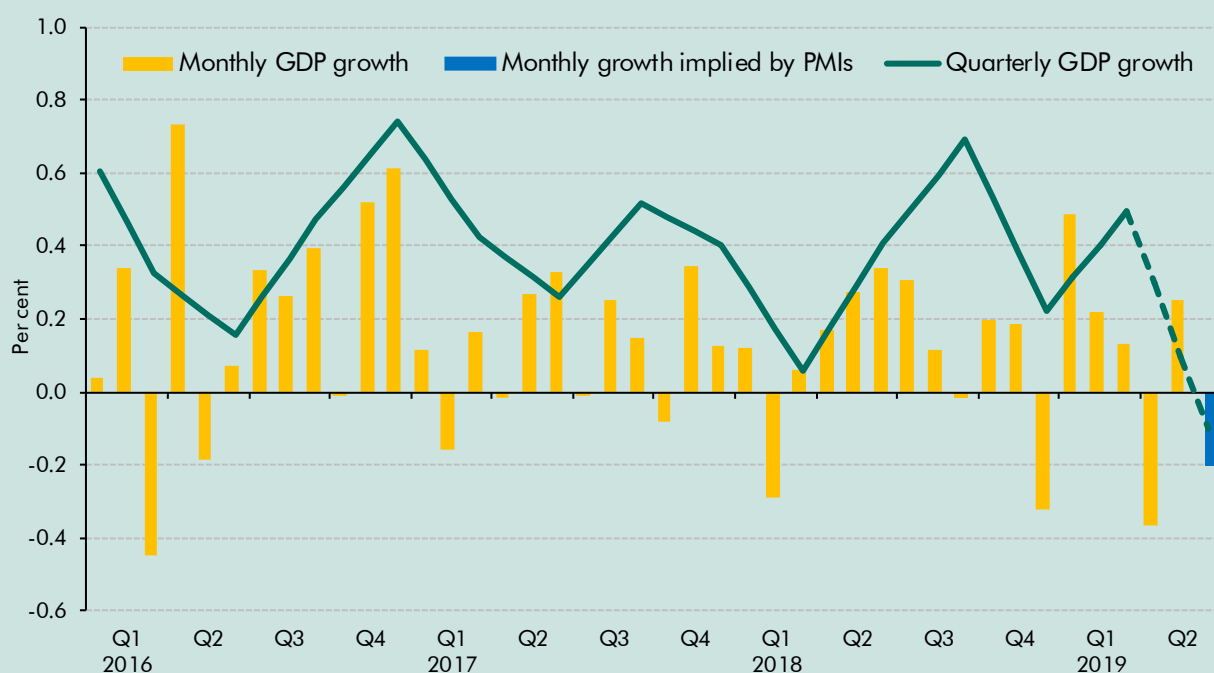
2.32 In three of those four recessions, the consequences for tax revenues and spending were sufficient to push the deficit above 6 per cent of GDP. The exception was in the early 1980s, when fiscal tightening was itself a factor contributing to the recession. Other than in the most recent recession, the effect on public debt relative to nominal GDP was relatively modest. One reason was that higher inflation boosted nominal GDP around the other three recessions (indeed tightening macroeconomic policy to squeeze inflation out of the system was a contributor to two of them), whereas nominal GDP fell in the late-2000s recession.

Box 2.1: Is the UK entering recession?

History suggests there is around a one-in-two chance of a recession in any five-year period. The ONS estimates that GDP fell on a monthly basis in April, after weak growth in March, and only partly rebounded in May. The National Institute of Economic and Social Research's (NIESR) monthly GDP tracker published on 10 July, which uses survey indicators and past trends in the data, suggests that the economy shrank by 0.1 per cent in the second quarter of 2019.^a The all-sector purchasing managers index (PMI) readings for April to June are also consistent with GDP contracting by 0.1 per cent in the second quarter according to IHS Markit (Chart A).^b So, does this foretell a full-blown recession? Or might transient factors be to blame?

If the ONS data released in August do show the economy shrinking in the second quarter, it is likely to be in part a 'pay-back' from the strength of Brexit-related stock building in the first quarter. Indeed, the 0.5 per cent growth in that quarter was more than explained by inventory accumulation. Manufacturing also grew strongly, which is consistent with businesses increasing stocks as a precaution against any potential disruption to supply chains. Higher stock building would have been growth-neutral if the goods being stockpiled were all imported, but it is possible that it boosted domestic output too, for example in the distribution and warehousing sectors, and exports might have benefited if EU firms stockpiled UK goods too.^c The volatility of monthly GDP growth in April and May was driven by car production, as the car industry had brought forward planned annual maintenance shutdowns to coincide with Brexit and minimise any related disruptions, causing output to plummet in April and rebound in May. But manufacturing has also weakened globally, reflecting factors such as the introduction of tariffs by the US and China.

Chart A: Monthly and quarterly GDP growth



Source: ONS, OBR

If Brexit-related factors were the only ones behind the relative strength of the first quarter and the possible contraction that followed, the economy might be expected to return to growth in the third quarter. But the PMI surveys were particularly weak in June, suggesting that the pace of growth is likely to remain weak. NIESR's initial estimate for the third quarter is weak GDP growth of 0.2 per cent. Still, this suggests there is a risk that the economy could enter a technical recession (i.e. two consecutive quarters of falling output).

The fiscal risks associated with recessions depend on their depth and persistence, the sectors most deeply affected, and the pace at which the economy subsequently recovers. The stress test presented in Chapter 10 illustrates the fiscal consequences of a recession following a no-deal Brexit, consistent with a scenario published by the IMF earlier this year.

^a NIESR Monthly GDP tracker: July 2019, press release.

^b IHS Markit/ CIPS UK services PMI, July 2019 press release.

^c See Box 3 in the Bank of England, May 2019 *Inflation Report*.

Output gap mismeasurement and the public finances

2.33 Judgements about the current size, and prospects for, the output gap are important drivers of our economic forecasts, as well as determining our assessment of the structural fiscal position. But, as noted earlier, the output gap is a theoretical construct that cannot be observed directly, and must instead be inferred from other indicators. This leaves much uncertainty surrounding output gap estimates, with revisions frequent and sometimes large.

2.34 Broadly speaking, approaches to measuring the output gap fall into two camps:

- **The first involves estimating potential output first, allowing the output gap to be calculated by residual from data on actual output.** The simplest approach assumes that potential output evolves smoothly and then uses statistical filters to separate actual output into a smooth potential component and a residual, often volatile, output gap. A more sophisticated approach relates potential output to its underlying drivers.
- **The second involves estimating the output gap directly** using either measures of slack (such as unemployment and survey measures of capacity utilisation), or else observable consequences of an output gap (such as movements in inflation). In this approach, potential output can then be deduced using data on actual output.

We employ measures utilising different variants of both approaches in forming our overall judgement regarding the paths of potential output and the output gap over the past.⁷

2.35 Uncertainty surrounding estimates of the output gap arises from three main sources:

- **End-point uncertainty.** Some estimation methods, notably statistical filters that assume potential output evolves smoothly, employ data at earlier and later dates when calculating potential output at any given date. This renders them less reliable at the beginning and end of the sample. But, of course, the size of the output gap at the end of the sample is precisely what we are most interested in.
- **Data uncertainty.** Data are imperfect and are prone to revision as more information becomes available and measurement methods evolve.⁸ Output gap estimates derived from some approaches will be more likely to change than others, depending on their underlying source of information. For instance, output gap measures that rely exclusively on survey data on economic slack will be less prone to revision.
- **Model uncertainty.** The estimation models themselves will evolve in line with changes to our understanding of how the economy functions. Generally speaking, this is more likely to be an issue for methods that embody a richer economic structure.

Earlier work showed that while data revisions did play a part in changes in our assessment of the output gap, rather more was down to the inclusion of new data.⁹

2.36 Revisions to output gap estimates can be substantial, as Table 2.2 illustrates. The IMF's real-time estimate of the output gap in 2007 from its April 2008 World Economic Outlook (WEO) was 0.4 per cent, but by the time of its April 2019 WEO it had been revised to 3.8 per cent. Similarly, in June 2008 the OECD estimated that there was an output gap of 0.2 per cent in 2007, but by its May 2019 publication it had been revised to 3.1 per cent. The Treasury's estimate in Budget 2008 was 0.3 per cent, in contrast to our March 2019

⁷ See OBR Working paper No.5: *Output gap measurement: judgement and uncertainty*.

⁸ This is such a common theme in explaining changes in our economic forecasts that we have devoted part of our website to the boxes included in our various reports on the theme of economic data revisions. See the 'box sets' area of our website.

⁹ See OBR Working paper No.5: *Output gap measurement: judgement and uncertainty*.

estimate of 1.4 per cent. Chart 2.5 shows that size of revisions to output gap estimates can be particularly large in downturns.

Table 2.2: Real-time and latest output gap estimates ahead of the 2008 recession

	Estimates of the output gap in the UK in 2007 (per cent of potential output)		
	IMF ¹	OECD ²	OBR ³
Real-time estimate	-0.1	-0.5	0.3
Latest estimate	2.3	1.3	1.4
Revision (percentage points)	2.4	1.8	1.1

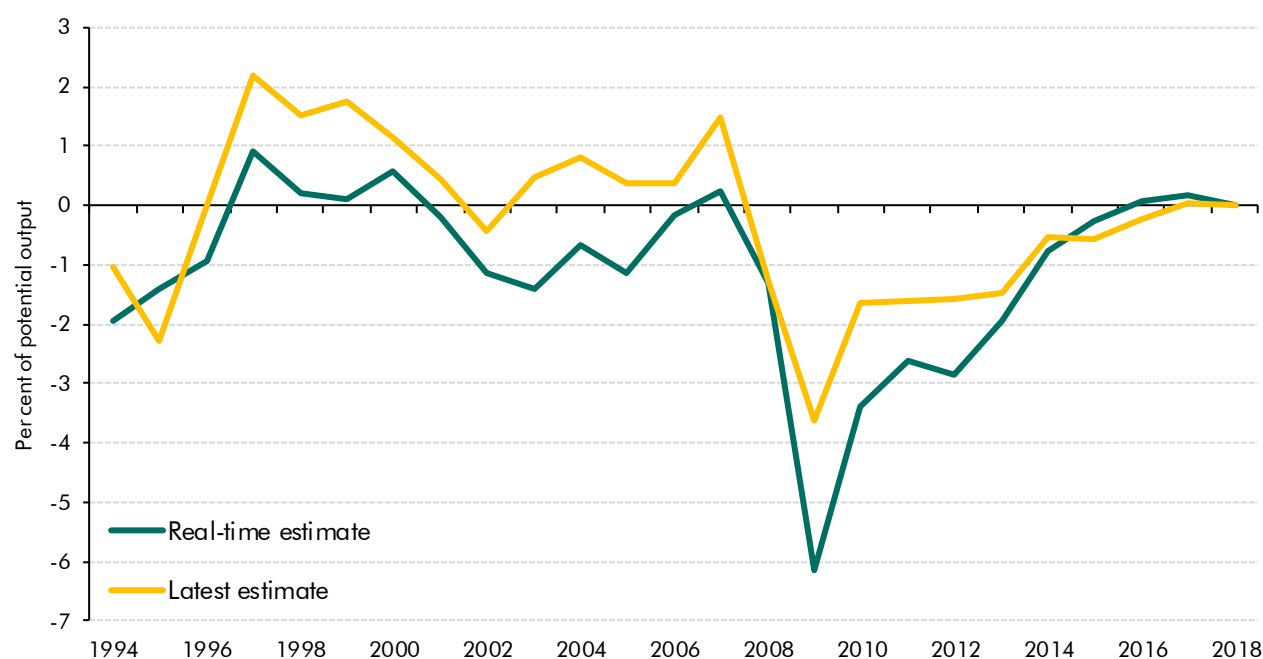
Note: numbers may not sum due to rounding.

¹IMF real time estimate from April 2008 World Economic Outlook.

²OECD real time estimate from June 2008 Economic Outlook.

³HM Treasury real time estimate, as of March Budget 2008.

Chart 2.5: Real-time and latest output gap estimates



Source: OBR

2.37 The sign of the output gap estimate can change as well as its magnitude. When this coincides with a material change in terms of size too it can be particularly challenging for policymakers, as it implies a switch in the appropriate *direction* of macroeconomic policy – shifting decisively from the accelerator to the brake, or vice versa. It may be more appropriate to base an assessment of whether policymakers’ decisions were pro- or counter-cyclical (i.e. amplifying or attenuating the economic cycle) on the vintage of data available to policymakers at the time (i.e. the real-time data).¹⁰

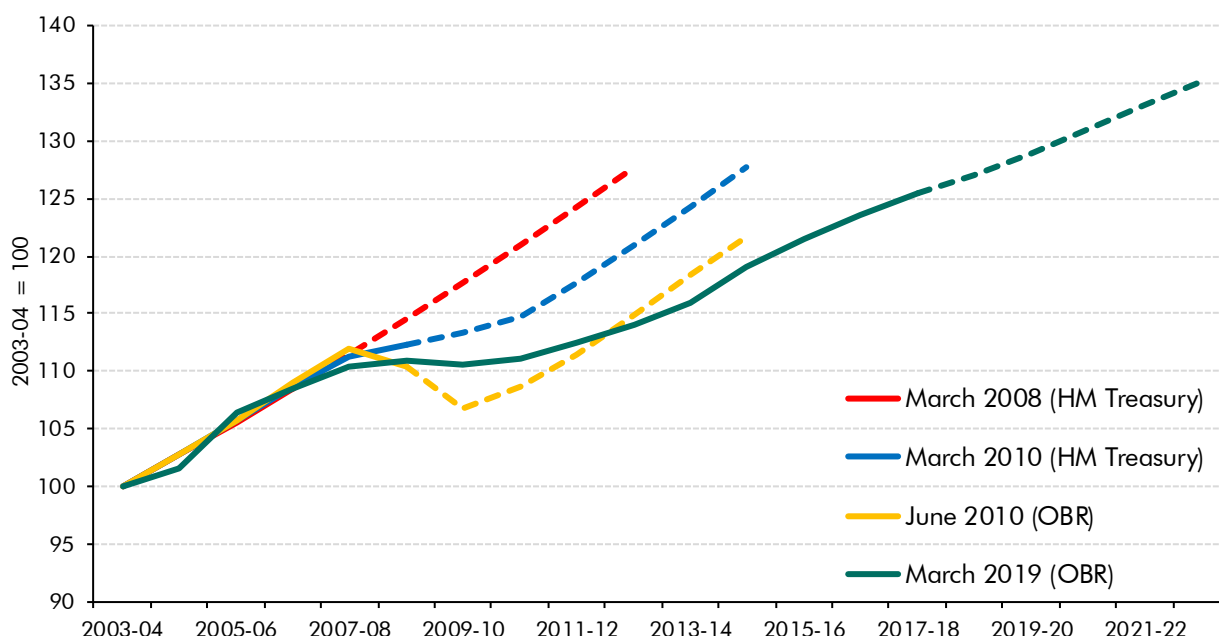
2.38 Revisions to output gap estimates can affect views about the outlook for future potential growth. When a recession occurs, it typically prompts a reassessment of the sustainability of

¹⁰ See Orphanides, *Monetary Policy Rules Based on Real time Data*, American Economic Review, 2001, and Cimadomo, *Fiscal Policy in Real Time*, European Central Bank Working paper series No.9, 2008.

pre-recession growth and a lowering of estimates of past and future growth in potential output. For some estimation methods, this effect can follow as a direct result of the way in which they are constructed. For example, statistical filtering methods are particularly sensitive to changes in recent data. So, if GDP growth weakens markedly, the filter will imply that the structural component of recent growth has weakened too. It is partly for this reason that we typically place less weight on filter estimates, and, given that no estimate is perfect, we use a range of evidence.

2.39 Chart 2.6 shows three vintages of Treasury and OBR estimates and forecasts for potential output, each starting five years before the financial crisis broke. It shows successive downward revisions to both the level and the slope (i.e. potential growth) over time. This general pattern is not unusual after recessions, but its scale and persistence has been.

Chart 2.6: Selected potential output growth estimates and forecasts



Source: OBR

Output gap estimates and the structural fiscal position

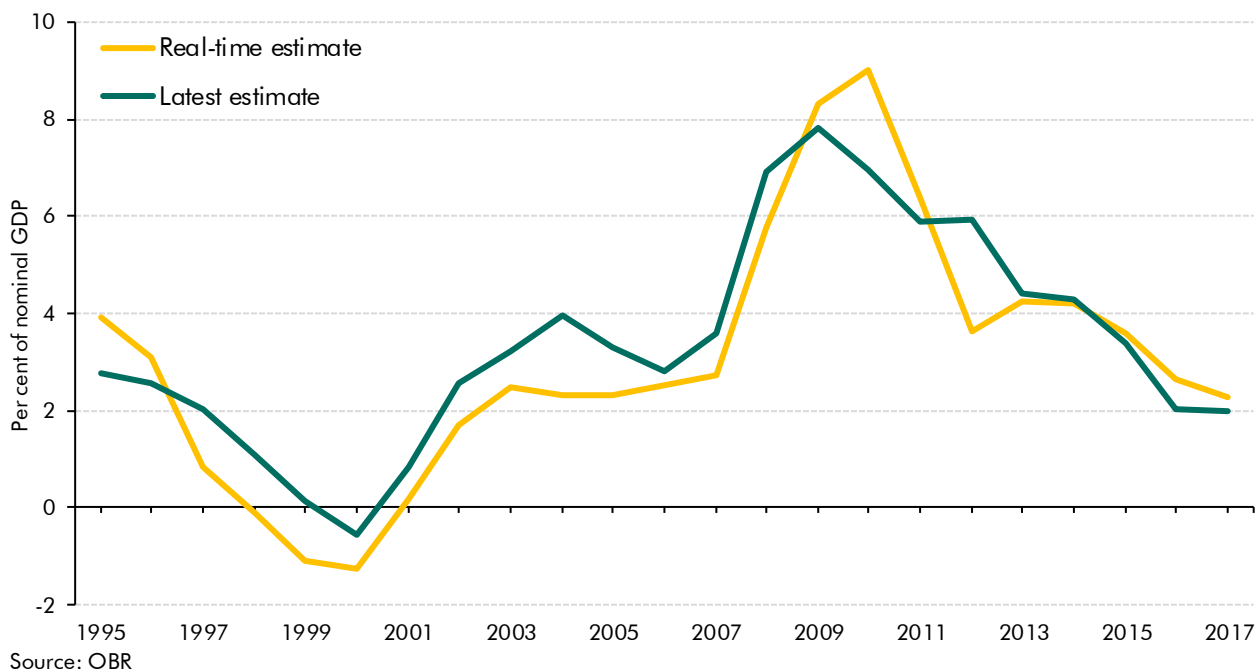
2.40 The extent to which real-time output gap estimates could influence a government’s *intended* fiscal stance would depend on the constraints it has set itself, and the weight it places on the output gap. The Government’s current fiscal mandate target measure is cyclically-adjusted public sector net borrowing (CA-PSNB), so it has assigned a significant role to our estimate of the output gap and the sensitivity of borrowing thereto.

2.41 CA-PSNB is constructed using PSNB and output gap estimates.¹¹ Both are uncertain and are revised, and both play a significant role in revisions to the structural fiscal position. Overall, the real-time and latest estimates of CA-PSNB move broadly in line with each other, though

¹¹ CA-PSNB=PSNB + 0.5*Gap_t + 0.2*Gap_{t-1}, for more on this see OBR Working Paper 3, *Cyclically adjusting the public finances*.

the two lines do not match entirely (Chart 2.7).¹² (Cyclical adjustment coefficients – the sensitivity of borrowing to the output gap – could change too, but did not over this period.)

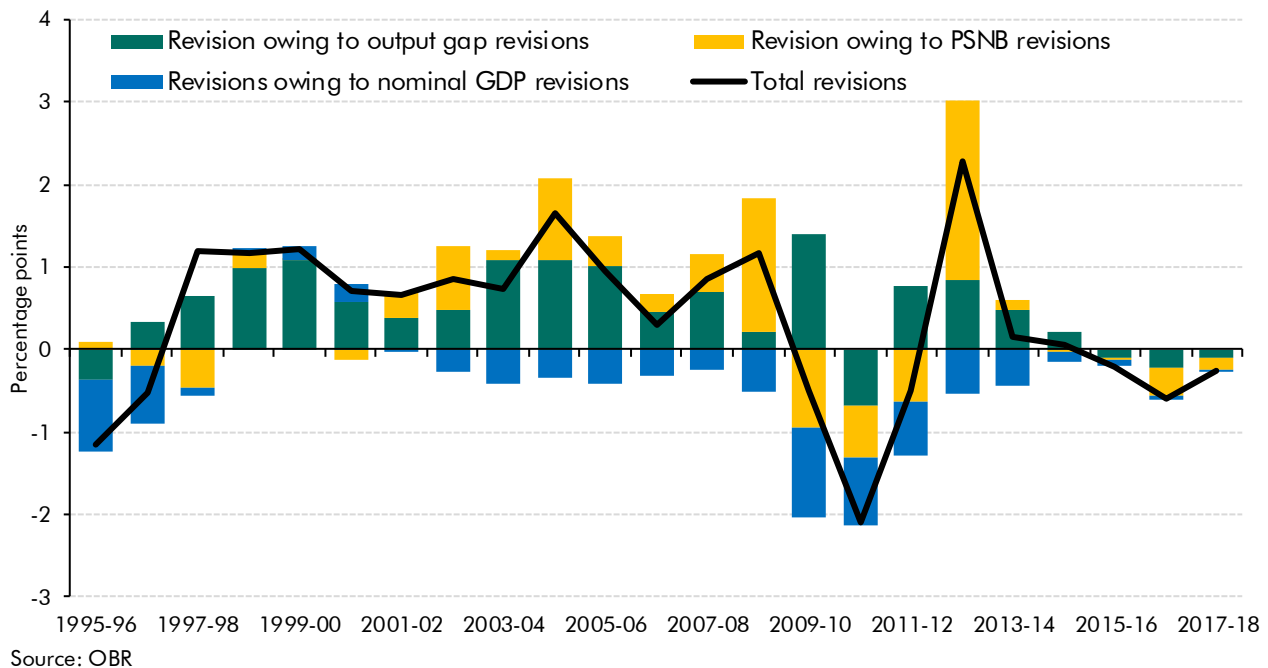
Chart 2.7: Real-time and latest estimates of cyclically adjusted PSNB



2.42 Breaking down CA-PSNB revisions by source, the part owing to revisions to output gap estimates are sizeable, though revisions owing from changes to PSNB played their part, especially following the financial crisis (Chart 2.8). PSNB can be revised as, for example, departmental spending forecasts are eventually replaced with outturn data. It is also subject to methodological and classification changes that can happen much later. And, expressed as a share of nominal GDP, it will also change as nominal GDP is revised for similar reasons.

¹² Real-time estimates are based on the information policymakers had at the time. For example, in 2007-08, CA-PSNB would be calculated using estimates for the output gap as at 2007-08. $CAPSNB_t^{2007-08} = PSNB_t^{2007-08} + 0.5 * Gap_t^{2007-08} + 0.2 * Gap_{t-1}^{2007-08}$.

Chart 2.8: Revisions to cyclically adjusted PSNB by source



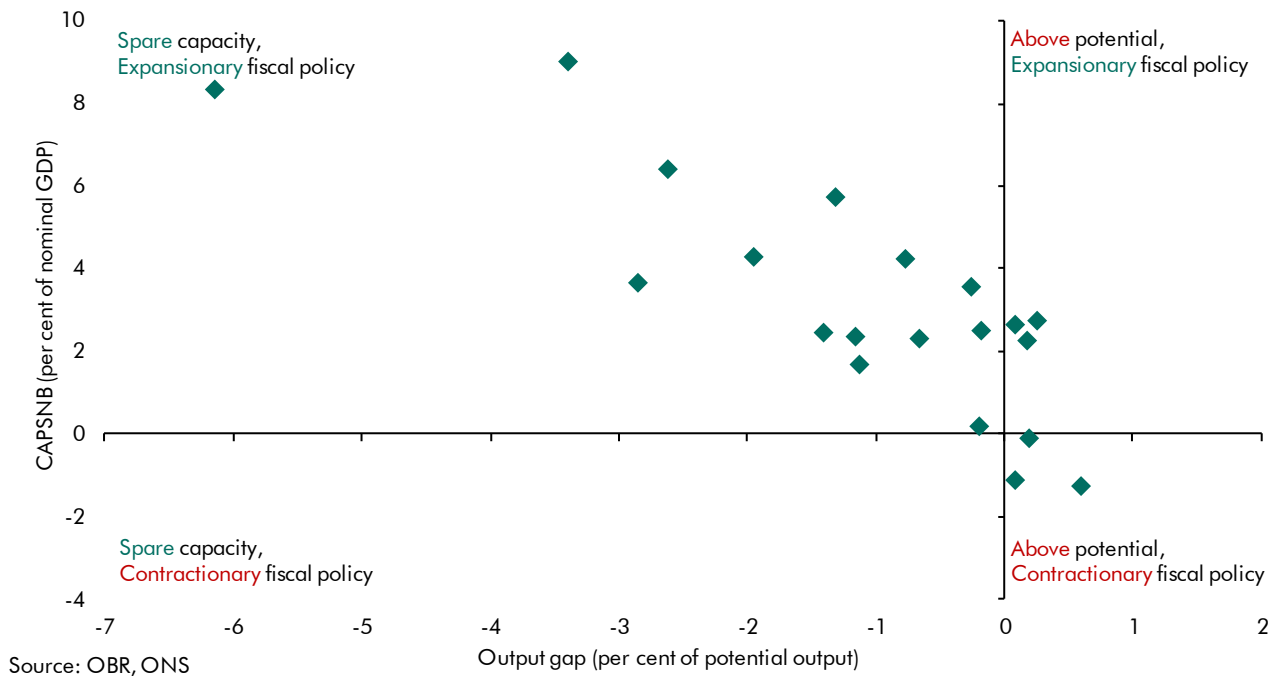
2.43 Given that our estimate of the output gap is liable to change in the light of new information, it is clear that estimates of the structural position of the public finances are similarly uncertain, and will be especially so around recessions.

Structural deficit uncertainty and the fiscal policy stance

2.44 A policy maker may choose to respond to sufficiently large positive or negative output gaps by setting policy to counteract the cycle. Assuming that the automatic fiscal stabilisers are insufficiently strong to achieve the desired stabilisation on their own, an additional discretionary fiscal impulse would be necessary. So when there is spare capacity (a negative output gap), we might expect to see expansionary discretionary fiscal policy (top left quadrant of Charts 2.9 and 2.10). And when the economy is operating above potential (a positive output gap) then the policy maker would set contractionary fiscal policy (bottom right quadrant of Charts 2.9 and 2.10). In other words, if the fiscal stance is 'appropriate', the points should lie in the bottom right or top left quadrants.

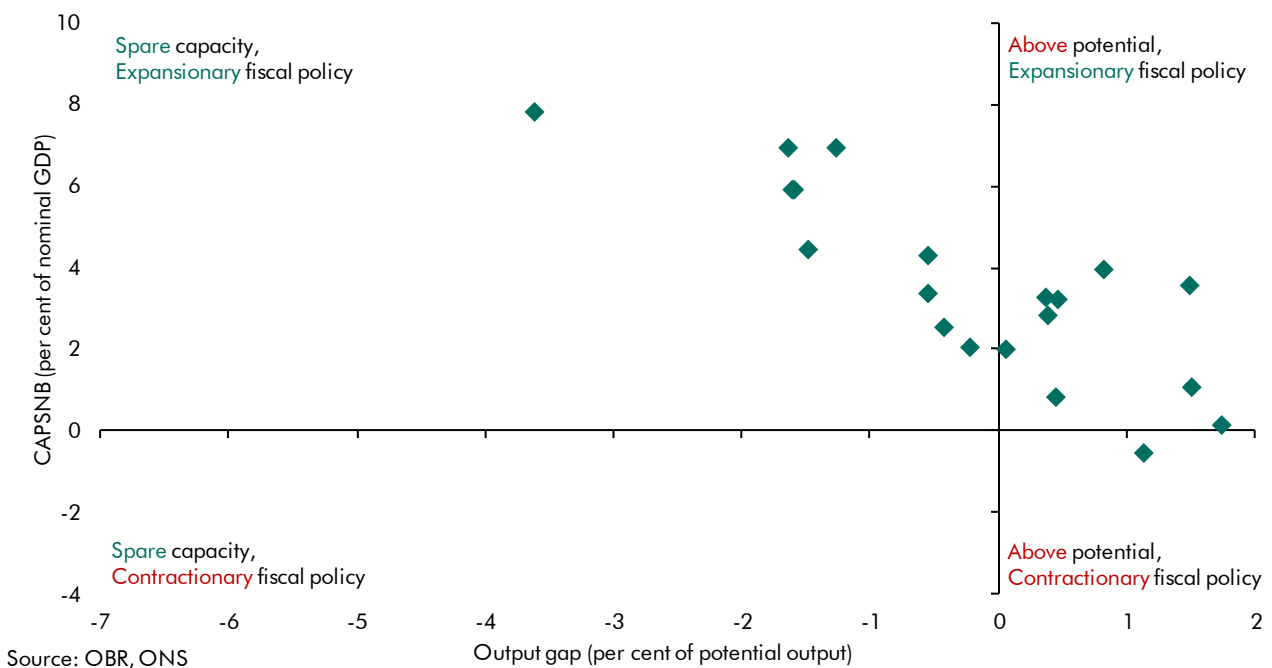
2.45 Policy makers unfortunately do not have the luxury of hindsight when making policy. So the response of the fiscal stance to the cycle should really be assessed based on the real-time information policy makers had at the time. Chart 2.9 shows the data on a real-time basis. In this case, almost all the points are in the top left or bottom right quadrant, suggesting that discretionary policy was indeed generally counter-cyclical in its intent.

Chart 2.9: Cyclically adjusted PSNB and the output gap on the real-time data



2.46 Our analysis suggests output gap revisions can be substantial, however, particularly in the later stages of the business cycle when there is a tendency to overestimate the amount of slack in the economy. Consequently, a policy setting that seems counter-cyclical in real time may look less counter-cyclical when judged with historical hindsight. That is illustrated in Chart 2.10, which shows a considerable number of points lying in the top right quadrant, where a discretionary fiscal expansion was applied when the economy – with hindsight – was already operating above potential.

Chart 2.10: Cyclically adjusted PSNB and the output gap on the latest data



What fiscal risks arise from output gap uncertainty and mismeasurement?

- 2.47 It is clear that output gap mismeasurement can have consequences for Chancellors' fiscal policy choices. What looks like wise counter-cyclical fiscal policy in real time might not do so with the benefit of hindsight. In particular, it is a feature of some models used to estimate output gaps that recessions tend also to lead to downward revisions in the pre-recession path of potential output (and thus also its prospective future path). This matters as it is the outlook for potential output that underpins judgements about long-run fiscal sustainability.
- 2.48 Uncertainty surrounding current estimates of the output gap means our central estimate could provide the Chancellor with a misleading steer as to both the margin of spare capacity in the economy and the size of the structural deficit, affecting any decisions about how much to adjust the fiscal stance. We try to address this risk by presenting fan charts around our forecasts for the CA-PSNB, illustrating the extent to which history would suggest outturns might differ from our central forecast. We also place our central estimate in the context of those produced by other organisations – in our March 2019 *EFO* estimates for 2019 ranged from minus 1.7 per cent to plus 0.8 per cent.
- 2.49 In principle this risk could be symmetric, but evidence around recessions is that estimates can worsen significantly as forecasters tend to conclude that they were over-optimistic ahead of the recession. To put the size of this risk in context, in real-time the Treasury, IMF and OECD all estimated there to be an output gap relatively close to zero immediately prior to the 2008 recession. The average of latest estimates is now 2.7 per cent. This represents a change in the estimated size of the structural deficit in that year of around 1.2 per cent of nominal GDP – around £26 billion in today's terms.

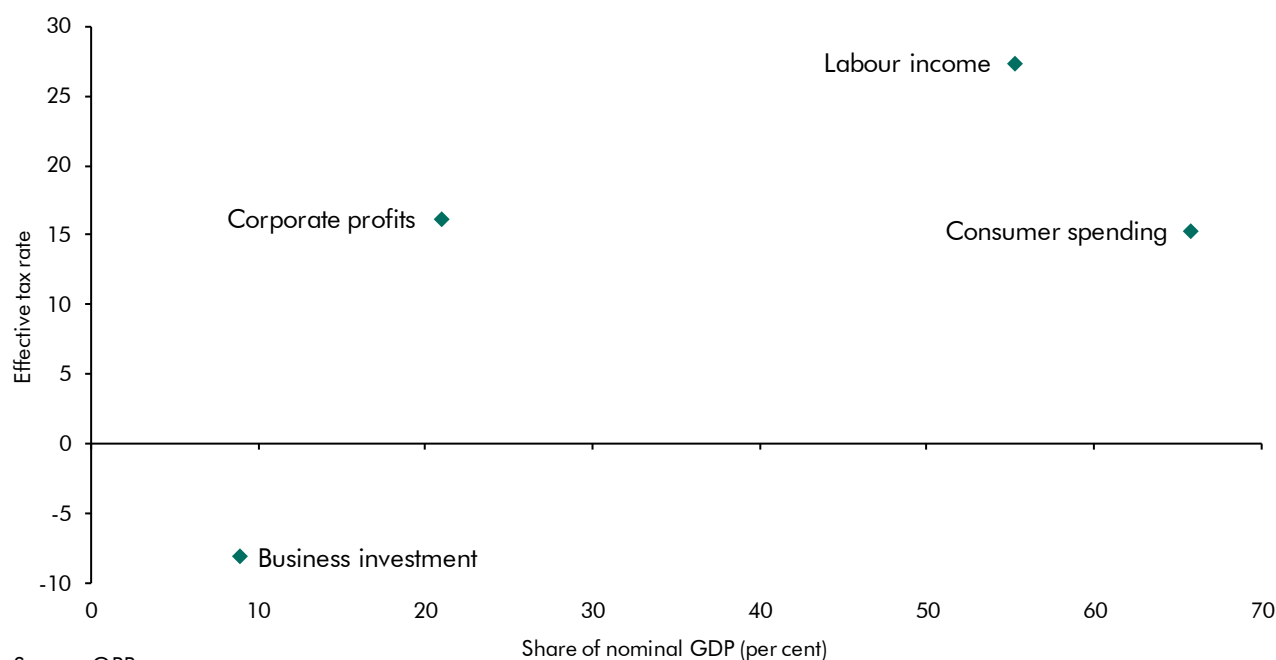
Risks from the composition of GDP

- 2.50 The composition of GDP can be important to the fiscal forecast, because some components generate more tax receipts per pound than others (i.e. they are more 'tax rich'). Chart 2.11 illustrates the tax-richness of different income and expenditure components of GDP by assigning various taxes to each: for example, income tax to labour income or VAT and excise duties to consumer spending. Not all taxes relate to income or expenditure components of GDP – in particular, those that relate to disposals or transfers of assets (capital gains tax or inheritance tax) or balance sheets (the bank levy). These have been excluded. The chart illustrates the particular fiscal importance of labour income and consumer spending, both of which are large components of GDP and relatively tax-rich.^{13,14}

¹³ We have split onshore corporation tax between a negative capital allowance element assigned to investment and a notional pre-capital allowance element assigned to corporate profits. We have not included use of North Sea capital allowances in this estimate. Almost all North Sea investment is subject to immediate 100 per cent capital allowances, but the effect on tax receipts depends on the proportion of that investment undertaken by firms with tax liabilities that can be offset. This is subject to significant uncertainty and varies across years.

¹⁴ The effective tax rate calculations underpinning this chart reflect static, average effects in one year. They do not attempt to capture interactions between components or longer-term dynamic effects – like the effect of higher business investment on potential output.

Chart 2.11: Selected components of GDP and associated effective tax rates



Source: OBR

Risks associated with the expenditure composition of GDP

2.51 Key risks from the expenditure composition of GDP include:

- Household consumption** makes up 66 per cent of nominal GDP by expenditure, and it is also relatively tax-rich. It accounts for around 70 per cent of VAT receipts. Owing to its size, relatively small differences between forecast and actual consumption growth can be fiscally material. Our latest ready reckoners suggest that a 1 per cent shortfall in consumption relative to forecast would reduce receipts by £¾ billion, while a 1 percentage point fall in the consumption share of GDP – offset by a rise in business investment – would lower the tax-to-GDP ratio by 0.2 percentage points.
- Business investment** makes up a much smaller share of GDP than private consumption, but is more volatile. In the medium term, higher business investment reduces tax receipts due to the use of capital allowances. Our ready reckoners suggest that the direct effect of a 1 per cent rise would reduce receipts by around £0.1 billion by the end of the forecast. The sensitivity in the short term is greater due to the annual investment allowance having been temporarily set at £1 million. But the indirect effect of higher business investment is likely more important in the longer term, boosting receipts via its effect on potential output growth.
- The UK does not impose **export** taxes and the customs duties it currently collects are treated as EU taxes. They will become UK taxes after Brexit, but until the terms of Brexit or any changes to customs policies are known, any receipts sensitivities are unknown.

Risks associated with the income composition of GDP

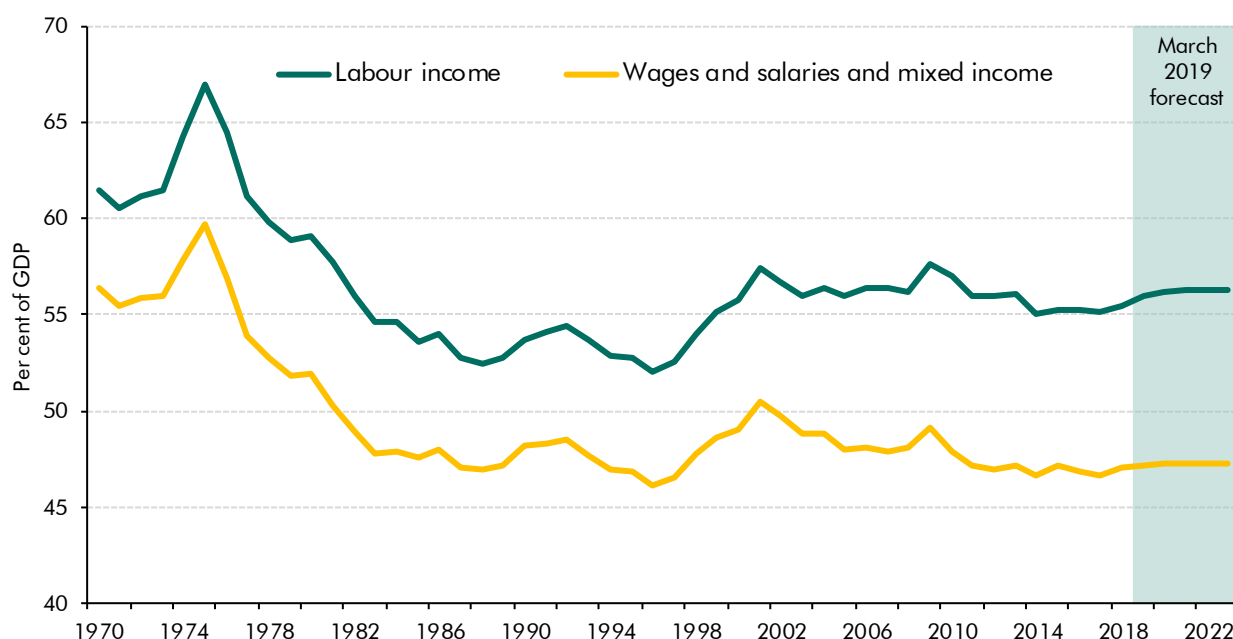
2.52 The two most important income components for the public finances are labour income and corporate profits, with the former significantly larger and more tax-rich than the latter:

- **Wages and salaries** make up the largest component of household income. Income tax and National Insurance contributions (NICs) are the largest taxes on that income – and the largest sources of total tax receipts. A 1 per cent fall in wages and salaries would reduce PAYE income tax and NICs receipts by about £3¾ billion in the first year. We have typically assumed that wages and salaries will be broadly stable as a share of GDP over the medium term, as they have been in recent decades (Chart 2.12). If the share were to fall, the tax-to-GDP ratio would fall too. A 1 percentage point fall in the labour share of income (weighted equally between earnings and employment), compensated by a corresponding rise in the profit share, would be associated with a 0.1 percentage point drop in the tax-to-GDP ratio. The distribution within labour income also matters fiscally because of the progressivity of the income tax system.
- A 1 per cent fall in **self-employment income**¹⁵ would reduce self-assessment receipts by £¼ billion, with a one-year lag. This is much smaller than an equivalent hit to wages and salaries, which are over six times the size of self-employment income, and also more heavily taxed (especially through NICs). There has been a long-term trend of a rising share of workers being self-employed (and a related sharp rise in the number of people setting themselves up as a single-director company, as discussed in Chapter 4). We assume the share of self-employment continues to rise in our medium-term forecast, but at a slightly slower pace than over the past couple of decades.
- **Corporate profits** are subject to a lower effective tax rate than labour income. Evidence suggests that profit margins are positively correlated with the economic cycle,¹⁶ and our forecast of the path of the profit share of GDP is partly informed by our output gap forecast. Positive (negative) cyclical shocks may therefore be associated with a higher (lower) profit share, reducing (increasing) the aggregate effective tax rate, depending on how other elements of income evolve. So, an economic shock that mainly affects the corporate sector will have smaller fiscal consequences than a similar one that mainly affects the household sector – as the results of our latest stress test illustrate.

¹⁵ Recorded in the household income category of ‘mixed income’ in the National Accounts.

¹⁶ Macallan *et al*, *The cyclical nature of mark-ups and profit margins for the United Kingdom: some new evidence*, Bank of England Working Paper No. 351, 2008.

Chart 2.12: Labour share of GDP by income



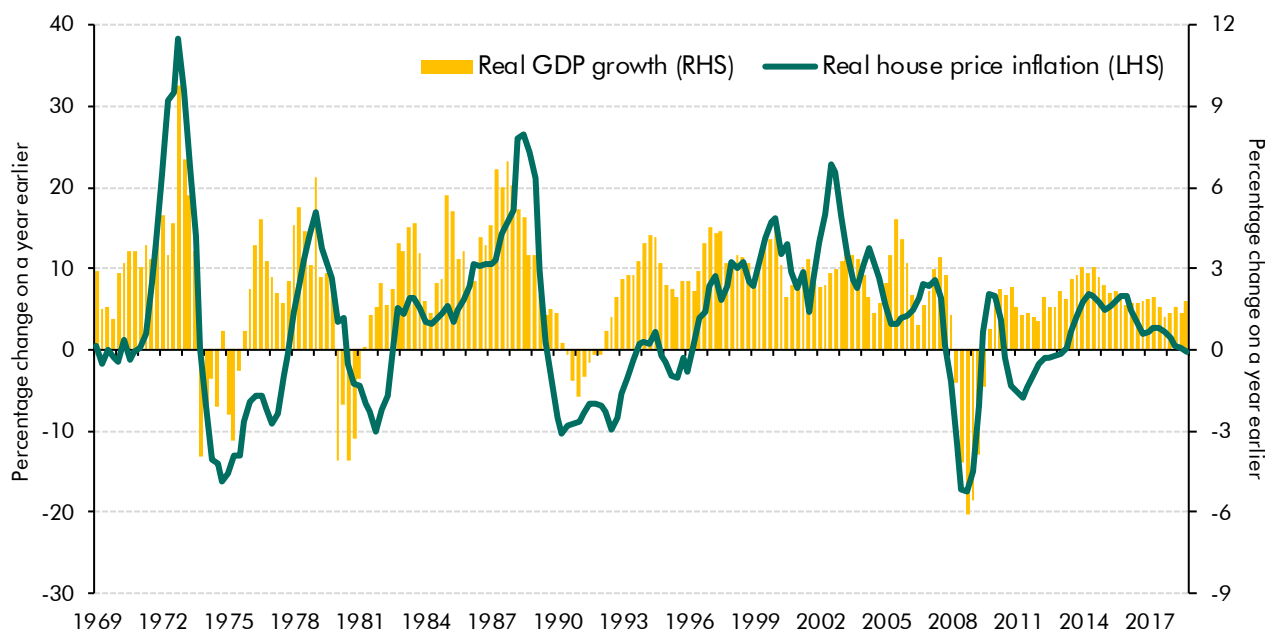
Source: ONS

Risks associated with the housing sector

- 2.53** The housing sector accounts for more than two thirds of stamp duty land tax (and equivalent taxes in Wales and Scotland), more than a third of inheritance tax and a sixth of capital gains tax. It also accounts for small – but still significant – shares of many other tax bases.
- 2.54** Housing-related risks to receipts can be illustrated by what happened during and after the financial crisis: SDLT receipts from residential properties fell from £10.0 billion in 2007-08 to £4.8 billion in 2008-09, as the number of property transactions halved. The level at which property transactions are taxed also depends on the house price and the type of purchaser, with residential SDLT revenue highly dependent on a small number of high-priced transactions (see Chapter 4).
- 2.55** Housing market shocks are often correlated with other shocks in the economy. House prices fell in real terms around each of the last four recessions (Chart 2.13). Housing shocks also have wider indirect effects. For example, consumption and house prices are highly correlated because they are affected by common factors, including income expectations and credit conditions. There may also be causal effects from housing to consumption, for example because housing wealth can be used as collateral for borrowing.¹⁷

¹⁷ Benito *et al*, *House prices and consumer spending*, Bank of England Quarterly Bulletin, June 2006.

Chart 2.13: Growth of real GDP and real house prices



Source: ONS, OBR

2.56 Other features of the housing market, such as the proportion of owner-occupiers, also affect public spending. While less volatile from year to year, home ownership rates were on a downward trend from 2005 to 2016, before apparently stabilising.¹⁸ The proportion of households renting their home – and within that the proportions in the private- and social-rented sectors – is a key driver of spending on housing benefit, which we estimate will cost £22.6 billion in 2018-19 (including equivalent payments made via universal credit).

2.57 There are several government-backed schemes to encourage housing supply and home ownership, which are individually and collectively a source of fiscal risk as they increase the exposure of the public sector balance sheet to housing market risks (see Chapter 6).

Risks associated with sectoral lending and balance sheets

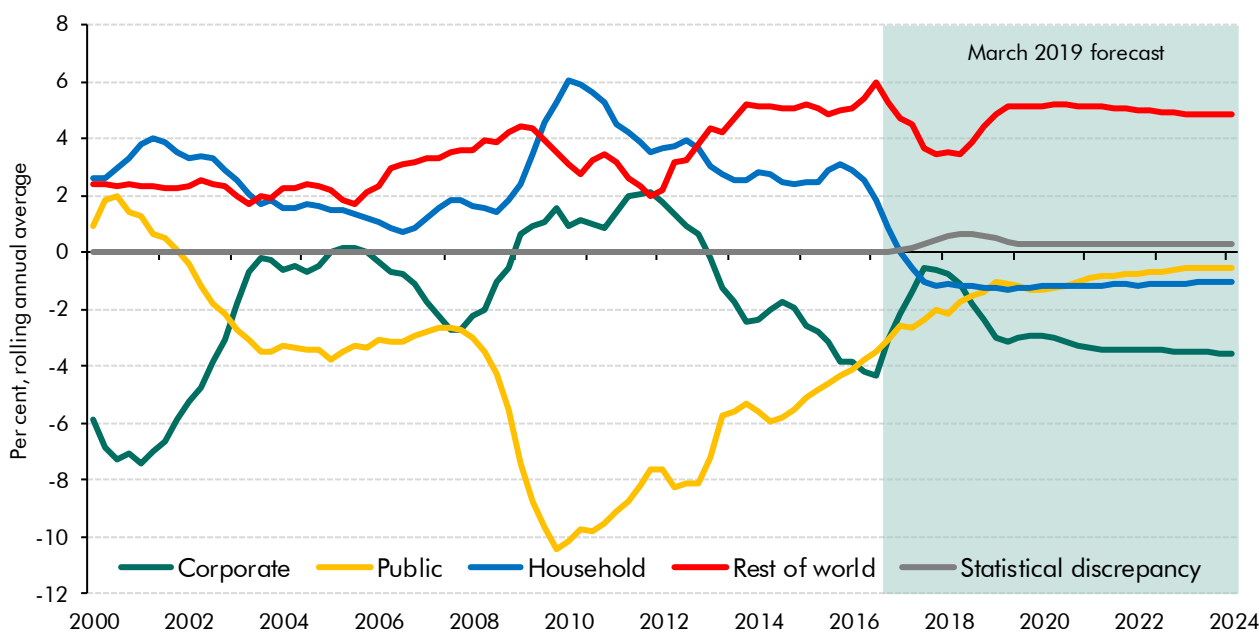
2.58 The National Accounts framework underpinning our economic forecast allows us to forecast each sector’s net lending or borrowing from the other sectors. In principle, these should sum to zero – for each pound borrowed there must be a pound lent. As each sector’s net lending follows arithmetically from our forecasts of income and expenditure, the profiles provide an important overall diagnostic on the coherence of our economic forecast. They can also highlight risks around it:

- The **overall position across the four sectors** shows how we expect the public sector deficit to narrow slightly, with that narrowing offset by a modest decline in the rest of the world surplus (a narrowing current account deficit) while the corporate and household sectors are expected to run persistent but stable deficits (Chart 2.14).

¹⁸ MHCLG, *Live tables on dwelling stock (including vacants): Table 102, May 2019*. Excludes Northern Ireland.

- The historically large **current account** deficit, which means overseas investors remain significant net lenders to the UK, poses risks. If investors' confidence in the UK economy were damaged, this could lead to a sharp fall in sterling causing an abrupt demand-led narrowing of the current account deficit and a spike in inflation. That said, the UK's net international investment liabilities are relatively modest as a share of GDP, mitigating these risks somewhat. Estimates of the current account balance, which on the current data vintage have averaged a deficit of 4.5 per cent of GDP since 2012, are also subject to frequent revision.
- A persistent **household deficit** has implications for household debt – high debt could cause households to retrench spending more than usual if there were a negative shock, which would amplify the effects of a slowdown. Household debt remains high by historical standards relative to income, though below pre-crisis levels (Chart 2.15). We expect it to rise modestly relative to income over our forecast, but this is largely driven by student loans (as currently recorded in the National Accounts).¹⁹

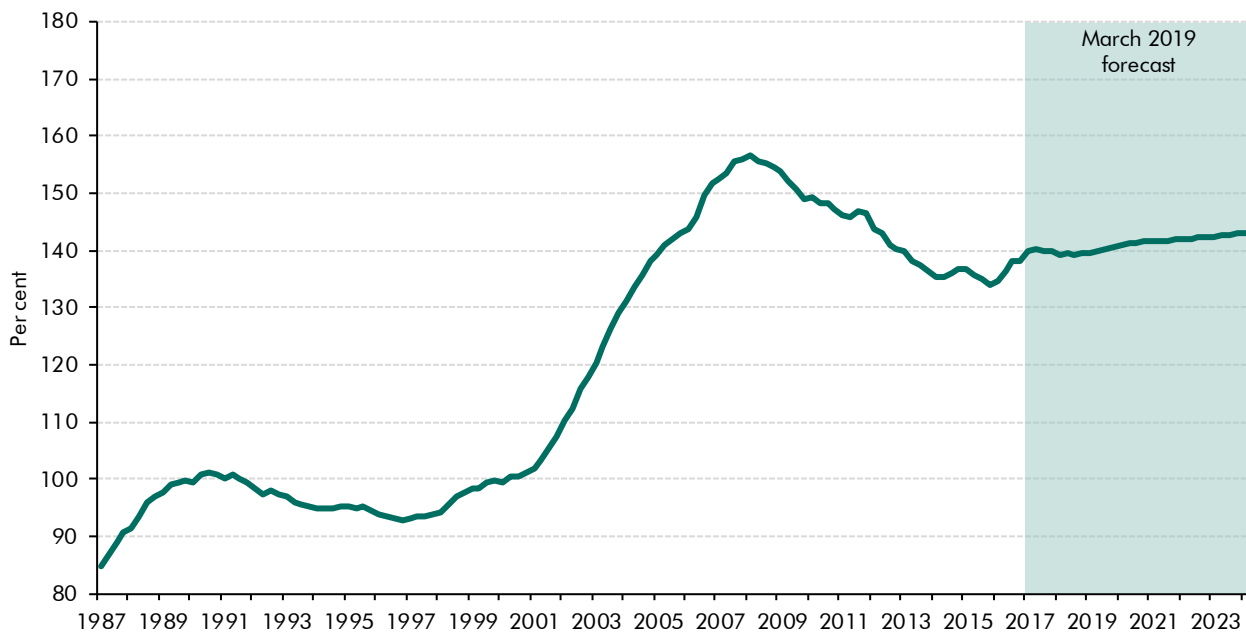
Chart 2.14: Sectoral net lending



Source: ONS, OBR

¹⁹ See Box 3.4 of our October 2018 *Economic and fiscal outlook* for further discussion

Chart 2.15: Household gross debt to income



Source: ONS, OBR

Conclusions

- 2.59** This chapter has highlighted various ways in which macroeconomic risks can affect the public finances. History suggests that these are some of the highest impact fiscal risks most likely to crystallise over the medium and longer term.
- 2.60** Our assessment is that the likelihood of, and impact from, most of these macroeconomic risks crystallising is little changed relative to our 2017 FRR. There is still a one-in-two chance of a recession in any five-year period, though of what size is uncertain. The timing of any recession is also uncertain, with the latest data suggesting the UK economy may have contracted in the second quarter of 2019 but implications for the third quarter unclear. Downside risks to productivity growth remain a concern given the continuation of its weakness since we published our 2017 FRR. We revised down our medium-term assumption in November 2017, but we have not changed our long-term one. But the longer the weakness in productivity growth persists, the more likely we are to revise that down too.
- 2.61** In this report we have looked more closely at the potential fiscal risks arising from uncertainty around and mismeasurement of the output gap. This shows that real-time estimates of the output gap are prone to significant revisions, particularly in the lead-up to recessions. That in turn can lead to inappropriate fiscal policy choices.

For the Government's response

2.62 In this chapter we have highlighted several issues that the Government is likely to wish to consider when managing its fiscal risks. Among them:

- the sources of weak post-crisis **productivity growth** and the risk of this continuing;
- the **inevitability of future recessions** and the risk of persistent effects from them;
- the **uncertainty around real-time output gap estimates** and its policy implications;
- the **persistent current account deficit and households' financial position**; and
- the Government's fiscal exposure to the **housing sector** in particular.

2.63 When assessing the macroeconomic outlook and its interaction with fiscal risk over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

3 Risks from the financial sector

Introduction

3.1 The financial sector is a prominent part of the UK economy and has a significant impact on the public finances. It is both a direct source of employment and tax revenue and also facilitates transactions, savings and investment, and insurance/risk transfer in the wider economy. But financial crises can have a significant adverse effect on the public finances. In our 2017 *Fiscal risk report (FRR)*, we noted several fiscal risks arising from the financial sector. In this chapter, as well as revisiting those risks, we also look at the risks posed by ‘shadow banking’ – in broad terms, those entities that act like banks – undertaking maturity and liquidity transformation and extending credit – but which are not regulated as banks.

3.2 This chapter:

- describes the key **characteristics of the financial sector**;
- reviews evidence on **financial crises and their fiscal impact**;
- assesses current and future **fiscal risks from the financial sector**;
- looks in more depth at risks posed by **shadow banking**; and
- identifies some **issues for the Government’s response**.

Characteristics of the financial sector

3.3 Despite shrinking somewhat in the aftermath of the financial crisis, the financial sector remains prominent in the UK economy and contributes significantly to the public finances:

- **Banks’ assets** relative to nominal GDP have risen more than fourfold since the 1970s and in 2017 stood at around 5½ times GDP (Chart 3.1).¹ In absolute terms, this makes the UK’s banking sector the third largest among major OECD countries after the US and Japan. But, relative to the size of the economy, it is more than four times bigger than that in the US and somewhat larger than that in Switzerland.²
- Value added by the finance and insurance industry, as defined in the National Accounts, accounted for around 7 per cent of **national output** in 2018, down from a peak of 9 per cent in 2009 but still above the EU average of around 5 per cent.³

¹ OECD Stats, *Financial balance sheets non-consolidated and GDP output approach*, data extracted in May 2019.

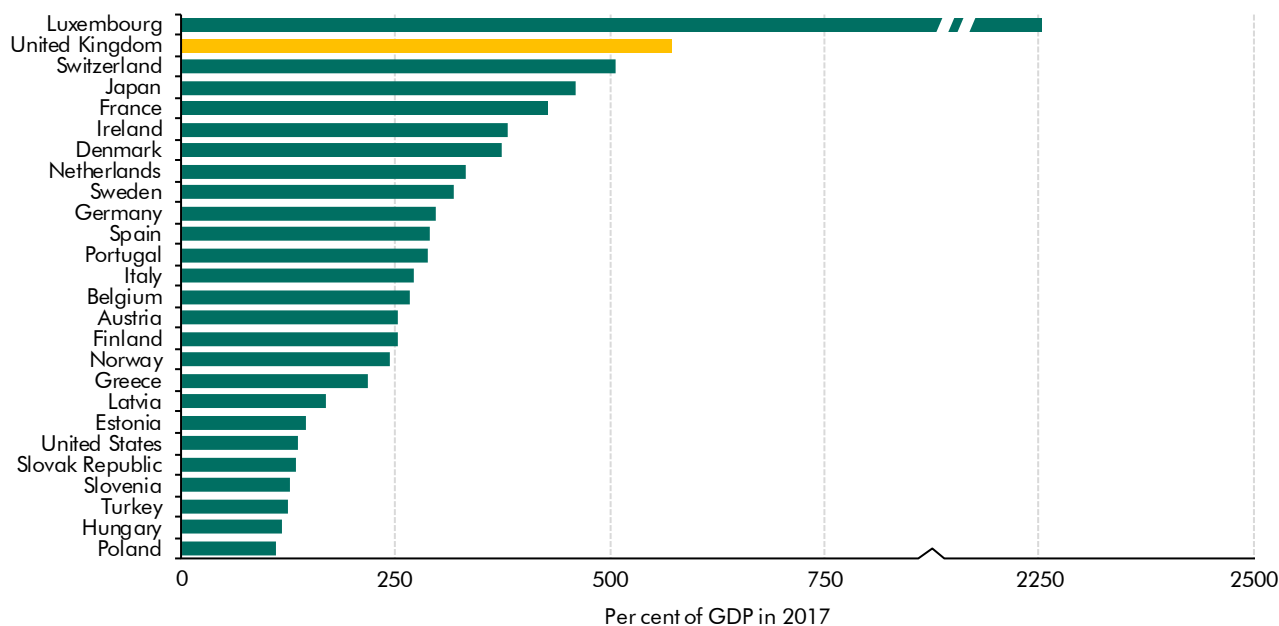
² To the extent that the domestic banking is now insulated from international banking through ring-fencing, that may somewhat overstate the UK’s vulnerability to a crisis.

³ ONS, *UK GDP(O) low level aggregates*, May 2019 for the UK and OECD, *Value added by activity*, 2018 for the EU average.

Risks from the financial sector

- As of December 2018, finance and insurance accounted for 1.1 million **jobs** or 3 per cent of the total.⁴
- The UK **trade surplus** in financial and insurance services stood at £61 billion in 2018, equivalent to around 3 per cent of GDP. The UK recorded an overall trade deficit in 2018 of £31 billion – illustrating the sector’s importance to the balance of payments.⁵

Chart 3.1: Banks’ assets relative to nominal GDP



Note: Data for the United States are as a per cent of nominal GDP in 2016.
Source: OECD

3.4 Chart 3.2 illustrates the composition of financial systems across developed economies on the left and the composition of the UK financial system over the past 15 years on the right.

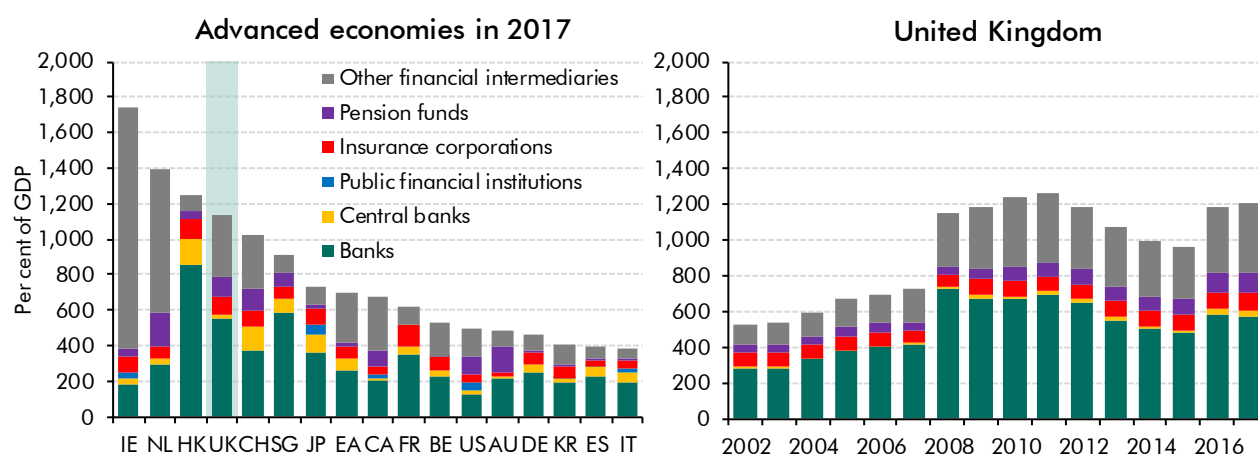
3.5 Banks are the largest component of the UK financial sector by assets (at almost half in 2017), followed by other financial intermediaries (OFIs, which accounted for almost a third of assets in that year). Insurance corporations, pension funds and the central bank are all much smaller by comparison. And while banks’ assets roughly doubled in size relative to GDP between 2002 and 2017, OFIs’ assets more than trebled over the same period.⁶

⁴ ONS, *Workforce jobs by industry*, March 2019.

⁵ ONS, *UK trade: May 2019, July 2019*.

⁶ The jump in banks’ assets in 2008 relates to the recording of derivative assets.

Chart 3.2: Assets of financial institutions in advanced economies



Note: We have excluded the Cayman Islands and Luxembourg due to high values.
Source: FSB

Direct implications for the public finances

3.6 The financial sector accounts for a disproportionately large share of total receipts, though less so than in the pre-crisis period. This reflects both the high average pay rates in the sector and differences in how financial sector companies are taxed relative to others:

- In 2017-18, the sector accounted for only 3 per cent of total jobs,⁷ but for around 8 per cent of total pay⁸ and 12 per cent of PAYE income tax and NICs receipts.
- In 2016-17, the sector accounted for 25 per cent of total corporation tax receipts.⁹
- According to a report produced for the City of London Corporation, total tax paid by financial sector companies and their employees was £75 billion in 2017-18, equivalent to 10.9 per cent of total UK tax receipts.¹⁰ On that metric, reliance on the financial sector for receipts has fallen from 13.9 per cent of total in 2007-08.

3.7 Looking specifically at the banking sector, in 2017-18 it accounted for 6.7 per cent of PAYE receipts and 12.1 per cent of corporation tax receipts (including the bank surcharge). As Chart 3.3 shows, the banking sector is currently somewhat less important as a source of receipts than it was before the financial crisis, but its share of receipts has increased steadily in recent years: from 3.4 per cent of the total in 2013-14 to 3.8 per cent in 2017-18.¹¹

⁷ ONS, *Workforce jobs by industry*.

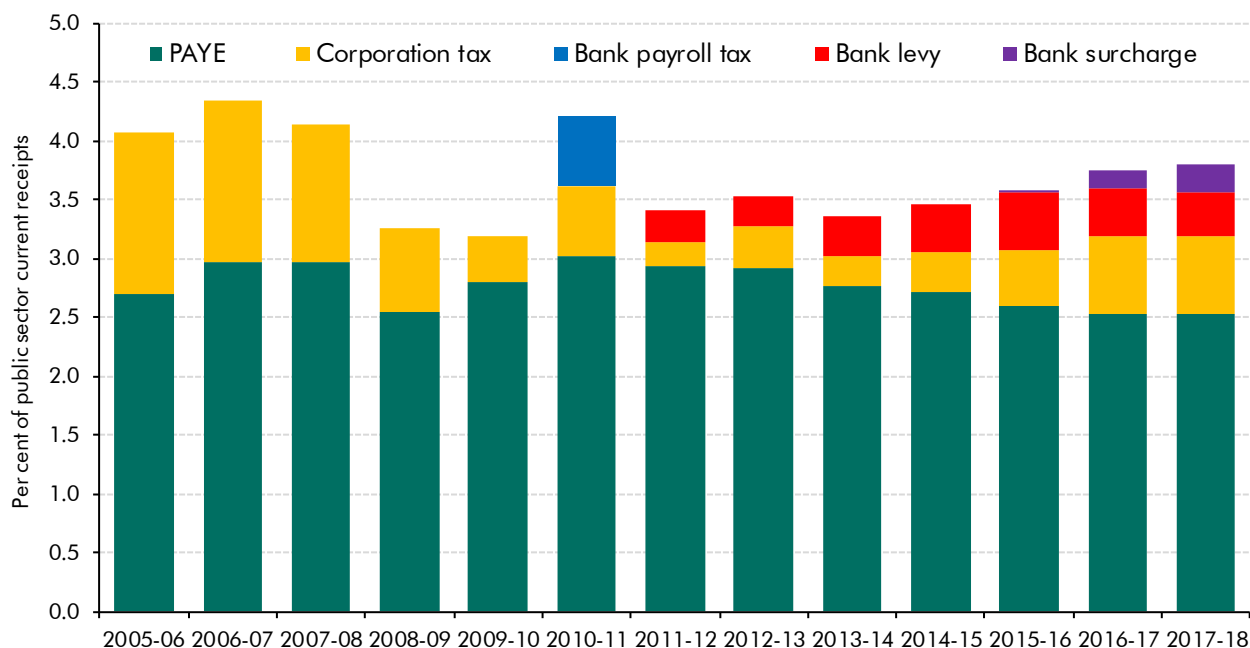
⁸ ONS, gross annual pay, *Annual Survey of Hours and Earnings 2018*. Total pay estimated using mean earnings and total number of jobs.

⁹ This reflects cash receipts, as shown in HMRC's *Corporation Tax Statistics 2018*.

¹⁰ The City of London Corporation in association with PwC, *The total tax contribution of UK financial services in 2018*. The estimates in this report are partly based on scaling up the tax paid or collected by 50 financial sector companies.

¹¹ HMRC, *Pay-As-You-Earn and Corporate Tax Receipts from the Banking Sector, 2018*.

Chart 3.3: Sources of tax receipts from the banking sector



Source: HMRC, OBR

Financial crises and their fiscal impact

Types and frequency of financial crises

3.8 Financial crises come in many forms and have multiple dimensions. It is impossible to characterise them by a single indicator, but there are some recurring common themes. Most notably, financial crises have frequently been associated with:

- substantial **booms and subsequent busts in credit volumes and asset prices**;
- severe **disruptions to financial intermediation** and the supply of external finance to households and/or businesses;
- **forced deleveraging** by firms, households, financial intermediaries and sovereigns; and
- **large scale official sector support** (in the form of both liquidity support, typically from central banks, and recapitalisation, typically by governments).

3.9 Based on a survey of studies of past financial crises compiled by the Basel Committee on Banking Supervision, the UK's Independent Commission on Banking (ICB) estimated in 2011 that the probability of a crisis occurring in the UK in any given year was nearly 5 per cent.¹² On this basis, one might expect the UK to experience a significant financial crisis roughly every 20 years, though of course it need not be as severe as the most recent one.

¹² HM Treasury and the Department for Business, Innovation and Skills, *The Government response to the Independent Commission on Banking*, 2011.

For instance, the secondary banking crisis in the 1970s and the small banks crisis of the early 1990s were both instances of UK bank failures, but at a smaller scale.¹³

Direct fiscal costs

- 3.10 Direct fiscal costs associated with financial crises include the issuance of debt to finance capital injections into financial institutions (a 'bail out'), plus the impact of bringing institutions wholly onto the public sector balance sheet (nationalisation).¹⁴
- 3.11 The concentration of the UK banking sector remains a potential source of direct fiscal risk. The top four banks (RBS, Lloyds, HSBC and Barclays) together account for more than 85 per cent of business current accounts and 90 per cent of business loans.¹⁵ Firm level analysis by the Bank of England suggests that the probability of a bank receiving public assistance if it gets into difficulty increases with its size relative to the system.¹⁶
- 3.12 Table 3.1 is drawn from our March 2019 *Economic and fiscal outlook (EFO)*. It shows the cash flows associated with the financial sector interventions undertaken in the UK during the late-2000s crisis, plus the sums subsequently recovered, those outstanding, and the market value of the Government's remaining stake as of mid-February. Finally, it estimates the financing costs associated with these interventions. This is not an attempt to quantify their overall effect on the public finances relative to a counterfactual where the Government had not intervened as the crisis unfolded. The costs of the crisis would almost certainly have been very much greater in the absence of interventions to restore financial stability.
- 3.13 In total, the Government's cash outlays during and after the crisis reached £136.6 billion. The snapshot estimate of the eventual net cost is much smaller at £27.3 billion, 1.7 per cent of GDP in 2008-09 (the year most of the outlays were made). But this figure is uncertain and prone to revision. The estimate has ranged from £10.3 billion to £38.4 billion since we started reporting it in our November 2011 *EFO*, as share prices have fluctuated and financing costs have risen with the passage of time. The final figure will not be known until the Government has sold all its remaining holdings (notably its 62 per cent stake in RBS).
- 3.14 The gross outlay attracts considerable public and political attention, but it overstates the direct cost of the interventions because it does not take account of the (admittedly uncertain) long-term value of the assets purchased. Most of the gross outlay raises public sector net debt, at least initially, as few of the assets are liquid. The impact on a broader balance sheet measure like public sector net financial liabilities – which was not published at the time of the most recent crisis – would be smaller as it nets off all financial assets.

¹³ See, for example, *The Secondary Banking Crisis, 1973-75: Inside Story of Britain's Biggest Banking Upheaval*, Margaret Reid, 2003 and *The United Kingdom's small banks' crisis of the early 1990s*, Andrew Logan, 2001.

¹⁴ We discussed the international evidence on the direct costs from financial crises in Chapter 4 of our 2017 *Fiscal risks report*.

¹⁵ Financial Conduct Authority, *Competition report 2013-16*, 2016.

¹⁶ *Too big to fail: some empirical evidence on the causes and consequences of public banking interventions in the United Kingdom*, Rose and Wieladek, Bank of England Working paper No.460, 2012.

Table 3.1: Gross and net cash flows of financial sector interventions

	£ billion							Total
	Lloyds	RBS	UKAR ¹	FSCS ²	CGS ³	SLS ⁴	Other	
Cash outlays	-20.5	-45.8	-44.1	-20.9	0.0	0.0	-5.3	-136.6
Principal repayments	21.1	6.3	41.4	20.9	0.0	0.0	5.3	95.0
Other fees received ⁵	3.2	4.3	4.4	3.5	4.3	2.3	0.3	22.2
Net cash position	3.8	-35.2	1.8	3.5	4.3	2.3	0.2	-19.4
Outstanding payments	0.0	0.0	2.3	0.0	0.0	0.0	0.1	2.3
Market value ⁶	0.0	18.2	8.5	0.0	0.0	0.0	0.0	26.8
Implied balance	3.8	-17.0	12.6	3.5	4.3	2.3	0.3	9.7
Exchequer financing	-4.0	-14.0	-12.1	-7.7	1.1	0.3	-0.5	-37.0
Overall balance	-0.2	-31.0	0.4	-4.2	5.4	2.6	-0.2	-27.3

¹ Holdings in Bradford & Bingley and Northern Rock Asset Management plc are now managed by UK Asset Resolution.

² Financial Services Compensation Scheme.

³ Credit Guarantee Scheme.

⁴ Special Liquidity Scheme.

⁵ Fees relating to the asset protection scheme and contingent capital facility are included within the Lloyds and RBS figures.

⁶ The RBS share price is an average over the 10 days to 14 February, consistent with other market-derived assumptions in our forecast. UKAR is book value of equity derived from its accounts published 31 March 2018 (value up to date to 26 February 2019).

Indirect fiscal costs

- 3.15** Indirect costs reflect the fiscal consequences of the damage that financial crises inflict on the economy. For example, a decline in tax revenues from weakness in nominal GDP and an increase in public spending due to higher unemployment.
- 3.16** In September 2014, we published a working paper that looked in detail at the differences between the Treasury's March 2008 Budget forecast – the last official forecast before the collapse of Lehman Brothers sparked meltdown in the world's financial markets – and subsequent outturns. This provides a useful benchmark for the effect of a large multi-dimensional shock, as the economy fell into a deep recession and the authorities stepped in to restore stability to the financial system. Public sector net borrowing ballooned to almost 10 per cent of GDP and public sector net debt more than doubled to 74 per cent of GDP over five years.¹⁷ But a full assessment of the costs of the crisis depends heavily on the extent to which the slowdown in productivity growth over the past decade is deemed to be a direct consequence of the crisis or instead reflects forces that were already in train – a much debated question.¹⁸
- 3.17** In our 2017 *FRR*, we presented the results of a fiscal stress test that modelled a period of synchronised domestic and global economic and financial market stress. In that scenario public sector net debt was 34 per cent of GDP higher than our baseline forecast by the scenario horizon, owing to a sharp recession-induced rise in public sector borrowing.

¹⁷ *Crisis and consolidation in the public finances*, Riley and Chote, OBR working paper No.7, 2014.

¹⁸ We discussed possible causes of the productivity slowdown in our November 2017 *EFO*, when revising down our productivity forecast.

Assessing fiscal risks arising from the financial sector

Summary of previous *FRR* discussion and the Government's response

- 3.18 In our 2017 *FRR*, based on the Financial Policy Committee's (FPC's) judgement, we concluded that there was a relatively low risk of another financial crisis over the five-year horizon of our medium-term forecasts. But, based on the ICB's analysis of the historical probability of crises occurring, we felt there was a very high probability of one or more crises within the 50-year horizon over which we assess fiscal sustainability. The potential impact of any future crisis is, however, difficult to assess and will depend to a significant extent on the effectiveness and durability of the Government's post-crisis regulatory changes. We also judged there to be a moderate risk that financial sector receipts would be significantly lower than in our latest projections, in both the medium and long term.
- 3.19 In *Managing fiscal risks (MFR)*, the Government's formal response to our 2017 report, it:
- Set out post-crisis **changes to the regulatory and policy framework** intended to ensure greater resilience to future shocks. These included the provisions in the Financial Services Act 2012. Key institutional reforms include the establishment of the Prudential Regulation Authority (PRA) to regulate the safety and soundness of firms, introduction of the FPC as the UK's macroprudential authority and the creation of the Financial Conduct Authority (FCA) to regulate conduct across financial services and markets.
 - Confirmed its continued support for the Basel regulatory framework, which embodies common regulatory and supervisory standards agreed by international prudential authorities. The Government has also taken a range of **actions to mitigate taxpayer exposure** to the financial sector, including introducing a resolution framework.
 - Welcomed the **diversification of the financial sector** since the financial crisis. This includes an increased role for market-based finance, a wider range of funding sources, and a reduced reliance on the UK banking system to intermediate funds. We explore non-bank finance – 'shadow banks' – in more detail later in this chapter.
 - Recognised the **risks from Brexit** to the financial sector, in particular from the potential loss of market access through the 'passporting regime'.¹⁹ The Government addressed these risks in the content of the Withdrawal Agreement negotiated between the EU and UK, but which has not received Parliamentary approval. The Government has also unilaterally put in place some measures to address these risks were the UK to leave the EU without a deal. UK legislation allows for temporary permissions to enable EEA firms currently passporting into the UK to continue to operate after exit day while seeking full UK authorisation – but the EU has not matched that offer for UK firms operating in the EEA, which would hit UK firms in the event of a no-deal exit.²⁰

¹⁹ The 'passporting' regime, allows firms authorised in one country within the Single Market to sell certain financial products into any other country within the Single Market. Outside the Single Market, UK regulation would need to be recognised as equivalent by the European Commission for UK-based firms to continue selling particular types of financial services into the Single Market.

²⁰ FCA, *The temporary permissions regime for inbound passporting EEA firms and funds*, 2019.

- Highlighted actions to ensure enhanced **cyber resilience**, including working with the G7 and Financial Stability Board (FSB) to explore the scope for cross-border collaboration to mitigate risks and a simulation by the Public Finances Business Continuity (PFBC) group of the consequences of a failure in critical banking infrastructure.²¹

3.20 We asked the Government several follow-up questions about developments since the publication of *MFR*, in particular where the Government had identified gaps to be filled. It noted several with a bearing on assessing the fiscal risks from the financial sector:

- In relation to the remaining elements of the **Basel III** framework, the UK remains committed to implementing these in any EU exit scenario, and supported the recent G20 finance ministers' commitment to the full, timely and consistent implementation of the agreed financial reforms. Several elements of the Basel III framework, such as a binding leverage ratio and a new long-term liquidity requirement (the 'net stable funding ratio'), have been adopted in the EU. The remaining elements of the Basel III framework, the package agreed in December 2017 and often referred to as 'Basel 3.1', has an implementation deadline of 1 January 2022. Work is underway in the UK and EU to meet that timeline.
- In relation to **Brexit**, the FPC updated its assessment of the associated financial stability risks in its March 2019 *Financial Policy Summary and Record*. It judged that "*most risks to UK financial stability that could arise from disruption to cross-border financial services in a 'no deal' scenario have been mitigated*", although "*some disruption to cross-border services is possible and, in the absence of other actions by EU authorities, some potential risks to financial stability remain*".²²
- In relation to **cyber resilience**, the Government continues to work with other UK financial authorities and the National Cyber Security Centre to improve cyber resilience in the financial sector. The UK also works closely with the G7 and the FSB to understand evolving cyber risks and coordinate action in response.
- The Government has identified potential risks from **fintech**. The FPC noted that, alongside benefits, fintech may introduce new risks to the financial system or contribute to the evolution of existing risks, for example the cloud services market is at present highly concentrated, therefore disruption at one provider, due say to a cyber incident, could interfere with the provision of vital services by several firms.²³
- The Government has also established a 'Cryptoassets Taskforce' to explore the risks and potential benefits of **cryptoassets** and the underlying distributed ledger technology (DLT), with the most immediate priority being to mitigate the risks posed by cryptoassets to consumers and markets, and preventing their use for illicit activity.²⁴

²¹ The PFBC comprises representatives from HM Treasury, the Debt Management Office, the National Audit Office, Government Banking, the Bank of England and HMRC, and has established a sub-group (the Information Security Group) which includes the National Cyber Security Centre (NCSC) to focus on current and emerging cyber threats that could disrupt public finances.

²² Financial policy summary and record of the FPC meeting on 26 February 2019.

²³ *Financial Stability Report*, Bank of England, November 2018.

²⁴ *Cryptoassets Taskforce: final report*, HM Treasury, FCA and Bank of England, October 2018.

Updated risk assessment

Risks to our medium-term forecast

- 3.21 In line with the FPC's judgement, we continue to believe that there is a relatively low, though not negligible, risk of another UK financial crisis over the next five years, as well as a moderate risk that underperformance of the sector will lead receipts to fall short of our central forecast. As in our 2017 report, several related vulnerabilities remain relevant:
- First, the **current account deficit** remains large by both historical and international standards. The UK has had the largest deficit in the G7 in eight of the past 10 years. In its November 2018 *Financial Stability Report*, the Bank of England noted that investment in UK assets by foreign investors has risen over recent years, financing the current account deficit. The heavy reliance on these capital inflows made the UK vulnerable to a shift in foreign investors' appetite for UK assets. It also noted that foreign investors have a large presence in the UK commercial real estate and leveraged loan markets. The consequences of a reduction in foreign investment could lead to a tightening in credit conditions for UK households and businesses.
 - Second, in recent years private consumption growth has outpaced income growth, leading to the **household sector moving into deficit**. Were this to continue, it would probably be associated with a further increase in the household debt to income ratio, a key vulnerability indicator.
 - Finally, the government's **reliance on the financial sector for tax revenues** remains significant (see paragraph 3.6).

Risks to fiscal sustainability

- 3.22 In our *Fiscal sustainability reports (FSR)*, our projections do not incorporate any effects from future recessions or financial crises. Based on the ICB's estimated probabilities (paragraph 3.9), we might expect the UK to suffer a financial crisis around once in every 20 years. Post-crisis reforms including tighter regulation and the actions taken by financial institutions have reduced the immediate risk (and potential impact) of further crises, but not eliminated it. And when risk is suppressed in one part of the system, it often migrates to some other less heavily regulated part. This is especially relevant when considering the rapid growth in credit intermediation through non-bank financial institutions, discussed in the next section.

Conclusions

- 3.23 The financial sector is a significant part of the UK economy, and a key contributor to the public finances. This means that risks associated with the financial sector can have significant implications for the public finances if they crystallise.
- 3.24 Our assessment of most risks is little changed from two years ago. In particular, the risk that post-crisis tightening of regulation could subsequently be reversed remains. Since the crisis, numerous regulatory changes have sought to ensure greater resilience to future shocks,

including the provisions in the Financial Service Act 2012. As we discussed in our previous report, history has shown that the tightness of regulation typically ebbs and flows, being ramped up in the aftermath of a crisis and then eased when memories fade.

Shadow banking

What is shadow banking?

- 3.25 There is no single accepted definition of shadow banking. Some institutions prefer not to use it at all, given the pejorative connotations of shadowy activity. But in broad terms, it refers to the set of financial entities that, although they do not take deposits, act in certain respects like banks – undertaking maturity and liquidity transformation and extending credit – and so have some or all the inherent fragilities of banks, but are not regulated as banks.
- 3.26 The essence of a bank is that it finances its investments in illiquid loans and risky marketable securities largely by taking in deposits that can be withdrawn with little or no notice or else by borrowing short-term funds wholesale from other institutions. It is thus potentially at risk if deposits are withdrawn *en masse* or maturing funding is not rolled over, i.e. it faces a ‘run’. A run may be triggered by concerns that the value of a bank’s assets is insufficient to meet its obligations to its creditors. Deposit insurance – the cap on which was significantly increased after the crisis – can greatly reduce the likelihood of a run by depositors.
- 3.27 Institutions accepting deposits in the UK have to be licensed by the PRA and comply with a variety of regulations, such as liquidity and capital requirements and in some cases ring-fencing from other operations.²⁵ In return, these institutions will usually have access to emergency liquidity support from the central bank. But entities that depend largely on funds raised in the wholesale markets or from supposedly sophisticated investors usually have greater freedom of action, although they are still subject to supervisory oversight (by the FCA). Such entities can end up behaving like a bank in some respects, but without being subject to the constraints of being supervised as one. Moreover, the passage of funds through to the final borrower may pass through a chain of specialised intermediaries that individually do not appear much like a bank, but the whole chain together in effect undertakes the maturity and liquidity transformation and credit extension characteristic of a bank.
- 3.28 By providing borrowers with an alternative source of funding and liquidity, such institutions can help to facilitate the efficient allocation of resources and risk transfer. But because shadow banks are potentially susceptible to a run like a conventional bank, they can also become a source of systemic risk. This can arise both directly from the shadow banking system and through its interconnectedness with the regular banking system.
- 3.29 The potential vulnerabilities that can arise from such entities were well illustrated by the activities of securitisation vehicles during the crisis. These off-balance sheet entities financed

²⁵ The largest UK banks are required by UK law to separate core retail banking services from their investment and international banking activities.

their holdings of mortgage-backed securities (MBS) by continually rolling over short-term wholesale funding, which dried up early in the crisis. Another example from the crisis is the role played by securities lending in the near-collapse of American International Group (AIG) in 2008. AIG owned a significant quantity of MBS, which it then repeatedly lent out in exchange for short-term funds (i.e. in similar fashion to a repo agreement). As AIG had also sold a significant quantity of insurance against the risk of a default on MBS, it was particularly exposed to the problems in the US housing market, necessitating its rescue by the US authorities after the collapse of Lehman Brothers.

- 3.30 More recently in the UK, the suspension in June 2019 of withdrawals from the Woodford Equity Income Fund, an opened-ended 'UCITS' fund,²⁶ illustrates the problems that can arise when withdrawable funds are invested in illiquid long-term assets. The Fund was subject to regulations limiting its holdings in unlisted securities, but it struggled to meet that requirement following a run of redemptions because it could not realise the value of some of its assets quickly enough.²⁷ Financial institutions that either hold entirely liquid assets, or where investors' funds cannot be redeemed quickly, do not pose the same risks.

The scale of shadow banking

- 3.31 The financial sector comprises both banks and non-bank financial institutions. Non-banks include insurance corporations, pension funds, investment funds, other financial intermediaries (OFIs) and financial auxiliaries. In the UK, the size of the non-bank sector has increased over the past ten years, from 42 per cent of financial sector assets in 2007 to 51 per cent in 2018.²⁸ However, only a subset of these entities are exposed to bank-like risks and should be thought of as shadow banks.
- 3.32 The FSB monitors a variety of different measures of non-bank financial activity and publishes the results in their annual publication *Global Monitoring Report on Non-Bank Financial Intermediation*. The different measures include:
- **Monitoring universe of non-bank financial intermediation (MUNFI)**. This is a broad measure referring to all non-bank financial intermediation. MUNFI accounted for 48 per cent of the total global financial sector assets in 2017.
 - **OFIs** comprise all financial institutions that are not central banks, banks, insurance corporations, pension funds, public financial institutions or financial auxiliaries. The largest OFI sub-sectors are investment funds, captive financial institutions and money lenders, and broker-dealers. In 2017, OFIs accounted for 63 per cent of all non-bank financial intermediation and 31 per cent of total global financial assets.
 - The **narrow measure** focuses on non-bank financial institutions that authorities have assessed as being involved in credit intermediation activities that may pose bank-like

²⁶ UCITS refers to 'Undertakings Collective Investment in Transferrable Securities', a regulatory framework of the European Commission that creates a harmonised regime throughout Europe for the management and sale of mutual funds.

²⁷ *Financial Stability Report*, Bank of England, July 2019.

²⁸ *Financial Stability Report*, Bank of England, July 2019.

financial stability risks. It is a subset of MUNFI and comprises some, but not all, OFIs. In 2017, the narrow measure accounted for 28 per cent of all non-bank financial intermediation and 14 per cent of total global financial assets. This is equivalent to 64 per cent of world GDP in 2017.²⁹

- 3.33 The narrow measure provides a reasonable metric for what we refer to as shadow banks. Although, as the AIG example illustrates, other entities can on occasion undertake bank-like activities that create significant risks to financial stability and so to the public finances.
- 3.34 The FSB has developed a high-level policy framework – endorsed by the G20 – for authorities to strengthen oversight of shadow banking. It comprises a range of economic functions that enable authorities to identify potential sources of systemic risk.³⁰ These collectively form the narrow measure of non-bank financial intermediation. As Table 3.2 shows, it includes institutions such as money market mutual funds (MMMFs), structured investment vehicles and hedge funds.

Table 3.2: Economic functions within the FSB’s narrow measure of non-bank financial intermediation

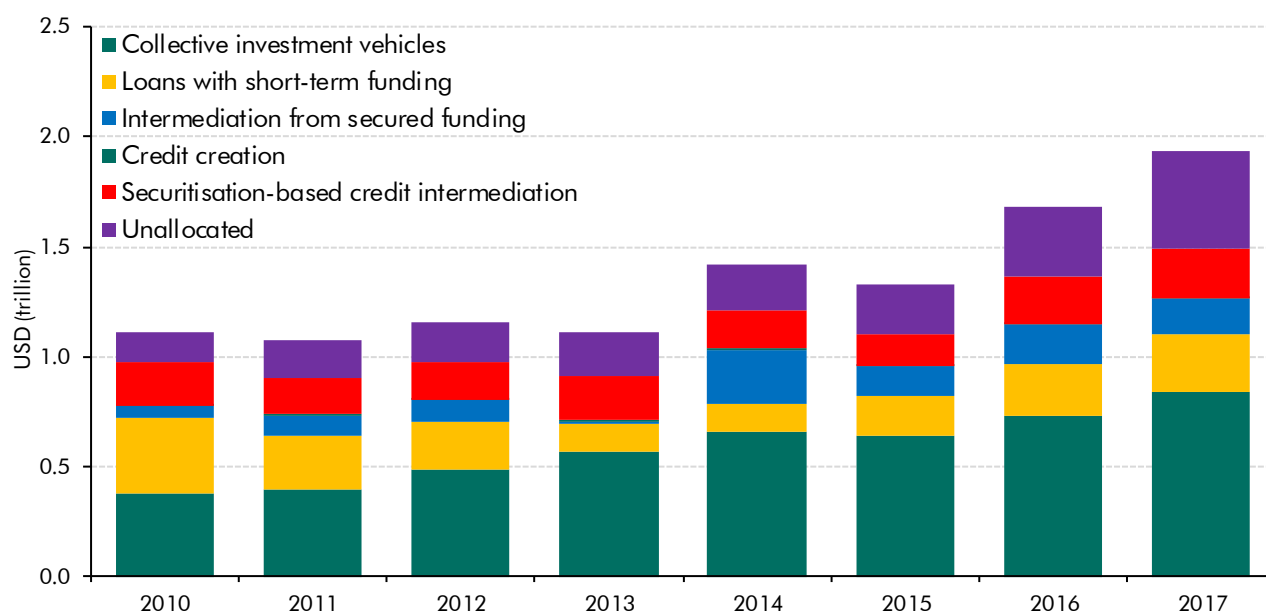
Economic function	Typical entity types
Management of collective investment vehicles with features that make them susceptible to runs.	MMMFs, fixed income funds, mixed funds, credit hedge funds, real estate funds.
Loan provision that is dependent on short-term funding.	Finance companies, leasing/factoring companies, consumer credit companies.
Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets.	Broker-dealers, securities finance companies.
Facilitation of credit creation.	Credit insurance companies, financial guarantors, monolines.
Securitisation-based credit intermediation and funding of financial entities.	Securitisation vehicles, structured finance vehicles.

