

Office for
**Budget
Responsibility**

Discussion paper No.2
**What should our *Fiscal risks report*
cover?**

October 2016

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1 Introduction

- 1.1 The Office for Budget Responsibility (OBR) has always placed considerable emphasis on the risks and uncertainties around any assessment of the outlook for the public finances. In our *Economic and fiscal outlook (EFO)* publications, 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 (FSR)* to sensitivity analysis, as well as highlighting specific fiscal risks from the Whole of Government Accounts.
- 1.2 From 2017 onwards, we will draw together and expand on these analyses every two years in a dedicated *Fiscal risks report (FRR)*. We hope that the *FRR* will provide 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* will build on the sensitivity and scenario analysis that we already present in our *EFOs* and *FSRs*. This discussion paper seeks views on what we should include in the *FRR*.
- 1.3 A number of countries already report on fiscal risks in different ways, with most reports produced by their governments rather than by independent fiscal institutions. Under the terms of the revised *Charter for Budget Responsibility* approved by Parliament in October 2015, the OBR is required to produce an *FRR* at least once every two years and the Government is obliged to respond formally to each within a year of publication.
- 1.4 To meet our aims for the *FRR*, we plan to draw on best practice around the world. We want the report to be analytically rigorous, based on the best available empirical evidence, and informative and user-friendly. We would therefore welcome comments from potential users on the content and presentation of the report and on the research agenda that should underpin it. Needless to say, there are as many potential risks to the public finances as there are activities taking place in the economy, so it will be impossible to do full justice to every aspect in any single report.
- 1.5 We are grateful to the International Monetary Fund's Fiscal Affairs Department, officials at the Treasury, National Audit Office and Government Actuary's Department, and the members of our expert advisory panel for their contributions to the preparatory work that we have undertaken in producing this discussion paper.
- 1.6 The rest of the paper is structured as follows:
 - Chapter 2 sets the context for discussing fiscal risks with a summary of **historical trends in public debt in the UK and internationally**;

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- Chapter 3 considers **what our report should cover and how**, drawing on guidelines published by the IMF and proposals from other sources;
- Chapter 4 reviews **international examples** of fiscal risk reporting;
- Chapter 5 describes **fiscal risks reporting in the UK**, including coverage in existing OBR publications and by other official institutions in the UK;
- Chapter 6 considers **how our conclusions can best be presented** to facilitate a meaningful Government response; and
- Chapter 7 outlines our **next steps**.

1.7 Any feedback and comments should be sent to OBRfeedback@obr.gsi.gov.uk – ideally by 27 January 2017. Please indicate whether you are happy for us to cite your submissions publicly.

2 The path of public debt

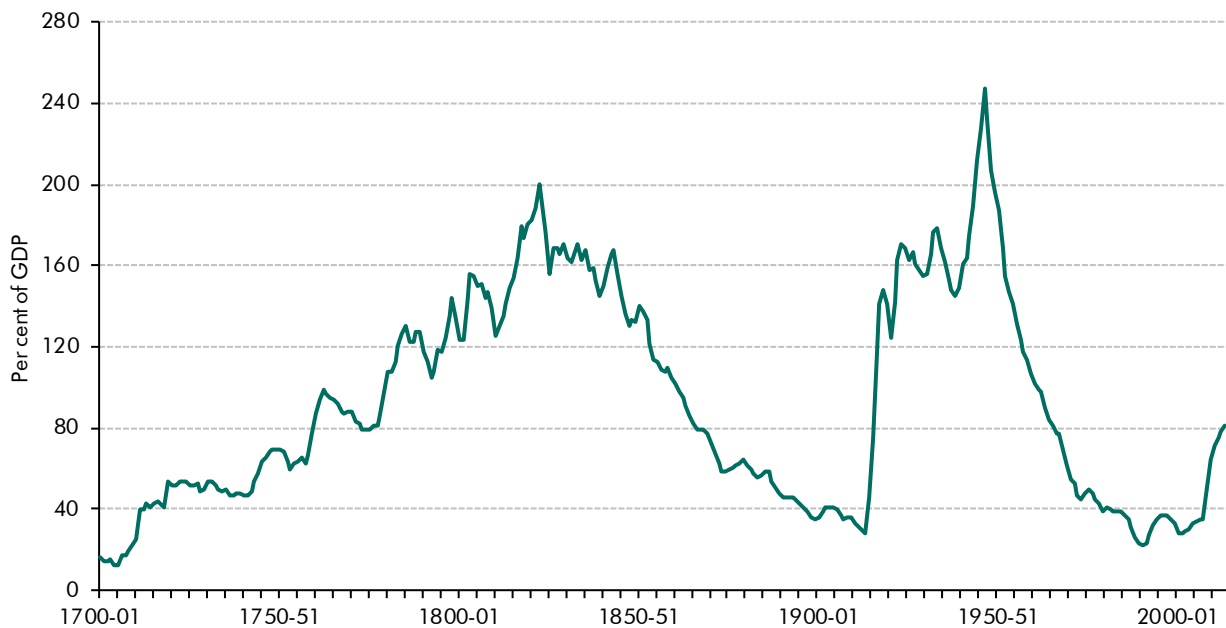
Introduction

- 2.1 When assessing fiscal sustainability – and the risks to which it may be subject – it is common to think in terms of a summary measure of government debt. Its level at any point in time reflects the cumulative effect of all previous budget deficits or surpluses and any other factors that required the government to borrow or allowed it to pay back debt. That includes the effects of past fiscal shocks, which might affect the deficit in a specific year but have a more lasting effect on the level of debt. Looking into the future, the fiscal position is typically considered sustainable if the government can service its debt over the long term without having to alter its tax or spending policies.
- 2.2 To provide the backdrop to the discussion of fiscal risks in subsequent chapters, this chapter therefore:
- discusses the **long-run historical trend in the UK's public debt-to-GDP ratio**;
 - summarises **international experience of shocks to government debt** presented in recent analysis published by the International Monetary Fund;
 - describes **the drivers of the bigger rises and falls** in the UK's public debt-to-GDP ratio over the past century; and
 - draws some **high-level conclusions** that can be borne in mind when considering the value of reporting on fiscal risks.

The path of public debt in the UK

- 2.3 Data on the UK's public debt are available over more than three centuries. As Chart 2.1 shows, over that time the debt-to-GDP ratio has fluctuated dramatically, with big spikes as a result of the Napoleonic Wars in the early nineteenth century and then again due to the first and second world wars in the twentieth century. But wars are not the only shocks that have pushed up public debt – recessions and financial crises, including the late 2000s global financial crisis, have also done so from time to time.

Chart 2.1: Historical estimates of the UK's public debt ratio

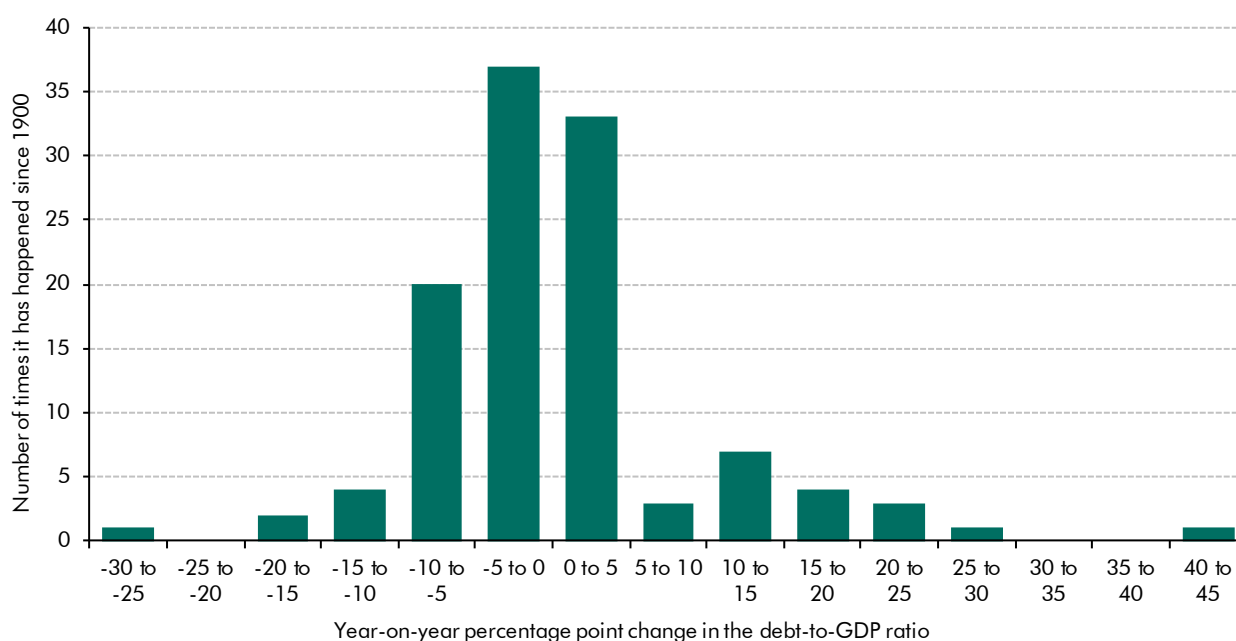


Source: Bank of England, ONS

2.4 One feature of the debt path shown in Chart 2.1 is that the ups tend to be sharper than the downs. When shocks like wars or financial crises hit, the debt-to-GDP ratio rises quickly. Once the shock has passed, the debt-to-GDP ratio generally falls, but more slowly than it increased. The frequency distribution of annual changes in the debt ratio in Chart 2.2 illustrates how that pattern has played out since 1900. It shows that:

- **most of the time the debt-to-GDP ratio rises or falls by relatively small amounts each year.** Since 1900, 60 per cent of the annual observations lie within the +5 to -5 per cent of GDP range;
- there have been **many more big increases than big falls.** There are five instances of the ratio rising by more than 20 percentage points in a single year (in 1915-16, 1916-17, 1917-18, 1922-23 and 1944-45) but only one of it falling by more than that (in 1948-49). The late 2000s financial crisis and recession saw two successive rises of close to 15 percentage points in 2008-09 and 2009-10 – the biggest trough-to-peak increase in public debt outside of wartime; and
- there have been **many more small falls than small rises.** 57 years saw a fall of 0 to 10 percentage points, compared to 36 years where it increased by that amount. In particular, there are many examples of the ratio falling by 5 to 10 per cent of GDP (particularly following the Second World War), but very few of it rising by that much.

Chart 2.2: Frequency distribution of changes in debt-to-GDP ratio



Source: Bank of England, ONS, OBR

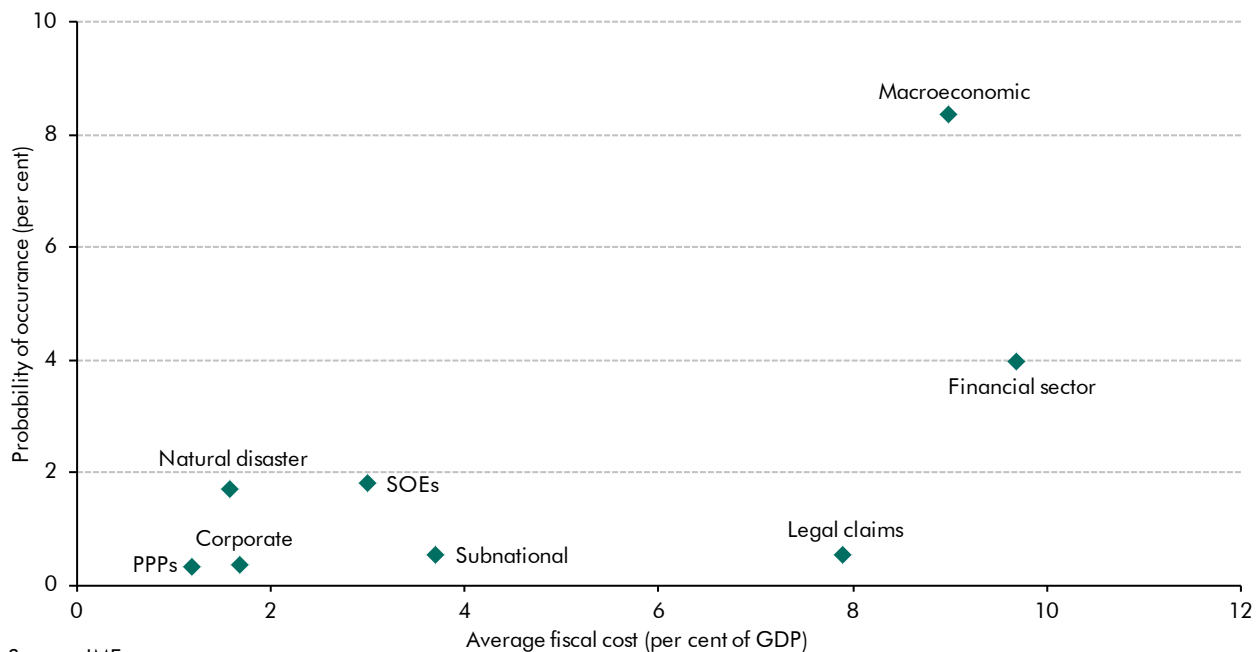
International experience of shocks to public debt

- 2.5** The International Monetary Fund (IMF) has analysed the size and frequency of different types of shocks to public debt across a wide range of countries. This analysis was presented in a database of contingent liability realisations in January 2016¹ and was complemented by analysis of macroeconomic shocks in the IMF's May 2016 paper on best practices in the assessment and management of fiscal risks.²
- 2.6** The results from this analysis – which covered 80 countries from 1990 to 2014 – are recreated in Chart 2.3. It plots the average size of the fiscal shocks from different sources against the probability of them occurring in any given year. It shows that macroeconomic and financial sector shocks are typically the largest, with the former around twice as frequent as the latter. Legal costs are also large, although that result was heavily affected by court decisions mandating compensation payments for domestic and foreign currency deposits frozen in many Central and Eastern European countries following the collapse of the Soviet Union and the former Yugoslavia. The remaining sources of fiscal risk were, on average, both smaller and less frequent.

