

9 A fiscal stress test

Introduction

- 9.1 The International Monetary Fund (IMF) recommends that fiscal risk analysis should include a ‘fiscal stress test’, which examines how the public finances would respond to a significant economic and financial shock. It argues that this can provide a “*more comprehensive and integrated assessment of the potential shocks to government finances*” and that it “*can help policymakers simulate the effects of shocks to their central forecasts and their implications for government solvency, liquidity, and financing needs.*”¹
- 9.2 In this chapter, we present the results of an illustrative fiscal stress test for the UK. The Bank of England carries out annual stress tests of the UK banking system, which has allowed us to base our fiscal stress test on the Bank’s latest ‘annual cyclical scenario’.² In it, the UK is hit by a period of synchronised domestic and global economic and financial market stress. By filling in a few variables that are important for fiscal outcomes, but which the Bank does not need for its own purposes, we can generate the inputs required to produce an alternative fiscal scenario under these challenging economic conditions.
- 9.3 At one level, putting ‘bad’ economic news into our fiscal models will simply generate ‘bad’ fiscal news – the worse the inputs, the worse the outputs. But by running the stress test we gain insights that are not apparent from simple linear ready-reckoners. It has shown:
- how the higher stock of debt and large quantity of gilts held by **the Bank’s Asset Purchase Facility (APF)** have increased sensitivity to interest rate changes;
 - how the use of losses in the **corporate tax system** depress receipts in subsequent years;
 - the contrasting sensitivity of **taxes on property and other transactions**, which fall sharply, and taxes on property itself, which do not; and
 - the importance of the **composition of GDP** to the scale of any receipts shortfall.
- 9.4 We compare the results with the evolution of the public finances during and after the last recession and financial crisis. The composition of the fiscal damage looks very different, implying different potential challenges for policy makers.
- 9.5 The stress test is a ‘what if’ analysis of a low-probability, high-impact adverse scenario rather than an event that we judge at all likely in the short term – the Bank refers to it as a

¹ IMF, *Analyzing and Managing Fiscal Risks – Best Practices*, May 2016.

² Bank of England, *Stress testing the UK banking system: key elements of the 2017 stress test*, March 2017

'tail-risk scenario'. It assumes that the economy was hit by domestic and global shocks at the start of 2017 and is already in recession, with interest rates raised to deal with a more challenging inflation-output trade-off than is apparent at the moment.

9.6 This chapter:

- summarises the **assumptions** underpinning the stress test and how they differ from those in our March 2017 *Economic and fiscal outlook (EFO)*;
- describes the **results** for receipts, spending, financial transactions and the main fiscal aggregates, plus liquidity and financing metrics recommended by the IMF;
- compares the results with what happened during the **late-2000s recession**; and
- draws some **conclusions**.

Assumptions underpinning the stress test

Economic assumptions

9.7 The Bank's scenario assumes a sharp slowdown in global growth, a sudden increase in the return investors demand for holding UK assets (leading to a sharp fall in the pound) and higher funding costs for banks. This results in a sharp fall in UK GDP and house prices, and a sharp rise in unemployment. The fall in the pound raises consumer price inflation, generating a challenging trade-off between growth and inflation that forces the Bank's Monetary Policy Committee (MPC) to increase Bank Rate – the biggest contrast with the late-2000s crisis. Stock markets and commercial property prices fall sharply.

9.8 We have had to make a number of assumptions about economy variables necessary to run our fiscal models – the expenditure and income composition of GDP, average earnings growth, RPI inflation and property transactions. In most cases it is relatively simple to ensure that they broadly follow the Bank's scenario. The key assumption is that the shock to output is largely permanent, with the output loss at the five-year horizon assumed to comprise almost entirely a loss of potential output with only a small negative output gap remaining. That is important when considering the implications of the stress test for the Government's deficit target, which is expressed in terms of the cyclically adjusted budget deficit.

9.9 The following tables detail the main economic assumptions (Table 9.1) and how they differ from our March forecast (Table 9.2), and the key fiscal determinant assumptions (Table 9.3) and how they differ from our March forecast (Table 9.4). In summary:

- **Real GDP** falls by 4.7 per cent between the end of 2016 and the end of 2017, slightly less than in the late-2000s recession, but more than in the early-1990s one. By 2021-22, real GDP is 9.2 per cent lower than in our March forecast. This is driven by lower investment, particularly residential, and weaker consumer spending as inflation rises.

- A negative **output gap** opens up, but we assume the shock is largely structural – consistent with hysteresis effects from high unemployment and persistent post-shock productivity weakness like that seen over the past decade. This implies a significantly weaker path for potential output and only a relatively small negative output gap despite the large GDP shortfall. The output gap peaks at around 3 per cent at the end of 2017 and narrows slowly to reach 1 per cent in 2021.
- **CPI inflation** is significantly higher than in our March forecast, driven primarily by the depreciation of sterling. It peaks at just over 5 per cent in 2018. The GDP deflator also picks up, but later and by less than the CPI, as inflation expectations become unanchored, feeding through to higher wage growth and to domestically generated inflation. This means that nominal GDP falls by less than real GDP – ending the period around 7 per cent lower than in our March forecast.
- **Employment** falls significantly, with the unemployment rate reaching 9.5 per cent in 2018 and remaining elevated throughout the period. There are more than a million fewer people employed at the end of the period than in our March forecast.
- Despite lower employment, **productivity growth** is also materially weaker than in our March forecast, averaging 0.5 per cent a year from 2017 to 2021 – 1.2 percentage points below our March forecast. But **earnings growth** is stronger in the first few years as domestic inflationary pressures increase. As inflation eases, earnings growth is weaker in later years, consistent with a weaker path for productivity growth.
- The sterling effective **exchange rate** depreciates by 30 per cent over 2017. On average, it is 26 per cent below our March assumption over the period.
- Domestic inflationary pressures force the MPC to increase **Bank Rate** to 4 per cent by the end of this year, where it is assumed to stay until mid-2020. That feeds through to higher mortgage interest payments, which means that RPI inflation increases even more sharply than CPI inflation, peaking at just over 7 per cent in early 2018.
- **Long-term interest rates** are higher than in our March forecast, reflecting both a higher path for Bank Rate and a risk premium on UK government bonds.
- **Oil prices** fall below \$30 a barrel for three years reflecting slower global growth – around half the level assumed in our March forecast.
- **Equity prices** fall sharply – down 45 per cent in the year to end-2017.
- **House prices** fall by a third in the two-and-a-half years to mid-2019. By 2021, house prices are around 40 per cent lower than our March forecast, and roughly in line with their 2009 levels. Property transactions also fall significantly. We assume the fall in demand is more pronounced for higher-value properties.
- As output contracts, **corporate profits** fall in the near term, with non-oil, non-financial profits falling by around 8 per cent over the course of 2017.

Table 9.1: Economy stress test scenario

	Percentage change on a year earlier, unless otherwise stated				
	2017	2018	2019	2020	2021
UK economy					
Gross domestic product (GDP)	-1.8	-1.6	1.2	1.0	1.0
GDP per capita	-2.3	-2.2	0.7	0.5	0.5
GDP level (2017=100)	100.0	98.4	99.6	100.6	101.6
Nominal GDP	0.3	-0.3	4.6	3.1	2.9
Output gap (per cent of potential output)	-1.6	-2.8	-2.0	-1.4	-1.0
Expenditure components of GDP					
Domestic demand	-1.5	-1.7	1.2	1.1	1.1
Household consumption ¹	-0.7	-1.9	0.7	0.6	0.6
General government consumption	1.2	0.7	0.4	0.9	1.3
Fixed investment	-7.3	-2.9	3.8	3.8	2.9
Business	-6.9	-1.1	5.3	3.5	2.7
General government ²	0.1	1.2	2.1	6.1	3.8
Private dwellings ²	-12.5	-9.4	1.5	2.9	2.8
Change in inventories ³	-0.1	-0.1	0.0	0.0	0.0
Exports of goods and services	-4.4	-2.9	0.6	-0.7	-0.7
Imports of goods and services	-2.9	-2.9	0.5	-0.2	-0.5
Balance of payments current account					
Per cent of GDP	-2.3	-3.1	-2.6	-2.5	-2.3
Inflation					
CPI	2.7	4.9	4.2	2.2	2.0
RPI	4.8	6.2	3.7	2.3	2.3
GDP deflator at market prices	2.2	1.3	3.4	2.1	1.8
Labour market					
Employment (millions)	31.2	30.5	30.7	31.0	31.3
Productivity per hour	0.1	1.0	0.8	0.4	0.3
Wages and salaries	0.9	0.7	4.5	3.0	2.8
Average earnings ⁴	2.8	3.3	3.9	2.2	2.0
LFS unemployment (% rate)	6.9	9.5	9.1	8.5	7.7
Claimant count (millions)	1.53	2.43	2.33	2.11	1.87
Household sector					
Real household disposable income	-1.1	-1.8	1.2	1.2	1.1
Saving ratio (level, per cent)	5.8	6.3	7.4	8.3	8.9
House prices	-3.8	-15.4	-14.6	2.7	5.5
World economy					
World GDP at purchasing power parity	-0.3	0.6	3.1	3.1	3.2
Euro area GDP	-1.6	-1.2	1.2	0.8	0.9
World trade in goods and services	-4.6	-2.5	3.2	3.0	3.2
UK export markets ⁵	-5.5	-3.4	3.3	3.0	3.2

¹ Includes households and non-profit institutions serving households.