- 3.35 Chart 3.4 shows that the management of collective investment vehicles is by far the largest source of shadow banking activity in the UK. This is consistent with global trends. There has been a decline in the intermediation of market activities dependent on short-term funding since 2008 – though this measure is quite volatile from year to year. Securitisation-based credit intermediation has also declined over the same period.

²⁹ *World Economic Outlook (April 2019)*, IMF, 2019.

³⁰ The inclusion of such entities or activities does not constitute a judgement that they definitively pose systemic risks, or that authorities regulation is necessarily adequate, Financial Stability Board (2017).

Chart 3.4: FSB estimates of the narrow measure of shadow banking in the UK



Note: Economic function-based measure. Based on time series data included in jurisdictions' 2018 submissions.
Source: FSB

- 3.36 Focus on leveraged lending – high interest loans extended to firms that are already highly indebted – as a potential source of financial stability risk has intensified recently. For example, the FSB report that they are monitoring developments closely.³¹ This is especially the case where it reflects loosening underwriting standards and strong creditor risk appetite.
- 3.37 The Bank of England's November 2018 *Financial Stability Report* noted that the share of 'covenant-lite' loans – where investors do not require borrowers to maintain certain financial ratios – had reached unprecedented highs. Other traditional investor protections in loan documentation have also been relaxed. Consequently, leveraged lending reached pre-crisis levels in 2018, both globally and in the UK. The Bank estimates that the global stock of leveraged loans reached an all-time high of \$3.2 trillion. This rapid growth in leveraged lending has also been associated with increased securitisation through collateralised loan obligations (CLOs).³² This has some echoes of the build-up to the previous financial crisis.

Financial stability risks from shadow banking

How might shadow banking pose financial stability risks?

- 3.38 Shadow banking is a potential source of risks to UK financial stability, and thus also poses indirect fiscal risks. The financial stability risks could operate through several channels:
- More stringent regulation of banks since the crisis has increased the incentives to undertake similar activities within the more lightly regulated shadow banking sector. The risk is that such entities will generate **higher market, credit and liquidity risk, but with less capacity to withstand losses** than their conventional banking counterparts.

³¹ FSB Chair reports to G20 Leaders ahead of Osaka Summit, Financial Stability Board, June 2019.

³² *Financial Stability Report*, Bank of England, July 2019.

- Shadow banking could become a **source of systemic risk through its interconnectedness with the banking system**. The European Systemic Risk Board recently highlighted significant interconnections between European banks and the shadow banking system, together with some associated vulnerabilities – for instance, that large-scale redemptions by investors in money-market and other investment funds could prompt fire sales of bank debt and an increase in the cost of bank funding.³³
- The interconnectedness with the banking system could also lead to a **contagion effect**, whereby institutions undertaking similar activities are tarred with the same brush as those that are in trouble.
- **Substantial growth in leveraged lending**, driven by high demand by CLO funds, is reminiscent of activities preceding the 2008 financial crisis when sub-prime lending increased sharply.³⁴ A sudden stop to this type of lending would have adverse consequences for businesses that rely on it as a source of funds.
- **A lack of resilience** in the shadow banking system could have more general adverse economic consequences if critical services that households and businesses rely on were to be abruptly withdrawn.

Have the risks from shadow banks risen or lessened?

3.39 Since the crisis, a considerable internationally coordinated effort by governments, regulators and supervisors has led to a notable strengthening of banking regulation. Some would argue that regulation needs to be tightened even further (for instance, by calculating capital ratios on the basis of the market value of bank capital as well as the book value)³⁵, but it is difficult to argue that the panoply of reforms has not made the conventional banking system more robust than it was on the eve of the crisis. Can the same be said of shadow banking?

3.40 There have certainly been major efforts to improve the regulation of the shadow banking sector and regulators believe they have significantly reduced the major risks, including those posed by large funding mismatches, high leverage and opaque off-balance sheet arrangements.³⁶ Steps have also been taken to make runs on collective investment vehicles less likely, including reforms to MMMFs.³⁷ Regulators are continuing to work on closing regulatory gaps – for instance, the FSB underscored the importance of effective operationalisation and implementation of policies agreed to address risks from liquidity transformation in certain investment funds.³⁸ To this effect, the International Organisation of

³³ *EU Shadow Banking Monitor*, European Systemic Risk Board, September 2018.

³⁴ *The rise of leveraged loans: a risky resurgence?*, Bank of International Settlements, BIS Quarterly Review, September 2018.

³⁵ John Vickers, *The case for market-based stress tests*, June 2019.

³⁶ Some reforms are still being implemented – such as the FSB's recommendations to address structural vulnerabilities from asset management activities, focused on liquidity mismatch and leverage. See *Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities*, Financial Stability Board, 2017.

³⁷ "In the US, which has the largest MMF market, the Securities and Exchange Commission (SEC) adopted initial rules in 2010 to increase the resilience of MMFs to economic stresses and reduce the risks of runs on the funds by tightening the maturity and credit quality standards and imposing new liquidity requirements." Financial Stability Board, 2017. The EU implemented reforms to MMMFs in full on 21 March 2019.

³⁸ *Assessment of shadow banking activities, risks and the adequacy of post-crisis policy tools to address financial stability concerns*, Financial Stability Board, 2017.

Securities Commissions (IOSCO) has updated its recommendations for liquidity risk management for investment funds.³⁹ IOSCO has also proposed a framework to improve the measurement of leverage in these funds.

- 3.41 Nonetheless, the general sense is that regulators believe the risks from this source are now sufficiently well contained. For example, the FSB in its 2017 assessment of shadow banking declared that it had *“not identified other new financial stability risks from shadow banking that would warrant additional regulatory action at the global level”*.⁴⁰
- 3.42 Others, including some former regulators, are less persuaded, believing that more needs to be done if the system is to be made not just safer, but safe enough. Regulatory reform has made conventional banking more involved and has raised the cost of compliance, increasing the incentive for riskier activities to migrate into more lightly regulated shadow banks.⁴¹ As a consequence, shadow banking comprises a constantly evolving and largely unrelated set of intermediation activities pursued by different types of financial institutions, requiring continual vigilance.⁴²
- 3.43 The Systemic Risk Council (SRC) has argued that *“relying on monitoring developments, which for the moment seems to be the default approach, is a recipe for failure given the obstacles to flexible, timely regulatory initiatives”*. This might be the case if the sector has grown big enough by the time financial stability risks manifest themselves to be deemed systemically important and to have acquired sufficient lobbying power to resist legislation. The SRC sees the reliance on monitoring as *“more or less... exactly the mistake of the early-2000s”*. It therefore argues that *“A clear substantive policy on shadow banking—focusing on liquidity mismatches and leverage, and so distinguishing between different asset-management activities and structures”* is necessary to fill *“a glaring gap in the regimes of every major jurisdiction”*.⁴³ This suggests that regardless of the degree of financial stability risk posed by shadow banking at present, the economic and fiscal impact of a crisis originating in the sector under the current regulatory arrangements could still be large.
- 3.44 For all these reasons, we believe it is appropriate to remain cautious in our assessment of the potential risks from shadow banking. Moreover, experience suggests that a financial sector that appears to be adequately regulated may turn out not to be so. Vulnerabilities that appear obvious with hindsight are often much harder to discern in real time.

Fiscal risks from shadow banking

- 3.45 Fiscal consequences arising as a result of problems in the shadow banking system could come through several channels:

³⁹ IOSCO issues recommendations and good practices to improve liquidity risk management for investment funds, 2018.

⁴⁰ Assessment of shadow banking activities, risks and the adequacy of post-crisis policy tools to address financial stability concerns, Financial Stability Board, 2017.

⁴¹ Sound at last? Assessing a Decade of Financial Regulation, Centre for Economic Policy Research, 2019.

⁴² Thinking Critically about Nonbank Financial Intermediation, Daniel K. Tarullo, 2015.

⁴³ Policy statement to G20 leaders, Systemic Risk Council, 2017.

- **Direct support to systemically important institutions within the shadow banking sector.** During the last crisis, the US Federal Reserve was extremely liberal in its lending policies under the “*unusual and exigent circumstances*” clause of the Federal Reserve Act, while the US Government’s ‘troubled asset relief program’ (TARP) was used to support several non-banks such as AIG. (Total support extended to AIG by the Treasury Department and the Federal Reserve eventually reached \$182 billion⁴⁴).
- **Indirect effects on the core of the banking sector**, necessitating public intervention. To the extent that regulatory reform has enhanced the resilience of the banking system, this is less likely now than during the last crisis.
- **General macroeconomic effects**, leading to lower tax revenues and higher public spending. During the crisis, the potential macroeconomic consequences of inaction were a prime reason for rescuing the US investment bank Bear Sterns. The macroeconomic effects of allowing Lehman Brothers to fail were certainly significant.
- The Government may come under **political pressure to compensate investors** who have suffered losses. This is more likely when retail investors have been lured into placing funds in shadow banking entities, believing that their investments are safe.

For the Government’s response

3.46 In this chapter we have highlighted several issues that the Government is likely to wish to consider when managing its fiscal risks. And those that we highlighted in our previous report remain relevant. Among them:

- The comparatively large and highly concentrated UK banking system;
- Cross-country evidence on the frequency of crises and their fiscal cost;
- The tendency for post-crisis tightening of regulation to be loosened over time; and
- Potential effects of Brexit on the financial sector and the tax receipts it generates.

3.47 And specific to shadow banking:

- The challenge of identifying shadow banking activity in the non-bank financial sector;
- The potential risks in a regulatory approach of monitoring risks, then responding; and
- The nature of the fiscal risks that might arise in a shadow banking-led crisis.

3.48 When assessing financial stability and its interaction with fiscal risk over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

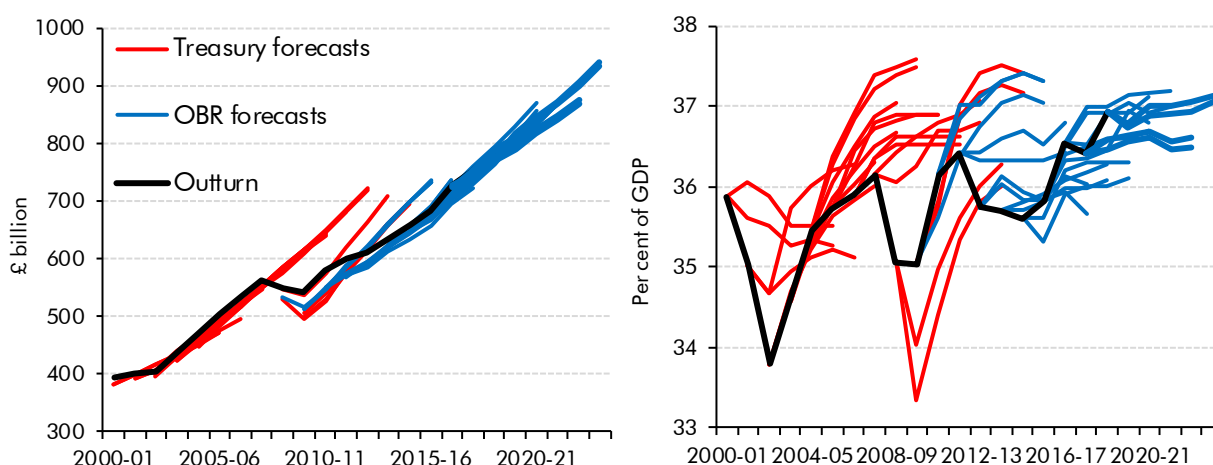
⁴⁴ US Treasury Notes Blog on AIG, Timothy G. Massad, 2012.

4 Revenue risks

Introduction

- 4.1 In 2018-19, public sector receipts totalled £786 billion, equivalent to around £27,700 per household or 36.8 per cent of GDP (on the latest data). Taxes made up 94 per cent of the total, with income tax and National Insurance contributions (£330 billion) and value added tax (VAT, £132 billion) the largest revenue raisers. Public sector income from non-tax sources (largely the interest received on its stock of assets) made up the remainder.
- 4.2 Our latest medium-term forecast assumes that total receipts relative to GDP – the most relevant metric for analysing fiscal sustainability – will rise by 0.4 per cent of GDP between 2018-19 and 2023-24 (a similar path to that set out in our March 2017 *Economic and fiscal outlook (EFO)*, which underpinned our 2017 *Fiscal risks report (FRR)*). The rise is more than explained by ‘fiscal drag’ (as real earnings grow and drag more income into higher tax rates) as well as our assumption that interest rates will rise (raising the returns on public sector assets). Our long-term sustainability analysis is predicated on a broadly stable receipts-to-GDP ratio, as historically other policy changes have tended to offset fiscal drag.
- 4.3 The outlook for receipts is always clouded by risks and uncertainties, as one can see by comparing the latest outturn estimates to the forecasts produced by the Treasury and (since 2010) the OBR (Chart 4.1). The differences reflect statistical adjustments and revisions, policy changes, unexpected developments in the economy and unexpected developments that affect the amount of revenue raised in any given state of the economy.

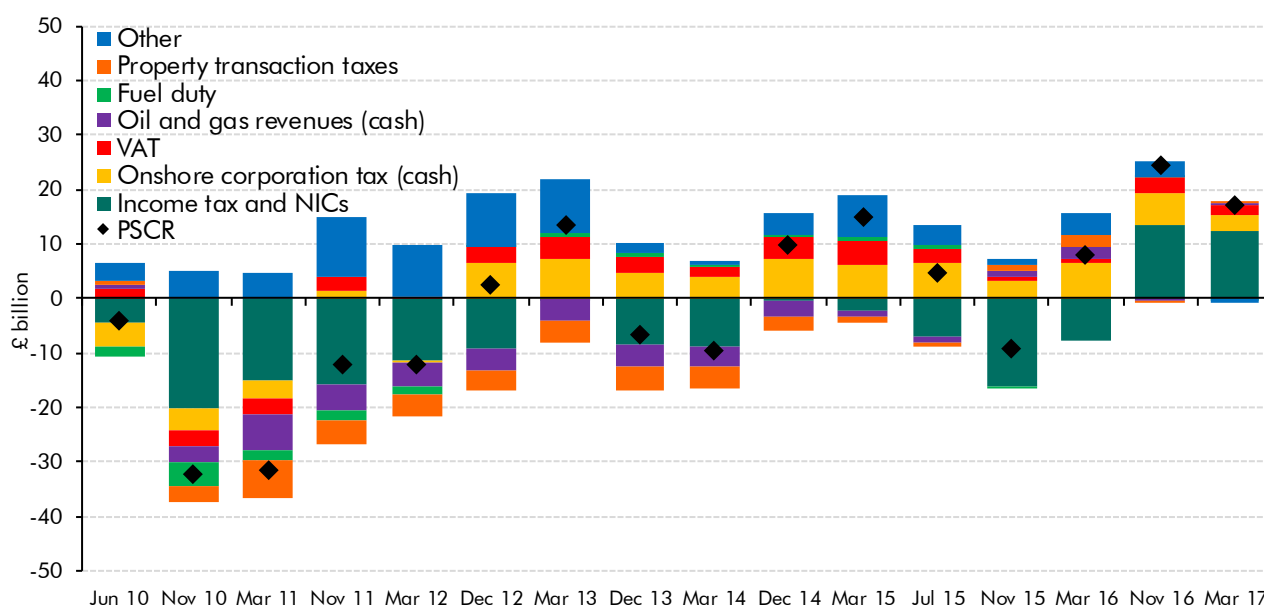
Chart 4.1: Successive forecasts for total receipts



Note: Per cent of GDP forecasts have been restated to remove the effects of subsequent revisions to the ratio in the starting year of the forecast – these can be large and typically reflect methodological changes that forecasters would not have been able to anticipate.
Source: ONS, OBR

4.4 Looking over a two-year horizon, the differences between our forecasts since 2010 and the subsequent outturns have been spread across several taxes, but are dominated by weaker-than-expected income tax and NICs receipts (Chart 4.2). This is the result of the productivity-related weakness in real earnings growth as well as a lower-than-expected effective tax rate on earnings that is likely to reflect movements in the earnings distribution (including among the self-employed) and subsequent policy changes (such as raising the income tax personal allowance). More recently, onshore corporation tax receipts have performed more strongly than we anticipated. Box 3.2 of our 2018 *Forecast evaluation report* described the drivers of this, in particular the impact of falling use of loss reliefs partly as a result of policy changes.

Chart 4.2: Two-year ahead forecast differences from successive OBR forecasts



Note: For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively. Forecast errors have been adjusted for major classification changes.
Source: ONS, OBR

4.5 In this chapter, we review risks we set out in our 2017 *FRR*. These include:

- the **concentration of receipts** at the top of particular tax distributions and sectors;
- the **falling effective tax rates from changing employment patterns**, including the shift from employee status to self-employment, and from both to incorporated businesses;
- risks from **behavioural or technological change**, such as improving fuel efficiency;
- **specific revenue policy risks**, including non-implementation of announced policy, aspirations yet to be fully specified and incorporated into our forecasts and the reliance on the relatively uncertain yield from avoidance and operational measures;
- **non-payment of taxes due**, as a result of avoidance, evasion and tax planning; and
- **risks associated with the UK oil and gas industry**, including depletion of the tax base and the uncertain future costs associated with decommissioning oil and gas fields.

4.6 We also discuss risks arising from two further areas:

- the uncertain costs of **reliefs and tax expenditures**; and
- the **increasingly digitalised economy** and the opportunities and challenges this presents for tax policy design and administration.

4.7 We end by raising **issues for the Government's next response**.

Concentration of tax receipts

Summary of previous *FRR* discussion and the Government's response

4.8 We identified two key areas in our previous *FRR* where a large proportion of revenue is being generated from a relatively small number of taxpayers. Greater concentration of receipts can pose a fiscal risk as it might make the tax base more volatile and sensitive to shocks that affect particular (usually high-income) taxpayers. These were:

- **income tax**, where the share of revenue from the top percentile of earners had risen to over a quarter of total revenues over the recent past; and
- **taxes on property transactions and capital gains** – where a small number of transactions were generating a very large proportion of total revenues.

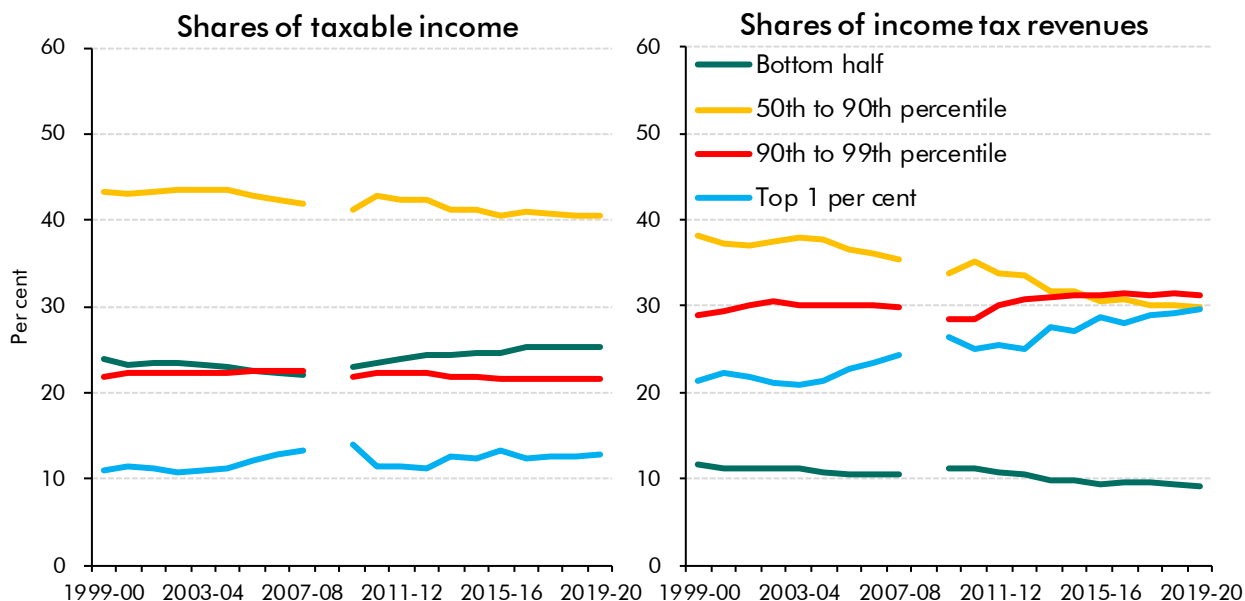
4.9 In its *Managing fiscal risks (MFR)* publication, the Government recognised that successive increases in the personal allowance meant that the proportion of adults paying income tax had fallen, and that a growing proportion of receipts came from higher earners. It highlighted the number of people whose income tax payments had fallen as a result of these decisions, but said nothing about its view of the fiscal risks that they might pose.

Updated risk assessment

Income tax

4.10 Since our previous report, income tax receipts have continued to become more concentrated at the top of the distribution. The latest HMRC statistics suggest that the share of receipts from the top 1 per cent of taxpayers will rise to 29.6 per cent in 2019-20, the highest level over the recent past. As Chart 4.3 shows, the increase in the proportion of revenues from the top 1 and top 10 per cent over the past five years has reflected the structure of the tax system, rather than their share of taxable income rising. This is probably the result of further increases to the personal allowance and higher rate threshold, as well as successive increases in dividend tax, which is disproportionately paid by higher income taxpayers.

Chart 4.3: Income tax contributions from the top percentile

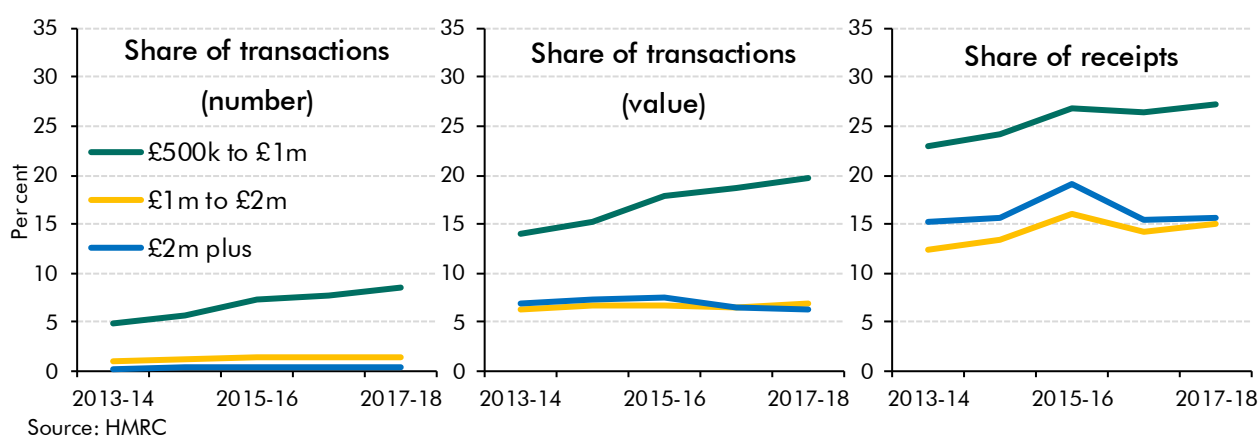


Note: Data for 2008-09 unavailable.
Source: HMRC

Taxes on property transactions

- 4.11** Revenues from stamp duty land tax are also highly concentrated, reflecting both the concentration of property value at the top-end of the market, as well as the tax schedule (which applies higher rates for higher property prices). Chart 4.4 shows that while properties worth over £500,000 made up roughly 10 per cent of transactions in 2017-18, they generated nearly 60 per cent of residential SDLT revenues. More striking still, just 7,000 property transactions in the London boroughs of Westminster and Kensington (0.6 per cent of the total) accounted for over £1 billion in receipts (11 per cent of the total).
- 4.12** Over the past few years, the trend towards greater concentration has stabilised somewhat, which may reflect weakness in the prime London property market, and the new 3 per cent surcharge on second homes and buy-to-lets from April 2016, receipts from which are much less concentrated in expensive properties. While the concentration of SDLT on high-value properties has stabilised, dependence may have increased on high-wealth individuals who purchase expensive properties as well as second homes and investment properties.
- 4.13** Since our previous FRR the Government's decision to cut SDLT for first-time buyers that took effect in November 2017 will have concentrated the tax base further as this only applies to properties under £500,000. Its effects are not fully reflected in the latest detailed SDLT data.

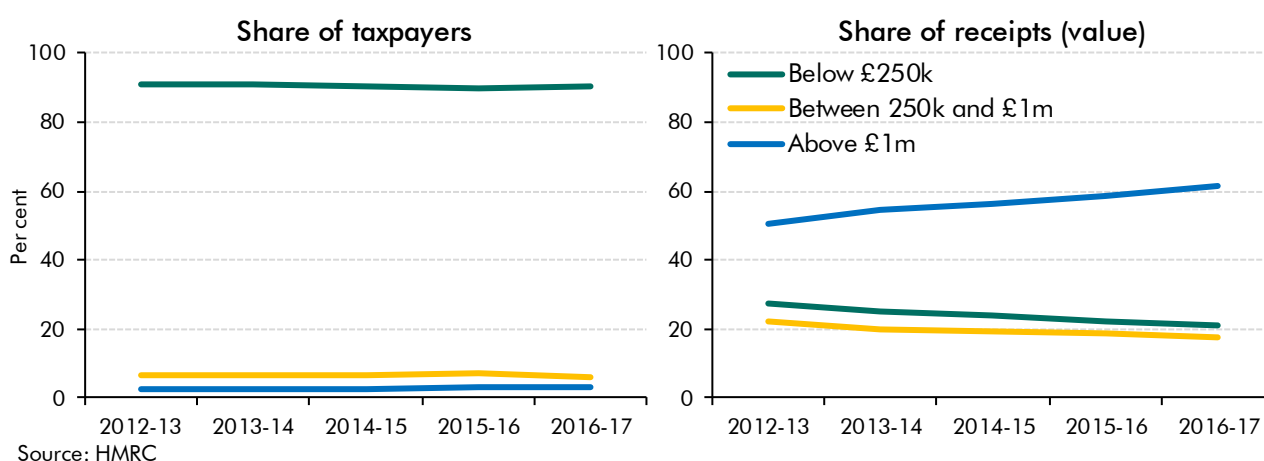
Chart 4.4: Composition of residential SDLT tax base and revenues by property value



Capital gains tax

- 4.14** Capital gains tax is levied on profits from the sale of assets. Roughly 40 per cent of receipts come from sales of property and 60 per cent come from sales of financial assets, particularly shares. CGT is only paid on annual gains above a threshold (£11,700 in 2018-19) and sales of primary residences are exempt. This means that CGT is typically paid only by relatively high earners with high value assets on which they can realise substantial gains.
- 4.15** Chart 4.5 shows that CGT liabilities are highly concentrated in a small number of taxpayers and that this concentration has been rising. In 2016-17, only 3 per cent of taxpayers disposed of assets worth at least £1 million, but these generated over 60 per cent of all CGT liabilities in that year (up from around 50 per cent of liabilities five years ago).

Chart 4.5: Composition of CGT tax base and revenues by value of overall disposals



Conclusions

- 4.16** Developments over the past two years leave our assessment of risks arising from the concentration of receipts little changed. Our forecasts for all three of these taxes continue to assume that concentration will rise further over time, given the current parameters of the tax system. While the Government has recognised these trends, the substantial rise in the

personal allowance and higher rate income tax threshold announced in Budget 2018 will exacerbate them. So the income tax concentration risk has risen since our previous report.

Trends in self-employment and incorporations

Summary of previous *FRR* discussion and the Government's response

4.17 Our previous *FRR* discussed the significant consequences for tax receipts of an individual switching the way they choose to be taxed on their income from work. On the same earnings, employees will pay more tax than self-employed individuals, who in turn pay more than individuals who are incorporated (managing their work via a limited company of which they are the sole director). Both self-employment and single-director companies have been increasing in number in recent years, which is likely in part to be a result of these tax discrepancies. Our forecast assumes that these trends continue, with the risk to our forecast being that the trend is faster or slower than expected.

4.18 In *Managing fiscal risks*, the Government:

- **Identified several policy changes it had taken to attempt to reduce the fiscal costs from incorporation**, including reforms to dividend taxation and off-payroll working rules.
- **Cited the *Taylor Review*** (July 2017), which highlighted a lack of clarity for employment status rules, among other issues, which may have contributed to incentives for self-employment or incorporation. Since *MFR* the Government has published a *Good Work Plan* (December 2018) setting out its next steps in responding to the review, but these remain 'aspirational' at this stage and insufficiently firm for us to reflect in our forecast.

Updated risk assessment

4.19 Two tax changes announced in Budget 2018 will slightly alter the incentive to incorporate relative to the rules in place at the time of our 2017 report:

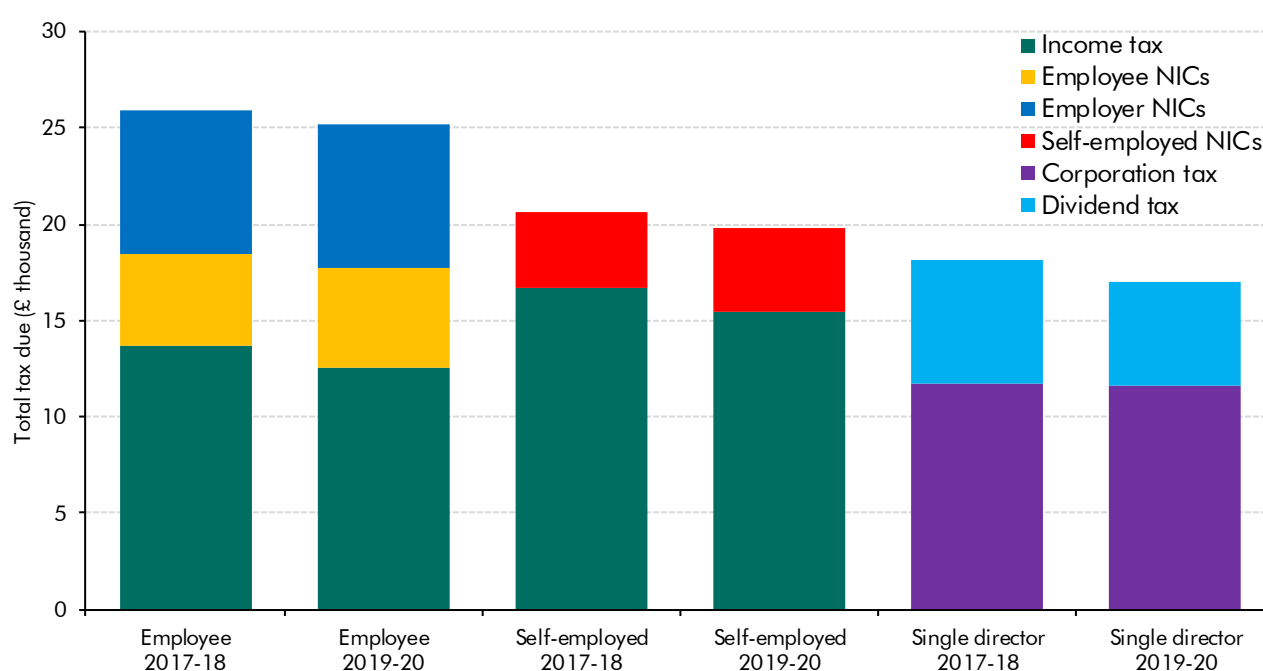
- First, an **extension to the private sector of more onerous compliance with off-payroll working rules ('IR35')** with effect from April 2020. This is expected to reduce the capacity to incorporate to avoid tax and so should reduce the risk, though as we noted when certifying the costing of this measure its effects are highly uncertain.
- Second, **raising the income tax personal allowance and higher rate threshold** shift the tax burden for employees and the self-employed towards NICs. NICs are not paid by those who have incorporated, so this slightly increases the incentive to incorporate.

4.20 The effect of these changes can be seen in Chart 4.6, which sets out illustrative examples of tax paid by an individual earning £70,000 if they are an employee, self-employed or

incorporated.¹ In 2017-18 an individual switching from being an employee to being incorporated reduced their effective tax by 11.1 percentage points (paying £7,777 less tax). In 2019-20 their effective tax rate was reduced by 11.6 percentage points (saving £8,147).

4.21 A larger change in the incentive to incorporate would have resulted from the 1 percentage point rise in Class 4 NICs announced in Spring Budget 2017, but this was reversed shortly after being announced and ahead of our 2017 FRR. Since addressing the imbalance in the tax system illustrated in Chart 4.6 is only likely to be possible via raising tax paid by the self-employed, this episode suggests that it is likely to persist for some time.

Chart 4.6: Tax due on £70,000 of income



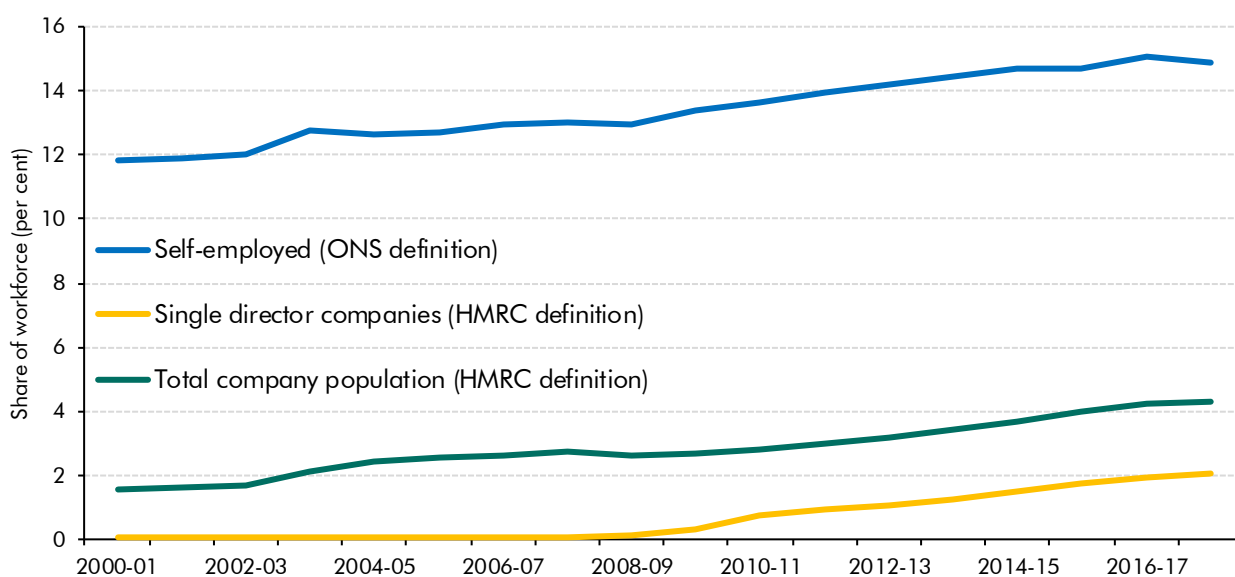
Source: OBR

4.22 As Chart 4.7 shows, growth in self-employment and incorporations has slowed over the past two years.² Our forecasts continue to assume that both continue on their long-run upward trends over the medium term, so if the recent slowing were to persist it would represent an upside rise to our receipts forecast.

¹ These calculations assume the individual has only one source of income. The deduction of employer NICs means that less of an employee's total compensation is made up of their wage, thereby paying less income tax but more NICs than the self-employed. Company directors are assumed to withdraw profits in the most tax efficient way, paying themselves a salary up to the primary threshold for NICs, and taking the rest as dividends, all in the same year. The change also includes the reduction in the dividend allowance from £5,000 to £2,000 announced in Spring Budget 2017 and implemented from April 2018. These examples all reflect taxpayers outside Scotland. In Scotland higher tax rates at the top-end of the distribution create a slightly larger incentive to incorporate.

² There are several issues surrounding the quality of these data. See our previous FRR for more detail. While the broad trends are likely to be reliable, the precise levels should be treated with some caution. HMRC's historical estimates of the number of single-company directors has been revised upwards since our previous report, due to further cleaning of the administrative data.

Chart 4.7: Trends in self-employment and incorporations



Note: Though there appear to be very few single director companies before 2008, many companies defined as having two directors were in effect acting as single director companies.

Source: HMRC, ONS

4.23 Another issue that poses a risk to our medium-term forecasts over the next two years is the forthcoming revision to the share of corporation tax receipts paid by quarterly instalment payments (QIPs). As we set out in our March 2019 *EFO*, HMRC has identified an issue in the algorithm that splits its monthly administrative data on cash payments and repayments between larger quarterly payers and smaller annual payers. Most incorporations will not be paying tax via the QIPs system. Changes in the historical split of this data might alter our view of trends in incorporations and so have forecast implications, but it is not possible to anticipate what those implications might be on the information currently available.

Conclusions

4.24 With little change in the tax differential on different ways of working and modest movements in the share of total employment they make up, our assessment of the fiscal risks from employees switching to self-employment or incorporation has not changed materially. The Government retains control over some of the drivers of these trends, such as the tax rates and thresholds, but has less control over wider changes in the labour market. As we discuss later in this chapter, the digitalisation of the economy is likely to have been one factor contributing to the trends towards self-employment and working via a company structure. But there is likely to be a limit to which employees choose to switch employment status. Self-employed and incorporated workers have fewer employment rights and less security, so for some individuals these downsides will outweigh the tax advantages. And changes to off-payroll working rules will limit opportunities for purely tax-motivated switching.

Risks from behavioural or technological change

Summary of previous *FRR* discussion and the Government's response

4.25 Behavioural and technological change can pose a variety of risks to the sustainability of underlying tax bases, the average tax rates applied to those bases or the government's ability to collect those revenues. In this section we provide an update on the risks surrounding the erosion of some excise duty bases over time due to these changes. Later in the chapter, we look at the wider risks from the digitalisation of the economy.

4.26 In our 2017 *FRR* we highlighted several risks related to behavioural and technological change that pose downside risks to the tax-to-GDP ratio. These included:

- Risks arising from **technological change**, in particular the impact of rising vehicle efficiency on fuel duty and vehicle excise duty.
- Risks arising from **behavioural change**, including the impact of declining alcohol and tobacco consumption.
- **Other potential risks**, arising from the impact of technological change on the prices of goods and services, the impact of globalisation on returns on skills and the impact of climate change targets on environmental taxes.

4.27 In *Managing fiscal risks*, the Government:

- Recognised that rising **fuel efficiency** may affect tax revenues, but stated that it believes fuel duty will continue to have an important role in the tax system.
- Stated that it is committed to reducing **smoking prevalence** and that it will continue to review tobacco duty rates to ensure they meet revenue and public health objectives.

Updated risk assessment: erosion of excise duty tax bases

4.28 Our latest forecast shows that fuel, alcohol and tobacco duties are expected to raise around £50 billion in 2019-20. We continue to expect receipts to fall over the medium-term by 0.1 per cent of GDP, reflecting continued erosion of each tax base. There have been no material developments to change our assessment of this risk over the past two years.

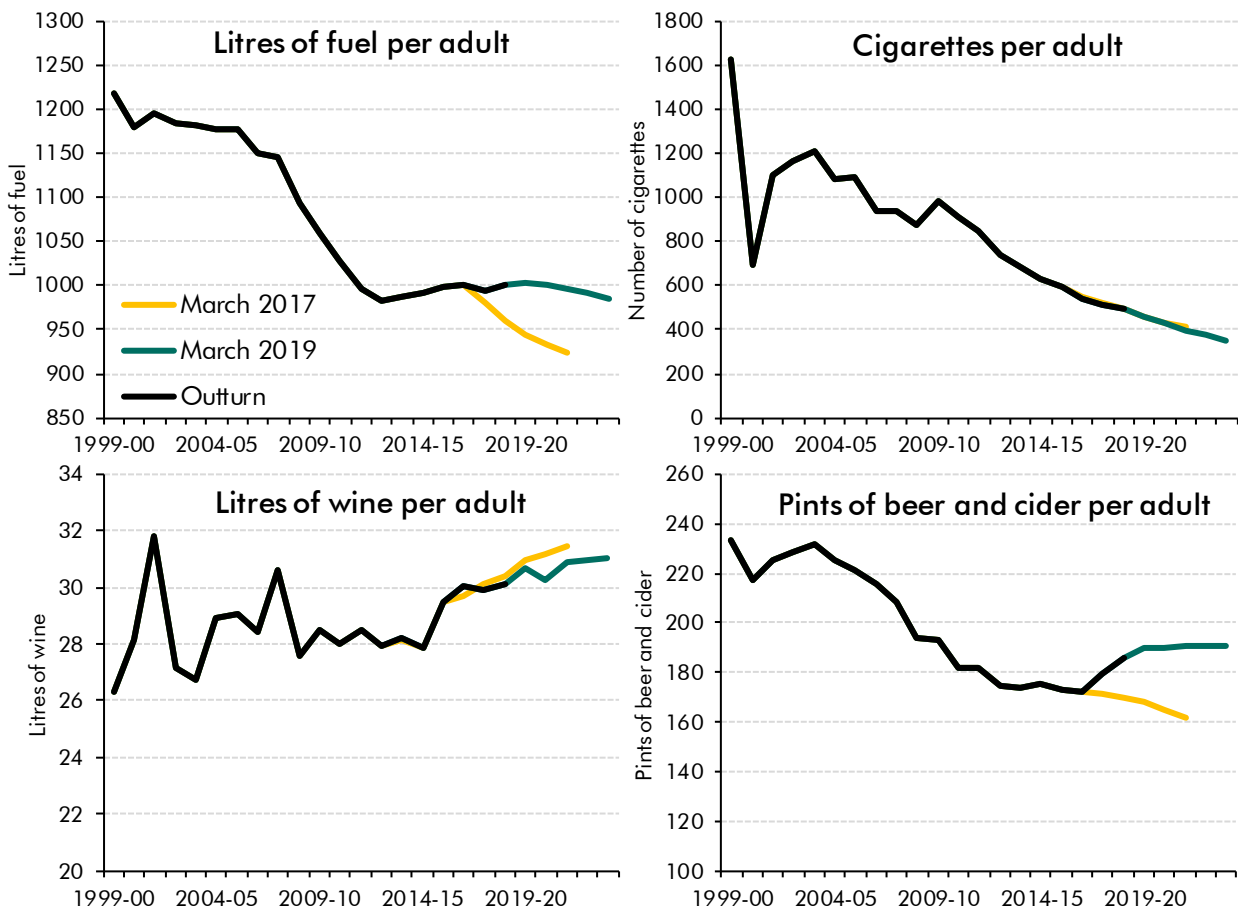
4.29 Chart 4.8 shows that:

- **Fuel consumption** per adult has remained relatively flat over the past two years despite sustained growth in overall mileages. This implies that the average efficiency of the vehicle stock has continued to rise (albeit at a slower pace than over the 2000s). In our October 2018 *EFO* we introduced a new forecasting model that better reflects changes in the composition of fuel usage, in particular due to the strong growth in mileages from light vans. Over the medium term, we are now slightly less pessimistic (from a

receipts perspective) about overall consumption, although in the longer term the continued trend toward alternatively fuelled vehicles will weigh on receipts. The Government’s 2017 decision to ban the sale of petrol and diesel cars by 2040 would, under a continuation of the current tax system, ultimately reduce receipts to zero.

- **Tobacco clearances** have evolved broadly as we expected at the time of our previous report. Over the recent past, regulatory and technological changes (such as the introduction of plain packaging and the rise of e-cigarettes) may have helped to sustain this fall, but overall the underlying decline in smoking prevalence appears to be the key factor. The latest ONS data suggest that just under 17 per cent of adults in Great Britain smoke cigarettes, down by half from 34 per cent in 1984.³
- Overall **alcohol clearances** have held up a bit better than expected. In particular, beer consumption over the past two years has been much stronger than anticipated. It is unclear at this stage whether this reflects short-term factors (such as rising popularity of craft beer) or a wider behavioural shift. We are in the process of reviewing our alcohol forecasting models and aim to reflect any resulting changes in our next forecast.

Chart 4.8: Trends in fuel, tobacco and alcohol consumption



Note: Reflects total taxable clearances.
Source: HMRC, OBR

³ Adult smoking habits in Great Britain, Office for National Statistics, July 2019.

Conclusions

4.30 Overall, nothing has materially changed our view of these risks. While the medium-term prospects for fuel duty revenues have improved since our previous report, we continue to expect them to trend towards zero over the longer term under current policy settings. We will continue to monitor alcohol consumption to see whether the decline in prevalence at younger ages will put downward pressure on revenues at a longer time-horizon. But, as the Government sets out in *Managing fiscal risks*, it has decided to accommodate some of these risks for other policy reasons – i.e. its commitment to reduce smoking prevalence.

Revenue policy risks

Summary of previous *FRR* discussion and the Government's response

4.31 Parliament requires our forecasts to be based on current government policy, or on our interpretation of it where it is not clearly defined. Changes in tax policy therefore constitute a further source of risk to our revenue forecast.

4.32 We identified several specific areas of policy risk in *FRR 2017*, including:

- **The risk associated with stated policy not being implemented**, notably the repeated decisions not to raise fuel and alcohol duties in line with inflation, which the Government has stated to be its default policy position for our baseline forecasts.
- **Policy commitments and aspirations not yet captured in our forecasts**. Unless the Government specifies a new policy with reasonable precision, and for each year of our medium-term forecast, we are unable to include it in our central forecast. Instead we consider it to be an aspiration and note it as a risk. This applies to manifesto commitments, conference announcements and leadership campaign pledges.
- **The increasing dependence on the uncertain yield from anti-avoidance and operational measures**. The policy costings for these types of measures are subject to higher levels of uncertainty compared to the relatively certain cost of tax cuts, such as the aforementioned freezes in fuel and alcohol duties.

4.33 In *Managing fiscal risks*, the Government:

- Estimated that **freezes to the headline fuel duty rate** over 2010-11 to 2018-19 will have raised net debt by around £84 billion by 2022-23 (just over 3 per cent of GDP). The Government stated that its policy is that “*all duties continue to be updated in line with inflation*” but that “*final decisions on tax rates are taken at fiscal events*”.
- Recognised the uncertainty surrounding our central estimates of **operational and compliance measures**. But it did not address the risk posed by policy packages that pair relatively certain costs with relatively uncertain yields.

4.34 The Government did not discuss how it manages the risks posed by policy aspirations that have been described publicly, but not in sufficient detail to allow them to be reflected in our central forecast. We asked the Treasury for further information about its risk management in this area when preparing this report. It pointed to the processes it has in place to allow the Chancellor to consider policy options ahead of fiscal events, including the one by which it updates us on policy aspirations that we have previously identified as risks to our forecasts.

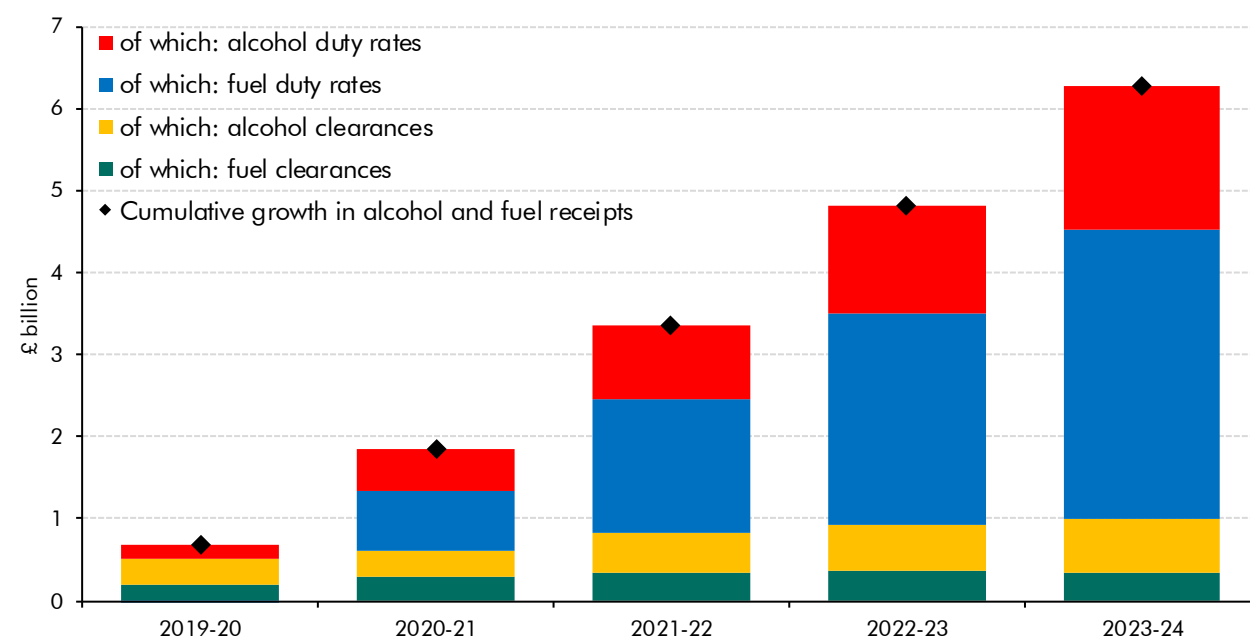
Updated risk assessment

Non-implementation of stated policy

4.35 Despite the Government’s MFR statement that “all duties continue to be uprated in line with inflation”, three months later its final decision on the fuel duty rate for 2019-20, taken in Budget 2018, was to freeze it again (at a cost of around £0.9 billion a year). The cost of real-terms cuts to fuel duty rates announced since June 2010 is now around £10 billion a year in 2019-20. Budget 2018 measures also froze beer, cider and spirits duty again in 2019-20 (at a cost of around £0.2 billion a year). The cost of cuts and freezes in alcohol duty rates announced since 2012-13 is now around £1¼ billion a year in 2019-20.

4.36 Chart 4.9 shows the drivers of growth in fuel and alcohol duty receipts in our March 2019 forecast.⁴ Of the £6.3 billion rise in receipts between 2018-19 and 2023-24, £5.3 billion reflects the policy assumption that duty rates will rise in line with RPI inflation. The remaining £1.0 billion reflects our forecast for underlying growth in fuel and alcohol consumption.

Chart 4.9: Fuel and alcohol receipts: drivers of growth over the medium term



Source: OBR

⁴ This represents the estimated static contribution of the Government’s duty uprating policy. If the upratings were not implemented, the actual impact on receipts would differ slightly due to the behavioural responses of taxpayers to those lower duty rates.

4.37 In the March 2016 Budget, the Government announced that it would abolish Class 2 NICs from 2018 at a cost of around £0.4 billion a year. The abolition was then delayed to April 2019 at Autumn Budget 2017, before being cancelled at Budget 2018, following political pressure generated by the fact that some taxpayers would lose out from the measure (by voluntarily paying the more expensive Class 3 rate when Class 2 was abolished) despite the overall effect being a giveaway. Similarly, the decision to increase Class 4 NICs rates at Spring Budget 2017 was almost immediately reversed in the face of political pressure generated by the cost to those who would pay more. This highlights once more the potential risk that non-implementation of stated policy may present to our central forecast.

Policy commitments and aspirations not yet captured in our forecasts

4.38 In our March 2019 *EFO* we listed many policy ambitions that the Treasury confirmed did not yet represent firm Government policy and so should not be reflected in our central forecast.⁵ Those policies included:

- Multiple **policy uncertainties regarding Brexit**, including the UK's participation in the EU emissions trading system (ETS) and the changes to accounting arrangements for traders facing the cash flow implications of import VAT being applied on goods imported from the EU.
- The Government's announced intention to introduce **a tax on plastic packaging** from April 2022, and the consultation on its design, including the tax rates to be applied.
- The consultation on the **surcharge on stamp duty land tax for non-resident buyers** acquiring residential property in England and Northern Ireland.

4.39 Since March there have been developments in several policy areas, including:

- The Department of Health and Social Care and the Cabinet Office announced a consultation on **potential changes to the NHS pension scheme** to help members who are affected by the 'annual allowance taper' – primarily GPs and consultants. For those on incomes above £150,000 the taper progressively reduces the amount an individual can contribute to pension pots from pre-tax income. Estimating how much will be deemed to have been contributed to a defined benefit pension pot is not straightforward, so some scheme members have faced unexpectedly large tax bills.
- In June 2019, the BBC announced that it intends to **end universal provision of free TV licences to the over-75s** and instead means-test entitlement with reference to receipt of pension credit. This would raise total licence fee revenue, but, as we describe in Box 5.1, the overall effect of the change is likely to raise rather than reduce the deficit.

4.40 The candidates in the current Conservative leadership campaign have advanced various net revenue-reducing tax proposals, which represent a policy risk to our central forecast.

⁵ We discuss these in greater depth in Annex A of our March 2019 *EFO*.

Reliance on yield from highly uncertain revenue-raising measures

4.41 In our 2017 *FRR*, we highlighted the increasing reliance that the Government has placed on raising money via anti-avoidance and operational measures that attempt to increase the effectiveness of HMRC's compliance activity. We tend to assign these costings a higher uncertainty rating, because the measures generally target a subset of taxpayers who are already changing their behaviour to reduce their tax liabilities.⁶ The higher uncertainty also reflects the less reliable data used to estimate the yields, since the measures are directed at uncollected tax. (It is important to note that when we describe a costing as highly uncertain, we see risks lying to both sides of what we nonetheless judge to be a central estimate.)

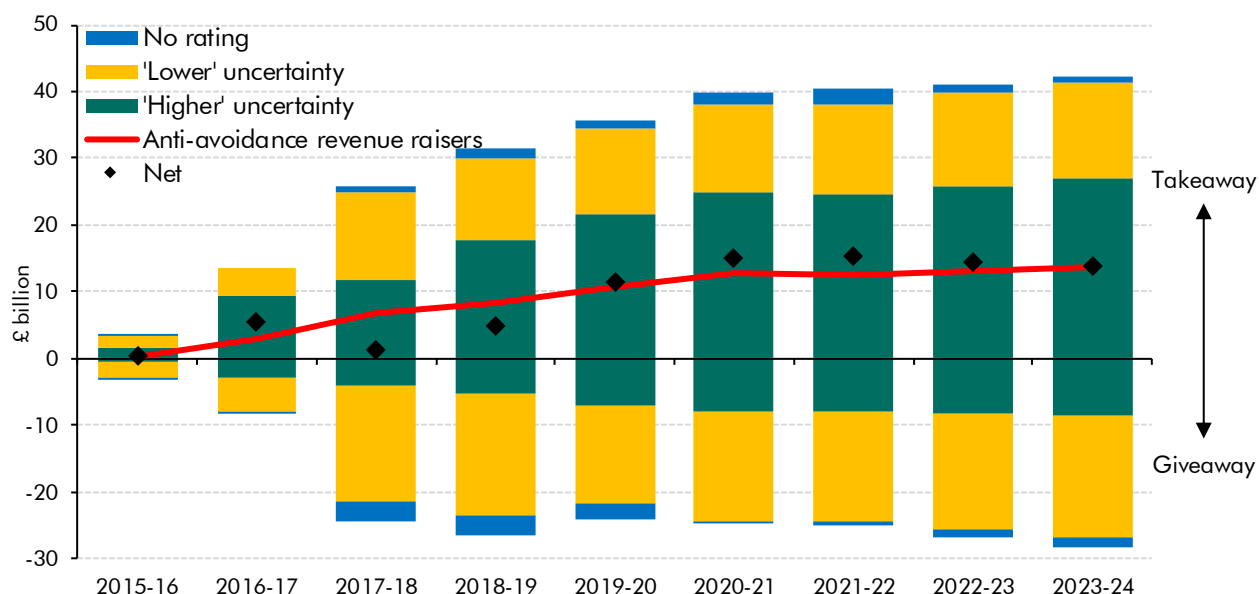
4.42 Chart 4.10 sets out the cumulative impact of tax giveaways and takeaways since December 2014 (when we first began assigning uncertainty ratings to each measure).⁷ It shows that:

- The **cumulative net impact of Government decisions since December 2014** has been to raise tax receipts by £13.8 billion (0.5 per cent of GDP) by 2023-24. That reflects a cumulative gross takeaway of £42.2 billion (1.7 per cent of GDP) partly offset by a cumulative gross giveaway of £28.4 billion (1.1 per cent of GDP).
- In value terms, **around two-thirds of the gross takeaway has been assigned a 'higher' uncertainty ranking**. In stark contrast, only around one third of the gross giveaway in value terms has been assigned a 'higher' uncertainty ranking.
- **The net tax takeaway since December 2014 is almost exactly equal to the total value of anti-avoidance revenue raisers**. Other takeaways (such as the doubling of the standard rate of insurance premium tax) have been broadly offset by other giveaways (such as the successive rises in the personal allowance and higher rate thresholds).

⁶ See our *Policy costings uncertainty ratings database* online for more information on the framework we use to assign these ratings.

⁷ The figures in the chart reflect the cumulative sum of policy costings, as they were estimated at the time (i.e. no adjustments have been made for subsequent recostings). For years outside the forecast period, we have assumed that the impact of the costing remains flat as a share of nominal GDP, consistent with the methodology used in the *Policy measures database* available on our website.

Chart 4.10: Relative uncertainty of tax measures announced since December 2014



Note: 'Lower uncertainty' includes our three lowest ratings ('low', 'medium-low' and 'medium') while 'Higher uncertainty' covers our three highest ratings ('very high', 'high' and 'medium-high'). 'Anti-avoidance' also includes operational and compliance measures.
Source: OBR

4.43 Over the past two years, the Government has again introduced several revenue-raisers that we have assigned higher uncertainty ratings to. Many of these measures are inherently uncertain to cost because they typically affect taxpayers who are subject to an already complex tax system and who are actively attempting to reduce their tax liabilities.

4.44 The underlying risk here reflects the consistent use of uncertain revenue-raisers to fund other objectives with more certain costs, such as tax rate cuts or spending commitments. Over the past two years, the most notable higher-uncertainty revenue-raisers have included:⁸

- **'Avoidance and evasion: additional compliance resource'**, announced at Autumn Budget 2017 and estimated to raise £0.7 billion a year by 2022-23. We assigned this a 'very high' uncertainty rating. As well as the usual difficulties outlined above, this type of compliance measure is challenging because it does not map directly onto the National Accounts receipts definitions that we forecast. Another challenge is determining whether the yield is additional to that already captured in similar previous measures or HMRC's existing compliance effort. Compliance measures are also subject to uncertainty around the timing of operational delivery.
- At Autumn Budget 2018, the Government introduced a **digital services tax**, which was estimated to raise £0.4 billion a year by 2023-24. We assigned this measure a 'very-high' uncertainty rating. All aspects of the costing were deemed uncertain, in particular the reliance on complex, multi-stage modelling.
- Also at Autumn Budget 2018, the Government **extended 'off-payroll' working reforms to the private sector**, which were estimated to raise £0.7 billion a year by 2023-24.

⁸ Each of these is discussed in more detail in the relevant *Economic and fiscal outlook*.

This measure also received a ‘very-high’ uncertainty rating, reflecting both the quality of data and the uncertainty of the behavioural response, as well as the challenges in modelling the impact of the measure.

- 4.45 Following a familiar pattern, all three were contained within Budget packages where their uncertain yield was used to fund giveaways with relatively more certain fiscal impacts, notably increases in departmental spending, freezes to fuel duty and increases in the income tax personal allowance and higher rate threshold.

Conclusions

- 4.46 Overall, the continued freezing of fuel and some alcohol duties, as well as the dropping of various NICs measures, suggests that the risk of non-implementation of stated policy still poses a material risk to our central forecast. As regards policy commitments and aspirations, while their number has risen over the past two years, their overall value is likely to have fallen thanks to the crystallisation of the personal allowance and higher rate threshold manifesto commitments at Autumn Budget 2018. The tax cuts proposed by the Conservative leadership candidates pose new risks on top of those we identified in March.
- 4.47 The Government’s continued behaviour over the past two years to help fund increased departmental spending and straightforward tax cuts with risky revenue-raisers suggests that this risk remains (particularly given the nature of governing via a minority and the continued challenges that Brexit poses to the ability of the Government to enact more certain tax rises).

Non-payment of taxes due

Summary of previous *FRR* discussion and the Government’s response

- 4.48 One important risk to all taxes is that some of those who should pay them do not. That could be for a number of reasons – legal or illegal. In our previous report, we:
- **Highlighted the stark difference in levels of non-compliance across different forms of tax collection** (as measured by HMRC as ‘tax gaps’).
 - **Discussed the complexity of the UK tax system** and how this may have created opportunities for taxpayers to challenge legal interpretations or exploit boundaries.
- 4.49 In *Managing fiscal risks*, the Government:
- Noted that HMRC’s estimate of the **tax gap** had fallen in recent years, but that these estimates were uncertain and that HMRC continues to improve its methodologies.
 - Identified a range of measures it had taken to tackle **tax avoidance and evasion**, including measures to digitise tax collection through ‘making tax digital’.

4.50 The Government argued that “the length of tax legislation and the number of tax reliefs” – two proxies we cited in our 2017 report – “are not necessarily good measures of complexity”. But it did not say what it does regard as good measures.

Updated risk assessment

Tax gaps

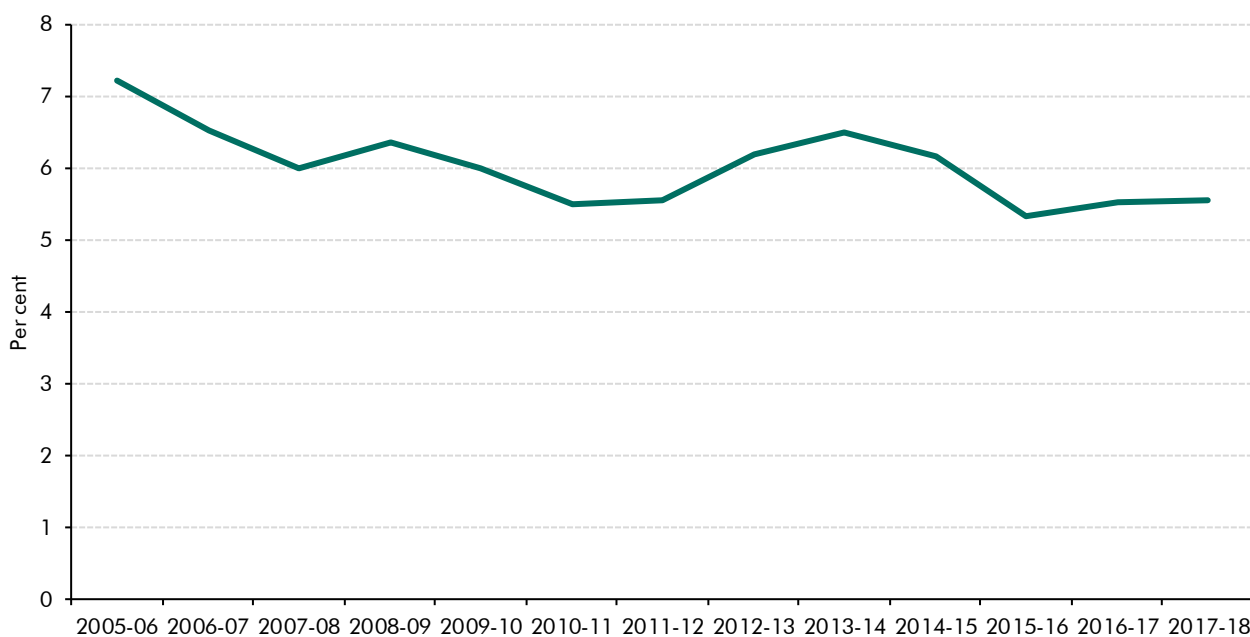
4.51 We do not generally estimate tax gaps explicitly when we produce our forecasts, as they are usually based on forecasts of growth rates from the latest outturn data collected by HMRC. This means that each forecast contains an implicit assumption about the tax gap – usually that it remains flat in proportional terms. There are two key exceptions to this:

- we include the estimated yield from **anti-avoidance and compliance measures**; and
- our **VAT forecast** includes explicit estimates of the theoretical liability and a VAT gap, which we typically set for the initial year of the forecast and hold flat thereafter, other than factoring in the effect of VAT gap-reducing policy measures.⁹

4.52 In our 2017 report we discussed how difficult it is to estimate tax gaps and looked at the main conclusions from HMRC’s 2016 *Measuring tax gaps (MTG)* report covering 2015-16, in particular the stark difference in rates of non-compliance between different taxes. HMRC’s latest published analysis covers 2017-18. It shows the tax gap rising by 0.3 percentage points since 2015-16 to 5.6 per cent. This increase appears to have been driven by a rise in the VAT gap, partly reflecting the fact that VAT debt owed to HMRC has risen over the past two years. As HMRC recognises in *MTG*, there is a relatively wide range of uncertainty around the central estimates of the individual and overall tax gaps, so they provide a better indication of longer-term trends than of precise small year-on-year changes. Chart 4.11 shows HMRC’s latest estimate of the tax gap since 2005-06.

⁹ More information on how our VAT forecast is produced is available in the ‘forecasts in-depth’ section of our website.

Chart 4.11: HMRC estimate of the tax gap since 2005-06



Source: HMRC

4.53 To understand the drivers of changes in the tax gap and the associated fiscal risks, we can split movements in the aggregate tax gap into:

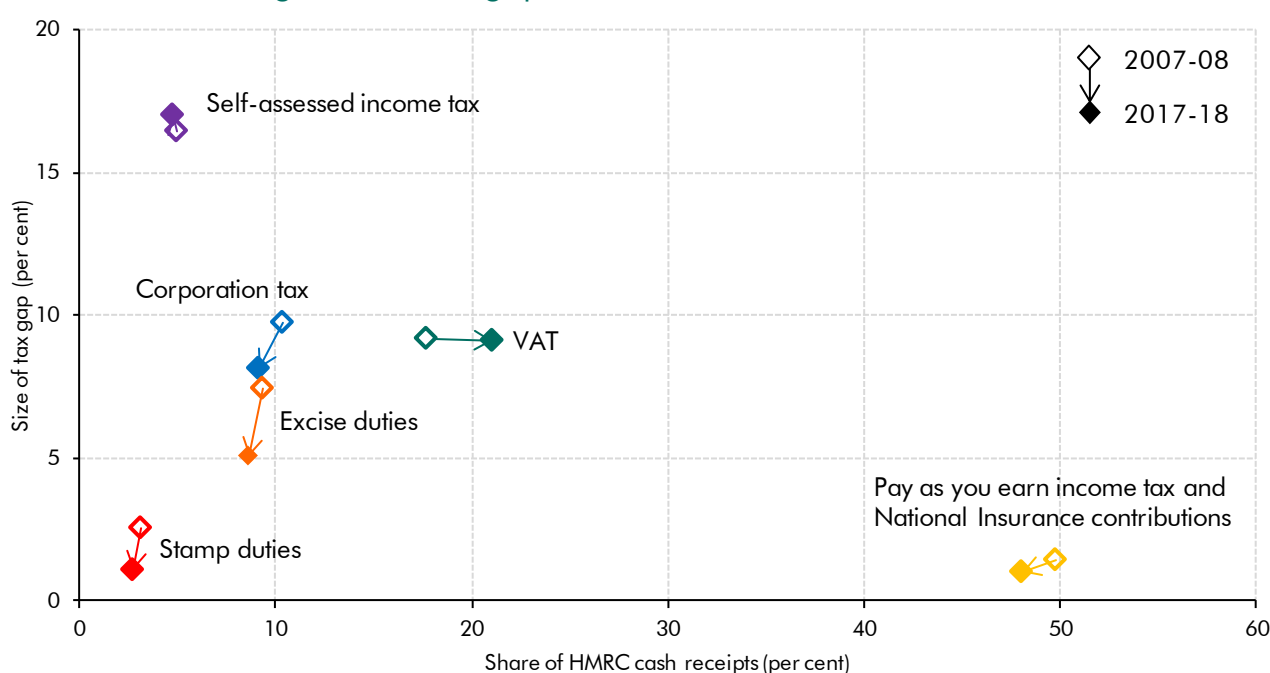
- **Trends in the tax gap for each specific tax head.** The drivers of these changes will reflect a multitude of factors, including estimation error, levels of HMRC compliance activity and underlying changes in the levels of avoidance and evasion.
- **The overall composition of the tax-take.** The government may decide to raise more or less revenue via different streams of taxation through discretionary policy changes, or changes in the composition of economic activity could affect the composition of the tax-take. This will affect the overall measure of the aggregate tax gap.

4.54 Chart 4.12 shows movements over the past decade in the level of the tax gap for each of the main revenue streams (on the vertical axis) against the share of those revenue streams in the overall HMRC tax-take (on the horizontal one). It shows that the key drivers of the 0.4 percentage point fall in the tax gap since 2007-08 have been:

- **A 1.6 percentage point fall in the corporation tax gap.** While the gap is substantially higher for smaller businesses, HMRC analysis suggests that it has fallen across all sizes of businesses over this period.
- **A 2.3 percentage point fall in the excise tax gap,** largely driven by declines in the fuel and tobacco duty gaps.

- **A 0.4 percentage point fall in the PAYE tax gap.** PAYE income tax and NICs are the largest sources of government revenue, so relatively small changes in their level of compliance can have substantial effects on the overall tax gap.
- Offsetting those falls, the **composition of revenue** since 2007-08 has shifted away from income tax (partly reflecting successive real-terms rises in the personal allowance and higher rate threshold) towards VAT (reflecting the rise in the standard rate to 20 per cent in January 2011). Because the tax gap for PAYE is much lower than for VAT (1.0 per cent versus 9.1 per cent in 2017-18) this has raised the overall tax gap.

Chart 4.12: Changes in the tax gap: 2007-08 to 2017-18



Source: HMRC

4.55 We asked the Treasury whether any steps taken on tackling tax gaps had been delayed because of Brexit-related priorities. It told us that it has allocated over £650 million to HMRC since 2017-18 for EU exit preparations, including £350 million in 2019-20, which has been ringfenced from the ‘business as usual’ budget.

Conclusions

4.56 Over the past two years, HMRC’s estimate of the tax gap has risen by 0.3 percentage points. Given the uncertainty and difficulty in generating these estimates, our view is that the underlying risk arising from non-payment of taxes due is little changed from our previous assessment. One source of this risk is the misuse of tax reliefs, which are discussed later in this chapter. As we set out last time, this risk is endogenous to government activity and it is important to understand that other policy changes that may influence the composition of the tax-take will also affect the total level of non-compliance.

Risks associated with the UK oil and gas industry

Summary of previous *FRR* discussion and the Government's response

4.57 In our previous *FRR*, we reported on the likely long-term decline of oil and gas revenues – largely down to exhaustion of resources remaining in the UK continental shelf (UKCS). To a large extent, the risk to tax payments has crystallised already – with the remaining resources in the UKCS becoming increasingly expensive to extract. Revenues have already fallen from £10.6 billion in 2008-09 to £1.2 billion in 2018-19. Our medium-term forecast predicts that they will stay at low levels given current oil price expectations. Over the longer term, the key risk reflects the cost of decommissioning infrastructure on the UKCS and how much of these costs will be borne by government via both tax repayments and foregone taxes.

4.58 In *Managing fiscal risks*, the Government:

- Acknowledged a June 2018 Oil & Gas Authority (OGA) report setting out its central estimate of **the cost of decommissioning infrastructure** (including platforms, wells, pipelines and terminals) on the UKCS (£58.3 billion in 2017 prices) as well as the uncertainty surrounding this estimate.¹⁰ HMRC has since estimated that the Government may bear around 40 per cent of these costs via tax repayments as well as tax receipts foregone.¹¹
- Stated that it was working with the OGA to monitor progress in **reducing decommissioning costs** and had set up a 'Decommissioning Costs Board' to "embed expertise and accountability for supporting the OGA's target across government".¹²

Updated risk assessment and conclusion

4.59 The oil price and expectations of future prices have risen since our 2017 report and our forecast for net receipts is therefore higher than it was then. But it is still small in cash terms at around £2 billion a year on average over the medium term. As we set out in our previous report, the revenue risk from declining production has already been largely realised.

4.60 The latest OGA estimate of total decommissioning costs is 17 per cent lower on a like-for-like basis than its original 2017 estimate. The OGA said that the reduction had been "primarily driven by continued improvement in planning and execution practices" although the underlying detail was not available when we finalised this publication.¹³ Neither was the updated HMRC estimate of the total exchequer impact of decommissioning costs.

¹⁰ *UKCS Decommissioning 2018 Cost Estimate report*, Oil and Gas Authority, June 2018

¹¹ *Statistics of Government revenues from UK oil and gas production*, HMRC, June 2018

¹² The target is measured against the 2017 estimate of £59.7 billion (reflecting total spending from 2017 onwards) in 2016 prices.

¹³ *Cost of UKCS oil and gas decommissioning continues to fall*, OGA announcement, June 2019.

- 4.61 Following a recent Public Accounts Committee hearing into the public cost of decommissioning oil and gas infrastructure, the Government agreed with the Committee's recommendations in a number of areas, including:
- That the **OGA should set out how it is making its estimate more certain** and what the expected impact of new and as-yet uncosted projects could be.
 - That **BEIS and the OGA should report annually on the direct impact it has had on reducing decommissioning costs**, as well as reporting outturn costs against forecast.
- 4.62 Given the uncertainty surrounding the overall cost of decommissioning as well as its implications for the public finances, nothing material has changed over the past two years to suggest that this risk has been substantially mitigated.

Tax reliefs

- 4.63 Tax reliefs are a part of every tax system and help define what is and what is not to be taxed – the tax base. But tax reliefs are often introduced with the intention of achieving other policy objectives. In this section, we discuss those tax reliefs and expenditures for which HMRC has published estimates, and we use those estimates to illustrate some of the ways they might constitute a fiscal risk. For example, in some instances, they are used as disguised and non-transparent alternatives to conventional public spending, getting far less scrutiny as a result. But it is worth noting at the outset that while we discuss several different reliefs and expenditures, we are not recommending their wholesale removal – this would be beyond our remit in any case. Reliefs are clearly an integral part of every tax system.
- 4.64 The estimates HMRC produces are what is known as 'static' estimates. That is, they answer the question 'Given the activity that took place in the economy in a particular year, if this relief did not exist *and the same activity took place* how much additional tax would have been raised?'. This is a very different question to 'How much additional tax would be raised if this relief did not exist?' – to answer that you would need to consider how activity might change as taxpayers responded to the different tax incentives now in place. And it is an even more different question to 'How would the public finances be affected if this relief did not exist?' – which would require you to think about knock-on implications to other elements of the public finances, for example the welfare spending implications of changing the income tax personal allowance when the universal credit means test is measured after tax or, where the figures involved are large, how would economic growth more generally be affected.
- 4.65 Finally, and beyond our remit, there might be a public policy question of 'How would the policy objective met by this relief be met if the relief did not exist, and at what cost?'. So, for example, governments seek to promote personal saving for retirement. One means of doing so is by ensuring that pension saving and income is only taxed once. In the UK that is currently achieved by allowing people to make pension contributions out of pre-tax income (subject to some limits), not taxing returns on pension savings, but then taxing income in

retirement (with some exceptions).¹⁴ The estimated cost of the former is large, but since the long-term fiscal cost of inadequate private pension saving might be much higher, one might reasonably assume that any reform of the system would retain the basic objective.¹⁵ So the public policy question is one of how effectively do different approaches achieve that goal.

Structural reliefs versus tax expenditures

4.66 HMRC splits reliefs into two broad categories:

- **'Structural reliefs'** are considered *"an integral part of the tax system"*. These include tax thresholds, such as the personal allowance for income tax and the primary and secondary thresholds for National Insurance contributions (NICs).
- **'Tax expenditures'** are designed to *"to help or encourage particular types of individuals, activities or products for economic or social objectives"*.¹⁶ This is a very broad definition, spanning everything from income tax relief for pension contributions to the exemption that ensures pet cemeteries are not liable for landfill tax.

4.67 Some reliefs fall neatly into one category or the other. For example, HMRC classes R&D tax relief as a tax expenditure, and it is a clear example of a relief designed to meet a specific policy objective – to stimulate additional R&D investment by partially or wholly offsetting the cost against corporation tax liability or providing a payable tax credit. But many include an element of both tax expenditure and structural relief. For example, the annual investment allowance is more generous than standard capital allowances and is designed to *"support investment by small- and medium-sized firms"*.¹⁷ HMRC classes it as having both tax expenditure and structural components, highlighting one of the challenges in categorising reliefs. Neither HMRC nor the Treasury maintains a list of reliefs by policy objective.

4.68 In our 2017 *FRR* we highlighted that the UK tax system, whether measured by the length of the tax code or the number and size of tax reliefs and expenditures, is one of the most complex in the world. HMRC currently identifies 1,171 structural reliefs and tax expenditures, although it is still trying to confirm the precise number in place. Based on past behaviour, it expects this number to rise as *"Governments and Parliament add more reliefs than they take away"*.¹⁸ The close to 100 new tax policy measures that the Government has announced in the two years since our previous report is consistent with a continuation of that pattern. Despite this, the Government stated in *MFR* that it *"agrees on the need for simplification of the tax system"*.

¹⁴ See, for example, House of Commons Library Briefing Paper Number CBP-07505, *Reform of pension tax relief*, October 2018.

¹⁵ See, for example, the 'principles for reform' identified in HM Treasury, *Strengthening the incentive to save: a consultation on pension tax relief*, July 2015.

¹⁶ HMRC, *Estimated costs of tax reliefs*, 2019. HMRC's definition of tax expenditures is in line with that proposed by the NAO in its 2014 *Tax reliefs* report. The NAO also splits non-tax expenditure-type reliefs into five categories: reliefs to correctly measure income or profits; reliefs to ensure the scope of the tax is as intended; reliefs to improve the progressivity of tax; reliefs to create simplicity; and reliefs introduced by international agreements.

¹⁷ The description used by the Government in Summer Budget 2015.

¹⁸ HMRC evidence to the Public Accounts Committee, September 2018.

Why do tax reliefs and expenditures constitute a fiscal risk?

4.69 There are several reasons why tax reliefs and expenditures could pose fiscal risks, including:

- **The Government does not know the overall cost** even of the tax reliefs and expenditures it can identify. HMRC only publishes the costs of around one in six of them, although these would be likely to account for the majority of the overall cost if that were known. The National Audit Office (NAO) has previously said that “HMRC has an inconsistent approach to collecting, using and publishing data on tax reliefs”.¹⁹ There is also little information about reliefs affecting non-HMRC taxes.
- **The cost of the policy motivated tax expenditures that HMRC has identified is large** in absolute terms – approaching 8 per cent of GDP – and also by international standards. The cost has also risen significantly over the past decade.
- **It is not clear that the Government gives tax reliefs and expenditures adequate scrutiny to control their cost.** This contrasts with the very high degree of scrutiny it applies to what can be much smaller spending settlements it reaches with departments. To give some sense of scale, the combined £4 billion annual cost of the ‘tied oils scheme’ and the ‘rebated rate for gas oil’ is more than the annual cost of running HMRC.
- **There is a lack of transparency** around tax reliefs and expenditures. HMRC’s annual data release contains many numbers, but almost no commentary on them.²⁰
- **The Government does not seem to have a systematic way of evaluating the effectiveness** of those tax reliefs and expenditures with a stated policy objective. The NAO has said that “HMRC does not collect the data that would allow it to conclude on the effectiveness of tax reliefs” and that there is “little evidence that HMRC evaluates reliefs to see if their objectives are being met”.²¹
- **Tax reliefs and expenditures add complexity to the tax system**, which may encourage more avoidance activity as taxpayers are given the opportunity to exploit new boundaries or to challenge legal interpretations. The Public Accounts Committee has recommended that “HMRC should regularly monitor variances between its forecasts of what tax reliefs will cost and what they actually cost. Where costs significantly exceed forecasts, it should seek positive evidence that the relief is working as intended and not being targeted for tax avoidance”.²²

4.70 In *Managing fiscal risks*, the Government said it “agrees on the need for simplification of the tax system” and that it “recognises the need to monitor and evaluate existing tax reliefs, and to ensure that any new reliefs introduced are justified and appropriately targeted”. Somewhat more concretely, it pointed to the role of the Office of Tax Simplification on the former and new internal HMRC processes that had been shared with the NAO on the latter.

¹⁹ National Audit Office, *The effective management of tax reliefs*, 2014.

²⁰ See HMRC, *Estimated costs of tax reliefs, annual estimates*, 2019. The single page of this release devoted to ‘commentary on changes in the published figures’ is dominated by an explanation of corrections to the estimated cost of the income tax marriage allowance.

²¹ National Audit Office, *The effective management of tax reliefs*, 2014.

²² Public Accounts Committee, *The effective management of tax reliefs*, 2015.

The cost of tax reliefs and expenditures

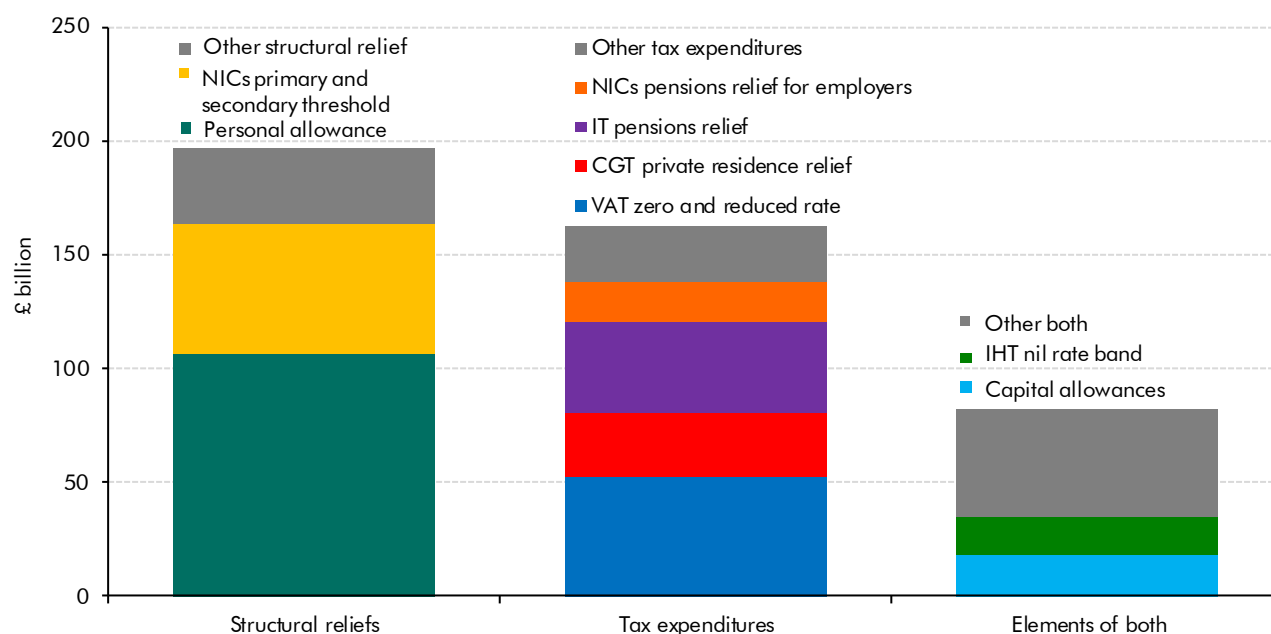
All reliefs and expenditures for which estimates are available

- 4.71 HMRC's most recent publications list 430 reliefs, and it estimates the cost of 195 of them.²³ Of the 235 that it does not quantify, the explanation given for most is that the *"information on the usage of this relief is not required in tax returns and cannot be reliably estimated from other data sources, and the cost of collection for statistical purposes is disproportionate."*²⁴ HMRC does not report on the remaining 741 reliefs it identifies, so there are no estimated costs of these, but HMRC is currently working to expand the number of estimated reliefs in future publications. Of the 195 that are estimated, 57 are classed as tax expenditures, 25 as structural reliefs with 33 as combining elements of both. The remaining 80 reliefs are classed as 'minor' – where the estimated cost of each relief is less than £50 million a year.
- 4.72 The estimated sum of all identified and costed reliefs for 2018-19 is £441 billion (21 per cent of GDP). To place this in context, it is around half the latest ONS estimate for total managed expenditure in 2018-19. But, as noted at the start of this section, it is important to recognise that while aggregating the costs of reliefs in this way gives some sense of the overall scale, it is not the amount that the Exchequer would gain from abolishing them all, and it is not directly comparable to the size of public spending. To give another example, the estimates do not consider interactions across reliefs – if the annual investment allowance did not exist, then take-up of the remaining capital allowances would be higher as a result. And if capital allowances were removed from the corporate tax system entirely, then investment would be lower thanks to the higher post-tax cost of capital, which in turn would ultimately have adverse second round effects on the economy and tax receipts.
- 4.73 Chart 4.13 shows that just under half the cost of the identified and costed reliefs relates to structural reliefs, just over a third to tax expenditures and around a fifth to reliefs that combine elements of both. The reliefs with the largest costs are structural ones: the income tax personal allowance (£107 billion, 5.0 per cent of GDP) and the primary and secondary thresholds for NICs (£57 billion, 2.7 per cent of GDP). Their cost has risen significantly since 2010-11 (from 3.2 per cent GDP for the personal allowance and 1.9 per cent of GDP for the NICs thresholds), largely due to policy decisions, particularly the near doubling of the personal allowance. These costs and their evolution are reasonably well understood.

²³ HMRC splits the list across three publications: *Estimated costs of principal tax reliefs, 2019*; *Estimated cost of minor tax reliefs, 2019*; and *Tax reliefs in force in 2017-18 or 2018-19: Estimates of cost unavailable, 2019*.

²⁴ HMRC, *Estimated costs of tax reliefs, 2019*.

Chart 4.13: Estimated total cost of tax reliefs in 2018-19



Source: HMRC

Tax expenditures

4.74 The three largest tax expenditures accounted for 85 per cent of the total cost of such policy-motivated reliefs in 2018-19. These are:²⁵

- **Tax relief for registered pension schemes** totalled £54.7 billion in 2017-18 (2.6 per cent of GDP).²⁶ HMRC records this cost in two parts: income tax relief accounted for £38.4 billion (equivalent to 21 per cent of income tax receipts) and NICs relief the remaining £16.3 billion (12 per cent of NICs receipts). As discussed above, abolishing these would lead to large behavioural responses, as people switched to alternative tax-efficient savings vehicles, so the yield of such a change would be much lower than these estimated costs. And the Government would be left with the policy question of how to encourage people to save. We discuss pensions tax relief in more detail below.
- The **reduced and zero-rating of VAT**, which amounted to £52.7 billion in 2018-19 (equivalent to 2.5 per cent of GDP and 40 per cent of total VAT receipts collected). In 2005-06 these cost 2.0 per cent of GDP, so their cost has risen. The two largest components are the zero-rating of food (£18.6 billion) and the construction of new dwellings (£13.6 billion). The reduced 5 per cent rate for domestic fuel and power adds a further £4.9 billion. Again, applying the standard 20 per cent rate to all reduced and zero-rated items would not yield the Exchequer the full £52.7 billion. But this is one example where narrow behavioural responses might be relatively muted – it is difficult to avoid consuming food, or, for those who need them, children’s clothing or prescription drugs. For those who chose to switch from bus travel to cycling due to

²⁵ The two reliefs for registered pension schemes – against income tax and NICs – are combined into a single bullet.

²⁶ HMRC, *Personal pension statistics*, 2019.

the imposition of VAT on bus tickets, their helmet would now incur VAT too. But, of course, a £50 billion tax rise would have wider implications for economic growth.

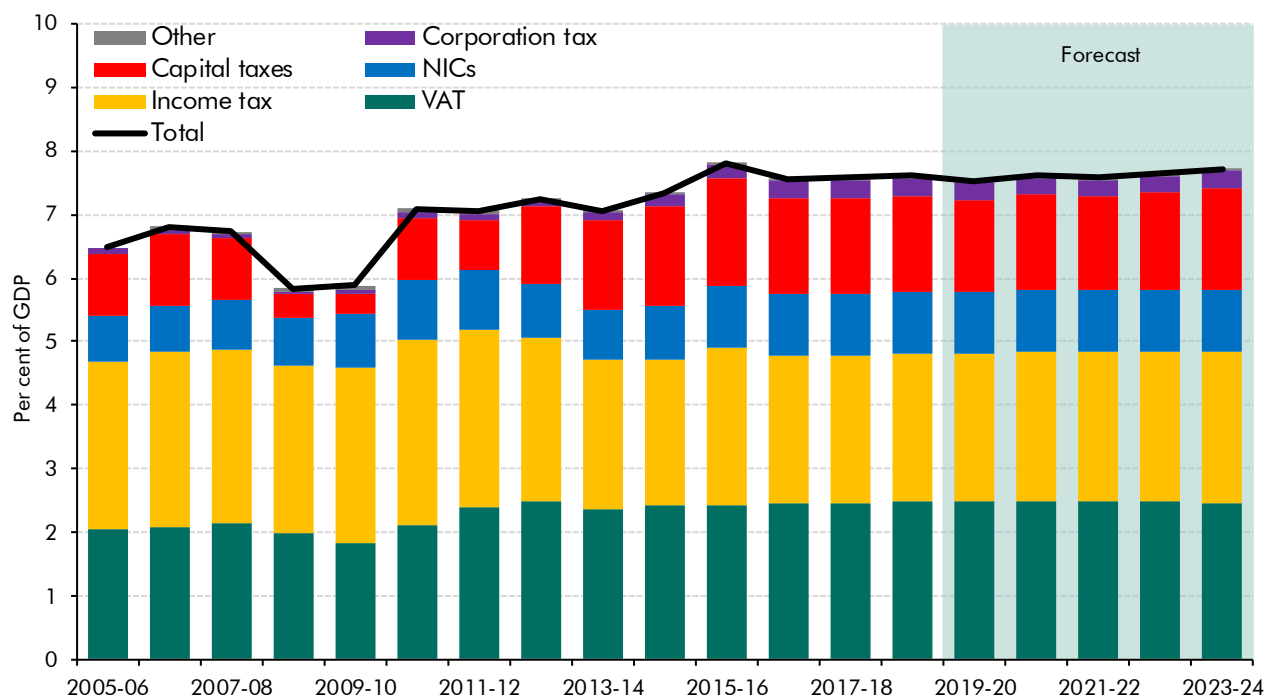
- **Private residence relief from capital gains tax (CGT)**, which was worth £27.2 billion in 2018-19 (1.3 per cent of GDP and three times greater than CGT receipts collected). In 2005-06 this relief cost 0.9 per cent of GDP, so its cost has risen too. Any capital gain from the sale of a primary residence is, on the whole, exempt from CGT. House price inflation explains why the cost has risen. This is another relief where there would be significant behavioural effects were it to be abolished. By lowering the post-tax return from selling a house and crystallising a tax liability when the transaction took place, its effects would be equivalent to those of a very large increase in stamp duty: reducing house prices and deterring transactions on a significant scale. Such consequences would reduce the amount of CGT it would raise, and would also hit receipts from property transactions taxes and on the spending associated with house moves.