¹ *The Fiscal Costs of Contingent Liabilities: A New Dataset*, Bova et al. (IMF), January 2016.

² *Analyzing and managing fiscal risks – Best practices*, IMF, May 2016.

Chart 2.3: IMF estimates of the cost and frequency of fiscal risk realisations



2.7 The conclusions the IMF drew from these results about the nature of fiscal risks will help to frame our forthcoming report. They were that fiscal shocks:

- can be **very large**: the late 2000s global financial crisis and recession provided numerous examples of big macroeconomic shocks, while the database of contingent liability realisations contains many examples of costs above 10 per cent of GDP and a few that exceeded 20 per cent of GDP;
- tend to be **biased toward the downside**: while positive shocks do occur, they are often anticipated in forecasts, whereas wars, recessions and contingent liability events tend to push debt higher before policy can respond. Evidence from debt forecast errors also suggests shocks tend to be skewed to the downside;
- are **highly correlated**: when something goes wrong, often many things go wrong. For example, recessions increase the risk that contingent liabilities – loan guarantees or implicit backing for state-owned enterprises – will be called upon. And financial crises go hand-in-hand with severe economic downturns; and
- can have impacts that are **highly nonlinear**: scenario analysis tends to assume that the fiscal consequences of a macroeconomic shock are a linear function of the size of the shock (i.e. if the shock is twice as big, the consequences will also be twice as big), but larger shocks tend to be proportionately more damaging than would be assumed by simply scaling up the effect of smaller shocks.

What drives changes in the debt-to-GDP ratio?

2.8 It is helpful to split the sources of changes in the debt-to-GDP ratio into three types:

- changes due to **the primary budget balance**, i.e. revenue less spending on all things other than debt interest. The primary balance can be thought of as the extent to which the cost of running the public sector in a given year is met by the revenue raised in that year. Debt interest reflects the ongoing cost of past deficits;
- changes due to **the difference between the interest rate on government debt and the growth rate of the economy**. This matters for the debt ratio because debt interest spending adds to the cash value of debt, raising the ratio, but economic growth increases the cash value of GDP, reducing the ratio. When the interest rate and growth rate are the same, the debt-to-GDP ratio would – all else equal – be stable. These rates can be expressed in nominal or real terms; and
- changes due to **other factors**. In particular, the debt ratio often rises when a government issues debt to finance the purchase of assets or to lend to the private sector. These are not classified as spending, so do not affect the primary balance.

2.9 This section uses these distinctions to show what was behind the main ups and downs in the UK public debt-to-GDP ratio over the past century. Interest rates and GDP growth rates are expressed in nominal terms, so that the growth rate can be further decomposed into real GDP growth and the whole economy measure of inflation. For earlier periods, the analysis draws on the Bank of England's historical dataset.

The periods of rising public debt

2.10 Table 2.1 decomposes the sources of change in the debt-to-GDP ratio during the ups. Ordering the episodes by the size of the cumulative rise, it shows that:

- as a result of **the First World War**, debt rose by more than 100 per cent of GDP to reach 147.7 per cent in 1918-19. This period saw the first, second and fourth biggest single-year rises in the debt ratio since 1900. The rise was driven by wartime defence spending, which generated huge primary deficits despite increases in direct taxes on property and income. (In 1913, just 2 per cent of the population paid income tax; by 1918, that had risen to 8 per cent.) Other factors also appear to have pushed up the cash level of debt, although this might also reflect problems combining different sources of historical data. Unanticipated inflation partly offsets these upward pressures, because the interest rate being paid on government debt was considerably lower than growth in the cash size of the economy. That was particularly true towards the end of the war;
- as a result of **the Second World War**, debt rose by 97.9 per cent of GDP. As in the First World War, this increase was more than accounted for by the government running large budget deficits in order to fund its wartime spending. Again, the rise in cash debt

was partly offset by high nominal GDP growth, which in turn was driven by strong growth in government consumption and higher inflation;

- in **the late 2000s financial crisis and its aftermath**, the debt-to-GDP ratio has increased by 48 percentage points from 2007-08 to 2014-15. This was predominantly due to cumulative primary deficits. As detailed in our 2014 working paper *Crisis and consolidation in the public finances*,³ spending increased sharply as a share of GDP because plans were fixed in cash terms while nominal GDP fell. Meanwhile cash revenues fell sharply due to the depth and nature of the recession. Income and capital taxes (stamp duty land tax, capital gains tax and inheritance tax) were particularly weak, while expansionary fiscal policy included a temporary VAT rate cut and boost to public investment. Debt also increased as a result of the government's interventions to stabilise the financial sector, including the purchase of shares in Lloyds Banking Group and the Royal Bank of Scotland, and the nationalisation of Bradford & Bingley and Northern Rock;
- contractionary policy in **the early 1920s**, as the UK sought to return to the Gold Standard at the pre-war sterling-dollar exchange rate, pushed the debt-to-GDP ratio up by 46.1 percentage points. That was largely due to the deflation that resulted from setting interest rates relatively high in an attempt to support the value of sterling. This weakened receipts and nominal GDP growth; and
- during **the Great Depression** that followed the 1929 Wall Street crash, the debt-to-GDP ratio rose by 22.9 percentage points from 1930-31 to 1933-34. Around half the increase was explained by a deflation-driven fall in nominal GDP, with real GDP growth and whole economy inflation both depressed.

³ See Working Paper No.7: *Crisis and consolidation in the public finances*, Riley and Chote, September 2014.

Table 2.1: Largest episodes of rising debt-to-GDP ratio since 1913-14

	Per cent of GDP				
	1913-14 to 1918-19	1920-21 to 1923-24	1930-31 to 1933-34	1939-40 to 1946-47	2007-08 to 2014-15
Debt at start of period	28.5	124.6	156.0	148.9	35.3
Debt at end of period	147.7	170.7	178.9	246.8	83.3
Change	119.2	46.1	22.9	97.9	48.0
<i>of which:</i>					
Primary balance	93.0	-20.6	-19.1	114.0	34.2
<i>of which:</i>					
Primary spending	175.7	51.1	57.3	347.8	282.6
Receipts	-82.7	-71.7	-76.4	-233.8	-248.3
Interest rate-growth differential	-40.1	65.4	33.6	-51.3	3.1
<i>of which:</i>					
Effective interest rate	23.7	20.7	20.7	27.8	16.0
Real GDP growth	-5.8	4.6	3.7	-10.7	-6.1
Whole economy inflation	-57.9	40.1	9.2	-68.4	-6.9
Other factors	66.3	1.3	8.4	35.2	10.7
<i>Memo:</i>					
Length of period (years)	5	3	3	7	7
Average primary balance	18.6	-6.9	-6.4	16.3	4.9
Average primary spending	35.1	17.0	19.1	49.7	40.4
Average receipts	-16.5	-23.9	-25.5	-33.4	-35.5

The periods of falling public debt

2.11 Table 2.2 decomposes the sources of change in the debt-to-GDP ratio during the falls. Ordering the episodes by the size of the cumulative fall, it shows that:

- during the three decades between the Second World War and the first oil crisis, the debt-to-GDP ratio fell by almost 200 percentage points. More than half the fall can be attributed to the interest rate paid on government debt being significantly and persistently lower than nominal GDP growth. The persistence of these negative real interest rates in part reflected 'financial repression' – in other words, that the interest rates at which the government could borrow were held below inflation by a number of institutional and policy factors.⁴ Among them was the Bretton Woods system, which featured restrictive exchange rate controls and a fixed exchange rate. Quantity and price controls on domestic bank lending also encouraged domestic financial institutions to invest in government debt. But the government also ran relatively large primary surpluses, particularly in the early post-war period, which also contributed to the sustained debt reduction;
- in the late 1930s after the UK left the Gold Standard, the debt-to-GDP ratio fell by 30 percentage points. The government ran slightly smaller primary surpluses than it had in the early 1930s, although that still contributed to the fall. The big difference from

⁴ See, for example, *The liquidation of government debt*, Reinhart and Sbrancia (2011).

the Depression was that the economy grew relatively strongly, leading to a favourable interest rate-growth rate differential; and

- in **the late 1970s and 1980s**, debt fell thanks to a combination of unanticipated inflation (particularly in the first half of the period) and strong real GDP growth and resulting primary surpluses (in the second half).

Table 2.2: Largest episodes of falling debt-to-GDP ratio since 1913-14

	Per cent of GDP		
	1933-34 to 1939-40	1946-47 to 1974-75	1974-75 to 1991-92
Debt at start of period	178.9	246.8	48.0
Debt at end of period	148.9	48.0	23.1
Change	-30.0	-198.8	-24.8
<i>of which:</i>			
Primary balance	-18.7	-94.8	-23.5
<i>of which:</i>			
Primary spending	125.5	921.9	588.1
Receipts	-144.2	-1016.7	-611.6
Interest rate-growth differential	-7.0	-124.7	-3.5
<i>of which:</i>			
Effective interest rate	40.2	119.7	67.7
Real GDP growth	-35.4	-89.9	-15.2
Whole economy inflation	-11.8	-154.5	-56.0
Other factors	-4.3	20.7	2.1
<i>Memo:</i>			
Length of period (years)	6	28	17
Average primary balance	-3.1	-3.4	-1.4
Average primary spending	20.9	32.9	34.6
Average receipts	-24.0	-36.3	-36.0

Conclusion

2.12 When considering the value of reporting on fiscal risks, the historical path of the UK's debt-to-GDP ratio is instructive. It illustrates two important points that governments need to bear in mind when managing the public finances:

- **shocks to the public finances are more likely to be negative than positive**, so debt tends to rise more sharply than it falls; and
- while shocks have played a big part in pushing debt higher, **bringing debt back down has typically required a combination of tighter fiscal policy and a favourable interest rate-growth rate differential**. In the post-war period that saw the biggest drop in the debt-to-GDP ratio, that favourable differential was also policy-related.

3 Approaches to analysing fiscal risks

3.1 The OBR has been tasked with producing a report on “*the main risks to the public finances, including macroeconomic risks and specific fiscal risks*”. This is a potentially huge subject area. There are few activities that take place in the economy without having some implications for the public finances – and each may be subject to risks and uncertainties. This chapter:

- **proposes a definition of ‘fiscal risks’** for the purposes of our *Fiscal risks report (FRR)*;
- **summarises the International Monetary Fund’s guidelines** on fiscal risks reporting set out in its *Fiscal transparency code* and in a recent best practices paper;
- reviews some other **research on approaches to fiscal risks reporting**; and
- **seeks views** on how our forthcoming *FRR* should try to capture any or all of these possibilities.

How should we define ‘fiscal risks’?

3.2 The IMF defines fiscal risks as “*the possibility of deviations of fiscal outcomes from what was expected at the time of the budget or other forecast.*”¹ When choosing how to interpret such a definition for the purposes of our reports, there are a number of factors we can consider. For example, should we only consider adverse outcomes or should we consider potential upsides too? Should we focus on developments that could have a direct effect on the public finances or broader developments with the potential to affect them indirectly? And, if the latter, how far removed could those indirect links be? Does the timeframe over which a risk might be expected to crystallise matter? And, in all these areas, how comprehensive should we aim to be?

3.3 The IMF’s definition is two-sided, since unforeseen developments could lead to better- or worse-than-expected outcomes. But, as illustrated in Chapter 2, history suggests that downside risks are more likely than upside risks to have lasting effects on the public finances. And it is likely to be easier for a government to cope with unexpected good news than with unexpected bad news. As such, it may well be more useful for us to focus on a one-sided definition of “*adverse*” deviations from expected outcomes – looking at things that could go wrong. Given the Government’s commitment to respond to our report, such a focus would allow it to explain how it is factoring those risks into its activities. That said, the Government might also wish to explain how it would deal with unexpected good news – for

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

example, whether it would allow that to feed through to lower debt than otherwise or would use it to cut taxes or increase spending.