² Includes transfer costs of non-produced assets.

³ Contribution to GDP growth, percentage points.

⁴ Wages and salaries divided by employees.

⁵ Other countries' imports of goods and services weighted according to the importance of those countries in the UK's total exports.

Table 9.2: Economy: stress test versus March forecast

	Percentage change on a year earlier, unless otherwise stated				
	2017	2018	2019	2020	2021
UK economy					
Gross domestic product (GDP)	-3.9	-3.2	-0.5	-0.9	-1.0
GDP per capita	-3.6	-3.0	-0.4	-0.7	-0.8
GDP level (2017=100)	0.0	-3.1	-3.6	-4.4	-5.3
Nominal GDP	-3.5	-3.5	1.2	-0.7	-1.1
Output gap (per cent of potential output)	-1.8	-2.7	-1.9	-1.4	-1.0
Expenditure components of GDP					
Domestic demand	-3.1	-2.9	-0.5	-0.8	-1.0
Household consumption ¹	-2.5	-2.7	-0.9	-1.1	-1.3
General government consumption	0.0	0.0	0.0	0.0	0.0
Fixed investment	-8.1	-6.0	0.4	-0.1	-0.5
Business	-6.8	-4.7	1.1	-0.4	-0.9
General government ²	0.0	0.0	0.0	0.0	0.0
Private dwellings ²	-15.0	-12.3	-0.9	0.0	-0.2
Change in inventories ³	-0.2	-0.2	0.0	0.0	0.0
Exports of goods and services	-7.9	-5.9	-0.9	-1.3	-1.1
Imports of goods and services	-5.0	-4.8	-0.9	-1.0	-1.1
Balance of payments current account					
Per cent of GDP	1.1	0.1	0.0	-0.4	-0.3
Inflation					
CPI	0.3	2.6	2.2	0.2	0.0
RPI	1.1	2.6	0.6	-0.8	-0.8
GDP deflator at market prices	0.4	-0.2	1.8	0.2	-0.1
Labour market					
Employment (millions)	-0.7	-1.6	-1.5	-1.3	-1.1
Productivity per hour	-1.5	-0.4	-0.8	-1.5	-1.6
Wages and salaries	-2.1	-2.4	1.2	-0.6	-1.0
Average earnings ⁴	0.1	0.5	0.9	-1.2	-1.6
LFS unemployment (% rate)	1.9	4.3	4.0	3.3	2.6
Claimant count (millions)	0.70	1.57	1.46	1.23	0.99
Household sector					
Real household disposable income	-1.1	-2.6	0.2	-0.4	-0.8
Saving ratio (level, per cent)	1.2	1.1	2.0	2.5	3.0
House prices	-10.3	-19.4	-19.0	-1.8	0.9
World economy					
World GDP at purchasing power parity	-3.7	-3.0	-0.6	-0.6	-0.5
Euro area GDP	-3.2	-2.8	-0.3	-0.7	-0.5
World trade in goods and services	-7.7	-6.1	-0.8	-1.1	-0.9
UK export markets ⁵	-8.6	-7.2	-1.0	-1.3	-1.1

¹ Includes households and non-profit institutions serving households.

² Includes transfer costs of non-produced assets.

³ Contribution to GDP growth, percentage points.

⁴ Wages and salaries divided by employees.

⁵ Other countries' imports of goods and services weighted according to the importance of those countries in the UK's total exports.

Table 9.3: Fiscal determinants: stress test scenario

	Percentage change on previous year, unless otherwise specified				
	2017-18	2018-19	2019-20	2020-21	2021-22
GDP and its components					
Real GDP	-3.3	-0.3	1.3	1.0	1.1
Nominal GDP ¹	-2.5	2.4	4.2	3.0	2.9
Nominal GDP (£ billion) ^{1,2}	1919	1965	2047	2108	2168
Nominal GDP (centred end-March £bn) ^{1,3}	1919	2010	2077	2138	2199
Wages and salaries ⁴	-0.1	1.9	4.5	2.7	2.9
Non-oil PNFC profits ^{4,5}	-0.6	-0.1	4.7	1.3	1.3
Consumer spending ^{4,5}	2.0	2.5	4.7	2.8	2.6
Prices and earnings					
GDP deflator	1.0	2.6	2.9	2.0	1.8
RPI (September) ⁶	5.2	6.0	3.3	2.4	2.3
CPI (September) ⁶	3.0	5.1	4.0	2.0	2.0
Average earnings ⁷	2.8	3.4	3.7	1.9	2.1
'Triple-lock' guarantee (September)	3.0	5.1	4.0	2.5	-
Key fiscal determinants					
Claimant count (millions)	1.89	2.44	2.28	2.05	1.82
Employment (millions)	30.9	30.5	30.8	31.1	31.4
Implied VAT gap (per cent)	11.3	9.6	8.5	8.2	8.1
Output gap (per cent of potential output)	-2.4	-2.6	-1.8	-1.4	-0.9
Financial and property sectors					
Equity prices (FTSE All-Share index)	2208	2501	2766	3009	3199
HMRC financial sector profits ^{1,5,8}	-5.7	-1.2	0.4	1.9	4.0
Residential property prices ⁹	-8.3	-16.0	-11.2	4.8	5.7
Residential property transactions (000s) ¹⁰	879	485	599	603	607
Commercial property prices ¹⁰	-14.5	-26.2	-0.9	-0.4	3.4
Commercial property transactions ¹⁰	-10.1	-19.2	-1.9	11.7	2.0
Oil and gas					
Oil prices (\$ per barrel) ⁵	29.3	24.0	28.4	35.4	42.4
Oil prices (£ per barrel) ⁵	30.6	28.3	32.7	39.2	45.4
Gas prices (p/therm) ⁵	31.9	29.8	34.4	41.4	47.9
Oil production (million tonnes) ⁵	47.4	47.4	47.4	45.0	42.8
Gas production (billion therms) ⁵	13.8	13.1	12.5	11.9	11.3
Interest rates and exchange rates					
Market short-term interest rates (%) ¹¹	3.6	4.5	4.3	4.1	3.5
Market gilt rates (%) ¹²	5.6	6.2	5.5	4.7	4.1
Euro/Sterling exchange rate (€/£)	0.88	0.86	0.88	0.90	0.93

¹ Not seasonally adjusted.² Denominator for receipts, spending and deficit forecasts as a per cent of GDP.³ Denominator for net debt as a per cent of GDP.⁴ Nominal. ⁵ Calendar year.⁶ Q3 forecast used as a proxy for September.⁷ Wages and salaries divided by employees.⁸ HMRC Gross Case 1 trading profits.⁹ Outturn data from ONS House Price Index.¹⁰ Outturn data from HMRC information on stamp duty land tax.¹¹ 3-month sterling interbank rate (LIBOR).¹² Weighted average interest rate on conventional gilts.