4.75 Chart 4.14 shows the estimated cost of tax expenditures relative to GDP from 2005-06 to 2018-19, and a projection consistent with our March 2019 forecast up to 2023-24.²⁷ The cost has generally risen over time, although it fell sharply in 2008-09 and 2009-10 thanks to falling house prices and the collapse in residential property transactions. It reached a recent peak of 7.8 per cent of GDP in 2015-16 and stands at 7.6 per cent in 2018-19. Our forecast suggests that the cost of reliefs will fall back in 2019-20, and then edge higher relative to GDP over the remainder of the period.

4.76 The cost of zero and reduced rates in VAT has increased because the January 2011 increase in the main rate to 20 per cent made the per-unit cost of the relief greater. The cost of income tax reliefs has fallen as pensions tax relief has been made less generous. Both the growth and the year-to-year variation in the cost of relief from capital taxes is largely due to CGT private residence relief, plus rising costs of inheritance tax reliefs and entrepreneurs' relief. Greater relief from corporation tax is largely due to policy decisions relating to R&D expenditure, the 'creative' industries and the introduction of the 'patent box'.

²⁷ Our forecast methodology is explained in more detail in the supplementary tables accompanying this report. For those treated explicitly in our forecast we use those estimates. For the remaining cases we make the simple assumption that expenditure grows in line with the relevant tax forecast.

Chart 4.14: Tax expenditures as a percentage of GDP



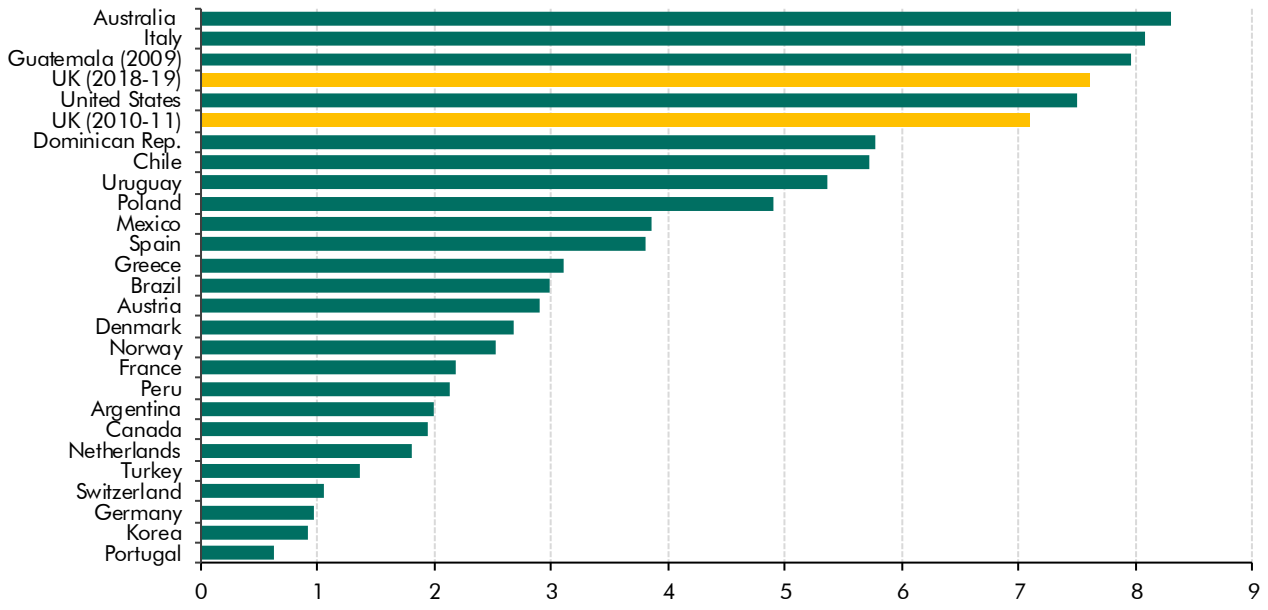
Source: HMRC, OBR

International comparisons

4.77 The IMF considers HMRC's coverage of tax expenditures to be 'good' by international standards, but adds that "there is no control on, or budgetary objectives for, the size of tax expenditures, which are relatively high by international standards."²⁸ Chart 4.15 is drawn from the IMF's 2016 *Fiscal transparency evaluation* of the UK. It shows that the revenue cost of tax expenditures in the UK is relatively high when compared to other countries, at around 7 per cent of GDP at the time of this snapshot, and 7.6 per cent now.

²⁸ IMF, *United Kingdom fiscal transparency evaluation*, 2016.

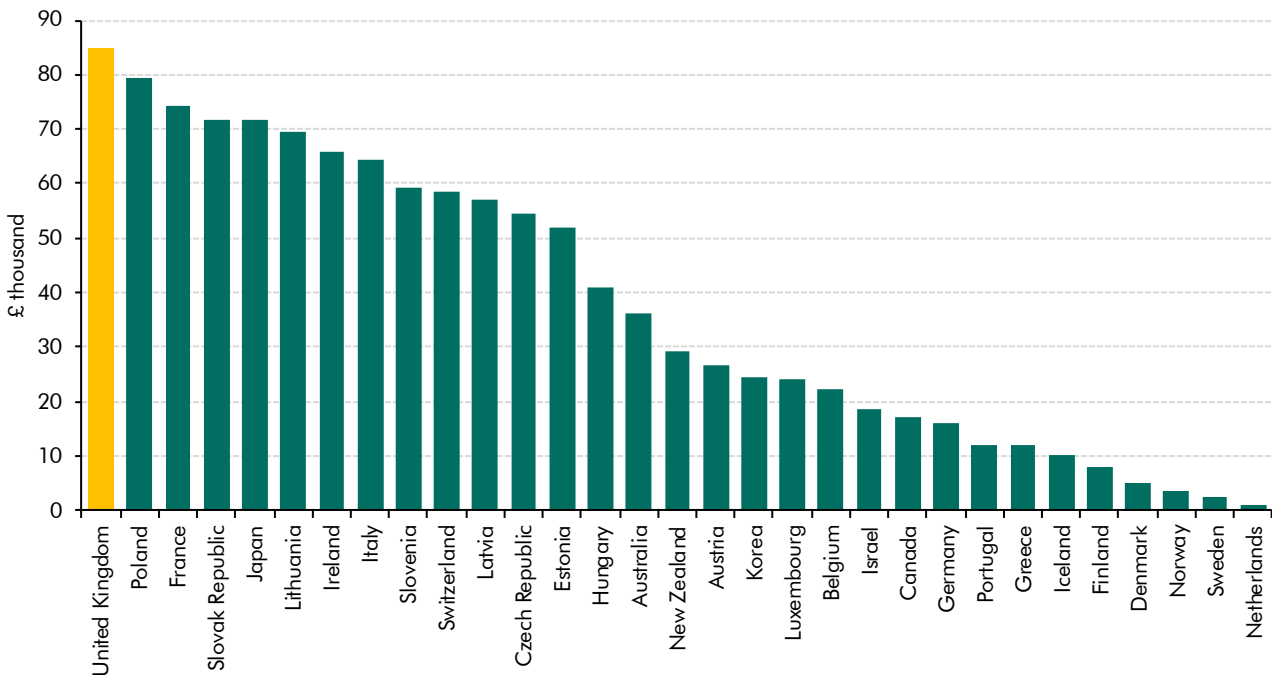
Chart 4.15: International comparison of the cost of tax expenditures in 2010



Note: Estimates are for 2010, unless otherwise stated.
 Source: IMF, HMRC, OBR

4.78 There are some thresholds that are not captured within HMRC’s definitions of either structural reliefs or tax expenditures, but where the level set is within the Government’s control. The VAT threshold is a good example where, as Chart 4.16 shows, the UK has chosen to set the highest rate across the OECD.

Chart 4.16: VAT threshold cross-country comparison



Note: Thresholds are for 2018. The exchange rates in the OECD analysis for conversion are purchasing power parity rates (PPPs) for GDP. The implied exchange rate is £1=\$1.40 USD.
 Source: OECD

- 4.79 Researchers at the Council on Economic Policies in Switzerland recently published a comprehensive comparative assessment of tax expenditure reporting in 43 G20 and OECD countries.²⁹ They use nine criteria to judge ‘best practice’, including the frequency of reporting, whether there is a legal requirement to report, whether reports are integrated into budgets, the number of estimations and the quality of accompanying descriptions.
- 4.80 They conclude that the UK falls into a group of 26 countries they deem to produce only “basic” reporting of tax expenditures. As with the IMF report, the authors praise the UK for producing a regular annual publication on their estimated cost. But they note that the proportion of expenditures reported is relatively low, and that failing to produce the estimates alongside budgets or fiscal statements is a weakness. For nine countries – Australia, Austria, Canada, France, Germany, Italy, Netherlands, Korea and Sweden – the authors conclude that the reporting of tax expenditures is “detailed and comprehensive”.

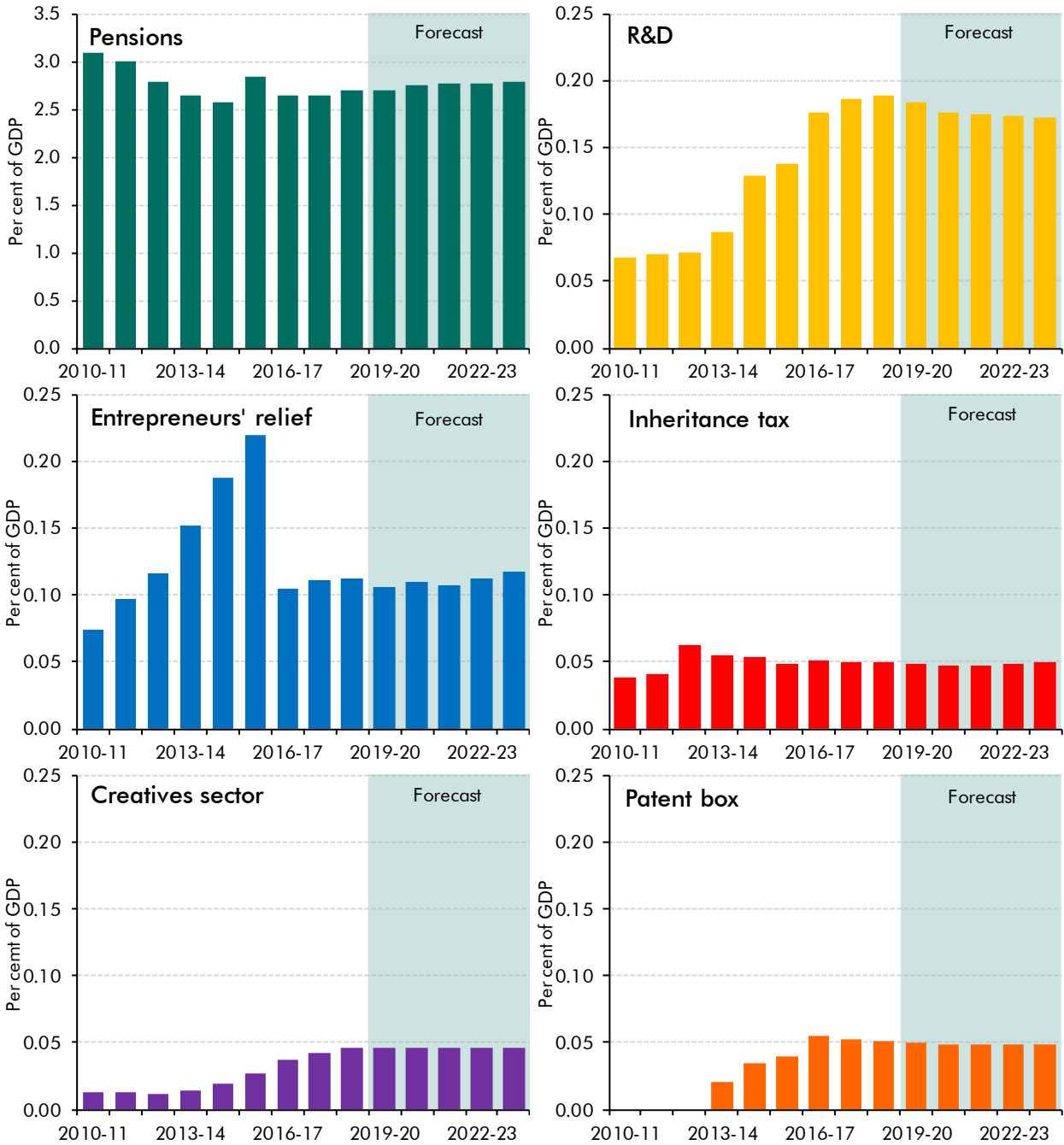
Tax reliefs and expenditures: six case studies

- 4.81 We have selected six reliefs that highlight some of the risks identified earlier: pensions tax relief, R&D tax credits, entrepreneurs’ relief, inheritance tax agricultural and business property reliefs, creative sector reliefs and the ‘patent box’. Comparing them, we note that:
- **The cost has grown in five of the examples**, as shown in Chart 4.17, but in most cases, the reasons behind that growth are not fully understood. This suggests a stronger role for monitoring to enable the Government to manage the fiscal risk more effectively.
 - Only **pensions tax relief has seen the cost decline**. Policy changes have reduced its generosity, helping to manage the narrow fiscal risk it poses. But this has been partially offset by introducing more generous tax treatment in the savings regime.
 - **The R&D tax credit scheme is the only one to have been evaluated** by HMRC,³⁰ though the evaluation does not cover the period after the scheme was made more generous. For the remaining case studies there is little evidence about whether policy objectives are being met. There is a risk that, for some, the cost is purely ‘deadweight’, in other words that it is offering a tax break for something that would have happened anyway.
 - Some represent areas where **the Government has chosen to tighten the rules** after evidence mounted that the reliefs in question were being abused.

²⁹ Redonda and Neubig, *Assessing tax expenditure reporting in G20 and OECD economies*, 2018.

³⁰ HMRC, *Evaluation of research and development tax credit*, 2015.

Chart 4.17: Tax expenditure cost estimates: six case studies



Note: Pensions reliefs are on a different scale.
Source: HMRC, OBR

4.82 Table 4.1 shows our latest forecasts for each of the six reliefs covered in this section.

Table 4.1: Tax expenditure cost forecasts: six case studies

	£ billion						
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Pensions	54.7	57.9	59.4	62.8	65.2	67.8	70.6
R&D	3.9	4.0	4.1	4.0	4.1	4.2	4.4
Entrepreneurs' relief	2.3	2.4	2.3	2.5	2.5	2.7	3.0
Inheritance tax	1.0	1.1	1.1	1.1	1.1	1.2	1.3
Creative sector	0.9	1.0	1.0	1.0	1.1	1.1	1.2
Patent box	1.1	1.1	1.1	1.1	1.1	1.2	1.2

Pensions tax relief

- 4.83** The Chancellor has previously described the cost of pensions tax relief as “eye-wateringly expensive”³¹ and “extraordinarily generous”.³² The gross amount of income tax and NICs relief on pension contributions was £54.7 billion in 2017-18 (£38.4 billion in income tax and £16.3 billion in NICs) or around 2.6 per cent of GDP.³³ The cost rose from 2.6 per cent of GDP in 2005-06 to a peak of 3.1 per cent in 2010-11, before declining to around its current level in 2013-14 and remaining relatively stable since (see Chart 4.17). The spike in 2015-16 is likely to reflect high-income individuals making additional contributions that year in anticipation of pre-announced policy changes to tax relief that would adversely affect them. Employer pension contributions are four times greater than those from employees, while contributions to occupational pension schemes are three times greater than those to personal pensions.
- 4.84** The relatively flat profile in recent years hides some opposing effects. The largest upward pressure has been from the introduction of automatic enrolment in 2012. Since then, an estimated 10 million workers have been automatically enrolled, contributing to a year-on-year increase in the number of individuals contributing to a pension and, where they have income tax liabilities, receiving tax relief. The rising employment rate will also have played a role, though this is tempered by relatively slow growth in average earnings.
- 4.85** The largest downward pressure comes from successive restrictions to the lifetime allowance and the annual allowance, plus the introduction of the annual allowance taper.³⁴ These restrictions have had a material impact. The latest statistics show that the value of pension contributions exceeding the annual allowance was £517 million in 2016-17, compared to £143 million the year before and just £6 million in 2010-11. The Government has recently signalled it will seek to introduce a ‘more flexible’ approach to the NHS pension scheme, to counter some of the difficulties the annual allowance taper has created for affected

³¹ Speech at the IMF Annual Meeting in Bali, 12 October 2018.

³² Evidence to the Treasury Select Committee, 24 April 2019.

³³ For our analysis we use gross income tax relief, that is before tax on payments from pension schemes is deducted. This is available in HMRC, *Personal pension statistics*, 2019. HMRC’s *Estimated costs of principal tax reliefs* only reports net income tax relief, i.e. after the tax has been deducted.

³⁴ The annual allowance sets how much an individual can contribute each year to pension pots before contributions can no longer be made out of pre-tax income. It was reduced from £255,000 in 2010-11 to £50,000 the following year, and then to £40,000 from 2014-15 onwards. The taper, which progressively reduces the annual allowance for income over £150,000 began in 2016-17. It stops at income of £210,000, by which point the annual allowance falls to £10,000. The lifetime allowance restricts the total amount of tax-relieved contributions that an individual can accumulate in their pension pots. It has progressively fallen from £1.8 million in 2011-12 to £1 million in 2017-18. It has been increased in line with CPI inflation since then.

employees. Breaching the lifetime allowance incurs a charge, and the amount collected from this has risen too, from £12 million in 2010-11 to £102 million in 2016-17.³⁵

- 4.86 A smaller downward effect comes from the rise in the number of self-employed individuals and a reduction in the proportion of them contributing to a pension scheme. In 2010-11, 16 per cent of them did, but this has since halved to 8 per cent in 2016-17.
- 4.87 It is also worth remembering that while the Government has been making the tax treatment of pensions contributions less generous for high earners, it has been making the tax treatment of savings more attractive. For example, the limit for the annual amount that can be saved in a tax-free individual savings account (ISA) has been increased from £7,200 in 2009-10 to £20,000 in 2017-18. During that time the cost of income tax relief on ISAs doubled, from £1.6 billion in 2009-10 to £2.9 billion in 2017-18.³⁶ The same high earners that are affected by the pensions restrictions are the ones most able to gain from the increased ISA limits.³⁷ The most recent statistics – for 2016-17 – show that 60 per cent of those ISA subscribers with incomes of £150,000 or more saved the maximum amount.³⁸
- 4.88 In 2015 the previous Chancellor signalled his intention to introduce major pensions reforms but in the event decided not to. Since then the Government has not signalled any plans to revisit them. It did state in *MFR* that “pensions tax relief encourages people to save for their future”, suggesting that the policy rationale would require at least some form of tax relief to be retained even if the system were reformed in future. Restricting tax relief on pension contributions further, perhaps combined with greater relief when pensions are drawn down in retirement, was one option mooted under the previous Chancellor. This might, of course, prove politically unpopular, with the costs for those affected being felt upfront while the benefits for post-tax retirement incomes would accrue some way in the future.³⁹

Research and development tax credit

- 4.89 The research and development (R&D) tax credit is a complex set of directly payable and reduced liability corporation tax credits designed to incentivise expenditure on innovation activities. R&D tax credits are a long-running programme whose structure has changed several times, but whose overarching characteristics have remained broadly constant: the scheme allows companies to deduct their expenditure on R&D-related activities for taxable income purposes, and gives a more generous incentive for smaller companies. In April 2013 ‘research and development expenditure credits’ were introduced (RDEC, also known as ‘above-the-line’ credits). This scheme is more generous scheme for large companies than the R&D tax credits that had previously been available to them.

³⁵ All data from HMRC, *Personal pension statistics*, 2019.

³⁶ HMRC, *Estimated costs of principal tax reliefs*, 2019 (and previous editions).

³⁷ Other generous savings measures include the savings allowance, the help-to-buy ISA and the lifetime ISA. See OBR, *Private pensions and savings: the long-term effect of recent policy measures*, 2016.

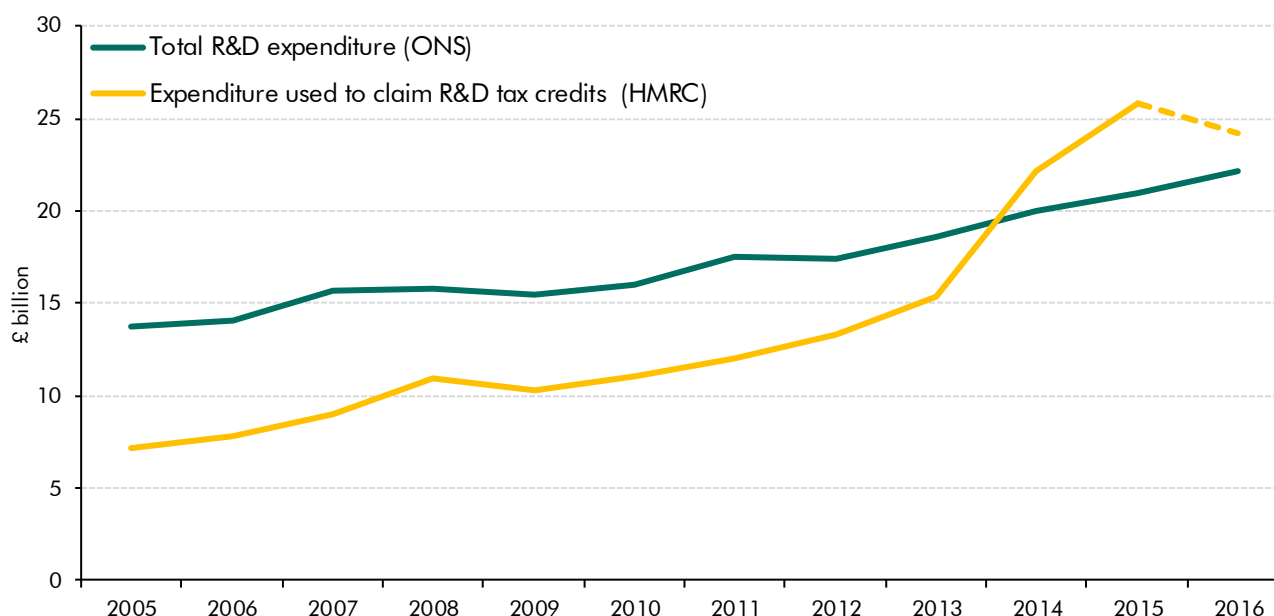
³⁸ This was £15,240 at the time (HMRC, *Individual savings accounts statistics*, 2019).

³⁹ See HM Treasury, *Strengthening the incentive to save: a consultation on pensions tax relief*, 2015. For a discussion, see Institute for Fiscal Studies, *Green Budget*, 2014.

4.90 The combined cost of the schemes has increased significantly, from £0.5 billion in 2003-04 to £1.6 billion in 2013-14 (the first year of the RDEC scheme) and to £3.5 billion in 2016-17. Part of the reason for the most recent jump is HMRC revising its outturn data from 2014-15 onwards, to account for claims that had previously been missed in its analysis. It is possible that years prior to 2014-15 will also be revised eventually, but this does not detract from the sharp rise in the cost of these schemes in recent years. An increase in take-up, through greater awareness and the introduction of more generous schemes, is the most likely explanation. But in the absence of any firm information to help us determine whether this rise represents a step change in the level or a trend that will persist, we have assumed a more modest pace of growth in our forecast – rising to £4.4 billion by 2023-24.

4.91 Chart 4.18 shows total R&D expenditure, as reported by the ONS, and the total expenditure used to claim R&D tax credits, as recorded by HMRC. Methodological differences mean the two are not directly comparable,⁴⁰ but it does demonstrate that the expenditure used to claim R&D tax credits has been increasing at a faster rate. Even with the methodological caveats borne in mind, the fact that the HMRC measure exceeds the ONS one by such a significant amount seems worthy of further investigation. That it moves from below to above the ONS estimate in 2014 seems more likely to relate to the revisions that HMRC has only taken back to 2014-15 rather than to the introduction of the more generous RDEC scheme for larger firms, but a role for the latter cannot be ruled out.

Chart 4.18: Expenditure in R&D tax credit claims versus total R&D expenditure



Note: Reflects Figure 9 of HMRC's *Research and Development Tax Credits Statistics* publication. 2016-17 reflects partial data and is expected to increase as more returns are received by HMRC.

Source: HMRC, ONS

⁴⁰ One difference is that overseas expenditure is not included in the ONS measure but may qualify for tax relief.

4.92 Evidence shows that schemes like R&D tax credits can be effective in generating additional R&D, and can do so cost effectively.⁴¹ But as with any tax relief, as it becomes more generous and/or more complex, it increases incentives to re-badge existing expenditure as qualifying R&D or to engage in fraudulent claims. An example of an attempt to control the latter is the reintroduction of a PAYE cap on the amount of payable R&D tax credit than can be claimed by a company under the smaller companies scheme. The cap was removed in 2012 but was brought back at Budget 2018 “to help prevent abuse”.

Entrepreneurs’ relief

4.93 Entrepreneurs’ relief allows directors of companies with significant stakes in them (as well as certain other taxpayers) to pay a lower tax rate of 10 per cent on disposals of shares below a certain threshold, rather than the much higher headline capital gains tax (CGT) rate. It was introduced by the Labour Government in 2008, at the same time as an 18 per cent flat rate of CGT. Initially the annual cost was expected to rise to £0.9 billion by 2013-14.⁴² In fact, it turned out to be three times that and continued rising to £4.2 billion (0.2 per cent of GDP) in 2015-16. This figure halved to £2.1 billion the following year, the most recent outturn. We forecast it to rise steadily from that level to reach £3.0 billion in 2023-24.

4.94 The sharp initial rise is most likely due to an increase in generosity. At the June 2010 Budget the Coalition Government increased the CGT rate for higher rate income tax payers to 28 per cent, significantly widening the differential to the unchanged 10 per cent entrepreneurs’ relief rate. Between the March 2010 Budget and Budget 2011, its generosity increased further as the lifetime limit on gains that can benefit from the lower rate was progressively raised, from £1 million to £5 million (at the June 2010 Budget) and then to £10 million.

4.95 The reason for the cost of entrepreneurs’ relief falling so suddenly in 2016-17 is not known. It might be related to a new 20 per cent CGT rate that applies to gains not from property or carried interest. The number of claimants dropped by around 20 per cent that year, and the gross gains on which entrepreneurs’ relief was claimed fell by 12 per cent. But it is not clear why these led to a 50 per cent drop in the overall cost of the relief. While CGT receipts can be volatile, HMRC offered little commentary on the drop when it released the latest estimate.

4.96 HMRC’s statistics show that the gains from this relief are increasingly concentrated on a small number of wealthier claimants. In 2016-17 there were 5,000 individuals making gains of greater than £1 million, and, in aggregate, they made up three quarters of the total gains for which entrepreneurs’ relief was claimed. The comparative figure in 2010-11 was around a half. These 5,000 claimants benefited by an average of £325,000 each.⁴³

4.97 Evidence also suggests that entrepreneurs’ relief plays very little role in entrepreneurial decision-making. A survey of those that benefited from it showed that, at the point of investment, only 8 per cent were influenced by it and 84 per cent were not even aware it

⁴¹ See: HMRC, *Evaluation of research and development tax credit*, 2015; Guceri and Lu, *Effectiveness of Fiscal Incentives for R&D: a quasi-experiment*, 2015; Dechezleprêtre et al, *Do tax incentives for research increase firm innovation? An RD Design for R&D*, 2015.

⁴² NAO, *Effective management of tax reliefs*, 2014.

⁴³ This calculation is based on assuming the taxpayer pays the 10 per cent entrepreneurs’ relief rate instead of the 20 per cent rate that applies to gains on everything other than property and carried interest.

existed. Even at the point of disposal, only 16 per cent said they had been influenced by the relief, with 27 per cent still blissfully unaware but no doubt pleased to receive the windfall.⁴⁴

- 4.98 Entrepreneurs' relief meets many characteristics of a relief that poses a fiscal risk. It has increased significantly in cost, and the reasons for the rise (and recent fall) are largely unknown, raising the possibility that the assumptions underpinning our forecast fail to factor in something that has affected its cost in the past. At Budget 2018 the Government brought in two new measures to tighten the rules around eligibility, and to address "*identified abuse*", suggesting this has also been a factor. It does not have a well-specified policy objective, other than making the UK "*a more attractive location for entrepreneurs*".

Inheritance tax: business and agricultural property reliefs

- 4.99 Estates that qualify for business property relief (BPR) can reduce the amount of chargeable inheritance tax (IHT) by either 50 or 100 per cent. It applies not only to a business, but also to certain company shares, and qualifying land and machinery. Agricultural property relief (APR) is available for qualifying agricultural land and properties.⁴⁵ The objective of these reliefs is to protect businesses and farms from being broken up as a means to pay an IHT liability. They are designed to enable estates to be passed down to the next generation following the death of the owner. (Although evidence suggests that family-owned firms being passed from one generation to the next tends to weigh on productivity growth.⁴⁶)
- 4.100 The cost of the two reliefs has increased from £0.6 billion in 2010-11 to an estimated £1.1 billion in 2018-19 (0.1 per cent of GDP and 20 per cent of IHT receipts). This is primarily due to BPR, the cost of which has more than doubled to £0.7 billion during that time. We expect these two reliefs to cost £1.3 billion by 2023-24, rising in line with IHT liabilities.
- 4.101 Part of the explanation for the rising cost of these reliefs is simply that IHT receipts have risen during this period. But it also seems likely to be a consequence of the increased awareness and popularity of these reliefs for tax planning purposes. Research from Savills identified that the proportion of agricultural land bought by farmers fell from 60 per cent in 2011 to 40 per cent in 2017, reflecting the increasing popularity of holding agricultural land for 'lifestyle' purchasers.⁴⁷ Estate agents actively promote APR as an investment opportunity and a tax-efficient means of sheltering wealth.⁴⁸ There is probably even greater risk around the use of BPR, where "*anyone can invest money in relevant AIM shares – with no personal relation whatsoever to those companies*".⁴⁹ Investment companies are actively marketing BPR as part of an estate planning strategy. Even the Government's own 'Money Advice Service' website has a page devoted to the 'Top 5 ways to cut your Inheritance Tax'.

⁴⁴ IFF Research, *Capital gains tax entrepreneurs' relief: behaviours and motivations, 2017*, as reported in Resolution Foundation, *Entrepreneurs' relief has cost £22 billion over the past 10 years. Was it worth it?*, 2018.

⁴⁵ A fuller definition is available on HMRC's website, as well as in Office of Tax Simplification, *Inheritance tax review – second report: simplifying the design of inheritance tax*, 2019.

⁴⁶ See, for example, Bloom and Van Reenen, *Measuring and Explaining Management Practices Across Firms and Countries*, 2006.

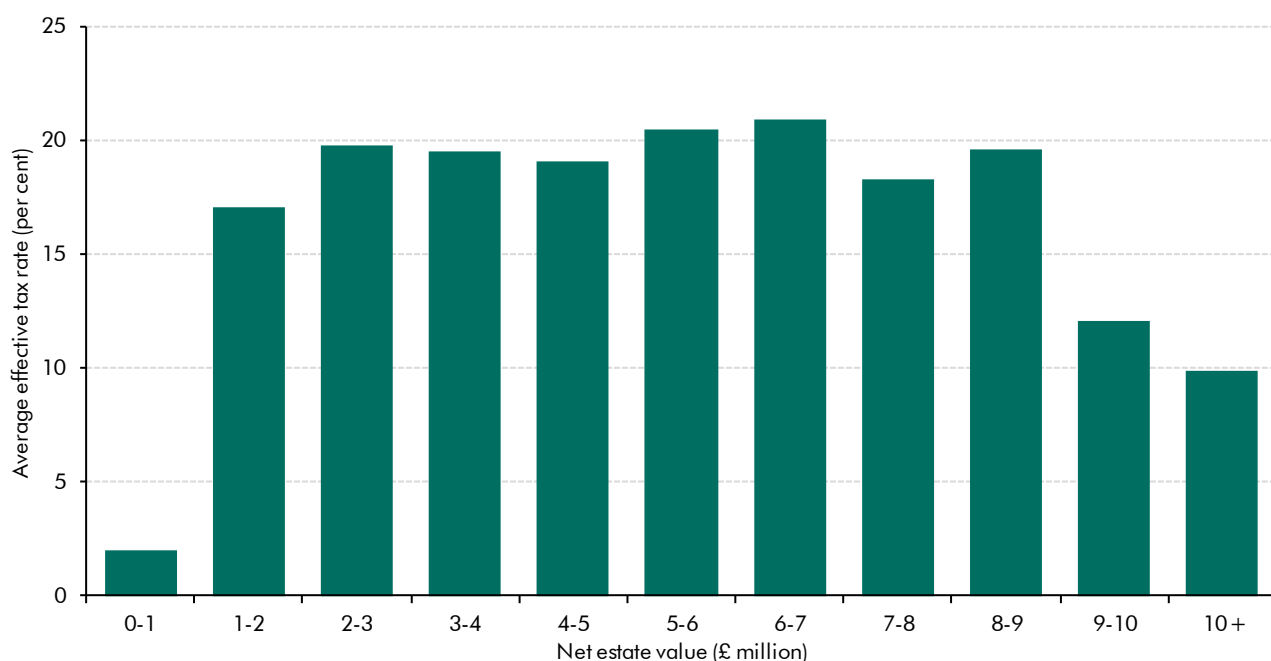
⁴⁷ Savills, *GB agricultural land*, 2018.

⁴⁸ Savills, *Global market tips*, February, 2016.

⁴⁹ Resolution Foundation, *Passing on: options for reforming inheritance taxation*, 2018.

4.102 Chart 4.19 shows the average effective tax rate paid by estates in 2015-16. It shows that the wealthiest estates can plan their affairs to reduce their liability. The use of APR and BPR will have played a part, though there are several other ways to manage IHT liability.⁵⁰ Data obtained by 'Tax Justice' provides some interesting insight to the value of these reliefs to the wealthy. It shows that over 70 per cent of the reliefs' combined cost in 2015-16 (£0.7 billion out of £0.9 billion) went to just 495 estates benefitting by £1.3 million each on average.⁵¹ Of course, the value of these reliefs to the wealthy is also simply a function of the high value of their estates and the fact that they are more likely to have business assets. They are also more likely to have the means to reduce their IHT liability via gifts and transfers to charities.

Chart 4.19: Inheritance tax average effective tax rate by net estate value



Source: Office of Tax Simplification

4.103 The Government has not formally evaluated whether the original policy objectives for APR and BPR are being met. But the current use of both seems far removed from those objectives, and this appears to have contributed to the rise in their cost.

4.104 In addition, the introduction of 'pensions flexibility' over defined contribution pension funds in 2015 might pose some future risks. This gives individuals the flexibility to withdraw their pension funds from age 55, subject to tax paid at their marginal rate. Prior to this, they needed to convert them into an annuity, that would then be subject to income tax. The pensions flexibility rules allow individuals to leave money in their pension pots (without annuitising it) and then bequeath any that remains to anyone without an IHT liability.⁵²

⁵⁰ See Office of Tax Simplification, *Inheritance tax review – first report: overview of the tax and dealing with administration*, 2019.

⁵¹ Tax Justice, *In stark relief*, 2019.

⁵² This is discussed in more detail in Institute for Fiscal Studies, *Green Budget*, 2018.

Creative sector reliefs

- 4.105 Creative sector tax reliefs provide eligible companies with a way to increase the amount they can deduct against corporation tax. This means that a company's taxable income is reduced by more than one pound for every pound spent on expenditure qualifying for relief. For loss-making companies there may be the possibility of benefiting from a payable tax credit. Relief is available for film production, 'high-end' television, animation production, video games, orchestral concerts, theatrical productions, children's television, and museum and galleries exhibitions. Films, television programmes, animations and video games must also pass a 'cultural test', and the Government has outsourced the certification of it to the British Film Institute. It has also decided that such a test is unnecessary for theatrical productions, orchestral concerts and exhibitions in museums and galleries.
- 4.106 Film tax reliefs were introduced in 2007 and the other creative reliefs have been introduced progressively since 2013-14. Their cost has risen significantly – from £0.2 billion in 2010-11 to an estimated £0.9 billion in 2017-18. This rise is mostly due to changes in film tax relief, unexpectedly high take-up and the introduction of new reliefs. We forecast the cost of creative reliefs to rise to £1.2 billion in 2023-24. Film tax relief alone accounts for over half of this – 10 years after its introduction, the cost has trebled.
- 4.107 While the popularity of these creative reliefs is clear, in the absence of a policy evaluation it remains unclear whether they meet their policy objectives. There are also examples where HMRC has successfully challenged some film schemes on the grounds that they were being used as tax avoidance vehicles, suggesting some of the rising cost might be from abuse.

Patent box

- 4.108 The 'patent box' rewards intellectual property (IP) that is commercialised in the UK by lowering the corporation tax (CT) rate on profits made from those patents. The original scheme was introduced in April 2013 and applied a 10 per cent CT rate to profits earned after that date. However, the full benefit of the reduced rate was phased in over four years, making it progressively more generous each year. The main rate of CT in 2013 was 20 per cent. It was cut to 19 per cent in 2017 and is set to fall to 17 per cent in 2020.
- 4.109 The stated policy objective for the patent box at the time of its introduction was to "provide an additional incentive for companies to retain and commercialise existing patents and to develop new innovative patented products" in the UK.⁵³ But the Government at the time also stated that it was "focusing on scientific and high-tech IP because of their particularly strong link to Research and Development (R&D) and technical innovation activities".⁵⁴ When it was announced in 2010 the IFS described it as "poorly targeted at research" and argued that it would "add complexity to the tax system and require policing to ensure that both income and costs are being appropriately assigned to patent".⁵⁵

⁵³ HMRC Tax information and impact note, *Corporation Tax Reform: Patent Box*, December 2011.

⁵⁴ HM Treasury, *Corporate Tax Reform: delivering a more competitive system*, November 2010.

⁵⁵ Institute for Fiscal Studies, *The UK will introduce a Patent Box, but to whose benefit?*, 2010.

- 4.110 In 2016, to comply with new OECD guidelines for tax-favoured IP regimes that were published in October 2015 as part of its Base Erosion and Profit Shifting (BEPS) project, the patent box was significantly amended. This ensured it was compliant with the OECD's new 'nexus approach', linking the benefit allowable to the proportion of relevant R&D expenditure by the company (or unconnected subcontractors) on the patents in question. But transitional arrangements allow those companies that entered the scheme before July 2016 to continue to benefit from the original rules until July 2021. The latest estimate is that the patent box cost £1.1 billion in 2018-19. We forecast it to rise to £1.2 billion in 2023-24.
- 4.111 HMRC statistics show that in 2016-17, the most recent year for which it has outturn data, 96 per cent of the relief claimed was from large companies. This, and the fact that UK-domiciled companies can, for now, continue to gain a UK tax relief even when conducting R&D overseas, suggests that some of the costs of the patent box might also be 'deadweight'. This is reinforced by the fact that the patent box applies to all IP, rather than just new IP, subject to a 'qualifying development' condition.⁵⁶

Conclusions

- 4.112 Managing the fiscal risks around tax reliefs and expenditures is an area where the Government's actions do not seem to match its ambition. While keen on simplifying the tax system, the Government has introduced around 100 new tax policy measures since our previous report, and it last asked the Office of Tax Simplification to review the topic in 2011. While the removal of some reliefs has been announced, such as the 'wear and tear allowance' for landlords and NICs relief for termination payments, others have been introduced, including the 'first-time buyers' relief from stamp duty land tax and 'public lavatories relief' from business rates. The Government has not signalled any plans to develop metrics that might allow it to measure its progress in simplifying the tax system.
- 4.113 The Government states that "HMRC in partnership with [the Treasury] continuously monitor tax reliefs" but, despite this, did not offer us any explanation for why, for example, the cost of R&D tax relief or entrepreneurs' relief has been rising or why the cost of entrepreneurs' relief apparently halved in a single year. More generally, few of the reliefs have been evaluated, either in terms of cost or of effectiveness in meeting stated objectives.
- 4.114 Following an NAO recommendation, HMRC is undertaking work to identify more reliefs and expenditures and this will be reflected in a more comprehensive list that it publishes and also the number of them for which it estimates an annual cost.
- 4.115 Overall, the IMF's 2016 recommendation that the Government "control tax expenditures by subjecting them to numerical limits and enhance reporting through the addition of a sectoral and functional breakdown in cost publications" appears to remain valid.⁵⁷

⁵⁶ The company making the claim must have either contributed to the creation of the patented invention or performed a significant activity in its development.

⁵⁷ IMF, *United Kingdom fiscal transparency evaluation*, 2016.

Taxation in a digitalised economy

Introduction

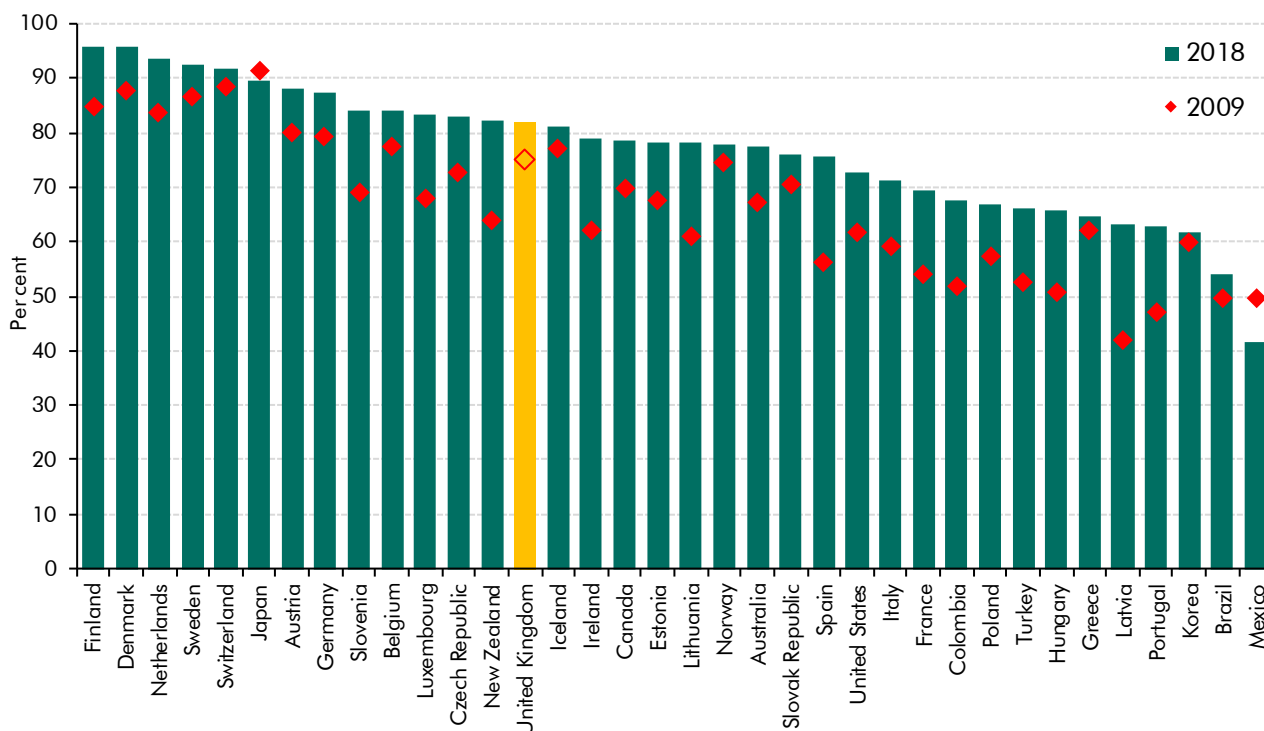
- 4.116 The technological innovations of recent years have had a dramatic impact on people's lives. Personal computing, the internet, smartphones and social media networks have transformed the way we interact, how and what we consume, and even how we work. A few taps on a screen and a product could be on its way to you from the other side of the world. The product is not physical but digital – perhaps an app developed by collaborators in Mumbai and Berlin. You downloaded the app from the 'Xiaomi Market' app store, based in China, though it is built on Android, which is open-source software, though it is also owned by Google. And you have 'purchased' it for free, as have most of your friends and thousands of others. Despite that, everyone involved seems to be making money, and it may be not immediately obvious what, if anything, is taxable and which country has the right to tax it.
- 4.117 This stylised example highlights some of the tax challenges posed by a digitalised economy, where the sheer speed of change has led to concerns that traditional tax systems are lagging behind. In this section we explore some of those challenges but also some of the opportunities digitalisation offers, particularly for improved administration of the system.

The digitalised economy

- 4.118 If we take a wide definition of the digitalised economy – all activities that make use of digital information and data, and all activities with an online presence – then the digitalised economy is largely indistinguishable from the whole economy. Chart 4.20 shows the percentage of businesses within OECD countries that had a website in 2018 versus 2009.⁵⁸ It shows that not only did the percentage increase in almost all countries, but also that in most countries the majority of businesses have an online presence – indeed, the proportion is above 80 per cent in 15 countries, including in the UK.

⁵⁸ Businesses are defined as those with ten or more employees.

Chart 4.20: The proportion of businesses with a website



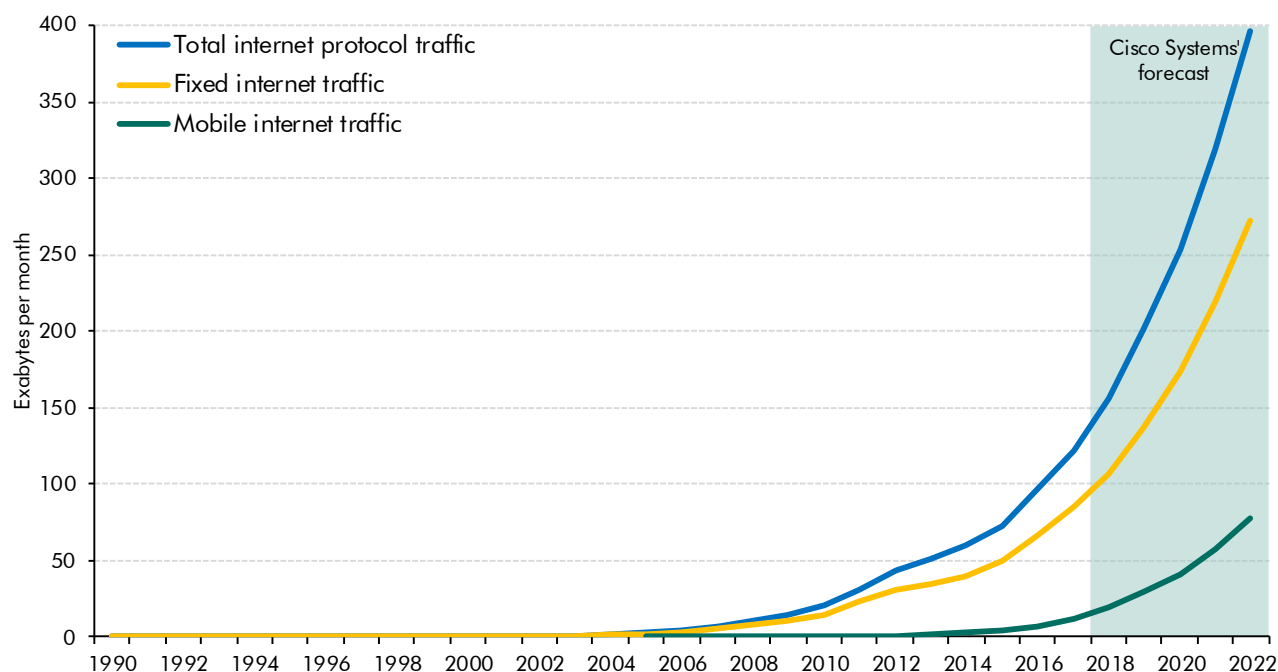
Note: For the '2009' series: Canada and United States = 2007; Iceland = 2010; Mexico and New Zealand = 2008.
 For the '2018' series: Australia, Brazil, Canada, Japan and Korea = 2017; Colombia and Netherlands = 2016; Mexico and United States = 2012; Switzerland = 2011.
 Source: OECD

4.119 Another way of looking at the growth in the digitalised economy is to look at global internet traffic since the launch of the world wide web in the early 1990s, which, as Chart 4.21 shows, has been rising at an exponential rate in recent years. While the first commercial browser – the Netscape Navigator – was launched in October 1994, and music downloads became popular in the late 1990s, it was not until the mid-2000s, including the births of YouTube and Facebook, that traffic really took off. Cisco Systems expect this to continue, forecasting a tripling in traffic over the next five years. The rate of growth is even faster for mobile internet traffic. The use of mobile devices to access the internet only became popular in the late 2000s, not least due to the launch of the first iPhone in 2007.

4.120 The ONS estimates that nine out of ten homes in the UK in 2018 had internet access, versus just one in ten 20 years ago, and that 86 per cent of adults were online daily in 2018, up from 35 per cent 12 years earlier, with smartphones overwhelmingly the device of choice.⁵⁹

⁵⁹ ONS, *Internet access – households and individuals*, 2018.

Chart 4.21: Growth in global internet traffic



Source: Cisco Systems

Why does digitalisation pose a fiscal risk?

- 4.121** Much of the economic activity that takes place within a digitalised economy seems at odds with the traditional tax system. Transactions may be global, rather than domestic; goods may be digital rather than physical; services may be provided remotely rather than locally. New business models have led to changes in what is consumed, for example internet searches or social media interactions, and how these are priced, often free at the point of purchase. Instead, those searches and interactions have been monetised by search engines and social media networks being able to sell customer information to businesses that value the power of targeted advertising.
- 4.122** Value creation is still a function of underlying economic inputs and activities, but it is much harder to know in which tax jurisdiction the value was created and therefore which government has the right to tax it. The 'Bean Review' of UK economic statistics sums up the difficulty of measuring activity in the digitalised economy: *"The nature of digital products has led to business models where it is harder for the statistician to observe both transactions and a corresponding price. The great challenge for economic measurement stems from the fact that the consumption of digital products often does not involve a monetary transaction that corresponds to its value to consumers. Digital products delivered at a zero price, for instance, are entirely excluded from GDP, in accordance with the internationally-agreed statistical standards."*⁶⁰ These challenges are equally important to tax administration and compliance.
- 4.123** The all-encompassing nature of digitalisation means that its effects will be felt to some extent across the entire tax system. In this section we focus on a relatively small number of examples that can be grouped under two broad categories:

⁶⁰ Bean, *Independent review of UK economic statistics*, 2016.

- **The challenges for tax policy design.** The OECD's base erosion and profit shifting (BEPS) project identifies issues around **taxing multinational profits** that threaten the traditional corporation tax base. Digitalisation exacerbates these issues by making it easier for companies to be international, and by enabling new business models that make it harder to define the connection between company and tax jurisdiction and to determine if there is a taxable presence. The growth of **online retailing** is largely at the expense of 'bricks and mortar' retailing. Online transactions might be less readily observable to HMRC, particularly where the seller is based abroad. The primary risk then is to the VAT base, but there are also consequences for business rates and, post-Brexit, to customs duties. We discussed the trend towards self-employment and its associated revenue risks earlier in this chapter. This growth has been aided by the popularity of online **peer-to-peer platforms** and the new ways of working they allow. The main risk arises from the loss of income tax and National Insurance contributions.
- **The opportunities for tax administration.** HMRC's "*ambition is to become one of the most digitally advanced tax administrations in the world*".⁶¹ While this is partly driven by the objective to improve the 'customer experience', it also reflects that digitalisation has led to the creation of a wealth of new data and information that might be used to improve tax compliance and reduce tax gaps. Many of the 'behaviours' that HMRC identifies in constructing its tax gap estimates are facilitated by an information constraint. Most obviously, tax evasion related to criminal activity and the 'hidden economy' is not easily observed. But tax avoidance, whether through contrived arrangements or differences in legal interpretation, often builds upon asymmetric information too. This is borne out by the results of HMRC's audits, which tend to increase rather than lower the amount of tax due.⁶² Better information for the taxpayer might also reduce errors and 'failure to take reasonable care'. Again, the evidence suggests correcting these increases tax revenue on average. Harnessing the opportunities that digitalisation presents can help relax information constraints.

4.124 One hypothesis that flows from the debate about digitalisation and the measurement of GDP is that current measurement is not fully capturing the positive effects of digitalisation and its innovations, for example because some products have a zero price. So real GDP per head might be higher, and growing faster, than prevailing GDP estimates suggest. From a tax revenue perspective, this does not necessarily mean that receipts are also being underreported. If some of the unmeasured benefit from these innovations is already being realised, perhaps in higher productivity, then it is likely that some positive impacts on tax revenues are already being captured in the taxes that are being paid. If it were captured in nominal GDP data too, effective tax rates would be lower than we currently believe. If the issue is that estimates of nominal GDP are overstating prices and understating real GDP, this would tell us something about living standards (the volume of goods and services being enjoyed is higher than measured) but not about taxes (where only nominal GDP matters).

⁶¹ HMRC, *Overview of making tax digital*, 2019.

⁶² Advani, Elming and Shaw, *The dynamic effects of tax audits*, 2019.

4.125 More fundamentally, there are some that believe the age of *transformative* technological innovation has drawn to a close.⁶³ Others take a more optimistic view, seeing the recent phase of digital technologies as a prelude to a new era of economic prosperity. Their argument is that “*the transformations brought about by digital technology will be profoundly beneficial ones*” but that there is always a lag between major innovations and when their full economic benefits are realised.⁶⁴ If the optimistic view proves correct, and the benefits of innovations in artificial intelligence, 3D printing and unmanned aerial vehicles, etc, generate longer-term increases in GDP, then that would support tax receipts. But typically, such effects build slowly, and governments are adept at finding ways to spend the proceeds.

Tax policy design

Taxation of multinational profits

4.126 Debating how to tax the profits of multinational companies that operate across international tax jurisdictions is not new. Agreements allocating taxing rights between a ‘source’ and ‘residence’ country to avoid ‘double taxation’⁶⁵ have existed since the 19th century,⁶⁶ and model tax treaties were first developed by the League of Nations in the 1920s.

4.127 Many treaties follow the principle that profits are subject to tax in a country only once the company generating them meets the definition of a ‘permanent establishment’. Only then can it properly be “*regarded as participating in the economic life of that other State to such an extent that the other State should have taxing rights on its profits*”.⁶⁷ Defining what constitutes a permanent establishment can be complex, for example in respect of a ‘fixed’ place of business through which the company’s business operations are conducted.

4.128 International tax rules generally state that countries are entitled to tax those profits that are attributed to activities undertaken through the permanent establishment. However, determining the correct level of those profits may not be straightforward, partly because transactions within a multinational company – for example the transfer of royalty and interest income between establishments in different countries – also need accounting for. There are further complex rules, such as those around ‘transfer pricing’, that try to ensure that these internal transactions are based on an ‘arm’s length principle’ – i.e. what the price of that transaction would be on the open market rather than between related parties.

4.129 Recent years have seen an increasing focus on the strategies that multinational companies use to minimise their global tax liabilities, facilitated by international tax rules that permit them to shift profits away from countries with higher corporate tax rates, even when the underlying economic activity and the ‘value creation’ took place in those countries.

⁶³ Gordon, *The rise and fall of American growth: the US standard of living since the civil war*, 2016.

⁶⁴ Brynjolfsson and McAfee, *The second machine age: work, progress and technology in a time of brilliant technologies*, 2014.

⁶⁵ ‘Source’ refers to where the income is generated and ‘residence’ to the place individuals or businesses are domiciled. Double taxation occurs if the same income is taxed in both jurisdictions.

⁶⁶ Jogarajan, *Prelude to the international tax treaty network: 1815-1914 early tax treaties and the conditions for action*, Oxford Journal of Legal Studies, 2011.

⁶⁷ From OECD Commentaries, as reproduced in OECD, *Addressing the Tax Challenges of the Digital Economy*, 2015.

- 4.130 These concerns led the OECD to develop its *Action plan on base erosion and profit shifting* (BEPS).⁶⁸ This initiative seeks to counter tax avoidance by multinational companies through fostering inter-governmental cooperation. Its ambition was to reform the international tax system so that the reporting of profits is more closely aligned with the location of the underlying economic activity and value creation. BEPS was launched in 2013, since when the UK Government has announced several policy measures in this area, including the diverted profits tax, changes to the taxation of royalties, rules around hybrid mismatches and restrictions in the amount of interest that can be relieved against corporation tax.
- 4.131 The Government also agreed to implement the OECD's recommendation that multinational companies file a new annual return, providing HMRC and other tax authorities with country-by-country reporting. The purpose of these returns is to increase the visibility of disaggregated, country-level financial results, including profits.
- 4.132 Digitalisation does not significantly change the nature of these issues, but it does make them more acute. It makes operating internationally easier – for example, by holding shares in a foreign company or setting up a subsidiary. It means that even small businesses can reach consumers across the globe and can do so without a physical presence in the consumer's country. Digitalisation also facilitates increasingly complex supply chains and enables them to be managed from multiple locations.
- 4.133 Digitalisation is related to, but not limited to, the digital sector. Despite this, there is an increasing focus on the rapid growth of large technology companies and the additional challenge this presents to taxing corporate profits. The OECD has concluded that *“digitalisation presents no unique BEPS issues but that some business models can exacerbate BEPS concerns”*.⁶⁹ Similarly, the Government has stated that the principle of taxing profits in the country in which the value is generated is *“being challenged by business models for which value creation is in part reliant on the engagement and participation of users”*.⁷⁰
- 4.134 Digitalised companies have been able to generate value from business models that did not previously exist. The OECD has identified three factors that are frequently observed:
- **‘Cross-jurisdictional scale without mass’** – digitalisation allows businesses to operate more easily across national boundaries, allowing them to locate production processes across different countries and tap into a global consumer base. And they can do so without a permanent establishment, and in some cases without even a legal presence.
 - **Importance of intangible assets** – digitalised businesses are characterised by high investment in intangible assets and a heavy reliance on intellectual property, such as software and algorithms. As discussed above, intra-company transactions involving such assets make it harder to determine the correct level of profits to be taxed.
 - **Value created by user participation** – a social media network is a good example of a business model where user participation and user generated content synergises with data and network effects to create value.

⁶⁸ OECD, *Action plan on base erosion and profit shifting*, 2013.

⁶⁹ OECD, *Tax challenges arising from digitalisation – interim report*, 2018.

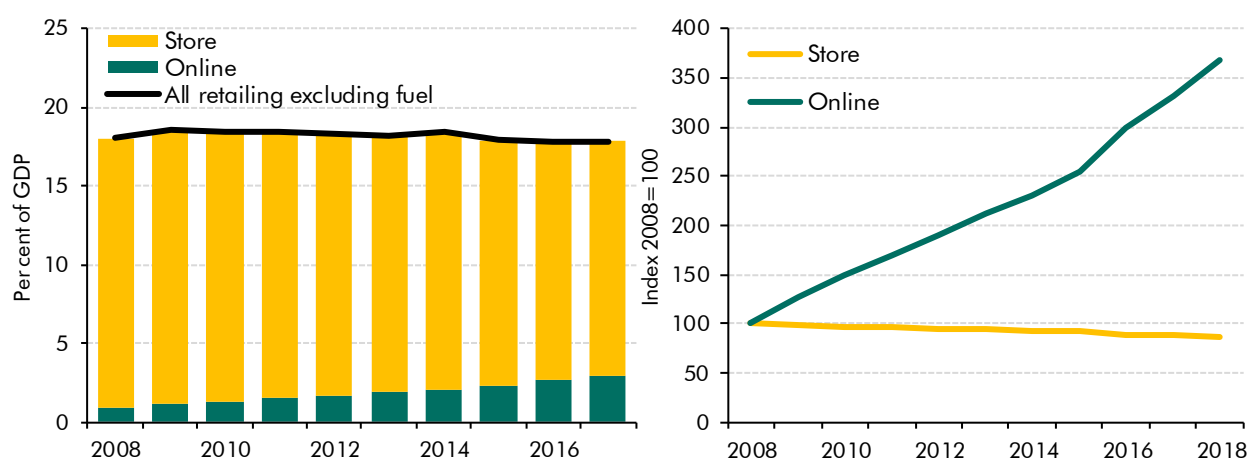
⁷⁰ HM Treasury, *Corporation tax and the digital economy: position paper update*, 2018.

- 4.135 At Budget 2018 the Government announced a new tax on the revenues of large businesses in the digitalised sector that derive value from a UK user base. The ‘digital services tax’ will apply regardless of whether a business has a taxable UK presence. It will affect social media platforms, search engines and online marketplaces. Rather than defining value or how it is derived, it will levy a 2 per cent tax on revenues generated by specific business models and activities that the Government has deemed to meet its definition and to relate to UK users. A consultation on the detailed design of the tax and its implementation closed in February and draft legislation was published in July. The tax is due to take effect from April 2020.
- 4.136 The Government considers the digital services tax to be an interim measure and that the “ultimate objective is to address the challenges... through reform of the international corporate tax framework”. It is “optimistic that progress can be made on multilateral reform” and is committed to working in forums such as the OECD and G20, and with the EU.⁷¹

Online retailing

- 4.137 Chart 4.22 shows that while the value of online retail spending remains small relative to the total, it is increasing its share year-on-year. In 2018, the ONS estimates that internet sales made up 18 per cent of total sales by value, compared to just 5 per cent in 2008.

Chart 4.22: Retail spending, store-only versus online-only sales



Source: ONS, OBR

- 4.138 The growth in online retailing is at the expense of traditional ‘bricks and mortar’ business, and the fiscal risk this creates is around the erosion of the tax bases for business rates and VAT. The issue for business rates is straightforward – competition from online retailers, with lower fixed costs, puts traditional businesses at a competitive disadvantage. Even when an online retailer is operating at large scale, they can do so via huge fulfilment centres in areas where business rates are low. The risks for VAT largely centre around compliance, and the risk that the tax system is struggling to keep pace with the changing nature of the economy.

⁷¹ HM Treasury, *Digital services tax: consultation*, 2018.

4.139 For domestic traders the compliance issues are those we discussed earlier in this chapter around the relatively higher ‘tax gaps’ for small businesses. For overseas traders two examples highlight the types of issues involved:

- In the 1990s and 2000s UK-based online retailers were selling CDs, DVDs and other goods VAT-free via the Channel Islands. This was perfectly legal and took advantage of ‘**low value consignment relief**’ (LVCR), which allows VAT-free transit of imports with a value not exceeding £15 within EU countries. The rationale is that the administrative costs of collecting relatively low amounts of VAT make it inefficient to do so. At Budget 2011 the threshold was reduced from £18 to £15 and Autumn Statement 2011 then withdrew LVCR from the Channel Islands. These changes were expected to generate additional yield of £115 million a year by 2015-16. LVCR still provides an incentive for domestic businesses selling such goods to reroute them via an offshore location, something that digitalisation facilitates. It also creates an incentive to evade VAT by falsely claiming LVCR. It is reasonable to think significant numbers of parcels that should not qualify for LVCR could pass through undetected.
- In 2018 the European Commission launched a legal challenge against the UK to recover what it claims is around €2.7 billion of **uncollected customs duties**. This followed an anti-fraud investigation that uncovered significant undervaluation of the value of imports from China, dating back to 2007. The charge is that the UK failed “to take appropriate risk control measures... [and]... failed to prevent the fraud”.⁷²

4.140 Neither example is related purely to digitalisation, but the growth of online retailing and the ability to transact seamlessly with businesses located overseas is likely to increase the risk.

4.141 VAT compliance will also be affected by the outcome of the Brexit negotiations, where agreements have yet to be reached. Post-Brexit, a UK consumer making a purchase in an EU country might be entitled to a VAT refund from that country. And the Government has said it will not charge VAT on such a purchase where it is for ‘personal use’.⁷³ It may or may not be liable to customs duties, depending on what trade arrangements are agreed.

4.142 Exiting the EU also raises questions around VAT administration. The current system has been built on a system of EU-wide cooperation and information sharing. It is not clear what the level of post-Brexit cooperation and information sharing will be. For example, the VAT ‘mini one stop shop’ is an EU-wide system used by traders to report and pay VAT from sales of digital services to consumers in the EU.⁷⁴ Also, while LVCR will no longer apply, the rationale around the cost effectiveness of compliance activity in such cases will remain.

4.143 The Government has introduced measures to mitigate some of these risks. The Autumn Budget 2017 measure ‘online VAT fraud: extend powers to combat’ makes online

⁷² European Commission press release, *EU Budget: Commission takes further action to ensure the United Kingdom makes customs duties fallen due*, available to the EU budget, 24 September 2018.

⁷³ HM Treasury, *Customs bill White Paper*, 2017.

⁷⁴ The EU has recently announced measures to extend the ‘mini one stop shop’, turning it into a ‘one stop shop’, including bringing goods as well as services within its scope.

marketplaces ‘jointly and severally liable’ for unpaid VAT from sales on their platforms from both UK and overseas sellers. We noted the very high uncertainty around this costing – a similar measure in Budget 2016 had significantly less impact than first expected. ‘Making tax digital’ is expected to improve compliance among smaller retailers. The digital services tax is not targeted at compliance but it will generate some yield from online marketplaces.

Online peer-to-peer platforms

- 4.144 Digitalisation has facilitated new business models, such as online peer-to-peer platforms, that virtually connect individuals looking to trade goods and services. A mobile internet application, for example, can match buyers and sellers, provide a rapid and near costless payment mechanism, and reduce information asymmetries by providing reputational and feedback mechanisms. Activities range from full-time contract working, the supply of irregular or casual labour and small or ‘home’ business transactions. Some of these activities or transactions might be on a short-term, rental or payment-by-task basis.
- 4.145 Online platforms have contributed to the growth in the so-called ‘gig’ or ‘sharing’ economy – the terms often being used interchangeably. This has been a contributing factor to the trends towards self-employment and working via a company structure that we discussed earlier in this chapter. Digitalisation also facilitates wider labour market changes by making remote-working easier, for example through improvements in communication technologies.
- 4.146 Online platforms do not change the nature of the associated tax risks, but do promote ways of working that pose a bigger fiscal risk. Both self-employment and incorporation generate less tax per pound of earnings than working as an employee (as we showed in Chart 4.6). And as was also discussed earlier, the ‘tax gap’ for self-assessed income tax and small companies’ corporation tax is proportionally much greater than that for PAYE income tax.
- 4.147 There is no official estimate of the number of people providing work via an online platform, but recent survey-based research commissioned by the TUC suggests that almost 10 per cent of the adult population have worked via an online platform at least once a week.⁷⁵ Platform working is centred around courier services, task-specific work, transport services and food delivery, and is disproportionately carried out by those aged under 35.⁷⁶
- 4.148 Peer-to-peer platforms also allow individuals to generate income from a range of other activities, including accommodation services, professional services, financial services and online sales. These earnings too will be self-assessed for income tax or corporation tax purposes and therefore subject to the same compliance risks.
- 4.149 The Government’s main policy response has been measures around disguised employment (‘off-payroll reform’, commonly referred to as ‘IR35’⁷⁷), which are expected to reduce the capacity to incorporate for tax-motivated reasons, (though the effects are highly uncertain, as we noted when certifying the costing). The rules around joint and several liability for

⁷⁵ University of Hertfordshire, *Platform work in the UK 2016-2019*, 2019.

⁷⁶ Department for Business, Energy & Industrial Strategy, *The characteristics of those in the gig economy*, 2018.

⁷⁷ IR35 is actually the original legislation around off-payroll working from 2000.

online marketplaces, while aimed at VAT, might also have an impact if they provide HMRC with better information on activities carried out via online marketplaces. Obtaining the digital records held by platforms is a potential compliance benefit that we discuss below. 'Making tax digital', again aimed at VAT, but also available for income tax on a voluntary basis, is a further source of potential upside risk.

- 4.150 Any Government policy response to the 'Taylor Review' of modern working practices might also have an effect, though it is worth recalling that tax definitions and employment rights definitions are not the same thing. Any measures attempting to align them might achieve the desired simplification, but could also create additional risks to tax revenue if they were to create new boundaries in the tax system that could be exploited or legal definitions to test.

Tax administration

- 4.151 The issues discussed in respect of tax policy also represent some of the challenges that digitalisation poses for tax administration and compliance – establishing international taxing rights; observing taxable activity online; and the trend toward small owner-manager businesses and the self-employed, both of which are typically less compliant.
- 4.152 But digitalisation also offers opportunities to enhance tax administration and compliance by providing HMRC with better and more timely information and data. It can help close the information gaps that facilitate tax avoidance and evasion. It could also reduce the number of taxpayers that HMRC estimates fail to 'take reasonable care' in their tax returns, or those that commit 'errors' when doing so. Together these two categories account for almost 30 per cent of HMRC's estimate of the overall tax gap.⁷⁸ Better information and data can also enable HMRC to target its compliance interventions more effectively.
- 4.153 In *Managing fiscal risks*, the Government states it "will ensure the tax system keeps pace with the rise of digital technologies and harnesses innovation to improve the administration of the tax system". This had already been set out in HMRC's 2014 'Digital strategy', including ambitions to "promote digital take-up and voluntary compliance", "use data to help customers avoid errors through pre-population", "using better data to make... intervention decisions" and "intelligence-led responses, supported by better data and risk analysis".⁷⁹ In the remainder of this section we consider a few of the ways that digitalisation can help fill information gaps and the positive fiscal risks that could flow from doing so.
- 4.154 Few of the risks we discuss can readily be quantified, but to put them in context HMRC's latest estimate of the tax gap is £35 billion, representing 5.6 per cent of all taxes due. So, reducing the tax gap by one percentage point would be worth around £6 billion a year.

Interacting digitally with taxpayers

- 4.155 HMRC states that well over 90 per cent of self-assessment returns are now completed online. Its 'personal tax account' has been accessed by 15 million taxpayers since its launch

⁷⁸ HM Revenue and Customs, *Measuring tax gaps*, 2019.

⁷⁹ HM Revenue and Customs, *HMRC digital strategy: 2014*, November 2014.

in 2015, and its ‘business tax account’ – also launched in 2015 – by over 3 million businesses.⁸⁰ While neither is mandatory, and the functions available are relatively basic, it is not inconceivable that they might be expanded or that the lessons learned from their introductions might be used to improve HMRC’s future digital offering. This might include broadening the coverage, improving guidance and engagement, or pre-populating additional fields in tax returns. The use of artificial intelligence might allow taxpayers to interact more productively with HMRC, and in doing so improve the understanding of their tax affairs. It may also help HMRC learn more about taxpayers and allow for more effective use of behavioural interventions – ‘nudges’ – to improve tax compliance.

- 4.156 The April 2019 launch of ‘making tax digital’, HMRC’s initiative to use software to interact with taxpayers, initially for VAT but available on a voluntary basis for income tax, is a more ambitious and fundamental change. It will require affected businesses to keep digital records and, for most, to use compatible software to send completed tax returns to HMRC. In our central forecast, we assume the use of software will reduce record-keeping errors and will therefore generate additional revenues rising to £300 million a year by 2023-24.
- 4.157 The process of reaping the tax-administration benefits of digitalisation may not, of course, be entirely without hiccups. New digital systems need designing and testing, and this might be challenging and time-consuming. We have previously reported on several HMRC digital initiatives that, after initial enthusiasm, have been delayed or scrapped.⁸¹ Even when a programme begins as scheduled, such as the collection of ‘real-time information’ (RTI) from the PAYE income tax system in April 2014, the payoffs can take a long time to be realised. For example, HMRC did not begin to publish RTI statistics until 2018, and still deems them to be ‘experimental’ and in a ‘development phase’.⁸² To date, RTI helps inform some of the judgements in our income tax forecast but is not yet a fundamental building block.

Use of third-party data

- 4.158 HMRC already collects vast amounts of information from third parties such as employers and financial institutions. This is used to improve the accuracy of tax liability calculations, to guide compliance activity and to pre-populate digital tax returns. Pre-population removes some of the burden from taxpayers by requiring them simply to verify information rather than sourcing and validating it themselves. This should improve compliance. Digitalisation has generated a raft of additional data that might be used to improve tax administration and compliance. From our earlier discussion, examples include sales data held by online marketplaces and the income generated by users of platforms in the sharing economy. HMRC already has significant powers for ‘bulk-data gathering’, but these do not yet apply to non-UK platforms. The Government has said that it “*will continue to explore opportunities for technological solutions for users to share their own data directly with HMRC*”.⁸³

⁸⁰ HMRC, *Annual report and accounts 2017-18*.

⁸¹ Examples include the ‘digital disclosure service’, plans to put inheritance tax online for customers and agents, and allowing all charities to register jointly with HMRC and the Charity Commission, as reported in our November 2017 *Economic and fiscal outlook*.

⁸² HMRC, *Earnings and employment statistics from Pay As You Earn Real Time Information: experimental statistics, 2019*.

⁸³ HMRC, *The role of online platforms in ensuring tax compliance by their users: summary of responses, 2018*.

Cashless transactions

- 4.159 In 2008, cash payments made up 60 per cent of all transactions. By 2018, they were just 28 per cent.⁸⁴ In its place, the number of payments by debit and credit cards has grown rapidly, driven jointly by the popularity of contactless payment and online shopping. Online banking and the use of faster payments has also grown considerably in recent years. Cash transactions can hinder tax compliance by contributing to less accurate record-keeping and the under- and non-reporting of income.⁸⁵ Digital payments should leave a more prominent audit trail that enables better record-keeping and reduces the incentive for evasion.
- 4.160 HMRC already has the power to access data on debit and credit card transactions, from electronic payment providers and from ‘business intermediaries’, so the growth of digital payment mechanisms, and the audit trail they leave, could improve compliance. However, there are caveats: first, there will continue to be some regular cash users, disproportionately represented by those on lower incomes and the elderly; and second, those determined to avoid or evade tax will find other ways to do so, even when using electronic payment – for example by suppressing the recording of electronic transactions.⁸⁶

Cryptoassets

- 4.161 It has been suggested that cryptoassets, alternatively known as cryptocurrencies or virtual currencies, could be a boon to tax administration.⁸⁷ They combine elements of a new payment system with a private currency, one that is not currently supported by the Bank of England. While the use of cryptocurrencies remains largely outside the mainstream, it is the underlying technology that is of potential benefit to tax authorities. Distributed ledger technology (often referred to as ‘blockchain’) is essentially a database that records and verifies all transactions made using the cryptoasset. In theory then, this might solve the information constraint faced by taxpayers and tax authorities, providing a complete historical record of all transactions and transacting parties. In practice, the Government is still developing its thinking in this area, so we are probably quite some way from any tax benefits being realised.⁸⁸ For now, there is as much interest in how to tax the gains from assets like bitcoin as there is in harnessing the underlying technology.⁸⁹ But the risks are not one-sided. With the technology arguably developing faster than the Government’s response, it may be that in the short- and medium-term the downside risk – an increase in the number of untaxed activities – is greater than the upside.

International information exchange

- 4.162 Digitalisation and the additional information and data that it generates can also be shared across tax jurisdictions to improve compliance. Country-by-country reporting is one example (see paragraph 4.131). The common reporting standard (CRS) is another that was

⁸⁴ UK Finance, *UK payment markets report*, 2019.

⁸⁵ HM Treasury, *Cash and digital payments in the new economy: call for evidence*, 2018.

⁸⁶ Office of Tax Simplification, *Technology review: a vision for tax simplicity*, 2019.

⁸⁷ See for example, Krishna et al, *Instilling digital trust, blockchain and cognitive computing for government*, IMF: Digital revolutions in public finance, 2017.

⁸⁸ HM Treasury, Financial Conduct Authority, Bank of England, *Cryptoassets taskforce: final report*, 2018.

⁸⁹ HMRC, *Cryptoassets for individuals*, policy paper, 2018.

established within the OECD, and then announced in the UK at Budget 2015. CRS requires financial institutions to disclose their clients' offshore holdings to tax authorities. Information is then exchanged, annually and automatically across countries.⁹⁰

- 4.163 Over 100 countries have signed up to CRS, and HMRC has made two exchanges to date – receiving information on 1.5 million accounts in September 2017 and a further 5 million in September 2018. HMRC is already targeting compliance activity based on the earlier information exchange, but the huge quantity of data means that considerable time is needed for processing and analysing before responding. This means there may be a considerable lag between an exchange and its final payoff.
- 4.164 This is also true of unauthorised information exchanges, such as the millions of files leaked as the so-called 'Panama papers' and 'paradise papers'. As a result of work linked to the Panama Papers, HMRC has opened investigations for suspected tax offences and expect to bring in more than £190million.⁹¹

Data analytics

- 4.165 Digitalisation combined with stronger powers of collection has allowed HMRC to collect vast amounts of data – from its own administration of the tax system, and from third parties and international information exchanges. These data are often unconnected and unstructured, which combined with their large volume makes the use of traditional data processing and software unfeasible. Instead, making sense of 'big data' requires what has become known as 'data analytics'. This is a broad term that covers many different types of statistical techniques and data analyses that are ultimately designed to reveal insights and patterns within complex data. Data analytics seeks to describe what has happened in the past and explain why, and therefore to predict what might happen in the future and suggest an appropriate course of action. By combining and analysing its different data sources, HMRC will potentially gain a much fuller picture of a taxpayers' affairs. This can allow HMRC to carry out targeted compliance activities, such as risk-based interventions and audits.
- 4.166 HMRC currently employs around 600 professional analysts and data scientists to work on 'data exploitation'. In the longer term, with the volume of data continuing to increase, many expect much of this insight to be achieved via the use of artificial intelligence, and in particular 'machine learning'. Indeed, HMRC is already using machine learning in its risk assessment and compliance work.⁹²

Conclusions

- 4.167 On balance, it seems likely that a declining share of activity will be taxable on current policies, and that the downside risks to tax bases, some of which have already crystallised, will be predominant in the shorter term. This is an area where the Government is actively

⁹⁰ The OECD has also developed a 'common transmission system' to "provide a single, secure connection between tax administrations through which they can exchange tax information" and can also allow "the secure exchange of other relevant tax information as necessary" (OECD, *Tax and digitalisation*, 2018).

⁹¹ HMRC, *No Safe Havens 2019: responding appropriately*, May 2019.

⁹² Interview with HMRC's chief digital and information officer, as reported on PublicTechnology.net.

trying to mitigate the risks. Arguably it is moving faster than other countries, but less quickly than the underlying technologies. It acknowledges that multilateral policy solutions are more effective ways to address the risks, and it remains to be seen whether unilateral initiatives like the digital services tax will help to facilitate those multilateral solutions.

4.168 The risks to effective tax rates from improved tax compliance seem to be on the upside in the longer term, and this is another area where the Government has ambitious plans. But the potential upside is constrained while operating within the existing tax system, suggesting downside risks in the short-to-medium term, as the Government plays catch-up.

4.169 Ultimately, the pace of change means that there is much uncertainty around the fiscal risks posed by the digitalisation of the economy – a process that probably still has some way to go. For example, a tax directed at the value created by users might soon be out of date if it is not also able to tax the value created by machines. And if some of the more dramatic predictions about the scope for artificial intelligence to replace workers in different occupations were to prove right, then the resulting consequences could be significant.⁹³

For the Government's response

4.170 In this chapter we have discussed several issues that the Government is likely to wish to consider when managing its fiscal risks, while others that we discussed in greater detail in our 2017 *FRR* remain pertinent despite changing little since then. These include:

- Narrowing of the income and capital tax bases, thanks in part to policy measures.
- Loss of revenue as people move to more lightly taxed forms of employment status.
- Pressure on excise duty tax bases from behavioural and technological change.
- Periodic policy reversals and persistent failure to implement some default tax rises.
- The number of policy aspirations not yet costed, including from leadership candidates.
- The stark difference in non-compliance rates across different forms of tax collection.
- Uncertainty around the projected cost of oil and gas infrastructure decommissioning.
- The high cost of tax expenditures, and the poor understanding of how it changes.
- Tax policy challenges from digitalisation in terms of what can be taxed and where.
- Potential tax administration gains from digitalisation that could be significant.

4.171 When assessing the outlook for revenue over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

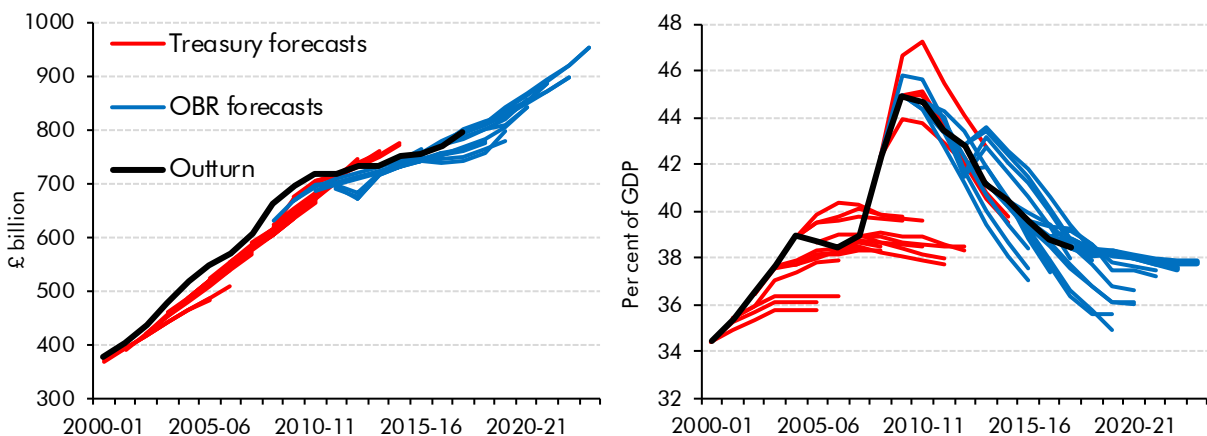
⁹³ Baldwin, *The globotics upheaval: globalisation, robotics and the future of work*, 2019.

5 Primary spending risks

Introduction

- 5.1 In 2018-19, public spending amounted to £812 billion, equivalent to £29,800 per household or 38 per cent of GDP (on the latest official data). In our March forecast we estimated that central and local government would spend £468 billion on the day-to-day ('current') running costs of public services and administration, and that government departments, local authorities and public corporations would spend £83 billion on capital investment (such as roads, rail and buildings). Cash transfers through the welfare system are expected to have cost £223 billion and net debt interest payments £37 billion.
- 5.2 Our latest medium-term forecast assumes that the ratio of total spending to GDP – the most relevant metric for analysing fiscal sustainability – will fall by 0.2 percentage points over the next five years (from 38.0 to 37.8 per cent). Our long-term fiscal sustainability analysis factors in demographic pressures on demand for public services and welfare transfers, plus non-demographic cost pressures in the health and care sectors. On unchanged policy, these would place spending and debt on an unsustainable upward path over the long term.
- 5.3 The outlook for spending is always clouded by risks and uncertainties, as one can see by comparing latest outturn estimates to the successive official five-year forecasts produced first by the Treasury and then the OBR (Chart 5.1). The differences reflect methodological changes and other statistical revisions, policy changes, unexpected economic developments and unexpected changes in how spending is affected by a given state of the economy. The charts show that the forecasts more often under-predicted spending than over-predicted it.

Chart 5.1: Successive forecasts for total public spending

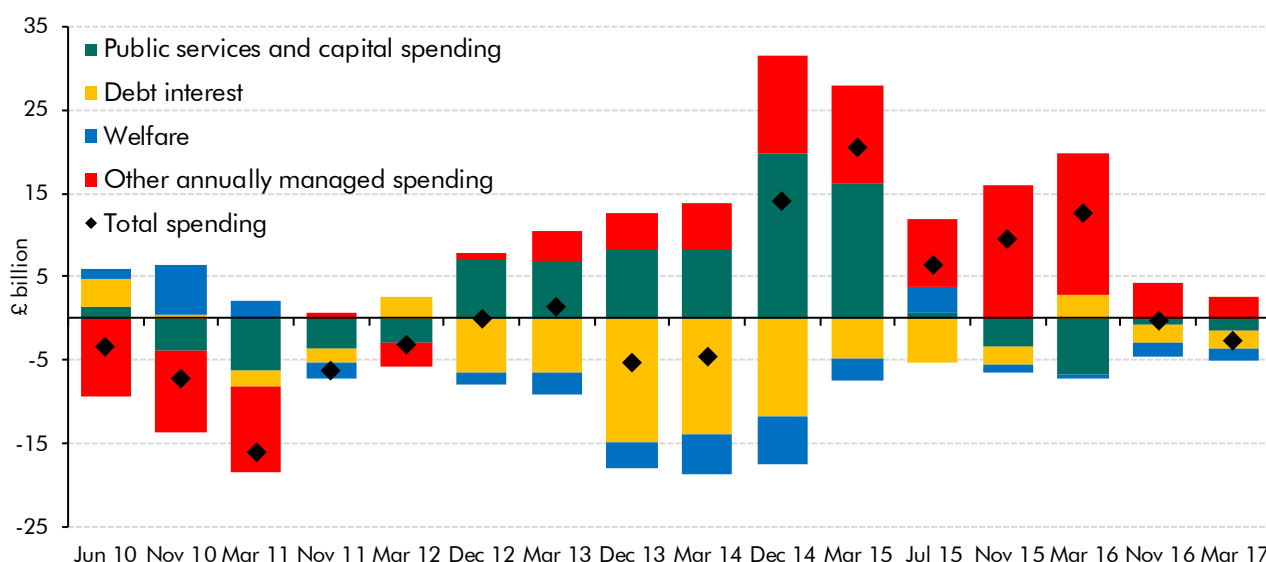


Note: Per cent of GDP forecasts have been restated to remove the effects of subsequent revisions to the ratio in the starting year of the forecast – these can be large and typically reflect methodological changes that forecasters would not have been able to anticipate.

Source: ONS, OBR

5.4 Looking over a shorter two-year horizon, outturns have differed from our forecasts since 2010 in both directions. Initially, we over-predicted departmental and local authority spending. We did not foresee the extent to which departments would underspend the limits they had been set by the Treasury and we underestimated local authorities' desire to continue adding to their reserves. More recently, we have over-predicted debt interest spending (where the interest rates at which the government can borrow have continued to surprise on the downside) and personal tax credits. But the apparent sizeable under-prediction of departmental spending in our December 2014 and March 2015 forecasts reflects subsequent policy decisions by the Government to increase planned spending significantly. Forecast differences have been smaller in more recent forecasts, but larger policy-related differences will emerge again soon: the boost to health spending taking effect this year will cause large differences relative to our two-year ahead forecasts for 2019-20.

Chart 5.2: Two-year ahead forecast differences from successive OBR forecasts



Note: Outturn data have been adjusted for major classification changes, to ensure they are consistent and comparable over time. Two-year ahead errors for the forecasts from November 2016 onwards are calculated using a mixture of provisional outturn and our most recent forecast, depending on the availability of data. For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecast respectively. Source: ONS, OBR

5.5 In this chapter we update our assessment of the broad range of risks to public spending that were identified in our 2017 *Fiscal risks report (FRR)*, noting how the Government responded in its 2018 *Managing fiscal risks (MFR)* publication to the issues we raised. We discuss the **drivers of public spending** and **how governments seek to control their effects**, before identifying medium- and long-term risks associated with:

- **health spending:** including the new NHS spending settlement and long-term plan;
- **adult social care spending:** where a green paper has been pending for some time;
- **welfare spending:** where the state pension age has been reviewed, while reforms to means-tested working-age benefits and to disability benefits continue;

- **local authorities and public corporations:** particularly local authority borrowing;
- **devolved administrations:** where new fiscal frameworks have begun operating;
- **major provisions and contingent liabilities:** including those relating to future nuclear decommissioning costs, clinical negligence claims and tax litigation; and
- **Brexit-related spending items:** including farm support and the ‘divorce bill’.

5.6 We focus in this chapter on ‘primary’ spending – i.e. spending excluding debt interest, the risks to which are discussed in Chapter 7. The chapter concludes with a list of issues that the Government may wish to address in its next edition of *Managing fiscal risks*.

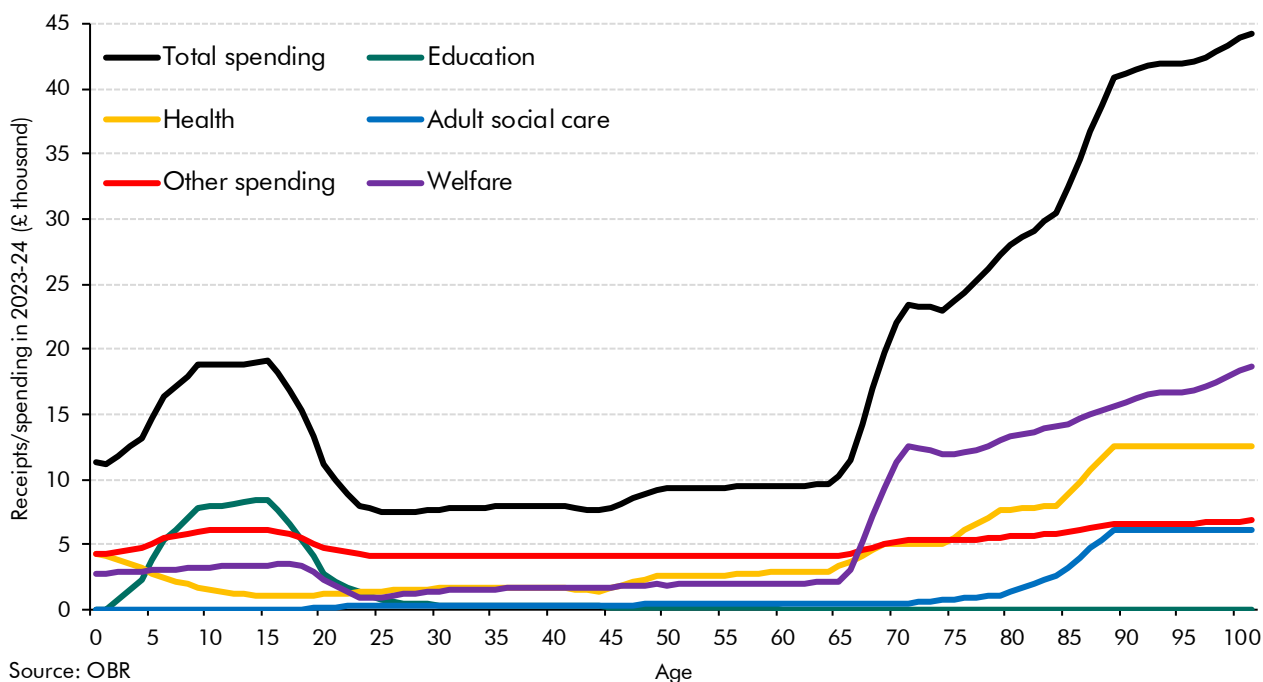
Drivers of public spending

5.7 When thinking about risks to public spending, it is helpful to think about its underlying drivers. In most cases, these can be grouped into:

- **policy choices:** such as which public services to provide, when to upgrade public infrastructure or what financial support to offer through the welfare system;
- **demand-side drivers:** the number of people to whom a given service will be provided or that will be eligible for a particular benefit; and
- **unit-cost drivers:** in particular the effect of inflation on the cost of providing each unit of a public service or the average amount awarded to each benefit recipient.