- 3.4 Given the *Charter* requirement that we must consider both macroeconomic and specific fiscal risks, the choice about how broad an approach to take has partly been addressed by Parliament. It may therefore be more useful to consider how focused or comprehensive we should aim to be in our report. Ideally, we would gather information on the potential impact of all the risks to which the public finances are exposed and the probability of those risks crystallising by a given point in time, then adjust for any correlation between individual risks in order to present our conclusions in terms of a value. In reality, that is not going to be possible. It may therefore be useful to try to identify the biggest sources of potential risk, both in terms of potential impact and probability-weighted impact, and focus on them.
- 3.5 Once the size of potential risks has been considered, there is a question of when they might crystallise and whether they would do so quickly or slowly. The more slowly a risk crystallises – e.g. the risk to health spending from an ageing population – the more time a government has to adjust its policies to manage it. Similarly, the further in the future the likelihood of crystallisation – e.g. the highly uncertain costs associated with known needs to decommission nuclear power stations in the future – the more time a government has to plan. Sudden shocks – like the financial crisis of the late 2000s – are much more difficult for a government to plan for or adjust to, which means public debt tends to act as the shock absorber while policy is adjusted later. There may be value in considering only the biggest of the slower-moving future sources of fiscal risk.
- 3.6 We will also need to decide which balance sheet metric to consider the fiscal risks against. Public sector net debt (PSND) is a relatively narrow measure, but it has been widely used in the UK. It is defined as the public sector's consolidated gross debt less its liquid financial assets – i.e. those assets that could be readily sold. A broader indicator is the public sector net worth (PSNW), which compares the public sector's liabilities with all its assets. These measures include only the current stock of assets and liabilities arising from past activities. The Whole of Government Accounts (WGA) balance sheet is wider, including some costs incurred in the past for which the payments will occur in the future. In particular, they take account of net pension liabilities, provisions and commitments for finance leases such as private finance initiative projects. Finally, an extended 'comprehensive' balance sheet captures changes in the volume and value of conventional financial assets and liabilities, as well as in the present value of future revenue and expenditure. It can be thought of as a stock equivalent to our long-term fiscal projections.

International Monetary Fund recommendations

- 3.7 The IMF's 2014 *Fiscal Transparency Code* recommends that "Governments should disclose, analyze, and manage risks to the public finances and ensure effective coordination of fiscal

decision-making across the public sector.”² In terms of risk disclosure and analysis, the areas to be covered in our *FRR*, it states that for reporting to be considered ‘advanced’ it should:

- for **macroeconomic risks**, include sensitivity analysis, alternative scenarios, and probabilistic forecasts of fiscal outcomes;
- for **specific fiscal risks**, disclose the main specific risks to the fiscal forecast in a summary report, along with estimates of their magnitude and, where practicable, their likelihood; and
- for **long-term fiscal sustainability analysis**, regularly publish multiple scenarios for the sustainability of the main fiscal aggregates and any health and social security funds over at least the next 30 years using a range of macroeconomic, demographic, natural resource, or other assumptions.

3.8 The IMF’s May 2016 report *Analyzing and Managing Fiscal Risks – Best Practices* goes further than the transparency code in detailing best practices. In terms of the analysis and reporting of fiscal risks, it identifies a number of different categories of fiscal risk:

- **macroeconomic risks**, including shocks to nominal GDP or other specific macroeconomic variables;
- risks relating to the **financial sector**, which are somewhat less frequent than macroeconomic shocks but nevertheless have substantial implications for the public finances, including government support for troubled banks;
- **legal cases** resulting in demands for government compensation;
- **subnational governments**, including support for troubled regional and local governments;
- **state-owned enterprises** may pose fiscal risks in the event they require government support or bailouts;
- risks relating to **private non-financial companies**, including bailouts or the assumption of PNFC liabilities by the public sector;
- **natural disasters** are a potentially significant source of fiscal risk for many countries, depending on the extent to which a country is prone to disasters; and
- **public-private partnerships**, which may commit the government to a range of contingent obligations.

² *The Fiscal Transparency Code*, IMF, 2014.

- 3.9 These risks tend to be highly correlated: for example, financial sector crises will often have significant macroeconomic implications, and may also have consequences for non-financial companies' balance sheets. The IMF also notes that fiscal risks tend to be biased to the downside, as governments are more prone to incorporate positive fiscal shocks in their baseline forecasts. Fiscal shocks can also be highly non-linear, as budget rigidities lead to large increases in spending relative to GDP or sector-specific shocks (such to the housing market) can have a disproportionate effect on tax revenues.
- 3.10 The underlying nature of fiscal risks may also vary. For example:
- risks may be **endogenous** if they are generated by government activities or if the actions of government can influence the probability of the risk crystallising. Other risks, such as natural disasters, may be **exogenous** as they largely fall outside the influence of government policy; and
 - risks may be regular and **continuous** – such as the risk that economy performs differently from the baseline forecast – or **discrete** and linked to specific events, such as natural disasters. Where risks are discrete, the IMF suggests dividing these into those that are probable, possible or remote.
- 3.11 The IMF also proposes carrying out a quantitative **fiscal stress test**. This would include two key elements. First, an assessment of how tax revenues and public spending would react to a large correlated shock to macroeconomic variables such as GDP, inflation, commodity prices, exchange/interest rates and asset prices. Second, an analysis of the interaction of macroeconomic shocks with explicit and implicit contingent liabilities. The extent of fiscal stress would then be assessed using three summary indicators: fiscal solvency would be assessed by the effect on the government's comprehensive net worth; government liquidity would be evaluated by examining the effect on its gross financing requirements; and government financing burden would be assessed by examining the share of total government revenue devoted to spending on debt interest.
- 3.12 The IMF paper also sets out a number of other tools, including a probabilistic assessment of the path of public sector debt, which could be used to evaluate the likelihood that a debt ceiling was adhered to or exceeded. It also proposes a framework for the management of fiscal risk. It is not for the OBR to comment on the appropriate approach to risk management, but we can frame our risk assessment in light of the available options for managing those risks. Chapter 6 sets out further discussion.

Other approaches to assessing fiscal risks

- 3.13 In this section we consider approaches of varying sophistication and complexity that try to bring indicators together that could give an early warning of fiscal stress or that apply different techniques to assessing fiscal sustainability in the presence of uncertainty.

Early warning indicators

- 3.14 The literature on early warning indicators, which originated from studies of currency and banking crises, covers a number of approaches to detecting and analysing fiscal risks. These can be broadly grouped into two main methodologies:
- the **non-parametric approach** (also known as the signalling approach) uses a set of pre-determined variables (leading indicators) to assess the build-up of fiscal vulnerabilities. Each warning signal is converted into a composite index using as a weight its past forecast accuracy. This is in turn compared against a threshold consistent with past episodes of crises. Recent applications of this approach include the IMF's 'fiscal stress index', which relies on a set of indicators such as basic fiscal variables, asset and liability management and long-term fiscal trends, and the European Commission's 'S0 indicator', which also incorporates financial and competitiveness risks;³ and
 - the **parametric approach** draws on multivariate regressions based on probit or logit models. It calculates the probability of a crisis given different binary variables (which can take the value of one if a crisis occurred or zero otherwise). Unlike the non-parametric approach, this method allows for testing the statistical significance of dependent variables and accounting for their correlations. However, it also requires long time series, which may not always be available if the number of dependent variables is large.
- 3.15 The main drawback of both approaches is their reliance on an arbitrarily selected set of variables. Recent methods of identifying 'robust' leading indicators attempt to overcome this issue by selecting explanatory variables on the basis of their association with fiscal stress.⁴ Early warning indicators may also have limited usefulness in predicting the timing or distribution of potential crises. Instead, their main objective is an early identification of signals that make countries vulnerable to fiscal stress. The remainder of this section looks at a number of stochastic techniques to assess fiscal sustainability explicitly under uncertainty.

Contingent claims analysis

- 3.16 Originating from option pricing models of corporate debt, **contingent claims analysis** (CCA) can be used to provide an estimate of the market value of government's implicit and explicit support to the private sector (see Chapter 5 for a more detailed discussion of contingent liabilities). CCA attempts to estimate formally the 'fair' spread on government bonds (the sovereign risk premium) in a similar spirit to which markets price sovereign default probabilities in credit default swap (CDS) spreads. This method offers a broad coverage of risks, spanning the government, financial and real economy balance sheets. It suffers from its limited ability to identify systemic events characterised by low probability but high

³ See Baldacci, E, Petrova, I, Belhocine, N, Dobrescu, G and Mazraani, S, *Assessing Fiscal Stress*, IMF WP 11/100, 2011 and Berti, K, Salto, M and Lequien, M, *An early-detection index of fiscal stress for EU countries*, European Economy Economic Paper No. 475, 2012.

⁴ See Bruns, M and Poghosyan, T, *Leading Indicators of Fiscal Distress: Evidence from the Extreme Bound Analysis*, IMF WP 16/28, 2016.

potential cost. As a result, it usually serves more as a backward-looking tool for monitoring fiscal sustainability.

- 3.17 Gapen *et al.* (2008) used the CCA approach to estimate the implied value of sovereign assets (contingent claims) from the value of observed liabilities.⁵ Implicit in this approach is the assumption that the current market price of liabilities correctly reflects the forward-looking information about the future economic prospects of the sovereign. Based on these principles, it is possible to derive a range of sovereign credit risk indicators, including the distance to distress and the risk-neutral probability of default.

Vector autoregression and value-at-risk

- 3.18 Vector autoregression and value-at-risk comprise two forward-looking methods to assess fiscal sustainability in the medium to long term. A **vector autoregressive (VAR) approach** is used to describe a dynamic evolution of a number of variables based on their history. The most basic form of a VAR treats all variables symmetrically, which allows for a feedback effect to be traced within the system. Given its relatively successful track record in economic forecasting, the VAR approach has over the years become one of the most popular empirical tools. In particular, plotting impulse response functions offers a useful way to visualise the impact of shocks on the system over time. However, in its reduced-form, a VAR exhibits no theoretical structure, making it difficult to give such interactions their true economic interpretation. To some extent this can be addressed by the structural models described in the next section.
- 3.19 Barnhill and Kopits (2003) proposed a **value-at-risk (VaR) approach** to the assessment of fiscal risks, a formal methodology that is similar to the approach used by many financial institutions to assess the risks associated with their assets.⁶ The VaR analysis draws on the inter-temporal balance sheet approach for evaluating fiscal sustainability. This method attempts to assess formally the probability of financial failure that would lead to the loss of government financing by estimating a risk-adjusted net worth, expressed as public sector net worth less the estimated value-at-risk. The VaR of the public sector would be evaluated as the maximum potential loss at a given confidence level. It could be derived by running a large number of simulations – an approach known as Monte Carlo analysis.

Structural macro-fiscal models

- 3.20 Structural models operate within a theoretical framework that is built on components that are each represented by behavioural equations. With economic shocks endogenously transmitted across variables, this allows for a more theoretically grounded sensitivity analysis compared to the one obtained, for example, from shocking the error terms of a reduced-form VAR. Dynamic stochastic general equilibrium (DSGE) models provide an example, which, by taking into account the uncertainty around shocks, can be used to understand specific policy questions.

⁵ Gapen, M, Gray, D, Lim, C H and Xiao, Y, *Measuring and Analyzing Sovereign Risk with Contingent Claims*, IMF Staff Papers, 2008.

⁶ Barnhill, T and Kopits, G, *Assessing Fiscal Sustainability Under Uncertainty*, IMF WP 03/79, 2003.

3.21 Borrowing from the DSGE approach, Kamenik *et al.* (2013) developed a semi-structural model for stress-testing fiscal consolidation strategies.⁷ Applied to Austria, the Czech Republic and Germany, the model includes five building blocks, including fiscal and monetary policies, supply- and demand-side, and prices. For each economy, the projected 20-year baseline scenario for the key fiscal variables (public sector debt, deficit, primary balance and interest rate) is evaluated against three risks: output loss, political difficulty and the probability of consolidation failure. The results are presented as fan charts and tested for sensitivity to alternative fiscal policies.

Summary

3.22 In principle, the approaches presented in this section could also be applied in the UK context. The main challenge would be the large number of assumptions required to build each model, each of which would inevitably be subject to some uncertainty. In our case, that might encourage the Government to focus its response to our conclusions on challenging the assumptions underpinning them rather than the substantive issues they raise.