Table 9.4: Fiscal determinants: stress test versus March forecast

	Percentage change on previous year, unless otherwise specified				
	2017-18	2018-19	2019-20	2020-21	2021-22
GDP and its components					
Real GDP	-5.0	-1.9	-0.5	-1.0	-0.9
Nominal GDP ¹	-5.7	-0.9	0.7	-0.9	-1.1
Nominal GDP (£ billion) ^{1,2}	-110	-131	-121	-143	-172
Nominal GDP (centred end-March £bn) ^{1,3}	-142	-120	-130	-157	-187
Wages and salaries ⁴	-3.0	-1.2	1.2	-1.1	-1.0
Non-oil PNFC profits ^{4,5}	-3.8	-2.3	0.4	-2.9	-2.7
Consumer spending ^{4,5}	-2.3	-0.7	0.9	-0.9	-1.3
Prices and earnings					
GDP deflator	-0.7	1.0	1.3	0.1	-0.2
RPI (September) ⁶	1.4	2.5	0.3	-0.7	-0.8
CPI (September) ⁶	0.4	2.9	2.1	0.0	0.0
Average earnings ⁷	0.2	0.6	0.7	-1.6	-1.6
'Triple-lock' guarantee (September)	0.4	2.4	1.1	-0.9	-
Key fiscal determinants					
Claimant count (millions)	1.05	1.58	1.40	1.17	0.94
Employment (millions)	-1.0	-1.6	-1.5	-1.3	-1.1
Implied VAT gap (per cent)	2.0	0.6	-0.1	-0.1	-0.1
Output gap (per cent of potential output)	-2.5	-2.5	-1.7	-1.3	-0.9
Financial and property sectors					
Equity prices (FTSE All-Share index)	-1801	-1638	-1516	-1438	-1424
HMRC financial sector profits ^{1,5,8}	-7.4	-2.8	-1.3	0.0	0.0
Residential property prices ⁹	-14.1	-20.1	-15.6	0.3	1.0
Residential property transactions (000s) ¹⁰	-401	-809	-706	-711	-715
Commercial property prices ¹⁰	-11.7	-27.8	-2.6	-2.2	1.5
Commercial property transactions ¹⁰	-11.8	-20.9	-3.7	9.7	0.0
Oil and gas					
Oil prices (\$ per barrel) ⁵	-27.0	-32.3	-28.3	-22.5	-16.6
Oil prices (£ per barrel) ⁵	-14.5	-16.3	-11.7	-5.4	0.5
Gas prices (p/therm) ⁵	-16.2	-16.4	-12.9	-6.8	-1.2
Oil production (million tonnes) ⁵	0.0	0.0	0.0	0.0	0.0
Gas production (billion therms) ⁵	0.0	0.0	0.0	0.0	0.0
Interest rates and exchange rates					
Market short-term interest rates ¹¹	3.1	3.9	3.5	3.1	2.3
Market gilt rates ¹²	4.1	4.5	3.7	2.7	1.9
Euro/Sterling exchange rate (€/£)	-0.28	-0.30	-0.27	-0.24	-0.21

¹ Not seasonally adjusted.

² Denominator for receipts, spending and deficit forecasts as a per cent of GDP.

³ Denominator for net debt as a per cent of GDP.

⁴ Nominal. ⁵ Calendar year.

⁶ Q3 forecast used as a proxy for September.

⁷ Wages and salaries divided by employees.

⁸ HMRC Gross Case 1 trading profits.

⁹ Outturn data from ONS House Price Index.

¹⁰ Outturn data from HMRC information on stamp duty land tax.

¹¹ 3-month sterling interbank rate (LIBOR).

¹² Weighted average interest rate on conventional gilts.

Fiscal assumptions

9.10 We have made a number of further assumptions on the fiscal side. Among them:

- **No discretionary fiscal policy response by the Government:** we assume neither fiscal stimulus in response to the downturn nor subsequent consolidation in response to the emergence of a large structural budget deficit.
- **APF gilts rundown:** MPC guidance is that the stock of gilts in the APF will be kept unchanged until Bank Rate reaches a level from which it can be cut materially, which it currently judges to be around 2 per cent. We therefore assume that sales begin once Bank Rate exceeds 2 per cent and that the stock of gilts held falls by £25 billion a quarter until it reaches £100 billion (in early 2020). The figures of £25 billion and £100 billion are arbitrary, but look reasonable for the purpose of a stress test. They are not predictions of what the MPC would choose in any future situation.

9.11 We assume the following contingent liabilities crystallise as a result of the stress scenario:

- **Significant interventions in the private sector:** the late-2000s crisis saw large government interventions in the banking sector. Given the nature of the stress test – with interest rates rising – heavily indebted non-financial sector firms might be more at risk. We have not attempted to model this or to pre-judge the results of the Bank’s actual stress test of commercial banks. But since history suggests that in periods of severe economic stress other costs hit the public sector balance sheet, we have assumed a hit that is half the size of the one experienced in the late 2000s. The cost therefore peaks at £94 billion in 2018-19 before declining.
- **Spending related to guarantees in housing and other sectors:** we assume a cost of £1 billion as an illustrative sum to reflect possible costs related to schemes such as Help to Buy or the UK Guarantees scheme.

9.12 Experience over time and across countries caution that the fiscal effects of a shock can often be compounded by unrelated costs. To reflect this we assume that a contingent liability crystallises for reasons unrelated to the stress scenario, since the ‘ordinary’ triggers of such events would still be present in times of economic stress. To illustrate this we have added a £25 billion payment on tax litigation, split between 2018-19 and 2019-20. This equals around half the contingent liability reported in HMRC’s 2015-16 accounts.

Results of the stress test

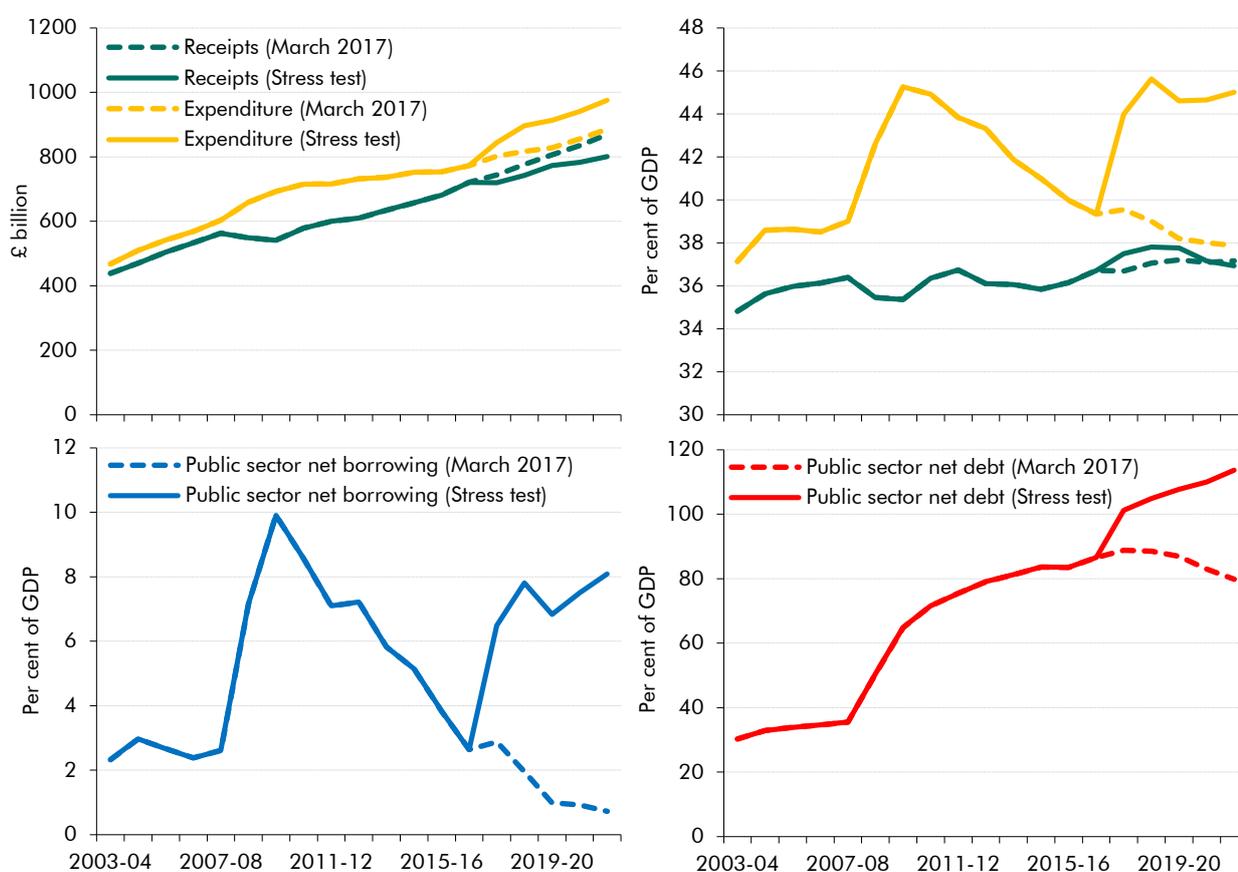
The big picture

9.13 The headline impact of the stress test on the public finances is shown in Chart 9.1. In cash terms, public spending is £89.5 billion higher than our March forecast baseline by 2021-22, of which £65.6 billion reflects higher debt interest and £15.1 billion higher welfare spending. Receipts are £68.9 billion lower, with the shortfall spread across a number of

taxes. As discussed later in the chapter, this is in contrast to the late-2000s crisis, where in cash terms the damage relative to pre-crisis expectations was driven much more by receipts.