5.8 These drivers vary in importance for different elements of public spending. For example, state pensions spending is projected to rise as a share of GDP over the long term due to the ageing population. As Chart 5.3 shows, ageing is also a source of upward pressure on health and adult social care spending relative to GDP. But, in our latest long-term projections, other unit-cost drivers are expected to be even more important. Policy choices can increase or reduce the effects of the various drivers of public spending.

Chart 5.3: Average public spending per person by age



Control of public spending

Summary of previous *FRR* discussion and the Government’s response

5.9 The Treasury uses two administrative ‘control totals’ to manage public spending:

- **departmental expenditure limits (DELs)**¹ cover spending on public services, grants, administration and capital investment, which can be planned over many years; and
- **annually managed expenditure (AME)** covers categories of spending less amenable to multi-year planning, such as social security spending and debt interest.

Departments’ DELs are further split into those covering current or ‘resource’ spending (RDEL) and those covering investment or ‘capital’ spending (CDEL).

5.10 DEL spending is subject to greater control than AME. In particular the Treasury usually requires departments to offset spending pressures in one area of their budget by bearing down elsewhere. It therefore tends to be less volatile than AME spending, with the most significant source of changes being policy choices rather than factors beyond the immediate control of government. In 2014, the Coalition Government sought to increase control over a subset of AME spending by introducing a ‘welfare cap’.

¹ Our presentation of expenditure only shows those components of DEL and AME that are included in the fiscal aggregates of public sector current expenditure (PSCE) and public sector gross investment (PSGI), i.e. the elements that affect public sector net borrowing. For budgeting purposes, the Treasury also includes other components in DEL and AME such as non-cash items (like depreciation and provisions) and financial transactions (like student loans). The non-cash items do not affect public sector net borrowing or net debt. Financial transactions affect debt but not borrowing and are discussed in Chapter 6 on risks to the public sector balance sheet.

5.11 In our 2017 *FRR*, we noted that the Treasury has exhibited a high degree of control over DEL spending once plans have been finalised, so the main medium-term risk to spending was not that limits are overspent but that policy decisions are taken to raise them. We also noted the declining proportion of total spending (total managed expenditure or TME) subject to relatively firm DEL controls – thanks to larger cuts to DEL than to AME during the post-crisis consolidation, and to the cost of state pensions being lifted by the triple lock and ageing. And we highlighted the jump in DEL spending as a share of GDP as a result of the late-2000s financial crisis and recession, when pre-crisis DEL plans were largely followed but nominal GDP fell far short of pre-crisis expectations.

5.12 In that context, we highlighted two issues for the Government's response:

- The **declining proportion of total spending subject to relatively firm DEL controls**.
- The possibility of **cost overruns for major projects** like HS2 and universal credit IT.

We also noted the growing reliance on loans and other financial transactions rather than conventional expenditure to fund new policies.

5.13 In *MFR*, the Government noted that it has introduced controls in AME spending, such as the welfare cap, which covers around 15 per cent of TME and adherence to which we monitor in each *Economic and fiscal outlook (EFO)*. In our March 2019 *EFO*, we judged that the cap would be met in 2022-23, the year in which the current one applies. Since it was introduced in 2014, the Government has changed the level of the cap several times and its design once. It was lowered substantially in July 2015, alongside a package of welfare spending cuts, but then raised substantially in November 2016, at which point the previous cap was set to be exceeded by more than 7 per cent in the year in which it applied. As such, it is not clear that the welfare cap has any meaningful impact on spending plans and outcomes.

5.14 The Government also pointed to the fact that Network Rail would be brought into DEL in 2019-20 (and shadowed DEL procedures during 2018-19). But Scottish Government spending has moved the other way, more than offsetting the shift of spending into DEL.

Updated risk assessment

The balance of DEL and AME in total spending

5.15 We now forecast the proportion of TME subject to DEL controls to increase over the period to 2023-24, largely as a result of policy changes announced over the past two years. The main contributor is the NHS DEL settlement announced in June 2018, and the subsequent increases in both NHS and non-NHS DEL totals announced in October 2018 and March 2019. The net effect of switching items between DEL and AME has been to raise AME, with the Scottish Government move into AME outweighing Network Rail moving into DEL. The Budget 2018 announcement of higher employer contribution rates for all public service pension schemes reduced the net cost of those schemes, which are controlled through AME. But it increased DEL totals to meet the higher gross contributions incurred by departments.

This shifted around 12 per cent of the gross annual cost of public service pensions from AME to DEL from 2019-20 onwards. Despite now rising over the forecast period, we still forecast DEL as a share of TME to be a little over 45 per cent in 2023-24, down 9 percentage points relative to 2007-08.

- 5.16 This suggests that the risk posed by spending being controlled more lightly under AME than DEL remains elevated relative to its pre-crisis level, but that it is no longer on a rising path. However, since that is largely the result of health spending risks having crystallised over the past two years, and given that there are continuing upward risks to health spending, it is not clear that there has been a material reduction in overall spending control risks. The main risk remains one of policy decisions raising DELs rather than those DELs being overspent.

Spending Review 2019

- 5.17 The Chancellor announced in his 2019 Spring Statement that the Treasury would launch a full three-year Spending Review before the summer. But this was a conditional commitment *“assuming a Brexit deal is agreed over the next few weeks and the uncertainty that is hanging over our economy is lifted.”* On 2 July, the Chief Secretary to the Treasury told Parliament that *“it will be for the new government to decide whether the circumstances make it appropriate to conduct a full three-year spending review, or a single-year exercise.”* So one medium-term spending control risk is that the Spending Review does not cover three years, leaving departments outside the NHS uncertain over their share of the DEL envelope pencilled in at the Spring Statement. Given the above-inflation RDEL settlement for the NHS, the Spring Statement RDEL totals would have seen non-NHS RDEL spending rise with inflation (as measured by the GDP deflator), but the Treasury has told us that *“these figures do not represent the final RDEL (...) spending envelopes for [the 2019] Spending Review”*.
- 5.18 While Spending Review controls have generally been tightly adhered to by international standards, there have been recent examples of large changes being announced outside Spending Reviews – most obviously the NHS settlement announced in June 2018. The announcement was not accompanied by a detailed reform plan explaining how the extra money would be used or by the announcement of any measures to help pay for it.
- 5.19 In addition, both candidates currently running for the Conservative Party leadership have made spending pledges that they would pursue as Prime Minister. Boris Johnson has talked of 20,000 extra police officers, raising per-pupil funding in education and higher public sector pay. The largest single pledge is Jeremy Hunt’s wish to add 0.5 per cent of GDP to the existing NATO commitment on defence spending (which would cost around £11 billion in 2019-20, rising to £12½ billion in 2023-24). Meeting either candidate’s pledges on top of the NHS settlement would either put enormous pressure on unprotected areas of spending if the envelope for the Spending Review were held at the Spring Statement totals, or would require higher spending and borrowing.
- 5.20 This might suggest that the role of Spending Reviews (and indeed Budgets) as the main vehicle for fiscally significant spending decisions – where costs can be considered in the round and trade-offs between priorities made – may be changing. This could have implications for the effectiveness of Treasury spending control and fiscal risk.

Cost overruns in major procurements

- 5.21 Over the past two years, there have been several examples of major projects costs rising beyond original estimates or the latest ones available at the time. These include:
- **Crossrail:** the funding envelope for this project has increased from £14.8 billion at Spending Review 2010 to £17.6 billion in the latest estimate (December 2018). This is a 19 per cent increase relative to the original settlement. Although that is not proportionately as large as for some other projects, there is still scope for it to escalate further. Crossrail's chief executive told Transport for London that it was "*not currently possible to give a date for the opening of the central section*" of the line.²
 - **Ministry of Defence (MoD) equipment plan 2018 to 2028:** over this period, the MoD is expected to allocate over 40 per cent of its total budget to equipment and support programmes. This includes both equipment already in use, such as Typhoon combat aircraft, and new equipment, such as four new nuclear-armed submarines. The programme is budgeted for £187 billion over ten years, but the MoD's forecast is for it to cost £7 billion more than that. The National Audit Office (NAO) published an assessment in November 2018, commenting that the plan "*remains unaffordable*" and that even the department's worst-case scenario – that it is £15 billion over budget – relies on analysis that is "*optimistic and costs could increase further*".³
 - **Home Office Emergency Services Network (ESN):** the Home Office originally intended to launch ESN, a new system to be used by 107 police, fire and ambulance services in England, Scotland and Wales, in September 2017, ready to replace Airwave – the current system – fully in December 2019. In 2017, the Home Office concluded that that timetable would not be achievable, and it reset the programme in 2018. The programme delivered has now been delayed by at least three years, and is expected to cost £3.1 billion more than initially anticipated, a cost overrun of 49 per cent. The NAO's most recent report concluded that the latest cost forecast is "*highly uncertain*" and that "*based on past performance, it seems unlikely that ESN can be delivered by the target date of 2022*", raising the possibility of further delays and cost escalation.⁴ The Infrastructure and Projects Authority has also assigned ESN a 'red' rating in its delivery confidence assessment, meaning that in its view "*Successful delivery of the project appears to be unachievable*".⁵
- 5.22 In our previous *FRR*, we highlighted the **High Speed 2 (HS2)** rail project as a potential source of upside spending risk from cost overruns. The official HS2 cost estimate of £56 billion (in 2015 prices) has not changed, but the House of Commons Library has derived a £65 billion (in 2015 prices) estimate based on the NAO review of the project in 2016 and the July 2017 Department for Transport financial case.⁶ The project has been subject to further delays, with Ministerial approval for major construction works on the first phase of

² Transport for London Board minutes, 21 November 2018.

³ National Audit Office, *Ministry of Defence: The equipment plan 2018 to 2028*, 5 November 2018.

⁴ National Audit Office, *Progress delivering the Emergency Services Network*, 10 May 2019.

⁵ Infrastructure and Projects Authority, *Annual report on major projects 2017-18*, 4 July 2018.

⁶ House of Commons Library, *High Speed 2: the business case, costs and spending*, Briefing paper number CBP 8601, 26 June 2019.

the project having been pushed back six months to December 2019. The NAO has reported that land and property acquisitions have so far cost more than the estimated budget, but within the contingency in the spending envelope.⁷

Historical performance of Treasury spending control

- 5.23 Last year, the Institute for Fiscal Studies (IFS) and the National Institute of Economic and Social Research (NIESR) each published a study of public spending control in the UK.⁸ The IFS found that controls generally work relatively well, in the sense that outturns do not diverge in large amounts from original plans systematically. But they note that the Treasury's spending controls formally being adhered to – in the narrow sense that departments mainly underspend relative to their ultimately binding allocations – masks the fact that allocations themselves are changed to match political pressures. The IFS cite in particular top-ups to settlements mid-way through Spending Review periods, and reallocation of capital budgets to cover resource pressures, examples of which were present across the whole period they considered (1993 to 2015). Similarly NIESR found that announced multi-year spending plans were changed significantly in subsequent fiscal events, and that the most significant factor in explaining such revisions were changes to the expected path of GDP growth.
- 5.24 The findings from both studies reinforce a risk that we highlighted in our previous report. Although DEL controls are formally effective, initial settlements in a Spending Review tend to be revised in future years, especially when political priorities change, and therefore they are less effective controls on medium-term expenditure than they might initially appear.

Conclusion

- 5.25 Given developments over the past two years, our assessment of fiscal risk from spending control (as distinct from spending policy, under the incoming administration) remains unchanged. Although our forecast now includes a small rise in the proportion of spending subject to DEL controls by 2023-24, it will remain well below pre-crisis levels. And more of it is to be spent on health, where (as described in the next section) history points to DEL plans being topped up periodically. The shift of Scottish Government spending from DEL to AME seems less of a risk than the operation of fiscal devolution more generally (discussed from paragraph 5.108 onwards). And the perennial risk of major projects costing more, and taking longer to complete, than initially planned continues.
- 5.26 It is difficult to say at this stage whether recent announcements of major spending policies outside Spending Reviews and Budgets represent a material shift in Treasury's ability to control total spending or whether these are merely further examples of political priorities bypassing the system on occasion, which the historical studies suggest is not unprecedented. If this does become the norm, then spending risk will have increased.

⁷ National Audit Office, *Investigation into land and property acquisition for Phase One (London – West Midlands) of the High Speed 2 programme*, HC 1531, 13 September 2018.

⁸ IFS, *The planning and control of UK public expenditure, 1993–2015*, July 2018 and NIESR, *Understanding and Confronting Uncertainty: Revisions to UK Government Expenditure Plans*, October 2018.

Health spending

Summary of previous *FRR* discussion and the Government's response

- 5.27 In our 2017 *FRR*, we highlighted medium- and long-term pressures on health (and adult social care) spending from several sources:
- **Demographic factors**, especially an ageing population. ONS population projections point to an increase in the proportion of the population at older ages, where per capita consumption of health and social care is higher than average.
 - **Income-related drivers**, since demand for health and social care rises as income rises.
 - **Non-demographic cost pressures**, such as: the labour intensity of health and social care provision; technological advances increasing demand and therefore spending even if they reduce unit costs; and the rise in chronic conditions, increasing demand.
- 5.28 In *FRR 2017*, we drew on analysis published by the Health Foundation and the IFS, the NHS's assessment of the efficiency savings necessary to live within its settlement to 2020-21, and our own analysis of contributions to changes in NHS spending relative to GDP, to conclude that there was a high probability that a moderately large upside spending risk would crystallise over the medium term. Based on our *Fiscal sustainability report (FSR)* projections, we concluded there were much larger long-term risks to fiscal sustainability from demographic and other cost pressures on health spending being accommodated.
- 5.29 This led us to raise two specific issues for the Government's response:
- Significant **long-term upward cost and demand pressures** on health spending.
 - The precedent created by **repeated topping-up of initial health spending settlements**.
- 5.30 The medium-term risk we had flagged crystallised before the Government published its response to these issues. In June 2018, the Prime Minister announced a significantly higher NHS RDEL spending settlement. When the Government published *MFR* in July 2018, it described the settlement as recognising the need for increased resources, while also referring to five 'financial tests' that the NHS would need to meet in its 10-year plan in order for the increased funding to be confirmed. In the event, the funding was confirmed in the Budget in October, with *The NHS long term plan* eventually published in January 2019.⁹

Updated risk assessment

The new NHS funding settlement and remaining medium-term risks

- 5.31 The new NHS RDEL settlement amounts to a real-terms increase of 3.4 per cent a year on average until 2023-24. It covers NHS England's resource budget, with 'Barnett

⁹ NHS England, *The NHS Long Term Plan*, January 2019.

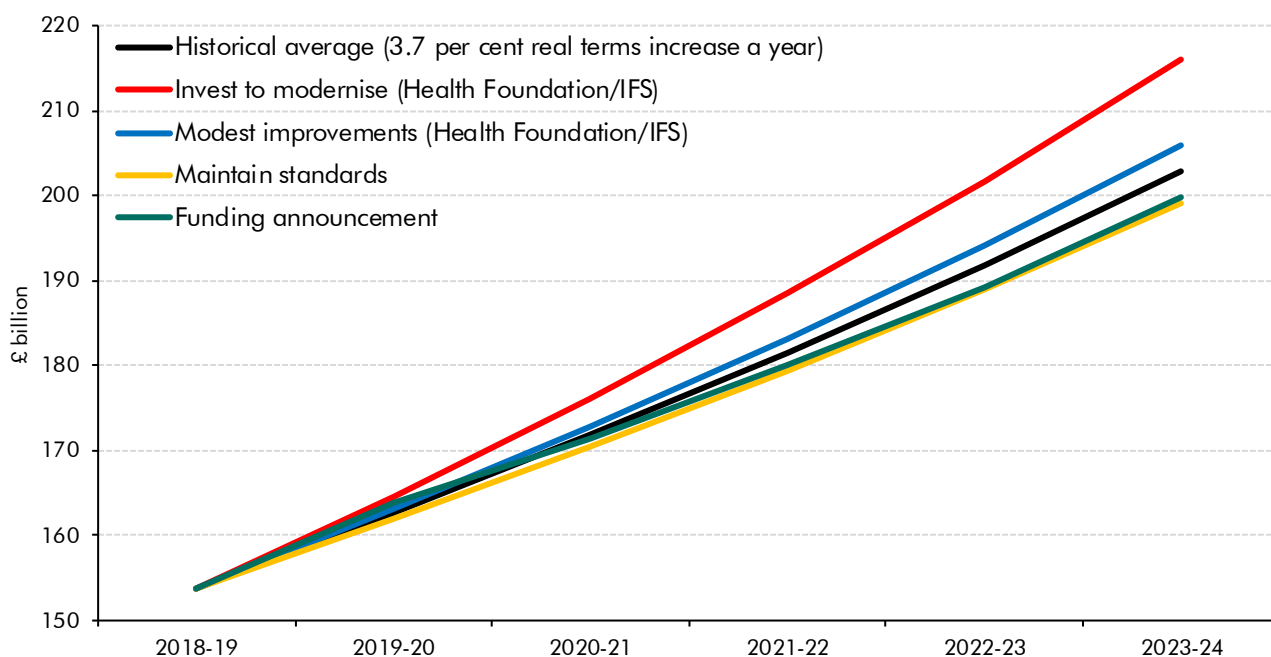
Primary spending risks

consequentials' added to the devolved administrations' budgets. It does not cover other current spending by the Department of Health and Social Care in England, for example on public health, or any capital spending. Still, it is a substantial increase relative to the 1.1 per cent a year real-terms increase between 2010-11 and 2017-18. It crystallises one of the main medium-term fiscal risks we identified in our 2017 FRR.

5.32 Despite its increased generosity, it remains uncertain whether the new settlement will stick. Although the Treasury told us in March 2019 that the updated settlement (topped up to cover changes in the inflation forecast relative to October 2018) was now final, experience with previous settlements suggests that March 2019 is unlikely to be the last top-up we see.

5.33 One way to gauge the prospects for further top-ups in the future is to look at the same kind of external analysis that informed our risk assessment two years ago. The Health Foundation and the IFS compared the settlement to various scenarios (Chart 5.4). They concluded that it may only be sufficient to maintain current standards.¹⁰ They estimate that real-terms funding for NHS England would have to rise by 3.3 per cent a year to maintain current standards, fractionally less than the announced settlement. To improve standards, as the long-term plan aims to do, real-terms funding would have to rise by 4 to 5 per cent a year, at an additional cost of £6 billion to £15 billion a year (in 2018-19 prices) by 2023-24.

Chart 5.4: New health settlement versus different Health Foundation/IFS scenarios



Source: Health Foundation, IFS, OBR

Productivity improvements

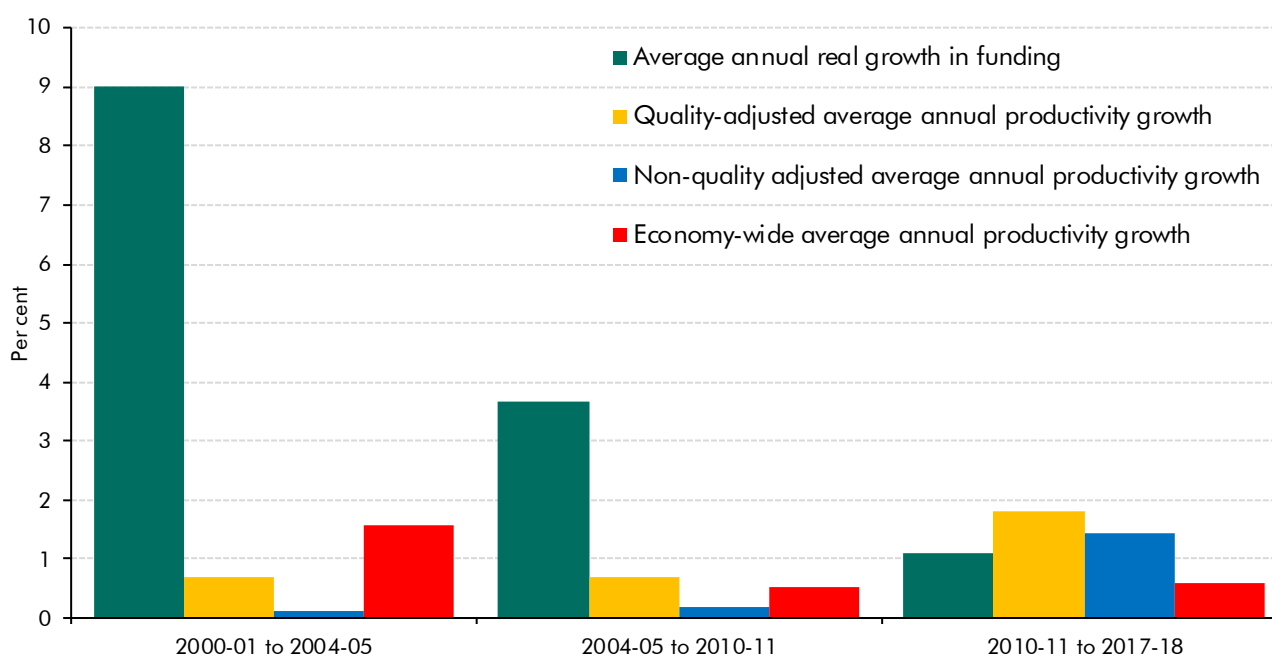
5.34 One of the main assumptions underpinning the NHS long-term plan is that it will be possible to deliver an increase in productivity of at least 1.1 per cent a year. This appears challenging. Since 2010-11 productivity growth in the NHS (whether adjusted for quality

¹⁰ Health Foundation and IFS, *Securing the future: funding health and social care to the 2030s*, May 2018.

improvements or not) has outperformed the wider economy, but it has been much lower in previous periods when funding growth has been higher (Chart 5.5). Indeed, it was only during the period of financial pressures from 2010-11 to 2017-18 that productivity growth averaged more than 1 per cent a year. This reflected growth in quality-adjusted output slowing less than input growth, suggesting that in periods of higher funding growth there is less pressure on providers to improve productivity to meet rising demand for services.

5.35 The NAO has also highlighted a significant risk that the need to deliver more services will lead to the use of more expensive agency staff, increasing unit costs and weighing on productivity.¹¹ Reliance on productivity improvements to help meet increasing demands on the health service might therefore represent a spending risk over the medium term.

Chart 5.5: Real-terms funding and productivity growth in the health service



Source: NHS Digital, OBR

Cost drivers

5.36 Around half of NHS expenditure relates to staff costs. Among the largest non-pay costs are clinical supplies, prescribed drugs and services bought from non-NHS suppliers. Historically slow rates of growth in overall spending since 2010-11 – 2.8 per cent a year on average in nominal terms – have mostly been achieved through pay restraint. Total staff costs grew by 2.0 per cent a year on average over the period, compared with 3.5 per cent growth in non-pay costs. But non-pay costs would have risen faster were it not for statins coming off patent in 2012, allowing the NHS to prescribe them in their generic form. This reduced the annual cost of statins to the NHS from £310 million in 2011 to £55 million in 2016. With statin prescriptions dispensed rising from just over 10 million in 2011 to 32 million in 2016, they would have cost the NHS £1 billion in 2016 if unit costs had remained flat.¹²

¹¹ National Audit Office, *NHS financial sustainability*, 18 January 2019.

¹² The King’s Fund, *The rising cost of medicines to the NHS: what’s the story?*, 26 April 2018. See also NHS Digital, *Prescription Cost Analysis – England, 2016*, 30 March 2017.

Primary spending risks

- 5.37 There is a limit to how long pay growth in health can be held below that in the wider economy without damaging recruitment and retention. Indeed, the Government has recently relaxed the NHS pay cap through the 'Agenda for Change' multi-year pay deal, noting the need to recruit, retain, motivate and boost the productivity of its workforce.¹³ Employment growth in the public health system has also picked up in recent years, being above 1.5 per cent a year since 2014-15, after employment fell in 2011-12 and 2012-13. The need to maintain growth in employment – highlighted in the long-term plan – is likely to put further upward pressure on pay due to the need to recruit and retain staff. The expected tightening of the immigration regime after Brexit would add to these pressures.¹⁴
- 5.38 With non-pay costs having increased more rapidly than pay costs in recent years, and the price of drugs typically rising faster than whole economy inflation, bearing down on them is seen as an important potential driver of productivity gains and improved services. The NHS long-term plan sets out several priority areas where it believes it can reduce costs, such as improving the coordination of procurement and the accuracy and turnaround times on tests and scans. Were the NHS to succeed in reducing unit costs in these areas, it is not clear whether it would lead to lower spending or higher volumes of services. Were it not to succeed, it seems plausible that it would generate pressure for spending to be topped up.

Financial sustainability

- 5.39 The NHS long-term plan also prioritises returning all components of the NHS in England – including all NHS trusts – to financial balance by 2023-24. This is likely to be challenging, despite the additional funding, especially given the improvements in care that are planned. For example, the NAO argues that *“previous funding boosts appear to have mostly been spent dealing with current pressures rather than making the changes that are needed to put the NHS on a sustainable footing.”* This suggests there will be a trade-off between returning NHS trusts to financial balance and delivering desired improvements in care. In January 2019, the NAO expected deficits (excluding sustainability and transformation payments) to reach £3 billion by the end of 2018-19, and concluded that *“current support and incentives will not alone be sufficient to return these trusts to financial balance”*.¹⁵

Our latest long-term spending projections

- 5.40 We published our latest long-term fiscal projections in July 2018. By far the largest source of change to our health spending projection was the higher medium-term starting point generated by the Prime Minister's NHS settlement announcement. Unfortunately we were not able to update our quantification of non-demographic cost pressures as the NHS had not (and still has not) repeated its analysis of the sources of spending growth that underpin it.¹⁶ Our latest projection shows health spending reaching 13.8 per cent of GDP in 2067-68, on the assumption that demographic and other cost pressures are accommodated, up 1.0 per cent of GDP from the January 2017 projections that underpinned our previous FRR.

¹³ Parliamentary Under-Secretary of State for Health, *NHS Pay Review Body Report 2018/19 and Agenda for Change Multi-Year pay deal*, House of Lords Written Statement – HLWS777, 27 June 2018.

¹⁴ See, for example, Health Foundation, *Closing the gap: Key areas for action on the health and care workforce*, March 2019.

¹⁵ National Audit Office, *NHS financial sustainability*, HC1867, 18 January 2019.

¹⁶ NHS England, *NHS Five Year Forward View: Recap briefing for the Health Select Committee on technical modelling and scenarios*, May 2016.

Conclusions

- 5.41 The crystallisation of the main medium-term policy risk to health spending we identified two years ago means we no longer see a high risk of current plans being increased materially over the medium term. But, despite what the Treasury has told us about this representing an absolutely final settlement, external analysis and past experience suggest that further, more modest, increases in funding may well be politically unavoidable in the medium term.
- 5.42 Long-term risks to fiscal sustainability from demographic and other cost pressures are little changed relative to the assessment we made two years ago. But in part this reflects the absence of new information on non-demographic cost pressures in health spending. It would help our own analysis of this crucial issue – and no doubt other researchers – if the NHS were to revisit its analysis of 2015-16 spending growth on an annual basis.

Adult social care spending

Summary of previous *FRR* discussion and the Government's response

- 5.43 In common with health care, the main drivers of spending on adult social care are demographic factors (both ageing and health status at given ages), income-related drivers (as demand rises with incomes) and non-demographic factors (notably for social care its labour-intensive nature and the rise of chronic conditions in the population). The high share of staff costs in service provision, and the low average wage paid, means that social care is particularly exposed to changes in minimum wage policy. And the adult social care system itself has been the subject of continuing uncertainty thanks to successive reviews, including the 2011 Dilnot Commission – the recommendations of which were enacted in the 2014 Care Act, but were not implemented and have subsequently been shelved.
- 5.44 On this basis our 2017 *FRR* raised two main issues associated with adult social care:
- The potential impact of **the NLW and migration reform** on health and social care costs.
 - Potential **pressure to bail out a private social care provider** if in financial difficulty.
- 5.45 In *Managing fiscal risks*, the Government:
- Noted the introduction of the **adult social care precept** in council tax raised by local authorities with social care responsibilities, and the **improved Better Care Fund**, as its main responses to pressures posed by the National Living Wage and other factors.
 - Highlighted the statutory role of the Care Quality Commission (CQC) in monitoring and assessing **the financial sustainability of care providers in England**, providing greater support for local authorities in ensuring continuity of care provision.
- 5.46 With the Dilnot reforms in abeyance, the Government stated that it “*will be publishing a green paper on care and support for older people in Autumn 2018.*” It suggested that in any

future reform to the system “there should continue to be a principle of shared responsibility, and that people should continue to expect to contribute to their care costs when preparing for later life.” The green paper has yet to be published and no date for it has yet been set.

Updated risk assessment

Cost pressures

- 5.47 There have been no concrete developments over the past two years in respect of the two main sources of pressure on the costs of delivering adult social care we identified in our previous report, but the Government is studying or consulting on possible changes to both:
- **The National Living Wage:** existing policy will see the effective minimum wage for employees aged 25 and over – the NLW – rise to 60 per cent of median hourly earnings by 2020. In Budget 2018, the Government expressed an ambition to increase that to two-thirds of the median thereafter. At Spring Statement 2019, the Chancellor asked Arindrajit Dube to undertake a review of the international evidence on the impacts of minimum wages, to inform how it sets the formal remit of the Low Pay Commission, which the Government has said it will do by the end of the year. Further rises would raise the cost of social care because a large proportion of care workers are affected by the NLW – at a rate of two-thirds of median earnings, over a third could be directly affected.¹⁷ The extent to which the cost would represent a fiscal risk would depend on whether it were funded through council tax or borrowing.
 - **Reforms to the immigration system:** the Government has announced its intent to impose a more restrictive immigration system after Brexit, and is currently consulting on the salary threshold for obtaining a visa. Wherever the threshold is set, it seems likely to be higher than the median wage for a full-time social care worker (£18,300 in 2018).¹⁸ This would make it harder to recruit care workers, leading either to more vacancies remaining unfilled or to increased labour costs (or both). The Institute for Public Policy Research estimates that these would leave 400,000 vacancies unfilled in England by 2028, which would be equivalent to around 20 per cent of estimated demand for workers in the sector at that point.¹⁹
- 5.48 In addition, pressures on local authority budgets have fed through to adult social care. The reduction in general-purpose grants from central government has hit at a time when demand for care has been increasing rapidly. Adult social care spending per adult in England fell by 3.1 per cent in real terms between 2011-12 and 2017-18, even when accounting for new funding sources.²⁰ But it is then projected to rise by 2.8 per cent in real terms between 2017-18 and 2019-20 as council tax and other funds for social care rise.

¹⁷ Skills for Care, *Pay in the adult social care sector*, March 2019, and OBR analysis of ONS, *Earnings and Hours, care workers: ASHE table 26*, 25 October 2018.

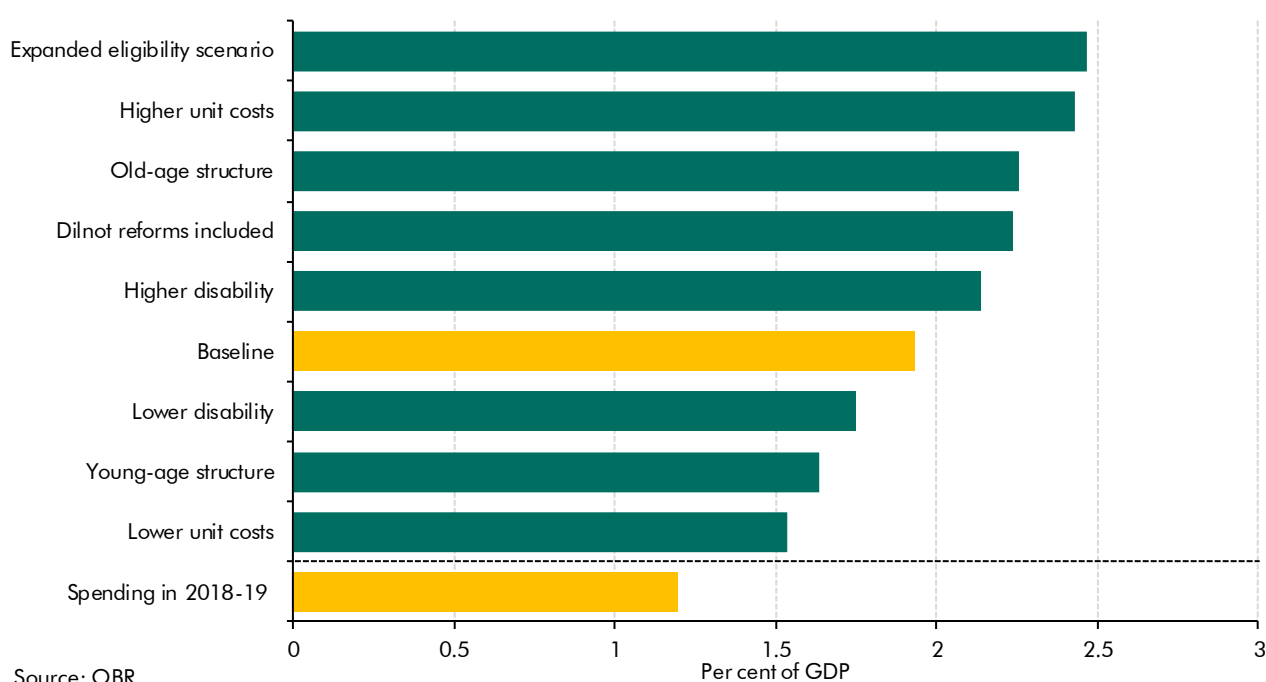
¹⁸ ONS, *Earnings and Hours, care workers: ASHE table 26*, 25 October 2018.

¹⁹ Institute for Public Policy Research, *Fair care: A workforce strategy for social care*, 25 October 2018. See also Social Care Institute of Excellence, *Forecasting the adult social care workforce by 2035: Workforce intelligence report*, 2016.

²⁰ The Government has introduced central funding for adult social care through the Better Care Fund (BCF). The Government's expenditure statistics, *Public expenditure statistical analyses*, classify the BCF as health expenditure, as it forms part of the Department of

- 5.49 Our 2018 FSR projection shows adult social care spending rising substantially over the long term, from 1.2 per cent of GDP in 2018-19 to 1.9 per cent of GDP by 2067-68. In our modelling, only around 10 per cent of this increase is driven by purely demographic factors. Other factors, such as demand for adult social care increasing with income and the rise in disability rates due to an ageing population, are more important drivers of demand. As with health care, our baseline projection assumes these pressures are accommodated.
- 5.50 In addition to these demand and cost drivers, the Government remains committed to limiting the cost of care for recipients. Although the Dilnot reforms have now been shelved, it seems almost certain that any reform finally adopted will seek to reduce the contributions from users,²¹ and will therefore increase public spending on social care as a share of GDP. The fiscal implications of such a reform would depend on whether they were accompanied by measures to fund them and by how much.
- 5.51 We discussed several sensitivities around our baseline projection for adult social care spending in Annex B of our 2018 FSR. These are illustrated in Chart 5.6. Spending would be higher in a world of higher unit costs, an older population or one where age-specific rates of disability were higher. Spending would also be higher in a world where local authorities provided care for more than just those who meet the minimum eligibility requirement in the Care Act 2014 or one where the Dilnot reforms were implemented. And it is of course possible that several differences from our baseline assumptions could materialise at once. If they were all to push in the same direction, rather than offsetting each other, spending could rise more significantly than shown in any one of these scenarios.

Chart 5.6: Adult social care spending in 2067-68: alternative scenarios



Health and Social Care's budget, but it is delivered through local authorities for adult social care purposes. We therefore include the BCF as part of expenditure on adult social care, consistent with its ultimate purpose.

²¹ House of Commons Library, *Social care: forthcoming Green Paper (England)*, Briefing paper number 8002, 13 May 2019.

Pressure to bail out struggling private social care providers

- 5.52 In April 2019, the holding companies controlling Four Seasons Health Care Group, the second largest private social care provider at the time, went into administration.²² The CQC, in its function of market oversight, stated that it did not expect service provision to be affected, according to the Minister of State for Care's written statement to the House of Commons.²³ The operational parts of the group are now in the process of being sold, which the Government expects to happen by the end of 2019.
- 5.53 Local authorities in England are required by the Care Act to meet people's needs for social care temporarily should a provider fail. While this is not expected to affect provision in this particular case, local authorities' legal position as a backstop makes this an ongoing risk.
- 5.54 Despite the apparently successful handling of Four Seasons Health Care Group's financial failure, our assessment of the fiscal risk associated with pressure to meet the obligations of private sector providers of a public service is little changed. The sector's financial position remains a concern among providers – 80 per cent of directors of providers believed that providers were facing financial difficulties in 2017-18.²⁴ So while the system for managing failures of providers appears to be working, the fiscal risk associated with local authorities needing to take over service provision remains due to their position in legislation.

Social care funding reforms

- 5.55 Since we published our 2017 *FRR*, the Government has announced that it would no longer pursue the reforms to social care funding proposed by the Dilnot commission,²⁵ having previously delayed implementation by four years due to concerns about their cost.²⁶ These reforms were intended to cap the costs of care for individuals at £72,000 over a lifetime. Instead, and as mentioned in *MFR*, a social care green paper was scheduled to be published in late 2018 (having itself already been delayed more than once).
- 5.56 With the green paper still not published, uncertainty over any future reform to the funding of adult social care continues to affect users and providers. The current system, which potentially sees recipients of care bearing costs limited only by their assets, seems unlikely to be politically sustainable over the long term. Any moves to limit the costs faced by individuals would present a fiscal risk relative to our baseline spending projection. And even on current policies, adult social care spending represents a source of pressure on long-term fiscal sustainability under all the scenarios we looked at in our 2018 *FSR*.
- 5.57 NHS England's long-term plan looks at the integration of health and social care provision. Cash transfers from the NHS to local authorities (through the Better Care Fund) are the

²² The two companies, Elli Finance (UK) plc and Elli Investment Limited, announced on 30 April 2019 that they were entering administration. A statement with the same date was posted on the Four Seasons Health Care website. See also, House of Commons Library, *Four Seasons Health Care Group – financial difficulties and safeguards for clients*, Briefing paper number 8004, 21 May 2019.

²³ Minister of State for Care, *Health and social care provider update*, Written ministerial statement HCWS1532, 1 May 2019.

²⁴ Care Quality Commission, *The state of health and adult social care in England: 2016/17*, 23 November 2017.

²⁵ Parliamentary Under-Secretary of State for Health, *Social care*, Oral statement to the House of Commons, Hansard Volume 632, Column 1235, 7 December 2017.

²⁶ Parliamentary Under-Secretary of State for Health, *Cap on care costs*, Written statement to the House of Lords HLWS135, 17 July 2015.

main channel for that at present. Fuller integration could reduce pressures on the NHS, freeing resources in hospitals by providing more adequate care in the community. But if funding for social care remains much tighter than that for health, pressures on social care could continue to spill over onto the NHS, for example where patient transfers out of hospital care are delayed while they wait for a social care package to be put in place.

Conclusions

5.58 The fiscal risks associated with adult social care noted in our 2017 *FRR* remain significant:

- The intention to **raise the NLW further** once the policy target for 2020 has been met, and the **tighter migration regime** that is expected to be put in place after Brexit, could place even greater upward pressure on the unit costs of providing social care.
- The risk that **private providers may need to be bailed out** remains, although the system for ensuring that a resolution occurs without local authorities having to take over financial obligations seems to be working in the latest case of a large failure.

5.59 More generally, while the Government has decided not to pursue the Dilnot reforms to the funding of social care, the pressure to limit individuals' exposure to the costs of social care, and hence the risk to public spending, remains. Uncertainty over how that will be done – including the multiple delays to the publication of the latest green paper – may have its own costs, posing a challenge for users and providers as they try to plan for the future.

Welfare spending

Summary of previous *FRR* discussion and the Government's response

5.60 As defined in our forecasts, welfare spending covers benefits and tax credits that transfer cash to eligible individuals or households. It is the single largest item of AME spending, and accounted for 27.5 per cent of total government spending in 2018-19.

5.61 Some welfare spending – particularly on working-age people – rises and falls with the economic cycle, as the number of claimants and the cash amounts awarded tend to rise during a recession and fall during the subsequent recovery. But most is little affected by the economy in cash terms, although it still rises and falls as a share of GDP due to fluctuations in GDP.²⁷ Spending overall has fluctuated between 9.3 and 12.1 per cent of GDP over the past 20 years and remains at just above 10 per cent of GDP in our latest forecast.

5.62 Our 2017 *FRR* discussed medium- and long-term risks to spending on state pensions and working-age benefits, noting important demographic and health-related drivers of caseloads and the role of uprating policy – notably the state pension 'triple lock' – in driving average payments. Delivery of major reforms to existing benefits and the introduction of

²⁷ See Box 4.1 in our 2014 *Welfare trends report* for analysis of the sensitivity of different welfare spending lines to the economic cycle.

Primary spending risks

universal credit, plus legal challenges to different parts of the system, were identified as medium-term risks. We highlighted three of these issues for the Government's response:

- The renewed commitment to **the 'triple lock'**, which ratchets pension spending higher.
- Risks surrounding the **implementation of the new state pension and universal credit**.
- Limited formal reporting of the cost of **potential legal challenges** to the welfare system.

5.63 In *Managing fiscal risks*, the Government:

- Stated that **the triple lock** had contributed to faster growth in pensioner incomes and to reduced pensioner poverty, noted our analysis of its ratchet effect on spending and promised to retain it for this Parliament. It did not set out longer-term objectives, nor did it discuss, for example, how it deems what costs and risks associated with the triple lock are appropriate to meet its goals for pensioner incomes and poverty rates.
- Recognised the risks associated with **the rollout and forecasting of universal credit**, establishing regular official-level monitoring and assurance procedures (in which OBR staff play a role). It felt that the **new state pension** did not pose risks, but noted continuing monitoring and evaluation of its operation by DWP officials.
- Described the procedures DWP follows in monitoring **legal challenges to the welfare system** and reporting on them in its departmental accounts. DWP's accounts now separately identify provisions for benefit payments related to legal challenges, bringing its transparency on this to a level comparable with HMRC. But it records a negligibly small contingent liability in this area, which seems less transparent than HMRC.

Updated risk assessment

5.64 There have been many relevant developments since we published the 2017 *FRR*. These include several policy announcements and further delays to delivery plans, the results of formal reviews of future state pension age policy, the crystallisation of some legal risks, and the conclusions from our two most recent *Welfare trends reports (WTR)*, which looked in depth at universal credit (in *WTR 2018*) and disability benefits (in *WTR 2019*).

Overall medium-term risks

5.65 Cyclical and other changes in the economy pose several risks to welfare spending, in particular on working-age people. With the uprating freeze on most working-age benefits now ending, cash spending from 2020-21 onwards will be more sensitive to inflation. Caseloads are also sensitive to trends in the labour market, housing market and health status, though the latter matters more over longer horizons. The contribution of these and other factors to past fluctuations in welfare spending were covered in our 2014 *WTR*.

5.66 Aside from economy-related risks, medium-term risks to welfare spending largely concern the Government's reform of the welfare system, reflecting policy risks, legal challenges, implementation risks and risks to take-up among eligible populations.

Policy risks

- 5.67 We do not make assumptions about how Government policy might change in the future, but we can consider the risks posed by:
- **Stated policy intentions:** these typically lack the detail and certainty necessary to include their effects in our forecasts, but they do signpost future policy and we can therefore consider their potential impact on the public finances.
 - **Existing trends in policy:** to the extent that recent history might provide a reasonable guide to the future, the continuation of such trends can be identified as potential risks to our forecasts. The fuel duty freezes described in Chapter 4 are a prime example.
- 5.68 The Government's March 2019 announcement that it intends to test combining personal independence payment (PIP) assessments and employment and support allowance (ESA) / universal credit (UC) work capability assessments poses one such risk.²⁸ DWP envisages that this would only apply to the small number of claimants who make an application to both benefits within a 3-month window, and require face-to-face assessments for both. If limited in this way, the spending consequences would be small, as individuals would still need to apply for each benefit separately. But bringing some assessments together could result in higher take-up of both benefits, and particularly PIP, as more people become aware that they may be entitled to both rather than just one (particularly if the assessments then become more automatic). If this change were adopted, it could increase welfare spending – for example, every 10,000 extra PIP claimants would cost around £50 million a year. By way of illustration, in November 2018 there were around 450,000 people receiving the support group rate of ESA, or the equivalent rate in UC, who do not receive PIP or disability living allowance (DLA), showing the potential for significant increases in take-up.²⁹
- 5.69 Take-up risks also arise with the BBC's June 2019 announcement that it intends to end universal provision of free TV licences to the over-75s and instead restrict entitlement to households where someone receives pension credit. It is accompanying this change with an awareness campaign, using its broadcast channels and letters to affected households to promote take-up of pension credit. This is likely to raise welfare spending (see Box 5.1).

²⁸ Secretary of State for Work and Pensions, *Health and Disability Announcement*, Written statement to the House of Commons, WS1376, 5 March 2019.

²⁹ We focus on the ESA support group here as these claimants are most likely to qualify for PIP as well. In November 2018 a further 335,000 claimants of ESA outside the support group, or the UC limited capability for work component, did not receive PIP or DLA.

Box 5.1: How much might it cost to means-test free TV licences for the over 75s?

Free TV licences for households including someone aged 75 or over were introduced in 2000, with the BBC being compensated for the foregone revenue by the Department for Work and Pensions (in effect transferring some of the BBC's funding from licence fee receipts to general taxation).^a In 2006, the licence fee as a whole was reclassified as a tax, making the free licences in effect a tax relief. All BBC income and spending is treated as part of the public sector finances.

In the July 2015 Budget the Government announced that compensation from DWP would be withdrawn progressively, so that from 2020-21 the full cost of free TV licences would be borne by the BBC. As part of that agreement, the Government gave the BBC responsibility for the policy beyond the term of the then current Parliament, legislated for in the Digital Economy Act 2017. We have assumed to date that the BBC would maintain the current system of free TV licences, so that the reduction in compensation would reduce BBC spending and the budget deficit.

However, the BBC launched a consultation on the future of the concession in November 2018, and in June 2019 announced its decision not to maintain the current system but to focus eligibility on households containing someone aged 75 or over who receives pension credit. A report prepared for the BBC by Frontier Economics estimated that maintaining the current regime would cost the BBC £745 million in 2021-22, but that means-testing it in this way would reduce the cost to £209 million, after accounting for additional administration and compliance costs but assuming no increase in pension credit claims.^b Announcing its decision, the BBC Board estimated the full cost at £250 million, factoring in *"implementation costs including compliance with the new policy and possible increased take-up of pension credit"*.^c

The scale of any likely increase in pension credit claims is highly uncertain. If the £40 million increase in costs estimated by the BBC Board were accounted for entirely by higher take-up, this would imply around an extra 250,000 claimants, costing around £850 million depending on their characteristics – more than the original move was expected to save the Government. And since the BBC will spend the £500 million or so it saves by means-testing, the overall cost to the public finances will be even greater relative to the assumptions in our latest forecast.

DWP estimates there were around 470,000 people aged 75 or over who were entitled to the guarantee element of pension credit in 2016-17 but who did not receive it, almost 40 per cent of the total number entitled. These had an average entitlement of £65 a week, resulting in around £1.6 billion of unclaimed benefit among this age group.^d So around half of that group would need to start claiming to wipe out the expected savings from transferring responsibility to the BBC and the BBC cutting its domestic spending by a corresponding amount. But if the BBC spends what it saves via means-testing free licences, that fraction would fall to only a sixth.

Experience from 2003 to 2008, when DWP undertook extensive activity to encourage pension credit claims, suggests that very large increases in take-up are unlikely, but more than a sixth is quite possible. The critical difference this time is that potential claimants are facing a potential loss via the licence fee, whereas then they were only forgoing income they had never claimed. During this period, take-up of guarantee credit initially increased, but plateaued at between 70 and 80 per cent of those eligible. DWP narrowly missed its 2008 target of 2.2 million guarantee credit claims and fell further short of its 3.2 million target for pension credit.

Part of this disconnect between the then estimates of entitled non-recipients and the ability for DWP staff to identify them was thought to be shortcomings in the estimation methodology, in particular mis-recording of benefit receipt by respondents to the family resources survey (FRS) and the understatement of savings. But methodological improvements since then, including matching FRS responses to administrative data, have increased rather than reduced estimated non-take-up, partly as a result of better identification of disability benefit receipt, which further increases the numbers entitled to pension credit (and the amounts they receive).

The publicity associated with the latest change will also be different, with more scope for the BBC to use its channels to advertise pension credit than DWP had with a limited communications budget. The BBC has stated its aim to encourage take-up of pension credit, saying:

"... We want to raise the visibility of Pension Credit, which Age UK cites as one of the reasons why people don't claim, and have already written to charities and older people's groups to work together to do this. We have started a public information campaign which includes using our airwaves and writing to all 4.6 million households setting out the new scheme. We hope that pensioners will consider claiming as they could then be eligible for around £2,500 and other benefits as well as a free TV licence."

DWP took a similar approach, but eventually concluded that *"it would not represent value for money to repeatedly press unwilling eligible people to take up their entitlement."*^e

Today's over 75s might, however, have different experiences and awareness of the benefit system, and attitudes to claiming, than their counterparts 15 years previously. This may increase the likelihood of take-up. Between 2012-13 and 2016-17 the proportion of eligible people aged 75 or over taking up the guarantee element of pension credit has fallen by almost 10 percentage points. This is likely to reflect a combination of the lack of proactive take-up promotion by DWP and the gradual reductions in pension credit as a whole as the savings credit element has been eroded in value. If this fall in take-up were reversed, there would be around 120,000 extra claimants of pension credit, at an annual cost of around £400 million.

The BBC's announcement appears already to have had an effect. New pension credit claims rose from 7,600 in the four weeks to 7 June (immediately prior to the announcement) to 9,300 in the four weeks to 4 July. After allowing for the fact that no new claims were made on the late May bank holiday, that represents an increase of around a quarter.

Potential knock-on effects of the BBC's decision extend beyond pension credit. In particular the act of claiming pension credit might prompt additional claims for attendance allowance, particularly among those who receive advice from third parties. And for those renting their homes, claiming pension credit could increase claims for housing benefit, though given the higher level of take-up of housing benefit among pensioners (perhaps due to it often being paid through a reduction in rent rather than as a benefit), the risks here appear smaller.

In summary, it is relatively unusual for a government to delegate parameters of welfare policy to a broadcasting company in an attempt to save money, and it is perhaps not surprising that this may have unintended consequences. The BBC's decision to means-test free TV licences via a link to pension credit receipt may well raise welfare spending by more than it reduces BBC spending,

particularly once the BBC spends the money it saves by means testing. The net effect on the public finances would therefore be to push the budget deficit up not down.

Government policy towards the licence fee in recent years also highlights the fiscal illusions and policy risks to which hypothecated taxes or charges of this sort are prone. In principle the licence fee is a charge that people choose to pay for the right to receive broadcast services, but the link between the amount that licence holders pay and the money that the BBC spends providing its share of those services has been weakened first by requiring it to pay for part of foreign policy (the World Service from 2014) and now part of welfare policy. Given the fate of other attempts to reduce the generosity of parts of the welfare system in recent years, there is also a risk that the Government will step in to prevent or ameliorate the losses for those due to lose out.

^a In the public finances, this is shown as reduced licence fee receipts, with BBC spending unaffected. As the reimbursement from DWP to the BBC is a transaction that moves funds between entities within the public sector, this is not included within welfare spending.

^b Frontier Economics, *Review of over-75s funding: A report prepared for the BBC*, November 2018.

^c BBC, *Age-related TV licence policy decision document*, June 2019.

^d Focusing only on the guarantee element of pension credit is appropriate in this instance, as the savings credit element is no longer open to new claimants, and has gradually been eroded in value since 2010.

^e DWP *Departmental Report 2008*, May 2008.

- 5.70 A recent policy trend that poses a medium-term risk to spending relates to reforms to UC. UC was originally expected to cost more than the benefits it replaced, but a succession of cuts culminating in the 2015 Summer Budget package resulted in it being expected to save around £3 billion a year, compared to the system it replaced, once fully rolled out.
- 5.71 Since then this marginal effect of UC has been revised back to a cost, partly thanks to a succession of giveaways, including the partial reversal of previously announced cuts to work allowances and a more generous earnings taper. In our latest forecast, UC costs £1.6 billion a year more than the legacy system once fully rolled out. But there are still substantial elements that are expected to save money. As greater numbers of people come into contact with the system, calls for policy giveaways have tended to increase, resulting in some of the recent reversals we have seen. This could well continue, particularly in respect of elements that are less generous than the legacy system.³⁰ This risk is heightened by the need, under current legislation, for DWP to seek approval from Parliament before it can extend managed migration to a caseload greater than the 10,000 cases in its pilot phase.
- 5.72 Another notable trend in UC policy is the pairing of measures increasing generosity with those lowering costs. In the past three fiscal events that included UC policy changes, increases in generosity were accompanied by delays or alterations to the managed migration phase that deliver temporary savings, in particular by lowering the cost of transitional protection paid to claimants who would otherwise lose out financially when being moved from their legacy benefits onto UC. This typically involves permanent costs being paired with temporary savings, so it generates longer-term costs.

³⁰ In a recent report, the Institute for Fiscal Studies noted that “77% of those who lose at least £1,000 p.a. are affected by universal credit’s harsher treatment of one of the following groups: those with financial assets; the low-earning self-employed; couples where one member is above state pension age and the other below; and some claimants of disability benefits.” See IFS, *Universal credit and its impact on household incomes: the long and the short of it*, IFS Briefing Note BN248, April 2019.

Legal challenges

- 5.73 Legal challenges pose a risk to spending, and these are more likely when there is major reform of the system creating scope to test the interpretation of new legislation. Over the past two years, legal challenges, or the potential for them, have led to two special ‘legal entitlements and administrative practices’ (LEAP) exercises, resulting in additional spending that is included within our March 2019 forecast:
- In **ESA**, claimants who were reassessed from incapacity benefit between 2011 and 2014 did not have their entitlement to income-related ESA considered if they were not in receipt of income support at the time of reassessment, and were only assessed for contributory benefit. They are now being assessed retrospectively for entitlement to the income-related component. This exercise is now expected to cost £920 million in arrears of benefit, with a continuing cost of around £100 million a year.
 - In **PIP**, following two Upper Tribunal judgements,³¹ and a subsequent judicial review, an exercise is being undertaken to award arrears of benefit to some claimants who should have scored more highly in the PIP assessment. Our March forecast assumed this would cost £450 million in arrears of benefit, with a continuing cost of around £480 million a year for these claimants and future claimants who will now receive higher scores. As of mid-June 2019, DWP had reviewed and cleared around 440,000 cases, from which 3,500 arrears payments had been made to qualifying claimants, totalling around £15 million.³² The very low proportion of reviewed cases giving rise to arrears suggests that our March forecast assumptions will prove too high, although if particular types of case are reviewed first then these early success rates may not be representative of the overall success rate.
- 5.74 These are two examples of a steady stream of legal challenges in the benefits and tax credits systems. The larger ones tend to focus on disability and incapacity benefits, but all parts of the welfare system are subject to them. For example, the bereavement benefits system was recently successfully challenged in respect of its treatment of unmarried couples.³³ In our previous *FRR* we noted that DWP’s departmental accounts did not report the expected or potential cost of current or anticipated legal challenges, in contrast to HMRC’s treatment of tax litigation risks. DWP has now made explicit provisions for previous underpayments of benefit – its 2018-19 accounts record just over £1.2 billion covering the above two exercises and a general provision of £390 million for further legal cases where there is a probable cost.³⁴
- 5.75 Following a lengthy campaign by the ‘Women Against State Pension Inequality’ (WASPI) group, a legal challenge has been brought by the ‘Backto60’ group against the 1995, 2007 and 2011 Pensions Acts that respectively equalised the state pension age for men and

³¹ *MH v Secretary of State for Work and Pensions (PIP)* [2016] UKUT 0531 (AAC) and *RJ, GMcL and CS v Secretary of State for Work and Pensions (PIP)*: [2017] UKUT 105 (AAC). We discussed the first case further in our 2019 *Welfare trends report*.

³² DWP, *PIP administrative exercise: progress on cases cleared*, at 14 June 2019, July 2019.

³³ *In the matter of an application by Siobhan McLaughlin for Judicial Review (Northern Ireland)* [2018] UKSC 48.

³⁴ Department for Work and Pensions Annual Report and Accounts 2018-19, June 2019. The provision in respect of the two LEAP exercises include in our forecasts is less than the arrears shown above, as these include payments made before 31 March 2019.

Primary spending risks

women at 65, raised it further to 66 (originally from 2024-26), then accelerated the timetable so that it is now due to reach 66 by October 2020. The judicial review hearing took place in June 2019, but the outcome is not yet known. Our forecasts assume the state pension age continues rising according to the legislated timetable, so any decision to alter that timetable, or to pay compensation, would crystallise a potentially large fiscal risk.

- 5.76 The cost of any ensuing policy changes would depend on their precise nature. An illustration of potential scale is provided by DWP's estimate that had the Acts not been implemented, cumulative spending over the period 2010-11 to 2025-26 would be £215 billion higher.³⁵ It put the difference at £21 billion in 2021-22 (the first full year after the state pension age reaches 66), rising in real terms thereafter. A range of other proposals would have smaller, although generally still substantial, costs.³⁶ None of these estimates consider the implications for tax receipts if some proportion of those affected chose no longer to work.
- 5.77 DWP's latest accounts mention the state pension age judicial review in respect of complaints it receives as a result of the continuing campaign, but not any associated contingent liability should the judicial review ruling find against the Government. Instead it makes only a general statement that *"The Department has other ongoing legal cases that are not being disclosed as either contingent liabilities or remote contingent liabilities as any disclosure could prejudice the Department's position"*. It records a contingent liability of just £82 million in respect of ongoing cases, which clearly does not include this one.
- 5.78 Our forecasts do not incorporate the cost of potential future legal cases that are currently unknown explicitly, but there will be an implicit allowance to the extent that previous legal cases have affected the observed trends in caseloads and spending that inform our judgements about future trends. The cost of future legal cases could be greater than we implicitly assume. It will almost certainly be higher than the £82 million in DWP's accounts.

Implementation risks

- 5.79 In our previous *FRR*, and in our 2018 *WTR*, we highlighted the repeated delays in rolling out UC and moving all existing claimants onto the new system. Since then there have been further delays, with completion now assumed in 2023-24 – six years later than originally planned. There remain significant obstacles ahead. But rollout delays only represent an adverse fiscal risk when the policy itself is designed to save money. UC policy changes over the past two years mean UC is now expected to cost a little more than the legacy system, so further delays will tend to reduce spending a little, unless they disproportionately affect aspects of the reform that reduce spending relative to the legacy system.
- 5.80 The past two years have also seen further delays in completing the reassessment of existing working-age DLA claimants for transfer to PIP. We now estimate that this will be completed in early 2021, five years behind the original plan. This date is still subject to uncertainty too, for example if capacity to undertake the required assessments were to prove inadequate. As detailed in our 2019 *WTR*, PIP no longer saves the money it was originally intended to and

³⁵ DWP, *Analysis relating to State Pension age changes from the 1995 and 2011 Pensions Acts*, June 2019.

³⁶ See House of Commons Library, *State pension age increases for women born in the 1950s*, Briefing paper CBP-7405, 20 June 2019.

on average those who are reassessed are expected to receive a higher amount of PIP than they did of DLA. Consequently, delays generate small savings – the March 2019 delay saved around £150 million in 2019-20, the year of the largest effect. So, as with UC now, our forecast is relatively insensitive to further changes in this rollout.

- 5.81 As regards the new state pension, while we have not yet needed to make significant revisions to our medium-term forecasts, this remains a risk since the first few years' data have yet to be fully analysed for any implications for our forecast. Given the rapid growth and ultimately large scale of spending on the new state pension – it rises from £8.0 billion in 2018-19 to £35.1 billion in 2023-24 in our latest forecast, but will ultimately rise to well over £100 billion a year – even relatively small changes in forecast assumptions could generate fiscally material forecast revisions.

Other take-up risks

- 5.82 In addition to policy-related take-up risks, the UC rollout itself also poses an upside risk to PIP take-up, because material numbers of longer-term ESA claimants who have had little contact with the benefits system for a long period are required to make a claim to UC. It is possible, particularly if they require advice and assistance from third parties, that awareness of PIP will increase and therefore also the number of claims.

Overall long-term risks

- 5.83 In the long run, the size, structure and characteristics of the population are the most important determinants of welfare spending. Policy choices also play a part, with changes in the state pension age (SPA) being used as a tool by successive governments to help mitigate the fiscal effects of increasing life expectancy. The rules for uprating benefits can also have significant effects on spending when they build up over a long time period.

Population ageing and the state pension age

- 5.84 The ageing population places pressure on spending as the proportion of the population eligible for pension-age benefits increases (holding eligibility rules constant). These benefits now account for over 55 per cent of welfare spending, which is forecast to rise further. Two key developments have affected our long-term projections of pensioner benefits spending and our assessment of the associated fiscal risks. Both were incorporated in our 2018 FSR:
- **The Government's response to two reviews of the state pension age:** the independent review led by John Cridland and the review conducted by the Government Actuary's Department were both published in March 2017.³⁷ The response consisted of a plan to bring forward the increase in the SPA to age 68 from 2046 to 2039 and to establish a presumption that an individual should, on average, spend 'up to 32 per cent' of their adult life in receipt of state pension.³⁸ The Government stated that there would be a further review before legislating to bring forward the rise to 68, to allow consideration

³⁷ John Cridland CBE, *Independent review of the state pension age: Smoothing the transition*, March 2017 and Government Actuary's Department, *Periodic review of the rules about State Pension age: Report by the Government Actuary*, March 2017.

³⁸ Bringing forward the increase to age 68 does not, however, achieve the '32 per cent of adult life' principle, since the timetable is constrained by a further principle that the SPA should only increase by one year every ten years.

of updated life expectancy projections, and that it would not formalise policy beyond 2039. Our 2018 *FSR* projections show that bringing the rise to 68 forward from 2046 to 2039 would ultimately reduce spending by 0.2 per cent of GDP a year. Our projection based on longevity-linked SPA rises (reaching 70 in 2068) is 0.6 per cent of GDP lower than that on the currently legislated timetable to 68 in 2046 in 2067-68.

- **The ONS's 2016-based population projections:** these included large upward revisions to mortality rates compared to the previous projections, with 4.6 per cent fewer people aged above the SPA in 2067 than previously assumed. But downward revisions to assumptions about fertility and net inward migration meant that the projected old-age dependency ratio in 2067 was revised up slightly from 46.2 to 46.8 per cent. It is this ratio that matters most for the effect of ageing on fiscal sustainability.

5.85 Taken together, the accelerated SPA timetable more than offset the effect of a higher old-age dependency ratio to reduce our estimate of state pension spending in 2067-68 by 0.2 per cent of GDP, relative to our previous projection. But population ageing is still a significant source of long-term spending pressure in the UK – our baseline *FSR* projection of spending on state pensions rises from 5.0 per cent of GDP in 2022-23 to 6.9 per cent of GDP in 2067-68. And these figures remain highly sensitive to assumptions about the population structure. Moving from our baseline projection to one based on the ONS old-age variant raises spending in 2067-68 by 0.5 per cent of GDP.

Benefit uprating

5.86 Our long-term projections assume that the Government's current uprating policy for the state pension – the 'triple lock' – continues. This raises the value of both the new state pension and the basic state pension that preceded it by the highest of CPI inflation, earnings growth or 2.5 per cent each year. It therefore causes spending to rise as a share of GDP if average earnings growth exceeds nominal GDP growth per person or if average earnings growth is low relative to CPI inflation or 2.5 per cent, as it has been in recent years.

5.87 We factor in the effect of the triple lock as an average premium relative to earnings growth, to reflect the assumed likelihood and extent of earnings growth falling short of CPI inflation or 2.5 per cent. In our 2018 *FSR*, we estimated this to add 0.36 percentage points to average uprating (a touch higher than in our 2017 *FSR*). This translates into state pension spending being around 1 per cent of GDP higher in 2067-68 than if it were uprated with earnings growth alone. The triple lock has been triggered once since the March 2017 *EFO* that was the most recent forecast at the time of our previous *FRR*. This was as predicted in that forecast, but its effect (in April 2018) was 0.6 percentage points larger than assumed, at 0.8 percentage points above earnings growth. A 0.6 percentage point difference raises spending on items subject to the triple lock by around £550 million a year by 2023-24.

5.88 In our November 2017 *EFO* we revised down our medium-term trend productivity growth assumption by 0.7 percentage points a year, which reduced average earnings growth commensurately. For the 2018 *FSR* we assumed this weakness would ultimately fade and that productivity growth would return to 2.0 per cent a year after an extended period. Were

growth in productivity and average earnings to be lower permanently, the cost of the triple lock would be expected to be higher as there would be a greater likelihood of earnings growth in any given year lying below CPI inflation or 2.5 per cent. This would ratchet up state pension spending relative to GDP more quickly. Over the period we use to calculate the triple lock premium, if earnings growth is uniformly reduced by 0.7 percentage points, the premium would almost double. That would add around a further 1 per cent of GDP to state pensions spending in 2067-68. In this respect, the long-term fiscal risk associated with the triple lock might be even greater than we had previously assumed.

- 5.89 The IMF studied the triple lock in its 2018 Article IV consultation on the UK, noting among other things that it is unique among advanced economies. Some governments uprate pensions by prices, some by earnings and some by a blend of the two, but *“The UK minimum 2.5 percent lock is an outlier compared to other countries’ indexation policies.”*³⁹
- 5.90 The Government’s response to our 2017 *FRR* noted that the triple lock supports pensioner incomes, but did not explain why it thought that the fiscal risks this poses were appropriate.
- 5.91 Other aspects of benefit uprating create favourable risks for the public finances, compared to our baseline projections. Under our ‘unchanged policy’ assumptions, our *FSR* projections assume that children’s and working-age benefits (along with some smaller pensioner benefits) are uprated in line with average earnings from the end of our medium-term forecast. Current government policy is for these benefits to rise in line with CPI inflation, and if this were to be maintained for 15 years beyond the end of the medium-term forecast, then welfare spending would be 1.0 per cent of GDP lower. But average incomes of benefit recipients would also fall by 28 per cent relative to average earnings over that period.

Rising prevalence of disability benefit receipt

- 5.92 Disability benefits accounted for around 11 per cent of all welfare spending in 2018-19.⁴⁰ Their cost is sensitive to the number of people that experience disabling conditions. In our 2019 *WTR* we noted that disability benefits spending had risen by 0.7 per cent of GDP since 1991-92 and that the cost was expected to continue rising over the medium term. The key driver has been caseloads rising as a share of the population, which has coincided with survey evidence of rising prevalence of disability in the population.⁴¹
- 5.93 The link between disability prevalence and the prevalence of disability benefit claims in the population is not one-for-one. Eligibility criteria, administration and take-up behaviour also play important roles in determining the size of the disability benefits caseload. Receipt of disability benefits has tended to rise by more than survey measures of disability prevalence (even after taking account of the ageing population and the fact that prevalence rises significantly with age).⁴² Despite that, the number of disability benefit recipients (around 5.1

³⁹ See Box 2 in IMF, ‘Long-term fiscal challenges in the UK’, *United Kingdom Selected Issues*, November 2018.

⁴⁰ By disability benefits, we mean those benefits that aim to provide support to the extra costs incurred by those with disabling conditions. In terms of current benefits, this includes disability living allowance, personal independence payment and attendance allowance.

⁴¹ See Chapter 2 of our 2019 *WTR* for a more detailed discussion of trends in disability prevalence over time.

⁴² The prevalence of receipt rises for each year above the age of 65, with around 12 per cent of the 65-year-old population in receipt of a disability benefit in 2018. This figure rises to around 17 per cent of 75-year-olds and over 50 per cent of those aged 90+. See Chapter 3 of our 2019 *WTR* for a more detailed discussion of trends in prevalence of receipt by age.

Primary spending risks

million in 2016-17) remains well below the number of people reporting disabling conditions in DWP's annual survey of family circumstances (around 14.4 million in 2016-17). This suggests that significant scope remains for further increases in disability benefit receipt even were there to be no further changes in the prevalence of disabling conditions.

- 5.94 Age-specific prevalence of benefit receipt has evolved over time. It has tended to increase for children and working-age adults, while for pension-age adults it increased continuously in the four decades to 2010 but has fallen since then. The recent trend for pensioners is consistent with an increase in disability-free life expectancy, although there may be other shorter-term drivers. However, even if the likelihood of receiving a benefit is falling at some older ages, increasing life expectancy is likely to result in individuals receiving a disability benefit for longer in future. The extent to which additional years of life are spent with or without a disability, and how this translates into disability benefit receipt, is very uncertain and could change substantially. The adverse fiscal risks associated with the disability benefits system would be greater were receipt at any given age to rise faster than assumed or the ageing of the population to be more rapid than projected.
- 5.95 This discussion assumes the continuation of current Government policy. In reality, of course, it is likely to change, and history points to the scope of disability benefits widening over time, for example as society recognises a broader range of (particularly mental health) conditions.

Conclusions

- 5.96 Our assessment of the fiscal risks posed by welfare spending is little changed from 2017. By far the largest remains the long-term pressure associated with an ageing population, though this is being mitigated through increases in the SPA. It is also relatively slow-moving, affording time for policy to respond to these pressures. Our latest analysis of health and disability trends, and their implications for disability benefits spending, suggests that is a greater source of risk than we recognised in 2017. The triple lock remains a significant source of risk that the Government has chosen to take on – and the chance and cost of it crystallising is greater when productivity and real earnings growth are lower. Longer-term policy towards state pension uprating is unclear. Fiscal risks associated with the rollout of universal credit and reforms to the disability benefits system have diminished, because neither is now expected to save money, which means the fiscal impact of delays is minimal. But fiscal risks from legal challenges still appear significant, though reporting on those that are viewed as probable is now more transparent.

Local authorities and public corporations

Summary of previous *FRR* discussion and the Government's response

- 5.97 In 2018-19, local authorities spent around £179 billion (22 per cent of total public spending). Around 60 per cent was financed by funding from central government, with the remainder financed by local sources of income – notably council tax and business rates.

5.98 Our 2017 *FRR* discussed various signs of pressures on local authorities' budgets. These included the large cuts in central government grant funding (only partly offset by further devolution of tax-raising and spending powers), pressures on the use of reserves, overspending against specific budget lines (in particular children's and adult social services), and their pursuit of alternative income sources (most notably through commercial investments). The key medium-term fiscal risks related to their ability to deliver the real per capita spending cuts implied by our then forecasts and the Government's spending plans.

5.99 In that context, we highlighted two of these issues for the Government's response:

- Initial signs that local authorities have started **running down their reserves**.
- Examples of local authorities undertaking **potentially risky commercial investments**.

5.100 We also noted:

- **Delivery of core services to standard**. Should delivery begin to fall short of legally or politically acceptable levels, pressure for more funding could build.
- At the extreme, **one or more local authorities could in effect become insolvent**, but that this was unlikely given systems in place to prevent it and no examples in recent history.

5.101 In *Managing fiscal risks*, the Government:

- Reported that it had updated the terms of the **Debt Management Account Deposit Facility** to give local authorities greater choice over how to invest their cash, while also helping it monitor local authorities' financial resources.
- Pointed to the updated prudential framework for **borrowing** that is underpinned by guidance published by MHCLG and the Chartered Institute of Public Finance and Accountancy, and new recommendations of quantitative indicators for local authorities to prepare and monitor when making investment decisions. The Government stated that it would "*monitor how local authorities respond to the revised guidance, and take appropriate further action if this is necessary*".
- In respect of **pressures on core services**, noted that it had set four-year funding allocations and had raised them in the Local Government Finance Settlement 2018-19 (albeit by a modest £1 billion over two years). As regards the imposition of Section 114 spending controls at Northamptonshire County Council in January 2018, it pointed to the independent inspector's report that found these reflected failings in the Council's internal controls rather than funding cuts.⁴³
- As regards **the risk of insolvency**, it pointed to the existing legal framework governing balanced in-year budgets and restrictions on borrowing and that no local authority had defaulted on its borrowing since the Prudential Code was introduced in 2004.

⁴³ Max Caller CBE, *Northamptonshire County Council Best Value Inspection*, 15 March 2018.

5.102 We also noted risks around public corporations relating to the possibility of excessive borrowing, shocks to financing costs and persistent loss-making.

Updated risk assessment

Local authorities

5.103 There have been several developments over the past two years that have affected our assessment of the fiscal risks associated with local authorities:

- The apparent trend towards drawing down from **current reserves** has reversed. The proceeds of measures that boost funding – for example, piloting business rates retention – have seemingly been saved rather than spent. In aggregate, authorities added to reserves in 2017-18 and we expect them to have done so again in 2018-19. The situation can be different for individual authorities – the Chartered Institute of Public Finance and Accountancy estimates that 10 to 15 per cent of local authorities exhibit at least some signs of risk to their financial stability.⁴⁴ The scale of the potential risk posed by reserve drawdowns remains large though – local authorities held £21.9 billion as of the end of March 2018.⁴⁵ But the likelihood of it crystallising has declined.
- By contrast, we have been surprised on the upside by local authorities' **borrowing** for capital spending. 'Prudential' borrowing increased from £6.7 billion in 2015-16 (the latest data at the time of our previous *FRR*) to £12.2 billion in 2017-18 (fully £6.8 billion higher than we forecast in March 2017). Much of this has been borrowed from the Public Works Loans Board (PWLB), with Spelthorne Borough Council being the largest user of PWLB funding to pursue commercial investments (see Box 5.2). The rapid expansion of prudential borrowing by local authorities suggests that this is a greater source of risk than we thought two years ago. It also raises questions about the effectiveness of the revised guidance in the Prudential Framework. We therefore asked the Treasury whether, as it suggested in *MFR*, its monitoring of the situation suggested further action would be appropriate. It told us:

"The Government is aware of a few authorities who are continuing to undertake significant amounts of borrowing for commercial purposes. Government shares the concerns of CIPFA and others about the risks that these local authorities are exposing themselves and local taxpayers to. MHCLG is now engaged in a post implementation review of the changes to the prudential code, to understand how the updated guidance and codes have been received by the sector and to evaluate the effectiveness of the revised framework. Findings from the review will be published in due course."

- Policy decisions added modest amounts to local authority **sources of income** – for example, increasing the cap on annual council tax increases (without being subject to a local referendum) and various extensions to business rates pilots. But there is still no clarity about the design of full business rates retention or when it will be implemented.

⁴⁴ The Chartered Institute of Public Finance and Accountancy, *Measured resilience in English authorities*, December 2018.

⁴⁵ Ministry of Housing, Communities and Local Government, *Local authority revenue expenditure and financing: 2017-18 final outturn, England – Revised*, 20 March 2019.

- The Government has made a **series of interventions in Northamptonshire County Council**. First it appointed two Commissioners to oversee the Council, who recommended scrapping it and replacing it alongside seven others with two unitary councils. The Council's officers then issued a second Section 114 notice banning all new spending except on statutory services for protecting vulnerable people. The Government appointed its own children services commissioner, while granting the council permission to use capital receipts to fund current spending. It also sanctioned a 5 per cent council tax rise in 2019-20 without a local referendum. In July 2019 the Council reported that it had *under-spent* its budget by £4.5 million.⁴⁶ The many and exceptional steps the Government has been willing to take reinforces our assessment that the risk of a local authority becoming insolvent is low because central government would step in first. It also suggests that the scale of fiscal risk here is small.

- 5.104 In our previous report we noted that local authorities' decisions about where to invest their reserves or other surplus funds had generated risks in the past, including the fall-out from the interest rate swaps litigation in the early 1990s (notably in relation to Hammersmith and Fulham London Borough Council) and, more recently, when it appeared possible that local authorities would lose money deposited at high interest rates in Icelandic banks that failed during the global financial crisis. In a similar vein, it has recently emerged that Kent County Council had invested £263 million (as of the start of June) in the Woodford Equity Income Fund, which has barred all investors from withdrawing their funds.
- 5.105 Our overall assessment of the fiscal risks posed by local authorities is little changed. They could crystallise via reserves drawdown; top-ups to central government funding; or if central government chooses to step in if one or more local authorities were unable to service its borrowing. These risks appear balanced and their magnitude is likely to be relatively small. We continue to see a low risk of authorities defaulting on their borrowing and that central government would probably step in before an authority reached the point of insolvency. But the scale of local authority borrowing is greater than we were expecting two years ago.
- 5.106 Ultimately, the key driver of such risks crystallising could be the delivery of core services to standard. Should delivery begin to fall short of legally or politically acceptable levels, pressure for more funding could build. If that were deficit financed, rather than tax financed, it would represent a fiscal risk. This assessment is unchanged from our previous report.

⁴⁶ Northamptonshire County Council, *Outturn Report for the financial year ending 31st March 2019*, July 2019.

Box 5.2: The rise in 'prudential' borrowing – the Spelthorne example

Recent years have seen a marked rise in 'prudential' borrowing, driven increasingly by local authorities taking advantage of low interest rates offered by the Public Works Loan Board (PWLB). Local authorities' PWLB debt has risen from £64 billion in March 2015 to £66 billion in March 2017 and now stands at £77 billion in March 2019.^a There are currently seven authorities with outstanding balances in excess of £1 billion: Transport for London, the Greater London Authority, Birmingham City Council, Leeds City Council, Woking Borough Council, South Lanarkshire Council and Spelthorne Borough Council. Spelthorne Borough Council, home to just 100,000 people, has acquired its £1 billion of PWLB debt in the space of just three years.

Spelthorne's PWLB borrowing has mainly financed the acquisition of commercial property. The Council argued that it was using fixed low rates of interest to "help offset the impact of disappearing general revenue grant support from the Government".^b On its largest investment so far – the £385 million purchase of the BP campus in Sunbury-on-Thames – the independent auditor of its accounts cited a "number of significant weaknesses in the Authority's arrangements to secure economy, efficiency and effectiveness in its use of resources".^c Since then Spelthorne has made further high-value property purchases – an office block in the City of London and another office development in Nine Elms, Battersea – more than doubling its PWLB borrowing.

Woking Borough Council has also taken on £0.6 billion of PWLB debt since March 2017,^d financing the acquisition of retail and property sites, with its largest investment so far the new Victoria Square commercial and property development (at an estimated cost of £500 million).

In May 2019 the Public Accounts Committee highlighted concerns that while governance arrangements for the sector as a whole were "generally robust", some councils have "audit committees that do not provide sufficient assurance, ineffective internal audit, weak arrangements for the management of risk in local authorities' commercial investments, and inadequate oversight and scrutiny". It also recommended that MHCLG increases its oversight of the sector urging it to ensure "concrete actions and outcomes on a timely basis".^e

A number of commentators have highlighted the risks from the concentration of local authority investments in commercial property, given uncertainty over the future financial prospects of such investments. Commercial property is often among the hardest hit asset classes during economic downturns. Prices fell 24 per cent in two years around the 2008 financial crisis.

^a Ministry of Housing, Communities and Local Government, *Borrowing and investment live table*, Q4 2018 to 2019, July 2019.

^b Spelthorne Borough Council, *Statement of Accounts 2016-2017*, February 2019.

^c Spelthorne Borough Council, *Statement of Accounts 2016-2017*, February 2019.

^d Debt Management Office, *Public Works Loan Board year end values*.

^e House of Commons Committee of Public Accounts, Local Government Governance and Accountability, Ninety-Seventh Report of Session 2017–19, May 2019.

Public corporations

- 5.107 Little has changed over the past two years to influence our assessment of the fiscal risks posed by public corporations. The most significant development has been the delays to the completion of Crossrail, which have adversely affected Transport for London's finances and required additional funding from central government to complete the project (see

paragraph 5.21). The possibility of excessive borrowing, shocks to financing costs and persistent loss-making remain the most likely sources of future fiscal risks.

Devolved administrations

Summary of previous *FRR* discussion and the Government's response

- 5.108 Directly elected devolved administrations in Scotland, Wales and Northern Ireland have controlled substantial public service spending since the late 1990s. Significant tax revenue has also been devolved since 2015. Funding for the devolved administrations is largely allocated via a block grant using the Barnett formula, but to account for tax devolution the Scottish and Welsh Governments' block grants are additionally adjusted in line with the fiscal frameworks signed with the UK Government in 2016.⁴⁷ We saw the core fiscal risk to the UK public finances in this area being that a devolved administration becomes unable to fund essential services while servicing any debts it has taken on, prompting the UK Government to 'bail out' a devolved administration rather than allow public services to fail.
- 5.109 We concluded that the risk was low for two main reasons. First, borrowing powers are relatively constrained, which should limit the pressure from debt servicing. Second, the devolved administrations can move resources around within their overall settlements to manage spending pressures as they occur, with any pressure more likely than not to build up relatively slowly. But the fiscal frameworks act to insulate the administrations from UK-wide economic shocks, so more of the risk from moving to greater self-financing is borne by the UK Government than is the case for local authorities.
- 5.110 In responding to our report, the Government also noted that the fiscal frameworks require independent scrutiny of the devolved administrations' tax forecasts, which should reduce the risk of overly-optimistic forecasts and in turn large forecast errors and funding shortfalls. This is carried out by the Scottish Fiscal Commission in Scotland and will be by us in Wales.

Updated risk assessment

- 5.111 Since our 2017 report there have been two relatively minor developments affecting our assessment of the fiscal risks associated with the devolved administrations:
- The Scottish Fiscal Commission (SFC) has estimated that **income tax forecast-outturn reconciliations could reduce the Scottish Government's spending power** by several hundred million pounds over its next three budgets.⁴⁸ We believe the scale of these possible adjustments may be unusually large and associated with errors in the initial estimates of the level of Scottish income tax.⁴⁹ The largest annual reconciliation in the

⁴⁷ *The agreement between the Scottish Government and the United Kingdom Government on the Scottish Government's fiscal framework*, February 2016, and *The agreement between the Welsh Government and the United Kingdom Government on the Welsh Government's fiscal framework*, December 2016.

⁴⁸ See Scottish Fiscal Commission, *Scotland's Economic and Fiscal Forecasts*, May 2019 for more detail on reconciliations. The final amounts will change in light of HMRC estimates of outturn income tax liabilities in Scotland and the rest of the UK in 2017-18, which had not been published at the time we finalised this publication.

⁴⁹ We also discussed the error in respect of 2016-17 liabilities in our October 2018 *Devolved taxes and spending forecasts* publication.

SFC's latest forecast is £608 million in 2021-22. This would be less than 2 per cent of Scottish Government current expenditure in that year (of £30.7 billion). As these reconciliations relate to sums moved between two parts of central government – the UK and Scottish Governments – they would only represent a fiscal risk to the UK public finances if the Scottish Government were to borrow to maintain spending (where it is subject to limits on both reserve use and borrowing) or the UK Government chose to override the fiscal framework reconciliations to top up Scottish Government funding.

- The Scottish Government has announced **proposals for wide-ranging changes to the design and administration of disability benefits** as they are devolved to a new agency – Social Security Scotland. These may create longer-term pressures on spending, in an area where the ability to control it is more limited. Major disability benefit reforms have historically tended to cost more than expected, while the prevalence of disability reported in surveys is significantly greater than the prevalence of disability benefit receipt, giving considerable scope for the latter to rise without changes to the former.⁵⁰

Conclusions

5.112 The nature of the fiscal risks posed by fiscal devolution is largely one of policy choices. We see a very low probability that a devolved administration could in effect become insolvent. Much more likely is that pressure from a devolved administration leads to spending allocations being topped up. There are early signs that this might be true for Scottish and Welsh devolution, despite the fiscal frameworks. For example, in our March 2019 forecast the Treasury advised us that outside the Spending Review period its central assumption for the Scottish Government's block grant would be that it rises in line with overall DEL spending, raising our forecast by several hundred million pounds compared to our expectations based on the Barnett formula and fiscal framework. The size of initial reconciliations estimated by the SFC could result in further calls for 'top-ups' to maintain spending.

Major provisions and contingent liabilities

5.113 The Government's accounts record a large number of provisions and contingent liabilities that reflect future spending incurred by actions to date that are deemed either probable or possible respectively. The Treasury has established a new control system to manage the flow of new contingent liabilities that departments take on, with 92 having been subjected to scrutiny over the past two years – 85 were approved and seven not. But from the perspective of overall fiscal risk, these new items have generally been small compared with the three largest sources of provisions and contingent liabilities recorded in the Whole of Government Accounts: nuclear decommissioning costs, clinical negligence claims and tax litigation cases. We focus on these major items in this section.

⁵⁰ See our January 2019 *Welfare trends report* for a discussion of trends in disability benefits spending and the effects of past reforms.

Nuclear decommissioning

Summary of previous *FRR* discussion and the Government's response

- 5.114 In our 2017 *FRR*, we highlighted the risk that the cost of cleaning up the UK's nuclear sites is likely to increase over time. Successive reviews had increased estimates of the cost, reflected in the Nuclear Decommissioning Authority's (NDA) nuclear provision (for older sites) more than doubling in real terms in ten years to 2014-15, abstracting from changes to discount rates.⁵¹ Uncertainty about the amount of nuclear waste that will have to be cleared up (thanks to inadequate record-keeping in the early days of nuclear power generation) and the technologies that will be available to do so make this particularly uncertain, especially over the very long term. While the overall impact of nuclear provisions on the Whole of Government Accounts balance sheet is large, the annual fiscal impact is relatively small since the costs of the clean-up operations are spread over as much as 120 years.
- 5.115 We also discussed how the Government's approach to risk management varies by vintage of site, tolerating risks around older sites – accepting costs falling entirely to government – but seeking to transfer risk to the private sector for the second generation and new sites. On this transfer approach, we highlighted the risk associated with the Nuclear Liabilities Fund (NLF) – an independent segregated trust with assets intended to meet the future costs of decommissioning. In the event that the fund's assets are insufficient to meet its liabilities, outstanding liabilities fall to government. The NLF's Trustees warned in its 2015-16 Annual Report that *“expected investment returns may be insufficient to meet the currently projected nuclear liabilities, based on current assumptions and current investment policy”*.
- 5.116 In light of this, we raised two specific issues for the Government's response:
- The increase over time in the **expected cost of cleaning up the Sellafield nuclear site**.
 - The Government's potential exposure to **clean-up costs for new nuclear stations**.
- 5.117 In *MFR* the Government outlined its approach to managing nuclear decommissioning risks, including identifying and disclosing future costs and provisions, a set of mitigating actions, such as legislating for new projects to have a 'Funded Decommissioning Programme', and applying best practice across the sector.

Updated risk assessment and conclusions

- 5.118 Having risen significantly in two of the past three years, the NDA's 2018-19 annual report records a significant fall in the provision for nuclear decommissioning – from £234 billion in 2017-18 to £131 billion in 2018-19.⁵² However, these movements are almost entirely explained by changes to the discount rate (Chart 5.7), which are adjusted each year to reflect changes in real government borrowing costs. But this year's NDA provision estimate is also affected by a methodological change in the Treasury's guidance on discount rates.

⁵¹ National Audit Office, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, June 2018.

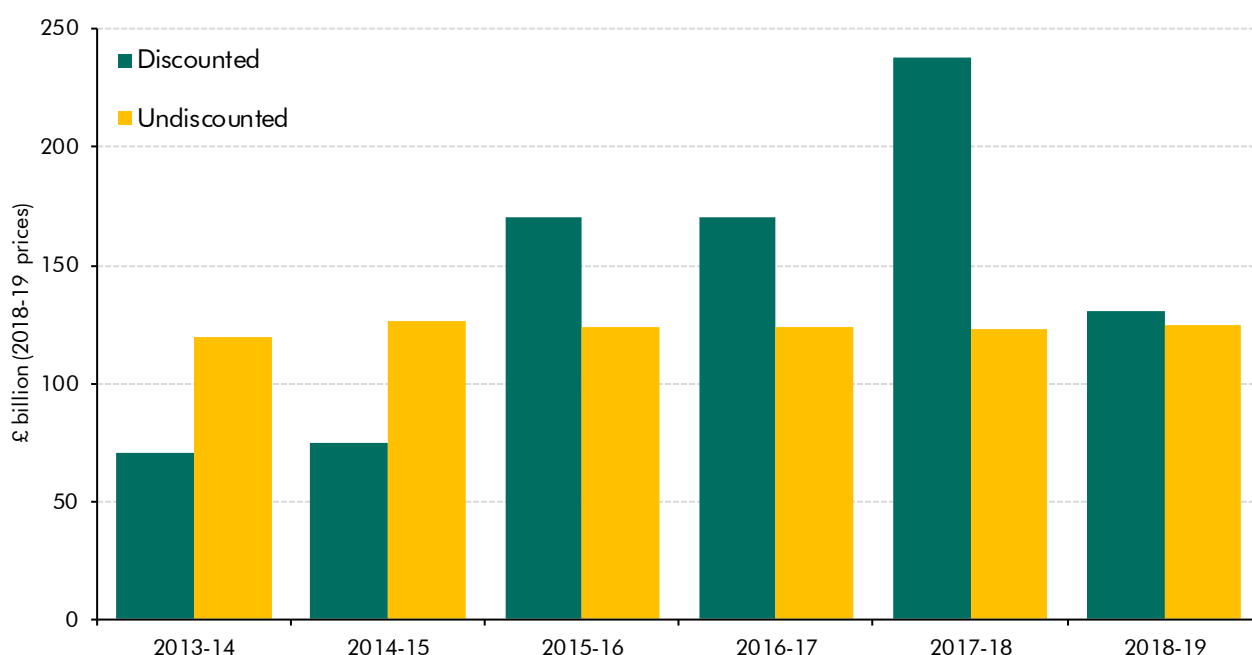
⁵² *Nuclear Decommissioning Authority 2018-19 annual report and accounts*, 4 July 2019.