Sustainable debt levels

3.23 The OBR's remit does not permit us to give policy advice. It would therefore not be for us to recommend what constitutes the 'sustainable' level of debt that the Government should target. It may nevertheless be helpful to consider our assessment of fiscal risks in the context of what other organisations have said in this area. The IMF regularly performs debt sustainability analysis as a part of its country assessments. According to the IMF guidance, "*public debt can be regarded as sustainable when the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level*".⁸

3.24 There is no consensus on the optimal level of public debt. As legislated in the Stability and Growth Pact, EU member states are mandated to achieve a level of debt below 60 per cent of GDP. In its debt sustainability framework, the IMF requires a higher degree of scrutiny for those advanced economies with current or projected debt above 60 per cent of GDP. Adopting the IMF's methodology to assess fiscal space, Moody's Analytics estimated that the difference between the debt limit and the actual debt-to-GDP ratio in the UK was 132.6 percentage points in 2014.⁹ The Bank for International Settlements assumed in its 2013 Annual Report a safe debt target of 60 per cent of GDP for advanced economies, noting that there is no hard and fast rule for selecting debt targets. In a recent OECD study,

⁷ Kamenik, O, Tuma, Z, Vavra, D and Smidova, Z, *A Simple Fiscal Stress Testing Model: Case Studies of Austrian, Czech and German Economies*, OECD Economics Department Working Paper No. 1074, 2013.

⁸ IMF, *Staff guidance note for public debt sustainability analysis in market-access countries*, May 2013.

⁹ See for example Ostry, J, Ghosh, A and Espinoza, R, *When Should Public Debt Be Reduced?*, IMF Staff Discussion Note 15/10, June 2015.

Sutherland, Hoeller and Merola concluded that prudent debt level should be considerably lower than 75 per cent of GDP.¹⁰

Questions

3.25 We would welcome views on:

- should we focus on adverse risks to the public finances?
- should we take a broad approach to the sources of fiscal risk?
- which balance sheet metric or metrics should we consider fiscal risks against?
- are there any issues beyond the IMF's guidelines that we should aim to cover?
- to what extent should we focus on quantitative stress-test-style analysis vs broader discussion of different types of risks, some of which may be more difficult to quantify on a consistent basis?

¹⁰ Sutherland, D, Hoeller, P and Merola, R, *How much is needed and how to reduce debt to a prudent level?*, OECD Economics Department Working Paper 932, January 2012.

4 International examples

Introduction

4.1 This chapter:

- describes **examples of fiscal and other risks reports** that have been prepared in different countries and by international organisations; and
- **identifies areas where feedback would be particularly valuable.**

Fiscal and other risks reports around the world

4.2 There are a number of reports on fiscal or broader risks around the world that can inform how we structure and populate our first *Fiscal risks report*. These include reports by international institutions, national governments and other fiscal councils.

International institutions

4.3 Many international institutions provide an assessment of risks in their global reports and in their reports on individual countries. A few examples include:

- the **International Monetary Fund (IMF)** produces three flagship reports – the *World economic outlook*, *Global financial stability report* and *Fiscal monitor* on a semi-annual basis. These consider a variety of current and future risks. For example, the April 2016 *Fiscal monitor* identified weak nominal growth, increased likelihood of contingent liabilities materialising and political calendars as being among the key risks faced by advanced and emerging market economies. One particularly relevant tool developed by the IMF is its debt sustainability analysis framework. This differentiates between countries like the UK with well-developed capital markets, which it terms ‘market access countries’ for this purpose, and low income countries. The framework uses a standardised template to present a baseline scenario for the path of public debt and to test the results against a number of sensitivities or stress scenarios;
- the **World Economic Forum (WEF)** produces an annual *Global risks report* that assesses the likelihood and potential impact of various risks by drawing on the results of its ‘global perception survey’. The survey captures the views of almost 750 experts and decision-makers. The WEF categorises risks under the five headings of economic, social, geopolitical, environmental and technological (as shown in Figure 4.2 in relation to Ireland’s *National risk assessment*, which has adopted the WEF’s framework); and

- the **Bank of International Settlements (BIS)** discusses a variety of risks in its Annual Report each year. For example, its 2015-16 report argued that the long-term global context was characterised by “a ‘risky trinity’ of conditions: productivity growth that is unusually low, global debt levels that are historically high, and room for policy manoeuvre that is remarkably narrow. A key sign of these discomfoting conditions is the persistence of exceptionally low interest rates, which have actually fallen further since last year.”¹

Finland’s Overview of central government risks and liabilities²

- 4.4 Since 2015, the Ministry of Finance in Finland has produced an *Overview of central government risks and liabilities* as an annex to the yearly *General government fiscal plan*. The report provides an overview of the government’s risks and liabilities and includes a risk assessment where applicable. It reviews the risks associated with macroeconomic developments, focusing on the sensitivity of the public finances to economic cycles. Where possible it quantifies that sensitivity: for example, in the 2015 report it judged that a 1 percentage point unanticipated decline in output would cause a 0.6 percent decline in general government finances.
- 4.5 Beyond macroeconomic risks, the report discusses the government’s risks and liabilities, which it splits into four categories: explicit direct liabilities, explicit contingent liabilities, implicit contingent liabilities and government assets (see Figure 4.1). It focuses on the number and size of the assets and liabilities.

Figure 4.1: Categorisation of assets and liabilities in Finland’s report

Government liabilities and assets for Finland in 2015	
Explicit direct liabilities	Explicit contingent liabilities
<p>Government debt management risks e.g. financing, market, credit, legal and operational risks.</p> <p>Public-private partnerships e.g. major new road construction projects.</p> <p>Contractual liabilities e.g. obligatory emissions reduction targets.</p>	<p>Off-balance-sheet liabilities e.g. government guarantees (Bank of Finland), multiannual liabilities (government pension liability) and capital liabilities (European Financial Stabilisation Facility).</p>
Implicit contingent liabilities	Government assets
<p>Liabilities associated with the banking sector e.g. 2009 government bailout in Finland.</p> <p>State owned enterprises.</p> <p>Liabilities associated with environmental and chemical safety e.g. compulsory insurance and oil pollution compensation fund.</p>	<p>Financial assets (more than half of government assets are in shares and holdings).</p> <p>Real assets: manufactured assets (buildings and stocks) and non-manufactured assets (land).</p>

- 4.6 The 2015 report provided extensive detail on government pension liabilities, which were estimated to total €94 billion in 2013 (46.2 per cent of Finland’s GDP at the time). It looked

¹ 86th Annual Report, 1 April 2015 – 31 March 2016, Bank of International Settlements, June 2016.

² *General Government Fiscal Plan 2016-2019*, Ministry of Finance, Finland, April 2015.

at the key drivers of pension liabilities, including demographic factors such as life expectancy and policy settings like the retirement age, as well as risks to the investment income of the state pension fund.

- 4.7 The report also provided a descriptive analysis of the Finnish financial sector. With total assets of 356 per cent of GDP, it is fairly large by international standards, although not as large as the UK's (845 per cent of GDP).³ The report looked at bank financing, focusing on market financing dependency and interdependency with other Nordic financial sectors. It argued that these could be a source of liquidity risk during any future financial crises.

Ireland's National risk assessment⁴

- 4.8 The Department of the Taoiseach in Ireland is required to publish an annual national risk assessment (NRA) for debate in the Irish Parliament, and has published two to date.⁵ The objective is broader than the reporting that we have been tasked with. The NRA aims to “*identify strategic risks that may arise due to potential changes in the economic, financial, geo-political and social environments*” – considering possible effects on national wellbeing rather than just the implications for fiscal sustainability.
- 4.9 Reflecting this broad objective, the Irish NRA is comprehensive in its coverage of potential risks. It uses the categorisation in the World Economic Forum's annual *Global risks report*, as shown in Figure 4.2. It deployed an inclusive process to identify and rank the risks, including an online consultation facilitated and analysed by an external party. The report is largely discursive; it does not quantify potential effects on the economy or public finances of scenarios in which one or more of the risks crystallise. It also highlights that the national risk assessment process is iterative, with opportunities to develop and refine it over time. There is a focus on how to enhance risk mitigation and prevention activities in light of the identification process that has been undertaken.

³ The financial sector is defined as total assets of the financial corporations sector (excluding derivatives), measured on an unconsolidated basis.

⁴ *National Risk Assessment 2015 – Overview of Strategic Risks*, Department of the Taoiseach, 2015.

⁵ The Department of the Taoiseach's Strategy Statement 2015-2017 commits to engaging with “*stakeholders about strategic risks facing the country*” and publishing “*an updated National Risk Assessment each year.*”

Figure 4.2: Categorisation of risks in Ireland’s national risk assessment

<p>Potential risks for Ireland in 2015 (adapted from Figure 1 of Ireland's National Risk Assessment 2015)</p>	<p>Social</p> <ul style="list-style-type: none"> Persistence of structural unemployment Human capital Expenditure pressures Social cohesion and political stability Changes in dependency ratio Increases in chronic diseases Migration and integration
	<p>Economic</p> <ul style="list-style-type: none"> Weak economic growth and public debt sustainability Re-emergence of the euro area sovereign debt crisis Loss of competitiveness Vulnerabilities in the banking system and private debt sustainability Importance of multinational corporations and risks of unfavourable international tax changes Uncertainties about impact of ECB quantitative easing
<p>Environmental</p> <ul style="list-style-type: none"> Climate change and extreme weather events Disruption to energy supply and price shocks Food safety Misalignments in the property market Infrastructural development 	<p>Technological</p> <ul style="list-style-type: none"> Cyber-security Major pandemics Nuclear contamination Technological trends Anti-microbial resistance

The Netherlands’ risk analysis of the public finances⁶

4.10 In 2011, the Ministry of Finance in the Netherlands, with the support of the Dutch fiscal council (the Central Planning Bureau) and the central bank, published a risk analysis of the Dutch public finances. The report included three key elements:

- it reviewed the **key sources of risks to the public finances**: those emanating directly from developments in the economy, plus those that could result from government having to intervene as a result of shocks (e.g. in the banking system) or from other government guarantees (e.g. the National Mortgage Guarantee Scheme, which it noted covered just under 70 per cent of mortgages in 2010);
- it then **presented three different shock simulations** that were designed to “illustrate what would happen if several shocks occurred simultaneously”. These scenarios went beyond risk analyses that had previously been published by focusing on major shocks (calibrated to reflect recent or prospective economic crises), analysing the indirect consequences from financial sector interventions and calls on guarantees (rather than

⁶ The Government finances shock proof – A risk analysis of the Dutch public finances, Ministry of Finance (Netherlands), 2011.

just economy-driven effects). It focused on the potential correlations between individual risks (because “*If things go badly, they really go badly*”); and

- it **summarised the main aspects of fiscal risk management** in the Netherlands, including post-crisis reforms to the financial sector, EU-wide fiscal management, policy on issuing government guarantees and the restoration of fiscal space that had been eroded during the crisis and its aftermath.

4.11 The results of these simulations illustrated how a further severe shock would push government debt – at that stage still relatively low by post-crisis international standards – up to between 80 and 95 per cent of GDP and remaining on an upward path. It noted that this would further reduce the capacity to react to future shocks and that it illustrated the importance of restoring fiscal space and of sound risk management.

New Zealand’s *Economic and fiscal update risk chapters*⁷

4.12 The New Zealand Treasury produces two risks chapters – ‘risks and scenarios’ and ‘specific fiscal risks’ – in its annual *Economic and fiscal update* document.

4.13 The ‘risks and scenarios’ chapter:

- outlines the key **risks to the economic outlook** – in its May 2016 report these include external risks associated with a sharper slowdown in China and persistent weak growth in advanced economies;
- presents two **alternative scenarios** for the economy – a negative globally driven scenario and a more positive domestically driven scenario; and
- discusses **general fiscal risks** – this includes mainly descriptive material on expenditure and balance sheet risks and more quantified sensitivity analysis for revenue risks. It includes a fan chart illustrating the range of uncertainty around the revenue forecast and estimates of the effect on revenue of a 1 percentage point increase in growth of nominal GDP, wages and salaries and taxable business profits over the 5-year forecast.

4.14 The ‘Statement of Specific Fiscal Risks’ is required by New Zealand’s 1989 Public Finance Act. It must set out, to the fullest extent possible, all government decisions and other circumstances known to the Government at the date of the finalisation of the fiscal forecasts that may have a material effect on the fiscal and economic outlook, but are not certain enough in timing or amount to include in the fiscal forecasts. The statement considers risks under four headings:

- potential policy decisions affecting **revenue**;

⁷ Budget Economic and fiscal update 2016, New Zealand Treasury, May 2016.

International examples

- potential policy decisions affecting **current spending** (to the extent that they cannot be managed within existing baselines or Budget allowances);
- potential **capital spending** decisions (to the extent that they cannot be managed within the existing balance sheet or capital allowance); and
- **matters dependent on external factors** (e.g. costs that are dependent on the outcome of negotiations or international obligations).

4.15 The specific fiscal risks chapter reports on contingent liabilities and assets that are listed by department. Contingent liabilities are categorised into guarantees and indemnities, uncalled capital, legal proceedings and disputes, other quantifiable contingent liabilities. Contingent assets are categorised into legal proceedings and disputes. Only contingent liabilities and assets worth over NZ\$100 million are separately disclosed.