- 9.14 The spending overshoot and receipts shortfall together push public sector net borrowing £158.5 billion above the baseline by 2021-22. The cumulative increase in borrowing across the forecast contributes to a £596 billion increase in net debt. The crystallisation of contingent liabilities adds £66 billion to net debt, but this is broadly offset by an accounting effect related to the APF³ and a higher sterling value of the foreign reserves. Net debt reaches 113.7 per cent of GDP in 2021-22, compared to 79.8 per cent in the baseline.
- 9.15 The relative importance of spending to the increase in borrowing is even more pronounced viewed relative to GDP, because even spending that is little changed in cash terms – like departmental spending – is a larger percentage of the smaller economy. On this basis, by 2021-22 spending is 7.1 per cent of GDP above the baseline but receipts just 0.2 per cent below it. Net borrowing is 7.4 per cent of GDP above and net debt 33.9 per cent above.
- 9.16 In the rest of this section we look in more detail at the impact of the stress test on receipts, spending, financial transactions and the fiscal aggregates.

Chart 9.1: The public finances: stress test versus March forecast



Source: ONS, OBR

³ The APF purchased gilts at market prices that were higher than their nominal value. The difference between the market and nominal values adds to PSND. As the APF sells gilts in the stress test scenario, this accounting effect reduces relative to the baseline.

Receipts

9.17 The combination of the recession and a particularly sharp drop in asset prices leads to a significant shortfall in receipts in cash terms relative to our March forecast. This rises from £24.6 billion in 2017-18 to £68.9 billion in 2021-22.

9.18 Initially the shortfall is less pronounced than the hit to nominal GDP, so receipts are higher as a share of GDP than in the March baseline – in contrast to the late-2000s recession and the early-2000s slowdown. Receipts rise by 1.1 per cent of GDP in the two years to 2018-19, but then fall back and end up 0.2 per cent of GDP below the baseline by 2021-22.

9.19 The initial rise reflects:

- A **relatively favourable composition of GDP** during the recession, with the key tax bases weakening less than nominal GDP as a whole. Inflation-driven earnings growth leads to a higher labour share, despite employment falling. VAT receipts rise as a share of GDP because consumer spending falls less sharply than GDP as a whole.
- Higher interest rates boost the **return on government financial assets**, although this only offsets a fraction of their effect on spending.
- Tax streams with the most stable tax bases – such as **business rates and council tax** – are only modestly affected in cash terms by the downturn, with the number of properties liable little changed. These tax streams therefore rise as a share of GDP.

9.20 These factors more than offset the steep drop in taxes on assets and property transactions. Within two years, combined receipts from stamp duty land tax, stamp duty on shares, capital gains tax and inheritance tax halve in cash terms and as a share of GDP.

9.21 The decline in receipts relative to GDP later in the period reflects a less favourable composition of GDP, in particular as earnings growth falls back.

Income tax and National Insurance contributions

9.22 With income tax and NICs accounting for over 40 per cent of receipts, trends in earnings, employment and the associated effective tax rates are important drivers of the overall public finances. Relative to the late 2000s, the stress test has a larger hit to employment but nominal earnings growth is actually stronger than the baseline in the near term.

9.23 Relative to the baseline, the shortfall in income tax and NICs receipts is £8.2 billion in 2017-18 and rises to £28.5 billion by 2021-22. Employment is around 1½ million lower than baseline by 2019-20, reducing receipts by around £13 billion in 2018-19 and 2019-20. Higher earnings growth initially cushions the effect, adding £6.2 billion to receipts by 2019-20. But the slowing in the final two years costs £7.6 billion by 2021-22.

9.24 Our March forecast assumes that earnings growth for the top 10 per cent of the distribution will be around a quarter of a percentage point lower than the average for four years from

2018-19. This reflects our view that high-paying sectors such as financial and business services are likely to be more adversely affected than others by Brexit. We have raised this to half a percentage point in the stress test. We have also assumed that receipts from financial sector bonuses would be hit in 2017-18 and 2018-19 when asset markets are weakest.

- 9.25 The effective tax rate on labour income is also expected to be lower than in the baseline. This primarily reflects fiscal drag – in which more income will be taxed at higher rates if earnings growth outpaces inflation-linked increases in tax thresholds and allowances. In our March forecast, fiscal drag intensifies beyond the near term as productivity and earnings growth pick up and inflation falls back to target. In the stress test, fiscal drag goes into reverse in those years, with earnings growth averaging well below inflation. The effective tax rate falls by 0.6 percentage points in the three years to 2021-22 whereas it rises by 0.8 percentage points in the baseline. This takes £7.3 billion off receipts by 2021-22.
- 9.26 Self-assessment (SA) income tax receipts in the stress test are higher than the baseline throughout. The recession and housing downturn reduce receipts from self-employment income, dividends and rental income. But higher interest rates boost savings income, which is mainly paid via SA since the savings allowance was introduced in Budget 2015.

VAT

- 9.27 VAT receipts are lower by £7.1 billion in 2017-18, with the shortfall rising to £10.1 billion by 2021-22. This reflects lower consumer spending, a lower proportion of spending subject to the standard rate of VAT and a recession-related rise in the VAT gap (the difference between the theoretical tax liability and actual VAT receipts):
- **Weaker consumer spending** takes over £4 billion off receipts by 2021-22, although the initial burst of inflation means that nominal consumer spending holds up better than other components of GDP, moderating the impact during the recession. There are also big hits to receipts from the ‘exempt’ sector (primarily the financial sector where VAT on purchases cannot be recovered) and the housing sector.
 - Spending on **consumer durables** (most of which is standard-rated) tends to fall more sharply than overall consumer spending in recessions. We assume that it is 10.5 per cent lower than the baseline by 2018, compared with 2.8 per cent for consumer spending overall. This reduces the share of consumer spending subject to the standard rate of VAT, which is just over 1 percentage point lower than in the baseline.
 - In the late 2000s, the **VAT gap** rose by around 3 percentage points over two years as firms delayed paying HMRC due to cash flow problems. It then fell back sharply. We have assumed the gap rises by 2 percentage points in 2017-18 before returning to the March baseline. This takes £2.7 billion off receipts in 2017-18.

Onshore corporation tax

- 9.28 Onshore corporation tax (CT) is £4.5 billion lower in 2017-18, with the shortfall rising to £6.9 billion by 2021-22. This reflects a number of factors:
- **Profits** of both non-oil, non-financial companies and financial sector firms fall in 2017 and again in 2018, with sluggish growth thereafter. This takes £5.9 billion off receipts by 2021-22.
 - The direct effect of higher **interest rates** raises companies' interest income and interest costs, with a broadly neutral effect overall for onshore CT. Indirect effects of higher interest rates – for example, from companies that default on loans or enter insolvency – are implicitly captured via the profits assumption. A restriction on the tax deductibility of corporate interest expenses was announced in Budget 2016, which might be expected to reduce the adverse effect of higher interest costs on receipts. But given lower profits against which to set those expenses, its yield could even fall.
 - **Trading losses** can be set against future profits, lowering receipts in subsequent years. We have assumed higher losses, but only a modest proportion of those generated in the stress scenario are used by 2021-22 reflecting a number of recent policies to limit the extent to which they can be set against future profits. These would continue to depress receipts beyond the medium term.
 - Lower **investment** partially offsets these factors, reducing the use of capital allowances. This reduces the receipts shortfall by around £½ billion.
- 9.29 One offsetting effect on CT receipts comes from the special 45 per cent withholding tax on litigation payments.⁴ We have assumed a £25 billion cost that adds to spending. For illustrative purposes, we have assumed a third of the cost would be subject to the special CT rate, so around a sixth of it would be recouped via higher CT receipts. As we noted in Chapter 6, this withholding tax is itself subject to an ongoing challenge in the courts.