Primary spending risks

This change applies to all provisions and will lead to significant changes in next year's WGA. Because the expected outlays from nuclear decommissioning are very long term – up to 120 years – the discounted estimate is very sensitive to small changes in the discount rate.

- 5.119 Abstracting from the effect of discount rate changes, provisions are only marginally higher. After many years of escalating costs, in June 2018, the NAO reported that the NDA's estimate of the undiscounted provision "*has stabilised ... as the NDA's understanding of the scope and cost of work has improved*".⁵³ This means that this risk remains broadly unchanged as the undiscounted provision remains within a 5 per cent range since 2014-15.

Chart 5.7: Nuclear decommissioning provisions



Source: NDA, OBR

- 5.120 The Nuclear Liabilities Fund, set up by the Government as an independent segregated trust to meet future costs of decommissioning, continues to have around £9 billion in assets as of 31 March 2018.⁵⁴ As discussed in our 2017 FRR, if the fund's assets are insufficient to meet its liabilities, outstanding liabilities will fall to government. This risk here is unchanged.
- 5.121 To date Hinkley Point C remains the only new generation site officially approved. As regards the 'contract for difference' related to Hinkley Point C's power generation, BEIS' best estimate of its fair value has risen from £29 billion in 2016-17 to £37 billion in 2017-18 (although this has not been recognised in its accounts).⁵⁵ The NAO's report on the 2017-18 Whole of Government Accounts highlights the "*uncertainties inherent in valuing the Hinkley Point C contract for difference which has resulted in the liability not being recognised on the Statement of Financial Position, as it is not considered to meet the recognition criteria set out in the Conceptual Framework for Financial Reporting.*" The contract for difference means

⁵³ National Audit Office, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, June 2018.

⁵⁴ *Nuclear Liabilities Fund 2018 annual report*, 21 December 2018.

⁵⁵ *Department for Business, Energy, and Industrial Strategy Annual Report and Accounts 31 March 2018*, July 2018.

that the immediate bearers of risk are households, who would pay higher prices for electricity in the event that wholesale prices were lower than assumed. This could become a fiscal risk if the Government decided to intervene to reduce the extent to which household energy bills increased, while honouring the Hinkley Point contract.

5.122 While the nuclear decommissioning provision remains large, the fiscal risk associated with it remains relatively small because it covers such a long period. The fiscal risks associated with the NLF and Hinkley Point also appear relatively small. On this basis, our overall assessment of the fiscal risks in this area is unchanged from our 2017 report.

Clinical negligence

Summary of previous *FRR* discussion and the Government's response

5.123 In our 2017 *FRR*, we discussed increasing clinical negligence pay-outs, highlighting the growing demand for medical services, as well as growth in the number of negligence cases, the average damages per successful claim and the associated legal fees. We raised two issues for the Government's response:

- The likelihood of **higher clinical negligence pay-outs** than currently provisioned for.
- The significant proportion of clinical negligence costs still accounted for by **legal fees**.

5.124 In *MFR* the Government said it intended to publish a review of cross-government strategy in autumn 2018, but, like the social care green paper, publication has been delayed.⁵⁶ The Government now plans to provide an update on progress on the strategy later this summer.

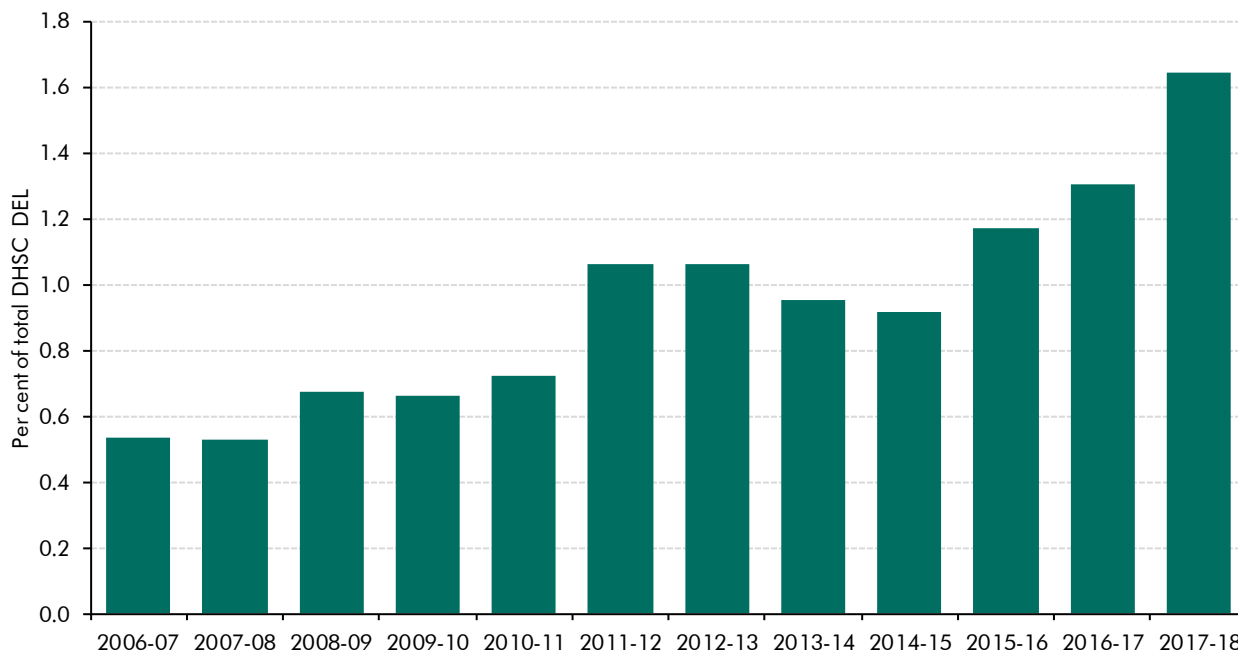
Updated risk assessment and conclusion

5.125 Since our 2017 *FRR*, the number of clinical negligence claims has plateaued, but the average amount paid out per claim has increased by 16 per cent a year on average since 2010-11. This pushed the annual cost up to £2.1 billion in 2017-18.⁵⁷ It also means that pay-outs have risen as a proportion of the health budget in England (Chart 5.8).

⁵⁶ Letter from the Permanent Secretary of DHSC to the Chair of the Public Accounts Committee of the House of Commons, *Managing the costs of clinical negligence in hospital trusts, Session 2017-2019 (HC 397)*, 12 October 2018.

⁵⁷ *NHS Resolution annual report and accounts 2017-18*, 12 July 2018.

Chart 5.8: Clinical negligence payments as a proportion of the DHSC budget



Source: DHSC, HM Treasury

5.126 NHS Improvement has published a new patient safety strategy, which includes a focus on reducing negligence.⁵⁸ It is too soon to say how effective this might be, and any positive results are only likely to have an effect in the longer run. On limiting legal fees, the Government is awaiting the Civil Justice Council’s recommendations on legal costs disproportionate to damages awarded before consulting on next steps.

5.127 One policy variable that can affect costs per claim is the personal injury discount rate (PIDR). In 2017 the Government reduced it from 2.5 to *minus* 0.75 per cent. The PIDR is used in calculating the present value of insurance and indemnity pay-outs, with a lower rate meaning higher pay-outs. The reduction to -0.75 per cent increased costs for the NHS, which HM Treasury funded from the reserve. The direct cost of the lower PIDR to the NHS in England was £400 million in 2017-18, accounting for almost 80 per cent of the £520 million increase in payments compared with the previous year.

5.128 In accordance with the Civil Liability Act 2018, the Lord Chancellor launched a review of the PIDR on 19 March 2019, which must be completed by 5 August 2019.⁵⁹ The terms of the review suggest that the rate will be raised when it is next changed, but the extent of any change is uncertain. If it were raised, that would lower costs for the NHS.

5.129 NHS Resolution has since April 2019 operated a new state indemnity scheme for general practice in England – the Clinical Negligence Scheme for General Practice (CNSGP).⁶⁰ It provides a fully comprehensive indemnity for all claims within its scope for incidents arising on or after 1 April 2019, and replaces the previous system, in which GPs had to seek

⁵⁸ NHS Improvement, *The NHS patient safety strategy*, 2 July 2019.

⁵⁹ Letter from the Lord Chancellor and Secretary of State for Justice to the Chair of the Justice Committee of the House of Commons, 18 March 2019.

⁶⁰ *NHS Resolution business plan 2019-20*, 7 May 2019.

indemnity cover from private medical defence organisations or other providers. In addition, DHSC has reached agreement with the Medical Protection Society Limited, one of the medical defence organisations, in relation to existing in-scope liabilities for general practice in England for incidents prior to 1 April 2019. These arrangements will add to the Government's liabilities, though figures have not been published by NHS Resolution or DHSC. But it is not clear that this change increases overall fiscal risk. Under the previous system, if the cost of clinical negligence claims against GPs increased, and the cost of their indemnity cover did too, it seems plausible that it would have been reflected in public sector pay decisions.

Tax litigation

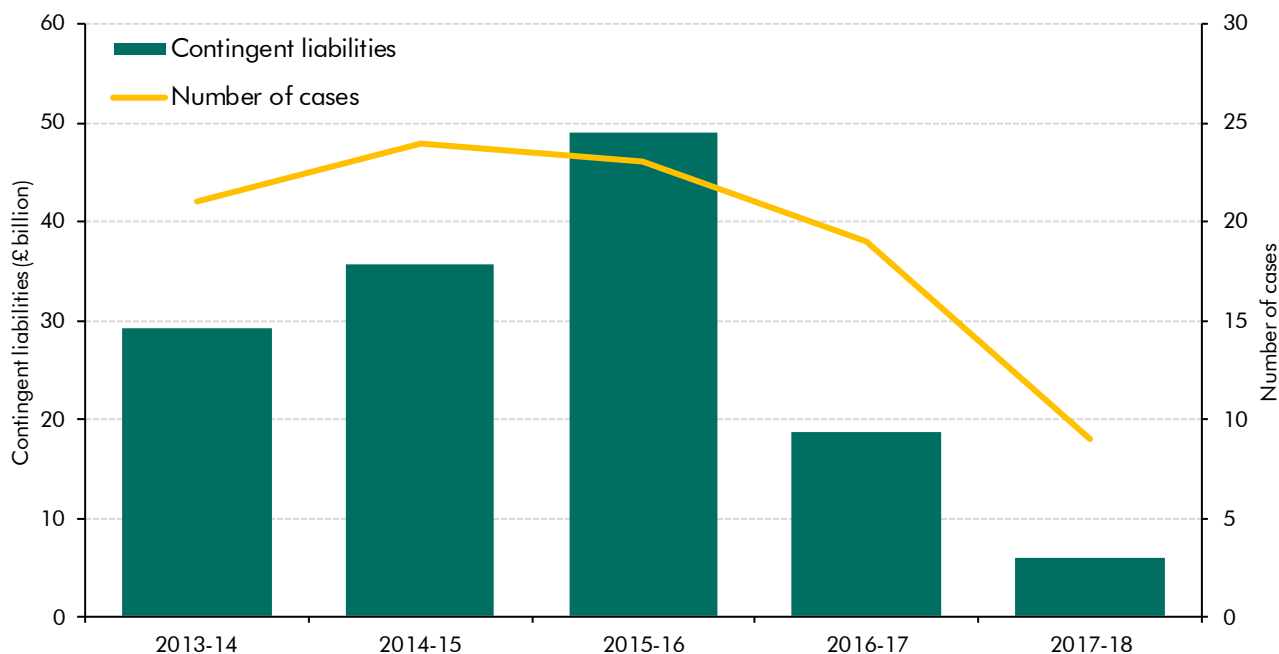
Summary of previous *FRR* discussion and the Government's response

- 5.130 In our 2017 *FRR*, we discussed the possibility of increasing tax litigation pay-outs if HMRC lost a significant 'lead' case, which could trigger pay-outs in subsequent 'follower' cases. In particular, we highlighted the Littlewoods case over the way interest is calculated on repaid tax. At the end of 2015-16, HMRC had recorded contingent liabilities of £49.1 billion on possible pay-outs. In November 2017, HMRC unexpectedly won the Littlewoods case, which the Government noted in its *MFR* response to our report. This victory reduced HMRC's central estimate of tax litigation losses by £18 billion.

Updated risk assessment and conclusion

- 5.131 HMRC's 2017-18 annual report shows a significant drop in contingent liabilities, from £49.1 billion in 2015-16 to just £6.0 billion in 2017-18 (Chart 5.9). This mostly reflects HMRC's win in the Littlewoods case, which also meant no 'follower' cases were brought. The fall in contingent liabilities and the number of cases HMRC records as being under dispute that involves large sums has led us to downgrade our assessment of the fiscal risk posed by large tax litigation pay-outs adding significantly to public spending. New cases will always emerge – for example, Credit Suisse is seeking to recover £239 million it paid in 'bank payroll tax' that was levied briefly after the financial crisis – but there are no cases on the horizon that would have follower-case implications as large as the Littlewoods one.

Chart 5.9: HMRC contingent liabilities in litigation cases



Source: HMRC

Contingent commitments not treated as contingent liabilities

5.132 Over the past two years, we have investigated the assurances that the Government provided to Nissan in 2016, and we reported on these in our March 2019 EFO. We were particularly interested in this case because these assurances seemed to constitute a commitment that was contingent on Nissan making a particular decision about production in the UK, so in some sense a ‘contingent liability’. But they were not recorded as such and the NAO confirmed that this was consistent with the standards that govern the Government’s accounts.⁶¹ This posed the question of whether there are other apparently contingent commitments that do not meet the accounting definition of a contingent liability, but that when aggregated might represent a fiscal risk that we should still be concerned about.

5.133 We have discussed this wider issue further with the NAO. We understand that the Nissan case will not be unique. Where departments have the legislative and discretionary power to issue grants from within their DEL allocations, they can engage with prospective grant recipients and signal that support could be given, while stopping short of entering into any commitment or obligation until the point when the grant is finally awarded. As such, there can be a long period – as with the Nissan case – between the initial stage of signaling that a grant may be forthcoming, and the final stage, if reached, of awarding it during which proposals are subject to due diligence and approval. Formally, there is no commitment to spend until the grant is awarded. It can only be made as and when there are funds available within a department’s DEL. As such, the initial statements of intent are judged to be part of departments’ process of exercising their discretionary powers, rather than creating guarantees. The wider fiscal risk (of which we need to be mindful, but which

⁶¹ Letter from Sir Amyas Morse, Comptroller and Auditor General, to Andrew Tyrie, Chair of the Treasury Select Committee, *Government’s commitments and/or assurances to Nissan*, 13 December 2016.

departments are required to manage) is the extent of the underlying need that creates the spending pressure, versus the extent of the funds available.

- 5.134 Other instances of actual contingent liabilities that are not reported in full include cases where the liability is deemed to be commercially sensitive or confidential, as with time-limited guarantees that might be issued to underwrite sales of assets, for instance. Under accounting standards, if such contingent liabilities are assessed as being both material in size and with a 'possible' likelihood of happening, then they should be reported in the department's accounts, as clearly as possible without breaking confidentiality. The Treasury has assured us that, as far as this can be done, such contingent liabilities are also included in the WGA. Sensitive contingent liabilities of this type are subject to the Treasury's new system for scrutinising new contingent liabilities, and included within the regular update to us that we use as the basis for reporting on contingent liabilities in each *EFO*.

Brexit-related spending risks

Summary of previous *FRR* discussion and the Government's response

- 5.135 In our 2017 *FRR*, we discussed several Brexit-related risks to spending, including the financial settlement with the EU (the so-called 'divorce bill'); potential future commitments to replace spending relating to EU programmes such as farm support and research funding; establishing and running UK-specific regulators; carrying out Brexit and other related negotiations; and any sector-specific interventions to support or compensate companies and industries adversely affected by the UK leaving the single market and the customs union.
- 5.136 In *MFR*, the Government responded to our assessment of these risks by highlighting the principles underlying the agreement regarding the financial settlement and said that future decisions with respect to replacing EU expenditure in the UK and the UK's continued participation in EU programmes would be considered at the 2019 Spending Review.

Updated risk assessment

The EU financial settlement

- 5.137 The Government and the EU have now agreed the methodology for calculating the financial settlement. This was set out in final detail in the Withdrawal Agreement published on 25 November 2018, although it has been broadly settled since the joint report of 8 December 2017. We published a detailed walk-through of the calculation in Annex B of our March 2018 *EFO*, and have since updated our estimate at each forecast.
- 5.138 Our March 2019 estimate stood at €41.8 billion, which translated into £37.8 billion at the exchange rates in our forecast. This was predicated on the UK leaving the EU on 29 March 2019. As this did not happen, the UK continues to contribute as a member, rather than making payments under the settlement. However, while this technically reduces the size of the settlement, it does not change the overall amount that the UK transfers to the EU. The Withdrawal Agreement provides that the UK will contribute to the EU's annual budgets as if it were a member until December 2020, and so no changes to payments have occurred.

5.139 Based on our March forecast, but assuming a 31 October 2019 exit date, the financial settlement would be €36.3 billion, or £32.8 billion, with the remaining £5.0 billion difference being paid as part of the UK's normal membership contributions to the EU.

Future expenditure commitments

5.140 As regards future expenditure in place of current EU programmes, the Government has already committed to maintaining several of them after Brexit, including farm support, industrial strategy and science programmes. In our forecasts, we have maintained a fiscally neutral assumption that any reductions in net expenditure transfers to the EU will be recycled into additional domestic spending. The Government's statements to date suggest this provides a reasonable holding assumption until the precise details of those commitments are settled. Specifically, the following commitments have been made since the referendum:

- **Farm support:** the Government's proposed Agriculture Bill in the current Parliamentary session contains a pledge *"to continue to commit the same cash total in funds for farm support until the end of this parliament, expected in 2022"*.⁶² European Commission figures suggest that this farm support was around €4 billion in 2018.⁶³
- **Shared prosperity fund (SPF):** the Government's November 2017 industrial strategy white paper set out that *"following the UK's departure from the European Union, we will launch the UK Shared Prosperity Fund. We intend to consult next year on the precise design and priorities for the fund."*⁶⁴ The 2017 Conservative manifesto stated that *"we will use the structural funds that come back to the UK following Brexit to create a UK shared prosperity fund"*. On the definition of structural funds used in the Treasury's annual EU finances document, the 2018 figure was around £1 billion.⁶⁵
- **Replacement of Official Development Assistance (ODA) funds:** the Government has legislated to maintain ODA spending of at least 0.7 per cent of gross national income (GNI).⁶⁶ At present, some EU ODA (broadly the proportion funded by UK contributions) counts towards this commitment. The attribution of some EU ODA spending to the UK accounted for £1.4 billion of the UK's total £14.1 billion of ODA spending in 2017.⁶⁷
- **Science and education:** the Prime Minister stated in her 2018 Mansion House speech that *"The UK is also committed to establishing a far-reaching science and innovation pact with the EU, facilitating the exchange of ideas and researchers. This would enable the UK to participate in key programmes alongside our EU partners. And we want to take a similar approach to educational and cultural programmes, to promote our shared values and enhance our intellectual strength in the world – again making an*

⁶² Parliamentary Under-Secretary of State (Department for Environment, Food and Rural Affairs), Answer to written question HL10006 in the House of Lords, 18 September 2018.

⁶³ European Commission, *Agriculture in the European Union and Member States – United Kingdom statistical factsheet*, June 2019.

⁶⁴ Department for Business, Energy and Industrial Strategy, *Industrial strategy: building a Britain fit for the future*, 27 November 2017.

⁶⁵ HM Treasury, *European Union Finances 2018*, 5 June 2019.

⁶⁶ The International Development (Official Development Assistance Target) Act 2015, 26 March 2015.

⁶⁷ Department for International Development, *Statistics on international development: Final UK Aid spend 2017*, November 2018.

ongoing contribution to cover our fair share of the costs involved.”⁶⁸ It is unclear what precisely this would apply to, but if it were taken to relate to programmes like Erasmus+, Creative Europe and Horizon 2020, the cost of participation is currently around €2 billion a year.⁶⁹

- **Regulatory agencies:** the Prime Minister also noted in her Mansion House speech that “We will also want to explore with the EU, the terms on which the UK could remain part of EU agencies such as those that are critical for the chemicals, medicines and aerospace industries: the European Medicines Agency, the European Chemicals Agency, and the European Aviation Safety Agency. We would, of course, accept that this would mean abiding by the rules of those agencies and making an appropriate financial contribution.” Again, it is unclear as to the precise list of agencies that the UK will seek to remain part of (there are over 30 EU regulatory agencies). The EU decentralised agencies budget in 2017 was around €350 million, implying a UK financing share of around €40 million for the full list.⁷⁰

5.141 These statements were all made by the outgoing administration, so all are subject to uncertainty as a new one takes up the reins of government and pursues its own priorities.

5.142 We have continued to include the ‘assumed spending in lieu of EU transfers’ as an AME line in our forecasts, but any expenditures that replace EU schemes might be more suited to being managed under the DEL spending control system. If that were the case, these programmes would be considered as part of the forthcoming or subsequent Spending Reviews. Indeed, this is what the Government indicated in *MFR* that it would look to do.

Conclusions

5.143 Since our 2017 *FRR*, the Government and the EU have agreed the methodology for calculating the financial settlement, which means that the risk can now be quantified. It is somewhat lower than the estimates that had been put forward by external commentators at the time of our previous report. Risks regarding post-Brexit replacement expenditure remain, as does the uncertainty as to how exactly the replacement programmes will be delivered, although the Government has already committed to a large list of targeted expenditure.

⁶⁸ Prime Minister’s speech on the UK’s future economic partnership with the European Union, 2 March 2018.

⁶⁹ House of Commons Library, *UK funding from the EU*, Briefing paper number 7847, 28 November 2018. Our analysis assumes a 12.3 per cent UK financing share, consistent with the assumption used in our March 2019 *EFO*.

⁷⁰ *Draft General Budget of the European Union for the financial year 2019*, COM(2018) 600, June 2018.

For the Government's response

5.144 In this chapter we have discussed several issues that the Government is likely to wish to consider when managing its fiscal risks, while others that we discussed in greater detail in our 2017 *FRR* remain pertinent despite changing little since then. These include:

- The tendency for major spending policies to be announced outside Spending Reviews.
- The possibility of cost overruns for major projects like HS2 and MoD procurement.
- The plausibility of assumed rates of productivity improvements in health care.
- The risk of further topping-up of health spending settlements, despite more funding.
- The large long-term upward cost and demand pressures on health and care spending.
- The potential impact of the NLW and migration reform on health and social care costs.
- Policy uncertainty around the desire to limit individuals' exposure to social care costs.
- Potential pressure to bail out a private social care provider if in financial difficulty.
- The precedent set by yielding to pressure to reverse planned cuts to welfare spending.
- The continued commitment to the 'triple lock', which ratchets pension spending higher.
- The knock-on effects to benefit take-up of other policy and operational changes.
- The possibility that local authorities will resume running down their reserves.
- The rise in local authorities' prudential borrowing for commercial property purchases.
- Pressure to top-up devolved administrations' budgets despite the 'fiscal frameworks'.
- The scale of nuclear decommissioning costs and uncertainty over Hinkley Point costs.
- The rising share of NHS spending taken up by clinical negligence pay-outs.
- The cost of commitments to replace current EU programmes.

5.145 When assessing the outlook for public spending over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

6 Balance sheet risks

- 6.1 The public sector balance sheet provides estimates of the assets and liabilities held by central government (including the devolved administrations), local government and public corporations. Several balance sheet measures are published for the UK, differing in coverage and accounting treatment. All show that the stocks of assets and liabilities are large relative to flows of spending and receipts and to national income. The asset and liability sides of the balance sheet can both be sources of fiscal risk.
- 6.2 The most comprehensive National Accounts balance sheet measure is public sector net worth (PSNW). This includes financial and non-financial assets and liabilities, but excludes the present value of future tax revenues and most spending. Ideally, we would use PSNW throughout this chapter to discuss balance sheet risks as it provides the best National Accounts measure of fiscal sustainability. But the ONS has not published PSNW data since 2012 due to concerns about the quality of the public corporations' non-financial assets data. It aims to address these concerns later in 2019. So instead we use other National Accounts aggregates: public sector net financial liabilities (PSNFL), which, unlike PSNW, excludes non-financial assets, and public sector net debt (PSND), which only includes a narrow set of 'liquid' financial assets. PSND is the Government's target measure of debt.
- 6.3 The Whole of Government Accounts (WGA) offer an alternative view, based on international accounting standards. These have wider coverage even than PSNW, particularly of future liabilities such as the present value of future public service pension costs already accrued and provisions for items where past activity has generated future expected liabilities.
- 6.4 Table 6.1 shows how these different measures related to each other at the end of March 2018. PSND stood at 85 per cent of GDP, with nearly £2 trillion of debt liabilities (largely debt securities, including gilts and Treasury bills) offset by less than £200 billion of liquid assets (largely the foreign exchange reserves). PSNFL includes a slightly broader set of liabilities but a significantly larger pool of financial assets (notably student loans, which are recorded at their nominal value). As such it is somewhat lower than PSND at 67 per cent of GDP. WGA net liabilities, which include £1.9 trillion of public service pension liabilities partially offset by £1.2 trillion of non-financial assets, stands much higher at 122 per cent of GDP. Public service pension liabilities and provisions are both very sensitive to the rate at which future expected costs are discounted, with discount rate changes driving volatility in liabilities from year to year. Such a change will materially lower the provisions liability in 2018-19, as we discuss in Chapter 5 with respect to nuclear decommissioning.

Table 6.1: Various measures of the public sector balance sheet in 2017-18

Liability type	Asset type		Balance sheet aggregate		
	£ billion	£ billion	£ billion	Per cent of GDP	
Gilts and T-bills	1505	Foreign exchange reserves	116		
Other debt liabilities	457	Other liquid assets	68		
PSND liabilities	1962	PSND assets	183	PSND	1779
Other financial liabilities	118	Other financial assets	481		
PSNFL liabilities	2080	PSNFL assets	664	PSNFL	1416
Accrued pension liabilities	1865	Non-financial assets	1208		
Provisions	423	Other valuation differences	141		
Other valuation differences	211			WGA net	
WGA liabilities	4579	WGA assets	2014	liabilities	2565
					122

Note: 'Other debt liabilities' in PSND includes the net liability of the Bank of England.

6.5 The WGA, like PSNW and other measures of debt used in this report, exclude the public sector banks. At their peak, including both RBS and Lloyds Banking Group in most of these measures would have roughly doubled the size of both assets and liabilities. In PSND, including them raised liabilities much more than assets, because the banks' assets – notably their mortgages and business loans – are not defined as 'liquid' for PSND purposes.

6.6 This chapter:

- discusses potential **sources of balance sheet risk**;
- **reviews the risks covered in our previous *Fiscal risks report (FRR)***, grouping them by potential source and noting how the Government responded in its 2018 *Managing fiscal risks (MFR)* publication to the specific issues we raised;
- revisits the issue of '**fiscal illusions**'; and
- takes a more in-depth look at **intangible assets**.

Sources of balance sheet risk

6.7 The evolution of the debt-to-GDP ratio depends on the primary budget balance (the difference between non-interest revenues and spending), debt interest spending and 'stock-flow adjustments'. The first two are flows recorded within the deficit that add to the stock year by year. The latter affect the stock directly, without an associated deficit flow. It is these we investigate in this chapter.

6.8 A variety of stock-flow adjustments are relevant when assessing fiscal sustainability:

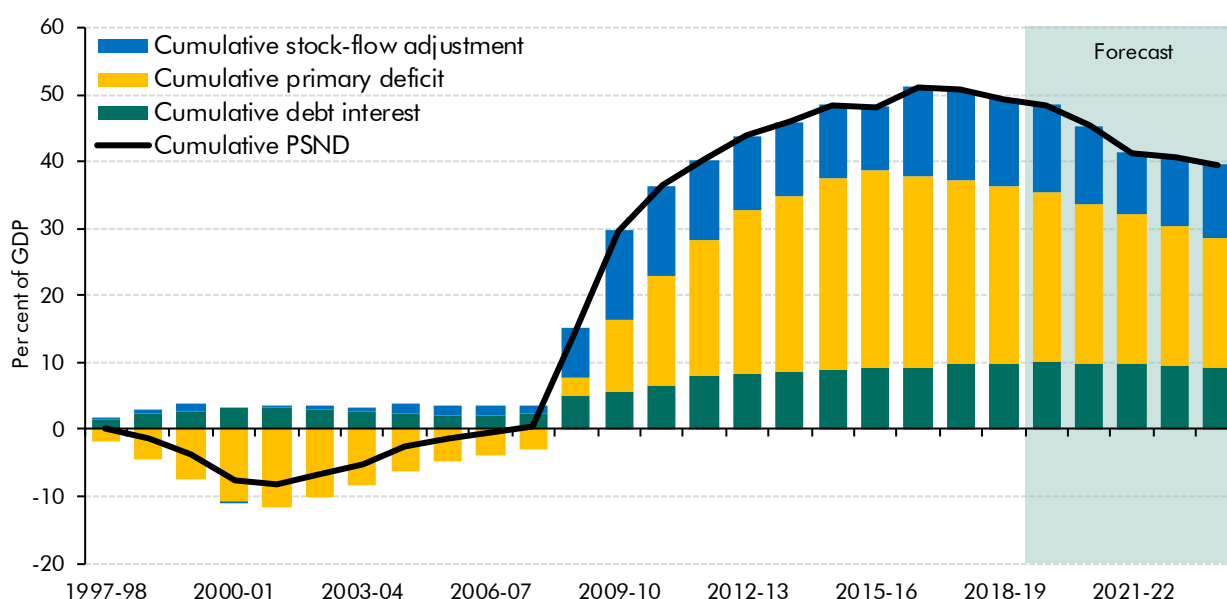
- **Balance sheet transactions**, in which the government issues debt to buy a financial asset or to lend to the private sector (such as the purchase of shares in RBS and Lloyds Banking Group during the financial crisis, or, more recently and on a smaller scale, the loan provided to British Steel to meet its 2018 EU carbon emissions liability).

- **Balance sheet transfers**, in which the government directly absorbs the assets and liabilities of a private sector entity (this can be a real-world event, like the transfer of the Royal Mail's historic pension liabilities and associated assets to the public sector in 2012, or a statistical one, as when the ONS reclassified English housing associations from the private to the public sector in 2015 and then back again in 2017).
- **Changes in the value of existing assets and liabilities**, such as the impact of a movement in the exchange rate on the sterling value of the UK's unhedged foreign exchange reserves and, less materially, its debt denominated in foreign currencies.
- **Timing or other accounting differences**. Timing differences arise because public sector net borrowing (PSNB) is recorded on an accruals basis, whereas PSND is largely a cash measure. This means, for example, that tax receipts are usually recorded in PSNB when the underlying economic activity that is being taxed took place, but in PSND somewhat later when the associated tax payments are received.

6.9 Timing and accounting differences are not usually relevant when assessing long-term fiscal sustainability, because they typically even out in the end. But they are worth scrutiny when the accounting methodology clouds the 'true' picture. Two examples are discussed in the fiscal illusions section of this chapter: the interest on student loans and the recording of gilts.

6.10 As Chart 6.1 shows, the cumulative effect of stock-flow adjustments was not, in aggregate, a significant contributor to the level of net debt over the years prior to the financial crisis. The path of PSND in the decade before the crisis could be explained almost entirely by the path of borrowing with little effect from stock-flow adjustments. But from 2007-08, stock-flow adjustments contributed 12 percentage points of the overall 49 per cent of GDP rise in PSND. Over the medium term we expect PSND to decline slowly relative to GDP, largely thanks to primary surpluses but also a lower contribution from stock-flow adjustments

Chart 6.1: Contributions to changes in net debt since 1997-98



Note: Stock-flow adjustments calculated as the residual unexplained by the primary balance or debt interest.
Source: ONS, OBR

Public sector net worth

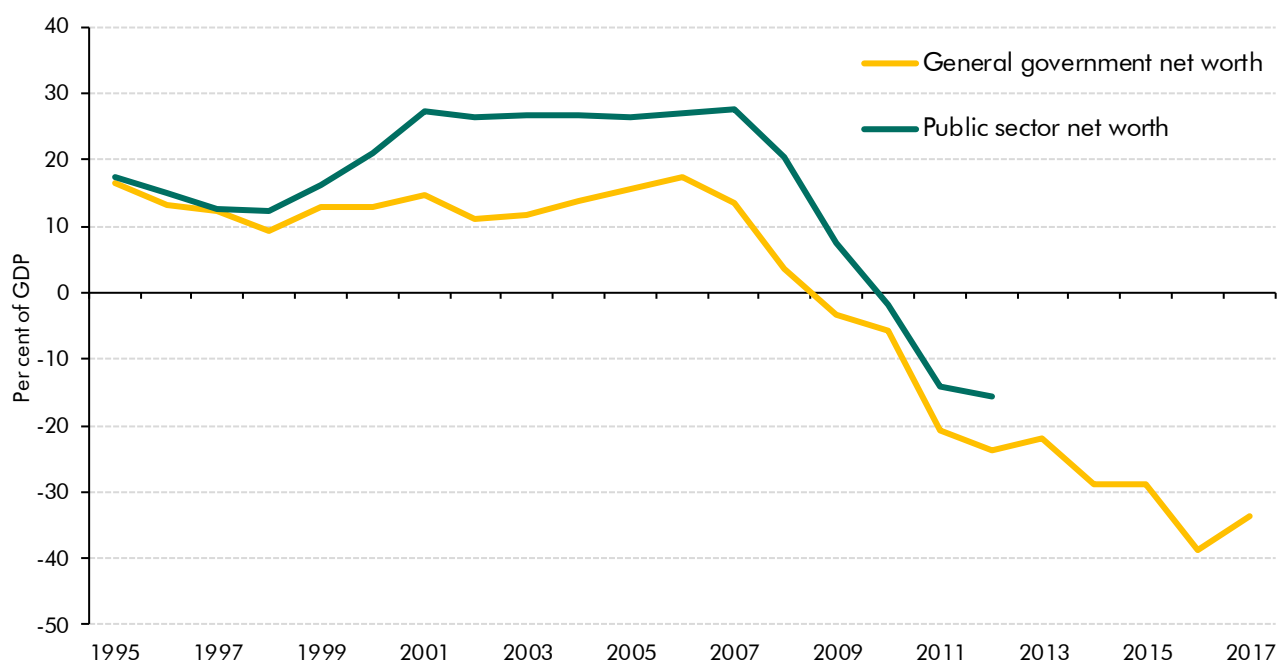
Summary of previous *FRR* discussion and the Government's response

6.11 In our 2017 *FRR* we identified risks arising from the deterioration in broad measures of public sector net worth since the crisis. In *MFR*, the Government pointed to new measures of balance sheet performance. These included asking us to forecast the gross stocks underlying our PSNFL forecast and the Treasury's own work with the ONS to introduce tables consistent with the IMF's Government Finance Statistics Manual (GFSM) into the regular public sector finances statistical release, which it has now done. In Chapter 1 we looked at the Treasury's 'Balance Sheet Review' and other steps it has taken to manage its balance sheet better.

Updated risk assessment

6.12 The deterioration in public sector and general government net worth are shown in Chart 6.2. Both fell sharply during the financial crisis (largely for the same reasons driving the rise in PSND) and have been negative since. The direction of travel is the meaningful indicator of how fiscal sustainability has evolved. There is no particular significance to their move from positive to negative territory, since the public sector's balance sheet is backed by its right to tax this and future generations – an asset not recognised in either measure.

Chart 6.2: Public sector and general government net worth



Source: ONS

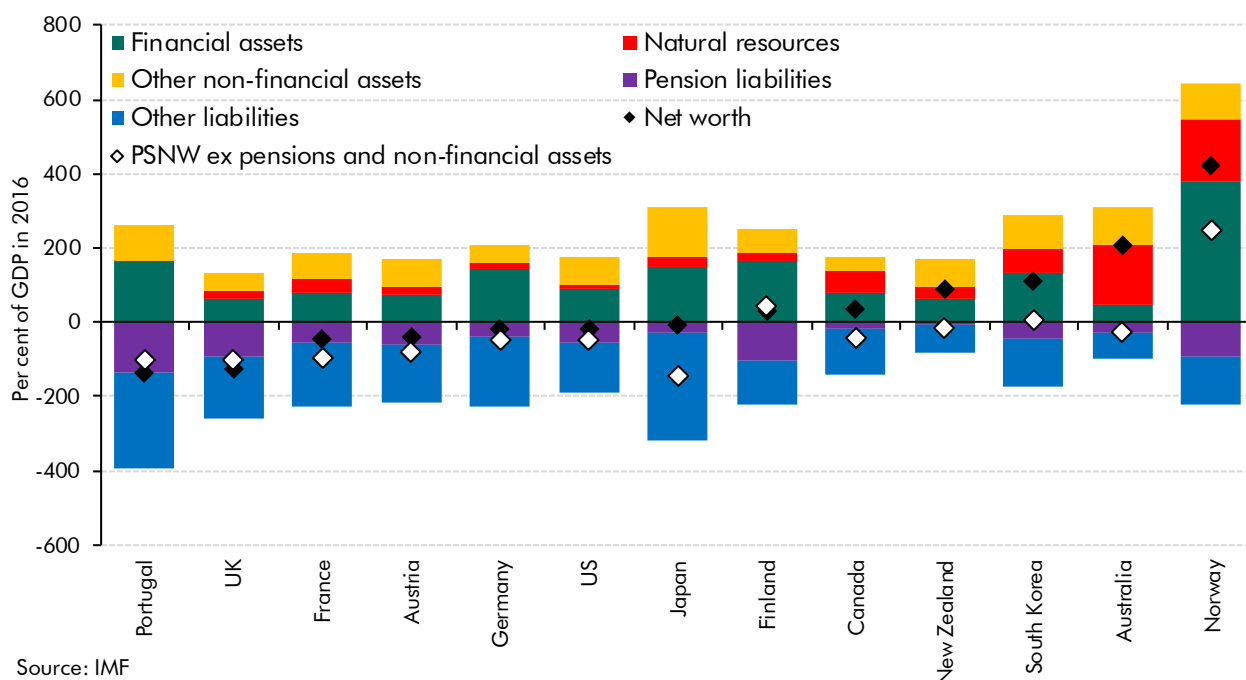
6.13 The IMF has been developing a new database of cross-country estimates of public sector net worth to complement the narrower measures that are more commonly used in international comparisons.¹ Its estimate of the UK public sector's net worth stood at minus 125 per cent

¹ International Monetary Fund, 2019, *Public Sector Balance Sheet Database*.

of GDP in 2016, the second weakest out of the 13 advanced countries for which it has full estimates (Chart 6.3). Total assets were 135 per cent of GDP, the lowest recorded among these countries, while total liabilities amounted to 260 per cent, the third highest.

- 6.14 Cross-country analysis of this nature is challenging. Gathering public sector-wide data on non-financial assets and pensions is particularly difficult and countries will not be using entirely consistent valuation methodologies. Nevertheless, removing these two elements of the IMF's cross-country estimates would not alter the UK's position relative to the other countries shown (though it would have larger effects on most of them, and particularly so in Norway and Australia, as it excludes their natural resources, and in Japan, where the value of other non-financial assets is higher relative to GDP than in the other countries).

Chart 6.3: Public sector balance sheets in selected advanced economies

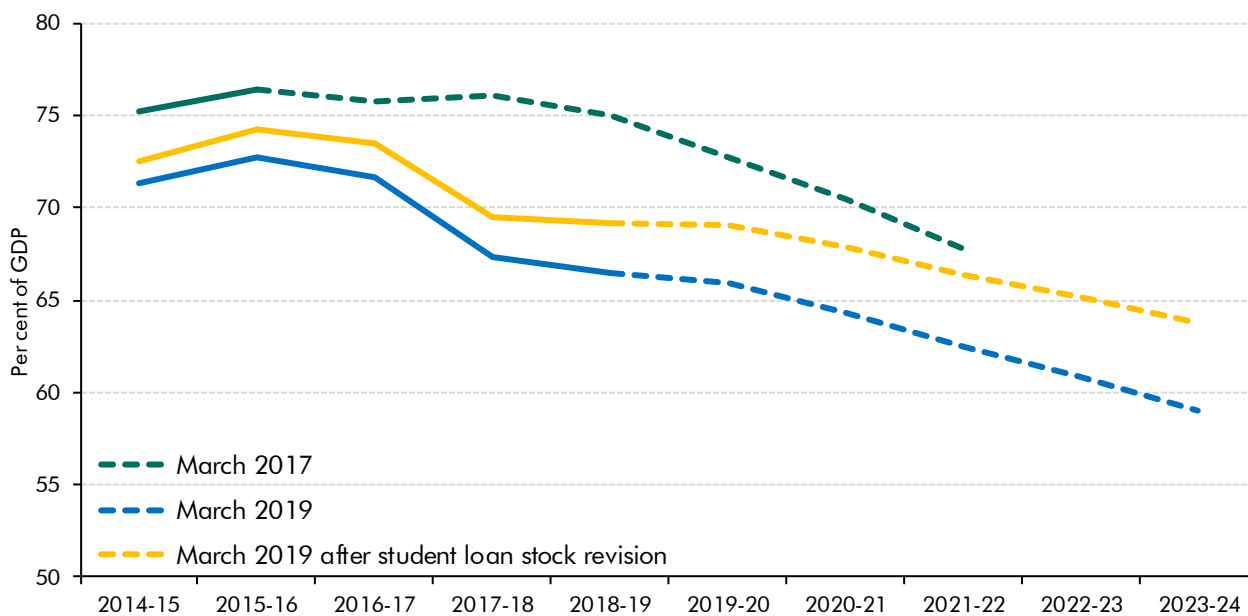


- 6.15 Given the current hiatus in publishing PSNW data in the UK, we do not currently forecast it. But we do forecast PSNFL. Chart 6.4 shows how our PSNFL forecast has been revised down significantly since the March 2017 forecast that underpinned our previous *FRR*. In part this is because the ONS has revised down the outturn in 2014-15 relative to the data in 2017 – by £56 billion (3.9 per cent of GDP). That in turn largely reflects changes in the recording of pensions liabilities, reducing them materially. The downward revision relative to our March 2017 forecast becomes larger in 2017-18, due to the reclassification of English housing associations to the private sector that took effect in November 2017 (see Box 6.1).

- 6.16 We expect PSNFL to decline in each year of our latest forecast, at an average rate of 1.5 per cent of GDP a year. This is about the same rate we forecast in March 2017, despite the lower level. But in both these forecasts PSNFL was flattered by an over-valuation of the student loans stock, which the ONS intends to address in methodological changes to be implemented this September. The ONS has released provisional estimates of the value of

the stock of student loans under the new methodology. They show PSNFL in 2017-18 would have been 2.1 per cent of GDP higher, while the drop in PSNFL relative to 2016-17 would have been 0.3 per cent of GDP smaller. On that basis, PSNFL would continue to improve each year of the forecast, but at a slower pace of 1.1 per cent of GDP a year.

Chart 6.4: Successive PSNFL forecasts and outturns



Note: The forecasts of revised student loans are consistent with those presented in Annex B of our March 2019 EFO.
Source: ONS, OBR

Conclusions

6.17 Overall the trend in the various measures of the balance sheet position are little changed since our previous report. The sharp deterioration since the financial crisis has ceased and a slow improvement is forecast on current policy settings. But, at the current rate of progress it would take several decades to get back to a pre-crisis position. And available data suggest the UK's public sector net worth is among the worst of its international peers.

Balance sheet transactions

Summary of previous *FRR* discussion and the Government's response

- 6.18 In the medium term we consider risks as deviations from our central forecast. The risk from asset sales then is that the annual receipts from them are significantly different from expectations. For guarantees it is that there are significant calls on them.
- 6.19 In the longer term, where we are concerned with sustainability, the considerations are different. Asset sales swap an uncertain flow of future returns on the assets for a known cash sum up front. Where markets are liquid and the sales process competitive we may assume that asset sales are broadly neutral for sustainability as the proceeds should reflect what the asset is worth. For guarantees, if government is able to assess the risk it is taking on and to

price that risk accordingly, fiscal sustainability may be little changed in expectation – i.e. on average in all possible future scenarios, although of course in those where guarantees are called it would be worsened. And it is also worth considering whether government is taking on risks that are correlated with other risks – in this case it would leave itself more vulnerable to extreme events.

6.20 In our 2017 *FRR* we identified risks arising from:

- **asset sales that could be delayed** or raise less than expected;
- **asset sales that have not been factored into current forecasts;** and
- the growing use of **guarantees in infrastructure and housing.**

6.21 In *MFR* the Government drew attention to the progress it had made in disposing of the assets acquired during the financial crisis and noted that the Public Accounts Committee and the National Audit Office “*have generally been positive on the overall assessment that sales have proved to be value for money*”. It also pointed to the increased transparency around the fiscal impact of asset sales and the framework put in place by the Ministry of Housing, Communities and Local Government to manage the risks associated with its loan, guarantee and equity loan products, with procedures covering both new products as they are developed, and live products that have already been approved.

Updated risk assessment

Asset sales

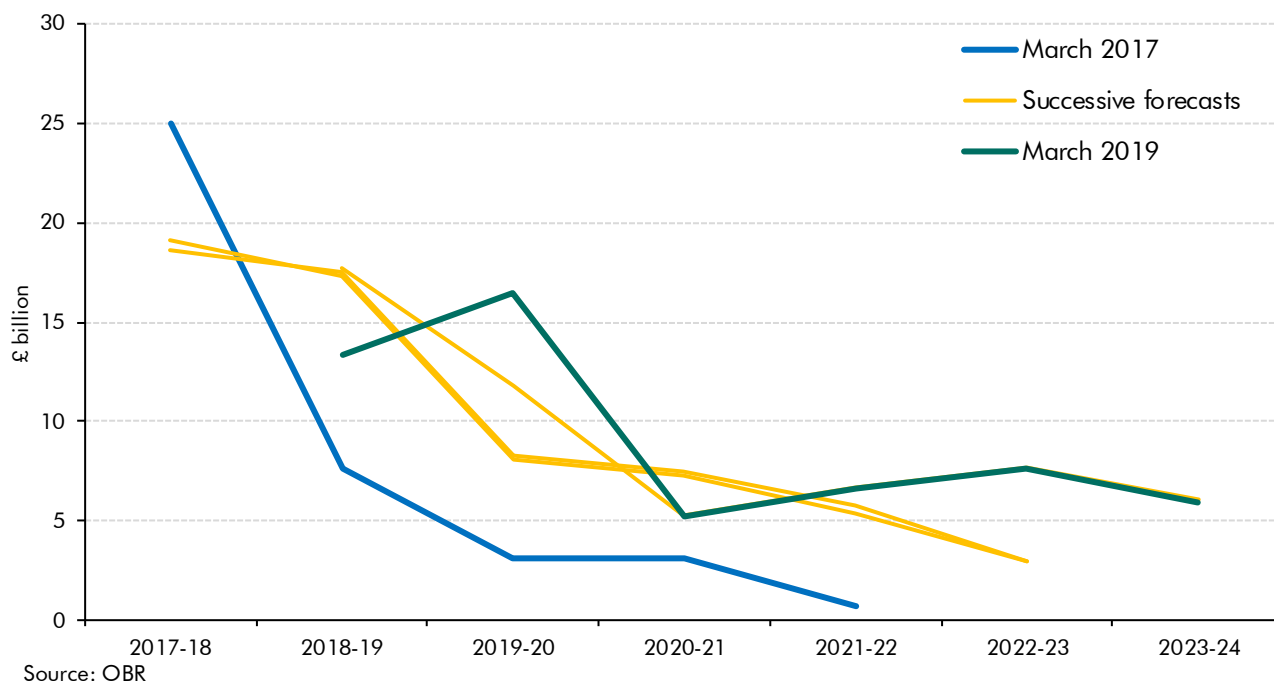
6.22 Chart 6.5 shows successive asset sales forecasts. Usually the Government has planned to raise more through asset sales in the early years of each forecast and little by the end. At successive forecasts additional sales are then pencilled in for the later years. For example, at March 2017 the Government had planned for only £0.7 billion to be raised in 2021-22 (and this was only from the natural run-off of UKAR mortgages), but by March 2019 it had increased this to £6.6 billion, with plans to sell tranches of student loans and RBS shares.

6.23 The largest forecast revisions can be seen in 2019-20: in March 2017 the Government had plans to raise £3.1 billion, but this has since risen to £16.4 billion. The largest contributors to this are UKAR and RBS, where there were no plans for active sales in March 2017 but the Government now plans to raise £13.2 billion from these sources.

6.24 As the Government sells the assets acquired in the financial crisis (after 2019-20 only RBS shares should remain to be sold) the risks from volatility in the proceeds from asset sales should subside. That said, Government policy is to seek further sales not currently factored into our forecasts, which it considers to be “*an integral part of the government’s plan to improve the public finances*”.²

² HM Treasury, *Budget 2018*, October 2018.

Chart 6.5: Successive OBR forecasts of proceeds from financial asset sales



6.25 When considering asset sales, the Government seems to look primarily at the PSND impact rather than other balance sheet measures. For example, in *MFR* it pointed to the reduction in PSND from the sales, but did not discuss PSNFL, PSNW or WGA measures of the balance sheet. And PSND is the only metric on which such sales could be considered to “*improve the public finances*”. Reducing PSND was one of three formal objectives for the sale of student loans. That said, in recently published guidance for departments on how to report asset sales to Parliament, the Treasury has sought to address this excessive focus on PSND at least in presentation.³ It requires disclosures to Parliament to include:

- a qualitative **policy rationale** for the sale;
- a justification of **the format and timing** of a sale;
- **the proceeds** of the sale;
- an explanation of whether the sale was above, at or below **the retention value**; and
- **the impact of the sale** on PSNB, PSND, PSNFL and WGA net liabilities.

6.26 It is too soon to assess whether these greater disclosure requirements will affect the weight of PSND impacts in decision-making. This may depend on the prominence given to changes in the PSND-to-GDP ratio in the next vintage of fiscal targets. Against the broader measures of the balance sheet, most asset sales make little difference as assets will be valued at close to their market price.

³ HM Treasury, *Asset sale disclosures: guidance for government*, March 2019.

- 6.27 For student loans, the difference between the effect on PSND and on broader measures is more stark as they are sold at steep discounts to their value in the Department for Education's accounts and in the National Accounts measure PSNFL. The sales clear the hurdle of 'value for money' due to the choice of high discount rates when making that assessment. This issue was discussed in Box 4.4 of our October 2018 *EFO*, where we concluded that in essence these sales mean the Government pays the buyers a higher rate of return than it would have had to pay if it had retained the assets on its own balance sheet and financed them conventionally via government bonds. They therefore represent a more expensive way of financing the loans, so the beneficial effect of the sales on PSND masks a modest detrimental effect on fiscal sustainability.
- 6.28 In its evaluation of the value for money of student loans sales the National Audit Office concluded that the use of different assumptions when issuing and when selling them "risks government: not knowing with enough certainty the cost to the taxpayer of student loans when they are issued; and of selling assets too cheaply relative to their long-term value".⁴

Loans

- 6.29 The public sector currently has three lending schemes that are fiscally material: student loans, Help to Buy equity loans and lending via the Bank of England's Term Funding Scheme. The past two years have seen significant changes to all three:
- Changes to the accounting treatment of **student loans** are discussed later in this chapter. Partly as a result of these changes there is currently considerable uncertainty about how the Government will finance higher education in future. Box 6.2 discusses the *Review of post-18 education and funding*. The departing Prime Minister made a statement welcoming the report's findings and supporting its recommendations, but it is not clear what view the new administration will take.
 - In October 2018 the Government announced a two-year extension to the **Help to Buy equity loan scheme** to 2022-23, alongside changes to how the scheme will operate until then that are expected to lower the flow of new lending. It committed to end the scheme in March 2023, but it is of course possible that the scheme will be extended again nearer its planned closure date, as has happened three times already. A recent NAO report concluded that Government's investment (£11.7 billion by December 2018) had exposed it to significant market risk as the loans are sensitive to house price movements and to the timing of buyers repaying the loans.⁵
 - In *FRR 2017* we estimated that loans under the **Term Funding Scheme (TFS)** would reach £90 billion, whereas the scheme actually lent £127 billion. This has no implications for fiscal sustainability in any but the most extreme circumstances, and does not affect the broad balance sheet measures. But, as the loans roll off, it increases the risks to the path of PSND in the medium term. Were the loans to be rolled over – rather than being redeemed at the end of their 4-year term as we

⁴ National Audit Office, *The sale of student loans*, July 2018.

⁵ National Audit Office, *Help to Buy: Equity Loan scheme – progress review*, June 2019.

currently assume – this would reduce the Government’s 3.2 per cent of GDP headroom against its falling PSND target by 2.2 per cent of GDP.

Guarantees

- 6.30 The Government has introduced a new approval regime for guarantees and other contingent liabilities. It aims to ensure that new proposals are evaluated against a range of criteria (rationale, exposure, risk and return, risk management and mitigation, and affordability). This gives the Treasury the tools to monitor the Government’s exposure to new contingent liabilities. We make use of the associated database at each *EFO* when we review developments since our previous forecast and their broader fiscal implications.
- 6.31 The Government’s appetite for extending new guarantees related to housing has yet to be sated. At Autumn Budget 2017, it announced a further £8 billion of guarantees to support housebuilding. Of this:
- £1 billion were made available for the **British Business Bank’s ENABLE guarantees** programme, which is aimed at small and medium-sized housebuilders; and
 - £3 billion were allocated to an **Affordable Homes Guarantee Scheme** at Spring Statement 2019, although no further details about this scheme are available yet.
- 6.32 In preparing this report, we asked the Treasury about how many contingent liabilities entered into before the new approval regime took effect had crystallised and at what cost. It was not able to provide complete information to answer this. This information gap could be important, since it is the stock of all contingent liabilities, rather than just the flow of new ones, that matters in terms of the Government’s fiscal risk exposure over time.

Conclusions

- 6.33 Asset sales continue to represent a risk to our medium-term PSND forecast, but this may subside as the assets acquired during the financial crisis are sold. The new transparency requirements around asset sales provide useful information that the Government could use to ensure that asset sales do not worsen fiscal sustainability while improving PSND.
- 6.34 Risks in the medium term from loans have increased, in particular policy risks in respect of student loans. We will analyse the impact of any new higher education financing plans in the relevant *EFO* and in more detail in next year’s *Fiscal sustainability report*.
- 6.35 Risks from guarantees have also risen somewhat thanks to new announcements, but remain low. The Government’s contingent liability approval regime should help to improve the quality and management of new guarantees. But information about the stock of existing contingent liabilities is less complete.

Balance sheet transfers

Summary of previous *FRR* discussion and the Government's response

- 6.36 In our previous report we drew attention to the risks that arise from the possibility of reclassifications that expand the public sector balance sheet. In its response the Government announced that the ONS had published a strategy that aimed to give greater transparency and predictability to the pipeline of future reclassifications.⁶
- 6.37 The reclassification of bodies on or off the public sector balance sheet can happen because the Government undertakes some action that, in the opinion of the ONS, causes the body to be moved into or out of the public sector. Or it can be because the ONS reacts to changed accounting guidance or to new information and retroactively reclassifies a body. On reclassification the assets and liabilities of the body are added to or removed from the public sector balance sheet, which can sometimes produce a large change in the size of the public sector with no corresponding flow recorded in the deficit.
- 6.38 In the medium term reclassifications change the path of debt and, usually to a lesser extent, the deficit. They can be highly distorting to the path of debt. This is why the Government uses fiscal aggregates that exclude the public sector banks for its fiscal targets and why they are the headline measures in the ONS public finances release and our forecasts.
- 6.39 In the longer term it is often difficult to judge what if any impact the reclassification has on fiscal sustainability. For example, the ONS has included Network Rail both on and off the balance sheet at various times yet this has made no apparent real-world difference to the extent to which Government supports the rail industry or stands behind the debts of Network Rail. However, as we discussed in our previous report, concerns about the classification have influenced past policy decisions with some real-world effects on borrowing costs.

Updated risk assessment: statistical reclassification

- 6.40 We do not usually anticipate ONS decisions on the classification of bodies. But where it has indicated a decision and we have a solid understanding of the eventual fiscal consequences we may include them in our forecast before they are incorporated in the outturn statistics.
- 6.41 The ONS publishes a *Forward work plan* spreadsheet detailing future classification cases and an annual *Looking ahead* article that gives a longer-term view of plans and potential impacts. None of the bodies under review in its latest plans would make a large difference to the balance sheet – indeed, all those listed in the latest ONS plan would, if reclassified, have an impact assessed as 'small' or 'medium', defined as no bigger than £1 billion.

Funded public sector pension schemes

- 6.42 In September 2019 the ONS intends to include funded public sector pension schemes (and their associated assets and liabilities) in the public sector. Any changes will be purely

⁶ Office for National Statistics, *Looking ahead: developments in public sector finance statistics*, July 2018.

statistical: the change will neither increase nor reduce the Government's exposure to the schemes. The ONS has estimated that this change will reduce PSND by £31 billion at the end of 2017-18 and PSNFL by £9 billion. This was not included in our most recent forecast as estimates of its effect were not available at the time. We will reflect it in our next forecast.

- 6.43 The inclusion of funded pension schemes on the balance sheet highlights the discrepancy between the treatment of funded and unfunded pension schemes in the public finances. The liabilities of unfunded schemes are not reflected on any statistical measure of the balance sheet and the treatment in the deficit also differs. The ONS will produce estimates of the liabilities of these schemes (in tables compliant with the IMF's Government Financial Statics Manual), which we will use when assessing fiscal sustainability. The WGA includes the discounted liabilities of unfunded schemes that have been accrued to date. At the end of 2017-18 the WGA estimated the net liabilities of unfunded pension schemes at £1.74 trillion, compared with those of funded schemes at £0.12 trillion.

Pension Protection Fund

- 6.44 Alongside the other changes to funded pensions schemes, the ONS will include the impacts of the Pension Protection Fund (PPF). The PPF takes on defined benefit pension schemes that have become insolvent. As well as a reduction in PSND (included in the estimates above), the PPF introduces some volatility into the future path of debt and the deficit.
- 6.45 Income from the scheme (from its investments and a levy on eligible schemes) and payments to pensioners are likely to be relatively stable, but as the PPF takes on schemes in the future the deficit will be increased by the level of the shortfall in each one when it is taken on. Most are small relative to the size of the economy, and the PPF takes on many each year meaning it is only when a particularly large one is taken on that significant volatility will be introduced into PSNB. PPF compensation is also less generous to scheme members than that offered by the failed scheme, which reduces the PPF's liabilities relative to the scheme's. In 2017-18 the PPF recorded £1.2 billion in deficits from new schemes taken on, up £0.9 billion from the previous year. Much of the increase will have arisen from the inclusion of the Carillion pension schemes that were estimated to be in deficit by £1 billion.⁷ The ONS has not released provisional estimates of the PSND impact of the PPF, but the scale is likely to be relatively small.

Updated risk assessment: Government actions

- 6.46 While the ONS has worked to improve transparency on forthcoming statistically driven reclassifications, it is rare that it or we have clarity about those driven by the Government's own actions. Unlike statistically-driven reclassifications, these also more often have real-world consequences and are therefore more likely to affect fiscal sustainability.

⁷ Letter from Carillion (DB) Pension Trustee Limited to the Chair of the Work and Pensions Committee, 26 January 2018.

Housing associations

6.47 The history of the classification position of housing associations is described in Box 6.1. Unusually for a Government-driven reclassification there was clarity about the prospect of it. The Government was candid that it was only legislating to relinquish controls over housing associations to remove them from the balance sheet. As we concluded in our previous report, in this case the movements also make no real-world difference to fiscal sustainability – they have not reduced the chances of a housing association failing, nor, in such circumstances, the probability of the Government stepping in to continue the provision of affordable housing. In practice, the Government has simply moved housing associations back into the realm of fiscal illusions – providing a public service off the balance sheet.

Implicit government liabilities

6.48 Other than housing associations, Government actions have not triggered reclassifications since our 2017 report. When thinking about potential future actions it is worth considering the industries in which the Government might choose to intervene. In our previous report we considered two broad (and overlapping) categories: those industries vital for the economy and those vital for the delivery of public services. For both categories the implicit recognition of the liability is illustrated by the level of regulation to which they are subject.

6.49 In the event of another financial crisis the Government may feel forced to intervene because the consequences of not doing so would be too severe. There are other areas where governments might similarly feel compelled to act. The Centre for the Protection of National Infrastructure lists 13 sectors that contain *“Those critical elements of national infrastructure (facilities, systems, sites, property, information, people, networks and processes), the loss or compromise of which would result in major detrimental impact on the availability, delivery or integrity of essential services, leading to severe economic or social consequences or to loss of life”*.⁸ These are: chemicals, civil nuclear, communications, defence, emergency services, energy, finance, food, government, health, space, transport and water.

6.50 Other heavily regulated industries include housing associations and education, which the Government substantially finances and relies on to deliver public services. The Office for Students warns of three key uncertainties: Brexit, the Augar Review (see Box 6.2) and the decline in the number of 18-year olds in the next few years, as well as pressures from pensions and other costs.⁹ The sector’s student recruitment expectations look optimistic. The OfS found that, in total, providers were aiming to increase full-time UK and EU students by 7 per cent over four years and overseas students by nearly 21 per cent. The OfS warns that *“a provider whose financial viability and sustainability is underpinned by reliance on fee income based on student recruitment targets which prove to be unrealistic is exposing itself to significant risk”*. Our latest forecast assumes 0.5 per cent growth in student numbers in the four years up to 2021-22. The number of 18-year olds is projected to fall 5.2 per cent. Another risk could come from a growing reliance on non-EU students. We only forecast EU entrants as they are eligible for student loans, but EU students comprise only a quarter of all

⁸ See Centre for the Protection of National Infrastructure, *Critical National Infrastructure*.

⁹ Office for Students, *Financial sustainability of higher education providers in England*, April 2019.

non-UK students: China alone accounts for a higher proportion.¹⁰ Were the attractiveness of the UK as a destination to change drastically, for example through changes in UK visa requirements or due to policy changes in students' origin countries, it would be very difficult for some providers to make up the lost fee income quickly.

- 6.51 The chair of the OfS has stated that “*the OfS will not bail out providers in financial difficulty*”. It requires all higher education providers to have student protection plans in place to ensure continuity of study. But it is worth noting that these plans have yet to be tested and government rarely commits to bailing out institutions in advance as it can generate risky behaviour on the part of affected institutions. In the event, it might still choose to rescue a failing institution or to provide assistance to its students when the time came.

Conclusions

- 6.52 The reclassification of housing associations produced a large statistical change but did not materially affect fiscal sustainability. Otherwise, the Government's commitment to support industry remains strong, as evidenced by the support proffered to Nissan (see Chapter 5) and extended to British Steel. Brexit may compel the Government to provide higher levels of support but it is not clear whether that might be sufficient to trigger any reclassifications.

Valuation changes

- 6.53 The Government's exposure to revaluation risks lies mostly with the official foreign exchange reserves. The sterling value of the unhedged portion of these (around a third of the total) fluctuates with exchange rates. In 2016-17 the large drop in sterling increased the value of the reserves by £4.4 billion (4.0 per cent). Since then revaluations reduced their value by £2.3 billion in 2017-18 and increased it by £2.9 billion in 2018-19. The possibility of future large exchange rate movements – particularly in the context of Brexit – remains significant.

Fiscal illusions

Summary of previous *FRR* discussion and the Government's response

- 6.54 In our previous report we highlighted risks arising from fiscal illusions – where accounting treatments obscure the true fiscal position and where they drive policy decisions. In its response the Government pointed to developments in several areas, including:
- the greater controls in place for **contingent liabilities**;
 - active monitoring of **guarantee exposures**;
 - the disclosure of more information on **asset sales**; and
 - updated guidance for departments on financial transactions.¹¹

¹⁰ Migration Advisory Committee, *Impact of international students in the UK*, September 2018.

¹¹ These guidelines have now been incorporated in the *Consolidated budgeting guidance (2019-20)*.

Updated risk assessment

- 6.55 Having adopted the IMF term ‘fiscal illusions’ in our previous report, we looked in detail at the illusions generated by the current recording of student loans in a working paper last year. The term has also been adopted more widely in the student loans debate and used in both the House of Lords and Treasury Select Committee reports on the subject.
- 6.56 Within the OBR we now use the concept more systematically when thinking about instances where the accounting treatment or presentation disguises the ‘true’ fiscal position and, in particular, where the attractiveness of the illusion drives Government policy. For example, in respect of housing associations in our November 2017 *EFO* and when discussing the closure of the PF2 private finance scheme in our October 2018 *EFO*.
- 6.57 In this section, we discuss three general classes of fiscal illusion: off-balance sheet financing; the use of financial transactions to replace spending; and valuation of assets and liabilities. We note different types of illusion elsewhere in this report too. Earlier in this chapter we discussed asset sales, where the Government emphasises how these reduce PSND but not that they usually have minimal impacts on broader measures of the balance sheet. In Chapter 4 we discuss the use of tax expenditures, which often perform a task that could also be achieved via conventional public spending but do so in a less transparent way – with the cost being revenue forgone rather than spending voted for in Parliament. And in Chapter 5 we note how shifting the burden of a welfare benefit – free TV licences for the over-75s – to the BBC to reduce the deficit appears likely to have fiscally costly unintended consequences.

Off-balance sheet financing

- 6.58 The **private finance initiative** (PFI and, after 2012, PF2) is a long-term contractual arrangement usually used for the construction and maintenance of an infrastructure asset. It has attracted much criticism as a fiscal illusion as in the public sector finances most of the contracts are off-balance sheet. This means that the construction costs of the assets are recognised over a long period (often 25 to 30 years) rather than when they are incurred.
- 6.59 The Whole of Government Accounts recorded a capital value of £57 billion from 704 contracts at the end of 2017-18, down from £59 billion and 715 contracts the year before. This reflects a lack of new contracts in recent years: there have only been six PF2 contracts with a capital value of £900 million signed since 2012. At Budget 2018 the Government announced that there would be no more use of PF2 contracts and the Government has now closed the PF2 scheme to new projects, so the value will continue declining.¹²
- 6.60 Before reclassification the debt of **housing associations** recorded on the public sector balance sheet was nearly £70 billion and they were borrowing an average of £3 billion a year. The spending associated with this borrowing is no longer recorded in the deficit and the debt is no longer in any balance sheet aggregates. But the fiscal risk it poses remains.

¹² The Scottish and Welsh administrations have their own models of public-private partnership, which they may continue to use.

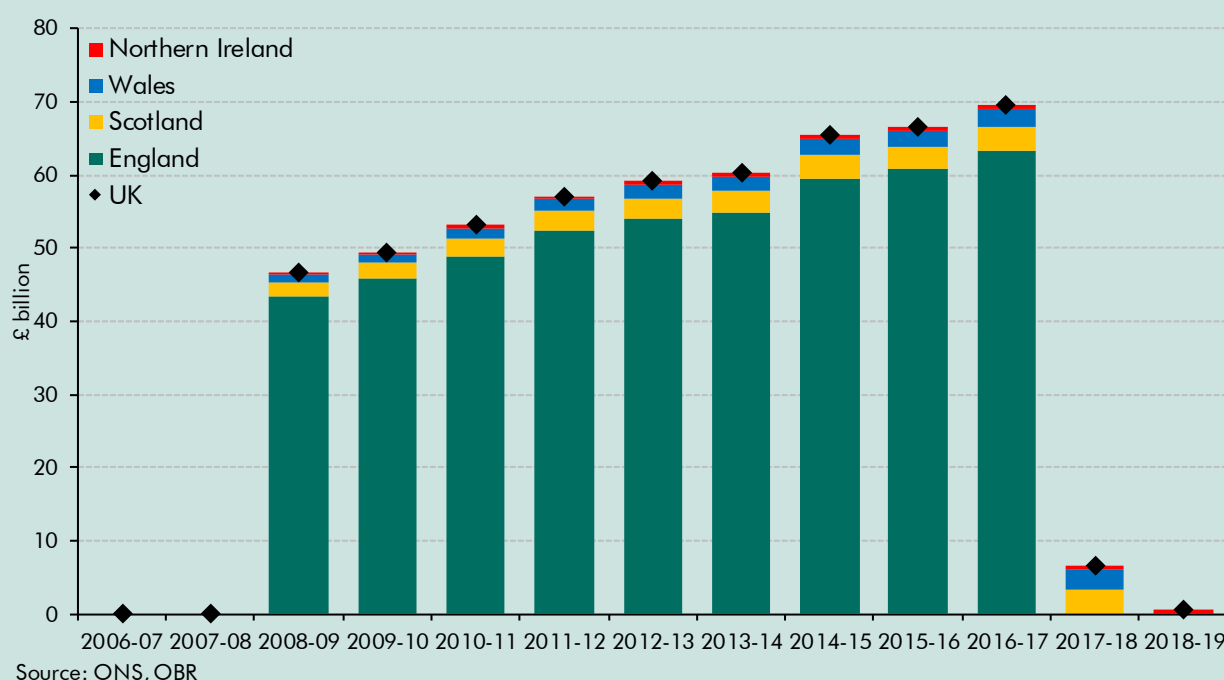
Box 6.1: Housing associations, classification changes and fiscal risks

Successive reclassifications of housing associations into and then back out of the public sector have generated large balance sheet transfers and affected our recent forecasts. The move back into the private sector returns them to the status of a ‘fiscal illusion’, having briefly featured in the full public finances data. The nature of the illusion stems from their use to deliver a public policy objective and the related likelihood that the Government ultimately stands behind them.

The 2008 Housing and Regeneration Act gave the Government significant controls over housing associations in England, but these powers were not used to a fiscally material extent until Summer Budget 2015, when the Government announced that it would force housing associations to cut social sector rents by 1 per cent a year for four years, thereby reducing the housing benefit bill on their properties. In our accompanying *Economic and fiscal outlook* we noted that this might prompt the ONS to reconsider their classification in the private sector. In October 2015, the ONS reclassified English housing associations into the public sector, with effect from 2008 when the relevant legislation had been enacted. It then reviewed the treatment of associations in the rest of the UK and took the same decision for them in September 2016.^a We noted at the time that these changes raised PSND, but did not materially affect fiscal sustainability.

Later, the Government took legislative steps to reduce its control over housing associations. It was unusually candid in admitting that those steps were precisely calibrated to relinquish just enough control to allow the ONS to reverse its decision, but no more.^b On the back of these regulatory changes, the ONS reclassified English housing associations back to the private sector with effect from November 2017.^c Scottish and Welsh associations followed a year later, reflecting slower passage of relevant regulations through the Scottish Parliament and the Welsh Assembly.

Chart A: Housing associations’ contribution to PSND



Our 2017 *Fiscal risks report* highlighted the potential reduction in PSND that would follow the Government's desired reclassification, were it to happen. But it also noted that the implications of housing associations for fiscal sustainability would be little changed either way since their role as providers of social housing would not change – and neither would the likelihood that the Government would stand behind them were they to face financial difficulties in future.

This episode highlights the degree to which statistical boundaries can drive regulatory policy decisions. This is probably not unusual, although this instance was unusual for the Government's candour about its motivation in designing the regulatory changes that were enacted.

^a See ONS, *Classification announcement: "Private registered providers" of social housing in England*, 30 October 2015.

^b Specifically it limited the percentage of officers that a local authority may nominate as board members of a housing association and removed a local authority's ability to hold voting rights. See *The regulation of social housing (influence of local authorities) (England) Regulations 2017*. Its motivation was set out in evidence to the House of Lords Secondary Legislation Scrutiny Committee - see 6th Report of Session 2017-19, October 2017.

^c ONS, *Statement on classification of English housing associations*, November 2017.

Financial transactions that replace spending

- 6.61 In our previous report we noted that there had been several policies in recent years that replaced grant funding with loans. These included maintenance grants for students from low-income families, nursing bursaries and the 'support for mortgage interest' benefit. While these lowered the overall cost to government of providing that support, they pushed write-off costs beyond the forecast horizon – hence generating a fiscal illusion in PSNB. No further policies of this type have been announced over the past two years.
- 6.62 As discussed in our 2018 working paper,¹³ there are many fiscal illusions associated with student loans as currently recorded, including the interest accrued, the balance sheet valuation and the treatment on sale. But the fiscal illusion that may have seduced government the most is the fact that moving from grant to loan financing allowed it to increase higher education funding while reducing recorded spending and the deficit. As discussed in Box 6.2 the ONS intends to remove these illusions by changing the accounting treatment for student loans, with effect from September this year. In our March 2019 forecast we estimated that these changes would increase the recorded deficit by £10.5 billion in 2018-19 rising to £13.7 billion in 2023-24. Initial ONS estimates of the effect on the PSNB data (of £10.6 billion in 2018-19) suggest these estimates are reasonable.

Valuation of assets and liabilities

- 6.63 The yield on gilts has fallen dramatically since the financial crisis and currently the real yield on index-linked gilts is negative. As the Debt Management Office cannot issue index-linked gilts with a negative real coupon, the coupon yield is greater than the market demands. Consequently, at auction index-linked gilts are sold for considerably above 'par' – that is, purchasers lend government more than £1 for each £1 they will receive at redemption. In

¹³ OBR, *Working paper No. 12: Student loans and fiscal illusions*, July 2018.

our March forecast, based on market interest rate expectations at the time, we assumed the Government would raise £140 in cash for each £100 of index-linked gilts issued.¹⁴

- 6.64 PSND (and other statistical balance sheet aggregates) record the liability from auctioning debt at the face value of the debt rather than the cash raised. This has the counterintuitive result that when government issues £100 of gilts to raise £140 of cash, PSND actually falls: measured liabilities rise by £100 but measured assets rise by £140. In our March forecast this 'auction premia' effect reduced PSND by £8.1 billion in 2019-20.
- 6.65 Auction premia unwind over the lifetime of the gilt, through the higher cash coupon payments, but that can take several decades. Meanwhile those premia have a significant impact on PSND. Since 2007-08 they have reduced debt by £97.5 billion (including £18.8 billion in 2016-17) and we forecast premia to average £7.3 billion a year over the forecast. But the net impact of premia is decreasing: the stock effect is now unwinding by £4.6 billion a year on average and this effect will get larger as long as premia at auction continue. This unwinding is sufficient to keep the levels impact on PSND at around 3.5 per cent of GDP in our latest forecast. These estimates are volatile, as relatively small changes in yields or the choice of gilts auctioned can have large impacts: at the time of our previous report we forecast auction premia of £12.7 billion for 2018-19; outturn was only £5.8 billion.

Conclusions

- 6.66 There have been some actions over the past two years that have reduced (or will reduce) fiscal illusions. Most importantly, the ONS's revised accounting treatment for student loans will remove the most egregious illusions from the accounts. We will look carefully at any new higher education financing arrangements to see if they introduce new illusions or appear to exploit the new accounting treatment to disguise their true fiscal effects. The Government's decision to end PFI schemes means that this illusion will gradually unwind as existing contracts mature – and it will no longer affect the flow of new spending decisions.
- 6.67 But the Government's actions to secure the reclassification of housing associations show that the incentive to exploit accounting and classification rules to keep activity off the balance sheet remains. While the letter of the rules was observed, the spirit of fiscal transparency was not, with a large quasi-public sector activity shifted back into the realm of fiscal illusion.

¹⁴ The equivalent mechanism plays out for conventional gilts, but the effect is currently much smaller than the effect on index-linked gilts.

Box 6.2: Accounting treatment and policy developments affecting student loans

Student loans have become an increasingly important part of our fiscal forecasts, with gross outlays reaching £18.1 billion (0.8 per cent of GDP) in 2018-19 and forecast to reach £22.6 billion (0.9 per cent) in 2023-24. Flows of this size would make student loans an important source of medium-term risk at any time, but prospective changes to their treatment in the National Accounts and potential future policy changes provide additional sources of risk.

Accounting treatment developments since our previous report

In our 2017 *Fiscal risks report* we discussed the fiscal illusions resulting from recording interest income on student loans that would never be received as revenue. Subsequently, both the Treasury Select Committee and the House of Lords Economic Affairs Committee have produced reports calling for changes to the accounting treatment of student loans in the public finances.^a

In July 2018 we issued a working paper discussing the various fiscal illusions associated with student loans.^b The ONS published an article alongside our report setting out potential improvements.^c The illusions to be addressed included those arising from significant write-offs of unpaid loans expected at the end of their 30-year term and from the sale of loans at deep discounts to their recorded value in the National Accounts without hitting borrowing.

In December 2018, after consulting international statistical authorities, the ONS published a follow-up article laying out its plans.^d Eurostat also published advice on the recording of income-contingent loans.^e The ONS proposed a new approach under which outlays on student loans would be split ('partitioned') into a portion that was expected to be repaid and would therefore be treated as a loan accruing interest, and a portion that was not expected to be repaid and would therefore be written-off at the point of outlay and so recorded as expenditure.

We updated our fiscal forecasts to take account of the ONS's plans in Annex B of our March 2019 *EFO*. In June 2019 the ONS then released an article detailing the methods it would use to calculate the loan-partitioning and how it would approach revisions.^f Provisional ONS estimates of the impact of the new treatment suggest that our March estimates were reasonably accurate: these ranged from an increase to PSNB in 2018-19 of £10.5 billion (ONS estimate £10.6 billion) rising to £13.6 billion in 2023-24. The ONS intends to introduce a new student loans time series into the public finances in September this year.

Fiscal risks under the new accounting treatment

By removing fiscal illusions, the new approach constitutes a material improvement. When the terms on the loans or the economic assumptions underpinning projected cash flows change, the accounting treatment will henceforth correctly reflect the changes in the underlying cash flows. (That is not the case with changes in interest rates charged, which will only affect cash flows for the minority of borrowers that repay in full, but will affect upfront write-offs for the majority that are not expected to do so.) This much closer alignment of the accounting treatment with economic reality reduces perverse incentives and promotes fiscal sustainability, so reducing risks.

However, the new treatment increases uncertainty in the medium term by introducing multi-decade projections into the calculation of outturn data, and thus introduces a new source of risk to our forecast. The economic assumptions embodied in our student loans forecasts and long-

term projections will be revised routinely at each forecast. Government has also periodically changed the terms and conditions on the loans. Both affect the expected stream of interest charged and repayments, which under the new treatment will change the estimated partition of gross loan outlays into expenditure and loan portions.

We will show the impact of such changes on future loan outlays in our forecasts, regardless of the underlying source of the change. But all changes to economic assumptions (such as projections for earnings growth or RPI inflation) and many policy changes will also affect estimates of how the existing stock of loans should be partitioned. The ONS will not revise historical estimates of PSNB in the light of these changes, but could change the loan balance and so PSNB in the year that policy changes come into effect. It has provided guidance about how these changes to the loan balance should be treated and considered three general cases:

- Where changes derive from revisions to **underlying economic assumptions**, these will generally be recorded as a revaluation on the balance sheet, with no associated flow transaction recorded in PSNB.
- Policy changes *“that significantly change the loan stock value through expectations of future repayments”* – i.e. **policy changes that affect cash flows significantly** – will be recorded as a flow transaction affecting PSNB and the balance sheet in equal measure. The ‘significant’ test is designed to avoid making large changes to PSNB due to changes in terms and conditions that do not genuinely affect economic reality. But by creating a dividing line in the accounting treatment, it might also generate opportunities for policymakers to try to avoid their policy decisions affecting the deficit.
- Policy changes *“that affect the stock value predominantly through a change in the discounting factor”* – i.e. **policy changes that affect the interest rate charged**, but not the amounts repaid – will be recorded as a revaluation, with no associated PSNB transaction. (Since lowering the interest rate charged reduces future write-offs, if a PSNB transaction were recorded it would generate a large fiscal benefit in year one offset by decades of lower interest receipts.) The ONS argues that this would *“adversely affect the interpretation of the fiscal aggregates”*, hence the different treatment to other policy changes. It also removes a potential fiscal illusion that policymakers might feel a strong incentive to exploit.

The ONS article provides an illustrative scenario with the impact on a single cohort of plan 2 English loans issued in 2018-19 of a decision to link interest rates to CPI, rather than RPI, inflation from 2024-25 onwards. This is the equivalent of reducing the interest rate charged by around 1 percentage point. Under the new treatment, this change increases the estimate of the loan balance for this cohort from £9.6 billion to £10.3 billion (out of total outlays of £16.3 billion).

We can use this example to give an idea of the scale of future revisions. If all future loans paid 1 percentage point less in interest – a little larger than the effect an RPI methodology change might have (see Box 7.1) – it would reduce spending by a little less than £1 billion a year in our forecast. If it applied to existing loans (and passed the ONS’s test as a policy change that significantly affected future repayments) the impact might be around £5 billion in 2019-20.

The Augar Review

In May 2019, an independent review chaired by Dr Philip Augar reported its findings.⁹ The review made recommendations across both further and higher education, but it is those relating to higher education financing that would be most fiscally significant were they to be adopted.

The review recommended:

- a reduction (compared to current plans) on spending on higher education by **freezing the fee cap** for a number of years and reducing eligibility for financing of ‘foundation years’;
- **some giveaways to students**, including replacement of part of the loan with a grant, the reintroduction of means-tested maintenance grants, lower in-study interest rates and a cap on total repayments; and
- **some takeaways from students**, including lower repayment and interest rate thresholds and a longer payment duration so that outstanding amounts would be written off later.

The review suggested that, (under the proposed new accounting treatment), the further and higher education recommendations would together raise borrowing by £1.2 billion to £1.5 billion in 2024-25. This reflected a mixture of proposals that would increase and reduce spending. The departing Prime Minister welcomed the recommendations but also noted that funding decisions needed to be “*taken in the round*”.^h This highlights the most important consequence of the ONS accounting treatment change: in the future, higher education financing will have to compete with other tax and spending policies, rather than appearing to be a ‘free lunch’ as at present.

^a House of Commons Treasury Committee, *Student Loans Seventh Report of Session 2017-19*, February 2018 and House of Lords Economic Affairs Committee, *Treating Students Fairly: The Economics of Post-School Education Second Report of Session 2017-19*, June 2018.

^b OBR, *Working paper 12: student loans and fiscal illusions*, July 2018.

^c ONS, *Looking ahead: developments in public sector finance statistics*, July 2018.

^d ONS, *New treatment of student loans in the public sector finances and national accounts*, December 2018.

^e Eurostat, *Ex ante advice on the recording of the UK student loans in Government Finance Statistics*, December 2018.

^f ONS, *Student loans in the public sector finances: a methodological guide*, June 2019.

^g *Review of post-18 Education and Funding*, May 2019.

^h *PM speech at Augar Review launch*, May 2019

Intangible assets

Intangible assets and the public sector

6.68 Intangible assets are those that are neither physical nor financial in nature. This definition covers a broad spectrum: from software to patents, research and development (R&D), data, training and know-how. In a recent book, Jonathan Haskell and Stian Westlake argue that four common characteristics tend to differentiate intangible assets from other ones:¹⁵

- **Scalability:** once the asset is created or acquired, it can be made use of multiple times at relatively little cost (due to both ‘non-rivalry’ and ‘network effects’).
- **Sunkness:** it is harder to recoup the cost of an investment in an intangible asset by selling the asset, so there are irrecoverable or ‘sunk’ costs.

¹⁵ Haskell, J. and Westlake, S., *Capitalism without Capital: The Rise of the Intangible Economy*, 2017.

- **Spillovers:** once an intangible investment has been made, it is relatively easy for others to take advantage of it (and relatively hard to prevent them from doing so).
- **Synergies:** the value of intangibles is greater when combined with other assets.

These features will generally mean that narrow financial returns to the creator or owner of intangible assets will be exceeded by broader economic and social returns on those assets.

6.69 Research has traditionally focused on the role of physical capital in the production process, but the impact that the properties of intangible assets have on productivity, competitiveness and growth has been receiving growing attention (although this research tends to focus on the private sector). For instance, a study by Corrado *et al* shows the importance of intangible capital deepening in accounting for recent growth trends.¹⁶ And, at the micro level, one by Hall *et al* demonstrates a strong link between firms' market valuations and the number of well-cited patents they hold.¹⁷

6.70 Given the scalability, spillovers and synergies present, the public and private sectors might be expected to take different approaches to intangible investment.¹⁸ In particular, the private sector can be expected to focus narrowly on private financial returns, while the public sector should take broader factors into account. Indeed, the Treasury's 'Green Book' guidance to departments is clear that "*all impacts – social, environmental, financial etc. – [are] to be assessed*" in cost-benefit analyses carried out by the public sector.

The scale of public sector intangible assets

6.71 A comprehensive valuation of the intangible assets owned by the public sector would need to consider all the ways these assets affect society. But even estimating only the financial value of intangibles is difficult. Accounting standards often recognise only the value of *individual* intangible assets, and then only if relatively stringent criteria are met, such as the existence of reliable cost estimates. And, unlike listed private companies, governments do not have a market-determined equity value, so the *total* financial value of intangibles cannot be estimated by subtracting the value of tangible assets from the value of equity.

6.72 The value of the public sector's intangible assets is thus likely to be substantially underestimated in the official accounts. For instance, the Whole of Government Accounts (WGA) is prepared under international financial reporting standards (IFRS), which do not allow many types of intangible assets to be capitalised and recognised therein. Indeed, intangible assets represent only 2 per cent of total public sector assets in the WGA, compared with global private sector estimates of 52 per cent to 84 per cent.¹⁹ At end-March 2018, this amounted to £36 billion of intangibles, mostly owned by the Ministry of Defence, like 'military equipment' (£24 billion) and 'capitalised development expenditure' (£6 billion).

¹⁶ Corrado, C., *et al.*, *Intangible investment in the EU and US before and since the Great Recession and its contribution to productivity growth*, 2016.

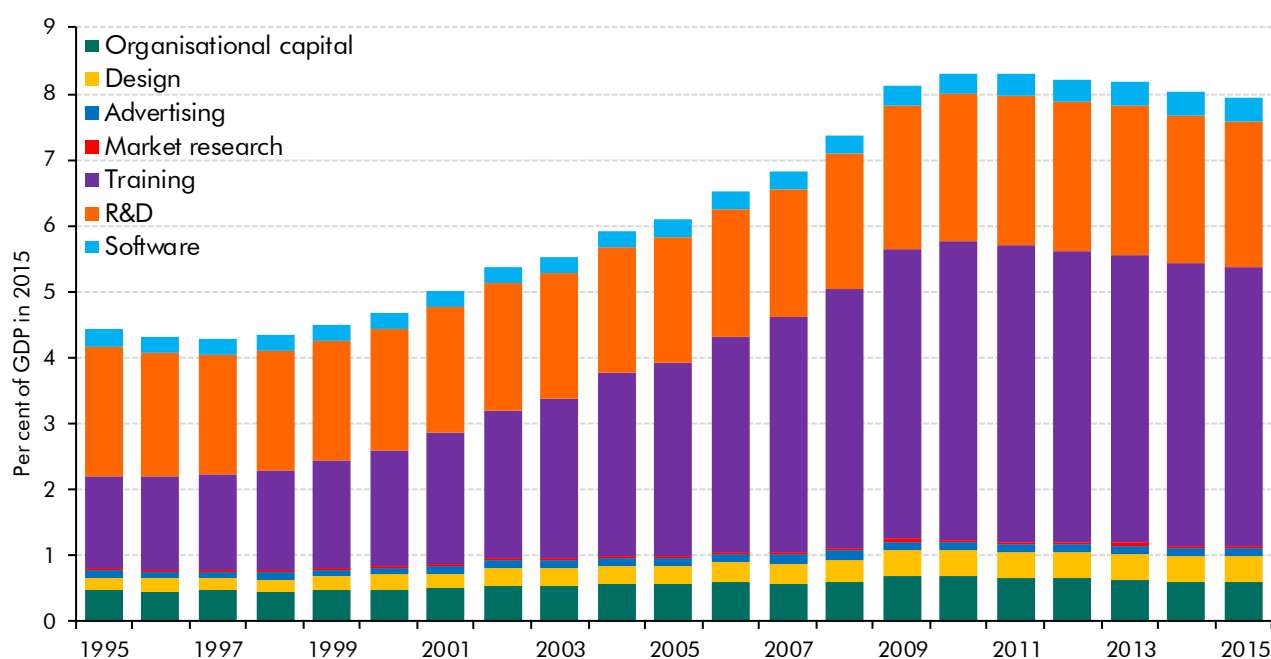
¹⁷ Hall, B., A. Jaffe, and M. Trajtenberg, *Market value and patent citations*, 2005.

¹⁸ Here, as elsewhere in this section, we focus on the public sector's intangible *knowledge* assets (this includes assets created by human intellect but excludes any value derivable from using the government's sovereign powers, such as the ability to levy taxes).

¹⁹ See Ocean Tomo, *Intangible Assets Market Value Study*, 2017, and Chartered Institute of Management Accountants, *Global Intangible Financial Tracker 2015*, 2015.