Highlights from other countries' reports

4.16 The four reports described above seem to us the best examples that we can draw from in preparing our first report, but there are many other reports that we might also be able to learn from. In preparing this discussion paper, we also considered:

- **Australia's** *Scenario analysis and statement of risks*, which was produced as an annex to the annual Budget document. Following a similar approach to New Zealand, the report mainly focused on contingent liabilities and assets, quantifying them where possible;
- the **Philippines** development budget coordination committee published a *Fiscal risk statement* in 2016, which included a descriptive overview of a wide range of fiscal risks such as those from public private partnerships and natural disasters; and
- the **Serbian** Ministry of Finance included a short summary of fiscal risks in its annual *Fiscal strategy* publication. It discussed macroeconomic risks, such as the potential impact inflation can have on nominal GDP, and other fiscal risks such as reducing the number of employees. The publication did not discuss contingent liabilities.

Questions

4.17 We would welcome views on:

- any further examples that we should consider?
- which elements are most worth adopting in the UK context?
- any elements that would be less valuable in the UK context?

5 Current practice in the UK

Introduction

5.1 This chapter draws on the IMF's categorisation of fiscal risks set out in Chapter 3 to review the main examples of reporting in the UK. It covers:

- **macroeconomic risks and uncertainties** – as discussed by the OBR and the Bank of England;
- **contingent liabilities** – including the Government's implicit exposure to the financial sector and its explicit exposures that are recorded in the Treasury's Whole of Government Accounts and by the entities that those accounts consolidate;
- sources of **longer-term pressure** – notably the ageing of the population and prospects for productivity growth in the provision of health and social care services; and
- **questions** on which feedback would be valuable.

Macroeconomic risks and uncertainties

Office for Budget Responsibility

Economy risks

5.2 As the IMF's analysis of shocks to public debt has illustrated, the most common big shocks stem from the economy. We highlight the main risks to our medium-term economy forecast in Chapter 3 of each *Economic and fiscal outlook (EFO)*.

5.3 There are some general risks and uncertainties common to all forecasts: conditioning assumptions may prove inaccurate; shocks may prove asymmetric; and previously stable relationships that have described the functioning of the economy may change. We also highlight what we see as the key specific risks to each forecast. For example, in our March 2016 *EFO*, we noted:

- **volatility in financial and commodity markets**, which had increased. If it persisted it could have a negative effect on the UK economy via financial markets linkages and world trade;
- the IMF had recently identified a sharper-than-expected **slowdown in China** as a risk to its global forecast. Although direct trade with China accounted for only 3.6 per cent of UK exports, China's significant contribution to world GDP and trade growth and its

increasing integration in global financial markets meant that lower growth in China could have wider implications;

- considerable uncertainty remained around our UK **productivity** forecast, which we had revised down. If productivity failed to recover as predicted, but wage growth continued to accelerate, the MPC could be forced to raise interest rates more quickly, which could in turn have a negative impact on consumer spending and housing investment. Alternatively, lower productivity growth could mean that wage growth falls short of expectations, in a similar manner to the revisions we made in our March forecast;
- the ratio of **households' gross debt** to income increased significantly over the forecast. That seemed consistent with supportive monetary policy and other interventions to support demand in the housing market, but it could pose risks to growth over the longer term;
- our forecast assumed that the decline in public sector net borrowing would be offset in a widening corporate deficit and a modest improvement in the current account. Some external commentators argue that the prospective path of the sectoral balances points to the risk of a **significant depreciation of sterling**; and
- a vote to leave in the **June 2016 referendum** could usher in an extended period of uncertainty regarding the precise terms of the UK's future relationship with the EU. This could have negative implications for activity via business and consumer confidence and might result in greater volatility in financial and other markets.

Current fiscal risks

5.4 In addition to the economy risks covered in Chapter 3 of our *EFOs*, in Chapter 4 we identify any specific risks that we judge to be relevant to each fiscal forecast. For example, in our March 2016 *EFO* we highlighted:

- global and domestic risks associated with **the economy**, including the outlook for productivity growth in the UK, the implications of lower growth in China and uncertainty associated with the forthcoming EU referendum;
- uncertainties associated with the **delivery of reforms to the welfare system**, particularly in relation to disability benefits and universal credit;
- **higher interest rates** would clearly pose an upside risk to our spending forecast, although recent experience shows that even at very low interest rates it is possible for them to fall further;
- ongoing uncertainties around the large **financial asset sales** that are planned to take place over this Parliament; and

- the Government has set out a number of **ambitions or intentions** that have not yet been confirmed as firm policy decisions, but which remain a source of risk to the forecast – for example, the commitment to raise the income tax personal allowance to £12,500 and the higher rate threshold to £50,000 or the plan to localise all business rates while also shifting some spending responsibilities to local government.

Illustrating uncertainty

5.5 As well as identifying specific risks to each forecast, in Chapter 5 of each *EFO* we use a variety of approaches to illustrate the range of uncertainty around each forecast. Given our statutory role to assess the Government’s performance against its fiscal targets, we focus our analysis on stress testing that assessment. We do that in three ways:

- by looking at the evidence from **past forecast errors**. This involves calibrating a distribution of possible outcomes around our central forecast based on the distribution of official forecast errors over the past 20 years or more. These forecast errors will reflect the consequences of unforeseen shocks to the public finances, errors in forecast assumptions or judgements and any policy changes announced in subsequent Budgets or Autumn Statements. We use this distribution to calculate a percentage chance of the Government meeting its surplus target;
- by seeing how our central forecast would change if we altered some of the key **judgements and assumptions** that underpin it. This sensitivity analysis draws on the many receipts and spending forecasting models that are used to produce our central forecast. These can be used to generate ‘ready reckoners’ that tell you for any given forecast roughly what the expected effect would be of changing an assumption by a specific amount. We published a full set of ready reckoners in Annex B of our March 2015 *EFO*; and
- by looking at **alternative economic scenarios**. One drawback of sensitivity analysis that focuses on specific assumptions is that it might miss interactions between different parts of the forecast. For example, higher oil prices are good news for receipts from the North Sea but are bad news for fuel duty receipts (because higher prices are expected to prompt motorists to drive fewer miles and consume less petrol and diesel). That can be quantified using ready reckoners. But the full effect of higher oil prices on the public finances will depend on what caused the rise. A positive demand shock – e.g. the Chinese economy booming – would be expected to have a more benign effect than a negative supply shock – e.g. sanctions being imposed on a major oil exporter. By preparing alternative scenarios, we can explore these interactions more fully.

5.6 We aim to produce alternative scenarios that explore an issue that is the subject of live debate at the time of each forecast. Table 5.1 shows the different subjects that we have covered so far. One conclusion that can be drawn from these scenarios is that public debt is particularly sensitive to shocks that have a persistent effect on the economy. Given the sustained weakness of productivity growth since the financial crisis of the late 2000s, that is an issue we have returned to over time and that remains pertinent today.

Table 5.1: Alternative scenarios presented in our *Economic and fiscal outlooks*

	Scenario topic (where stated)	Scenario variants		
November 2010		Delayed rebalancing	Persistent weak demand	
March 2011		Persistent inflation	Weak euro	
November 2011		Persistent tight credit conditions	No structural impairment	Higher structural unemployment
March 2012		OECD stylised downside scenario in the euro area	Temporary oil price spike	
December 2012	Output gap	Weaker supply	Stronger demand	
March 2013	Depreciation	Export volumes rise	Muted export response	
December 2013	7 per cent unemployment	Later than forecast - for 'good'/'bad' reasons	Earlier than forecast - for 'good'/'bad' reasons	
March 2014	Mortgage rates	Higher credit spreads	Stronger demand	
December 2014	Productivity	Weak	Strong	
March 2015	Oil prices	Supply driven	Demand driven	
July 2015	Growth	Strong growth	Employment-rich growth	History-repeats
November 2015	Cyclical shocks	Positive	Growth slow down	Negative
March 2016	Migration	High	Low	Zero

Analysis of past forecast errors

5.7 The legislation that established the OBR requires that we produce an assessment of the accuracy of past economic and fiscal forecasts each year. We do that in our *Forecast evaluation reports (FERs)*. Our aim in analysing past errors is to identify the underlying reasons why outturns have differed from forecasts – which will inevitably be the case – and to learn any lessons that can be applied to future forecasts.

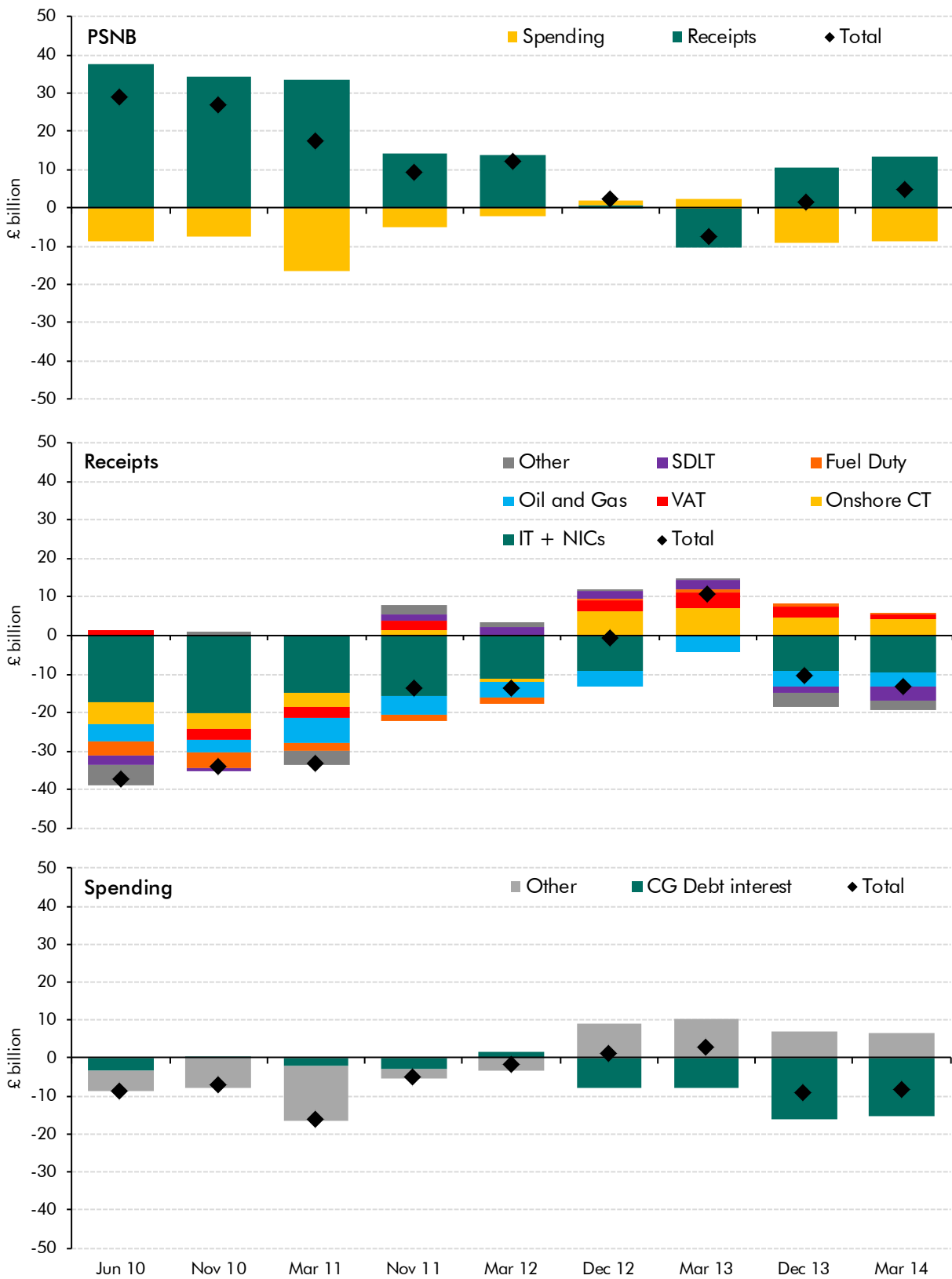
5.8 As we have only been operating for six years, there are still too few OBR forecasts to evaluate with confidence the accuracy and bias of our forecasts relative to previous official forecasts. For what it is worth, on the basis of the available evidence:

- our **economy forecasts** have on average been subject to slightly smaller errors in terms of real GDP growth than previous official forecasts. They have been optimistic more often than they have been pessimistic, in large part reflecting the persistent weakness of productivity growth since the financial crisis, which we have so far underestimated; and
- our **fiscal forecasts** have on average been subject to slightly smaller errors in terms of public sector net borrowing. Again, they have been optimistic more often than they have been pessimistic, due to the effects of overestimating productivity growth and other factors that have weighed on receipts growth.