Oil and gas revenues

- 9.30 The stress test assumes that oil prices fall below \$30 a barrel for three years, a more prolonged weakness than in 2015 and 2016. But with the pound much weaker against the dollar, sterling prices are around £30 a barrel between 2017 and 2019, similar to their 2015 and 2016 averages. Sterling oil prices then rebound to a similar level to the March baseline by 2021-22. We have assumed that gas prices move in line.
- 9.31 Oil and gas revenues are negative each year until 2020-21, with repayments of petroleum revenue tax more than offsetting net CT payments. This reflects the impact of lower prices on profitability since we have assumed no change in production or expenditure.

⁴ See HMRC, *Corporation Tax: Restitution Interest*, 2015.

Stamp duties

- 9.32 Stamp duty land tax (SDLT) is the receipts stream hit hardest by this stress test, falling to only 20 per cent of our March forecast. In the scenario, SDLT receipts fall to around £3 billion from 2018-19 onwards. This compares with the March baseline rising from £11.4 billion in 2016-17 to £16.8 billion by 2021-22. The shortfall reflects a 40 per cent drop in house prices and a more than halving of turnover, relative to baseline.
- 9.33 SDLT thresholds are fixed in cash terms, so lower house prices lead to reverse fiscal drag and a lower effective tax rate. The average house price falls from £215,000 in 2016-17 to £150,000 in 2019-20. This is only slightly above the £125,000 tax-free threshold and means the tax paid on an average-price transaction falls from £1,800 to £500. Many more transactions would pay no tax at all. We assume that 'prime' residential and commercial markets are hit harder than average. As set out in Chapter 5, policy changes have concentrated SDLT receipts in these markets, so this further weakens revenues.
- 9.34 Receipts from stamp tax on shares fall sharply reflecting the fall in equity prices. We assume more transactions than normal when the shock first hits, so the fall in revenue in the first year is smaller than the fall in equity prices.

Taxes on capital

- 9.35 Like stamp duties, inheritance tax (IHT) and capital gains tax (CGT) receipts are hit hard by the falls in equity and property prices. CGT is highly geared to changes in equity prices, as two-thirds of chargeable gains are related to financial assets and tax is charged only on the gain. CGT receipts are 40 to 50 per cent lower from 2018-19 onwards. The stress test envisages a large-scale sell-off of investment properties, which would be liable to CGT. This tempers the shortfall in receipts from property assets.
- 9.36 IHT receipts are down more than 30 per cent on baseline from 2018-19, mostly reflecting the geared effect of the 40 per cent drop in house prices. Lags in payment mean that both IHT and CGT receipts are resilient in the first year, as they reflect pre-shock liabilities.

Excise duties

- 9.37 Duties on fuel, tobacco and alcohol are all boosted by higher RPI inflation. This adds over £1.5 billion to excise duty receipts in 2019-20. As in our March forecast, we assume that fuel duty rates are uprated with inflation each year from April 2018 in line with stated Government policy, but, as noted in Chapter 5, these increases are routinely cancelled.
- 9.38 Fuel duty receipts depend on the duty rate and the demand for fuel. Higher duty rates raise receipts throughout. Demand for fuel is hit by the recession, with the effect initially offset in part by the lower oil price. By the end of the period, weaker economic activity dominates.
- 9.39 Tobacco duties are higher throughout, with receipts £0.9 billion above the March baseline in 2019-20. In addition to the effect of higher duty rates, duty-paid consumption is boosted as the depreciation of sterling against the euro reduces cross-border shopping.

A fiscal stress test

- 9.40 Alcohol duties are little changed from the March baseline, with higher inflation being largely offset by the effect of the downturn on the volumes consumed.

Other taxes

- 9.41 Business rates are higher as a share of GDP throughout the scenario, and higher in cash terms from 2019-20 onwards as higher inflation boosts the multiplier applied to the rateable value of non-domestic properties. This more than explains the £1.5 billion rise in business rates in 2021-22 relative to the March baseline. We assume only a modest effect on business rates from the recession – a 1 per cent fall in rateable values and £0.2 billion higher empty property relief in 2017-18 and 2018-19.
- 9.42 Other effects are small. Council tax receipts are little changed from the March baseline, while many smaller taxes are hit by weaker activity (e.g. indirect taxes such as insurance premium tax, air passenger duty and landfill tax). In some cases, there is an offset from indexation due to higher RPI inflation (e.g. vehicle excise duty and the aggregates levy (although this is another tax where indexation is routinely cancelled)).

Other receipts

- 9.43 Interest and dividend receipts include interest income on the government's stock of financial assets. Compared with the March baseline, receipts are over £10 billion higher in 2019-20, with the surplus declining to £3.6 billion by 2021-22. Higher interest rates raise returns on the government's cash deposits and foreign reserves. They also boost accrued interest on some older student loans. Higher RPI inflation boosts accrued interest on more recently issued student loans, where interest is based on RPI plus 3 per cent.

Table 9.5: Current receipts: the stress test scenario

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Income tax (gross of tax credits) ¹	170.3	176.7	184.6	187.3	193.0
of which: Pay as you earn	148.9	150.8	155.8	157.3	161.5
Self assessment	24.8	29.7	32.9	34.1	35.2
National insurance contributions	126.8	129.5	135.7	138.6	142.2
Value added tax	118.4	122.8	129.6	133.4	136.6
Onshore corporation tax ²	48.2	51.1	50.8	47.0	46.4
Offshore corporation tax	0.4	0.2	0.2	0.5	0.8
Petroleum revenue tax	-0.5	-0.6	-0.6	-0.5	-0.5
Fuel duties	27.5	28.5	28.9	28.9	29.0
Business rates	29.3	30.9	33.0	34.5	35.2
Council tax	31.8	32.9	34.2	35.2	36.2
VAT refunds	13.8	13.9	13.9	14.3	14.7
Capital gains tax	9.0	5.9	6.6	6.1	7.1
Inheritance tax	4.3	3.6	3.3	3.4	3.6
Stamp duty land tax ³	7.7	3.3	3.2	3.3	3.5
Stamp taxes on shares	2.0	2.1	2.3	2.5	2.7
Tobacco duties	9.3	9.8	9.8	9.7	9.5
Alcohol duties	11.5	12.1	12.6	12.9	13.2
Air passenger duty	3.2	3.2	3.3	3.4	3.5
Insurance premium tax	5.6	5.7	5.7	5.7	5.7
Other taxes	42.4	45.0	47.1	47.6	48.1
National Accounts taxes	661.1	676.7	704.1	713.6	730.5
Less own resources contribution to EU	-3.7	-3.7	-3.9	-3.9	-3.9
Interest and dividends	11.1	17.5	19.5	17.4	15.4
Gross operating surplus	49.1	50.4	51.4	54.1	56.9
Other receipts	2.0	1.9	1.9	1.9	1.8
Current receipts	719.6	742.8	773.1	783.1	800.6
<i>Memo: UK oil and gas revenues⁴</i>	<i>-0.2</i>	<i>-0.4</i>	<i>-0.5</i>	<i>-0.1</i>	<i>0.3</i>

¹ Includes PAYE, self assessment, tax on savings income and other minor components.

² National Accounts measure, gross of reduced liability tax credits.

³ Forecast for SDLT is for England, Wales and Northern Ireland.

⁴ Consists of offshore corporation tax and petroleum revenue tax.