- 6.73 Other approaches generate higher – and probably more realistic – estimates of the value of intangibles, such as that adopted by the SPINTAN (Smart Public Intangible) project, which looks at the capitalised net present value of past investment in activities such as research, software and organisational capital. This finds that public sector intangible assets in the UK amounted to £150 billion in 2015,²⁰ around 8 per cent of total public assets.²¹ Moreover, this costs-of-production approach is still likely to underestimate the true value of intangibles, as it does not take account of the potential streams of financial revenue they might generate or any wider economic and social returns from spillovers to other parts of the private sector or synergies with the rest of the capital stock.
- 6.74 Chart 6.6 shows the increase in public sector intangibles in the UK, as recorded by the SPINTAN project, over the past two decades. Training activities and R&D accounted for over 80 per cent of total intangibles in 2015. The largest increase has been in training capital, whose share rose by almost a quarter over two decades. This represents the cumulative cost of training public sector employees – teachers, nurses, civil servants and so on. (In contrast, in the private sector in the UK training accounts for a much lower 22 per cent of the total investment in intangibles, with organisational capital, software and R&D forming the bulk of the remainder.²²)

Chart 6.6: Intangible assets in the UK public sector by type



Source: SPINTAN

- 6.75 The scale and composition of public sector intangibles also varies significantly across countries, as shown in Chart 6.7. Of the 21 advanced economies covered by the SPINTAN dataset for 2015, the UK ranked fifth in terms of the total stock (at 8 per cent of GDP), with only the US, Sweden, Austria and Finland ranked higher. The UK ranked top in terms of

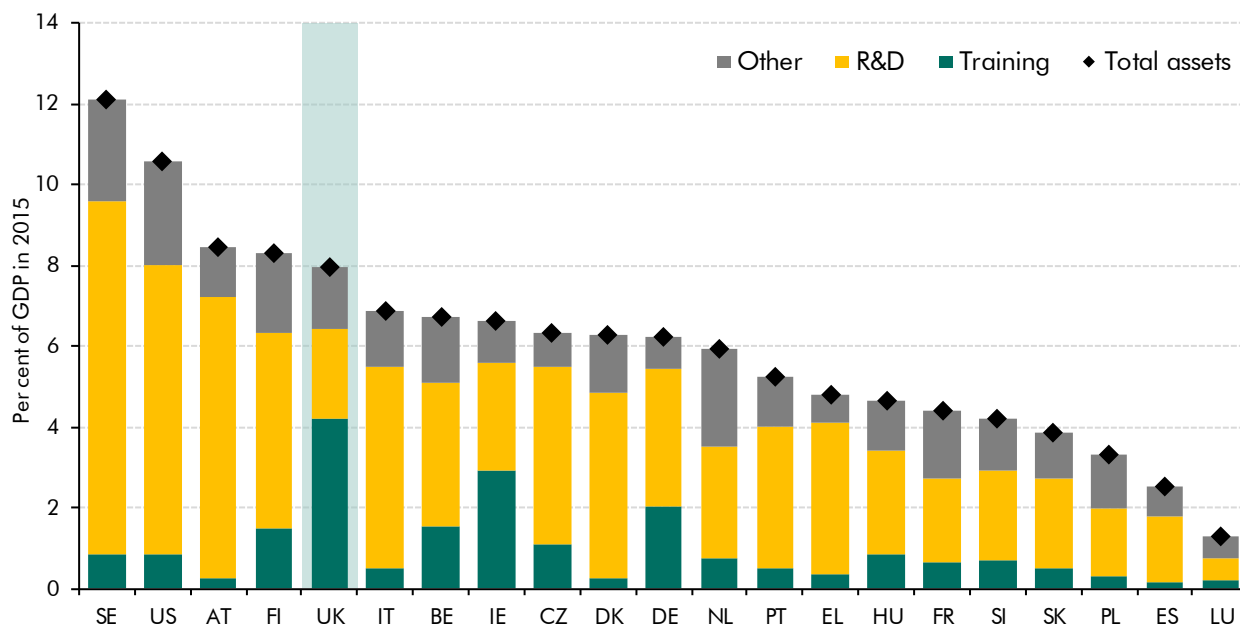
²⁰ See SPINTAN Project, *SPINTAN database on intangibles in the Public Sector (1995-2012) and Real Time data (2013-2015)*.

²¹ Different sectoral coverage also partly accounts for this difference: as well as adopting a broader accounting definition of intangible assets, SPINTAN includes some non-profit entities, such as charities, that WGA does not capture as they are not part of the public sector.

²² See ONS, *Experimental estimates of investment in intangible assets in the UK, 2015*.

training assets, but only seventeenth in terms of R&D assets, which account for only a quarter of the UK stock compared with around 70 per cent in the US and Sweden. Different asset types are likely to generate different financial, economic and social returns.

Chart 6.7: Public sector intangible assets: international comparison



Source: SPINTAN

6.76 There are no estimates of the financial, economic or social values of public sector intangibles in the UK. The Government reviewed its management of intangible (or ‘knowledge’) assets alongside Budget 2018, recognising that they were often not well understood. Through the ‘Balance Sheet Review’ (see Box 1.1 in Chapter 1), the Government plans to do more to measure and manage its intangible and other assets. The Treasury’s 2018 review of intangibles suggest using new measurement and accounting approaches, and establishing a central repository for tracking the value of intangibles.²³

6.77 As part of the exercise, the Treasury is looking at how to “improve the management of public sector knowledge assets, and generate greater social, economic and financial value”.²⁴ Any attempt to do so could bring with it risks for the public finances, as we discuss next.

What type of fiscal risks might arise from intangible assets?

6.78 The Treasury’s review noted that policymakers face trade-offs between maximising the revenue stream an asset can generate directly and the public benefit that derives from its broader economic and social returns. It recognised that alongside the financial value that could be obtained by the sale or licence of intangible assets (or other exploitation for a commercial return), intangible assets also held social value (for example by supporting the provision of public services) and – more relevantly for any assessment of fiscal risks – economic value (by stimulating innovation and competition in the private sector).

²³ HM Treasury, *Getting smart about intellectual property and other intangibles in the public sector: Budget 2018*, October 2018.

²⁴ HM Treasury, *Knowledge asset implementation study: terms of reference*, December 2018.

6.79 Potential fiscal risks from the exploitation of intangible assets can also be grouped this way:

- **financial returns** could be improved as a result of increased government effort; and
- **economic returns** could be affected positively or negatively in the process of seeking higher financial returns (generating indirect effects on public finances via tax bases).

6.80 Many of the Treasury review's recommendations have a financial focus. For instance, it suggests registering the intellectual property assets with the most commercial potential and further exploiting the data owned by the public sector. Clearly, the direct impact of this constitutes an upside risk to the public finances, but the potential indirect implications could work in either direction. For example, if the Government were to develop a new technology, it could sell it for profit or alternatively share it freely (for some highly scalable assets like data, this corresponds to 'selling' at marginal cost). Doing the latter removes any potential financial returns but maximises economic and social impacts because anyone who values the new technology at all would gain relative to the price they have to pay to access it. Alternatively, the act of trying to commercialise returns from a public sector intangible asset might in itself generate positive wider economic and social returns. Estimating the net fiscal implications of either approach would, of course, be hard.

6.81 One relevant example is CT scanner technology in the 1960s and 1970s, which the Department of Health and Social Security and the NHS played a key role in developing. If the public sector had sought to focus narrowly on the financial returns, the economy might have benefitted less from its further development by commercial players and society might have benefitted less from the health gains associated with its widespread application. More recently, a Deloitte study found that giving app developers free access to transport data had generated £90 million to £130 million worth of benefits, largely from time-savings for passengers.²⁵

6.82 Distributing intangible assets at marginal cost will not always be appropriate. In July 2017, the Information Commissioner's Office found the Royal Free Hospital in breach of the Data Protection Act for giving data on 1.6 million patients to the Google subsidiary DeepMind. As part of its National Data Strategy the Government aims to explore how to "unlock the power of data across government" while "building citizen trust in its use".²⁶ This may be challenging – a recent National Audit Office report criticised the Government's existing capabilities, noting a "culture of tolerating and working around poor data".²⁷

6.83 Personal data is a significant source of economic and social value to both businesses and consumers, with the latter benefitting from personalised goods and services. Personal data can reveal new findings or insights if aggregated or merged with other personal information. In the private sector, tech giants such as Google or Facebook have shown that they can successfully monetise the data they hold on individuals, while the Government is still in the process of recognising the potential value of the data it collects. The Government

²⁵ See HM Treasury, *The economic value of data: discussion paper*, August 2018.

²⁶ See Department for Digital, Culture, Media & Sport, *National Data Strategy open call for evidence*, June 2019.

²⁷ See NAO, *Challenges in using data across government*, June 2019.

can reap a financial (and wider economic) benefit by selling it in anonymised form to private companies, but at the same time it could open itself up to legal, fiscal and reputational risks if it were mismanaged or misused.

How large might those fiscal risks be?

- 6.84 Given the uncertain scale of financial returns and the uncertain direction *and* scale of economic returns, attempting to quantify the potential fiscal risk from attempts to exploit the existing stock of intangible assets more effectively would be extremely challenging.
- 6.85 The most comprehensive estimate of the UK public sector stock of intangibles is the cost-generated one presented by SPINTAN. The Treasury review provided an illustrative calculation based on the SPINTAN stock, noting that achieving a 3.5 per cent return on it would generate £5 billion a year in revenue. That would be equivalent to 0.7 per cent of 2018-19 current receipts. But, as described above, half those assets reflect training of the public sector workforce, which it is hard to see generating additional financial returns beyond those already embodied in the productivity with which they deliver public services.
- 6.86 In the process of seeking higher financial returns, economic returns could be affected positively or negatively. Quantifying potential wider consequences for the economy and their indirect fiscal implications is not straightforward. It would need to factor in the many knock-on effects across the economy, not just those on the specific activity affected by use of public sector intangibles. The scale of the resulting indirect effects on public finances is therefore even more uncertain than the scale of any financial returns.
- 6.87 As with many other government policies and activities that affect the economy's capacity to grow, we would typically wait to see evidence of any effect in the data rather than anticipating it in our forecasts. It does seem likely that attempts to secure greater financial returns to government from deploying an intangible asset will come at some cost in terms of foregone social (and probably economic) returns. How that might translate into risks to our medium-term forecast – which makes no explicit assumptions in this area – is unknowable.

Conclusions

- 6.88 The post-crisis deterioration in the balance sheet has halted, with debt forecast to fall on all National Accounts measures. But returning to pre-crisis levels at the currently projected rate would take decades. This is broadly as we had anticipated at the time of our 2017 report. Our assessment of balance sheet risks is similar to that from two years ago: the greatest risk remains the possibility that the Government will feel compelled to respond to some unexpected future event or crisis, triggering a step change in the level of public debt.
- 6.89 But significant risks still remain from smaller – and more predictable – developments. Some will genuinely affect long-term sustainability, such as potential changes to the financing of higher education. Others will have purely statistical impacts, such as moving certain pension schemes' balance sheets inside the public sector boundary and the improved way of accounting for student loans in the public finances.

- 6.90 Fiscal illusions and the incentives they create for policymakers remain a risk. Changes to the accounting treatment of student loans will remove a particularly obvious illusion, but the steps taken by the Government to secure the reclassification of housing associations to the private sector reinstates another and illustrated policymakers responding to incentives.
- 6.91 Other changes that are likely to mitigate fiscal risks over time include the steps taken by the Government, highlighted in its *MFR* report, where more progress was made in respect of managing balance sheet than in other areas. (This may be partly because the issues we raised were more focused on transparency and management than on difficult policy questions.) Concrete steps have been taken to improve how the public sector's assets and liabilities are recorded or understood, which should improve the Government's management of them and facilitate our scrutiny of them. We will survey any examples of this greater transparency affecting decision-making in the next edition of this report.

For the Government response

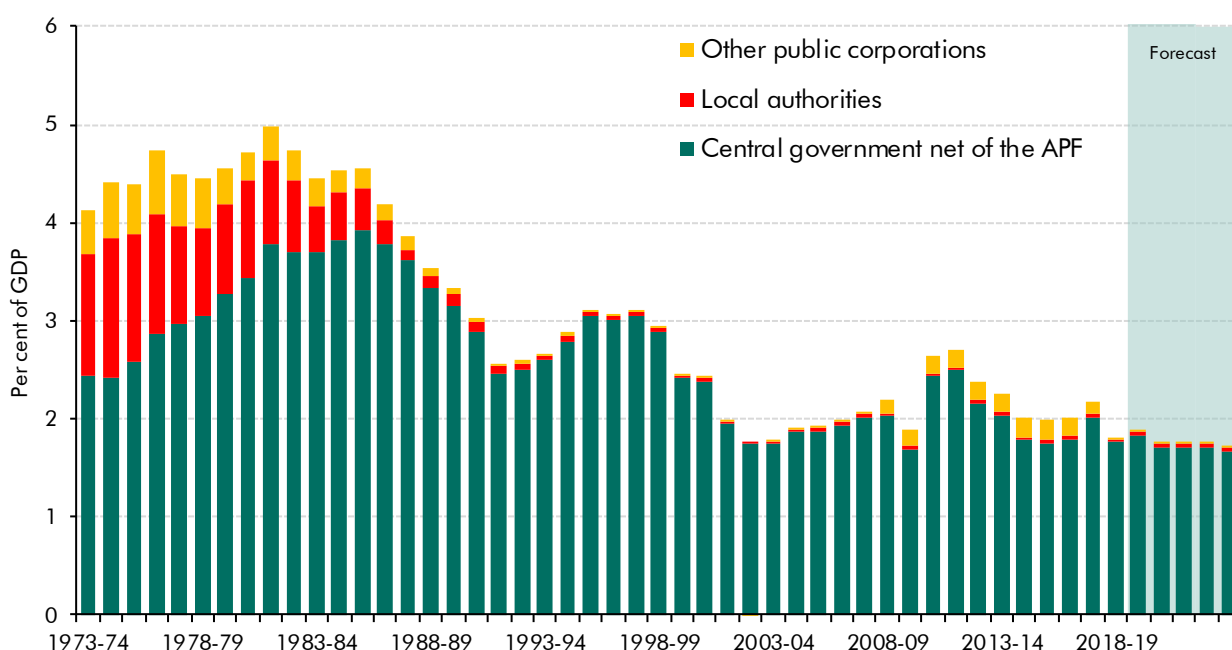
- 6.92 In this chapter, we have highlighted several issues that the Government is likely to wish to consider when managing its fiscal risks. Most raised in our previous report remain relevant:
- The deterioration in broad measures of public sector net worth since the crisis;
 - Asset sales that could be delayed or raise less than expected;
 - Asset sales that have not been factored into current forecasts;
 - The possibility of reclassifications that expand the public sector balance sheet;
 - The growing use of guarantees in infrastructure and housing; and
 - The impact of fiscal illusions where accounting rules drive policy decisions.
- 6.93 We have also highlighted several new issues:
- The use of PSND as a fiscal sustainability metric and its suitability for this task;
 - The management and oversight of the stock of existing contingent liabilities;
 - How the commendable improvements in balance sheet transparency affect decisions;
 - Statistical classification driving regulatory policy in respect of housing associations; and
 - Trade-offs between exploiting intangible assets' narrow financial and other impacts.
- 6.94 When assessing the outlook for the public sector balance sheet over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

7 Debt interest risks

Introduction

- 7.1 Debt interest is one of the largest elements of public spending not under the direct control of government. It is determined by the stock of debt – mostly the legacy of past budget deficits – and the rates of interest that the government must pay on it.
- 7.2 Earlier chapters looked at risks that could raise future deficits, or the debt stock directly, both of which would increase debt interest spending. But increases in the cost of new borrowing are an important additional risk, not just because they would make it more expensive to service a given debt, but also because they could push the debt-to-GDP ratio towards an unsustainable trajectory if they were to rise relative to the rate of growth of nominal GDP.
- 7.3 The public sector paid £38.5 billion (1.8 per cent of GDP) of debt interest to the private and overseas sectors in 2018-19, with £37.5 billion paid by central government (net of the APF), £0.4 billion by public corporations and £0.6 billion by local authorities. The public sector, in its turn, received £8.1 billion of interest payments from the private and overseas sectors, including accrued interest on student loans and interest on its foreign exchange reserves.

Chart 7.1: Total debt interest spending by government sector



Source: ONS, OBR

7.4 Most outstanding public debt in the UK is the liability of central government. So in this chapter we focus on risks to interest spending on central government gross debt (bearing in mind that some factors we identify would have partly offsetting effects on interest receipts). An important complication is that the Bank of England – also part of the public sector – has bought a substantial quantity of central government debt, financed by the creation of reserves on which it currently pays an interest rate of just 0.75 per cent – the Bank Rate set by the Bank’s Monetary Policy Committee (MPC).¹ In effect, this has allowed the Government to refinance some of its past fixed interest borrowing at a lower floating rate, reducing interest payments for now but leaving it more exposed to the risk of higher debt servicing costs if the MPC were to decide to raise Bank Rate in the future.

7.5 When considering interest rate risks to fiscal sustainability, it is important to do so relative to growth rate risks. Changes in the debt-to-GDP ratio depend, among other things, on the relationship between the effective interest rate on the debt stock and the rate of nominal GDP growth – increases in the former raise it and in the latter lower it. The difference between them is known as the ‘growth-corrected interest rate’ (sometimes simply referred to as ‘R-G’). When the effective interest rate and growth rate are affected to the same extent, the growth-corrected interest rate is unchanged, with little implication for fiscal sustainability. But shocks that raise the effective interest rate relative to GDP growth increase spending and debt faster than GDP, threatening fiscal sustainability.

7.6 This chapter updates those risks identified in our 2017 *Fiscal risks report (FRR)* relating to:

- the **debt stock and sensitivity to inflation and interest rate risk**; and
- the **impact of the Bank’s Asset Purchase Facility on effective interest rates**.

We also take a deeper look at the influence of the **growth-corrected interest rate** on fiscal sustainability and risks to the favourable path assumed in our latest central forecast, before offering some **conclusions** and raising some **issues for the Government’s next response**.

Debt stock and sensitivity to inflation and interest rate risk

Summary of previous *FRR* discussion and the Government’s response

7.7 In our 2017 *FRR*, we outlined the risks that arise from:

- the **rise in the debt stock and the issuance of index-linked gilts in recent years**; and
- the increased sensitivity of debt interest spending to **inflation and interest rate risk**.

7.8 In *Managing fiscal risks (MFR)*, the Government’s response to our 2017 report, it noted that:

¹ We discussed the accounting treatment of this (and the Bank’s other unconventional monetary policies) in a recent explainer: OBR, *The direct fiscal consequences of unconventional monetary policies*, March 2019.

- **debt was forecast to fall as a percentage of GDP** over the medium term; and
- the Government was **reducing its inflation exposure** by progressively reducing the proportion of index-linked gilt issuance in its overall financing plans.

Updated risk assessment

- 7.9 In the medium term, risks to our debt interest forecast relate to the level of new debt issued, the interest rate charged on that debt and the rate of inflation acting on index-linked debt.
- 7.10 The level of new debt issued reflects a combination of the cash deficit and the size and structure of existing debt. All else equal, medium-term debt interest risks will be lower when the initial stock of debt is lower, when that debt is of longer average maturity, and when more of the debt is at fixed interest rates rather than floating or linked to inflation.

The overall level of debt

- 7.11 Table 7.1 shows our most recent forecast for general government gross debt (GGGD) relative to the size of the economy, and compares it with the March 2017 forecast that formed the basis of our 2017 *FRR*. Debt has been revised down in all years, but by diminishing amounts from 2019-20 onwards. All else equal, this has reduced debt interest risks. But the changes are small and debt remains at more than twice its pre-crisis level.

Table 7.1: General government gross debt forecasts

	Per cent of GDP						
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
March 2017 <i>EFO</i>	87.7	87.7	86.5	84.8	83.6		
March 2019 <i>EFO</i>	85.3	85.5	83.8	82.9	82.2	81.1	80.0
Change	-2.4	-2.2	-2.8	-2.0	-1.5		

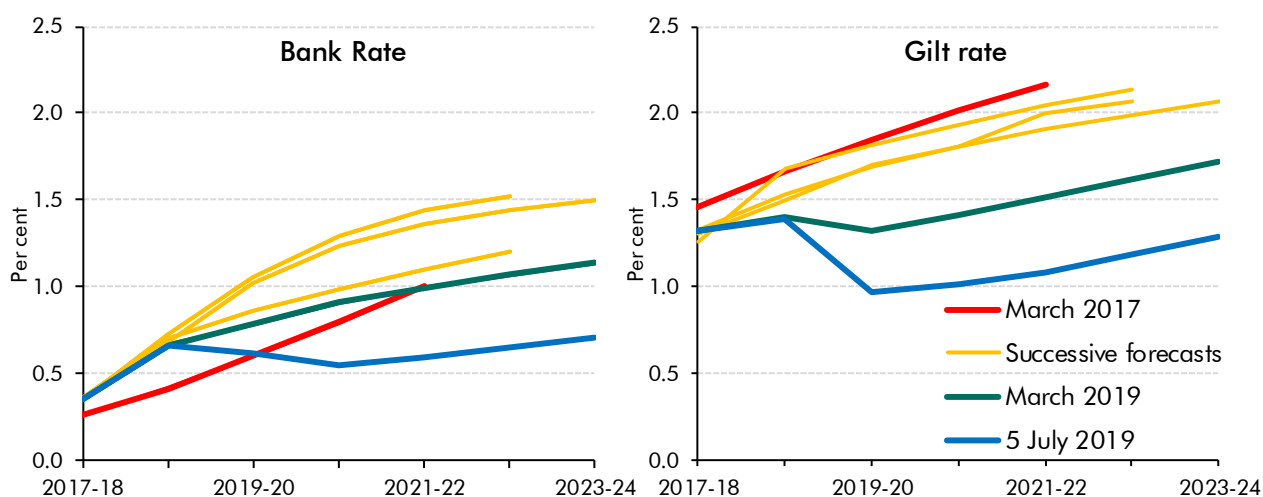
Maturity structure of debt

- 7.12 Most government debt is issued in the form of gilts, Treasury bills (T-bills) or NS&I products (such as premium bonds). At the end of 2018-19, these accounted for 94 per cent of GGGD. The average maturity of the debt stock is around twice that of most G7 economies, at around 15 years. This reduces medium-term risks to our debt interest forecasts, because only around 40 per cent of existing debt will be refinanced within a five-year forecast period. As yield curves generally slope upwards (which means that longer maturity debt pays higher rates of interest) this lower risk is paid for in higher annual financing costs.
- 7.13 Even though some debt will not be redeemed within the forecast horizon, significant amounts will be – and some is issued at rates that can change during that period. Roughly 20 per cent of debt will redeem in 2019-20 or is otherwise subject to interest rate changes (abstracting from the gilts held by the APF and index-linked gilts, discussed later in the chapter). This is up slightly from the position ahead of our previous report (18 per cent in 2017-18), as more gilts are coming up for redemption and there has been a big increase in NS&I financing through floating interest rate products. Over our five-year forecast, 39 per cent of the stock will be subject to rate changes, unchanged from our previous report.

Market interest rates

7.14 We derive our medium-term interest rate forecasts from market expectations embodied in financial market instruments. Changes in these expectations pose risks to our debt interest forecast. Chart 7.2 shows the changes in expectations for gilt yields and Bank Rate (the most important two interest rate assumptions in our forecast) at each of our past five forecasts. We have revised our gilt rate forecast down three times and up once, while the Bank Rate forecast has been revised down twice and up twice. The average absolute revision to each has been 0.18 percentage points across the period, relatively small in historical context. But it has still yielded some relatively large changes in our debt interest forecasts – adding £1.0 billion a year on average in our March 2018 forecast and subtracting £1.5 billion a year in March 2019. As of 5 July, market expectations for both Bank Rate and gilt yields had fallen significantly relative to our March 2019 forecast.

Chart 7.2: Successive forecasts for Bank Rate and gilt rates



Note: Gilt rates are the weighted average interest rate on conventional gilts.

Source: OBR

- 7.15** In our 2017 *FRR* we judged that the risks to our forecast for interest rates were two-sided, but that with interest rates still close to historic lows the risks to spending from rates rising above our central forecast were likely to be more significant. Over the past two years, our gilt rate forecast has fallen on average, and rates have fallen yet further since then, but large increases still seem more likely than large falls over the longer term. Factors that could drive UK interest rates higher include faster than expected increases in global interest rates or increases in the UK risk premium demanded by investors.
- 7.16** We also discussed how revisions to debt interest forecasts had most often partially offset revisions to receipts forecasts. And that this was unsurprising as market expectations of future interest rates tend to rise/fall when expectations of GDP growth are raised/lowered.
- 7.17** Up to our 2017 *FRR*, revisions to debt interest and receipts had contributed in the same direction to borrowing revisions in only three of our preceding 15 forecasts. But in two of the four forecasts since then, receipts have been revised up but debt interest revised down. The latter is likely to reflect the market pricing in some probability of a no-deal Brexit and an

associated monetary policy easing. So to some extent it is inconsistent with the assumption of a smooth exit that underpins our economy and receipts forecasts. If a smooth Brexit is achieved, market interest rates – and our debt interest forecast – could rise again.

Index-linked gilts

- 7.18 Index-linked bonds are one of the tools governments use to manage the risks faced by society. Historically, financial markets have struggled to meet investors' demand for safe assets protected against inflation (which arises in part because of requirements on defined benefit pension schemes to uprate payouts in line with inflation). By issuing index-linked debt, the Government offers the private sector this protection in exchange for lower yields.
- 7.19 Today, the UK issues a greater share of its debt as inflation-linked securities than any other G7 government. At the end of 2018-19, index-linked gilts (ILGs) amounted to 29 per cent of all gilts (and 38 per cent if Bank of England holdings are excluded, as none have been bought under quantitative easing). The return on ILGs is linked to the Retail Prices Index (RPI) and uncertainties over the path of RPI inflation are a significant risk to our medium-term forecasts. But as we discuss in Box 7.1, this risk reflects not just the usual risks around price movements but also potential changes to the way the RPI is constructed.

Box 7.1: How a change to the RPI would affect our fiscal forecasts

The RPI is a long-standing measure of inflation that is used to uprate a variety of payments and taxes, notably including those related to index-linked gilts (ILGs). In 2010, a change in the collection method for clothing prices resulted in a significant increase in the gap between the RPI and CPI measures of inflation, prompting a recognition that the RPI embodied an unsuitable formula for aggregating individual price quotes.^a Over the past four years, the ONS estimates that the effect of the unsuitable formula has raised annual RPI inflation by an average of 0.7 percentage points. This box looks at the potential consequences for our fiscal forecast were the RPI to be changed in a way that removed this formula effect and thus narrowed the gap with CPI inflation.

The stock of index-linked gilts stood at £429 billion in 2018-19 (19.8 per cent of GDP). Both coupons and the value of the principal due for ultimate repayment rise with RPI. Both elements are accrued each year, though investors only receive the principal uplift on redemption. This means RPI inflation tends to be the most important near-term influence on our accrued debt interest forecast. What would a change to the formula for RPI mean for the holders of ILGs? The ready reckoners published alongside our most recent forecast imply that if RPI inflation were 0.7 percentage points a year lower – equivalent to the effect of removing the formula effect – debt interest spending in 2019-20 would be £3.1 billion (0.1 per cent of GDP) lower. The effect builds somewhat each year, reaching £4.4 billion (0.2 per cent of GDP) in 2023-24.

Assessing the fiscal implications of such a change is, however, further complicated in that three of the oldest ILGs outstanding contain a clause requiring the Treasury to offer to redeem them at (uplifted) par in the event of a change to the RPI that the Bank of England judges to be “*fundamental... and materially detrimental*” to bondholders. Given current market prices are far

above uplifted par for these bonds, it seems unlikely that many bondholders would exercise this option. In sum, were such a change to go ahead, it would be likely to lower debt interest spending by progressively larger amounts over time. The large reduction in the overall return to investors over the lifetime of each ILG would generate a large drop in market prices for those bonds, with potentially significant implications for existing investors' balance sheets. The change could also prompt wider market instability were it to be seen as a breach of trust, though as the Government would simply be curtailing an unintended windfall that seems unlikely.

A change to the RPI would have several other effects on our fiscal forecast. Many payments to the Government and other regulated prices are uprated using the RPI – including the annual revalorisation of various excise duties and increases in regulated rail fares – and the RPI is also used in the calculation of the interest accrued on most student loans. The business rates multiplier was switched from RPI to CPI inflation uprating in April 2018. In contrast, many payments from the Government to the public, other than those on ILGs, are uprated with CPI – including many welfare payments, personal tax credits, and, since May 2019, NS&I index-linked savings certificates. Income tax and NICs thresholds are also linked to CPI inflation.

Looking just at ILGs, excise duties and accrued interest on student loans (under the current accounting treatment) – the largest elements of the public finances still linked to the RPI – the net effect of a 0.7 percentage point a year drop in RPI inflation relative to CPI inflation would be to reduce borrowing by £2.3 billion in 2020-21, falling slightly to £1.9 billion in 2023-24.

In 2013, the UK Statistics Authority (UKSA) acknowledged the problems with the RPI by withdrawing its status as a National Statistic, though it continues to publish it. The RPI is also unusual in that it requires the Chancellor's consent before any major changes can be implemented, rather than changes being the sole domain of statisticians.^b The wider implications for ILG holders of addressing the shortcomings of RPI represent a disincentive to change. In light of the continued lack of action in addressing the problems with the RPI, the House of Lords Economic Affairs Committee recently concluded that UKSA should request "*a fix to the clothing problem*" and that the "*Chancellor should approve this change regardless of the effects on index-linked gilt holders*".^c That may hasten a methodological change in the RPI.

^a The CPI largely uses the 'Jevons' and 'Dutoit' methods to aggregate prices at the most basic level, while the RPI largely uses the 'Carli' and 'Dutoit' methods. The Carli method tends to inject spurious inflation into the index and is therefore prohibited by Eurostat regulations except in 'exceptional cases'. The ONS provides more detail in: ONS, *Shortcomings of the Retail Prices Index as a measure of inflation*, March 2018.

^b See *The Statistics and Registration Service Act 2007*, 2007.

^c House of Lords Economic Affairs Committee, *5th Report of Session 2017–19 HL Paper 246: Measuring Inflation*, January 2019.

7.20 Our previous report pointed out that the relatively high issuance of ILGs and their relatively long maturities meant that in our March 2017 forecast the stock of these gilts continued to rise, from 20 per cent of GDP in 2016-17 to 24 per cent in 2021-22, despite total debt falling relative to GDP. This would further increase the sensitivity of accrued debt interest spending and the deficit to RPI inflation.

7.21 Partly in response, in March 2018 the Government announced a 1 to 2 percentage point reduction in ILG issuance in 2018-19.² In October 2018, it then announced that it would

² HM Treasury, *Debt Management Report*, March 2018.

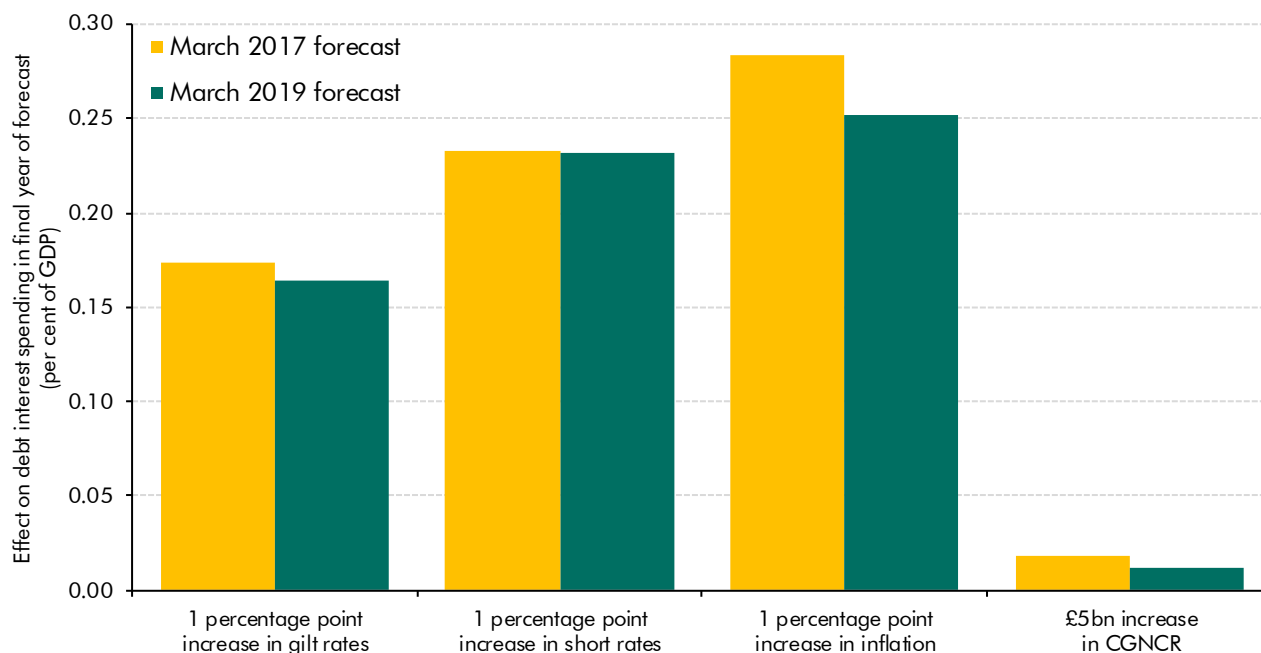
“look to reduce index-linked gilt issuance in a measured fashion as a share of total issuance over the medium-term, in line with this planned reduction”.³ Our latest forecast assumes the mid-point of this range – a 1.5 percentage point a year decline. This takes ILG issuance down from around 20 per cent of gross gilt issuance in 2018-19 to less than 15 per cent in 2023-24. As a result, the total stock of ILGs is now forecast to peak at 20.4 per cent of GDP in 2021-22 before falling to 19.3 per cent of GDP in 2023-24. The Government has not indicated whether the proportion of ILG issuance will continue to decline beyond 2023-24.

- 7.22 In MFR, the Government stated that it kept the potential issuance of new debt instruments under review and discussed a previous consultation on CPI-linked gilts (unlike the RPI, the CPI is a National Statistic that meets international statistical standards). The Government has not announced any plans to consult again on CPI-linked gilts.

Sensitivity analysis

- 7.23 Chart 7.3 shows the debt interest ready reckoners we published alongside our March 2017 and March 2019 forecasts. With debt stocks and maturities little changed it is not surprising that the sensitivity to changes in interest rates and the net cash requirement are little changed. The sensitivity to inflation has fallen slightly reflecting lower issuance of ILGs. This reduced sensitivity will only become significant over time if the stock of ILGs decreases.

Chart 7.3: Debt interest ready reckoners



Note: All increases are assumed to take effect at the beginning of the first year of the forecast and continue until the final year.
Source: OBR

³ See Annex A of HM Treasury, *Budget 2018*, October 2018.

Conclusions

- 7.24 The level of debt remains around twice its pre-crisis level, leaving the Government more exposed to changes in the effective interest rate than it was then. And debt servicing costs remain more sensitive to changes in interest rates and inflation than they were prior to the crisis, due to the debt stock's shorter maturity and a higher proportion of index-linked gilts.
- 7.25 In many respects the picture is little changed from our previous *FRR*, as might be expected with risks to a stock that is typically slow-moving. However, the reduction in ILG issuance has reduced the sensitivity of future spending to RPI inflation somewhat (and potential changes to the RPI itself might further reduce the Government's exposure to inflation). But market participants appear to be pricing some chance of a no-deal Brexit and the likely monetary policy response, so a smooth outcome could see rates rise again. And with interest rates remaining at historic lows, and having fallen further since our March forecast, over a medium-term horizon interest rates seem more likely to overshoot our forecast materially than they are to undershoot it significantly.

The Asset Purchase Facility and effective interest rates

Summary of previous *FRR* discussion and the Government's response

- 7.26 In our previous report, we noted that the Asset Purchase Facility (APF) lowers government borrowing costs, but that shortens the average maturity of the debt stock at the public sector level and increases exposure to changes in short-term interest rates.
- 7.27 In its response, the Government pointed to the oversight and governance arrangements it had in place for the APF. Looking ahead to a world in which the MPC decides to unwind quantitative easing by selling the gilts held in the APF, the Government stated that any sales the Bank of England undertook would be coordinated with the Treasury and the Debt Management Office to manage the impact on the gilt market.

Updated risk assessment

- 7.28 The APF purchases gilts as part of the Bank of England's quantitative easing programme.⁴ It has purchased around a third of all conventional gilts in issue, costing the Bank a little under £435 billion at prevailing market prices. This is essentially unchanged from two years ago. The purchases are financed by the issuance of Bank reserves, which pay interest at Bank Rate. This has the effect of reducing public sector debt interest payments (by the difference between the rate paid on the gilts and Bank Rate) but also shortening the average maturity of the debt stock and so increasing risk. The impact of the APF is to increase the amount of public sector debt with a maturity of less than one year from 20 to 40 per cent.
- 7.29 There are two distinct fiscal risks arising from the APF's gilt holdings:

⁴ OBR, *The direct fiscal consequences of unconventional monetary policies*, March 2019.

- **The difference between the rate it receives on its gilts and Bank Rate may change unexpectedly.** Movements in the effective interest rate it receives on its gilt holdings will move relatively slowly (only around 33 per cent of its holdings at the end of 2018-19 were due to be redeemed within five years). By contrast, Bank Rate changes affect the entire stock of reserves immediately. So Bank Rate movements represent the primary source of fiscal risk. The full-year effect of each 0.25 percentage point rise in Bank Rate – assuming no change in the gilts it holds and therefore the coupons it receives – reduces the debt interest saving from the APF by £1 billion.
- The second risk comes from **changes in the size of the APF and how that is accounted for in PSND.** The difference between the price that gilts are bought or sold at and their nominal value is reflected in PSND. We do not forecast increases in APF assets unless the MPC has announced them, but we do forecast decreases if the terms of the MPC's stated policy – that it will not begin to reduce its stock until the Bank Rate reaches 1.5 per cent – are met. This threshold was changed by the MPC in June 2018, having previously been 2 per cent.⁵ It currently lies beyond our forecast horizon, so we do not forecast reductions, but in our October 2018 forecast Bank Rate reached 1.5 per cent in the final year. On our assumption that sales of gilts began at that point, and further assumptions about their pace and composition, this reduced PSND by £4 billion.

7.30 While Bank Rate does not currently reach 1.5 per cent within our forecast horizon, the curve is very flat, which, given normal levels of volatility, suggests that the 1.5 per cent threshold is likely to move into and out of our forecast horizon on a regular basis. As of 5 July, that risk had receded as market expectations for Bank Rate in 2023-24 had fallen from 1.1 per cent at the time of our March forecast to just 0.7 per cent. The nature of any APF run-off is also uncertain. The Bank has been clear that 1.5 per cent is not a hard threshold at which sales will definitely start and has given little guidance on their pace or composition. Any forecasts of this are therefore subject to considerable uncertainty.

7.31 There is also a risk that as the APF sells gilts it increases yields by more than is priced into our forecast. The Government's MFR statement that *"if and when the MPC decides to unwind the facility, any sales of APF assets would be coordinated with the Treasury and the Debt Management Office (DMO) to manage the impact on the gilt market"* suggests that this risk may have some bearing on how any eventual run-off is managed.

Conclusions

7.32 The level of gilts held in the APF has not changed since our previous report and the sensitivity to changes in interest rates is therefore little changed. So it remains a material source of risk to our medium-term spending forecast. The MPC's guidance about when the rundown of APF assets might commence has changed, with the Bank Rate threshold lowered from 2 to 1.5 per cent. But market interest rate expectations have also fallen further. Taken together, the probability of the rundown starting within our forecast horizon is also little changed. There is no further information about how any APF rundown would be managed.

⁵ Bank of England, *Monetary Policy Summary and minutes of the Monetary Policy Committee*, June 2018.

The growth-corrected interest rate

- 7.33 The evolution of the debt-to-GDP ratio reflects three factors.⁶ First, the size of the primary budget balance – the difference between government spending on all but debt interest on the one hand and tax revenues on the other. Second, the ‘growth-corrected’ interest rate – the difference between the interest rate paid on the government’s debt, which raises the debt-to-GDP ratio, and the growth rate of output, which reduces it.⁷ Finally, any ‘stock-flow adjustments’. As Chapter 1 explains, these are changes in the stock of debt left unaccounted for by the flows of primary borrowing and debt interest: they can stem either from the net acquisition of financial assets or from timing, classification and valuation effects.
- 7.34 The growth-corrected interest rate (or ‘R-G’ for short) is an important factor driving the dynamics of the debt stock. When R-G is high – for instance when there are fears of default (either *de jure* through failure to meet debt payments or *de facto* through currency depreciation and unanticipated inflation) – the debt-to-GDP ratio can rise rapidly. Consequently, the behaviour of R-G can be a key determinant of fiscal sustainability.
- 7.35 In an important recent contribution, former IMF chief economist Olivier Blanchard, in his presidential address to the American Economic Association (AEA), revisited the historical evidence on R-G in the US, concluding that more often than not the interest rate on US government debt had been less than the growth rate.⁸ He noted this meant that “*historically, debt rollovers would have been feasible*” – in other words that if debt rises the government could repay the principal and accumulated interest with new borrowing without triggering an upward spiral in the ratio of debt to GDP. He went on to consider the implications of this continuing to be the case for the conduct of US fiscal policy, concluding that the costs of debt are “*smaller than is generally taken as given in current policy discussions.*”
- 7.36 In light of this we now:
- document the **history** of the growth-corrected interest rate in the UK;
 - consider how **different possible future paths for R-G** would affect the future evolution of public debt relative to GDP; and
 - discuss how other assumptions might affect **the balance of fiscal risks**.

⁶ This decomposition can be expressed as: $d_t - d_{t-1} = p_t + s_t + [(R_t - G_t)/(1+G_t)]d_{t-1}$. The change in debt-to-GDP ($d_t - d_{t-1}$) is equal to the primary deficit (p_t), plus any stock-flow adjustments (s_t), plus the impact of any difference between the effective nominal interest rate (R_t) on the debt stock and nominal GDP growth (G_t). The growth-corrected interest rate, $R_t - G_t$, which determines whether this impact is positive or negative can also be expressed in real terms: the real interest rate (r_t) minus real GDP growth (g_t).

⁷ This relationship holds more generally: if the nominal interest received from an asset (or paid to a liability) is larger than the rate of growth of the economy, then that asset (or liability) will tend to increase relative to the size of the economy (assuming interest costs are rolled over and any interest received is reinvested). All interest rates discussed in this section are the rates paid on government debt. These so-called ‘riskless’ rates tend to be lower than the rate of return received by holders of other assets. For instance, Thomas Piketty discusses the returns on capital in the economy as a whole: Piketty, T., *Capital in the 21st Century*, 2013.

⁸ Blanchard, O., *Public debt and low interest rates*, January 2019.

The growth-corrected interest rate in history

7.37 The historical importance of the growth-corrected interest rate to the evolution of the public finances over the past century can be seen in Charts 7.4, 7.5 and 7.6:⁹

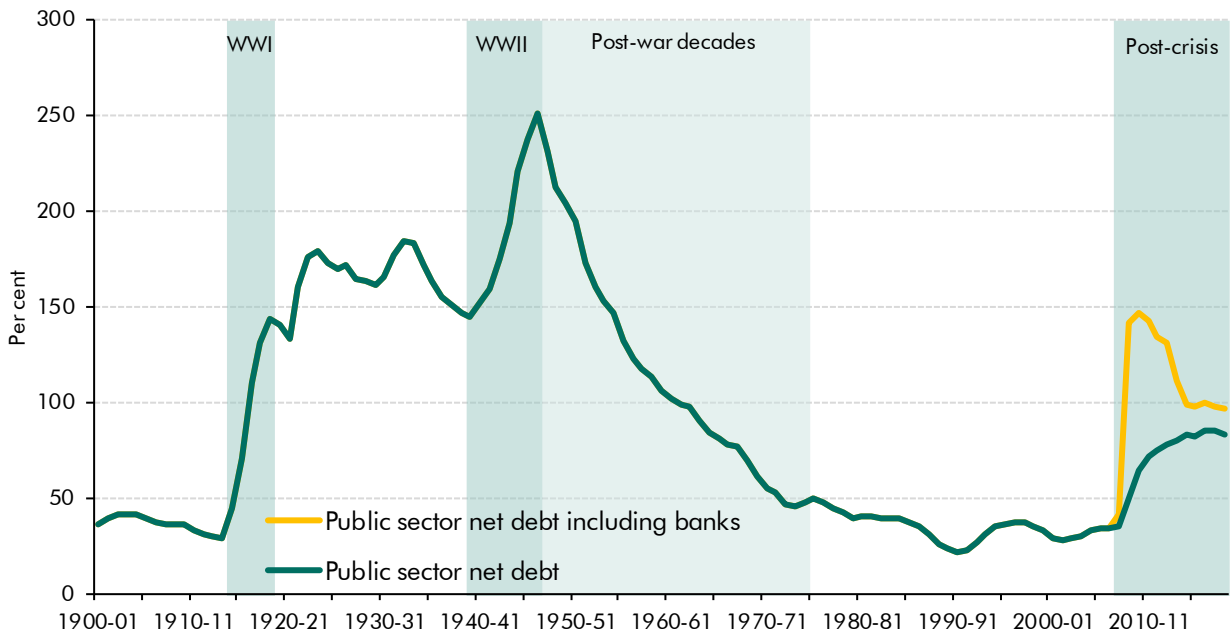
- During both **the First and Second World Wars**, the debt-to-GDP ratio rose sharply – by about 100 percentage points – as conflict pushed up military spending. In both cases, the effect was partially offset by a favourable growth-corrected interest rate, due to both higher growth (from high government spending and inflation) and lower interest rates (due to concessional lending and the issuance of low-coupon war bonds).
- In **the 1920s**, the Government tightened both monetary policy (in an ill-fated attempt to return to the gold standard at the pre-war parity) and fiscal policy (in an attempt to pay off its war debts in real terms). The resulting high interest rates, shrinking real economy, and deflation combined to generate the greatest upward pressure on debt from the growth-corrected interest rate in any decade, and ultimately outweighed the downward effect on debt from a string of primary surpluses.
- **After the Second World War**, the debt-to-GDP ratio fell by around 200 percentage points over three decades. Half of this fall came from growth exceeding the effective interest rate (Chart 7.5).¹⁰ Initially this was largely due to ‘financial repression’,¹¹ but as the 1970s wore on it increasingly reflected unanticipated inflation (Chart 7.6).
- Excluding banks taken onto the public sector balance sheet, debt rose by almost 50 per cent of GDP during **the late 2000s financial crisis**. This mainly reflected a sharp rise in the primary deficit, with the cash value of spending rising relative to GDP (reflecting mainly the unexpected and sharp contraction in nominal GDP) while tax revenues fell even more sharply than GDP. Although the effective interest rate initially exceeded the growth rate, this raised the debt-to-GDP ratio only very modestly.

⁹ Compiling very long time series inevitably requires judgements to be made about how to splice together different data sources and fill any gaps in the data. We have used the Bank of England’s ‘Millennium of macroeconomic data’ to produce these charts and analysis.

¹⁰ To line up with the Bank’s dataset, primary balances are calculated as PSNB minus gross interest spending. Effective interest rates are therefore calculated as gross interest payments divided by the previous period’s net debt.

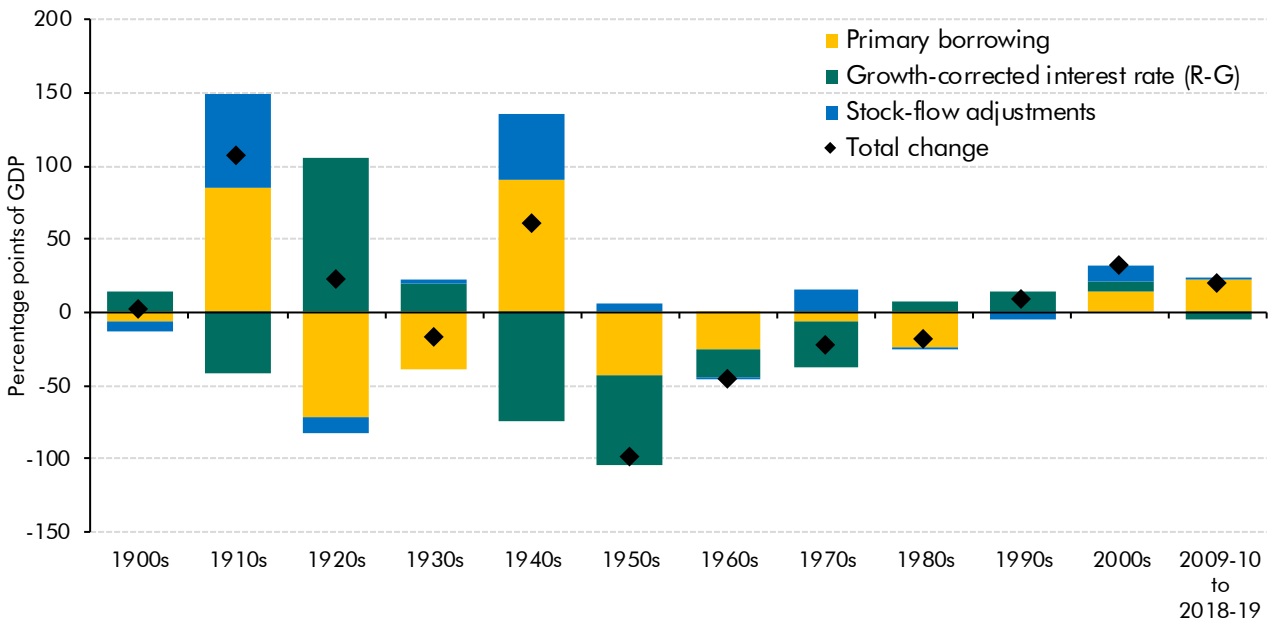
¹¹ Policies that have the effect of keeping nominal interest rates below the competitive market equilibrium – e.g. regulatory requirements for pension funds to hold government debt, or capital controls on foreign exchange. See, for example, Reinhart, C., Kirkegaard, J. and Sbrancia, B., *Financial repression redux*, IMF Finance & Development, June 2011, Volume 48, No.1.

Chart 7.4: Public sector net debt since 1900



Source: Bank of England, ONS

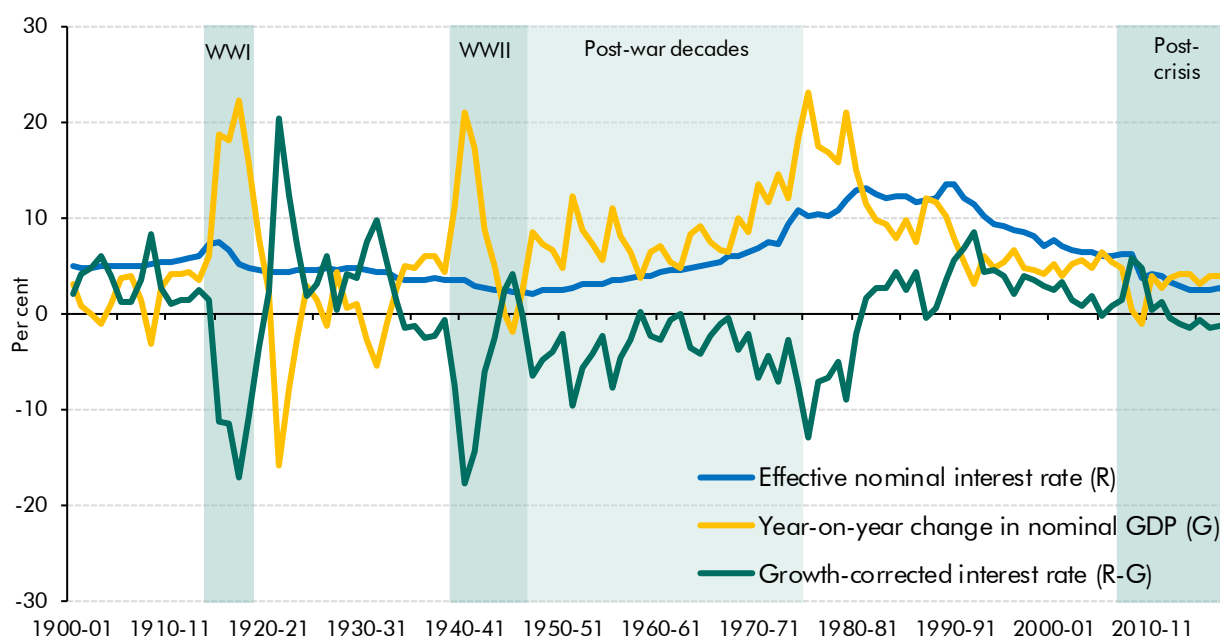
Chart 7.5: Contributions to changes in the debt-to-GDP ratio by decade



Note: Contributions to changes in PSND are annual changes summed over the decade (with the 1900s defined as the change from 1899-00 to 1909-10 and so on).

Source: Bank of England, ONS, OBR

Chart 7.6: Decomposing the growth-corrected interest rate

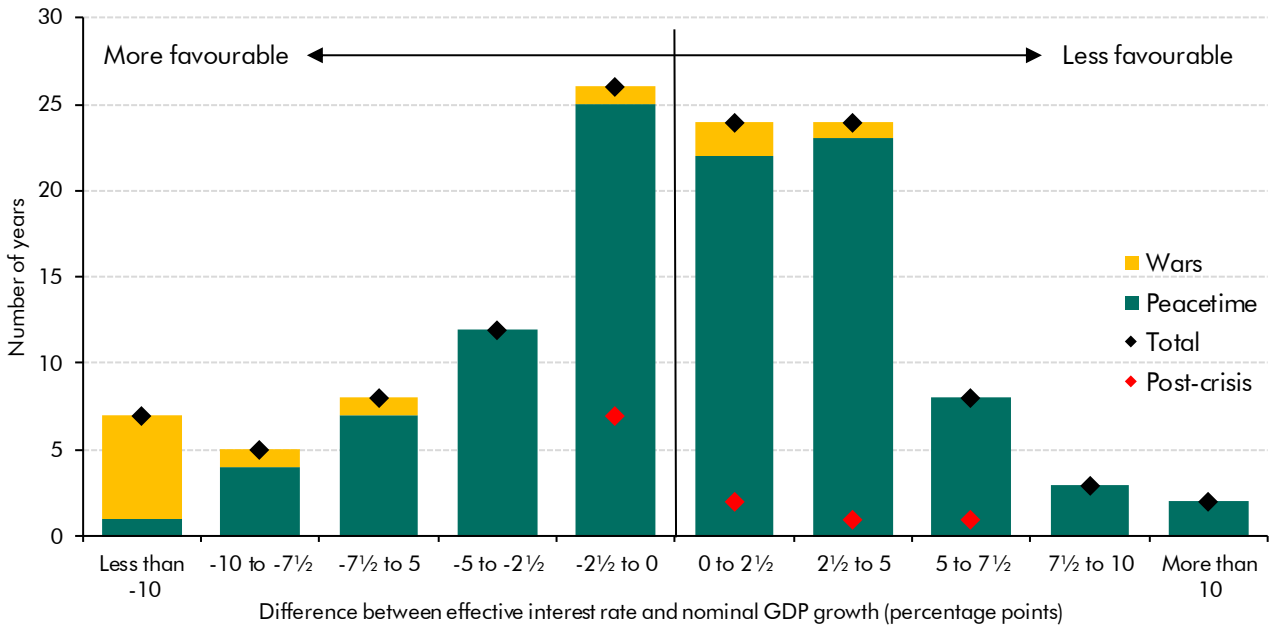


7.38 The mean growth-corrected interest rate since 1900 is -0.3 per cent, while the median is slightly higher at 0.3 per cent. Confining attention to peacetime, so excluding the very favourable R-G conditions experienced in some years of each world war, the mean rises to 0.5 per cent and the corresponding median to 0.7 per cent.

7.39 While these averages are all relatively close to zero, the range of R-G outcomes over the past century is very wide, twice exceeding 10 per cent and falling below -10 per cent in seven years (Chart 7.7). This variability is crucial when considering risks to fiscal sustainability. Because the range is so wide, the future path of R-G is necessarily highly uncertain. For instance, even if we (heroically) assume that the outturns summarised in Chart 7.7 come from a stable statistical distribution, a 95 per cent confidence band around the mean R-G across the whole period would nevertheless still span both -1.4 per cent and +0.7 per cent. A recent IMF study obtained negative estimates of various growth-corrected interest rates in the UK (and some other G7 countries) using a variety of statistical tests, but, like us, could not statistically reject the hypothesis that the mean growth-corrected interest rate is actually a low positive number.¹²

¹² Barrett, P., *Interest-Growth Differentials and Debt Limits in Advanced Economies*, April 2018.

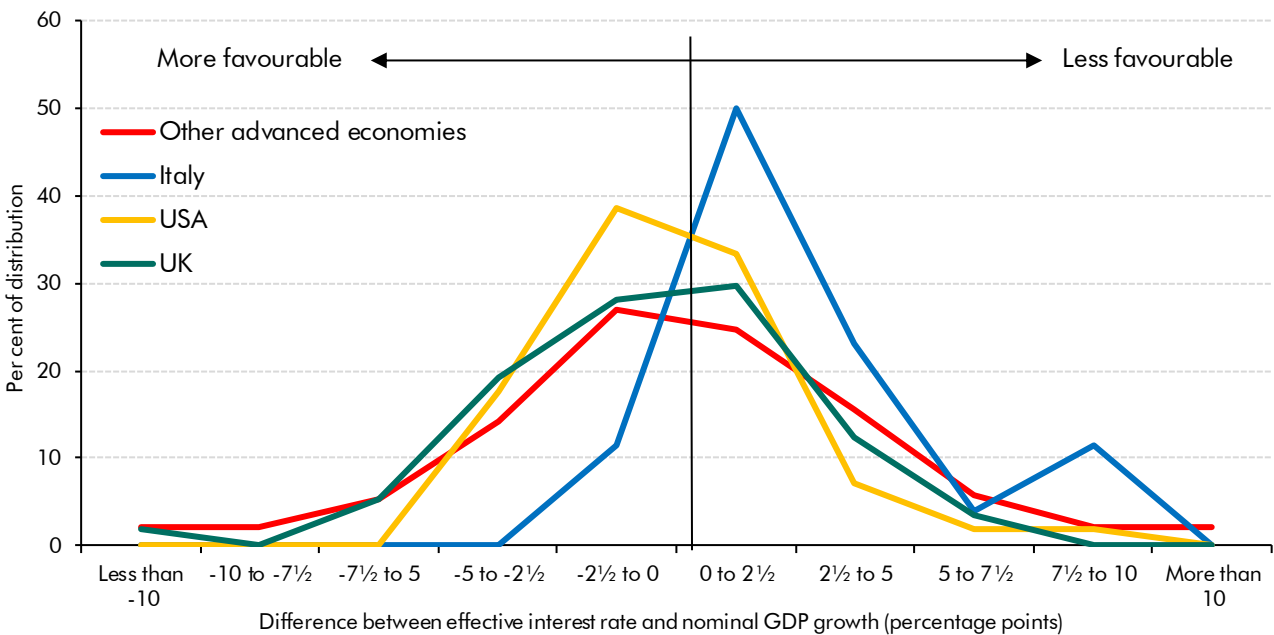
Chart 7.7: Distribution of growth-corrected interest rates: 1900-01 to 2018-19



Source: Bank of England, ONS, OBR

7.40 Chart 7.8 repeats Chart 7.7 for the rest of the OECD countries over the period since 1961, showing frequency distributions based on a dataset collated by Charles Wyplosz in a recent response to Blanchard’s AEA address.¹³ From the perspective of fiscal risk, the most important thing it shows is that the range of R-G outcomes has been very wide in all countries. The averages over the period range from -2.7 per cent in Ireland to 2.6 in Italy and 5.1 per cent in Greece. For the UK, it was -0.5 per cent over this period, similar to the averages in the OECD and US and to the average over the longer period used in Chart 7.7.

Chart 7.8: Growth-corrected interest rates in advanced economies: 1961 to 2017

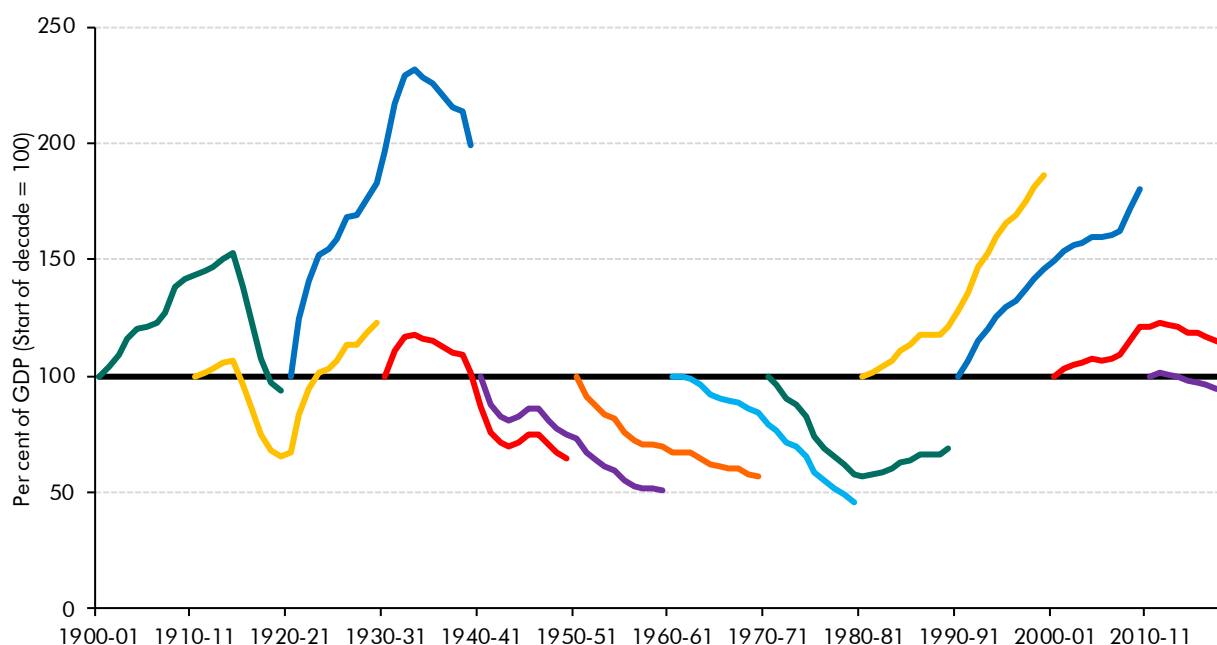


Source: IMF, OECD, World Bank

¹³ Due to a lack of available data, some countries and some years are excluded. See, Wyplosz, C., *Olivier in Wonderland*, June 2019.

- 7.41 As well as a wide variance, R-G also displays significant serial correlation – it goes through phases rather than fluctuating randomly.¹⁴ So, even though debt rollovers may have been possible ‘on average’ over the past century, there were extended periods when the growth-corrected interest rate was pushing the debt-to-GDP ratio upwards.
- 7.42 Chart 7.9 illustrates this. Each scenario assumes debt stood at 100 per cent of GDP at the start of a decade, and isolates the effect of R-G outturns on it over the subsequent 20 years. In effect, these scenarios assume no primary borrowing, no stock-flow adjustments, and that the entire debt stock is rolled over onto the new effective rate each period. In seven of the 12 periods, debt is a smaller proportion of GDP after two decades, but in five it is higher. In one, based on the 20 years beginning in 1920-21, R-G would have caused debt to double.

Chart 7.9: The effect of R-G on debt in the UK in overlapping 20-year periods



Source: OBR

- 7.43 Looking at the history of R-G is informative, but for a fuller picture of potential future risks to sustainability, we must also ask whether the past is likely to be a good guide to the future.

What might the future hold?

What do recent trends imply for future growth-corrected interest rates?

- 7.44 In some simple theoretical models, there is a tight relationship between domestic real interest rates and economic growth.¹⁵ But in practice, it is not one that we would expect to hold in any given year, and, in any case, several other factors are also likely to be relevant. Empirical studies suggest that for globally integrated economies like the UK, domestic

¹⁴ This remains the case even after removing the effect of the roughly 15-year average term to maturity of the debt stock, which means changes feed through to the effective rate only gradually.

¹⁵ For instance, in the Ramsey-Cass-Koopmans growth model with logarithmic preferences, the real interest rate is equal to the real growth rate plus the rate of time preference.

growth is not the most important driver of domestic interest rates, with a high degree of correlation between UK and US government bond yields, for instance.¹⁶ Other important factors include global interest rates and domestic policy.

- 7.45 As regards domestic policy, sustained reductions in the debt-to-GDP ratio have often been associated with financial repression. In some respects, this is harder to achieve today: inflation is lower and the task of keeping it low has been delegated to independent central banks, and capital flows more freely across borders. But several interventions have boosted gilt prices in recent years and so lowered effective interest rates (thereby having financial-repression-like consequences, even if they were not pursued with that objective in mind). These include Basel III regulations that require banks to hold enough high-quality liquid assets (i.e. government bonds) to fund cash outflows for the duration of a 30-day stress scenario, and the Bank of England's purchase of £435 billion worth of gilts at prevailing market prices under its quantitative easing programmes.
- 7.46 Abstracting from policy interventions, over the past 30 years or so, several structural factors are thought to have lowered real safe interest rates by affecting the demand for, and supply of, savings. For instance, ageing populations' desire to save for retirement increases demand for safe assets, reducing interest rates. And there are other candidate explanations: changes in the relative price of capital goods; technological developments favouring greater use of intangible instead of physical capital; increased income inequality; and the impact of increased market power. Several of these are likely to persist, in the near future at least.¹⁷
- 7.47 Real growth rates in the UK have also fallen, although by less than interest rates, as productivity growth has stubbornly failed to return to its pre-crisis trend. Our November 2017 *EFO* outlined several candidate explanations for this underperformance, including weak investment, highly accommodative monetary policy, and employment growth becoming increasingly skewed toward low productivity jobs and industries. Given the extended period of post-crisis productivity weakness, we revised down our long-run productivity growth assumption in that forecast rather than continuing to assume that whatever has depressed growth in recent years will disappear over the coming five years.
- 7.48 So, downward revisions to risk-free interest rates have outweighed downward revisions to growth rates. On the face of it, that – coupled with historical evidence on the feasibility of debt rollovers – would suggest that policymakers can afford to be more relaxed about the risks to debt sustainability than in the past, echoing Blanchard's conclusion. (Of course, relatively little weight should be given to any particular value of R-G in supporting this conclusion, since history has also shown that any departure from a favourable central expectation could be both significant and persistent, with large fiscal implications.)
- 7.49 One concern that could temper that conclusion is that the lower level of long-term risk-free interest rates at present could in fact foreshadow a period of weaker growth than we (and

¹⁶ For example, Chinn, M., and J. Frankel, *Debt and Interest Rates: The US and the Euro Area*, 2007.

¹⁷ See, L. Rachel and L. Summers, *On Falling Neutral Real Rates, Fiscal Policy, and the Risk of Secular Stagnation*, 2019, for an overview of several of these factors. The authors go on to argue that because these forces will continue to keep short-term interest rates at or near their 'zero lower bound', fiscal policy may need to become more activist in future.

many other forecasters) currently expect. Since the crisis, forecasts conditioned on market-derived interest rates have often had growth rates exceeding interest rates. But while the assumed path for interest rates has often proved a good guide to the outturn, growth forecasts have been repeatedly revised down. So what currently looks like a favourable outlook for R-G may instead presage a further downgrading of the growth outlook.

What do we and other institutions assume in forecasts and projections?

7.50 In our most recent medium-term forecast, the growth-corrected interest rate averages -1.1 per cent (Table 7.2). As our growth forecast picks up by slightly more than interest rates rise, debt dynamics become slightly more favourable over the medium term. As we discuss in paragraph 7.17, this could well reflect market participants pricing in some probability of a no-deal Brexit and the monetary easing that they expect would ensue (in contrast to the smooth Brexit on which our economic forecast is conditioned).

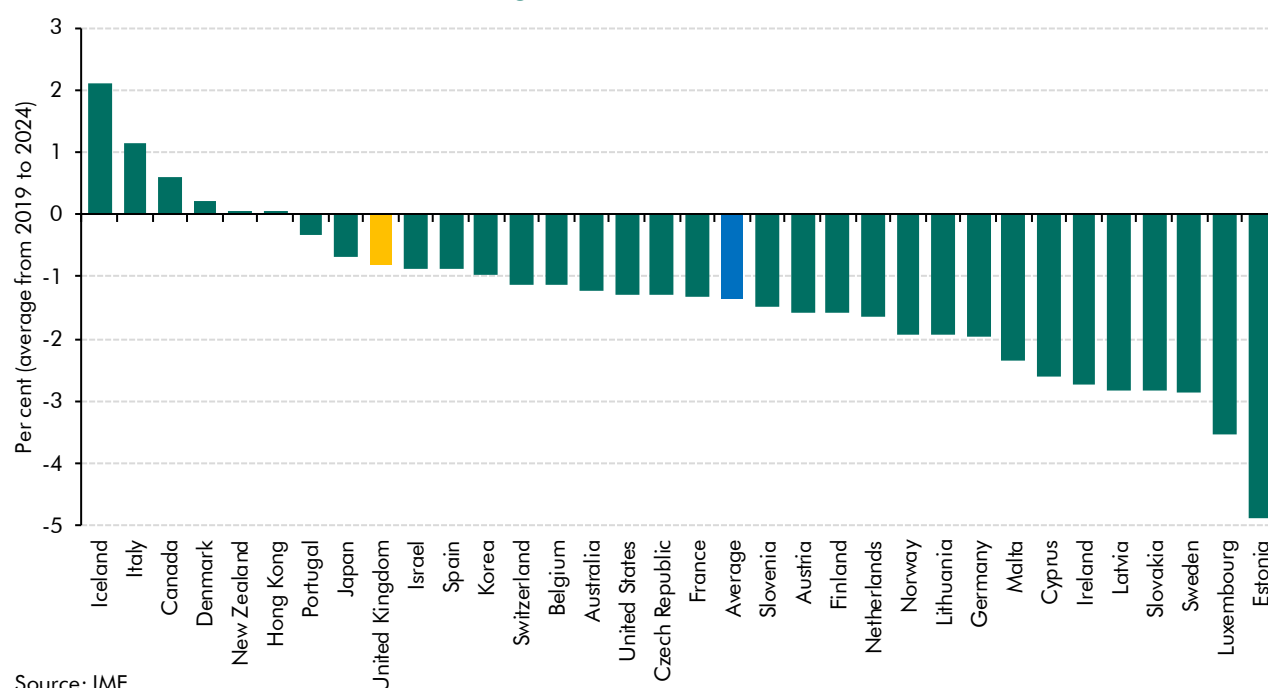
Table 7.2: Medium-term forecast for the growth-corrected interest rate

	Per cent of GDP						Average
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	
Effective interest rate	2.1	2.3	2.2	2.3	2.4	2.4	2.3
Nominal GDP growth	3.3	3.0	3.4	3.5	3.6	3.6	3.4
Growth-corrected interest rate	-1.1	-0.7	-1.2	-1.3	-1.2	-1.3	-1.1

Note: Effective interest rates are calculated as gross interest payments divided by the previous period's net debt.

7.51 Favourable dynamics in our forecast are in line with the recent past in the UK and with the outlook in many other advanced economies. Indeed, as Chart 7.10 shows, in the IMF's most recent economic and fiscal forecasts, R-G is expected to be favourable to public sector debt dynamics over the next five years in 27 out of 33 advanced economies.

Chart 7.10: IMF forecasts for the growth-corrected interest rate



Source: IMF

- 7.52 In making long-term projections, economists and policymakers – including the US Congressional Budget Office and the European Commission, as well as ourselves – are wont to assume a modest positive growth-corrected interest rate. (For instance, the CBO recently used a projection of long-term government bond yields rising to 4.6 per cent between 2039 and 2048, compared with a nominal growth rate of 4.0 per cent.¹⁸) But this is as much for convenience as on the basis of compelling theory or evidence.
- 7.53 In our case, we have assumed since our first *Fiscal sustainability report (FSR)* in 2011 that the long-run real interest rate on government debt will eventually exceed the growth rate by 0.2 percentage points.¹⁹ The latest market expectations for interest rates are consistent with a slightly more favourable growth-corrected interest rate than in our central projection – on the assumption that the market holds the same view as us about long-term nominal GDP growth, which it may not. In its own *FSR*, the European Commission shows that switching to a market-expectations-based projection of nominal interest rates would only lower debt-to-GDP in 2029 by 3.7 percentage points – again, leaving long-run growth rates unchanged.
- 7.54 Hitherto, we have judged the assumption of a modestly positive growth-corrected interest rate beyond our medium-term forecast horizon to be relatively neutral for assessing fiscal sustainability and have maintained it in successive *FSRs*. Consequently, changes in R-G have not been a source of variation from one projection to the next. Most importantly, R-G is not material to our reports' main conclusions: in the *FSR* we are less interested in the stability of debt following a one-off step increase than we are in the primary balance required to achieve sustainable debt dynamics over the longer run. In that context, whether R-G is a small positive or small negative number does not make a huge difference.²⁰
- 7.55 Towards the end of our latest medium-term forecast, debt stands at around 75 per cent of GDP. Given anticipated growth rates, interest rates and stock-flow adjustments in 2023-24, the Government would need to run a 0.1 per cent of GDP primary surplus (as defined in this chapter) to hold debt constant at that level.
- 7.56 Chart 7.11 shows the primary balance required to stabilise the debt-to-GDP ratio in 2023-24 for all the combinations of interest and growth rates in the period since 1900-01. Faced with some years' growth-corrected interest rates, particularly those seen in some wartime years, the Government could run sizeable primary deficits and still hold debt flat. But were it to face the hugely unfavourable debt dynamics of 1921-22, for instance, a primary surplus of almost 20 per cent of GDP would be required.
- 7.57 Over the long run, demographic and other cost pressures are likely to put significant upward pressure on spending. Accommodating them raises primary spending by 8.2 per cent of GDP between 2022-23 and 2067-68 in our baseline *FSR* projection. Only growth-

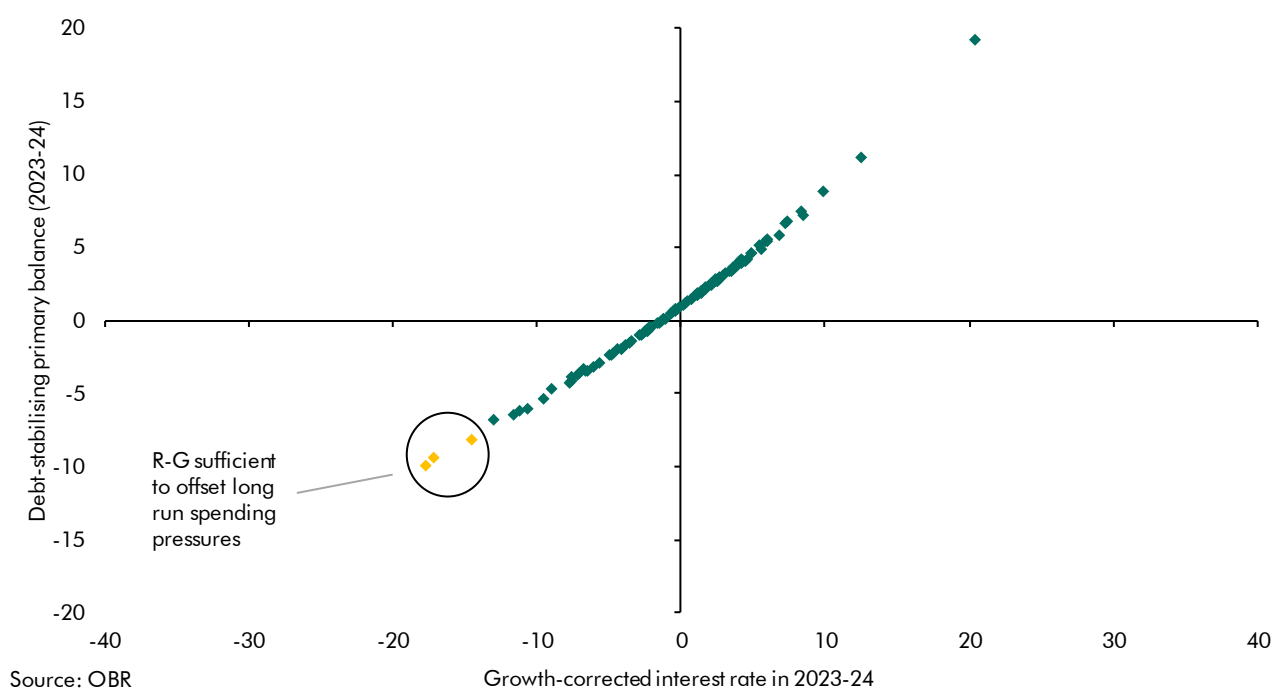
¹⁸ Congressional Budget Office, *The 2019 Long-Term Budget Outlook*, June 2019.

¹⁹ This is the rate paid on newly-issued debt. In our 2018 *FSR*, as the existing stock of debt gradually rolls on to these new rates, the effective rate converges on 0.2 per cent. Like the other interest rates discussed in this section, this does not net off interest receipts. Doing so would lower the effective rate, due to the 3 per cent real interest rate accrued on the stock of student loans – much of the interest accrued is never expected to be repaid, while student loan assets do not net off against PSND, hence using gross interest payments here. As we discuss in Chapter 6, the ONS intends to change the accounting treatment of student loans soon.

²⁰ Specifically, in the absence of any stock-flow adjustments, the debt-to-GDP ratio will be stable if, and only if, $p_t = - (R_t - G_t)/(1 + G_t)d_{t-1}$, where, as before, d_{t-1} and p_t are the debt and primary deficit as shares of GDP and G_t and R_t are the nominal growth and interest rates.

corrected interest rates in the bottom 2 per cent of the historical distribution would be favourable enough to offset such a rise. This is extremely unlikely to persist over decades.

Chart 7.11: Combinations of R-G levels and debt-stabilising primary balances

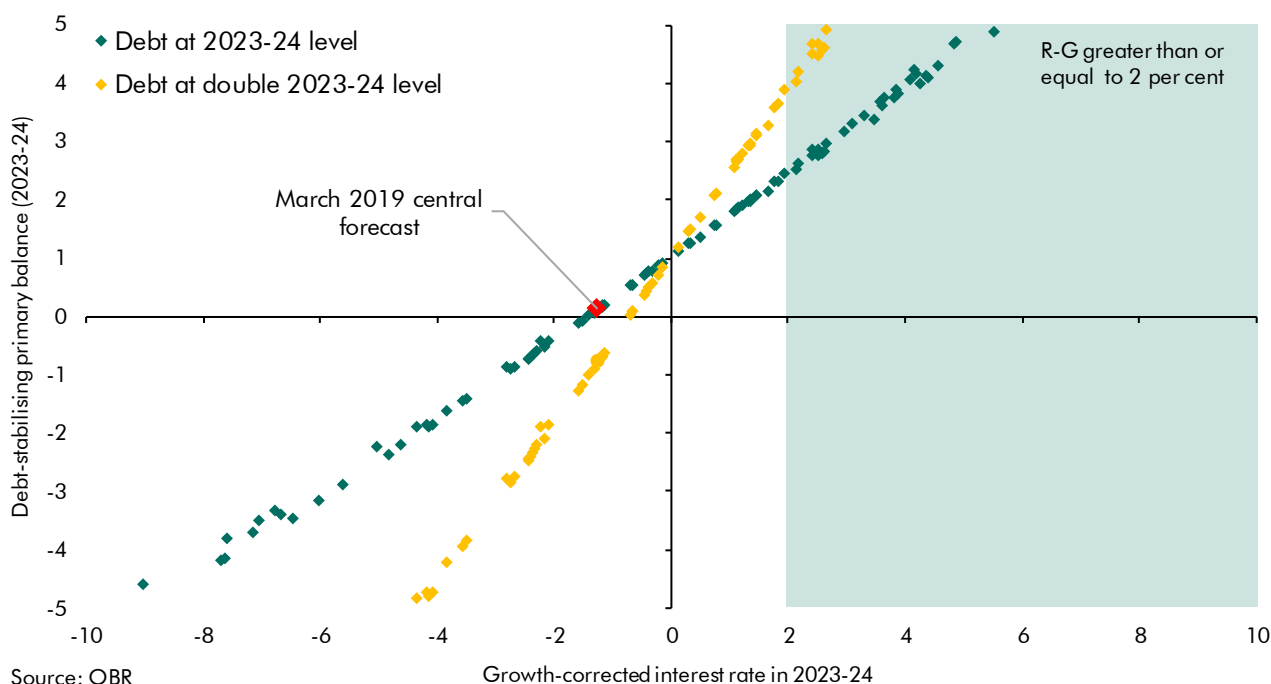


What does this mean for fiscal risks?

What are the impacts of higher debt levels?

- 7.58** Historically, large rises in the debt-to-GDP ratio have resulted from the sharp increases in deficits associated with wars and financial crises. If growth-corrected interest rates were positive, higher debt ratios leave policymakers less flexibility to accommodate these shocks in the future. Financing a war or the consequences of a natural disaster then requires the government to raise taxes, or cut other spending, if fiscal sustainability is to be retained. Today, large-scale conflicts are hopefully a less likely source of risk than at the turn of the 20th century. But another significant financial crisis would still carry a sizeable fiscal cost. And the future may contain new pressures, perhaps relating to Brexit or to climate change.
- 7.59** Higher debt also leaves interest payments more exposed to changes in the growth-corrected interest rate. This means that following a shock, a larger correction to the primary balance is required to stabilise the debt – and, in the absence of corrective action, that debt rises more quickly. Holding all else constant, Chart 7.12 zooms in on Chart 7.11 to show that if the growth-corrected interest rate were to rise to 2 per cent in 2023-24 (versus -1.3 per cent assumed in our central forecast), a primary surplus of roughly 2.5 per cent of GDP would be required to hold debt constant. (This compares to a debt-stabilising primary surplus of 0.1 per cent of GDP given our central assumption for R-G – and to the 1.2 per cent of GDP primary surplus in our central forecast.) And were debt twice as high as in our central forecast (at 150 per cent of GDP, instead of 75 per cent), a primary surplus of around 4 per cent of GDP would be required to hold it stable with R-G at 2 per cent.

Chart 7.12: Growth-corrected interest rates and debt-stabilising primary balances at different starting levels of debt



7.60 In contrast, if we could be confident that R-G would be negative, then – in the framework we use to analyse sustainability in our FSRs – one-off increases in debt would not require tax rises or spending cuts for the government to remain on a sustainable path. Based on the analysis of past and expected future trends outlined above, some commentators have suggested that policymakers therefore need to be less worried about high levels of debt in the current context than previously thought. For instance, Blanchard argues that historically negative R-G is “at striking variance with the current discussions of fiscal space, which all start from the premise that the interest rate is higher than the growth rate.” He also notes the importance of considering other factors beyond R-G. Two such sources of risk associated with higher debt levels that are not examined in our FSRs include:

- **Interactions between public debt levels and the economy.** Debt can be used to achieve economic outcomes – for instance, governments can spread out over time the economic cost of events like wars or financial crises by allowing public debt to rise to support economic activity in any given year²¹ – but these interactions can be complex. Evidence suggests that, although the debt level itself is not a particularly strong indicator of the medium-term economic outlook, its trajectory, at least, does matter.²²
- **Financing risks.** This concerns market expectations for the future path of the primary deficit. Higher primary deficits can be expected to increase the cost of borrowing, and if markets begin to fear default, this increase can be sharp. This can result in situations where an initially solvent debtor’s liabilities become unsustainable simply because creditors begin to think that is so and become unwilling to refinance them.²³

²¹ This theory of optimal debt accumulation is discussed in R. Barro, *On the determination of the public debt*, 1979.

²² Chudik, A., et al., *Is there a debt-threshold effect on output growth?*, March 2017.

²³ See, Calvo, G., *Servicing the public debt: the role of expectations*, 1988.

A government will be more exposed to such self-fulfilling prophecies when debt is high. Policymakers may thus increasingly fear that financial markets will demand progressively higher interest rates as debt rises. Higher debt levels may also constrain policymakers' behaviour because the future path of the growth-corrected interest rate is unknown and policymakers wish to be prudent.

Is there an optimal level of debt-to-GDP?

- 7.61 In Box 2.F of *MFR*, using an OECD-supplied framework,²⁴ the Treasury reviewed various estimates of public debt ratios for the UK. Estimates of 'debt limits' (above which the UK would be likely to lose market access) ranged between 167 and 223 per cent of GDP. The OECD suggests 'debt thresholds' (above which macro-stabilisation and growth are impaired and sustainability might be threatened) could range between 70 and 90 per cent of GDP. And estimates of 'debt targets' (levels low enough that debt stays below debt thresholds even following large adverse shocks), range from 40 to 73 per cent of GDP.
- 7.62 As this highlights, there is little consensus in the academic literature or policy world as to what levels of debt might be safe or desirable. None of these estimates fully reflect all the factors that affect the UK's ability to incur and service its debts. For instance, most public debt in the UK is owed to British citizens and almost all is issued in sterling. Furthermore, the average term to maturity of public debt in the UK is long. There is also no reason to suspect that any estimate would remain constant over time (although a recent IMF study suggested that debt limits in the UK might have varied relatively little historically²⁵).
- 7.63 Nevertheless, it is also important to emphasise the credibility and resilience of the UK's policy framework as a factor determining the level of debt that can be safely sustained. Indeed, the most plausible scenario in which interest rates would significantly exceed growth rates is one in which market participants lose confidence in the institutional framework and start to expect default and/or monetisation. As the euro area debt crisis highlighted, such a situation could cause market beliefs to shift quite rapidly, although the fact that the UK controls the supply of the currency in which its debt is issued is an important difference.

Recap of previous *FRR* discussion and the Government's response

- 7.64 This deeper look into the risks posed by the growth-corrected interest rate reinforces the conclusions we reached two years ago, when we noted the risks that would be associated with interest rates rising to more normal levels relative to GDP growth. In *MFR*, the Government argued that reducing the deficit below its 2017-18 level of around 2 per cent would be necessary to get debt falling, after taking "typical economic shocks" into account (which were assumed to increase debt-to-GDP by 10 per cent of GDP every 9 years), and that doing so would partly offset projected rises in debt interest spending as a share of GDP. It also pointed to its strategy for boosting long-run productivity, noting that, all else equal, higher trend productivity growth would improve debt dynamics.

²⁴ Fall, F., et al., *Prudent debt targets and fiscal frameworks*, 2015.

²⁵ Barrett, P., *Interest-Growth Differentials and Debt Limits in Advanced Economies*, 2018. His estimates range between 90 and 95 of GDP over time, although he suggests that accounting for the maturity structure of UK debt might raise this by 50 percentage points or so.

Conclusions

- 7.65 Debt rose much less after the financial crisis than it did after major wars, but by much more than after any other peacetime shock. While a lower or negative growth-corrected interest rate would make it less risky to absorb these sorts of one-off shocks, it is important not to overstate the importance of the growth-corrected interest rate to the conclusions we draw in our *FSRs*. The more important challenge to fiscal sustainability is how demographic trends and other cost pressures in health and social care provision will affect spending over the longer run. A lower R-G would make the sustainability challenge posed by ageing and health cost pressures somewhat less daunting, but the chance of the beneficial effect being sufficiently large or persistent to offset them altogether is vanishingly small.
- 7.66 There are inherent difficulties associated with predicting growth and interest rates over the long run. The actual value of R-G is certain to differ from our baseline assumption and – if historical variability is any guide – will probably do so by a significant amount at different points in the coming decades. Any differences are likely to persist for a period of years.

Conclusions

- 7.67 This chapter has illustrated the sensitivity of debt interest spending to several factors, notably the interest rate on new borrowing that feeds through to the effective interest rate on the outstanding stock of debt – in some cases quickly, in others over many years. The most important downside fiscal risks are those that would push interest rates up relative to economic growth, thereby raising debt interest spending proportionately more than GDP.
- 7.68 Over the medium term, there are many factors that could raise debt interest spending relative to our most recent forecast. As in our 2017 report, higher Bank Rate or RPI inflation would affect spending quickly, and higher gilt yields or borrowing would affect it more slowly. The Government's exposure to inflation risk, which it has begun to reduce, could be further reduced if methodological changes to the RPI were to be implemented. Brexit poses a risk to our interest rate forecast, given that markets now appear to be pricing in some chance of a 'no deal' outcome and the monetary loosening that they expect it would bring.
- 7.69 There has been much debate in recent months over what, if anything, history tells us about the future growth-corrected interest rate. It remains to be seen if rates will stay 'lower for longer' and whether that would hold if growth rates picked up. But although such an outcome poses a favourable risk to our baseline debt projection, no plausible future path is likely to offset fully the building demographic and other pressures on primary spending.

For the Government's response

7.70 In this chapter we have highlighted several issues that the Government is likely to wish to consider when managing its fiscal risks. Among them:

- The increase in the debt stock and the issuance of index-linked gilts in recent years.
- The increased sensitivity of debt interest spending to inflation and interest rate risk.
- The balance between inflation risk exposure and other goals in ILG issuance choices.
- The potential fiscal impacts of material changes to the Retail Prices Index.
- The temporary impact of the APF in lowering the Government's borrowing costs.
- The potential impact if interest rates rise to more normal levels relative to GDP growth.
- The balance of risks around the future path of the growth-corrected interest rate.

7.71 When assessing the outlook for debt interest spending and debt dynamics over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

8 Fiscal policy risks

Introduction

8.1 This chapter:

- discusses **potential sources of fiscal policy risk**;
- introduces a **framework for measuring and analysing fiscal policy**; and
- analyses the **key drivers of fiscal policy over the past decade**.

Sources of fiscal policy risk

8.2 Understanding how governments tend to set fiscal policy and react to events is important when assessing the future sustainability of the public finances. There are many risks associated with the setting of fiscal policy, some of which reflect uncertainty surrounding:

- **Real-time economic data.** Fiscal policy can have unintended consequences if based on poor data or significant misjudgements about the current state of the economy.¹ Judgements about the output gap are particularly uncertain and prone to revision.
- **Our underlying public finances forecast**, i.e. the state of the world absent any policy changes. As we set out in each *Economic and fiscal outlook (EFO)*, there is a wide range of potential outcomes surrounding our central forecasts.
- **The economic and fiscal impact of policy changes.** In many cases, the fiscal impact of individual tax and spending measures is hard to estimate accurately. We assess the uncertainty around the costing of each measure at each fiscal event and report it on our website. The impact of fiscal policy is also uncertain, in particular in respect of the multipliers used to incorporate fiscal policy changes into our economic forecasts.
- **The behaviour of future policy makers.** Changes to plans and fiscal rules in response to unforeseen events could impart a systematic drift in the public debt. Since we are required to base our forecast on stated Government policy, any such behaviour is necessarily absent from our central forecasts.

¹ This finding is consistent with the international academic evidence. See, for example, Cimadomo, *Real-time data and fiscal policy analysis: A survey of the literature*, European Central Bank working paper No. 1408, 2011.