5.9 Chart 5.1 summarises the evidence on our fiscal forecast errors at the 2-year horizon:

- the top panel shows that up to March 2012, our **borrowing** forecasts were too optimistic, with underperforming receipts only partly offset by lower-than-expected spending. Since then, our borrowing forecasts have been subject to smaller errors and those errors have been in both directions;
- the middle panel shows that **receipts** errors have been dominated by weaker-than-expected income tax and NICs – the result of productivity-related weakness in earnings growth, but also a lower-than-expected effective tax rate on earnings that is likely to reflect changes in the earnings distribution, including among the self-employed, and subsequent policy changes (e.g. to the income tax personal allowance); and
- the bottom panel shows that on the **spending** side, our early forecasts overestimated spending by local authorities and non-interest spending by central government while our more recent forecasts overestimated debt interest spending. One of the early lessons highlighted in our 2012 *FER* was that despite the pressure on local government budgets resulting from the fiscal consolidation, local authority treasurers remained keen to build up reserves (i.e. to cut spending by more than resources were reduced) while there remained uncertainty about the extent of any future cuts.

Chart 5.1: 2-year ahead forecast errors from successive OBR forecasts



Source: OBR

5.10 In September 2014, we published a working paper that looked in detail at the errors associated with the March 2008 Budget forecast produced by the Treasury just before the worst of the financial crisis and recession took hold. It provides a useful benchmark for the effect on the public finances of being hit by a number of big shocks in quick succession, as the economy fell into a deep recession, house prices fell sharply and the government stepped in to restore stability to the financial system.

5.11 The main conclusions (on the basis of data available at the time) included:

- **public sector net debt** was around £450 billion or 35 per cent of GDP higher than expected by 2012-13, the final year of the Budget 2008 forecast horizon;
- there was a **substantial deterioration in the underlying budget deficit** during the recession that has persisted through the early years of the recovery. The scale of that deterioration reflects the way in which various developments in the economy – some unusual even for a recession – interacted with tax and spending policies designed for more normal times. Fiscal stimulus measures and direct support for the financial sector accounted for only a small share of the overall deterioration in the public finances;
- the key **economic developments that shaped the public finances** in the post-crisis period included the weakness of nominal GDP, stubbornly high consumer price inflation, the productivity puzzle and falling real wages, a disproportionate hit to the tax-rich financial sector, very low interest rates and weak asset markets; and
- some of the fiscal consequences reflected the way in which **the unusual behaviour of the economy interacted with long-standing features of tax and spending policy**. These include the setting of multi-year cash plans for spending on public services and capital investment, as well as the convention that tax allowances, tax thresholds, benefits and public service pension payments rise in line with some measure of consumer price inflation. Under normal circumstances these settings generally help to keep government borrowing in check. They increase tax receipts and reduce welfare spending as a share of GDP over time, while helping the Treasury to resist political and other upward pressures on public services spending. But in an environment in which earnings growth and nominal GDP growth were very weak – relative to both consumer price inflation and previous expectations – the opposite was the case. Multi-year cash spending plans that were designed to reduce spending slightly as a share of GDP suddenly implied a sharp increase. Fiscal drag moved into reverse, as falling real wages pull people's incomes into lower tax brackets and reduce the effective tax rate. And maintaining the purchasing power of benefits relative to consumer prices increased them relative to the earnings of people in work and relative to the size of the economy that had to finance them.

Bank of England

Quarterly *Inflation Report*

- 5.12 The Monetary Policy Committee (MPC) of the Bank of England highlights various risks to its forecasts in its quarterly *Inflation Reports*. In August 2016 the MPC noted four key judgements – relating to the path of private demand, potential supply and productivity, the current account and global growth, and domestic inflation – each of which was surrounded by uncertainty. The MPC uses a range of indicators to monitor such risks and to understand the degree to which they might be materialising. These judgements and risks are listed and discussed in more detail in each *Inflation Report*.
- 5.13 The MPC also illustrates risks and uncertainties surrounding its forecasts by using fan charts. Like our own fan charts, these draw on evidence of past forecast errors, but the MPC can overlay subjective judgements about the direction of the probability distribution around its forecasts of GDP growth and inflation. As well as uncertainty around the future, the *Inflation Report* fan charts of GDP growth also illustrate uncertainty around the measurement of the past based on the likelihood of revisions to past data.

Semi-annual *Financial Stability Report*

- 5.14 The Financial Policy Committee (FPC) of the Bank of England identifies, monitors and takes action to remove or reduce systemic risks, with a view to protecting and enhancing the resilience of the financial system. In recent years, these risks have included the UK's large current account deficit, pro-cyclical behaviour of buy-to-let investors, household indebtedness and subdued global growth. In its July 2016 *Financial Stability Report*, the FPC highlighted the uncertainty surrounding the EU referendum as the main near-term domestic risk to financial stability. The *Report* listed a number of possible channels through which the referendum could increase risks to financial stability, including the financing of the current account deficit, the commercial real estate market, and fragilities in financial market functioning.
- 5.15 Drawing on this risk assessment, the resilience of the UK banking system to deterioration in macroeconomic and financial market conditions is assessed in annual stress tests against extreme economic shocks. For example, the 2016 stress scenario is based around a synchronised global downturn in output growth, sharp falls in asset prices and a rise in market volatility and risk premia.¹ In the UK, GDP is assumed to fall by 4.3 per cent over the first year of the scenario, the unemployment rate to peak at 9.5 per cent in 2017 and residential property prices to fall by a total of 31 per cent from peak to trough. The severity of the stress reflects the assessment of the FPC and the Prudential Regulation Authority Board about the level of risk facing the banking system.

¹ See *Stress testing the UK banking system: key elements of the 2016 stress test*, Bank of England, March 2016.

Contingent liabilities

- 5.16 The IMF's review of the sources of shocks to the public finances around the world covered a wide range of contingent liabilities.² From an accounting perspective, possible future liabilities can comprise 'provisions' (where costs are judged to be probable but not certain), 'contingent liabilities' (where costs are contingent on an event and are judged to be possible but not probable) and 'remote contingent liabilities' (judged to be unlikely). From a broader economic and fiscal perspective, these are all 'contingent liabilities' that might pose a risk to future fiscal sustainability. The relevance of this source of risk is also recognised in the 2010 European System of Accounts (ESA10).³
- 5.17 It is important to note that all the possible future liabilities that are recognised in accounts relate to events that the accounting entity, i.e. government in this instance, has openly committed to in advance. The full contingent liabilities of government are likely to be even broader than those reported in departmental accounts, reflecting items contingent on future activity not yet committed to and possible implicit commitments. Indeed, one important conclusion from the IMF's analysis was that over 80 per cent of the contingent liability realisations that were identified related to implicit liabilities – i.e. when a government absorbed the cost of an event that it had not committed to do in advance – in particular intervening to support the financial system.

Implicit contingent liabilities

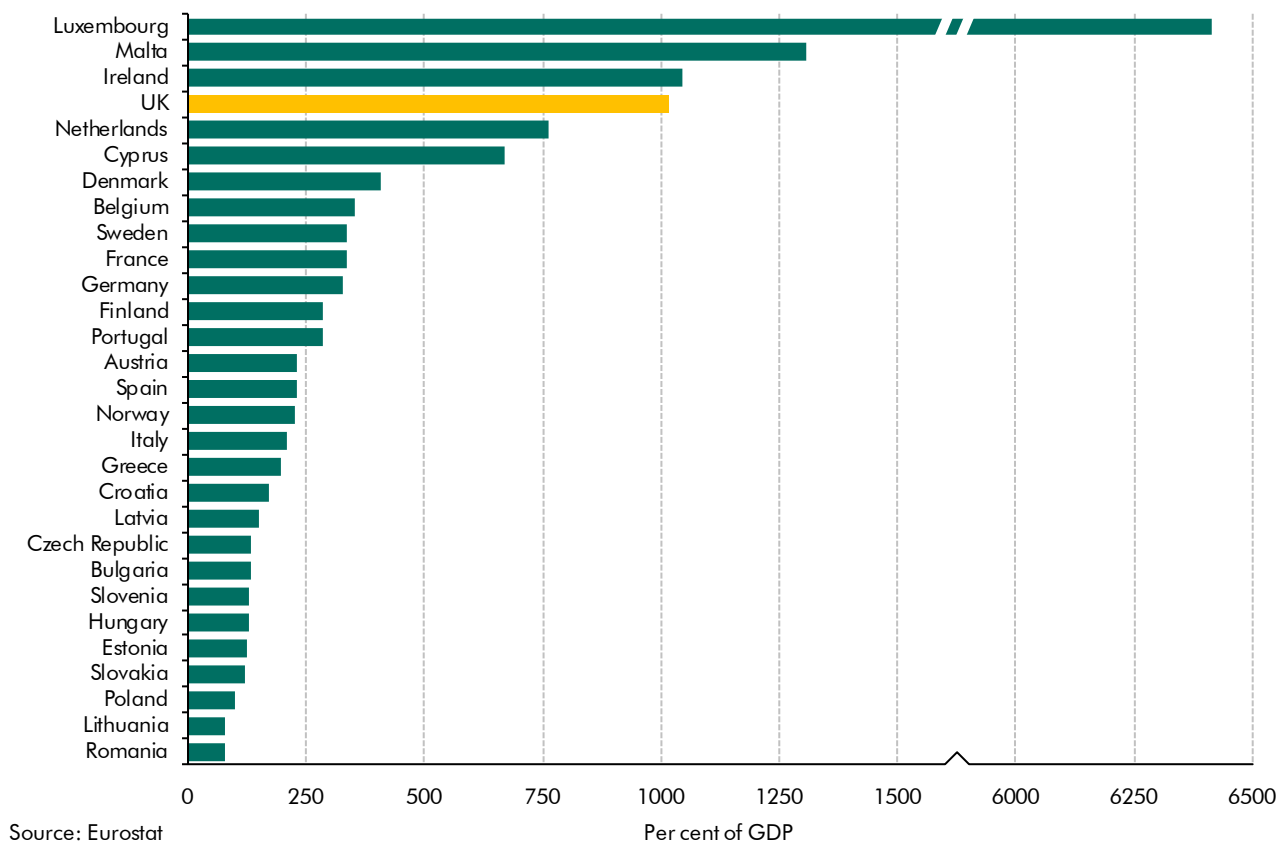
Financial sector

- 5.18 The UK has a large financial sector relative to the size of the economy, with the financial sector's consolidated non-equity liabilities over ten times larger than nominal GDP. That is greater than in any other major European country (Chart 5.2). By extension, the potential risk associated with that sector is also large. Any assessment of fiscal risks associated with financial sector liabilities also needs to recognise that financial sector assets can also move to the public sector during times of stress, providing one route by which the cost of financial assistance measures can be partly recovered over time.

² See *Analyzing and Managing Fiscal Risks – Best Practices* (June 2016) and *The Fiscal Costs of Contingent Liabilities: A New Dataset* (January 2016).

³ Paragraph 5.11 of ESA 2010 specifies that "[a]lthough contingent assets and contingent liabilities are not recorded in the accounts, they are important for policy and analysis, and information on them needs to be collected and presented as supplementary data. Even though no payments may turn out to be due for contingent assets and contingent liabilities, a high level of contingencies may indicate an undesirable level of risk on the part of those units offering them".

Chart 5.2: Consolidated non-equity liabilities of financial corporations in Europe (2014)



5.19 The financial crisis of the late 2000s has had large consequences for the public sector. The Treasury disbursed around £133 billion during and following the financial crisis as a result of its interventions, as well as assuming the private debts of Bradford & Bingley and Northern Rock and extending over £1 trillion in guarantees.⁴ Over time, this exposure has declined, as guarantee schemes closed, balance sheets shrank and principals repaid to the Treasury. By the time of our March 2016 *EFO*, principal repayments amounted to £56.2 billion. But risk remains, with the market values of RBS’ and Lloyds’ shares implying a £22 billion loss on the principal extended for share purchases.

5.20 Following the financial crisis, the Coalition Government introduced a variety of reforms to the regulation of financial services. These came into force in 2013. The new regulatory architecture comprises two new statutory decision-making bodies at the Bank of England:

- the **Prudential Regulation Authority** Board, responsible for micro-prudential (i.e. institution-specific) supervision and regulation; and
- the **Financial Policy Committee**, responsible for identifying, monitoring and addressing risks to the UK financial system, with a view to protecting and enhancing resilience.

⁴ National Audit Office, *HM Treasury Resource Accounts 2011-12. The Comptroller and Auditor General’s Report to the House of Commons*, July 2012.