Table 9.6: Current receipts: stress test versus March forecast

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Income tax (gross of tax credits) ¹	-4.7	-6.9	-7.2	-13.2	-18.2
of which: Pay as you earn	-4.4	-7.0	-8.4	-14.4	-18.7
Self assessment	0.1	0.6	1.7	1.6	0.7
National insurance contributions	-3.5	-5.1	-4.3	-7.5	-10.2
Value added tax	-7.1	-7.9	-6.6	-8.2	-10.1
Onshore corporation tax ²	-4.5	-3.1	-2.7	-5.5	-6.9
Offshore corporation tax	-1.0	-1.1	-1.3	-1.0	-0.6
Petroleum revenue tax	0.0	-0.1	-0.1	-0.1	0.0
Fuel duties	0.0	0.5	0.3	-0.3	-1.0
Business rates	-0.3	-0.1	0.8	1.5	1.5
Council tax	-0.2	-0.7	-0.7	-0.7	-0.7
VAT refunds	0.0	0.0	0.0	0.0	0.0
Capital gains tax	-0.1	-4.1	-5.2	-5.1	-5.8
Inheritance tax	-0.7	-1.6	-2.2	-2.4	-2.6
Stamp duty land tax ³	-5.4	-10.6	-11.6	-12.5	-13.4
Stamp taxes on shares	-1.3	-1.4	-1.3	-1.2	-1.2
Tobacco duties	0.4	0.9	0.9	0.7	0.5
Alcohol duties	-0.1	0.0	0.1	-0.1	-0.2
Air passenger duty	-0.2	-0.3	-0.3	-0.4	-0.5
Insurance premium tax	-0.1	-0.3	-0.3	-0.4	-0.4
Other taxes	-0.3	-0.5	-0.7	-1.1	-1.5
National Accounts taxes	-29.2	-42.5	-42.6	-57.6	-71.5
Less own resources contribution to EU	-0.2	-0.3	-0.4	-0.4	-0.4
Interest and dividends	5.0	9.9	10.5	7.1	3.6
Gross operating surplus	-0.2	-0.7	-0.9	-0.6	-0.6
Other receipts	0.0	0.0	0.0	-0.1	-0.1
Current receipts	-24.6	-33.6	-33.4	-51.6	-68.9
<i>Memo: UK oil and gas revenues⁴</i>	<i>-1.0</i>	<i>-1.3</i>	<i>-1.4</i>	<i>-1.0</i>	<i>-0.6</i>

¹ Includes PAYE, self assessment, tax on savings income and other minor components.

² National Accounts measure, gross of reduced liability tax credits.

³ Forecast for SDLT is for England, Wales and Northern Ireland.

⁴ Consists of offshore corporation tax and petroleum revenue tax.

Public spending

9.44 The main impact of the stress test on spending comes from debt interest and, to a lesser extent, welfare spending. Total spending is £41.6 billion higher than baseline in 2017-18, rising to £89.5 billion in 2021-22. Since nominal GDP is also weaker, these cash increases push spending up by 4.4 per cent of GDP in 2017-18, rising to 7.1 per cent in 2021-22.

Departmental spending

9.45 We assume no discretionary increase in spending to support the economy in the downturn or to reduce the pressure on departments' budgets from higher inflation. Nor do we assume that spending is reduced to reflect the lower cost of meeting commitments to defence and overseas aid spending that have been expressed as a percentage of GDP. The total envelopes for resource and capital spending by departments (RDEL and CDEL) are therefore unchanged from our March baseline, with two small exceptions:

- **Scottish block grant:** lower UK tax receipts cause the block grant to be increased automatically, in line with agreed devolved funding arrangements.
- **Spending related to guarantees:** an illustrative £1 billion is added to CDEL in 2018-19 to reflect the crystallisation of contingent liabilities pertaining to guarantee schemes.

9.46 These cash changes are small, so the main effect on DEL spending as a share of GDP results from nominal GDP being lower. As a result, DEL spending is 1.0 per cent of GDP higher than baseline in 2017-18, rising to 1.5 per cent in 2021-22.

Welfare spending

9.47 Welfare spending increases by £6.5 billion (2.9 per cent) relative to baseline in 2017-18, rising to £15.1 billion (6.3 per cent) by 2021-22 (Table 9.7). Most of the increase is on spending outside the Government's 'welfare cap'. It is dominated by higher caseloads that are due to higher unemployment, with some upward pressures on average awards where they are not subject to the uprating freeze. We have not factored in any further costs or delays associated with the rollout of universal credit, although clearly that would be a risk.

9.48 The change in spending outside the welfare cap reflects:

- **Higher unemployment:** this drives big increases in jobseeker's allowance and associated housing benefit – by £8 billion in 2018-19 falling to £5 billion by 2021-22.
- **Higher CPI inflation:** this mainly increases spending on the state second pension – by very little in 2018-19 but rising to £1.8 billion a year from 2020-21.
- **Higher triple lock uprating:** state pension uprating is significantly more expensive in the stress test than in the baseline, with higher inflation adding 2.4 percentage points to uprating in 2019-20 and an additional 1.1 percentage points in 2020-21, by when the cost reaches £3.1 billion. This falls back to £2.5 billion in 2021-22, when the 2.5 per cent floor drives uprating in the stress test rather than the 3.4 per cent earnings growth in our March forecast. By 2021-22, state pensions spending stands at 5.1 per cent of GDP, 0.6 percentage points higher than the March baseline.

9.49 The change in spending subject to the welfare cap reflects:

- **Higher unemployment:** this also increases tax credits spending (by £1.8 billion by 2018-19) as some of the newly unemployed would be eligible for child tax credits. This effect declines slowly from 2019-20 onwards as unemployment falls.
- **Higher CPI inflation:** this feeds through to some uprating from 2018-19. But only from 2020-21, beyond the period covered by the uprating freeze, are its effects felt across the board. It adds £3.7 billion to spending in 2021-22, largely on tax credits and disability benefits. The four-year freeze means that the initial burden of higher inflation falls on benefit recipients rather than adding to spending. For example, the work-

related activity rate of ESA is frozen in cash terms at £73.10 a week until 2019-20. In our March forecast, it falls by 6.5 per cent in real terms (relative to CPI inflation) between 2016-17 and 2019-20; in the stress test it falls by 11.2 per cent.

- **Higher rent inflation:** this feeds through to higher spending on housing benefit, rising to £0.6 billion a year from 2020-21.

Table 9.7: Welfare spending: stress test versus March forecast

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Total welfare spending					
March forecast	221.1	224.4	226.8	231.9	240.3
Stress test	227.7	234.6	239.8	248.3	255.3
Difference	6.5	10.2	13.0	16.4	15.1
Difference in welfare spending outside the welfare cap	5.3	8.4	10.3	11.0	9.4
<i>of which:</i>					
Unemployment	5.3	8.0	7.1	6.1	5.0
CPI uprating	0.0	0.1	1.1	1.8	1.8
Triple lock uprating	0.0	0.3	2.1	3.1	2.5
Other	0.0	0.0	0.0	0.0	0.0
Difference in welfare spending inside the welfare cap	1.2	1.8	2.6	5.4	5.7
<i>of which:</i>					
Unemployment	1.2	1.8	1.7	1.6	1.3
CPI uprating	0.0	0.1	1.1	3.4	3.7
Rent inflation	0.0	0.0	0.1	0.6	0.6
Other	0.1	-0.1	-0.2	-0.1	0.1

Debt interest spending

9.50 Debt interest delivers the largest spending increase in the stress test, adding £34.6 billion to the baseline in 2017-18, rising to £65.6 billion by 2021-22. Together with the downward revision to nominal GDP, this increases debt interest spending from 1.9 to 5.1 per cent of GDP in 2021-22, which would be a post-war high. The cumulative addition to debt interest spending over five years is £266 billion. This reflects:

- **Higher interest rates:** Bank Rate is 3.2 percentage points higher than the baseline on average across the period and gilt rates 3.4 percentage points higher. Higher interest rates add £27.7 billion to central government spending in 2021-22. The impact rises over time as more debt is issued to finance the deficit and roll over maturing debt.
- **Lower savings from the APF:** higher Bank Rate and the running down of the APF's gilt holdings reduce the amount saved by gilts being held in the APF. This adds £9.4 billion to debt interest spending net of the APF in 2021-22.
- **Higher stock of debt:** this is much higher than the baseline as higher deficits mount up and contingent liabilities crystallise. In addition more debt is issued to make good losses as APF gilt holdings are sold at lower prices than they were purchased for. By 2021-22 the higher stock adds £32.6 billion to annual debt interest spending.

- **Higher RPI inflation:** this increases accrued spending on index-linked gilts sharply in the first two years, but reduces it thereafter – by £4.1 billion in 2021-22.