Measurement of fiscal policy

A framework for analysing fiscal policy

8.3 The simplest measure of the change in the fiscal position is the change in public sector net borrowing (PSNB) – the difference between the changes in total receipts and expenditures. Movements in PSNB can reflect both temporary and structural factors, each of which can be either related to policy or exogenous. In our *EFOs*, we decompose changes in PSNB into:

- **The impact of the business cycle** through the automatic stabilisers. This is estimated via the historical sensitivity of the deficit to the output gap and largely reflects the structure of the tax and benefit system and the scale of revenues and spending.
- **‘Structural’ changes in the public finances**, i.e. changes in cyclically adjusted public sector net borrowing (CA-PSNB). These are calculated by residual, having subtracted the estimated cyclical borrowing. These ‘structural’ changes can reflect a variety of exogenous factors, including both temporary and permanent components.

8.4 The split between cyclical and structural movements in the public finances requires judgements on both the path of the output gap and the impact of the cycle on taxes and spending. Both are uncertain. Chapter 2 sets out some of the challenges and issues surrounding estimation of the output gap, while our 2012 *Cyclically adjusting the public finances* working paper details our estimates of the impact of the cycle on revenues and expenditure and the surrounding uncertainty.

8.5 We can further decompose changes in the structural budget balance into:

- **Discretionary fiscal policy decisions**, i.e. the tax and spending policy decisions announced at each fiscal event. In each *EFO*, we show the total impact of discretionary policy announcements as the ‘effect of Government decisions’ on the budget balance.²
- **Non-discretionary, non-cyclical factors**. Other factors considered when constructing our fiscal forecast include those relating to the path of the economy (e.g. trend productivity growth) as well as others not necessarily related to the macroeconomy (e.g. the effective VAT rate). This element is calculated by residual, having first estimated the effect of discretionary policy.

8.6 These changes can also be measured across two dimensions: over time (most commonly changes relative to the previous year) or relative to previous plans (which is what the Treasury’s scorecard of policy decisions at each fiscal event represents). The next section describes how fiscal policy evolved in recent years. The remainder of the chapter then focuses on how fiscal plans were changed in response to unexpected events.

² In order to estimate the impact of government decisions at each fiscal event, we have to consider a counterfactual to compare against. In most cases, our counterfactual simply reflects the default policy parameters that the Government has asked us to assume in our forecasts, e.g. that excise duties should be updated in line with RPI inflation each year. In other cases, the counterfactual is less clear. For example, our forecast for spending on public services (RDEL) is set by the Government and is overlaid by our judgement on underspending. In the absence of a counterfactual when our forecast is extended by a year, we make the neutral comparison that spending would otherwise have remained constant as a share of nominal GDP.

The evolution of fiscal policy since the financial crisis

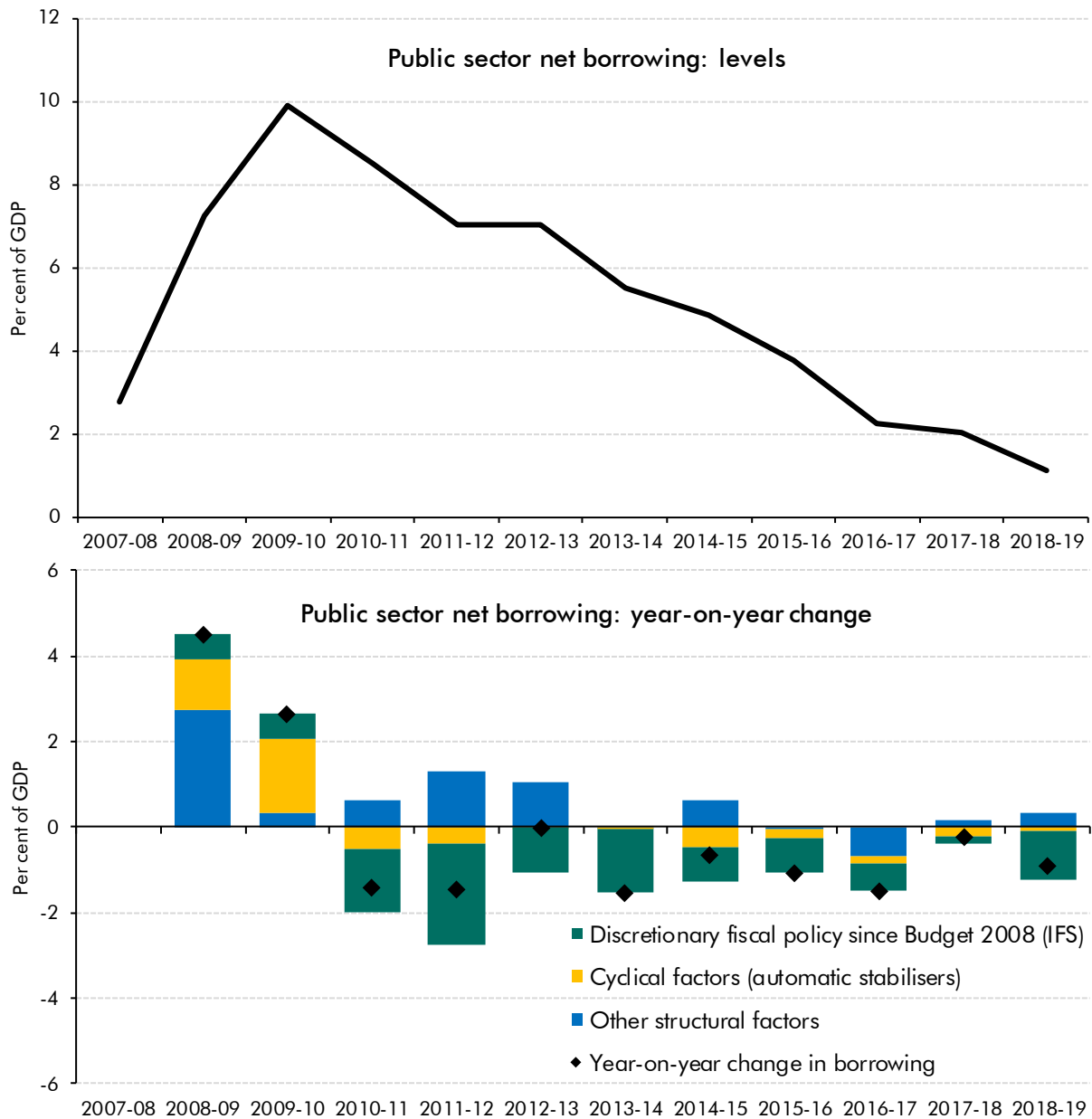
8.7 The threefold decomposition of changes in the budget balance into endogenous cyclical movements, discretionary policy changes, and other structural factors provides an accounting framework for understanding the forces driving the public finances and assessing the associated risks. Chart 8.1 sets out changes in headline borrowing since 2007-08, decomposed into these three factors.³ It shows that:

- **Between 2007-08 and 2009-10**, borrowing rose by 7.1 per cent of GDP, of which 2.9 per cent of GDP can be explained by cyclical borrowing caused by the downturn (based on our latest estimate of the output gap). Non-discretionary structural factors – notably the decision not to reduce cash spending plans despite the unexpected weakness of nominal GDP – were the largest source of fiscal deterioration (worth 3.1 per cent of GDP). Discretionary policy changes, most significantly the temporary cut in the standard rate of VAT to 15 per cent, explained only 1.2 per cent of GDP. (This reflects the fact that changes in cash spending plans are treated as discretionary policy changes, rather than changes in planned spending as a share of GDP.)
- **Since its peak in 2009-10, borrowing has fallen from 9.9 per cent of GDP to 1.1 per cent of GDP in 2018-19.** That fall is more than explained by discretionary policy, largely cuts to public services spending and to welfare spending, as well as some tax rises (including the rise in the standard rate of VAT to 20 per cent). Our latest estimate of the output gap suggests that around two-thirds of the cyclical rise in borrowing following the crisis has now unwound. (One would not expect it to unwind fully as output was above potential in 2007-08, so the actual level of PSNB exceeded the cyclically-adjusted level). Other factors have raised structural borrowing, largely reflecting the productivity-driven weakness in GDP growth. This has depressed the tax-to-GDP ratio (partly because the associated weakness in real earnings growth has depressed the income tax and NICs effective tax rate⁴) and has raised the spending-to-GDP ratio via the denominator effect.

³ The discretionary policy series is derived from the IFS' *Fiscal response to the crisis* dataset. It shows the cumulative impact of discretionary policy measures since Budget 2008.

⁴ See Box 4.1 of our March 2017 *EFO* for more detail.

Chart 8.1: Explaining annual changes in net borrowing since 2007-08



Source: ONS, OBR

8.8 In our 2017 *Forecast evaluation report*, we estimated the effect of discretionary fiscal policy changes on GDP growth (based on estimates of the consolidation produced by the Institute for Fiscal Studies (IFS) together with our estimates of fiscal multipliers, which are drawn from the available empirical literature). The analysis considered how changes in discretionary fiscal policy compared with our forecast errors for GDP growth. We concluded that the shortfall in GDP growth since 2010-11, relative to our forecast, was more likely to be explained by non-policy factors than the application of inappropriate multipliers.

Fiscal policy over the past 10 years and potential risks

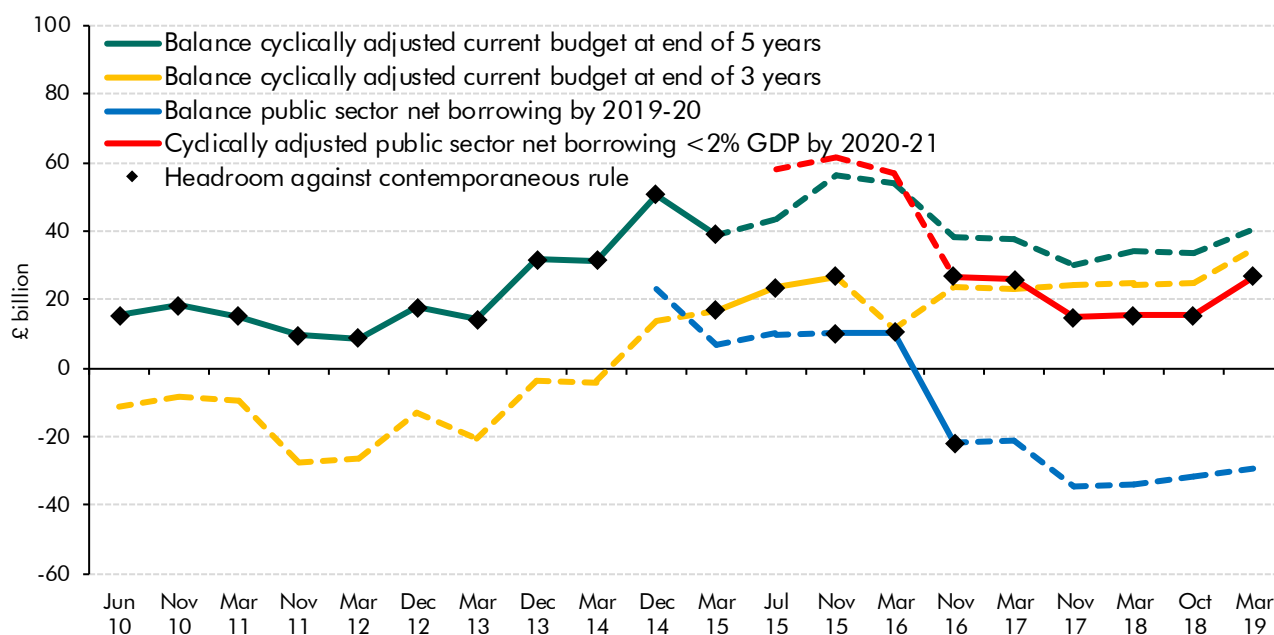
Fiscal objectives

- 8.9 Since the 1990s, UK governments have adopted ‘fiscal rules’ to guide and constrain fiscal policy. These have typically come in pairs. One for the budget balance, with different deficit measures targeted at different times, and one for the debt-to-GDP ratio, sometimes its level and sometimes its profile. These rules have taken various forms over the past two decades:
- For most of its time in office, the **1997 to 2010 Labour Government** followed two fiscal rules. Its ‘golden rule’ required the Government only to borrow to invest over the economic cycle, while its ‘sustainable investment rule’ stated that debt should be kept at a ‘prudent’ level over the economic cycle (later specified at 40 per cent of GDP). The crisis prompted the replacement of these longstanding rules with a simpler temporary one and then, briefly, a Fiscal Responsibility Act, passed just before the 2010 election.
 - The **2010 to 2015 Coalition Government** specified a ‘fiscal mandate’ that aimed to balance the cyclically adjusted current budget by the end of a rolling, five-year period; in December 2014, the horizon was shortened to three years ahead. It also adopted a ‘supplementary debt target’ that required the debt-to-GDP ratio to be falling in 2015-16. For a period, the target date was shifted to 2016-17, but the rule was then further tweaked to aim for year-on-year falls from 2015-16 onwards.
 - From July 2015 to November 2016, the **Conservative Government** targeted a headline PSNB surplus by the end of 2019-20, together with a supplementary target that required the debt-to-GDP ratio to be falling every year from 2015-16 to 2019-20. This version of the fiscal rules contained an explicit escape clause, allowing the targets to be overridden in the face of a significant adverse economic shock.⁵
 - The **current Government’s** rules require cyclically adjusted PSNB to be less than 2 per cent of GDP by 2020-21 and the debt-to-GDP ratio to be falling in the same year. Again, these can be overridden in the face of an adverse shock. The Government also has a ‘fiscal objective’ to return the public finances to balance by the ‘earliest possible date in the next parliament’ (which in practice has been treated as 2025-26).
- 8.10 One notable feature over the past decade is the frequency of changes in the rules. Chart 8.2 shows the headroom at each fiscal event since June 2010 against the four fiscal mandates chosen by successive governments. It is striking that, regardless of the rule in operation at the time (represented by the solid segments), successive Chancellors have consistently chosen to maintain headroom of around £20 billion against breaching the rule. The contemporaneous rule has been on course to be met by between £10 billion and £30 billion in 14 of our 20 forecasts.

⁵ Defined as real GDP growth of less than 1 per cent on a rolling 4 quarter-on-4 quarter basis, which was to be assessed by the OBR.

8.11 The first notable exception came in December 2014 and March 2015, when headroom against the five-year-ahead fiscal mandate far exceeded that, which prompted a tightening of the cyclically adjusted current balance target. The next came in November 2016, following the EU referendum, which prompted us to lower our growth forecast, leaving the balance by 2019-20 target missed by a large margin. In response, the Government abandoned that target and adopted a far less demanding one for a cyclically adjusted deficit of 2 per cent of GDP. It also pushed the balanced budget objective to the mid-2020s.

Chart 8.2: Headroom against successive fiscal mandates since June 2010



Note: Solid lines correspond to the operative rule at the relevant date. Dashed lines show the same measure at other dates.
Source: OBR

8.12 This suggests that governments’ fiscal decisions cannot be explained fully by reference to the fiscal rules, but rather that the choice of rules itself depends in a somewhat predictable way on the fiscal outlook. Indeed, alongside the formal rules, governments pursued several less formal (and sometimes surprisingly precise) objectives for the post-measures fiscal position, which have also moved alongside changes in our forecasts. These include:

- In the **March 2013 Budget**, the Government wanted to ensure that borrowing fell year-on-year in cash terms in every year of our central forecast. This looked challenging for 2012-13 on the available data at the time. It achieved its goal by reducing departmental spending in the final months of the year, by an unusually large amount, including by pushing some of that spending out into 2013-14.
- In the December 2014 Autumn Statement, the Government reduced its final-year spending assumption such that total expenditure was set to fall to its lowest share of national income since the 1930s. In the **March 2015 Budget**, it wanted to ensure that this was no longer the case, but also to ensure that the post-measures borrowing forecast was revised down in every year up to 2018-19. It achieved that by altering its spending assumption in a way that left a rollercoaster profile for public services

spending in the years beyond those covered by Spending Review plans. As seemed inevitable, the profile was smoothed out in time for the 2015 Spending Review.

- In the **March 2016 Budget**, the Government wanted to ensure that its headroom versus the fiscal mandate (to balance the budget in 2019-20) remained as close as possible to the headroom we had predicted at the previous fiscal event (£10.1 billion). Our pre-measures forecast showed the target being missed, so a significant tightening was required to achieve this goal. The overall policy package largely delivered that by shuffling money between years. A measure bringing forward £6.0 billion of corporation tax instalment payments was delayed so that it flattered the target year (this was “to give businesses more time to prepare”), while £1.6 billion of departmental capital spending was shifted out of 2019-20, “accelerating investment plans”.
- In the **October 2018 Budget**, the Government fine-tuned its policy measures to ensure that the headroom against the fiscal mandate remained at the same level (to the nearest £0.1 billion) as it had been in our March 2018 forecast. It decided against maintaining this unofficial target in the March 2019 Spring Statement.

8.13 Governments have also periodically sought to exploit the fact that public sector net debt only nets off liquid assets, or taken other steps, to ensure that debt is forecast to fall relative to GDP in a particular year, sometimes by fiscally insignificant amounts. Examples include:

- In **Budget 2016**, the Government brought forward several asset sales (in particular sales of Bradford & Bingley mortgages held by UK Asset Resolution), in an attempt to ensure the debt-to-GDP ratio fell in 2015-16 (which was almost over by then).
- In **Autumn Budget 2017**, various spending items were pushed back from 2018-19 to later years in changes to the policy package that were made too late for us to reflect them in our economy forecast. This ‘reprofiling’ was sufficient in size to mean that net debt fell from 86.5 to 86.4 per cent of GDP between 2017-18 and 2018-19 – although by only 0.03 per cent of GDP in unrounded terms – rather than being flat.

8.14 These were later examples of a trend we highlighted in Box 5.1 of our March 2015 *EFO*, noting the increasing impact of non-primary balance factors in explaining the debt profile in 2015-16 (the target year at the time). The Government made several policy decisions designed to affect the profile of PSND in that year, largely relating to new asset sales (including some of the UKAR loan book as well as shareholdings in Lloyds Banking Group). Such decisions exploit what we note in Chapter 6 to be a fiscal illusion to which PSND is susceptible, namely that selling an illiquid asset for what it is worth lowers PSND (by swapping an illiquid asset for a liquid one) but has no implications for fiscal sustainability.

Conclusions

8.15 The setting of fiscal rules needs to balance the credibility of the objective against flexibility in the face of unexpected events. However, repeated moving of the goal posts over the past decade (typically alongside movements in the underlying outlook for the economy and

public finances) risks making it more difficult to discern the likely future path for fiscal policy and the credibility of the constraint the Government has sought to place on itself. (In Chapter 5, we note a similar moving of the goal posts with the ‘welfare cap’.) At the same time, the Government has engaged in sometimes remarkably precise medium-term fine tuning of its policy measures to meet informal objectives for the public finances. The margins by which these objectives were set to be achieved were rarely fiscally or statistically significant given the uncertainty around both the pre- and post-measures forecasts.

- 8.16 The risk is that when revisions to the underlying fiscal position are sufficiently adverse, the rules are reset to accommodate that, rather than policy being adjusted to meet them. Relative to a world in which fiscal rules acted as a greater constraint, the path of debt can be expected to be higher. But that is not to say that any particular vintage of fiscal rule should be pursued in all circumstances, as some shocks may clearly warrant overriding it.

Policy reactions to unanticipated shocks

- 8.17 Alongside the reputational demands of being seen to meet fiscal rules and informal objectives, there are three key factors that governments are likely to consider when determining discretionary fiscal policy. Empirical evidence suggests that a mix of these factors are important and that the factors vary across countries and over time:

- **Macroeconomic conditions.** Discretionary fiscal policy may be used to influence the business cycle (over and above the impact of automatic stabilisers) and so the size and direction of the output gap may be a key consideration.
- **The level and sustainability of public debt.** A government may wish to alter the flow of annual borrowing in order to target a particular trajectory for the stock of debt given its judgements about the risks posed by its pre-measures path.
- **The effectiveness of monetary policy.** A government may be more inclined to use fiscal policy to influence the economy if monetary policy is constrained (for example, if interest rates are at their effective lower bound and unconventional monetary policies such as asset purchases are thought ineffective or undesirable).

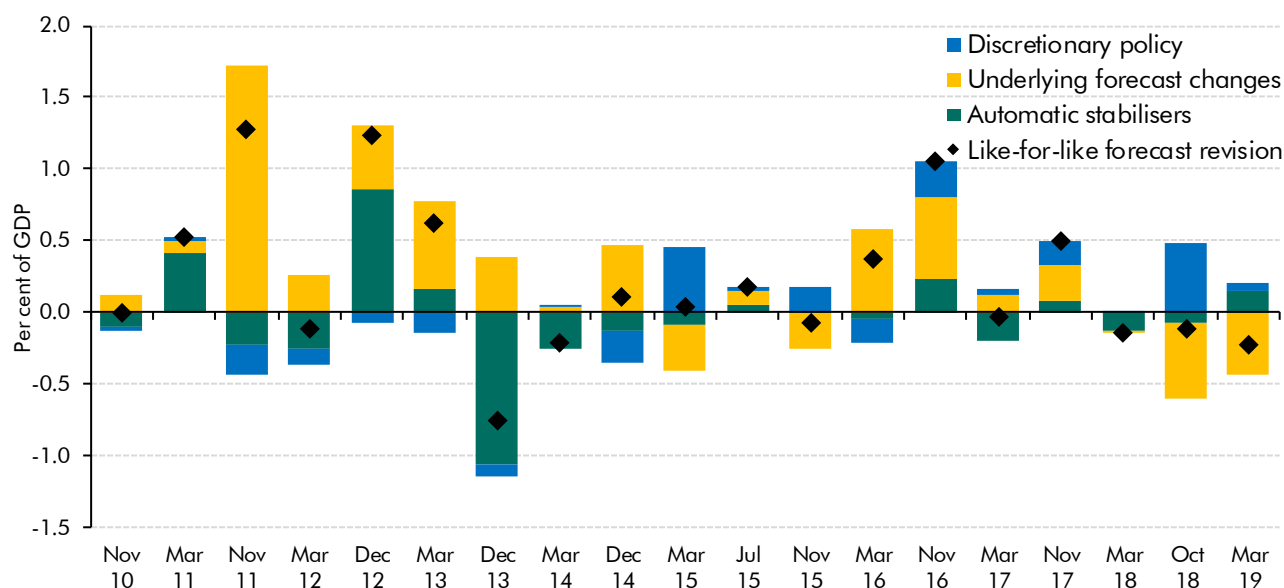
- 8.18 Chart 8.3 shows like-for-like revisions in our forecasts for PSNB since June 2010, split into discretionary policy changes, the impact of automatic stabilisers and other underlying changes in our forecasts.⁶ It shows that, since June 2010:

- **Discretionary fiscal policy has responded to changes in the outlook for the public finances conveyed by our central forecasts.** In more than two-thirds of fiscal events since June 2010, the Government has attempted to offset movements in our underlying forecast with changes in discretionary policy.

⁶ Further information on the methodology underpinning the rest of the analysis in this chapter can be found in Annex B of our March 2016 *EFO* or the *Forecast revisions database* that we publish online. The methodology takes the diagnostic tables that we have included in each *EFO* and decomposes forecast revisions into: classification changes, underlying forecast changes and changes relating to Government decisions. In this report, we have further decomposed underlying forecast changes into its respective structural and cyclical components by applying the revisions to our output gap forecasts over time.

- **Discretionary fiscal policy has not been particularly responsive to changes in our view of the business cycle.** Most notably, our prediction of a cyclical deterioration in our December 2012 *EFO* and a cyclical improvement in our December 2013 *EFO* (the largest movements in our output gap forecasts since the creation of the OBR) were each met with a modest discretionary tightening by the Coalition.

Chart 8.3: Sources of revision to PSNB forecasts since June 2010



Note: Diamonds reflect the cash revision over the last 5 years of the forecast, rebased to each historic nominal GDP forecast.
Source: OBR

8.19 Plotting discretionary policy changes (the blue bars above) against our underlying structural forecast changes (the yellow bars above) shows us how governments tend to react to our forecasts on average. Chart 8.4 shows that, in around three-quarters of the fiscal events since June 2010, governments have with a surprising degree of consistency aimed to offset about a third of the change in our underlying structural forecast via discretionary measures.⁷

8.20 For the remaining five fiscal events (shown in blue on the chart), the relationship does not follow this pattern, with an average policy response that is around 0.3 per cent of GDP looser than would be implied by the more common pattern. In stark contrast, there has been no fiscal event where the policy response has been significantly tighter than this typical pattern. The context for each of these five policy responses has been unusual in some way:

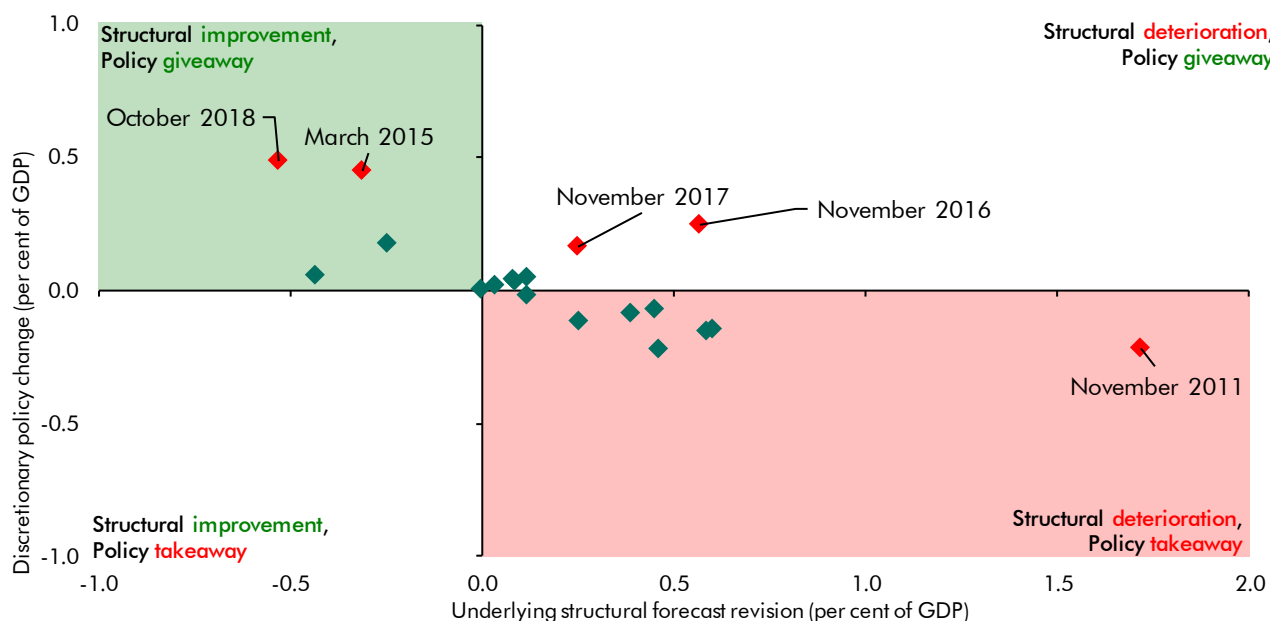
- In our **November 2011** forecast, we revised down trend productivity growth materially, leaving our pre-measures structural borrowing forecast around £30 billion a year higher on average. The Government decided to offset only around 15 per cent of this change over 2011-12 to 2015-16, but pencilled in a consolidation worth 1.6 per cent of GDP in 2016-17, which entered the forecast period for the first time. This was

⁷ In Box 4.1 of our March 2019 *Economic and Fiscal Outlook*, we compared discretionary policy responses to the overall revisions in our underlying borrowing forecasts. It has been a stated objective of fiscal policy to allow automatic stabilisers to operate freely since Gordon Brown's 1998 'Code for Fiscal Stability' and so in this updated analysis, we have excluded the cyclical component of our forecast revisions below.

almost entirely comprised of cuts to DEL spending outside the Spending Review period. (This extra consolidation in 2016-17 is not captured in the methodology underpinning the chart, because there was no prior forecast for 2016-17 to be revised). The lack of further up-front tightening is likely to have reflected the wider macroeconomic climate at the time, such as the intensification of the euro area debt crisis.

- At the **March 2015 Budget** (the last Coalition Budget before the May 2015 election), the Government more than spent the improvement in our underlying structural borrowing forecast, partly reflecting higher departmental spending plans to keep total spending from falling to a post-war low as a share of GDP (as described above).
- At every fiscal event **since the EU referendum**, the Government has loosened fiscal policy (though sometimes only very marginally). In both November 2016 and November 2017 policy was loosened in spite of a worsened outlook for the pre-measures structural deficit. In October 2018, the Government spent the underlying improvement in our structural borrowing forecast on a one-for-one basis, largely by raising spending on the NHS (in an announcement that preceded the forecast).

Chart 8.4: Discretionary policy responses to our underlying forecast revisions



Note: Reflects the cash revision over the last 5 years of the forecast, rebased to each historic nominal GDP forecast.
Source: OBR

Conclusions

8.21 As we set out in each *EFO*, the uncertainty surrounding our central forecasts is large and each is therefore liable to substantial revision over time. Clearly the overall impact of discretionary policy has been to substantially lower overall borrowing since 2009-10. But the analysis above reveals a pattern in how the Government typically responds to our underlying structural forecast revisions, but also that the exceptions to this pattern all lie in one direction – with a looser policy setting – which could generate an upward source of bias in revisions to the path of debt over time.

Do governments stick to their policy announcements?

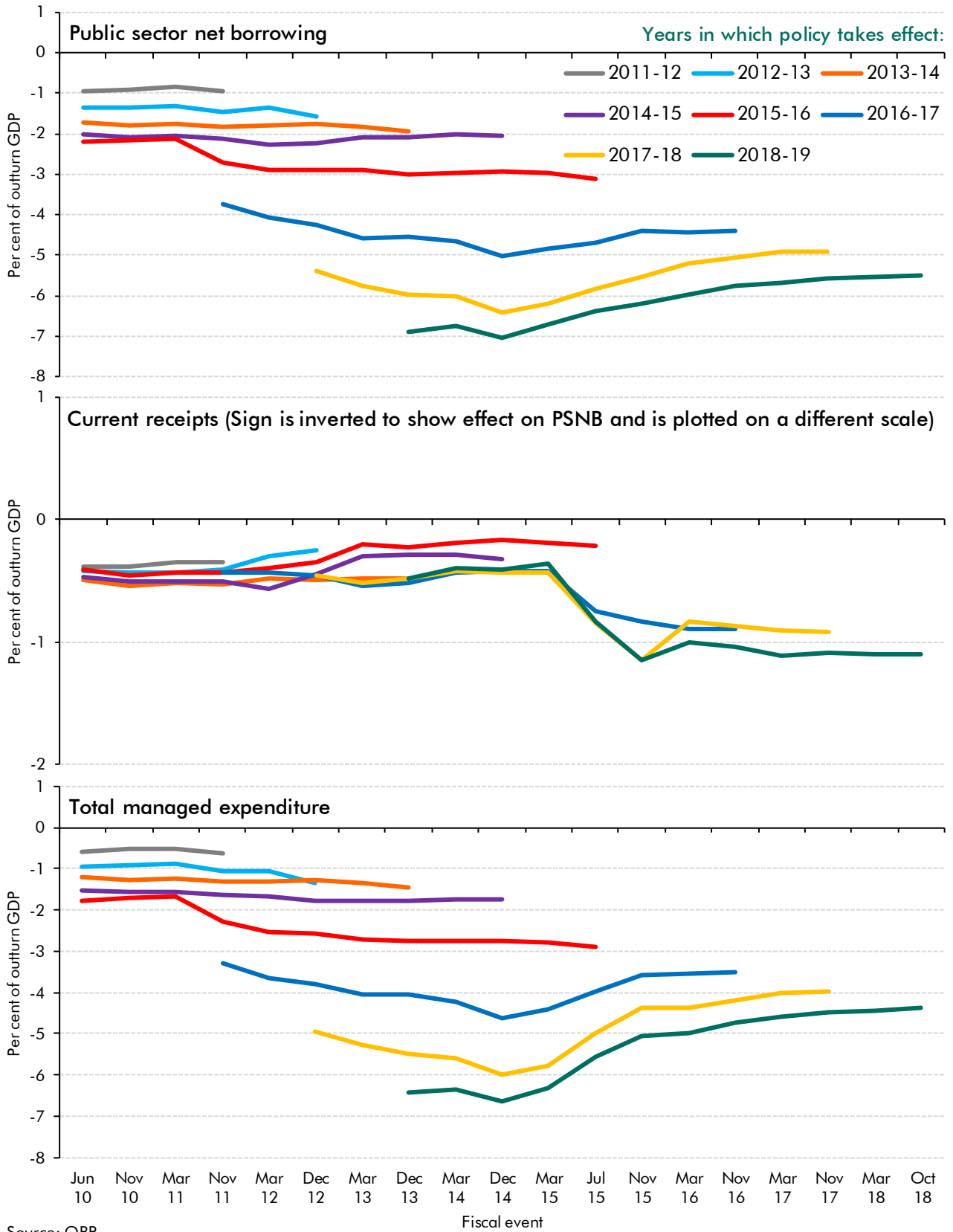
8.22 The analysis above looks at announced plans at each fiscal event. These may reflect changes to tax and spending as well as revisions to previous plans, so it is important to track such revisions. Chart 8.5 shows the cumulative effect of announced discretionary policy on each fiscal year since 2010-11, as it was announced at each fiscal event.⁸

- The Coalition Government broadly stuck to its original plans **during the 2010 Spending Review period** (from 2010-11 to 2014-15).
- The Coalition pencilled in increasing amounts of fiscal tightening **beyond the 2010 Spending Review period**, driven by unspecified departmental spending cuts. This planned tightening peaked in December 2014, when spending was projected to reach its lowest level since the 1930s as a share of GDP. In the accompanying *EFO*, we showed the implications of the Government's stated spending assumptions to illustrate the policy risk that appeared to be building – and that has since largely crystallised.⁹
- **Following the 2015 election**, the Conservative Government then reversed a considerable proportion of these planned cuts, in particular by raising departmental expenditure plans in the 2015 Spending Review and since. The Government paid for some of the higher public services spending via tax rises and welfare spending cuts.
- **Some of the planned saving from welfare spending cuts has not materialised**, for example due to tax credit cuts announced in July 2015 that were dropped before being implemented, and to a series of universal credit giveaways that have in effect reversed much of saving that was expected from July 2015 universal credit cuts.
- Based on our **October 2018 forecast**, cumulative discretionary tightening in 2018-19 (relative to the baseline of our June 2010 pre-measures forecast) has fallen by nearly a quarter from 7.0 per cent of GDP in December 2014 to 5.5 per cent of GDP.

⁸ The analysis in this section is also derived from the numbers underpinning our *Forecast revisions database* online. The charts reflect the cumulative cash impact of announced Government decisions, summed over successive fiscal events since the June 2010 'pre-measures' forecast. They have not been adjusted for subsequent recastings, so simply reflect the estimated costs or yields of individual policies as they were announced. They are shown in the charts as a proportion of outturn nominal GDP.

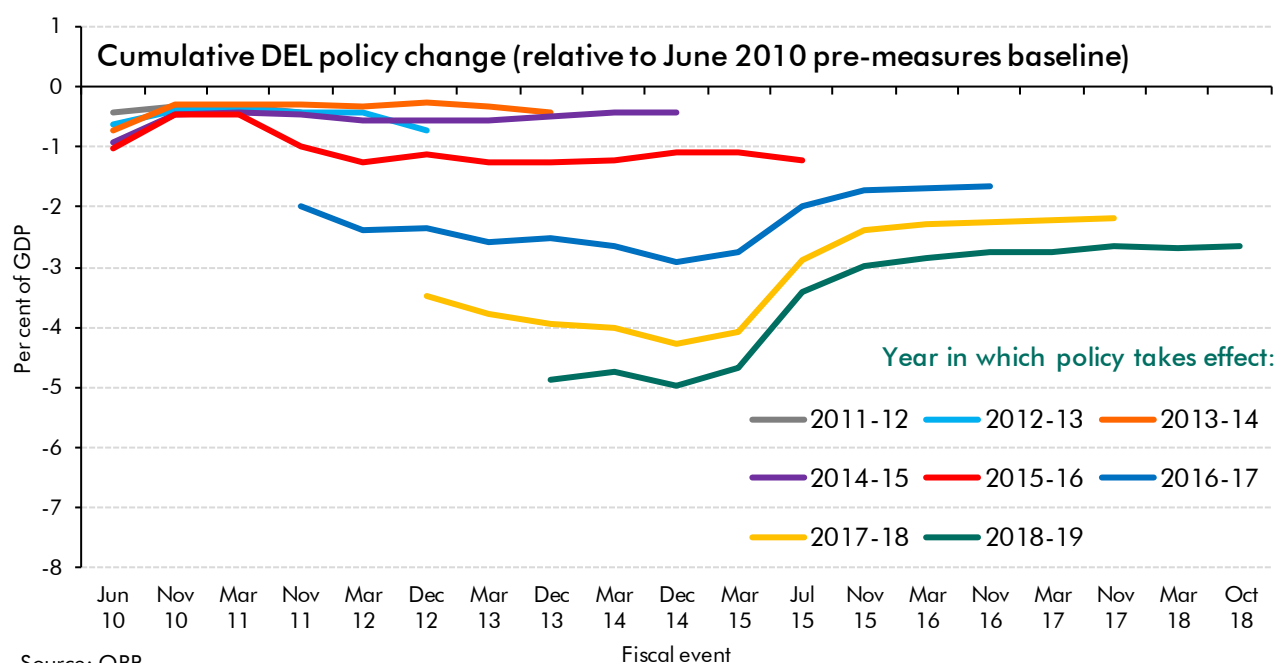
⁹ See Box 4.6 of our December 2014 *EFO*.

Chart 8.5: Cumulative effect of discretionary policy since June 2010



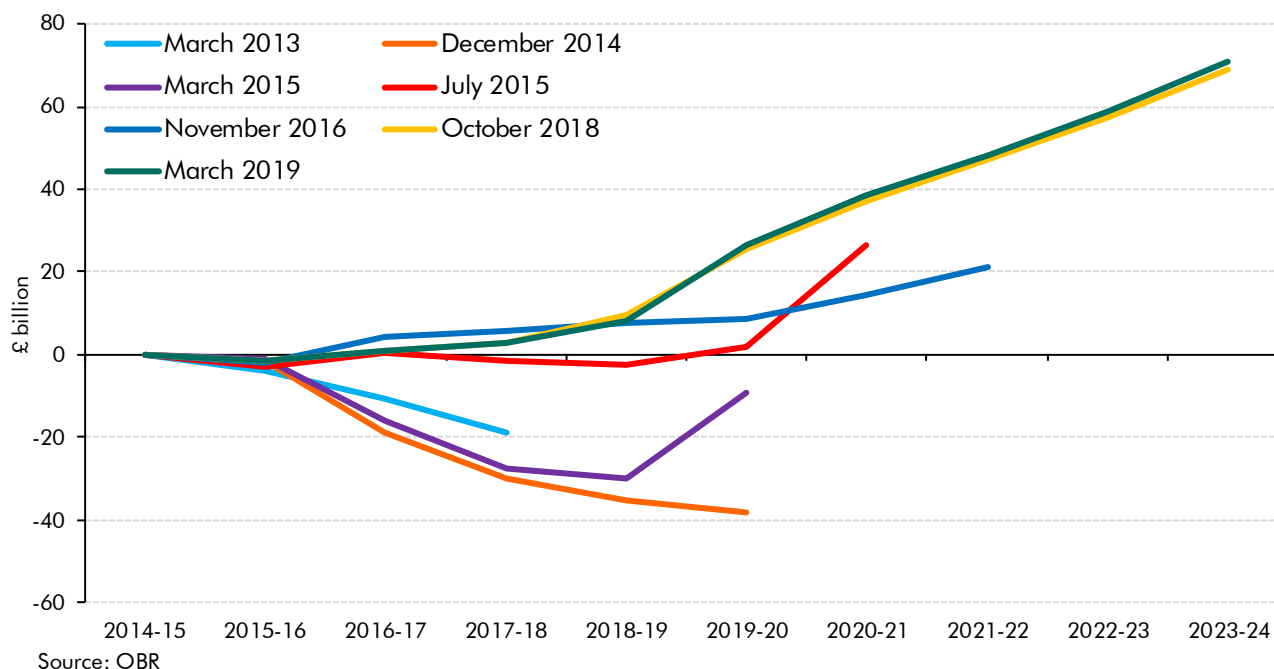
8.23 The largest component of the consolidation since 2010 has been cuts in departmental spending as a share of GDP. Chart 8.6 shows that the June 2010 plan to reduce DEL spending by around 1 per cent of GDP by 2015-16 (relative to the DEL totals inherited from the previous Labour Government) were broadly stuck to. From November 2011 to December 2014, the Coalition pencilled in increasingly large cuts, largely in years that were outside Spending Review periods (i.e. from 2016-17 to 2019-20). From March 2015 onwards, these cuts were largely unwound as detailed plans were set. In our December 2014 forecast, the cumulative effect of DEL announcements totalled an additional reduction of around 5 per cent of GDP by 2018-19. Successive announcements since then mean that the cumulative total impact is now roughly half that at 2.6 per cent of GDP.

Chart 8.6: Cumulative effect of DEL policy decisions since June 2010



8.24 Viewed another way, in terms of changes in cash RDEL spending since 2014-15, these revisions to plans are particularly striking. In our December 2014 *EFO*, the Coalition's RDEL policy assumption would have seen RDEL spending fall by around £38 billion between 2014-15 and 2019-20. In July 2015, the Conservative Government revised that to assume RDEL would be roughly flat in cash terms over that period. But since the June 2018 NHS settlement was announced, RDEL has been set to rise significantly. Our March 2019 forecast shows it rising by around £26 billion between 2014-15 and 2019-20, a turnaround worth around £65 billion from December 2014. And it continues rising in cash terms thereafter.

Chart 8.7: Cumulative changes in RDEL since 2014-15



Conclusions

- 8.25 This analysis shows that previous Governments tended to make substantial revisions to already announced policy, particularly when plans lay outside Spending Review periods. In the recent past, such plans have tended to contain fiscal tightening when first announced, but have been relaxed as the time comes for assumed totals to be replaced with firm plans.
- 8.26 As we set out in each *EFO*, our forecasts are conditioned on the Government’s announced tax and spending policies. Our March 2019 forecast shows overall net borrowing falling from 1.1 per cent of GDP in 2018-19 to 0.5 per cent of GDP in 2023-24, with the fall largely driven by discretionary policy. Given that the bulk of DEL plans for 2020-21 onwards have not yet been allocated to departments in a Spending Review, past behaviour suggests there is a material source of policy risk to our central forecast. Spending pledges being made during the Conservative Party leadership contest point that way too.

Fiscal policy risks over the medium term

- 8.27 Our March 2019 forecast shows the fiscal mandate being met with a margin of £26.6 billion in 2020-21. The supplementary target (for debt-to-GDP fall in 2020-21) is currently met with 3.2 per cent of GDP to spare (giving headroom of around £75 billion), although this largely reflects the impact of Term Funding Scheme loans being repaid in the target year. Excluding that, the debt-to-GDP ratio falls by only 1.0 per cent in that year (which would reduce the headroom to around £24 billion).

- 8.28 As discussed in Chapter 6, forthcoming changes to the accounting treatment of student loans could raise the measured level of borrowing by between £11.2 billion and £13.7 billion over the next five years. This would reduce headroom against the fiscal mandate in 2020-21 to £15.0 billion.¹⁰ But as these accounting treatment changes relate to when the cost of write-offs and interest income is accrued, they do not affect cash flows, so the change in the debt-to-GDP ratio in the target year would be unaffected.
- 8.29 The Government's formal fiscal objective is to balance the budget by 2025-26 and while our forecast horizon does not currently extend that far, on past forecast performance it now has around a 40 per cent chance of doing so by 2023-24. But the current Chancellor's recent statements suggest that the Government's goal might be moving away from achieving budget balance towards the less stretching target of ensuring that debt is falling:
- In a statement to the Treasury Select Committee in March he said *"budget balance is clearly achievable – but it is a choice. It would be equally sustainable to increase RDEL spending growth still further; reduce taxation levels; or increase capital spending – or a combination of these measures. The critical point is that Britain once more has choices in planning its fiscal future, whilst ensuring that debt will continue to fall."*
 - In a letter to Conservative Party leadership candidates in June, he asked them all *"to pledge that if you are the next prime minister your government will, at a minimum, have a clear commitment to keeping our national debt falling every year, and to maintain the current limit of the deficit at 2 per cent of GDP at least through 2021-22."*
- 8.30 Both leadership candidates have set out policy proposals with a potential total cost in the low tens of billions of pounds,¹¹ with few accompanying suggestions of ways to cut spending or raise revenue. It remains to be seen what the victorious candidate and his Chancellor will actually implement in future fiscal events, which will presumably depend in part on near-term Brexit developments. But it seems highly likely from their statements to date that the new administration will loosen fiscal policy and adopt less ambitious fiscal objectives.

How far can the primary deficit rise before debt stops falling?

- 8.31 Between July 2015 and November 2016, the Government aimed for debt to fall in every year from 2015-16 to 2019-20. Given the recent comments about ensuring debt falls each year, we now look at how far primary borrowing could rise before this constraint would bite.
- 8.32 Based on the assumptions that underpin our March 2019 forecast, Chart 8.8 sets out how much higher primary borrowing would need to be for debt not to fall in *any* year of the forecast period as a share of GDP.¹² This estimate includes the extra debt interest that would be incurred by higher primary borrowing, but does not adjust for any other factors. Clearly

¹⁰ In the May 2019 *Public sector finances* release, the ONS published its first provisional estimate of the impact of the new accounting treatment of student loans. It put the impact on the deficit in 2018-19 as an increase of £10.6 billion, close to the £10.5 billion we estimated in our March 2019 forecast.

¹¹ For a discussion of some of the proposals made see *Jeremy Hunt's tax and spending policies: what would they cost and who would benefit?*, IFS, June 2019, and *Boris Johnson's tax policies: what would they cost and who would benefit?*, IFS, June 2019.

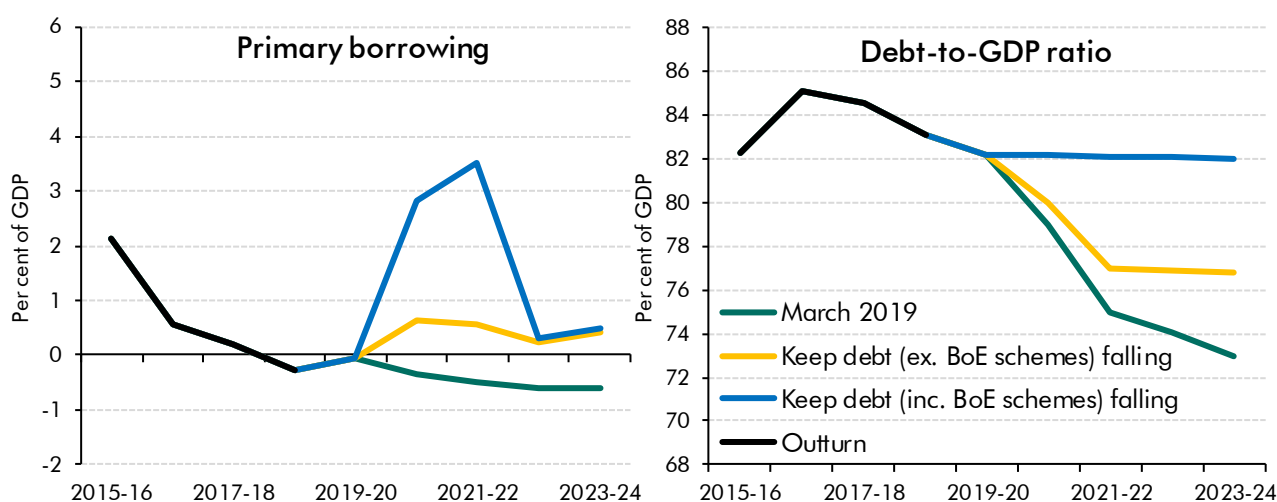
¹² 'Debt falling' is defined as a year-on-year change of minus 0.1 per cent of GDP on a rounded basis, which is typically the way it has been viewed by successive governments since the profile of the debt-to-GDP ratio was adopted as a target by the Coalition in 2010.

the particular drivers of such a rise in borrowing could have other implications for the debt-to-GDP ratio. If it were an underlying forecast revision, it would probably be driven by a weaker outlook for GDP growth, which would put further upward pressure on the debt-to-GDP ratio. If it reflected discretionary policy, then it could have partly offsetting indirect effects that supported GDP, although the size of the effect would be sensitive to the composition and timing of the overall package, as well as any monetary policy response.

8.33 Abstracting from those factors, the chart shows that:

- The **large impact of Bank of England schemes** (particularly the Term Funding Scheme) on the path of debt in 2020-21 and 2021-22 mean that primary borrowing could rise by a very large amount in those years before the headline debt-to-GDP ratio would stop falling (by roughly £70 billion and £95 billion in those years respectively).¹³
- Ignoring those schemes, **primary borrowing would have to rise by around £22 billion in 2020-21 before debt stops falling in that year.** This would also lead to the current fiscal mandate being missed (under the assumptions of our March 2019 forecast, plus the assumed impact of student loan accounting treatment changes).
- Between 2021-22 and 2023-24, **primary borrowing would have to rise by between £21 billion and £25 billion before debt (excluding the impact of Bank of England schemes) stops falling in any of those years.** The profile is somewhat lumpy, reflecting other factors driving the year-on-year change in the debt level (i.e. the flow of net lending), as well as the starting point of debt in each year.

Chart 8.8: Maximum levels of borrowing consistent with the debt-to-GDP ratio falling



Note: Primary borrowing equals PSNB less net debt interest payments.
Source: ONS, OBR

8.34 Relative to our average underlying forecast revision, a deterioration of £24 billion a year (the average annual change in primary borrowing in Chart 8.8) would be large – roughly as large as that in our November 2016 forecast (following the EU referendum), although

¹³ See paragraph 4.146 of our March 2019 EFO for more information on these schemes.

smaller than our largest upward revisions to borrowing, which came in November 2011 and December 2012. In absolute terms, our average two-year ahead underlying forecast revision is around £9 billion.

8.35 In a world in which debt was falling only very gradually relative to GDP in our central forecast, there would necessarily be a roughly one-in-two chance that revisions to our underlying forecasts would result in it being forecast to rise instead. From a fiscal policy risks perspective, if our central forecast were to show a government running close to whatever target it had chosen, any future forecast deterioration would need to be offset on at least a one-for-one basis for the target to remain on track to be met. This no doubt at least partly explains why Chancellors have aimed for a reasonable amount of headroom against their fiscal targets. But as we have shown, since June 2010 governments have only attempted to offset around a third of our underlying forecast movements via discretionary measures – and this relationship has tended to be weaker where other factors have been at play, such as impending elections or the change of administration that followed the EU referendum.

For the Government's response

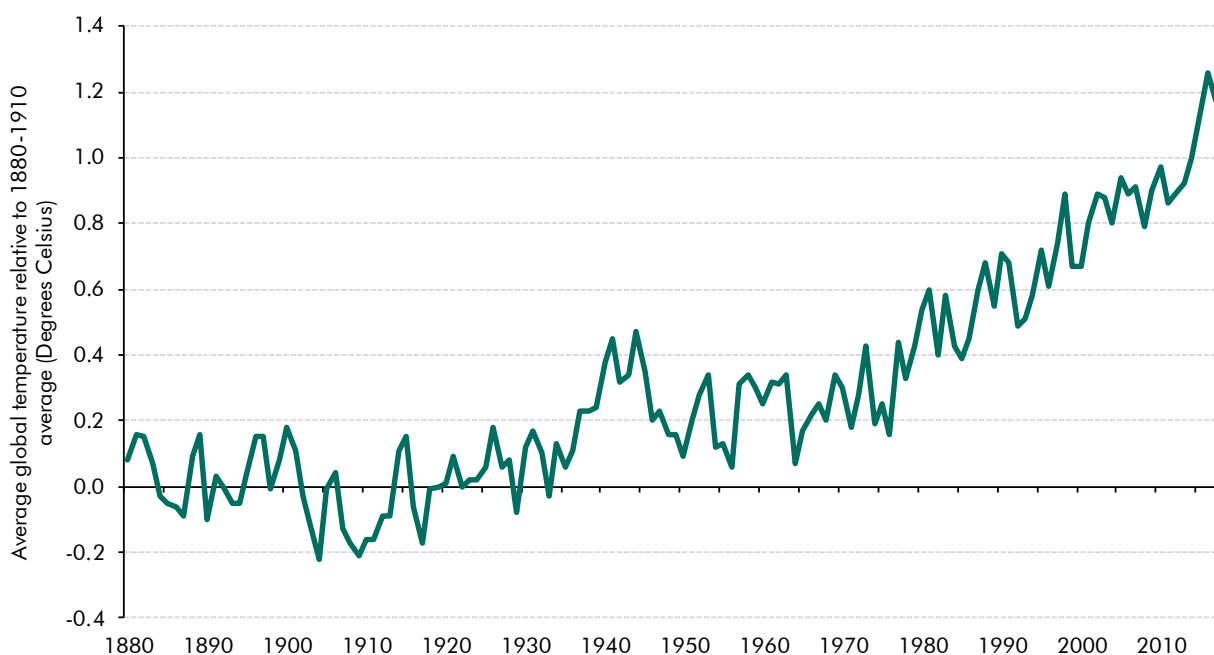
- 8.36 In this chapter we have highlighted several issues that the Government is likely to wish to consider when managing its fiscal risks. Among them, governments' tendencies to:
- Revise fiscal rules in line with movements in the forecast.
 - Respond asymmetrically to movements in our underlying forecasts.
 - Assume cuts outside Spending Review periods, but revise totals up when plans are set.
- 8.37 When assessing the outlook for the public finances over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

9 Climate change

Introduction

9.1 Evidence of climate change is clear in rising average temperatures – 17 of the 18 hottest years recorded globally since 1880 occurred in the past 18 years (Chart 9.1). The global rise of around 1°C relative to the pre-industrial period has been matched in the UK, with most of the warming occurring since the 1970s (yielding milder winters and hotter summers). Sea levels around the UK have risen by 15 to 20 centimetres since 1900, with the rate of change picking up since 1990. In the UK, the risk of heatwaves and severe flooding (due to the greater moisture levels that a warmer atmosphere can hold) has risen. By contrast, cold snaps in winter are now around half as likely as they were in the 1960s.¹

Chart 9.1: Global average temperatures



Source: NASA

9.2 The Intergovernmental Panel on Climate Change (IPCC) has concluded that the increase in man-made greenhouse gas emissions since the pre-industrial era, driven largely by economic and population growth, has led to unprecedented concentrations of greenhouse gases in the atmosphere and that these emissions are extremely likely to have been the dominant cause of the observed global warming since the mid-20th century.²

¹ All the UK-specific evidence in this paragraph has been drawn from the Committee on Climate Change, *UK Climate Change Risk Assessment 2017 Synthesis report: priorities for the next five years*, July 2016.

² International Panel on Climate Change, *Fifth Assessment Report of the International Panel on Climate Change*, 2014.

- 9.3 The global response to this challenge is embodied in the 2015 Paris Agreement. Its central aim is to strengthen action to mitigate climate change so as to keep the global temperature rise this century to below 2°C above pre-industrial levels, and to pursue efforts to limit the rise further to 1.5°C. The UK Government is party to the Paris Agreement and has recently adopted a more ambitious target of reaching net zero greenhouse gas emissions by 2050.
- 9.4 Our 2017 *Fiscal risks report (FRR)* acknowledged climate change as a potentially significant source of fiscal risk that we had not analysed. Drawing on the Bank of England’s assessment that climate-related risks to financial stability arise through two primary channels – physical effects and the impact of the transition to a low-carbon economy – we noted that the fiscal risks from climate change are likely to arise through similar channels. When responding to the *FRR* in *Managing fiscal risks*, the Treasury did not mention climate change. Indeed, the Committee on Climate Change’s *Climate change risk assessment 2017: Evidence report* stated that, as of mid-2016 when it was finalised, there was “no UK-wide assessment quantifying indirect or macroeconomic effects of climate risks”.³ The Government’s 2017 *Climate change risk assessment* did not discuss fiscal risks (Box 9.1).
- 9.5 Over the past two years, the Bank of England has further developed its approach to assessing climate-related risks to financial stability, while the Network for Greening the Financial System, a collaboration between many of the world’s central banks and banking supervisors, has published ‘a call for action’ on climate change as a source of financial risk.⁴ This work – and the planned next steps – will help us undertake future assessments of the nature and scale of the fiscal risks associated with climate change.
- 9.6 Considering climate change from the perspective of fiscal risk, while also respecting Parliament’s instruction to us not to consider alternative policy paths, requires us to set aside some important questions. For example, tax and spending decisions that help us adapt to the changing climate or discourage greenhouse gas emissions will affect the public finances directly, while also affecting the path of climate change itself (especially where taken in concert with the governments of other countries). But it will not be for us to consider the merits of the choices made or that are available. Instead, we can seek to illustrate the risks associated with projected climate trends and current policies. With this in mind, this chapter:
- sets out **a framework for considering climate-related fiscal risks**;
 - discusses **the nature of climate-related fiscal risks** and their relative scale;
 - sets out **next steps** we plan to take in collaboration with other institutions; and
 - summarises **issues raised** in the chapter that the Government may wish to address in its response to this report.

³ See Section 8.3.1 in Committee on Climate Change, *UK Climate Change Risk Assessment 2017: Evidence Report*, July 2016.

⁴ Network for Greening the Financial System, First comprehensive report, *A call for action: Climate change as a source of financial risk*, April 2019.

Box 9.1: The UK Government's *Climate Change Risk Assessment*

The Climate Change Act 2008 provides the statutory underpinning for the UK's approach to cutting greenhouse gas emissions and adapting to the changing climate. Among other things, it requires the Government to assess the risks and opportunities arising from climate change once every five years. The most recent assessment was published in 2017.^a It drew on over 2,000 pages of evidence gathered by the Committee on Climate Change (CCC).^b In its synthesis of this evidence, the CCC identified six priority risks where more action and/or further research was required. The Government accepted almost all the CCC's recommendations (with the exception of some related to food security). Those six priority risks were:

- **Risks to communities, businesses and infrastructure from flooding and coastal change.** Damages from flooding and coastal change were estimated to cost around £1 billion a year, with separate but related risks associated with episodic heavy rainfall, river flows, sea levels, tidal surges and coastal erosion.
- **Risks to health, well-being and productivity from high temperatures.** With both average and extreme temperatures expected to rise further, there was a need to adapt existing buildings to cope with higher temperatures, while the risks associated with overheating in hospitals, care homes and the like were unknown.
- **Risks of shortages in the public water supply, and for agriculture, energy generation and industry.** Scenario analysis suggested that demand for water could materially outstrip available resources in many areas by mid-century, thanks to changes in rainfall patterns, increased evaporation and soil aridity, coupled with population growth raising demand.
- **Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soil and biodiversity.** The affinity of animals and plants to different regions would be altered by environmental change. High-grade agricultural land was projected to deteriorate – perhaps significantly – due to soil aridity, water scarcity and other factors.
- **Risks to domestic and international food production and trade.** Increased risk of extreme weather would affect food production and supply chains. And while temperature rises could present opportunities for greater domestic food production, such benefits would most likely be limited by increasing soil aridity and water scarcity.
- **Risks from new pests and diseases and from invasive non-native species.** Pathogens already present in the UK at low levels might become more prevalent, while new ones might arrive from overseas. A warmer UK would also be at greater risk of diseases carried by mosquitos and ticks. Here, the CCC noted particularly large uncertainties.

Each of these climate-related risks comes, to varying degrees, with associated fiscal risks. Floods and heatwaves disrupt activity, affecting tax revenues. Taking mitigating action will generate more calls on the public purse. And the consequent changes in the structure of the economy will affect both the reliability of tax revenues and the allocation of public spending.

^a HM Government, *UK Climate Change Risk Assessment 2017*, January 2017.

^b Committee on Climate Change, *UK Climate Change Risk Assessment 2017 Evidence Report*, July 2016.

A framework for assessing climate-related fiscal risks

- 9.7 Climate change is such a pervasive phenomenon that it potentially affects almost every aspect of the public finances. And the policies to mitigate and adapt to climate change have both direct fiscal implications and indirect ones via their effects on the economy (and the path for climate change). It is therefore helpful to have a framework in which to think about climate-related fiscal risks to make the task tractable. The Bank of England's approach to climate-related financial stability risks provides a relevant framework for our purposes.
- 9.8 Risks to financial stability and to fiscal sustainability have much in common. The banking system is exposed to risks facing banks' customers and counterparties, which in effect make up the entire economy. Those same actors – and the financial system itself – are the ultimate source of many fiscal risks. So the approach to assessing climate-related risks to financial stability and to fiscal sustainability will overlap to a considerable degree. The key difference is that tax and spending policies can affect the path of climate change – especially when pursued globally – so the risks are to some extent endogenous, whereas climate change is exogenous to financial stability. For example, the OECD argues that 'ambitious' mitigation policies will reduce both the damage from, and the probability of, malign outcomes.⁵

The Bank's framework for assessing climate-related risks to financial stability

- 9.9 The Bank of England has developed its response to climate-related financial stability risks over the past four years, starting with Governor Carney's September 2015 speech on the nature of the challenge for central banks posed by climate change.⁶ He described how its potentially large costs lie beyond the horizon of most policymakers and set out the channels through which it can affect financial stability, establishing the framework we will use too:
- **Physical risks** were described as *"the impacts today on insurance liabilities and the value of financial assets that arise from climate- and weather-related events, such as floods and storms that damage property or disrupt trade"*.
 - **Transition risks** were described as *"the financial risks which could result from the process of adjustment towards a lower-carbon economy. Changes in policy, technology and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent."*

In the speech, he also separated out 'liability risks' – *"the impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible."* These were specific to the insurance sector.

- 9.10 Alongside the Governor's speech, the Bank published a more detailed assessment of how climate change could affect the Prudential Regulation Authority's statutory objectives with regard to insurance.⁷ This assessment was produced at the invitation of Government and

⁵ OECD, *The Economic Consequences of Climate Change*, November 2015.

⁶ 'Breaking the Tragedy of the Horizon – climate change and financial stability', Speech given by Mark Carney, Governor of the Bank of England, Chairman of the Financial Stability Board, Lloyd's of London, 29 September 2015.

⁷ Bank of England, *The impact of climate change on the UK insurance sector*, A Climate Change Adaptation Report by the Prudential Regulation Authority, September 2015.

informed the 2017 *Climate change risk assessment*. It was followed by a report on the risks from climate change to the banking sector.⁸ Further reports include a working paper discussing the impact of climate change and the transition to a low-carbon economy on monetary policy and financial stability, published in 2016,⁹ and a *Quarterly Bulletin* article outlining the Bank's response to climate change more broadly.¹⁰ This touched on fiscal risk, noting that “significant uninsured losses from physical risk could also result in economic disruption at a national level, reducing tax revenues and increasing fiscal expenditures.”

9.11 In January 2018, a Bank working paper reviewed the analysis of macroeconomic risks deriving from climate change.¹¹ It noted the importance to those responsible for fiscal and monetary policy, and various other policy areas, of understanding the impact on the economy of climate change. The paper looked at physical risks due to extreme weather events and due to gradual global warming, as well as transition risks. The macroeconomic consequences of these were broken down into those affecting the supply-side and demand-side of the economy – i.e. affecting potential output and the output gap respectively.

9.12 Table 9.1 is taken from the Bank's paper. Possible fiscal consequences of such macroeconomic risks were discussed in Chapter 3 of our 2017 *FRR* and Chapter 2 of this report. That discussion would point to the largest risks being those associated with lower potential output growth reducing growth in tax bases and thus the resources available to finance future public spending. These pressures typically build slowly, giving governments time to factor their effects into fiscal policy, but also scope to put off necessary action.

Table 9.1: Examples of macroeconomic risks from climate change

Type of shock/impact	Physical risks		Transition risks	
	From extreme weather events	From gradual global warming		
Demand	Investment	Uncertainty about climate events	'Crowding out' from climate policies	
	Consumption	Increased risk of flooding to residential property	'Crowding out' from climate policies	
	Trade	Disruption to import/export flows	Distortions from asymmetric climate policies	
Supply	Labour supply	Loss of hours worked due to natural disasters	Loss of hours worked due to extreme heat	
	Energy, food and other inputs	Food and other input shortages	Risks to energy supply	
	Capital stock	Damage due to extreme weather	Diversion of resources from productive investment to adaptation capital	Diversion of resources from productive investment to mitigation activities
	Technology	Diversion of resources from innovation to reconstruction and replacement	Diversion of resources from innovation to adaptation capital	Uncertainty about the rate of innovation and adoption of clean energy technologies

⁸ Bank of England, *Transition in thinking: The impact of climate change on the UK banking sector*, September 2018.

⁹ Bank of England Staff Working Paper No. 603, *Let's talk about the weather: the impact of climate change on central banks*, Batten S., Sowerbutts R. and Tanaka, M., May 2016.

¹⁰ Bank of England Quarterly Bulletin, 2017 Q2, *The Bank of England's response to climate change*, Scott M., van Huizen, J. and Jung, C.

¹¹ Bank of England Staff Working Paper No. 706, *Climate change and the macro-economy: a critical review*, Batten, S., January 2018.

Fiscal risks from extreme weather events

- 9.13 The 2006 Stern Review estimated that the global cost of extreme weather events could reach 0.5 to 1 per cent of world GDP a year by the middle of this century. In developing countries, these costs primarily reflect income losses for those affected. In advanced economies, the cost of infrastructure damage and depreciation dominate.¹² The Bank estimates that the number of weather-related insurance payouts around the world has tripled since the 1980s, while the insurance-related losses associated with these events have increased five-fold.¹³ And for the UK, the Met Office has estimated that the probability of a summer heatwave like that of 2018 is now around 30 times higher than under pre-industrial climate conditions.¹⁴
- 9.14 The Bank's 2018 working paper noted that studies of the economic effects of natural disasters provide a useful guide to the effects of extreme weather events.¹⁵ It concluded that there was general agreement on their negative short-term effects on GDP, and that while evidence on their longer-term effects was both scarcer and more mixed, the largest number of studies pointed to them generating longer-term GDP losses too. But it is important to note that these studies are partial, often covering only a small number of the transmission channels (i.e. the impact of temperature on productivity) and do not usually account for the possibility of climate tipping points accelerating impacts in a non-linear way.¹⁶
- 9.15 Fiscal risks from extreme weather events could take many forms. To the extent that they reduce economic activity over the medium term – rather than merely shifting it between time periods – tax receipts would be hit and the social security bill would rise. Were the Government to choose to meet some of the costs of repairing and rebuilding private property – or to spend more to restore assets of its own that were damaged – public spending could be higher. And if critical infrastructure were affected – or its owners placed at financial risk – private sector assets could be taken onto the public balance sheet.
- 9.16 The scale of such risks would depend on the precise nature of the extreme weather event. The Environment Agency estimates that the 2007 summer floods in the UK were associated with the largest economic costs of recent major floods (£3.9 billion in 2015 prices). The 2015/16 winter floods, which were the most extreme on record by intensity of rainfall, generated a smaller cost (£1.6 billion). In both cases the estimated cost is dominated by damage to property and transport infrastructure.¹⁷ But the fiscal implications were modest as they only affected parts of the country and their local economies. Given the concentration of tax receipts generated by economic activity close to the Thames estuary, a coastal surge that led to severe flooding in this area could have more significant fiscal consequences.

¹² Stern Review, *The Economics of Climate Change*, October 2006.

¹³ Bank of England, *The impact of climate change on the UK insurance sector: A Climate Change Adaptation Report by the Prudential Regulation Authority*, September 2015.

¹⁴ Met Office, *Chance of summer heatwaves now thirty times more likely*, December 2018.

¹⁵ Bank of England Staff Working Paper No. 706, *Climate change and the macro-economy: a critical review*, Batten, S., January 2018.

¹⁶ As discussed by the NGFS in, *A call for action: Climate change as a source of financial risk*, April 2019.

¹⁷ Environment Agency, *Estimating the economic costs of the 2015 to 2016 winter floods*, January 2018.

Fiscal risks from adaptation to climate change

- 9.17 The scale of the risks associated with gradual global warming will depend on the extent to which temperatures rise. If the most ambitious of the Paris goals were met and temperatures stabilised at 1.5°C above pre-industrial levels – and therefore only around 0.5°C higher than temperatures witnessed in recent years – the nature of climate-related risks might be a more severe version of those already being seen. By contrast, if temperatures were to rise to 4°C above pre-industrial levels, consistent with the IPCC’s unmitigated climate change scenario,¹⁸ the risks could be much greater and much more difficult to assess. These could include much greater international migration flows and induced periods of conflict.¹⁹
- 9.18 In its 2018 working paper, the Bank noted that, from the perspective of the wider economy, gradual rises in temperatures are generally viewed as a potential source of economic loss as they tend to reduce the productivity of workers and agricultural crops.²⁰ (For particular countries at particular times this may not be the case, as the IMF’s cross-country analysis described below illustrates.) The main channel along which this effect takes place is the diversion of resources from productive capital and innovation to ‘adaptation capital’. This is a climate-related risk to what we routinely identify as the most important and uncertain judgement underpinning our medium-term forecasts: underlying productivity growth.
- 9.19 The extent to which adaptation to global warming will affect economic growth is subject to considerable uncertainty. The Bank noted that studies of the economic consequences of adapting to gradual temperature rises typically deploy models that combine climate-related assumptions (about greenhouse gas emissions and their consequences for the climate) with economy-related assumptions (about how climate change affects output). The ‘damage function’ assumptions that drive the economic results of these models are important and subject to huge uncertainty.²¹ In particular, long-term economic costs of higher temperatures vary greatly depending on whether they are assumed to have static or dynamic effects – i.e. whether they affect only the level of activity, with a transitory effect on growth, or the growth of activity, with an ever-increasing effect on the level.²² As the Bank notes, even small growth effects ultimately dominate large level effects as their impact cumulates over time.
- 9.20 In a cross-country study, the IMF estimated that the effect of a 1°C average temperature rise would be particularly harmful in Africa, India and much of South East Asia, but beneficial in

¹⁸ The IPCC’s ‘RPC8.5’ representative control path sees greenhouse gas emissions continue to rise leading to high concentrations levels in the atmosphere. As a result, global temperatures would be projected to rise by 3.7°C (likely range 2.6 to 4.8°C) by the end of the century. See Table SPM.2 in IPCC, ‘Summary for Policymakers’ in: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013.

¹⁹ See, for example, Raleigh, C., Jordan, L. and Salehyan, I., *Assessing the Impact of Climate Change on Migration and Conflict*, World Bank Group, 2008, and Sawas A., Workman, M. and Mirumachi, N., *Climate change, low-carbon transitions and security*, Grantham Institute Briefing paper No 25, March 2018.

²⁰ Bank of England Staff Working Paper No. 706, *Climate change and the macro-economy: a critical review*, Batten, S., January 2018.

²¹ For example, in *Climate Change Policy: What Do the Models Tell Us?* *Journal of Economic Literature*, 2013, Robert Pindyck concludes that the answer is “very little”, while Lord Stern has warned that models “may be profoundly misleading on the issues of great significance” (in *The Structure of Economic Modeling of the Potential Impacts of Climate Change: Grafting Gross Underestimation of Risk onto Already Narrow Science Models*, *Journal of Economic Literature*, 2013).

²² See also, for example, Dietz, S. and Stern, N., *Endogenous growth, convexity of damages and climate risk: how Nordhaus’ framework supports deep cuts in carbon emissions*, June 2014.

Canada, Russia and Scandinavia. The effect on UK GDP would be insignificantly small.²³ But this study was based on historical correlations between temperature and per capita GDP growth. It did not factor in possible effects of rising sea levels, extreme weather events or spillovers from more vulnerable economies. And even if the economy-wide effect were limited, that could mask potentially large gains and losses at the sector level. Any effects might become significant with greater increases in temperature, given the non-linear relationship between temperature changes and output.²⁴ The OECD's central projection for its baseline scenario, where no further action is taken to mitigate climate change, is damage of 2 per cent of global GDP by 2060. In this scenario, changes in crop yields and labour productivity are expected to deliver the largest hit to global GDP.²⁵

9.21 As well as the fiscal implications of any effects of climate change on GDP and the tax base, adaptation can generate more direct fiscal costs. For example, the Environment Agency has estimated that an average of £1 billion a year will need to be spent on flooding and coastal infrastructure in order to be resilient to a 4°C rise in global temperatures.²⁶ It projects that a continuation of current planning outcomes – i.e. the decisions taken by local authorities about where new properties can be built – would result in the number of properties exposed to flood risk almost doubling from 2.4 million at present to 4.6 million in 2065. But it estimates that the associated increase in flood damages would be limited to 4 per cent, due to planning policy mitigation measures such as raised floor levels.²⁷ Of course, in a 4°C world, the public spending implications of conflict and mass migration could represent a far more significant source of fiscal risk than those of flood defences and coastal protection.

Fiscal risks from the transition to a low-carbon economy

9.22 In some ways, the nature of fiscal risks from mitigating emissions matches those associated with adaptation: i.e. they stem from both the direct fiscal implications of policies designed to lower emissions and from the indirect effects of structural change in the economy as it moves to a low-carbon future. The extent of these will be guided by the degree of emissions reduction being targeted and the efficiency and predictability of the measures adopted. The extent to which resources in the economy shift to activities that will prosper in a low-carbon global economy poses a different type of risk. Failure to adjust flexibly could damage growth prospects by leaving resources in sectors and technologies where growth prospects have weakened. Such risks become more important as the costs of green technologies fall.²⁸

9.23 The Bank's 2018 working paper argued that the policy-driven transition to a low-carbon economy in order to meet the Paris commitments on limiting global warming will entail its own set of risks.²⁹ Such policies have typically been seen as an economic burden in the shorter run, diverting resources to climate change mitigation from other productive activities

²³ IMF, *World Economic Outlook*, October 2017. See Annex Figure 3.3.1. Countries for which the estimated effect of temperature increase on real per capita output was between -0.31 and +0.32 per cent were deemed not to be statistically significant.

²⁴ Burke, M., Hsiang, S. and Miguel, E., *Global non-linear effect of temperature on economic production*, *Nature*, October 2015.

²⁵ OECD, *The Economic Consequences of Climate Change*, November 2015.

²⁶ Environment Agency, *Draft National Flood and Coastal Erosion Risk Management Strategy for England*, May 2019.

²⁷ Environment Agency, *Long-term investment scenarios*, 8 May 2019.

²⁸ See, for example, Dechezleprêtre, A., Martin R. and Mohnen, M., *Knowledge spillovers from clean and dirty technologies: a patent citation analysis*, September 2013.

²⁹ Bank of England Staff Working Paper No. 706, *Climate change and the macro-economy: a critical review*, Batten, S., January 2018.

and raising input costs, although in the long run successful mitigation would reduce the economic costs of gradual global warming. The OECD notes that in a delayed-action scenario, where climate change mitigation accelerates only after 2025, GDP losses are estimated to be 2 per cent on average across the G20 after 10 years.³⁰

- 9.24 As the cost of green technologies falls, and as policymakers around the world look to orient their economies to capitalise on the growth in their use, mitigation policies are increasingly seen as a source of potential growth. The same OECD study argues that *“bringing together the growth and climate agendas, rather than treating climate as a separate issue, could add 1% to average economic output in G20 countries by 2021 and lift 2050 output by up to 2.8%. If the economic benefits of avoiding climate change impacts such as coastal flooding or storm damage are factored in, the net increase to 2050 GDP would be nearly 5%.”*
- 9.25 The macroeconomic risks of climate policy will depend on how it is managed: well-signalled and orderly policies that allow time for the economy to adjust and for technological advances to reduce costs might pose little risk; unexpected or inconsistent policy changes could have more severe consequences in terms of higher energy prices reducing economic activity or stranded assets depleting wealth and generating financial stability risks.
- 9.26 The Stern Review argued that reducing greenhouse gas emissions sufficiently to avoid the worst impact of climate change (an 80 per cent reduction on then current levels) could cost around 1 per cent of global GDP a year.³¹ More recently, the CCC estimated that the annual costs of reducing the UK’s greenhouse gas emissions to net zero by 2050 would be around 1 to 2 per cent of GDP, but that the structural changes underlying these modest aggregate costs would be very large.³²
- 9.27 In a letter to the Prime Minister that was leaked to the press, the Chancellor chose to sum the annual costs, drawing on analysis from the Department of Business, Energy & Industrial Strategy, to reach a figure of £1 trillion for the total cost – both public and private – of meeting the target.³³ To place this in context, our latest long-term projections suggest that over the same period the economy will generate around £90 trillion of real GDP and the state will spend about £40 trillion, so £1 trillion is not as much as it first appears.
- 9.28 One of the CCC’s advisory groups argued that the macroeconomic costs of deep decarbonisation are likely to be small globally, and for a fossil fuel importing country like the UK there could be macroeconomic gains.³⁴ The CCC itself recommended that the Treasury review how the costs of decarbonising the economy will be met, considering effects on the public finances and on those affected by the policies that are put in place.

³⁰ OECD, *Investing in Climate, Investing in Growth*, June 2017.

³¹ Stern Review, *The Economics of Climate Change*, October 2006.

³² Committee on Climate Change, *Net Zero: The UK’s contribution to stopping global warming*, May 2019.

³³ Letter from the Chancellor of the Exchequer to the Prime Minister, *2050 Net Zero Emissions Target*, May 2019.

³⁴ Modelling of the macroeconomic consequences of ‘deep decarbonation’ are discussed in an accompanying ‘Report to the Committee on Climate Change from the Advisory Group on Costs and Benefits of Net Zero’ by Paul Ekins. It illustrates how different assumptions can generate positive or negative GDP effects, depending in particular on how innovation and technological change are assumed to evolve.

9.29 Successful mitigation of greenhouse gas emissions can create its own fiscal risks, to the extent that tax revenues are currently dependent on emission-generating activities. We have considered some of these issues in previous reports, particularly in respect of vehicle-related taxes. For example, our 2014 *Fiscal sustainability report* considered the effects of improving fuel efficiency of vehicles on fuel duty revenue and the effect of reducing emissions on vehicle excise duty (VED) receipts. We updated these analyses in our 2017 *FRR*, noting how reforms to VED in the intervening period had reduced this source of fiscal risk. Receipts from the climate change levy and EU emissions trading system (or UK-equivalent were the UK to leave the ETS after Brexit) would also fall if carbon emissions were to fall to 'net zero'. If the financial system were to find itself overly exposed to 'old' sectors and technologies, its revenues could be hit by the consequences of stranded assets and under-priced risks, which in turn could hit tax revenues from one of the most tax-rich sectors of the economy.

The nature of climate-related fiscal risks

9.30 From a broad public policy perspective, the reasons for government to address climate change are simple – climate change results from a market failure, namely that the costs to society of greenhouse gas emissions are shared widely, including across generations, rather than being borne by those generating the emissions. Indeed, the Stern Review described climate change as “the greatest and widest ranging market failure ever seen.”³⁵ As well as this, governments increasingly seek to ensure that their economies are competitively placed to take advantage of green growth opportunities and that they are not locked into infrastructure or institutions that could become devalued or stranded in the future.

9.31 For the UK Government, fiscal risks stem from the consequences of climate change – the damage wrought by extreme weather events and the cost of adapting to a slowly changing climate – and from policy measures designed to reduce the UK's own greenhouse gas emissions and to ensure that the economy is well placed to thrive in a low-carbon world. The former are essentially unavoidable, although their scale can be influenced. The latter reflect policy choices, but are framed by the international agreements to which the UK is party and its own zero net emissions target for 2050. The more successful the global reduction of emissions, the lower the cost of weather events and adaptation measures.

9.32 The Bank of England's physical/transition framework for assessing climate-related risks to financial stability risks maps well onto the categories of fiscal risk we identified in our 2017 *FRR*. Extreme weather events represent potential 'shocks' with short-term consequences that are unlikely to be foreseen in our central forecasts because of their uncertain scale and timing. The fiscal consequences of adaptation costs and mitigation policies represent 'pressures' on the public finances that are foreseeable and will typically build slowly, affording time for policymakers to address them and adjust as new information emerges. In the case of green growth opportunities, the risk relates to potential output growth foregone.

³⁵ Stern Review, *The Economics of Climate Change*, October 2006.

9.33 Relative to the two definitions of fiscal risk we use in this report, climate-related risks include:

- **Conventional medium-term forecast risks:** the Government allocates some spending to climate change adaptation and mitigation (the Treasury estimates that in 2017-18 such spending amounted to around £10½ billion – £9¼ billion on mitigation and £1¼ billion on adaptation – £7¼ billion of which went on spending for low carbon electricity, funded via levies on consumer and business energy bills); it has established ‘Flood Re’ to take on the flood risk element of eligible insurance products (although unusually this is structured such that tail risk sits with the private sector); and it raises revenue from environmental taxes like the climate change levy (around £2 billion a year). It might also be subject to climate-related legal challenges that generate future costs.³⁶ So medium-term fiscal risks include unexpected costs that raise spending relative to plans or shocks that cause revenues to fall short of forecast. And were an extreme weather event to be sufficiently large to cause material disruption to the economy and tax revenues, this too would be a source of fiscal risk.
- **Risks to fiscal sustainability:** longer-term climate-related fiscal risks can be considered from the perspective of the economy – such as the extent to which redirecting resources to adaptation and mitigation activities weighs on productivity growth or the opportunities from reorienting the economy towards green technologies boost it – or from the direct pressures placed on tax revenues and public spending – such as the declining fuel duty tax base or requirement for extra spending on flood defences.

9.34 Taking each issue in isolation, the material reviewed in this chapter might suggest the fiscal risks associated with climate change are not large relative to others we have assessed in this and our previous *FRR*. Extreme weather events, such as flooding or heatwaves, could have wider economic costs through damage to property or lost working days that hit tax revenues or generate calls on public spending. But it seems unlikely that those costs would be on the same scale as a recession or financial crisis. Redirecting resources to adaptation and mitigation measures will have longer-term implications for the composition of revenue and spending – and for the structure of the economy itself. But the fiscal implications are likely to be small relative to those of population ageing or the cost pressures seen in health care. But this relatively sanguine conclusion might simply reflect the difficulty in seeing through to the full systemic consequences of significant global warming – where interconnections and associated amplifying mechanisms might be more important than is initially apparent. And of course the severity of any impacts will be correlated with the extent of global warming.

9.35 Others have argued that associated fiscal risks are likely to be manageable. For example:

³⁶ In *Global trends in climate change legislation and litigation: 2018 snapshot*, May 2018, the LSE’s Grantham Research Institute counted 225 climate-related cases brought against governments or their representatives around the world. These cases include those seeking to overturn decisions taken on climate-related grounds (for example, denying a licence for a coal-fired power plant) and those challenging the allocation of allowances under emissions trading schemes. There are also more strategic cases, such as those seeking to force courts to rule on the consistency of countries’ actions with the Paris Agreement.

- **The Treasury's 2009 Long-term public finance report** discussed climate change. It argued that the approach to lowering carbon emissions that the Government of the time was advocating (and that is little changed today) would *"ensure that although there may be some direct pressure on the public finances (e.g. spending on R&D and investment, and spending to raise awareness and change behaviour) the effect is likely to be manageable. Policies will also impact on the economy and therefore indirectly affect the public finances. Again, however, this effect is likely to be modest."*³⁷
- **The CCC's Advisory Group on Costs and Benefits of Climate Change** noted more recently that *"where taxing fossil fuels (such as motor fuels in the UK) provides a significant source of revenue already, the shift away from them and any other carbon-based fuels that may have been taxed in the meantime will require, in the medium and long term, a new tax base to be developed. But these fiscal changes are likely to be gradual and manageable."*³⁸

Box 9.2: Case study: US federal government on climate-related fiscal risks

In November 2016, the US Office of Management and Budget (OMB), in collaboration with President Obama's Council of Economic Advisers, presented a preliminary assessment of some of the fiscal risks associated with climate change.^a Guided by the available climate studies and economic modelling, it included five detailed risk assessments – covering expenditure risks related to crop insurance, air quality and health care, wildfire suppression, coastal storm disaster relief and flood risks to Federal government facilities. It also illustrated the potential revenue costs of climate change reducing the level of US economic activity.

The bottom-up programme-specific expenditure risk assessments pointed to various ways in which climate change will raise Federal spending in the US. The overall cost estimate was dominated by the projected increase in spending on coastal disaster relief. In total it was put at between \$9 billion and \$28 billion a year by late in this century (around 0.05 to 0.15 per cent of US GDP in 2016). But the report stressed that this did not represent a complete assessment of the spending implications of climate change. Important areas were not quantified due to lack of reliable inputs to model them – for example, the focus on the health costs of air quality changes was considered likely to reflect *"only a slim component of the full fiscal risk related to health care and public health"*. As well as the scale of the risk, the report noted that the variability of calls on affected spending programmes was likely to increase, causing greater recourse to safety nets and challenges for expenditure planning.

The indicative revenue hit was calculated top-down using a commonly utilised economic model that puts the global economic cost of a four-degree climate scenario at 4 per cent of global GDP and simple assumptions about the US share of global economic activity by the end of the century and the revenue share of GDP.^b It therefore illustrated the revenue loss associated with an unmitigated climate change scenario relative to a reference scenario assuming no further climate change. On that basis, the revenue cost in today's terms by the end of the century was put at \$56 billion to \$111 billion a year (around 0.3 to 0.6 per cent of US GDP in 2016).^c

³⁷ See Chapter 3 of HM Treasury, *Long-term public finance report: an analysis of fiscal sustainability*, December 2009.

³⁸ Ekins, P., *Report to the Committee on Climate Change of the Advisory Group on Costs and Benefits of Net Zero*, May 2019.

A comparable calculation for the UK would yield a range of revenue costs in today's terms of £16 billion to £32 billion a year by 2100.^d

The OMB's assessment of flood risk to federal property was not included in its expenditure risk estimates. Instead, it reviewed a sample of all federal property and identified \$83 billion of federal assets located within the 100-year floodplain, \$23 billion within the 500-year floodplain and \$62 billion in coastal assets that would be threatened by inundation or otherwise severely affected in a scenario in which sea levels rose by six feet. The Congressional Budget Office has estimated more recently that annual expected losses from hurricane winds and storm-related flooding total \$54 billion, with \$12 billion of this expected to fall on the public sector.^e

^a US Office of Management and Budget, *Climate change: The fiscal risks facing the Federal Government*, November 2016.

^b Nordhaus, W., *The Climate Casino: Risk, Uncertainty, and Economics for a Warming World*, 2013.

^c The range was generated by different assumptions about the US share of global GDP by 2100 – which varied from 10 to 20 per cent, with the higher figure being roughly the US share of global GDP at the time.

^d This is equivalent to 0.7 to 1.5 per cent of GDP. It is considerably higher than the OMB's figure for the US because it covers total receipts (which we forecast to be 36.8 per cent of GDP in 2019-20) whereas the OMB figure relates only to US Federal Government revenues (i.e. excluding state and local governments), which the CBO estimates to have been 17.6 per cent of US GDP in 2016.

^e Congressional Budget Office, *Expected Costs of Damage From Hurricane Winds and Storm-Related Flooding*, April 2019.

Next steps

9.36 The Bank's next steps in this area were discussed by Sarah Breedon, Executive Director for International Banks Supervision, in April 2019,³⁹ coinciding with the publication of the Network for Greening the Financial System's first comprehensive report on financial risk and climate change (see Box 9.3). These steps include supervisory expectations of the individual banks and insurance companies the Bank regulates.⁴⁰ Of most relevance to us on fiscal risks, the Bank will include climate-related factors in its 2021 'biennial exploratory scenario' – part of the Bank's financial stability stress testing infrastructure.⁴¹ The NGFS is also developing its framework for scenario analysis, on which the Bank is leading.

9.37 This work underway at the Bank and the NGFS can provide a foundation upon which we can test the sensitivity of the public finances to alternative climate pathways. We have therefore launched two collaborative workstreams:

- **With the Bank of England:** we will engage with the Bank's analysts as they consider possible financial stability stress-testing scenarios. This will allow us to consider how those scenarios can be adapted for fiscal risk analysis.
- **Between the OECD network of fiscal councils and the NGFS:** we have proposed working with the OECD Network of Parliamentary Budget Offices and Independent Fiscal Institutions to engage with the NGFS on its scenario workstream. This will allow us to draw on the experience and expertise of dozens of central banks and fiscal councils around the world.

³⁹ 'Avoiding the storm: Climate change and the financial system', Speech given by Sarah Breedon, Executive Director, International Banks Supervision, Official Monetary & Financial Institutions Forum, London, 15 April 2019.

⁴⁰ Bank of England Prudential Regulation Authority, Policy Statement PS11/19, *Enhancing banks' and insurers' approaches to managing the financial risks from climate change*, April 2019.