- 5.21 The financial crisis demonstrated that regulatory measures may not always be successful in mitigating the exposure to large shocks. This may be particularly true in the UK given its large and globally focused financial sector. Recognising that, the legislation requires the Treasury and the Bank of England to maintain a memorandum of understanding on financial crisis management. Under the memorandum, the Chancellor has a power of direction over the Bank to address a serious threat to financial stability, for example by conducting special support operations for the financial system that go “*beyond the Bank’s published frameworks*”.⁵
- 5.22 In some cases, policy designed to address risk in the financial sector can shift it elsewhere by influencing the behaviour of market participants. For example, in response to the uncertainty caused by the bank run on Northern Rock in 2007, the Financial Services Authority increased deposit insurance to 100 per cent of the first £35,000 of each depositor’s claim. The deposit protection limit has since been increased to £75,000. But if depositors expect full compensation for losses, then they may no longer consider the risk associated with particular banks or demand premium for riskier business models. This can create moral hazard on behalf of the banks.⁶
- 5.23 Empirical estimates suggest that the subsidy associated with implicit government backing for financial institutions can be very large.⁷ The IMF uses contingent claims analysis (CCA) models for the estimation of implicit contingent guarantees to the financial sector. These take the difference between the expected loss associated with the guarantee-free (or fair value) credit spread and the expected loss from observed bank credit spread as an estimate of the market-implied contingent liability. Credit rating information can also be useful in measuring implicit contingent liabilities, by comparing an ‘ordinary’ credit rating of an institution with one that abstracts from the possibility of government support.

Non-financial sector

- 5.24 It may be the case that the government is forced to support institutions outside the financial sector should they come under stress. The government may wish to provide support to companies to relieve them from liquidity problems or to increase their commercial value. For example, in 2012 the Coalition Government transferred £37.5 billion of historic liabilities from the Royal Mail pension scheme to a new public sector scheme (the Royal Mail Statutory Pension Scheme). Around £28 billion worth of assets were also transferred to the Government. Removing the liability of the pension fund deficit was seen as a prerequisite to the subsequent privatisation of the Royal Mail.
- 5.25 We report on new explicit contingent liabilities in our *EFOs*, but also try to flag fiscal risks associated with possible implicit liabilities. For example, in our March 2016 *EFO* we noted that a small number of universities in the UK had recently issued bonds in their own names,

⁵ See *Memorandum of Understanding between the Bank, including the PRA, and HM Treasury re: Financial Crisis Management*, April 2013.

⁶ See for example Bartholdy, J, Boyle, G and Stover, R, *Deposit insurance and the risk premium in bank deposit rates*, *Journal of Banking & Finance* 27 (2003) 699–717.

⁷ For example, Standard & Poor’s estimated that the average fiscal exposure to risk from the financial sector across 75 countries rated in mid-2008 was about 27 per cent of GDP. See Cebotari, A, *Contingent Liabilities: Issues and Practice*, IMF WP 08/245, 2008.

typically raising around £¼ billion each. Universities are classified as ‘non-profit institutions serving households’ in the National Accounts, so are part of the private sector. As such, these liabilities will not add to the ONS measure of public sector net debt or feature in our fiscal forecast. Moreover, since the bonds are not issued with a government guarantee, they are not contingent liabilities in departmental accounting terms either. But given the public service nature of universities’ roles, we felt it was worth flagging the possibility that if one or more were to default on their bonds, the liabilities could ultimately be transferred to government. Investors in universities’ bonds might even anticipate that when choosing to purchase those bonds. For example, the rating assigned by agency Moody’s to a bond issued by Cardiff University earlier this year reflected – among other things – its expectation of “extraordinary support” from government in the event of a possible default.

5.26 From time to time, the ONS reclassifies entities from the private to the public sector, thereby adding to the measured liabilities of the public sector. If investors in the debt of those entities already viewed them as implicitly guaranteed by government, such reclassifications would convert implicit to explicit liabilities. Two recent examples of relatively large reclassifications that might fall into that category include the 2015 decision to reclassify housing associations in England to the public corporations sector and the 2012 decision to reclassify Network Rail into the central government sector.

Explicit contingent liabilities

5.27 Information on public sector contingent liabilities is reported in the Whole of Government Accounts (WGA), departmental accounts and in notifications to Parliament. These can include provisions, contingent liabilities and remote contingent liabilities. Departments are required to report on provisions as part of the net liabilities included on their balance sheet. They are also required to report on contingent liabilities following international accounting standards, although the extent of information provided can vary. The WGA performs a valuable service in explicitly identifying the main quantifiable contingent liabilities. International standards do not require accounts to provide any information about remote contingent liabilities, but departments are required to make these explicit under the Government’s own accounting framework.⁸

5.28 Departments are also required to inform Parliament in advance of entering into specific commitments that will generate future liabilities. The arrangements for this are specified in *Managing public money*, the Government’s published guidelines on financial management for public sector bodies. This requires departments to cover any persistent liabilities via specific statutory powers, with statements made to both Houses when statutory liabilities are entered into. It also requires departments to report any material or non-standard non-statutory liabilities to Parliament via a written Ministerial statement and an accompanying departmental minute. Such commitments need to be cleared with the Treasury first, which provides a channel by which the Treasury can monitor and manage fiscal risks.

⁸ The Financial Reporting Standards set by the Financial Reporting Advisory Board.

- 5.29 The National Audit Office (NAO) also plays a significant role in assessing risks faced by departments and ensuring that they are managed and reported on accurately and appropriately. It undertakes routine statutory audits of departmental annual accounts as well as value-for-money assessments on topical issues. In a recent report, the NAO noted the rising trend in such liabilities and commented on the management of the associated risks.⁹ We also considered these trends in a fiscal sustainability analytical paper earlier this year: *Public sector balance sheet*.¹⁰
- 5.30 The available information on explicit future liabilities spans much of the IMF's categorisation of fiscal risks, as illustrated by some of the bigger examples that follow.

Future costs associated with past activities

- 5.31 The largest future liabilities quantified in the WGA are the future nuclear decommissioning costs reported as provisions by the Nuclear Decommissioning Authority (NDA). The 2014-15 WGA reported the latest estimate of the nuclear decommissioning provision as £83 billion, with the Sellafield reactor plant accounting for about 65 per cent of the total. The estimated future costs of nuclear decommissioning have increased every year since the WGA were first published in 2011 (covering the 2009-10 fiscal year), rising by almost 50 per cent in five years. That rise reflects changes in measurement and plans to manage the work required, rather than rises in the amount of material to be decommissioned. The estimate jumped even more dramatically to £161 billion in the NDA's 2015-16 accounts, although this time the rise was explained by converting a little changed flow of future expected costs into a single present value figure using a lower discount rate (as stipulated by the Treasury). The costs of nuclear decommissioning represent a pressure on the new Department of Business, Energy and Industrial Strategy's departmental budget.
- 5.32 Another future liability is the prospective cost of decommissioning oil and gas fields. Legislation allows these to be set off against profits chargeable to petroleum revenue tax (PRT) and ring-fence corporation tax. The 2014-15 WGA included a provision of £7.5 billion in respect of the effect on PRT receipts (mainly through expected repayments of previously paid tax) from decommissioning costs out to 2041-42.

Legal cases

- 5.33 HM Revenue and Customs (HMRC) includes both provisions and contingent liabilities in its accounts in relation to risks from litigation where the potential tax that HMRC might have to repay is over £100 million. HMRC legal provisions for 2015-16 were £5.9 billion, while contingent liabilities were £49.1 billion across 23 cases. In our *EFO* forecasts, we assess the latest information available from HMRC on all large court cases and their associated risks, and include our central assumption of the amount and timing of payments over the forecast period. We assume that the total amount paid out over that period will be equal to the latest provision and that, due to the lengthy nature of litigation cases, it will be weighted toward the later years.

⁹ *Evaluating the government balance sheet: provisions, contingent liabilities and guarantees*, National Audit Office, June 2016.

¹⁰ *Fiscal sustainability analytical paper: Public sector balance sheet*, Office for Budget Responsibility, July 2016.

5.34 Another category of legal cases that represent significant fiscal risks is clinical negligence claims, as reported by the NHS Litigation Authority (NHSLA). This is an area where likely future costs are increasing because provisions for new claims are building up faster than the provisions for previous cases are resolved. The 2014-15 WGA reported estimates that the NHSLA was likely have to pay settlements of £29 billion, and that it might (but probably would not) have to pay a further £14 billion. The NHSLA's 2015-16 accounts report a £27.8 billion increase in provisions, due to the same discount rate reduction that boosted the NDA's estimate of the present value of future costs for nuclear decommissioning. The costs of clinical negligence represent a pressure on the Department of Health's departmental budget.

Private non-financial companies

5.35 The UK Government has an explicit exposure to compensate members of eligible defined benefit pension schemes, when their employers become insolvent. These compensation payments are made by the Pension Protection Fund (PPF), which was established under the Pensions Act 2004. The PPF is designed to be self-financing, with the compensation payments financed by a risk-based levy on eligible schemes. At the end of 2014-15, the PPF's assets exceeded its liabilities by £3.7 billion.

5.36 The PPF reported £1.3 billion of provisions and £1.2 billion of contingent liabilities at the end of March 2015. The contingent liabilities represented its estimate of the risk associated with future compensation payments to members of pension schemes for businesses that were currently solvent, but where the scheme was in deficit and the business was categorised as being at high risk of future insolvency. That figure is small relative to the overall deficit of defined benefit pension schemes. The PPF estimates that as of the end of August 2016, 85 per cent of all defined benefit pension schemes were in deficit, with a combined deficit of £489 billion.¹¹ In a broad economic sense, that aggregate deficit is an estimate of the maximum value of the public sector's implicit contingent liability in having set up the PPF.

Natural disasters and other civil emergencies

5.37 The Cabinet Office's 'National Risk Register of Civil Emergencies'¹² (NRR) identifies a number of high priority risks to society based on the likelihood and impact of an emergency. In the 2012 edition, it listed pandemic influenza, coastal flooding, terrorist attacks and volcanic eruptions as the main priorities. The register is then used by national and local government to prepare for and respond to an emergency, and cross-referenced with the National Risk Assessment, the classified and unpublished version of the NRR.

5.38 One of the highest priorities in the NRR is coastal flooding. In a report into flood risk management by the NAO,¹³ it was estimated that 5 million properties were at risk of flooding as of December 2013 and a key risk to future sustainability of flood management is global warming. The NAO also concluded that the limited resources that DEFRA and the

¹¹ As reported in the September update of the Pension Protection Fund's 'PPF 7800 index', available on the PPF's website.

¹² *National Risk Register of Civil Emergencies: 2012 edition*, Cabinet Office, February 2012.

¹³ *Strategic flood risk management*, National Audit Office, November 2014.

Environment Agency have for maintenance is increasing the flood risk further, particularly in less densely populated areas.

Fiscal devolution

- 5.39 One area of public sector activity that might present a source of new or different risks in the future is fiscal devolution. The devolved administrations within the UK have the power to borrow and have recently gained power over an increasing number of tax and spending streams that were previously centralised. Borrowing powers cover in-year cash management needs, tax forecast errors (Scotland and Wales only), economic shocks (Scotland only) and capital investment.
- 5.40 The devolved administrations do not directly borrow from the National Loans Fund (NLF) of central government. Instead, the enabling legislation allows for the relevant territorial Secretary of State to borrow from the NLF and to onward-lend to the devolved administration. The UK Government also imposes certain limits on the borrowing powers of devolved administrations, which mitigates associated risks. Taking these in order of the scale of potential fiscal risk:
- under the Scotland Act 2016 and associated Fiscal Framework, from April 2017 the **Scottish Government** has a resource borrowing limit of £600 million each year with a statutory cap of £1.75 billion. Resource borrowing is made from the NLF with repayment periods between three to five years. Within these overall limits further specific annual limits are applied to in-year cash management (£500 million), forecast error (£300 million) and Scottish specific economic shocks (£600 million). In addition, the Scottish Government may undertake borrowing for capital expenditure with a statutory cap of £3 billion and an annual limit of 15 per cent of that borrowing cap. Capital borrowing can be made via commercial loans and bonds as well as the through the NLF;
 - under the Wales Act 2014, from April 2018 the **Welsh Government** will have a statutory resource borrowing cap of £500 million from the NLF, with annual limits of up to £500 million for in-year cash management and up to £200 million in the case of negative receipts forecast errors. It will additionally be able to borrow up to £125 million a year for capital spending within a separate statutory cap of £500 million. Capital borrowing can be made via commercial loans and bonds as well as through the NLF; and
 - the **Northern Ireland Executive** can borrow up to £250 million from the NLF for in-year cash management (with no separate annual limit) – facilitated by the Northern Ireland Act 1998. It can borrow up to £200 million a year¹⁴ within a statutory cap of £3 billion for capital spending using the provisions contained within the Northern Ireland (Loans) Act 1975.