Table 9.8: Central government debt interest: stress test versus March forecast

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
March forecast (net of APF)	41.5	39.1	40.1	40.9	44.0
Stress test (net of APF)	76.1	91.6	93.1	101.7	109.6
Change	34.6	52.5	53.0	60.7	65.6
<i>of which:</i>					
Higher interest rates	8.8	17.6	22.6	26.1	27.7
Lower savings from the APF	11.3	14.7	12.9	11.2	9.4
Higher stock of debt	3.2	12.1	19.6	26.7	32.6
Higher RPI inflation and other	11.1	8.1	-2.1	-3.3	-4.1

- 9.51 As noted in Chapter 8, the Government's exposure to the effect from higher interest rates depends on how quickly it feeds through to the effective rate on the outstanding stock of debt. Even after taking into account the shortening of average maturities that comes from APF gilt holdings, the UK's debt has an average maturity of 11 years, well above levels in the other major advanced economies. This limits the effect of interest rate rises by 2021-22, but means that there would be further upward pressure on debt interest spending and the deficit if interest rates remained higher as more debt matured and was rolled over.
- 9.52 But the stress test also illustrates a number of ways in which debt interest spending has become more sensitive to shocks. The higher starting point for the stock of debt amplifies the effect of higher interest rates. The higher stock of index-linked gilts means a larger near-term response to changes in RPI inflation. And the substantial gilt holdings of the APF mean that the sensitivity to changes in Bank Rate has increased. It is these factors in combination that result in a rise of just 3 percentage points or so in interest rates and inflation pushing debt interest spending to a post-war high as a share of GDP.

Other annually managed expenditure

- 9.53 Other annually managed expenditure (AME) affected by the stress test includes:
- **Public service pensions:** higher CPI inflation boosts inflation-indexed payments, raising spending by £2 billion a year by the end of the period.
 - **Net transfers to the EU:** using the same approach as in our March forecast, sterling depreciation would add around £2½ billion a year to this spending line.⁵
 - **Locally financed current expenditure:** in the face of higher inflation, we assume that local authorities draw down reserves to keep total service expenditure the same in real terms as in the baseline, with additional drawdowns to meet cyclical pressures, such as

⁵ See paragraph 4.128 onwards in our March 2017 *Economic and fiscal outlook* for a discussion of the approach we have taken in our forecasts since the EU referendum and ahead of firm information on post-Brexit policy settings.

the impact of higher unemployment on council tax exemption schemes. Together this reduces the aggregate level of reserves by around a third by 2021-22. Cash spending is around £3 billion a year higher in the later years of the forecast than in the baseline, with about half attributable to reserve drawdowns and much of the remainder to higher interest income and locally retained business rates.

- **Locally financed and public corporations' capital expenditure:** small changes include reduced spending by housing associations and fewer asset sales.
- **Tax litigation costs:** when HMRC loses a case and must refund tax and pay interest, the amount is treated as a capital grant. We have assumed that the Government is hit by a £25 billion loss, with the associated spending split evenly over 2018-19 and 2019-20.

Table 9.9: Public spending: stress test scenario

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Public sector current expenditure (PSCE)					
PSCE in RDEL	318.3	321.8	323.9	330.2	337.3
PSCE in AME	443.3	475.2	488.7	512.8	534.7
<i>of which:</i>					
Welfare spending	227.7	234.6	239.8	248.3	255.3
Net public service pension payments	12.1	13.8	14.3	16.2	17.7
Expenditure transfers to EU institutions	11.9	13.7	-	-	-
Assumed spending in lieu of EU transfers	-	-	15.5	15.6	16.1
Locally financed current expenditure	47.2	50.2	52.0	53.5	55.0
Central government debt interest, net of APF	76.1	91.6	93.1	101.7	109.6
Other current expenditure	68.4	71.3	74.1	77.5	80.9
Total public sector current expenditure	761.6	797.0	812.6	843.0	872.0
Public sector gross investment (PSGI)					
PSGI in CDEL	49.0	53.2	55.4	64.3	67.7
PSGI in AME	33.4	46.0	45.0	34.0	36.2
<i>of which:</i>					
Tax litigation	1.6	14.1	14.1	1.6	1.6
Locally financed capital expenditure	7.3	6.7	6.0	5.2	5.6
Public corporations' capital expenditure	18.0	18.4	17.1	18.4	19.6
Other capital expenditure	6.6	6.9	7.8	8.8	9.4
Total public sector gross investment	82.5	99.2	100.4	98.3	103.9
Less public sector depreciation	-42.8	-44.4	-46.1	-48.0	-50.2
Public sector net investment	39.6	54.9	54.3	50.3	53.7
Total managed expenditure	844.0	896.2	913.0	941.3	975.9

Table 9.10: Public spending: stress test versus March forecast

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Public sector current expenditure (PSCE)					
PSCE in RDEL	0.0	1.0	1.1	1.6	1.9
PSCE in AME	42.1	65.2	72.3	84.2	87.8
of which:					
Welfare spending	6.5	10.2	13.0	16.4	15.1
Net public service pension payments	0.0	0.1	1.2	2.0	2.0
Expenditure transfers to EU institutions	0.3	1.1	-	-	-
Assumed spending in lieu of EU transfers	-	-	2.8	2.6	2.4
Locally financed current expenditure	0.6	1.5	2.9	3.1	3.1
Central government debt interest, net of APF	34.6	52.5	53.0	60.7	65.6
Other current expenditure	0.1	-0.3	-0.4	-0.5	-0.5
Total public sector current expenditure	42.1	66.1	73.4	85.8	89.7
Public sector gross investment (PSGI)					
PSGI in CDEL	0.0	1.0	0.0	0.0	0.0
PSGI in AME	-0.5	11.9	11.7	0.1	-0.2
of which:					
Tax litigation	0.0	12.5	12.5	0.0	0.0
Locally financed capital expenditure	0.1	0.2	0.2	0.1	0.1
Public corporations' capital expenditure	-0.5	-0.8	-1.1	-0.1	-0.3
Other capital expenditure	0.0	0.0	0.1	0.1	0.0
Total public sector gross investment	-0.5	12.9	11.7	0.1	-0.2
Less public sector depreciation	0.0	0.0	0.0	0.0	0.0
Public sector net investment	-0.4	12.9	11.7	0.1	-0.2
Total managed expenditure	41.6	79.1	85.1	85.9	89.5

Financial transactions and the crystallisation of contingent liabilities

- 9.54** Of the contingent liabilities crystallised in this stress test, those relating to tax litigation and guarantee schemes are included in spending and therefore affect PSNB. Those relating to the private sector interventions either require government debt to be issued, and are therefore included here as financial transactions, or will increase debt by taking liabilities directly onto the government's balance sheet. In line with our illustrative assumption that the overall cost of these types of interventions will be half that of the financial crisis, a total of £94 billion is added over 2017-18 and 2018-19. In Tables 9.11 and 9.12, this is split between 'loans and repayments' and the 'contingent liability shock'.
- 9.55** The accrued interest paid on index-linked gilts and received on student loans are boosted in the early years of the stress test by higher RPI inflation, with index-linked gilt interest also increased by the extra debt issued. These affect the accrued measure of the deficit but have little or no cash impact so are adjusted for as financial transactions.
- 9.56** There are a number of smaller financial transaction changes relating to timing effects on taxes and gilt coupon payments, but no other significant changes from the stress test.

Table 9.11: Financial transactions: stress test scenario

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Public sector net borrowing	124.5	153.5	139.9	158.1	175.3
Loans and repayments	56.8	43.6	19.1	20.3	19.6
Transactions in financial assets	-6.4	-2.5	-2.4	-2.4	0.0
Bank of England schemes	42.5	0.0	0.0	-50.0	-40.0
Contingent liability shock	41.8	-5.9	-8.1	-6.6	-4.1
UKAR asset sales and rundown	-18.6	-5.2	-0.7	-0.7	-0.7
Accruals adjustments	-13.7	-8.1	-1.3	5.7	-1.7
Other factors	-0.8	-0.8	-0.8	-0.8	-0.8
Public sector net cash requirement	226.0	174.7	145.6	123.6	147.6

Table 9.12: Financial transactions: stress test versus March forecast

	£ billion				
	2017-18	2018-19	2019-20	2020-21	2021-22
Public sector net borrowing	66.2	112.7	118.5	137.5	158.5
Loans and repayments	35.7	21.9	-2.6	-1.6	-4.2
Transactions in financial assets	0.0	0.0	0.0	0.0	0.0
Bank of England schemes	0.0	0.0	0.0	0.0	0.0
Contingent liability shock	41.8	-5.9	-8.1	-6.6	-4.1
UKAR asset sales and rundown	0.0	0.0	0.0	0.0	0.0
Accruals adjustments	-13.2	-6.6	5.4	2.8	0.7
Other factors	0.0	0.0	0.0	0.0	0.0
Public sector net cash requirement	130.5	122.1	113.2	132.1	150.9

Asset Purchase Facility

9.57 The stress test has severe consequences for the APF's net position. At present, the APF earns around 3¼ per cent interest on its gilt holdings and pays only 0.25 per cent on the associated funding – a healthy profit margin of 3 percentage points. As Bank Rate rises sharply in the stress test, this margin actually turns negative for a period before recovering gradually to +0.4 percentage points in 2021-22 as Bank Rate falls a little and maturing gilts in the residual stock are rolled over at higher rates. The APF also sells many of the gilts at lower prices than they were bought for, thereby crystallising significant losses that the Treasury is obliged to cover under the terms of the APF indemnity.