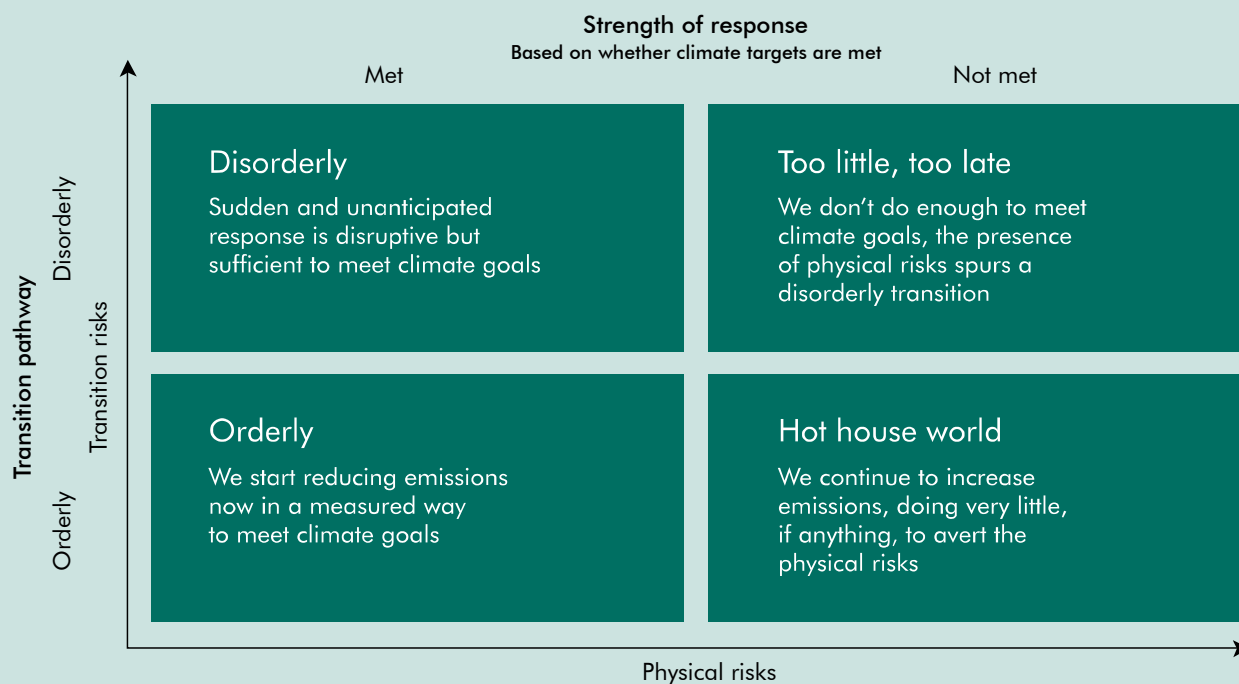
⁴¹ Bank of England, *Financial Stability Report*, July 2019.

Box 9.3: Climate-related scenario analysis: the NGFS approach

The Network for Greening the Financial System (NGFS) was established in January 2018 and builds on the work of the Taskforce for Climate-related Financial Disclosures (TCFD). In April 2019 it issued a ‘call for action’ that uses the physical/transition framework to set out next steps for assessing climate-related risks to financial stability.^a It considers the transmission channels and feedback mechanisms that relate the physical risks from climate change and the transition risks associated with reducing greenhouse gas emissions to the financial system.

To facilitate central banks’ and banking supervisors’ work on climate-related financial stability risks, the NGFS is developing a scenario analysis framework for assessing those risks. It has proposed using four high-level scenarios that capture different settings along two important dimensions: the strength of the greenhouse gas mitigating policy response; and how smoothly and foreseeably those actions are taken. This yields the scenario matrix in Figure A.

Figure A: NGFS scenario analysis framework



In the next phase of the NGFS’s work, it plans to develop data-driven narrative and quantitative parameters on which to base these scenarios, including proposals for key assumptions about policy settings and technological change. This work should facilitate our own next steps.

The TCFD’s recommendations have prompted others to look at climate-related scenario analysis. For example, the Institutional Investors Group on Climate Change has published a guide for investors on how to select appropriate scenarios and apply them to the analysis of investments.^b

The Government itself recently released its *Green Finance Strategy* setting out how it will build on the TCFD recommendations, including by ensuring that all UK listed companies and large asset owners disclose in line with those recommendations by 2022. It will also work to embed the TCFD reporting proposals in public financial bodies and to foster greater transparency in nature-related financial disclosures. In respect of the public sector, it will undertake a review, led by the

Treasury, of the costs associated with achieving net-zero emissions by 2050, and will consider risks from climate change and the low-carbon transition in *Managing fiscal risks* next year. The Government also said that it would be “Clarifying responsibilities for the Prudential Regulation Authority, the Financial Conduct Authority and the Financial Policy Committee to have regard to the Paris Agreement when carrying out their duties.”^c

^a Network for Greening the Financial System, First comprehensive report, *A call for action: Climate change as a source of financial risk*, April 2019.

^b The Institutional Investors Group on Climate Change, *Navigating climate scenario analysis: A guide for institutional investors*, February 2019.

^c Department for Business, Energy & Industrial Strategy, *Green Finance Strategy*, July 2019.

For the Government’s response

9.38 In this chapter we have surveyed some of the climate-related risks to economies and the nature of the fiscal risks that might be posed, and set out some steps we propose to take in considering these risks. This raises several issues, among them:

- the integration of climate-related risks into the broader management of fiscal risks;
- the appropriateness of the Bank/NGFS scenario framework for assessing fiscal risks;
- the analysis of the sources and transmission channels relevant to the public finances;
- the trade-off between climate and other objectives – for example, around fuel duty;
- the way to manage potential shocks to the public finances from climate change; and
- the trade-off between longer-term climate-related fiscal pressures and other priorities.

9.39 When assessing the outlook for the economy and public finances over the medium and long term, does the Government regard these or other issues as important for its risk management strategy and, if so, how does it intend to address them?

10 A fiscal stress test

Introduction

- 10.1 The International Monetary Fund (IMF) recommends that fiscal risk analysis should include a ‘fiscal stress test’, which examines how the public finances would respond to a significant economic and financial shock. It argues that this can provide a “*more comprehensive and integrated assessment of the potential shocks to government finances*” and that it “*can help policymakers simulate the effects of shocks to their central forecasts and their implications for government solvency, liquidity, and financing needs.*”¹
- 10.2 Our latest central forecast was published in our March 2019 *Economic and fiscal outlook (EFO)*. It was based on broad-brush assumptions about Brexit – that we would leave on 29 March, that trade with the EU would be less free after Brexit, and that the migration regime would be tighter. While these assumptions are not based on any particular deal, they are consistent with a smooth transition to a deal of some sort. So leaving without a deal – perhaps in a disorderly or disruptive manner – is a key risk to our central forecast.
- 10.3 In this chapter, we present the results of a stress test based on the IMF’s no-deal, no-transition Brexit scenarios in its April 2019 *World Economic Outlook*. Specifically, we employ ‘Scenario A’ – the less disruptive of two scenarios it sketched out.² In doing so, our goal is to illustrate what *could* happen to the public finances, not necessarily what is *most likely* to happen: it is a scenario, not a forecast. For example, we do not specify how fiscal policy might respond in such a scenario. But we do discuss Brexit-related risks that either do not feature in the scenario, or that could be more fiscally detrimental, at the end of the chapter.
- 10.4 Several other institutions have produced no-deal Brexit scenarios. In November 2018, the Bank of England produced a number of Brexit scenarios, including two that assumed a ‘disruptive’ and a ‘disorderly’ no-deal, no-transition Brexit. The scale of the shock they assumed was similar to that assumed in our 2017 fiscal stress test. One advantage of using the IMF’s scenario as the basis for the stress test in this report is therefore that it allows us to subject our fiscal forecasts to a different set of assumptions to those used two years ago.
- 10.5 This chapter:
- summarises the **assumptions** underpinning the stress test;
 - describes the **results** for receipts, spending and the main fiscal aggregates; and
 - discusses the potential **wider economic and fiscal risks**.

¹ IMF, *Analyzing and Managing Fiscal Risks – Best Practices*, May 2016.

² See Scenario Box 1.1 in Chapter 1 of the IMF’s *World Economic Outlook*, April 2019.

Assumptions underpinning the stress test

10.6 The IMF scenario sets out its key assumptions regarding the trading and migration relationship between the UK and the EU in the event of a no-deal, no-transition exit. It also quantifies the impact on real GDP growth in annual terms over the period from 2019 to 2023 and the long-term effects of different trade and immigration assumptions on real GDP. This provides the foundation for the stress test in this chapter. We have shifted everything back to be consistent with Brexit taking place on 31 October, whereas the IMF assumed 29 March, the date Brexit was slated to happen when it finalised its scenario.³

Assumptions taken from the IMF scenario

10.7 We use the following policy and economy assumptions drawn from the IMF scenario:

- Imports into the UK face the Government's announced **temporary tariff regime** – which sees 87 per cent of imports exempt from tariffs for a year⁴ – before reverting to the current EU 'most-favoured nation' (MFN) rates (of around 4 per cent, on average).⁵
- Implementation of a **temporary recognition regime** with the EU for some financial services, and temporary recognition by the UK of multiple EU product standards.⁶
- Limited physical border disruptions, but trading under WTO rules means that **non-tariff barriers** to trade with the EU rise by an additional 14 per cent in tariff-equivalent terms.
- **Net migration** into the UK is lower by 25,000 a year out to 2030.
- **Potential output** growth is therefore lower, due to the combination of higher trade barriers and weaker labour force growth.
- The economy enters recession and there is a significant **cyclical fall in output**.
- There is a modest tightening of **financial conditions**. Interest rate spreads increase by 12.5 basis points for gilts and by 20 basis points for UK corporates, but fall back to the baseline over the subsequent 18 months.
- There is no discretionary **fiscal policy** response, but automatic stabilisers are assumed to operate. **Monetary policy** is eased according to a Taylor rule-type response.

³ This adjustment affects annual real GDP growth rates relative to those in the IMF's scenario.

⁴ HM Government, *Temporary tariff regime for no deal Brexit published*, 13 March 2019.

⁵ For more details on EU MFN tariff rates, see Chapter 2 of OBR, *Discussion paper No.3: Brexit and the OBR's forecasts*, October 2018.

⁶ For more details see HM Government, *Implications for Business and Trade of a No Deal Exit on 29 March 2019*, 26 February 2019.

Other economic assumptions

10.8 We need to make assumptions about several economic variables that are not specified in the IMF's scenario before we can use our ready-reckoners to generate the fiscal side of the stress test. These include: the expenditure and income composition of GDP; employment and productivity growth; average earnings growth; CPI and RPI inflation; house prices and property transactions. In making these assumptions, we have sought to produce paths consistent with the output profile and conditioning assumptions outlined by the IMF. All the following assumptions are expressed relative to a baseline of our March 2019 forecast.

Financial markets

10.9 Our main financial market assumptions are:

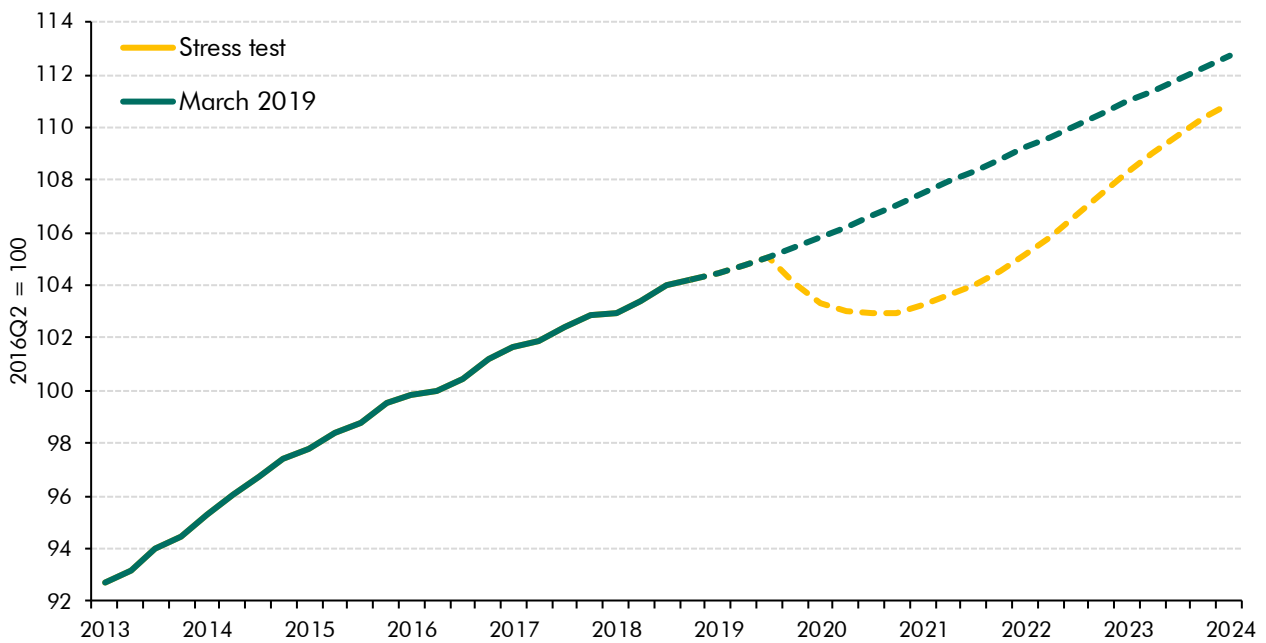
- The nominal sterling effective **exchange rate** depreciates by 10 per cent immediately, and is around 5 per cent lower in real terms in the first quarter of 2024, as market participants judge that a fall in the pound is needed to compensate for the reduced competitiveness with the EU.
- Despite higher interest rate spreads, **gilt yields and mortgage rates** are slightly lower, thanks to a lower path for Bank Rate (see below). In reality, medium-term Bank Rate expectations and gilt yields have already fallen back further than this since March, which may reflect a higher probability of a no-deal Brexit being priced in.
- **Equity prices** fall 5 per cent in the quarter in which the no-deal Brexit takes place, before rising in line with (the weaker) path for nominal GDP, ending 6.7 per cent lower than our March forecast by 2023-24.

Real GDP, potential output and the output gap

10.10 Our assumptions about real GDP growth and its cyclical-structural decomposition are:

- The **UK enters a year-long recession** in the fourth quarter of 2019. Real GDP falls by 2.1 per cent, around the same as in the early-1990s recession but only about a third of what was seen in the financial crisis. By mid-2021, real GDP is 4.0 per cent lower than in our March forecast. The economy then picks up and is just 1.6 per cent smaller than the baseline by the first quarter of 2024 (Chart 10.1).
- A negative **output gap** opens, peaking at 2.5 per cent of potential output at the end of 2020, before narrowing to 0.5 per cent by the scenario horizon.
- **Potential output** is 1.1 per cent lower than the baseline by the end of the period.

Chart 10.1: Real GDP: stress test versus March forecast



Composition of GDP

10.11 The composition of GDP matters for the fiscal consequences of the stress test given differing effective tax rates across different components. We assume that:

- The weaker path for GDP is mainly driven by lower **business investment**, thanks to heightened uncertainty about the outlook and the increase in trade costs resulting in a prospective loss of some export markets. Residential investment and consumer spending also weaken (though proportionately less), as slower nominal earnings growth and the depreciation of sterling squeeze household real incomes.
- In the near term, the contribution of **net trade** to GDP growth is similar to our March forecast. The cyclical downturn reduces import growth and the sterling depreciation boosts export growth, but these effects are largely offset by the immediate rise in tariff and non-tariff barriers on UK exports to the EU. Over the medium term, increased barriers to trade with the EU lower the trade intensity of the UK economy – with the UK’s export market share and the import intensity of demand hit by similar amounts. But weaker domestic demand means that imports are hit by more than exports. That leaves the medium-term net trade contribution somewhat higher.
- The share of labour income in GDP rises initially before falling back. **Wages and salaries** are 2.6 per cent lower at the start of 2024.
- **Corporate profits** initially fall as a share of GDP, but rise above the March forecast in the medium term. Non-oil, non-financial profits – a key determinant in the fiscal forecast – are 0.7 per cent below the March forecast in the first quarter of 2024.

Labour market

10.12 Labour income is the most tax-rich component of GDP. We assume:

- **Employment** initially falls and unemployment rises, peaking at just over 5 per cent in 2021. This is a smaller rise and a lower peak than in either of the past two recessions. Employment then recovers and the unemployment rate is only slightly above our March forecast by the first quarter of 2024.
- **Productivity growth** is weaker. Output per hour is 2.2 per cent lower in 2021, but the subsequent cyclical recovery leaves it 1.1 per cent lower in the first quarter of 2024.
- **Earnings growth** is lower in the first few years, due to weaker productivity growth. Earnings growth is similar in the medium term, as a rise in productivity growth is not fully matched by an increase in real wages, consistent with the rise in unemployment.
- The combination of weaker nominal earnings growth and higher CPI inflation leaves **real wages** significantly lower – by 2.5 per cent by the start of 2024. Their previous peak is not regained until 2022, representing 13 years of stagnant real wages.

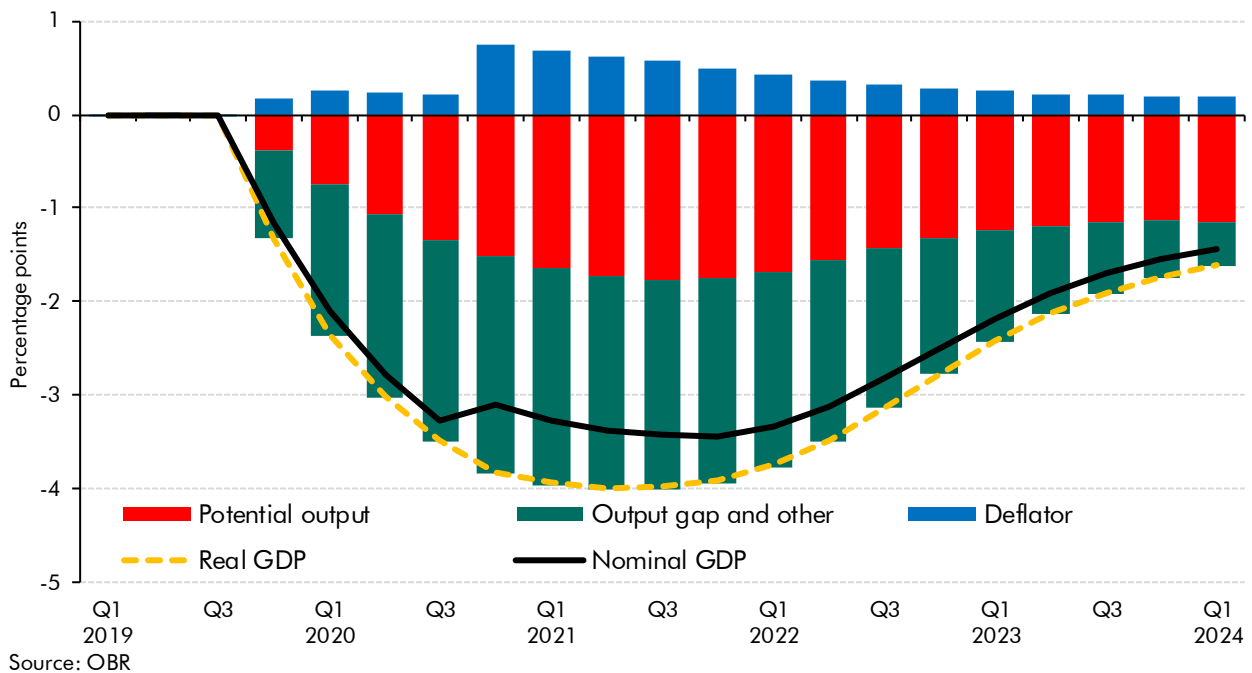
Prices and nominal GDP

10.13 Real GDP growth is an important driver of the public finances, but ultimately it is nominal GDP – factoring in price movements too – that matters. We assume:

- **CPI inflation** is initially higher, due to the weaker pound, on top of the increase in tariffs on imports from the EU, which raise import prices in two steps – an initial smaller increase as the ‘no-deal’ tariffs are used, then a second larger rise when MFN rates are imposed. CPI inflation then drops below the baseline as the effect of higher import prices fades and spare capacity lowers domestically generated inflation.
- **RPI inflation** is lower in the near term, thanks to falling house prices and lower mortgage interest rates, which affect RPI but not CPI inflation. RPI inflation is similar to that in the baseline forecast towards the end of the period, as the recovery in house prices and mortgage rates broadly offset the lower path for CPI inflation.
- As with CPI inflation, **GDP deflator inflation** picks up initially, then falls back to below the March forecast later in the period.
- **Nominal GDP** is 1.4 per cent lower than our March forecast by the start of 2024 – a similar shortfall to that in real GDP.

10.14 Chart 10.2 decomposes the sources of difference between the stress test scenario for nominal GDP and our March forecast. For most of the period, a significantly more negative output gap provides the largest contribution to the nominal GDP shortfall. Towards the end of the scenario, the deterioration in potential output becomes the most important factor.

Chart 10.2: Contributions to difference in nominal GDP from March forecast



Property markets

10.15 Property transactions and prices often move disproportionately during recessions, with significant implications for tax receipts. We assume:

- **House prices** fall by almost 10 per cent between the start of 2019 and mid-2021, to be around 14 per cent below our March forecast. They recover a little, but remain almost 13 per cent lower by the end of the period.
- **Residential property transactions** fall by 20 per cent by the end of 2020. They are 11 per cent below the March forecast at the scenario horizon.
- **Commercial property** prices are assumed to fall more steeply than those in the residential market, as was the case in the 2008 recession, while commercial property transactions move broadly in line with residential transactions.

Monetary and fiscal policy

10.16 In this type of scenario, the response by policymakers would be important. We assume:

- Inflation expectations remain anchored, allowing the MPC to look through the temporary import-price-driven rise in CPI inflation. As spare capacity lowers domestic inflation, the MPC cuts **Bank Rate** to around 0.2 per cent by the end of 2020. As the negative output gap closes, Bank Rate gradually increases back towards the level assumed in our March forecast.
- We do not assume that any further monetary easing is delivered through quantitative easing, so the **Asset Purchase Facility** remains the same size as in our March forecast.

- But we do assume that lending under the **Term Funding Scheme** is rolled over rather than being repaid at its four-year term in 2020 and 2021 (as is the case in our March forecast), since the economy is in recession in 2020.
- Discretionary **fiscal policy** is unchanged from that set out in the Spring Statement, but automatic fiscal stabilisers are assumed to operate freely.

Summary of the stress test scenario and comparison with our March forecast

10.17 The main economic assumptions and how they differ from our March forecast are outlined in Tables 10.1 and 10.2. The key public finance determinant assumptions and how they differ from our March forecast are detailed in Tables 10.3 and 10.4.

Table 10.1: Economic assumptions: stress test

	Percentage change on a year earlier, unless otherwise stated					
	2018	2019	2020	2021	2022	2023
UK economy						
Gross domestic product (GDP)	1.4	0.9	-1.4	0.8	2.3	2.9
GDP per capita	0.8	0.3	-2.0	0.2	1.8	2.4
GDP level (2018=100)	100	100.9	99.4	100.2	102.5	105.5
Nominal GDP	3.2	2.9	0.7	3.0	4.1	4.8
Non north sea profits	2.9	1.5	-2.7	2.8	5.7	6.6
Output gap (per cent of potential output)	0.2	-0.3	-2.2	-2.4	-1.9	-0.9
Potential output	1.2	1.4	0.5	1.0	1.8	1.9
Expenditure components of GDP						
Household consumption ¹	1.7	0.9	-1.4	0.5	2.1	3.0
General government consumption	0.2	2.1	1.7	1.6	1.6	1.7
Business investment	-0.9	-2.1	-8.0	-1.3	5.0	7.0
General government investment ²	0.5	5.9	1.8	2.2	0.9	2.0
Residential investment ²	1.4	0.4	-4.9	-1.4	3.7	5.1
Exports of goods and services	0.2	0.4	-3.5	0.8	0.0	-0.3
Imports of goods and services	0.8	2.2	-3.6	-0.1	0.1	0.9
Inflation						
CPI	2.5	2.1	2.4	2.4	1.7	1.8
RPI	3.3	3.0	2.5	2.5	2.4	3.2
GDP deflator at market prices	1.7	2.0	2.2	2.2	1.7	1.9
Labour market						
Employment (millions)	32.4	32.6	32.4	32.5	32.7	33.0
Productivity per hour	0.5	0.5	-0.6	0.7	1.5	1.9
Wages and salaries	4.5	3.1	1.1	2.7	3.6	3.9
Average earnings ³	3.0	2.9	1.6	2.6	3.0	3.2
LFS unemployment (% rate)	4.1	4.2	5.0	5.2	4.8	4.3
Household sector						
Property transactions (000s)	1193	1147	947	965	1087	1185
House prices	3.3	0.5	-5.9	-3.0	3.0	5.7

¹ Includes households and non-profit institutions serving households.

² Includes transfer costs of non-produced assets.

³ Wages and salaries divided by employees.

Table 10.2: Economic assumptions: stress test versus March forecast

	Percentage change on a year earlier, unless otherwise stated					
	2018	2019	2020	2021	2022	2023
UK economy						
Gross domestic product (GDP)	0.0	-0.3	-2.9	-0.8	0.7	1.3
GDP per capita	0.0	-0.3	-2.9	-0.8	0.7	1.3
GDP level (2018=100)	0.0	-0.3	-3.3	-4.1	-3.5	-2.2
Nominal GDP	0.0	-0.3	-2.6	-0.6	0.5	1.2
Non north sea profits	0.0	-0.7	-5.6	-0.4	2.1	3.0
Output gap (per cent of potential output)	0.0	-0.2	-2.1	-2.3	-1.8	-0.9
Potential output	0.0	-0.1	-1.1	-0.6	0.2	0.3
Expenditure components of GDP						
Household consumption ¹	0.0	-0.2	-2.9	-1.2	0.5	1.4
General government consumption	0.0	0.0	0.0	0.0	0.0	0.0
Business investment	0.0	-1.1	-10.3	-3.6	2.7	4.7
General government investment ²	0.0	0.0	0.0	0.0	0.0	0.0
Residential investment ²	0.0	-0.4	-5.5	-2.2	2.3	3.3
Exports of goods and services	0.0	-1.0	-5.2	0.6	0.3	0.2
Imports of goods and services	0.0	-0.8	-5.7	-0.7	0.0	0.7
Inflation						
CPI	0.0	0.1	0.5	0.4	-0.3	-0.2
RPI	0.0	0.0	-0.3	-0.5	-0.7	0.1
GDP deflator at market prices	0.0	0.0	0.3	0.2	-0.2	-0.1
Labour market						
Employment (millions)	0.0	0.0	-0.3	-0.4	-0.3	-0.2
Productivity per hour	0.0	-0.2	-1.6	-0.4	0.3	0.6
Wages and salaries	0.0	-0.2	-2.2	-0.9	0.1	0.4
Average earnings ³	0.0	-0.2	-1.4	-0.5	-0.1	-0.1
LFS unemployment (% rate)	0.0	0.1	0.9	1.1	0.8	0.3
Household sector						
Property transactions (000s)	0	-25	-287	-316	-232	-169
House prices	0.0	-0.4	-7.2	-6.6	-1.1	1.5

¹ Includes households and non-profit institutions serving households.

² Includes transfer costs of non-produced assets.

³ Wages and salaries divided by employees.

Table 10.3: Fiscal determinants: stress test

	Percentage change on previous year, unless otherwise specified				
	2019-20	2020-21	2021-22	2022-23	2023-24
GDP and its components					
Real GDP	0.3	-1.2	1.2	2.6	2.8
Nominal GDP ¹	2.9	0.8	2.9	4.1	4.8
Nominal GDP (£ billion) ^{1,2}	2193	2210	2275	2368	2482
Nominal GDP (centred end-March £bn) ^{1,3}	2229	2249	2316	2410	2526
Wages and salaries ⁴	2.4	1.4	2.9	3.7	3.9
Non-oil PNFC profits ^{4,5}	1.5	-2.7	2.8	5.7	6.6
Consumer spending ^{4,5}	3.1	0.9	2.9	3.8	4.9
Prices and earnings					
GDP deflator	2.1	2.2	2.0	1.7	1.9
RPI	3.0	2.4	2.4	2.6	3.2
CPI	2.2	2.5	2.1	1.7	1.9
Average earnings ⁶	2.5	1.8	2.7	3.1	3.2
'Triple-lock' guarantee (September)	3.5	2.5	2.6	3.0	3.2
Key fiscal determinants					
Employment (millions)	32.5	32.4	32.5	32.8	33.0
Output gap (per cent of potential output)	-0.8	-2.4	-2.3	-1.6	-0.7
Financial and property sectors					
Equity prices (FTSE All-Share index)	3808	3744	3855	4024	4213
HMRC financial sector profits ^{1,5,7}	2.2	-5.3	1.2	4.4	5.5
Residential property prices ⁸	-1.2	-6.2	-1.5	4.3	5.6
Residential property transactions (000s) ⁹	1098	934	991	1118	1200
Commercial property prices ⁹	-3.6	-13.4	-6.1	2.2	4.1
Commercial property transactions ⁹	-5.7	-19.1	4.1	11.6	6.4
Oil and gas					
Oil prices (\$ per barrel) ⁵	62.1	61.6	62.0	63.3	64.5
Oil prices (£ per barrel) ⁵	49.0	51.2	50.1	49.7	49.8
Gas prices (p/therm) ⁵	50.5	53.1	54.1	55.2	56.3
Oil production (million tonnes) ⁵	48.4	48.4	46.0	43.7	41.5
Gas production (billion therms) ⁵	13.7	13.3	12.7	12.0	11.4
Interest rates and exchange rates					
Market short-term interest rates (%) ¹⁰	0.9	0.5	0.5	0.8	1.2
Market gilt rates (%) ¹¹	1.3	1.4	1.4	1.6	1.7
Euro/Sterling exchange rate (€/£)	1.08	1.02	1.03	1.03	1.02

¹ Not seasonally adjusted.² Denominator for receipts, spending and deficit forecasts as a per cent of GDP.³ Denominator for net debt as a per cent of GDP.⁴ Nominal. ⁵ Calendar year.⁶ Wages and salaries divided by employees.⁷ HMRC Gross Case 1 trading profits.⁸ Outturn data from ONS House Price Index.⁹ Outturn data from HMRC information on stamp duty land tax.¹⁰ 3-month sterling interbank rate (LIBOR).¹¹ Weighted average interest rate on conventional gilts.

Table 10.4: Fiscal determinants: stress test versus March forecast

	Percentage change on previous year, unless otherwise specified				
	2019-20	2020-21	2021-22	2022-23	2023-24
GDP and its components					
Real GDP	-0.9	-2.7	-0.4	1.0	1.2
Nominal GDP ¹	-0.3	-2.6	-0.6	0.5	1.2
Nominal GDP (£ billion) ^{1,2}	-6	-64	-80	-72	-46
Nominal GDP (centred end-March £bn) ^{1,3}	-7	-65	-81	-73	-47
Wages and salaries ⁴	-0.7	-2.1	-0.6	0.3	0.4
Non-oil PNFC profits ^{4,5}	-0.7	-5.6	-0.4	2.1	3.0
Consumer spending ^{4,5}	-0.2	-2.5	-0.8	0.2	1.2
Prices and earnings					
GDP deflator	0.1	0.4	0.1	-0.2	-0.1
RPI	0.0	-0.4	-0.6	-0.5	0.2
CPI	0.2	0.6	0.1	-0.3	-0.1
Average earnings ⁶	-0.4	-1.2	-0.4	-0.1	-0.1
'Triple-lock' guarantee (September)	0.0	-0.4	-0.5	-0.1	0.0
Key fiscal determinants					
Employment (millions)	-0.1	-0.4	-0.4	-0.3	-0.2
Output gap (per cent of potential output)	-0.6	-2.2	-2.2	-1.6	-0.7
Financial and property sectors					
Equity prices (FTSE All-Share index)	-122	-319	-353	-335	-304
HMRC financial sector profits ^{1,5,7}	-0.9	-7.0	-0.6	2.6	3.7
Residential property prices ⁸	-1.4	-8.4	-5.4	0.2	1.4
Residential property transactions (000s) ⁹	-82	-313	-300	-210	-162
Commercial property prices ⁹	-2.1	-12.5	-8.1	0.2	2.1
Commercial property transactions ⁹	-6.8	-20.6	2.5	10.0	4.8
Oil and gas					
Oil prices (\$ per barrel) ⁵	0.0	0.0	0.0	0.0	0.0
Oil prices (£ per barrel) ⁵	1.2	4.7	3.8	3.0	2.7
Gas prices (p/therm) ⁵	0.0	0.0	0.0	0.0	0.0
Oil production (million tonnes) ⁵	0.0	0.0	0.0	0.0	0.0
Gas production (billion therms) ⁵	0.0	0.0	0.0	0.0	0.0
Interest rates and exchange rates					
Market short-term interest rates ¹⁰	0.0	-0.7	-0.7	-0.4	-0.2
Market gilt rates ¹¹	0.0	-0.1	-0.1	0.0	0.0
Euro/Sterling exchange rate (€/£)	-0.06	-0.10	-0.08	-0.06	-0.06

¹ Not seasonally adjusted.² Denominator for receipts, spending and deficit forecasts as a per cent of GDP.³ Denominator for net debt as a per cent of GDP.⁴ Nominal. ⁵ Calendar year.⁶ Wages and salaries divided by employees.⁷ HMRC Gross Case 1 trading profits.⁸ Outturn data from ONS House Price Index.⁹ Outturn data from HMRC information on stamp duty land tax.¹⁰ 3-month sterling interbank rate (LIBOR).¹¹ Weighted average interest rate on conventional gilts.

What does the scenario imply for the overall economic impact of Brexit?

- 10.18** In describing the stress test, we have concentrated on differences from our March forecast. That was conditioned on the UK securing a deal and exiting smoothly, as well as the same broad-brush assumptions of the medium and longer-term impact of Brexit that we have used since our November 2016 forecast. So the comparisons described here represent the additional cost of leaving without a deal or transition period, not the total effect of Brexit.
- 10.19** In the IMF scenario used here, the loss of potential output continues to build well beyond our five-year scenario horizon. In the long run, potential output is 2.9 per cent lower than the IMF's own baseline forecast, with 0.6 percentage points coming from lower migration and 2.3 percentage points from less capital deepening. This compares to potential output being only 1.1 per cent lower than our March forecast by the end of our stress test based on this scenario. Some other studies assume that the loss of potential output from a no-deal, no-transition exit occurs more quickly. For example, the Bank of England argues that "A range of evidence suggests that the impact of introducing frictions such as tariffs and customs checks at the border comes through quickly. A substantial number of firms have little experience with customs checks and, for many, business models and supply chain management could be significantly disrupted by delays at the border."⁷
- 10.20** The IMF's latest central forecast already includes a long-term GDP loss of 3 per cent relative to remaining in the EU – 0.6 percentage points of which comes from lower migration.⁸ Combining the IMF's baseline and scenario estimates of the cost of Brexit gives a long-run estimated hit to GDP from leaving the EU and then trading under WTO rules of 5.9 per cent (Table 10.5). This compares to the Government's estimates of between 7.7 and 9.3 per cent (depending on the migration policy assumption used);⁹ NIESR's estimate of 5.5 per cent;¹⁰ and a joint study by the UK in a Changing Europe and the LSE Centre for Economic Performance's (LSE) which contains estimates of between 4.7 and 9.9 per cent (depending on whether or not there are additional dynamic effects on productivity).¹¹

Table 10.5: Contributions to long-run impact on GDP from trading with the EU on WTO terms

	HM Government			NIESR	LSE	
	IMF	Unchanged migration policy	Zero net EEA immigration		Static productivity	Dynamic productivity
Migration	-1.2	-0.2	-1.8	Not stated	-1.4	-1.8
Productivity	-4.7	-7.5	-7.5	Not stated	-3.3	-8.1
Total	-5.9	-7.7	-9.3	-5.5	-4.7	-9.9

Note: Estimates are in percentage points.

⁷ Bank of England, *EU withdrawal scenarios and monetary and financial stability*, November 2018.

⁸ IMF, *United Kingdom: Selected Issues*, November 2018.

⁹ HM Government, *EU Exit: Long-term economic analysis*, November 2018.

¹⁰ Hantzsche et al, *The economic effects of the Government's proposed Brexit deal*, 26 November 2018.

¹¹ CEP, *The economic consequences of the Brexit deal*, November 2018.

Fiscal assumptions

10.21 We have made several further assumptions on the fiscal side. Among them:

- **Asset sales:** our March forecast included £55.2 billion of financial asset sales over the forecast period to 2023-24. These consist primarily of the remaining loan assets held by UK Asset Resolution (UKAR), sales of RBS shares and sales of Plan 1 student loans. Around £4.9 billion of the £16 billion of sales in 2019-20 have already occurred. The remaining sales in 2019-20 and those in subsequent years are assumed to be delayed by two years. Several sales were delayed after the EU referendum in 2016.
- **The cost of interventions in the private sector:** we assume the Government uses £10 billion in lending to provide support to private sector companies, for example those most affected by the introduction of tariffs (in manufacturing or agriculture) or by higher non-tariff barriers (in business and financial services). This is far less than the initial cost of the financial sector interventions undertaken in the crisis.
- **Spending related to guarantees:** we assume that £1 billion is spent to reflect possible costs related to schemes such as Help to Buy or UK Guarantees.

10.22 As in our post-referendum forecasts, we assume that any savings from EU contributions are recycled into domestic spending, for example on the Government's commitments to maintain farm support and industrial and science programmes after EU withdrawal. As we currently assume the financial settlement costs are subsumed within this assumption, it means the scenario is not sensitive to different assumptions about when and how much would be paid under the terms of any alternative financial settlement. We have therefore not made any assumptions about whether the amount or terms would be renegotiated.

Results of the stress test

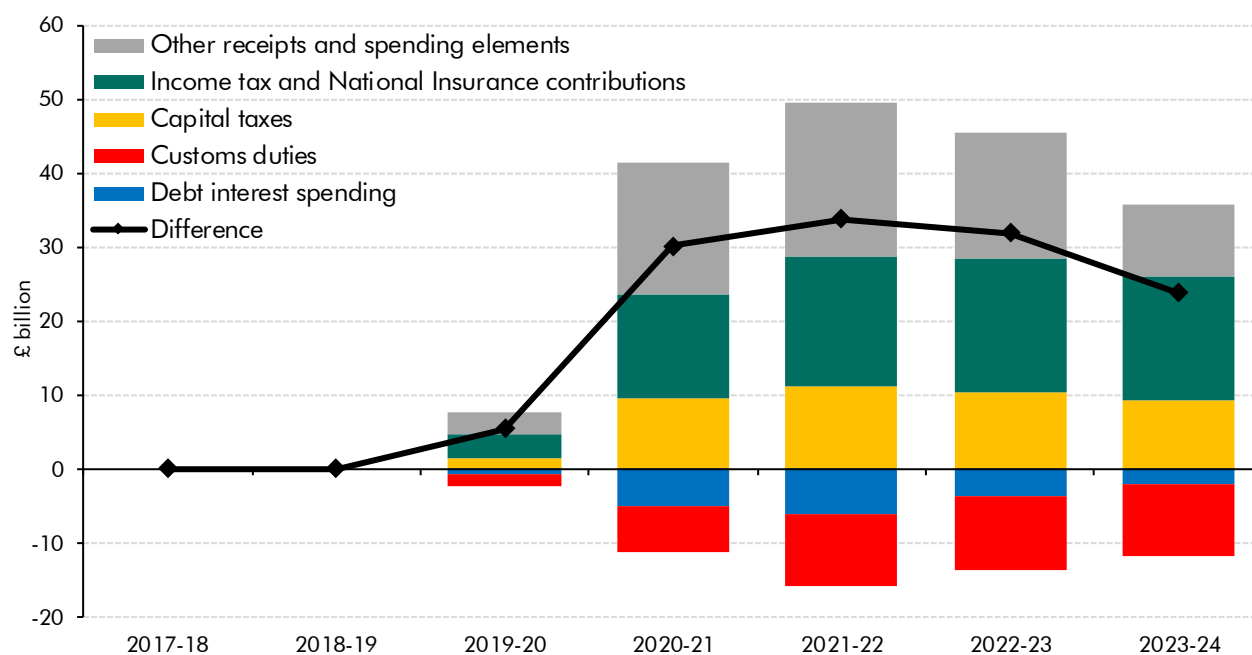
The big picture

10.23 Relative to our March forecast, borrowing is around £30 billion a year higher on average from 2020-21 onwards. There are four main drivers of the results (Chart 10.3):

- **Income tax and NICs receipts** are hit by the cyclical downturn, raising borrowing by around £16½ billion a year from 2020-21 onwards.
- **Capital tax receipts** fall sharply thanks to the falls in asset prices, especially in the housing market, adding around £10 billion a year from 2020-21 onwards.
- But **debt interest spending** benefits more from lower interest rates and RPI inflation than it suffers from higher borrowing, lowering the deficit by £5 billion to £6 billion in 2020-21 and 2021-22, and by diminishing amounts thereafter.
- And **customs duties** bring in more than in our March forecast, and are treated as UK tax receipts rather than being collected on behalf of the EU. This boosts receipts by

£6.3 billion in 2020-21 and by around £10 billion a year thereafter. The effect on borrowing is around £0.7 billion a year less than that because we lose the amount currently credited to the UK that notionally covers the cost of collecting tariffs. Box 10.1 gives more detail on how these customs duties figures have been generated.

Chart 10.3: Stress test versus March forecast: sources of differences in PSNB



Source: ONS, OBR

Receipts

10.24 The shortfall in receipts is primarily from weaker nominal tax bases and the downturn in asset markets. The receipts to GDP ratio is around 0.2 to 0.3 percentage points lower over the period. This drop would have been greater were it not for higher customs duties.

Income tax and National Insurance contributions

10.25 Receipts are more than £16 billion a year below our March forecast from 2021-22 onwards. The shortfall is dominated by the effects of weaker earnings growth (which takes over £10 billion a year off receipts by 2022-23) and lower employment (taking £4 billion a year off at its peak in 2021-22). Other sources of weakness include less fiscal drag, and a disproportionate adverse effect on some higher-paid sectors.

10.26 As we discuss in Chapter 4, income tax receipts have become more concentrated at the top of the income distribution. Some non-tariff barriers resulting from a no-deal exit (such as the end of passporting for financial services and mutual recognition for some business services) could affect high-paying jobs in these sectors. The motor and pharmaceuticals sectors, which would be the worst affected by tariffs on exports to the EU, are also well paid compared to the rest of manufacturing. To allow for these potential effects, we have taken around £1 billion a year off income tax receipts, in addition to the other effects.

10.27 Self-assessment (SA) income tax receipts are £2 billion lower in 2021-22 than in our March forecast. We assume that the hit to self-employment and dividend income is in line with that to employee incomes and profits respectively. Lower short-term interest rates also reduce tax on savings income collected via the SA system. These effects come through more slowly than most others because of the lag between activity and tax payment in SA.

VAT

10.28 Relative to our March forecast, VAT receipts are around £6 billion a year lower on average from 2020-21 onwards, reflecting weaker nominal tax base growth, a hit to the share of consumer spending subject to the standard rate and a rise in the VAT gap:

- **Weaker consumer spending** takes around £3 billion a year off receipts from 2020-21 onwards. Higher inflation only partly offsets the decline in real consumption during the recession. Weakness in the exempt sector (primarily the financial sector, where VAT on purchases cannot be recovered) and the housing sector together take around another £1 billion a year off receipts from 2020-21 onwards.
- **Consumer durables spending**, which is usually standard rated, is hit harder than the rest of consumer spending. This reduces receipts by £1.6 billion at its peak in 2021-22, which partly unwinds as durables spending recovers relatively strongly.
- In the late 2000s recession, the **VAT gap** rose by around 3 percentage points as firms delayed paying HMRC due to cash flow problems. It then fell back sharply. Similar, though less severe, issues in the scenario raise the VAT gap by 1 percentage point in 2020-21 and 2021-22. It then returns to the profile in our March forecast.

10.29 A no-deal exit would mean an abrupt move to a UK-only VAT regime from the EU system that has been in place for more than four decades. The stress test does not include any additional fiscal losses from such a move, but clearly that would be a risk. We discuss potential risks around compliance and the operation of a new regime later in the chapter.

Onshore corporation tax

10.30 Receipts of onshore corporation tax are over £4 billion a year lower in 2020-21 and 2021-22, primarily reflecting weaker profits, only partly offset by lower capital allowance claims following the drop in business investment:

- Lower **profits** take around £3 billion off onshore corporation tax receipts in 2021-22 compared with March, narrowing to around £1 billion by 2023-24.
- **Business investment** falls a cumulative 15 per cent below our March forecast by the end of 2021, before recovering in the final years of the scenario. Lower use of capital allowances adds between £0.5 to £0.8 billion a year to receipts.

10.31 We assume that financial sector profits are hit harder than those for non-financial companies. This takes £0.5 billion a year off receipts on average. A downturn would mean

more trading losses by all firms which can then be used to offset against future profits. However, with loss restriction measures now in place, the effect on receipts from using these losses in future would now take place over a longer period.

Stamp duties

10.32 Stamp duty land tax (SDLT) is the most adversely affected tax stream in proportionate terms, due to the fall in residential and commercial property prices and transactions. We assume the same proportional effect for the devolved transactions taxes in Wales and Scotland. Property transaction taxes are around £6½ billion lower than in our March forecast in the final three years, a shortfall of around 40 per cent on average:

- With SDLT thresholds fixed in cash terms, **lower house prices** generate reverse fiscal drag (with a higher proportion of each transaction taxed at lower rates) lowering the effective tax rate. They take around £2½ billion a year off receipts from 2021-22.
- **Residential property transactions** fall by around 20 per cent by the end of 2020. This takes an average of around £2½ billion a year off SDLT receipts.
- **Commercial property** prices and transactions fall even more steeply, taking around £1.5 billion a year on average off SDLT receipts.

10.33 Stamp duty on shares is £0.3 billion a year lower on average, reflecting the short-term drop in equity prices that is only partly reversed by the scenario horizon.

Taxes on capital

10.34 Both inheritance tax and capital gains tax (CGT) are hit by the falls in equity and property prices. CGT receipts are lower by £2.7 billion a year by 2023-24. Given the lags in payment, the effect of the short-term fall in asset prices is only felt in 2021-22.

10.35 With housing assets accounting for around half of the value of estates notified for probate, the downturn in the residential property market is the main driver of the £0.9 billion a year hit to inheritance tax receipts by 2023-24.

Excise duties

10.36 Duties on fuel, alcohol and tobacco are £1.5 billion lower in 2021-22 and £1.1 billion lower by 2023-24. These taxes are affected both by lower RPI inflation, which lowers duty rates, and weaker real GDP and consumption, which lowers demand for fuel and alcohol.

Other taxes

10.37 Oil and gas revenues rise by around £0.3 billion a year from 2020-21 onwards. The weaker exchange rate against the dollar raises oil prices in sterling terms.

10.38 Business rates and council tax are both little changed from the March forecast and so are higher as a share of GDP. This was also the case during the financial crisis since the tax base (the stock of buildings) is very stable. We have assumed no change in council tax

relative to our March forecast. Higher CPI inflation raises the business rates multiplier applied to the rateable value of non-domestic properties, lifting receipts. We assume only a modest effect on business rates from the recession – a 1 per cent decline in rateable values and a temporary rise in empty property relief in 2020-21 and 2021-22.

Other receipts

- 10.39 Interest and dividend receipts include the interest income on the government's financial assets, among them student loans and bank deposits held by the Debt Management Office and local authorities. Short-term interest rates are 0.6 percentage points lower between 2020-21 and 2022-23, which lowers receipts by around £1½ billion a year in those years.
- 10.40 Lower interest rates and RPI inflation reduces accrued interest on student loans. This effect peaks at £0.9 billion in 2021-22. As we discuss in Chapter 6, the ONS intends to change its accounting treatment for student loans in September 2019. The stress test has been calculated on the basis of the existing methodology, consistent with the March forecast baseline.
- 10.41 With RBS asset sales delayed for two years, the Government holds more RBS shares than in the baseline. However, RBS's decisions over dividend payments might be affected in such a scenario. For simplicity, we have assumed the worst-case scenario from the public finances perspective of no further dividends being paid over the period. This lowers receipts further.

Box 10.1: Customs duties in a no-deal Brexit

In a no-deal Brexit, the UK would be able to apply its own external tariff. On 13 March 2019, the Government announced the rates that would apply for the first 12 months after a no-deal exit from the EU.^a In line with this, in our stress test we have assumed that:

- for 12 months from November 2019, the announced 'no-deal' tariff rates will apply;
- from November 2020 onwards, the UK applies 'most-favoured nation' (MFN) tariff rates in line with the current EU common external tariff to all incoming goods not covered by preferential agreements (including goods coming in from the EU); and
- in line with the IMF scenario, the UK secures **replacement free trade agreements** with third countries currently covered by EU agreements by the time MFN tariff rates apply.

Customs duties receipts on UK imports from outside the EU totalled £3.3 billion in 2018-19. Our March forecast was for this to increase to £3.5 billion by 2023-24. But customs duties are at present remitted to the EU, so do not add to UK current receipts. Their only effect on PSNB comes via the 20 per cent retained to cover the cost of collection. That reduces net expenditure transfers to the EU.^b Post-Brexit customs duties receipts would score in the same way as any tax.

The 'no-deal' tariff schedule contains tariff lines that cover around £36 billion of imports in 2018-19 (around 7 per cent of all goods imports). Based on a simple application of these tariff rates to detailed goods imports data, we assume that they would raise around £3.8 billion over the 12 months they would be in force. Three quarters of this revenue would come from tariffs on

EU goods, and around £5 of every £6 of revenue would come from tariffs on finished cars – the main area to be subject to tariffs outside the agri-food sector.

Application of MFN tariffs from November 2020 to goods coming in from the EU raises more revenue than is raised on goods from the rest of the world. This is mostly because a higher proportion of imports from the EU are goods that face higher MFN duty rates (notably agri-food goods) and goods imports from the EU are worth 20 per cent more than those from the rest of the world. The average MFN tariff that would apply to goods currently imported from the EU is 3.9 per cent, compared with 2.8 per cent for goods from non-EU countries.

Again, a simple application of MFN tariff rates to goods imports yields revenues on goods from the EU of around £6.3 billion a year, in addition to the £3.5 billion from non-EU countries in our March baseline forecast. Removing the 20 per cent of non-EU revenues currently retained to cover costs of collection, the impact of MFN tariffs would be to reduce borrowing in the scenario by around £9.2 billion a year relative to the assumptions in our March forecast.

Table A: Impact of customs duties on PSNB under the fiscal stress test scenario

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Baseline revenues (£ billion; no effect on PSNB) (a)	3.4	3.4	3.5	3.5	3.5
Baseline retained cost of collection (b)	0.7	0.7	0.7	0.7	0.7
No-deal tariff schedule (to October 2020) (c)	1.5	2.3	0.0	0.0	0.0
MFN tariffs (from November 2020) (d)	0.0	4.1	9.8	9.9	9.9
Scenario retained cost of collection (e)	0.0	0.0	0.0	0.0	0.0
Effect on public sector current receipts (f) = (c) + (d)	1.5	6.3	9.8	9.9	9.9
Effect on total managed expenditure (g) = (b) - (e)	0.7	0.7	0.7	0.7	0.7
Effect on PSNB (h) = (g) - (f)	-0.8	-5.7	-9.1	-9.2	-9.2

The figures we have generated for this scenario are illustrative of the potential magnitudes involved, but they should not be taken as a precise central estimate of what the application of these tariff schedules would raise. We have not attempted to account for all the intricacies involved in operating the customs regime or the potentially important behavioural responses of importers and the ultimate consumers of imports. Nor have we made assumptions about any operational challenges, for example regarding the land border between Northern Ireland and the Republic of Ireland.^c We have not modelled non-linear effects of the ‘no-deal’ tariffs, such as tariff-rate quotas, which disproportionately apply to agricultural goods.

Finally, we make no assumptions about the rate of compliance with the regime, or how traders might change their behaviour in response to the tariff schedule. In particular:

- In most tariff schedules – including the EU’s common external tariff – similar tariff rates are applied to similar goods to remove **incentives for misclassification** of goods to avoid higher tariffs. This is not the case in the no-deal schedule – for example, with an 8 per cent tariff on frozen freshwater fish but a 15 per cent tariff on other frozen fish. This could present opportunities for non-compliance that might be difficult to detect.
- The no-deal tariff schedule imposes very **different tariffs on certain components and finished goods, particularly on cars**, where a 10 per cent tariff applies to finished

products but parts can be imported tariff-free. The extent to which a car can approach completion without being deemed finished and hit by the tariff is not clear. This could prompt producers to import cars in a sufficiently unfinished state to avoid the tariff.

All these and no doubt other factors would need to be considered should we be required to produce a full medium-term customs duties forecast on a no-deal Brexit basis.

^a Department for International Trade, *MFN and tariff rate quotas of customs duty on imports if the UK leaves the EU with no deal*, 13 March 2019 (updated 29 March 2019).

^b The retained cost of collection is included in the calculation for the UK's net contribution to the EU as a negative contribution, therefore reducing expenditure, rather than as a tax.

^c The Government's published guidance regarding transitional simplified procedures states that it does not apply to the movement of goods between Northern Ireland and Ireland, and that new guidance for that border will be issued at a later date. As such, it is not possible to know what impact that will have on compliance with tariffs and/or with trade volumes between the two.

Table 10.6: Current receipts: the stress test scenario

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Income tax (gross of tax credits) ¹	193.7	199.0	204.5	212.8	223.6
of which: Pay as you earn	161.9	166.8	171.8	178.4	186.8
Self assessment	34.0	33.7	34.5	36.4	38.9
National insurance contributions	142.2	144.8	149.2	154.9	161.5
Value added tax	135.9	135.1	138.9	144.5	151.4
Onshore corporation tax ²	56.1	52.5	54.0	57.6	61.5
Offshore corporation tax	1.6	2.2	2.5	2.7	2.7
Petroleum revenue tax	-0.4	-0.4	-0.4	-0.4	-0.3
Fuel duties	28.3	28.5	29.2	30.2	31.4
Business rates	31.3	31.6	33.3	34.2	34.7
Council tax	36.3	37.5	38.7	39.9	41.1
VAT refunds	18.4	18.9	19.4	20.0	20.6
Capital gains tax	9.1	6.9	6.8	7.8	8.9
Inheritance tax	5.3	4.8	4.7	5.0	5.3
Property transaction taxes ³	11.0	7.5	7.3	9.1	11.2
Stamp taxes on shares	3.6	3.5	3.6	3.7	3.9
Tobacco duties	9.1	9.0	8.9	8.8	8.8
Alcohol duties	12.5	12.7	13.2	13.7	14.3
Air passenger duty	3.7	3.7	3.8	4.1	4.3
Customs duties	1.5	6.3	9.8	9.9	9.9
Other taxes	53.0	54.0	54.5	56.0	57.7
National Accounts taxes	752.1	758.2	781.8	814.4	852.5
Interest and dividends	10.2	8.4	9.1	11.2	14.2
Gross operating surplus	43.3	45.3	47.0	48.9	51.0
Other receipts	0.8	0.8	0.6	-0.1	0.0
Current receipts	806.4	812.7	838.6	874.5	917.7
<i>Memo: UK oil and gas revenues⁴</i>	<i>1.1</i>	<i>1.8</i>	<i>2.1</i>	<i>2.3</i>	<i>2.4</i>

¹ Includes PAYE, self assessment, tax on savings income and other minor components such as income tax repayments.

² National Accounts measure, gross of reduced liability tax credits.

³ Includes SDLT, ATED and devolved property transaction taxes.

⁴ Consists of offshore corporation tax and petroleum revenue tax.

Table 10.7: Current receipts: stress test versus March forecast

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Income tax (gross of tax credits) ¹	-2.0	-9.2	-11.3	-11.9	-10.8
of which: Pay as you earn	-2.0	-7.2	-9.3	-10.0	-9.5
Self assessment	0.0	-1.9	-2.0	-1.9	-1.4
National insurance contributions	-1.2	-4.9	-6.3	-6.3	-5.9
Value added tax	-0.7	-6.4	-7.4	-6.4	-4.2
Onshore corporation tax ²	-0.6	-4.3	-4.3	-3.4	-2.0
Offshore corporation tax	0.1	0.3	0.3	0.3	0.2
Petroleum revenue tax	0.0	0.0	0.0	0.0	0.0
Fuel duties	-0.1	-0.7	-1.0	-1.0	-0.7
Business rates	0.0	-0.1	-0.2	-0.1	-0.2
Council tax	0.0	0.0	0.0	0.0	0.0
VAT refunds	0.0	0.0	0.0	0.0	0.0
Capital gains tax	0.0	-2.8	-3.0	-2.9	-2.7
Inheritance tax	-0.1	-0.6	-0.9	-0.9	-0.9
Property transaction taxes ³	-1.6	-5.9	-7.2	-6.3	-5.6
Stamp taxes on shares	-0.1	-0.3	-0.3	-0.3	-0.3
Tobacco duties	0.0	0.0	-0.1	-0.2	-0.1
Alcohol duties	-0.1	-0.2	-0.4	-0.3	-0.2
Air passenger duty	0.0	-0.2	-0.2	-0.2	-0.1
Customs duties ⁴	1.5	6.3	9.8	9.9	9.9
Other taxes	0.3	0.1	0.1	0.2	0.2
National Accounts taxes	-4.6	-28.9	-32.4	-29.8	-23.5
Interest and dividends	-0.4	-2.5	-3.0	-2.2	-0.3
Gross operating surplus	0.0	0.0	0.0	0.0	0.0
Other receipts	0.0	0.0	0.0	0.0	0.0
Current receipts	-5.0	-31.4	-35.5	-32.1	-23.8
<i>Memo: UK oil and gas revenues⁵</i>	<i>0.1</i>	<i>0.3</i>	<i>0.3</i>	<i>0.3</i>	<i>0.2</i>

¹ Includes PAYE, self assessment, tax on savings income and other minor components, such as income tax repayments.

² National Accounts measure, gross of reduced liability tax credits.

³ Includes SDLT, ATED and devolved property transaction taxes.

⁴ Comparison against the baseline where no customs duties score as a UK tax

⁵ Consists of offshore corporation tax and petroleum revenue tax.

Public spending

10.42 Total spending in cash terms is little changed in the stress test compared with March. Lower debt interest spending is largely offset by higher welfare and local authority spending. But spending is higher as a share of GDP because the economy is smaller.

Departmental spending

10.43 We have assumed no change in discretionary fiscal policy, including no adjustments to meet overseas aid and defence spending targets that are set relative to GDP and would therefore cost less in cash terms. The only departmental spending difference relative to our March forecast is the £1 billion in spending on guarantees being called, which in the scenario is assumed to be financed via reduced underspending in 2020-21 and 2021-22.¹²

¹² In our 2017 stress test we assumed departmental spending would increase to reflect larger block grant payments to the Scottish Government. In 2018 Scottish Government expenditure was reclassified into annually managed expenditure. In this scenario we assume

Welfare spending

- 10.44 Welfare spending rises by £2.7 billion relative to March in 2021-22. A higher caseload and higher awards for working-age benefits is partly offset by lower spending on state pensions.
- 10.45 Higher unemployment adds over £2 billion a year. As modelled, this is primarily through higher jobseeker's allowance, housing benefit and out-of-work tax credits in 2020-21 and 2021-22. In reality, much of this would be paid via universal credit. As unemployment falls back, the effect diminishes to around £0.6 billion a year by 2023-24. Higher inflation raises working-age average awards from 2021-22 onwards, costing over £1 billion by 2022-23.
- 10.46 State pensions are uprated by the triple lock (the higher of earnings growth, CPI inflation or 2.5 per cent). In our March forecast, they are uprated by earnings in each year. Earnings growth is much weaker in the scenario, and state pensions spending is close to £1 billion a year lower by 2023-24, with the 2.5 per cent minimum being triggered in 2021-22.
- 10.47 One uncertainty over the welfare spending consequences of a recession hitting in the next year or so is the rollout of universal credit, which by 2020-21 would be a much greater source of means-tested benefits than it is today. Universal credit differs from the systems it replaces – with tax credits-type support being provided through jobcentres rather than by HMRC and conditionality being applied to many more claimants. We have not attempted to predict how that might affect caseloads and spending in a downturn.

Debt interest spending

- 10.48 Debt interest spending is lower than our March forecast in each year, despite the higher deficit. This reflects the beneficial effects of lower short-term interest rates and lower RPI inflation. The debt interest saving peaks at £6 billion in 2021-22.
- 10.49 Table 10.8 compares the stress test path of debt interest spending with our March forecast. The main differences are:
- Lower **Bank Rate** reduces the cost of financing the Bank of England reserves created to fund the Asset Purchase Facility's gilt holdings. Bank Rate in 2020 and 2021 is around 0.6 percentage points lower than in March. This reduces debt interest spending by over £3½ billion in those years.
 - Lower **RPI inflation** reduces accrued spending on index-linked gilts. This reduces debt interest spending by an average of £2½ billion a year from 2020-21 onwards.
 - **Gilt rates** are marginally lower, reducing debt interest spending a little.
 - Higher **borrowing** raises the stock of debt. This adds £2 billion a year to debt interest spending by 2023-24.

that Welsh Government expenditure, which remains within departmental spending, remains constant with increased block grant payments fully offset by lower self-financed expenditure.

Table 10.8: Debt interest spending: stress test versus March forecast

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
March forecast	40.2	38.9	40.3	41.5	42.3
Stress test	39.5	34.0	34.3	37.7	40.3
Change	-0.8	-4.9	-6.0	-3.8	-2.0
<i>of which:</i>					
RPI inflation	0.2	-1.7	-3.2	-2.6	-2.7
Interest rates	0.0	0.0	-0.1	-0.1	-0.2
Financing	0.1	0.5	1.0	1.5	2.0
Short-term interest rates (APF)	-1.0	-3.6	-3.7	-2.5	-1.1

Other spending

10.50 Other spending items affected materially by the stress test are:

- **Public service pensions:** higher CPI inflation boosts inflation-linked payments, raising spending by a maximum of £0.4 billion in 2022-23.
- **Net expenditure transfers to the EU:** as we note in Box 10.1, customs duties will be treated as a UK tax after Brexit. This will mean the removal of the 20 per cent of customs duties that are retained for collection costs while we are still a member of the EU. This will raise spending by £0.7 billion a year.
- **Local and devolved expenditure:** we assume that local authorities draw down reserves to keep total service expenditure unchanged in real terms. Higher inflation pushes spending up by £0.3 billion in 2021-22. We also assume that Scottish Government expenditure remains constant.

Table 10.9: Public spending: stress test scenario

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Public sector current expenditure (PSCE)					
PSCE in RDEL	312.2	325.1	334.8	344.6	356.8
PSCE in AME	440.9	445.9	460.7	479.2	496.9
<i>of which:</i>					
Welfare spending	227.8	234.5	242.7	251.9	261.3
Net public service pension payments	6.7	6.4	7.4	8.2	8.4
Expenditure transfers to EU institutions	13.4	10.5	10.4	7.7	4.1
Assumed spending in lieu of EU transfers		3.7	3.7	6.3	10.0
Locally financed current expenditure	54.3	53.3	55.4	57.1	58.7
Central government debt interest, net of APF	39.5	34.0	34.3	37.7	40.3
Other current expenditure	99.2	103.6	106.8	110.3	114.0
Total public sector current expenditure	753.1	770.9	795.5	823.9	853.7
Public sector gross investment (PSGI)					
PSGI in CDEL	60.3	65.5	68.8	71.2	75.4
PSGI in AME	27.8	27.5	25.7	25.8	25.8
Total public sector gross investment	88.1	93.0	94.5	97.0	101.2
Less public sector depreciation	-41.1	-42.6	-44.2	-45.8	-47.5
Public sector net investment	47.0	50.5	50.3	51.2	53.8
Total managed expenditure	841.2	864.0	890.0	920.9	954.9

Table 10.10: Public spending: stress test scenario versus March forecast

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Public sector current expenditure (PSCE)					
PSCE in RDEL	0.0	0.5	0.5	0.0	0.0
PSCE in AME	0.4	-1.7	-2.2	-0.1	0.0
<i>of which:</i>					
Welfare spending	0.5	2.3	2.7	2.5	0.9
Net public service pension payments	0.0	0.0	0.1	0.4	0.2
Expenditure transfers to EU institutions	0.7	0.0	0.0	0.0	0.0
Assumed spending in lieu of EU transfers	-	0.7	0.7	0.7	0.7
Locally financed current expenditure	0.1	0.3	0.3	0.2	0.1
Central government debt interest, net of APF	-0.8	-4.9	-6.0	-3.8	-2.0
Other current expenditure	0.0	0.0	0.0	0.0	0.0
Total public sector current expenditure	0.4	-1.2	-1.7	-0.1	0.0
Public sector gross investment (PSGI)					
PSGI in CDEL	0.0	0.0	0.0	0.0	0.0
PSGI in AME	0.0	0.0	0.0	0.0	0.0
Total public sector gross investment	0.0	0.0	0.0	0.0	0.0
Less public sector depreciation	0.0	0.0	0.0	0.0	0.0
Public sector net investment	0.0	0.0	0.0	0.0	0.0
Total managed expenditure	0.4	-1.2	-1.7	-0.1	0.0

Financial transactions and the crystallisation of contingent liabilities

10.51 Financial transactions push up public sector net debt by a cumulative £147 billion by 2023-24, of which £121 billion is down to our assumption on the rolling over of TFS loans that would otherwise have been repaid in 2020-21 and 2021-22 as in our March forecast.

10.52 Other financial transaction effects include:

- The £10 billion **crystallisation of contingent liabilities** related to loans for private sector companies. We assume this support is provided in 2020-21.
- The assumed **delay in asset sales** for two years. By 2023-24, around £13½ billion of planned asset sales have not taken place.
- **Other smaller changes** include those to accruals adjustments to bring the cash borrowing and PSND elements of the stress test into line with the PSNB elements.

Table 10.11: Financial transactions: stress test scenario

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Public sector net borrowing	34.8	51.3	51.4	46.4	37.3
Financial transactions	11.8	41.4	14.8	29.1	20.3
<i>of which:</i>					
DEL net lending	6.0	16.5	5.9	6.4	2.3
Other government net lending	16.7	17.6	19.0	18.4	17.8
Sales or purchases of financial assets	-4.9	0.0	-11.5	-5.3	-6.6
Bank of England schemes	0.0	0.0	0.0	0.0	0.0
Cash flow timing effects	-6.0	7.4	1.5	9.6	6.9
Public sector net cash requirement	46.6	92.7	66.2	75.5	57.5

Table 10.12: Financial transactions: stress test versus March forecast

	£ billion				
	2019-20	2020-21	2021-22	2022-23	2023-24
Public sector net borrowing	5.5	30.1	33.8	32.0	23.8
Financial transactions	11.5	66.8	66.3	3.1	-1.1
<i>of which:</i>					
DEL net lending	0.0	10.0	0.0	0.0	0.0
Other government net lending	0.0	0.0	0.0	0.0	0.0
Sales or purchases of financial assets	11.5	5.2	-4.9	2.4	-0.7
Bank of England schemes	0.0	51.1	70.3	0.0	0.0
Cash flow timing effects	0.0	0.4	0.9	0.7	-0.3
Public sector net cash requirement	17.0	97.0	100.1	35.1	22.7

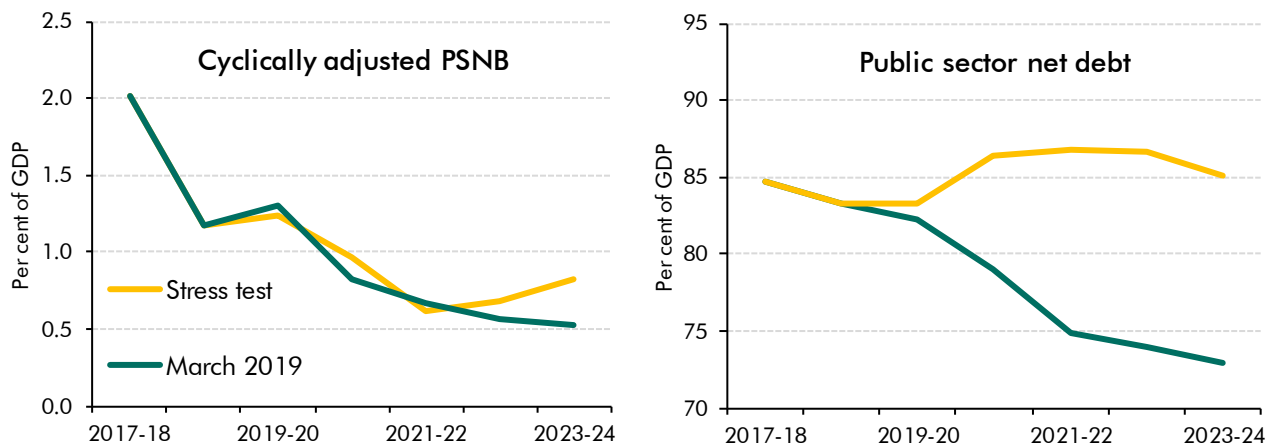
Fiscal aggregates

Public sector net borrowing

10.53 The deficit is around £30 billion a year higher from 2020-21 onwards. It rises to 2.3 per cent of GDP in 2021-22, then falls back gradually to 1½ per cent in 2023-24 as the economy recovers, but remains 1 per cent of GDP higher than our March forecast.

10.54 The near-term deterioration in output has a significant cyclical element, but the GDP loss at the five-year horizon is mostly structural. Cyclically adjusted net borrowing is modestly higher than in our March forecast in 2020-21 (Chart 10.4). There are structural improvements from higher customs revenues, a more fiscally-favourable composition of GDP and lower debt interest spending. These largely offset structural deteriorations from weaker potential output and asset markets. Structural borrowing rises steadily from 2021-22 onwards as the GDP composition and debt interest effects fade.

Chart 10.4: Fiscal aggregates: stress test versus March forecast



Source: ONS, OBR

Balance sheet measures

10.55 Table 10.13 shows the impact of the stress test on public sector net debt (PSND). In our March forecast, PSND falls relative to GDP in each year of the forecast. In the stress test, it rises each year until 2021-22, before falling slowly in the final two years. This leaves PSND in 2023-24, 12.1 per cent of GDP higher than in our March forecast. Of this, around 1.4 percentage points reflects lower nominal GDP, with the remainder due to the £272 billion higher level of cash debt in 2023-24. This in turn is dominated by higher borrowing (which adds £125 billion) and the assumed rolling over of TFS loans (£121 billion). Other factors, including loans to private companies and delayed assets sales, have only modest effects.

Table 10.13: Public sector net debt: stress test versus March forecast

	Per cent of GDP				
	2019-20	2020-21	2021-22	2022-23	2023-24
March forecast	82.2	79.0	74.9	74.0	73.0
Stress test forecast	83.2	86.3	86.8	86.6	85.1
Change	1.0	7.4	11.9	12.6	12.1
of which:					
Change in nominal GDP ¹	0.2	2.3	2.6	2.2	1.4
Change in cash level of net debt	0.8	5.1	9.2	10.3	10.8
	£ billion				
March forecast	1838	1828	1796	1838	1878
Stress test forecast	1855	1942	2010	2087	2150
Change in cash level of net debt	17	114	214	249	272
of which:					
Borrowing	5	36	69	101	125
Crystallisation of contingent liability	0	10	10	10	10
Delay in asset sales	12	17	12	14	13
Term Funding Scheme	0	51	121	121	121
Other factors	0	0	1	2	2

¹ Non-seasonally-adjusted GDP centred end-March.

The Government's fiscal targets

- 10.56** The fiscal mandate in 2020-21 is met with a slightly smaller margin of £22.7 billion, but the supplementary target in the same year is missed. Meeting the mandate by only a slightly smaller margin than in March reflects two main elements of the scenario: first, a significant element of the near-term hit to the economy is cyclical rather than structural; and second, higher customs duties generate a near-term structural improvement to receipts, with the detrimental effect of those tariffs on potential GDP building more gradually. With the target year for the mandate only one year ahead, it does not provide an anchor for medium term tax and spending decisions. The Government's objective of returning the public finances to balance by 2025-26 is further out of reach in the stress test than in our March forecast, with borrowing standing at almost £40 billion in 2023-24 and declining at a modest pace.
- 10.57** None of these figures reflect the forthcoming changes to the accounting treatment of student loans, which we estimate will raise the measured level of borrowing by between £11.2 billion and £13.7 billion over the next five years. This would reduce headroom against the fiscal mandate in 2020-21 to £11.1 billion. As these accounting treatment changes relate to when the cost of write-offs and interest income is accrued, they do not affect cash flows, so the change in the debt-to-GDP ratio in the target year would be unaffected.

Table 10.14: Fiscal aggregates and other indicators

	Per cent of GDP				
	2019-20	2020-21	2021-22	2022-23	2023-24
Receipts and expenditure					
Public sector current receipts	36.8	36.8	36.9	36.9	37.0
Total managed expenditure	38.4	39.1	39.1	38.9	38.5
Fiscal mandate and supplementary target					
Cyclically adjusted net borrowing	1.2	1.0	0.6	0.7	0.8
Public sector net debt ¹	83.2	86.3	86.8	86.6	85.1
Deficit					
Public sector net borrowing	1.6	2.3	2.3	2.0	1.5
Current budget deficit	-0.6	0.0	0.0	-0.2	-0.7
Cyclically adjusted current budget deficit	-0.9	-1.3	-1.6	-1.5	-1.3
Primary deficit	0.2	1.1	1.1	0.8	0.4
Cyclically adjusted primary deficit	-0.2	-0.2	-0.5	-0.5	-0.3
Financing					
Central government net cash requirement	1.9	4.2	3.1	3.2	2.4
Public sector net cash requirement	2.1	4.2	2.9	3.2	2.3
Alternative balance sheet metrics					
Public sector net debt exc. Bank of England	74.9	78.1	78.9	79.1	77.9
Public sector net financial liabilities	66.2	67.5	67.4	66.6	65.0
£ billion					
Public sector net borrowing	34.8	51.3	51.4	46.4	37.3
Public sector net debt	1855	1942	2010	2087	2150
<i>Memo: Output gap (per cent of GDP)</i>	-0.8	-2.4	-2.3	-1.6	-0.7

¹ Debt at end March; GDP centred on end March.

Table 10.15: Fiscal aggregates: stress test versus March forecast

	Per cent of GDP				
	2019-20	2020-21	2021-22	2022-23	2023-24
Receipts and expenditure					
Public sector current receipts	-0.1	-0.3	-0.3	-0.2	-0.3
Total managed expenditure	0.1	1.1	1.3	1.1	0.7
Fiscal mandate and supplementary target					
Cyclically adjusted net borrowing	-0.1	0.1	-0.1	0.1	0.3
Public sector net debt ¹	1.0	7.4	11.9	12.6	12.1
Deficit					
Public sector net borrowing	0.3	1.4	1.5	1.4	1.0
Current budget deficit	0.2	1.3	1.4	1.3	0.9
Cyclically adjusted current budget deficit	-0.1	0.1	-0.1	0.0	0.3
Primary deficit	0.3	1.5	1.6	1.4	1.0
Cyclically adjusted primary deficit	-0.1	0.2	0.0	0.1	0.3
Financing					
Central government net cash requirement	0.8	2.1	1.4	1.5	0.9
Public sector net cash requirement	0.8	4.4	4.3	1.5	0.9
Alternative balance sheet metrics					
Public sector net debt exc. Bank of England	1.0	4.9	6.5	7.5	7.3
Public sector net financial liabilities	0.3	3.2	4.9	5.8	5.9
£ billion					
Public sector net borrowing	5.5	30.1	33.8	32.0	23.8
Public sector net debt	17	114	214	249	272
Memo: Output gap (per cent of GDP)	-0.6	-2.2	-2.2	-1.6	-0.7

¹ Debt at end March; GDP centred on end March.

Other economic risks from Brexit

10.58 The stress test we have presented is by no means a worst-case scenario under a no-deal, no-transition Brexit. Neither the cyclical downturn nor the medium-term loss of potential output are as large as those considered in the Bank of England's disruptive and disorderly Brexit scenarios that were published last year.¹³ But even so it leaves borrowing around £30 billion a year higher and sees debt rising relative to GDP until 2021-22. In this section we review some of the more adverse economic risks that a disorderly Brexit could bring.

Short-term risks from a disorderly Brexit

10.59 A disorderly Brexit could take many forms and would depend, in part, on the extent of mitigating action taken by policy makers in both the UK and EU. Its economic and fiscal effects would depend on the reactions of market participants, firms and households.

Temporary border disruptions

10.60 A disorderly exit could be expected to result in temporary constraints on the supply of some imported products and domestic goods that rely on imported components. That might occur, for instance, if a lack of customs preparedness led to significant delays at the border.

¹³ Bank of England, *EU withdrawal scenarios and monetary and financial stability*, November 2018.

If the UK and EU were unable to agree to continued mutual recognition ('grandfathering') of existing product standards and professional qualifications, goods may need to be re-approved or sale and loss of market access would severely restrict services trade.

- 10.61 The impact of such effects would depend not only on their extent, but also on their duration. The IMF scenario that we base our stress test on includes only minimal border disruptions. Its more disruptive one includes delays in customs processes that lower GDP by an additional 2.2 per cent in the first two years after Brexit. The Bank's 'disorderly' Brexit scenario included short-run falls in UK trade and potential productivity of 15 and 5 per cent, respectively, due to border disruptions. But the UK and the EU would presumably eventually get the staff and systems in place to cope with the new trading relationship, so these disruptions would be likely to have only temporary demand and supply consequences.

Distinguishing between supply and demand

- 10.62 Should we be required to produce a forecast based on a no-deal, no-transition Brexit, we will need to form a judgement regarding the cyclical and structural components of its impact on output. That judgement is critical to assessing performance against the Government's fiscal mandate, which is expressed in terms of cyclically adjusted borrowing in 2020-21. As explained in Chapter 2, it is hard enough in normal times to separate in a robust way the movements in activity into changes in potential output and the output gap. It would be almost impossible to do so if a disorderly Brexit were underway.
- 10.63 Indeed, the distinction between supply and demand may not be very helpful at that point in assessing the state of the public finances. A disorderly exit might well result in supply capacity falling temporarily, for instance, from temporary border disruptions. If we reflected that in our forecast for potential output, then any associated increase in borrowing would be deemed structural rather than cyclical. But if the hit to supply was assumed to be temporary, then the cyclically adjusted deficit would be assumed to improve as the temporary loss of potential passed. In such a scenario, the cyclically adjusted balance in 2020-21 would provide a misleading guide to the medium-term sustainability of the public finances.

Financial conditions

- 10.64 The stress test involves a small, temporary, tightening of financial conditions, so clearly the tightening could be larger and more persistent. In the IMF's more disruptive scenario, it assumes that sovereign and corporate interest rate spreads rise by 100 and 150 basis points respectively. In the Bank's 'disruptive' no-deal scenario, the term premium on gilts rises by 50 basis points, while interest rate spreads on household and business loans rise by 150 basis points. In its 'disorderly' scenario, they rise by 100 and 250 basis points respectively – similar to the increases seen during the financial crisis.
- 10.65 A more pronounced tightening in financial conditions could result in a larger cyclical deterioration in the economy as well as weighing on potential output in the medium term. In addition to the lower receipts from the weaker economy, higher gilt yields would boost government spending. A 1 percentage point permanent rise in gilt yields adds £0.5 billion to debt interest spending in the first year, rising to £4.2 billion a year after five years.

- 10.66 Asset prices – including the sterling exchange rate – could fall sharply in a disorderly Brexit, reflecting the likely deterioration in financial market participants’ views about the future economic outlook and heightened risk premia. Such falls could be especially large if a no-deal Brexit was associated with a loss of trust in the effectiveness of the UK’s political machinery. Our stress test includes a 5 per cent fall in UK equity prices and an initial 10 per cent fall in the pound. But these market movements could be more significant. For example, the Bank of England’s ‘disruptive’ no-deal scenario included an initial 15 per cent depreciation and its ‘disorderly’ scenario assumed a 25 per cent drop.
- 10.67 Typically, the most fiscally significant effect of such a depreciation is to push inflation up relative to earnings. This raises inflation-linked spending (especially debt interest) and lowers receipts through a reversal of fiscal drag (i.e. inflation-linked tax thresholds rise faster than earnings, meaning a smaller proportion of income is taxed at higher rates).

Policy response

- 10.68 The MPC’s response to a no-deal Brexit would depend on the balance of the effects on demand, supply and the exchange rate. At an appearance at the Treasury Select Committee on 26 June, Governor Mark Carney stated that in a no-deal Brexit, *“it is more likely we would provide some stimulus”* and *“we have said we would do what we could in the event of a no-deal scenario but there is no guarantee on that”*. The stress test includes an easing of monetary policy. That is in line with the Bank’s response in the wake of the 2016 referendum, when it cut Bank Rate and took other measures to support activity. But in the case of a disorderly Brexit, the inflationary consequences of a fall in supply, a weaker pound and, potentially, the imposition of new tariffs could limit the MPC’s scope to ease policy.
- 10.69 In the stress test, Bank Rate troughs at around 0.2 per cent. This is likely to be close to its effective lower bound so any further monetary stimulus in a more disruptive scenario would probably occur via unconventional measures. These can have quite large direct effects on borrowing (quantitative easing via gilt purchases lowers debt interest spending when Bank Rate is lower than gilt yields) and public sector net debt (if the market price of gilts purchased is higher than their nominal value or where other forms of unconventional easing involve the purchase of assets deemed illiquid for PSND purposes).¹⁴ But these direct fiscal effects would probably be less important than the indirect ones via growth and inflation.
- 10.70 The stress test assumes the automatic fiscal stabilisers operate, but discretionary fiscal policy is unchanged. If instead the Government eased fiscal policy to support the economy, then the public finances would obviously deteriorate more significantly as the direct cost of fiscal measures would only be partly offset by the indirect gain from supporting growth.
- 10.71 The fiscal risk posed by a cyclical downturn is increased by the proximity of Bank Rate to its effective lower bound and by doubts that some have expressed about the effectiveness of unconventional monetary policy, both of which suggest that the authorities may rely more heavily on fiscal stimulus measures than would previously have been the case.

¹⁴ For more information, see OBR, *The direct fiscal consequences of unconventional monetary policies*, 13 March 2019.

Longer-term Brexit risks to potential output

10.72 The greater risk of Brexit over the longer term relates to the future trading and migration relationships between the UK and the EU. These risks would remain even if the UK and EU implemented a withdrawal agreement that includes a transition period. The consequences of changes in the trading and migration relationship for potential output are particularly important for the public finances, and are especially uncertain.

Migration

10.73 In the IMF's no-deal scenarios, net inward migration is assumed to be 25,000 lower than their baseline scenario each year out to 2030 because of stricter immigration policies. This lowers potential output in the long term by 0.6 per cent. A variety of studies suggest that net inward migration is on average positive for the public finances over the medium term.¹⁵ So lower inward migration from the EU might be expected to weaken the public finances. That said, it is possible that any changes in migration from non-EU countries could offset a fall in EU migration, as has happened to some extent since the EU referendum.

10.74 Inward migration could also be affected by 'pull' factors such as the value of wages in prospective migrants' home currency. This would be especially relevant in the case of a disorderly Brexit or if the UK and EU ended up trading on WTO terms. The Bank's 'disruptive' no-deal scenario included a much larger fall in net inward migration to around 30,000 a year versus the ONS central projection of 165,000 a year, due to both policy and 'pull' factors. Even in the Bank's scenario that assumes a smooth transition to trading on WTO terms, net inward migration was assumed to fall to 85,000 a year by 2023.

10.75 In our March 2016 *EFO*, we examined the potential implications of lower net inward migration of 105,000 a year rather than 185,000 in 2021. By 2020-21, the final year of our forecast at the time, this increased the budget deficit by £5.9 billion or 0.3 per cent of GDP (taking into account the impact on cash receipts and spending and the reduction in GDP). The fiscal impact of reduced migration reflected not just a reduction in the overall size of the population, but also a shift to a less favourable age structure as the foregone inward migrants were more likely to be of working age than the native stock.

Productivity

10.76 In the IMF's no-deal scenarios, the impact on potential productivity over the longer term comes from the effect that moving to trading on WTO terms has on capital deepening. Increased trade barriers with the EU are assumed to reduce the returns to capital, the desired capital stock and business investment, which in turn renders workers less productive than they would otherwise be. To date, our forecasts for the effect of Brexit on potential productivity have also concentrated on this capital deepening channel, though operating through the discouraging effect of heightened uncertainty on business investment.

¹⁵ See Chapter 3, OBR, *Discussion paper No.3: Brexit and the OBR's forecasts*, October 2018, for more details on the effects of migration on the public finances.

- 10.77 The increase in trade barriers between the UK and the EU from trading on WTO terms would also weigh on the UK's export market share and the import intensity of demand, lowering trade as a share of the economy. Economic theory and empirical evidence suggest that greater trade intensity leads to increases in productivity by allowing economies to specialise more in their areas of comparative advantage. This is because specialisation allows an economy to use its resources more efficiently. The IMF's scenarios did not include an effect on productivity from lower trade intensity, but several other studies have – although the range of estimates is relatively wide.
- 10.78 The effects on productivity discussed so far are 'static' ones – a one-off decline in potential output associated with the less effective exploitation of comparative advantage. These one-off shifts will affect the growth rate of the economy for several years as the economy adjusts to the new equilibrium. On top of these static effects, some studies suggest that barriers to trade and migration are also likely to have adverse dynamic effects on productivity and potential output, for example, by impeding technology transfer and slowing innovation and technological progress. There is little consensus regarding the size of such effects, though some Brexit studies have attempted to allow for them. The Bank's no-deal scenarios included a 5 per cent hit over the subsequent five years. The relevant studies that we covered in our *Brexit Discussion paper* showed an average total effect (i.e. including the static impact as well) on long-run productivity from moving to trading with the rest of the EU on WTO rules of around 8 per cent.
- 10.79 To calibrate the potential fiscal effects of lower productivity, in our November 2016 *EFO*, we produced a 'weak productivity' scenario where potential productivity growth was just 0.8 per cent a year compared to an average of about 1.8 per cent in our central forecast. After five years, public sector net borrowing was £41 billion or 1.9 per cent of GDP higher than in the central forecast and net debt was 8.0 per cent of GDP higher.

Other risks to tax receipts from a no-deal Brexit

- 10.80 A no-deal Brexit would require immediate changes in several tax regimes (for example, VAT and the EU emissions trading system (ETS)) that are based on common EU rules and would introduce tax compliance risks associated with the effectiveness of new tax systems and border controls. We have not attempted here to quantify any receipts losses from such changes in tax regimes or increased avoidance, evasion or non-compliance.
- 10.81 Policy intentions have been announced in some areas, including some parameters of a replacement system for the EU ETS. But to cost such measures we would need more detail on their implementation. Risks to receipts from non-compliance will depend hugely on the extent of border disruptions following a no-deal exit. In the medium term, it will also depend on the extent of cooperation between the EU and UK tax authorities. But it is clear that risks lie to the downside relative to the assumptions in the stress test.
- 10.82 It is not possible to quantify these risks, but for the simple reason that it is such a large source of revenue, risks to VAT receipts are likely to be the most material. By way of context, every 1 percentage point increase in the 'VAT gap' lowers receipts by around £1½ billion.

Non-compliance risks

- 10.83 The effectiveness of the customs and tax systems following a no-deal Brexit remains uncertain. We noted in our March *EFO* that HMRC's new customs declaration service was being rolled out at a slower pace than first anticipated, with HMRC prioritising the upgrading of its existing 'CHIEF' system instead. A no-deal exit would mean that customs duties would be applied to imports from the EU under the one-year temporary tariff regime. This would challenge the smooth operation of HMRC's systems and the readiness of businesses to submit customs declarations.
- 10.84 The Northern Ireland border is a further fiscal risk. Arrangements for the border following a no-deal exit remain uncertain. If a future tariff regime were not fully applied at the Northern Ireland border, either by design or for operational reasons, we would need to consider the associated loss of customs revenues due to non-compliance. This could be sizeable if tariffs could be avoided relatively easily by routing goods through Northern Ireland. It could also have knock-on effects on other taxes collected at the border such as import VAT and excise duties.

Tax regime changes

- 10.85 While in the EU, the VAT system is based on European directives applied in national legislation. A no-deal exit would mean an abrupt move to a UK-only VAT regime. The EU-based VAT regime currently treats imports from within the EU and those from outside the EU differently. Goods from outside the EU are liable for VAT immediately on arrival, rather than just after a sale occurs as is the case for goods and services supplied from the EU. In the absence of policy changes, a move to a UK-only VAT regime would mean that goods arriving from the EU would also be liable to import VAT.
- 10.86 The Government has announced that if the UK left the EU without a deal it would introduce postponed accounting for import VAT on goods brought into the UK from all countries. This would mean that import VAT would be paid via a VAT return. This would both mitigate potential cashflow problems for importers from the EU who otherwise would have had to pay VAT earlier in the process and improve cashflow for importers from non-EU countries relative to the current system. This would clearly generate a timing effect on receipts (with VAT payments made later than now), but we would need to consider whether this might also represent an opportunity for increased fraud.
- 10.87 The Government has also announced several other changes to the VAT system in the event of a no-deal exit. These include the extension of VAT zero-rating to exports of financial services and that 'low value consignment relief' would not be available to goods entering from the EU. The financial services measure would bring the treatment of exports of such services to the EU (currently exempt) in line with those to non-EU countries. It would not change the VAT charged by businesses, as none is charged whether they are exempt or zero-rated. However, VAT on purchases attributable to zero-rated outputs can be reclaimed. This would increase the recovery of input VAT by businesses exporting financial services to the EU and would therefore lower VAT receipts overall. Low value consignment relief allows

for goods of a low value (under £15 in the UK) to be exempt from VAT when they are imported from outside the EU. In the event of a no-deal exit, this relief would be removed for all imports, boosting import VAT and possibly removing a vehicle for fraudulent activity in the current system.

- 10.88 The Government has also announced that in the case of a no-deal exit, it would replace the EU emissions trading scheme with a carbon emissions tax which would apply to all installations participating in the EU scheme. This would apply from the first day following exit. It stipulated a rate of £16 per tonne of carbon would be applied, which was close to the EU ETS carbon price at the time of the announcement. Given the large fluctuations in carbon prices since then, it is unclear what applying such a rate would cost relative to an updated EU ETS baseline forecast, or whether the rate might change.

Conclusion

- 10.89 The stress test presented in this chapter illustrates the fiscal consequences of one possible no-deal Brexit scenario. It is not the most disruptive one we could have chosen. For an illustration of a more severe variant, the results of our 2017 stress test might be a better guide. But it still adds around £30 billion a year to borrowing (which would come on top of the more than £10 billion a year that will be added when the accounting treatment of student loans is improved later this year). And it sees debt rising rather than falling relative to GDP over the next three years.
- 10.90 We also discuss the many other factors about which judgements would have to be made if we needed to produce a central forecast on the basis of a no-deal exit. These range from the near-impossible task of distinguishing between supply and demand effects in what might be substantial fluctuations in economic activity, to knotty questions about tax compliance at the border. Uncertainty would be the watchword.

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