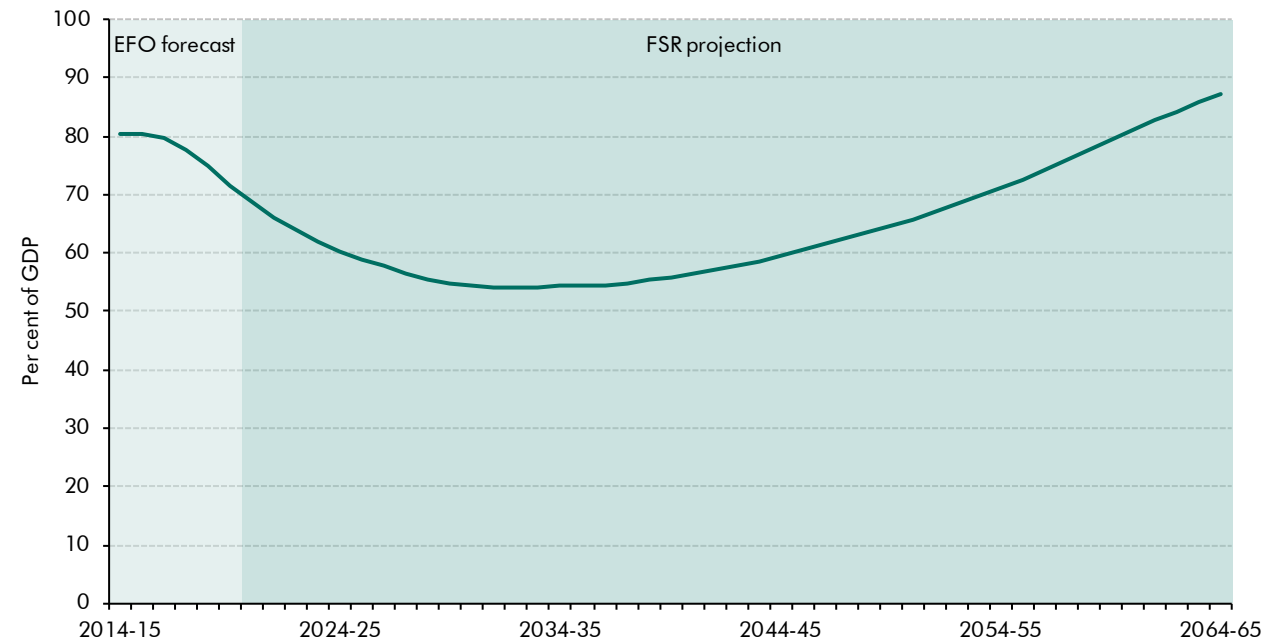
¹⁴ Additional flexibilities have been agreed in some years.

Longer-term pressures

Demographic pressures from an ageing population

- 5.41 The legislation that established the OBR requires that each year we produce an analysis of the sustainability of the public finances. We have done that in our *Fiscal sustainability reports (FSRs)*. In the *FSR* we consider balance sheet indicators from the National Accounts and the Whole of Government Accounts, but focus our assessment on illustrative long-term fiscal projections. We make a number of assumptions that allow us to focus our analysis on the consequences of demographic trends – in particular, the ageing of the population that has resulted from rising life expectancy.
- 5.42 In each *FSR*, our central projection and most variants around it have shown the public finances to be on a path that would ultimately be unsustainable in the absence of future policy changes. That has primarily been the consequence of an ageing population increasing demand for health and social care services and the cost of providing state pensions. In our 2015 *FSR*, these pressures more than accounted for a projected 4.2 per cent of GDP increase in public spending between 2019-20 and 2064-65, which was sufficient to put debt on upward path by the mid-2030s and to reach 87 per cent of GDP in 50 years' time (Chart 5.3).

Chart 5.3: 2015 *FSR* projection for public sector net debt



Source: OBR

Non-demographic pressures on health spending

- 5.43 The biggest item of age-related spending in our long-term fiscal projections is health care. As we set out in a fiscal sustainability analytical paper published last month, the long-term

pressure associated with health spending goes well beyond the ageing of the population.¹⁵ Most studies of past trends in health spending identify non-demographic cost pressures as the main source of its rise as a share of GDP. Those include cost-raising technological advances (e.g. those that mean more health conditions are treatable or that extend lives while also extending the proportion of life consuming treatments) and the rise of chronic conditions (e.g. obesity and mental health conditions).

5.44 The results in our working paper show that including an explicit assumption about ongoing excess cost growth in our long-term health spending projection could have very big effects on our assessment of the sustainability of the public finances. As with pressures from an ageing population, this would be a relative slow-moving, but potentially very large, fiscal risk that future governments could respond to over time.

Questions

5.45 We would welcome views on:

- are there particular gaps in the current risk reporting that we should try to fill?
- is this a sensible framework within which to think about the scope of the *FRR*?
- how should the OBR gather information on implicit contingent liabilities?
- how can the OBR usefully present information about implicit contingent liabilities?
- how should we take into account feedback between the financial sector and fiscal sustainability?

¹⁵ See *Fiscal sustainability and public spending on health*, Licchetta and Stelmach, September 2016.

6 What should we present for the Government to respond to?

Introduction

6.1 The Treasury's 2015 review of the OBR recommended that the Government should respond formally to our biennial report on fiscal risks in order to increase its *"impact... on both the public debate and the policy making process."*¹ For our report to contribute most effectively to those objectives, as well as to our statutory duty of examining and reporting on the sustainability of the public finances, it will be important that we frame our conclusions in a way that encourages a substantive response from Government. This chapter considers how we might do that. In order to do so, it:

- **reviews possible approaches** to managing the type of risks that we are likely to identify;
- **describes the existing roles and responsibilities** in managing fiscal risks; and
- **sets out options for how we could present our conclusions** to which the Government will formally respond.

Approaches to fiscal risk management in the public sector

6.2 Parliament requires the OBR not to make normative statements about government policy, so it will not be for us to make recommendations about the best approach to managing fiscal risks. That said, in framing our conclusions it will be important to be aware of the risk management options that are available to governments. The choices that governments make in this area will reflect a number of factors, including:

- the **risk appetite** of the government, which might be expected to represent the wishes of those who elected it;
- the **perceived benefits of taking on risks** in pursuit of other objectives;
- the **estimated costs of reducing exposure to risks**; and
- **how it balances these factors** to bring the amount of risk to which it is exposed into line with the amount it is willing to tolerate.

¹ HM Treasury review of the Office for Budget Responsibility, Led by Sir Dave Ramsden, Chief Economic Adviser to the Treasury, HM Treasury, September 2015.

6.3 Faced with a wide variety of risks and trade-offs, governments have a number of options available. For example:

- the **IMF's 2014 fiscal transparency code** recommends specific actions that it considers 'advanced' in respect to fiscal risk management across seven areas (budgetary contingencies, asset and liability management, guarantees, public-private partnerships, financial sector exposure, natural resources and environmental risks). These actions include, for example, managing balance sheet risks in accordance with a published strategy or setting a legal limit on new or total use of guarantees;
- the **IMF's 2016 'best practices' paper** identifies mitigation (through the use of direct controls, indirect tools such as regulation or risk transfer instruments like insurance policies), provisioning (either in an accounting sense, by scoring provisions against expenditure, or setting aside contingencies within budgets or building up buffer funds) or accommodation (where the risk is simply borne by government itself);² and
- the **Treasury's 2004 'Orange Book' guidance on risk management** notes that *"The resources available for managing risk are finite and so the aim is to achieve an optimum response to risk, prioritised in accordance with an evaluation of the risks."* In terms of responses to risk, it recommends the standard 'four Ts' of risk management: *"tolerating the risk; treating the risk in an appropriate way to constrain the risk to an acceptable level or actively taking advantage, regarding the uncertainty as an opportunity to gain a benefit; transferring the risk; [and/or] terminating the activity giving rise to the risk."* It also advises that the risk exposure that remains after any response *"should be acceptable and justifiable – it should be within the risk appetite."*³

6.4 Whether described as 'accommodating' or 'tolerating' risk, it is important to recognise that governments cannot reduce fiscal risks to zero. Indeed, one role of government is to act as 'insurer of last resort', for example by supporting the incomes of those who are unable to work or by standing behind the banking system in times of severe stress. As such, we will need to frame our conclusions in a way that allows the Government to explain the choices it has made in terms of the fiscal risks to which it is exposed and how it manages them. Indeed, one of the benefits of more systematic fiscal risks reporting is likely to be in the routines and accountability that it establishes with regard to changes in risks from one report to the next – i.e. drawing attention to risks that are building and assessing the effect of any actions taken to mitigate them.

Roles and responsibilities for managing fiscal risks

6.5 The institution with overall responsibility for managing fiscal risks in the UK is the Treasury. The Treasury's Executive Management Board (EMB) oversees three sub-committees looking specifically at risk. The Economic, Fiscal and Operational Risk Groups report directly to the

² *Analyzing and managing fiscal risks – best practices*, IMF, June 2016.

³ *The Orange Book: Management of risks – principles and concepts*, HM Treasury, October 2004. Emphasis added to the quotation on possible responses to risk.

Board and are each chaired by an EMB member. The Fiscal Risk Group (FRG) has particular responsibility for identifying and assessing risks associated with the fiscal objective that the Government has set the Treasury for the life of this Parliament to *“Reduce the structural deficit in a fair and responsible way.”*

- 6.6 The FRG meets every month and is chaired by the Treasury’s Chief Economic Adviser. It contributes to the Treasury’s risk management framework by tracking indicators, horizon-scanning and assessing the likelihood, probable impact and potential mitigation of risks. This enables the EMB and senior management to take action where appropriate. As part of this process, the FRG tracks a standard set of indicators to scrutinise trends and identify risks to the fiscal objectives.
- 6.7 At its first meeting each quarter, the FRG looks back over the previous quarter to:
- **assess the overall risk status of the fiscal objectives**, taking into account significance and likelihood of risks identified, and the effectiveness of any intervention to date; and
 - **identify other actions the Treasury could or should do to influence its desired outcomes**, feeding any findings into the performance report process, which are in turn put forward to the EMB.
- 6.8 The Treasury’s non-executive board members are informed of the FRG’s analysis through the quarterly reporting process. While the FRG supports the EMB in managing the department’s risks, the EMB and Directors remain formally accountable for risk management at departmental and group level respectively.
- 6.9 The FRG does not replace existing processes, including Budgets and Autumn Statements, general analysis among Treasury groups, or departmental contingency planning. Instead, it focuses on risk identification and on encouraging members to look at longer-term issues.

How could we present our conclusions?

- 6.10 The IMF best practice recommendations described in Chapter 3 and the international examples described in Chapter 4 are most relevant to fiscal risks reporting by governments, where the analysis of risks and the approach to managing them are reported together. As such, none provide the perfect model for us as an independent fiscal council producing a report to which the Government will respond.
- 6.11 Drawing on the material in Chapters 3 and 4 – and the approaches to risk management outlined above – it is clear that there are a number of options available to us, not all of which are mutually exclusive. For example, we could:
- aim to **be as comprehensive as possible**, providing an exhaustive checklist of potential fiscal risks – large and small, likely or remote – and seeking the Government’s response to each;

What should we present for the Government to respond to?

- try to **bring all the risk analysis together into a single figure** – e.g. a ‘value-at-risk’ estimate or the result of a fiscal stress test calibrated to represent a scenario that could be expected to hit once in a given number of years – and seek the Government’s response in terms of whether it is content for the public finances to be exposed to that amount of risk or whether it is trying to reduce/increase it as risk is traded off against other objectives; and
- **use our judgement to identify the most significant fiscal risks** – perhaps based on the common three-by-three matrix approach of assigning high/medium/low assessments of likelihood and impact of given risks – in order to focus the Government’s response on issues with the greatest potential to affect fiscal sustainability. One way to present our conclusions if we took this approach would be to populate a risk register, with the OBR responsible for completing sections on identifying risks and assessing their likelihood and impact, and requesting that the Government/Treasury response includes completing sections on how the risks that have been identified are being managed and the judgements about costs and benefits that have led to that approach.

Questions

6.12 We would welcome views on:

- options for how we could present our conclusions in the *Fiscal risks report*?
- UK or international examples of recommendations that have been presented to governments that we could draw on.

7 Next steps

- 7.1 This discussion paper has outlined many key questions that we will have to consider when preparing our first *Fiscal risks report*. We are now requesting responses to these questions and – given the wide-ranging nature of this topic – would also be welcome responses that detail further areas of inquiry that may not have been mentioned in the preceding chapters.
- 7.2 While there are examples of fiscal risks reporting around the world, this remains a relatively new area for governments and independent fiscal institutions. We would therefore be particularly grateful for responses that detail credible research and evidence that we can draw on as we embark on this task.
- 7.3 Responses will help inform our analytical agenda in preparing our first and subsequent *Fiscal risks reports*, and any working papers that explore specific topics in greater detail.
- 7.4 Please send all comments to OBRfeedback@obr.gsi.gov.uk – ideally by 27 January 2017. Please indicate whether you are happy for us to cite your submissions publicly.