9.58 All this means that the financial flows between central government and the APF change dramatically. In our March forecast, the APF transfers cash profits of £40.5 billion to the Treasury over the five years to 2021-22, reducing the need for the Government to issue gilts. In the stress test, the flow is reversed with the Treasury transferring £81.4 billion to the APF to cover losses on selling gilts. These transfers are within the public sector, so do not affect PSNB, but they do increase the Government's need for gilt financing and PSND.

9.59 Even in this particularly adverse scenario, the net effect of the APF on the public finances over its lifetime would be relatively small. To date, the APF has benefited the Exchequer by over £75 billion. Given the cost of just over £80 billion in the stress test, the eventual cost

would be around £5 billion by 2021-22, more than a decade after the APF was set up and after hundreds of billions of pounds worth of gilts had been bought and sold.

Fiscal aggregates

Borrowing

- 9.60 Public sector net borrowing (PSNB) is much higher in the stress test than the baseline. PSNB is £66.2 billion higher in 2017-18, rising to £158.5 billion by 2021-22. Thanks also to lower nominal GDP, this increases PSNB by 3.6 per cent of GDP rising to 7.4 per cent.
- 9.61 Borrowing rises year-on-year in every year except 2019-20, when it falls in cash terms and as a share of GDP (partly reflecting the sizable cut in departmental spending planned by the Government for that year). The deficit reaches 8.1 per cent of GDP by 2021-22, compared to 0.7 per cent in the baseline. The renewed deterioration in the later years of the forecast reflects the adverse composition of GDP growth at that point, with very sluggish real earnings growth, while debt interest payments also continues to rise.
- 9.62 Most of the fall in GDP in the stress test is assumed to be permanent and so too therefore is the increase in borrowing. Cyclically adjusted net borrowing is 7.4 per cent of GDP by 2021-22 compared to 0.7 per cent in the baseline. On our estimates, which begin in 1975-76, the structural deficit has only been higher than this once – at 7.9 per cent of GDP in 2009-10. The extent of the fiscal challenge facing policymakers by the end of this scenario would therefore be similar to that facing the Coalition as it took office in 2010.
- 9.63 As we noted in Chapter 1, two key drivers of the debt-to-GDP ratio are the primary balance (which excludes net interest payments) and the difference between the effective interest rate on government debt and the growth rate of the economy (the ‘growth-corrected interest rate’). In the March baseline, there is a primary surplus from 2019-20 onwards; in the stress test, it is in deficit by between $2\frac{3}{4}$ and 4 per cent of GDP throughout. The growth-corrected interest rate is negative in the baseline, but positive in the stress test (averaging 2.5 per cent, close to the average of the three decades from 1980). This means that debt interest spending adds to the cash value of debt, raising the debt-to-GDP ratio, faster than economic growth raises the cash value of GDP, reducing the ratio.

Balance sheet measures

- 9.64 Table 9.13 shows the impact of the stress test on public sector net debt (PSND). In contrast to the March baseline, debt rises in every year and reaches £2.5 trillion or 113.7 per cent of GDP in 2021-22, 33.9 per cent of GDP higher than the baseline. Of the rise, 6.8 per cent of GDP comes from a lower nominal GDP denominator, while the remainder comes from a £596 billion increase in the cash debt level. This reflects:
- **Higher borrowing** in every year, which increases debt by £597 billion.
 - **Government interventions in the private sector** that add £66 billion, including £49 billion of debt issued and £17 billion of liabilities added directly to the balance sheet.

- **APF-related accounting effects** reduce debt by £51 billion. The APF purchased gilts at market prices that were higher than their nominal value. The difference between the market and nominal values adds to PSND – by £64 billion in 2016-17. As the APF sells gilts in the scenario, this accounting effect reduces relative to the baseline.
- **Other factors** that reduce net debt by £16 billion, including a £9 billion rise in the sterling value of assets in the international reserves thanks to a weaker pound.

Table 9.13: Public sector net debt: stress test versus March forecast

	Per cent of GDP				
	2017-18	2018-19	2019-20	2020-21	2021-22
March forecast	88.8	88.5	86.9	83.0	79.8
Stress test forecast	101.2	104.9	107.7	110.0	113.7
Change	12.4	16.4	20.8	27.0	33.9
of which:					
Change in nominal GDP ¹	6.6	5.3	5.5	6.1	6.8
Change in cash level of net debt	5.9	11.1	15.4	20.9	27.1
	£ billion				
March forecast	1830	1885	1918	1904	1904
Stress test forecast	1942	2109	2238	2351	2500
Change in cash level of net debt	113	224	319	447	596
of which:					
Borrowing	70	183	301	439	597
Government interventions	77	94	83	75	66
APF	-16	-35	-51	-53	-51
International reserves	-13	-13	-12	-11	-9
Other factors	-5	-4	-1	-3	-6

¹ Non-seasonally-adjusted GDP centred end-March.

9.65 Public sector net financial liabilities (PSNFL) is a broader balance sheet measure that includes all financial assets and liabilities recorded in the National Accounts. PSNFL is 31.2 per cent of GDP higher by 2021-22 than in our March baseline. As with net debt, the key driver is higher borrowing in the scenario. The increase is marginally smaller than for net debt, because the government interventions in the private sector involve the purchase of financial assets that net off PSNFL but not PSND.

Other fiscal stress indicators

9.66 In addition to the headline fiscal aggregates that we usually focus on, the IMF recommends looking at indicators of government liquidity and the government financing burden.

9.67 The IMF's 'liquidity' metric looks at the government's gross financing needs to cover deficits and roll over existing debt as it matures. In the stress test, the total financing requirement to cover borrowing and other cash outlays is £859 billion in the five years to 2021-22, some £415 billion more than in the baseline. Adding in maturing debt, the Government would need to sell almost £1.3 trillion of gilts. On top of that, the APF is assumed to sell the majority of the gilts it currently holds, bringing net sales to the private sector to £1.6 trillion.

- 9.68 Gilt issuance including the APF sales peaks at £388 billion (18.5 per cent of GDP) in 2018-19 in the scenario. This is much higher than in the financial crisis. The total financing requirement then peaked at £228 billion (14.9 per cent of GDP) in 2009-10. But the APF bought £185 billion of gilts that year, so in effect net issuance to the private sector was only £43 billion (2.8 per cent of GDP). Net of APF purchases, issuance peaked in 2010-11 at £166 billion (10.4 per cent of GDP).
- 9.69 The high volume of gilt sales required would no doubt put stress on the gilt market, although actual market capacity would depend on the attractiveness of gilts relative to overseas or private sector instruments at the time. Part of the stress would be due to sales by the APF. But that would be an operational choice. The Bank has stated that, were sales required, the MPC *“would consider the appropriate mechanisms for selling assets, having due regard for the impact of those sales on the Government’s debt management operations, but subject to taking the action necessary to meet its policy objectives.”*⁶
- 9.70 The IMF’s ‘financing burden’ metric looks at the ratio of debt interest payments to receipts. In the stress test, this rises significantly, increasing from 6.8 per cent of receipts in 2016-17 to 13.7 per cent in 2021-22. This compares with a fall to 6.2 per cent in the baseline. Like debt interest spending as a share of GDP, the financing burden rises to a post-war high in the stress test. This would generate a potential squeeze on other spending priorities.

The Government’s fiscal targets

- 9.71 The *Charter for Budget Responsibility* contains targets for borrowing and debt:
- **Fiscal mandate:** Cyclically adjusted PSNB to be below 2 per cent of GDP by 2020-21.
 - **Supplementary target:** Public sector net debt to fall as a share of GDP in 2020-21.
- 9.72 Both are, not surprisingly, missed by a large margin. Cyclically adjusted PSNB is 6.5 per cent of GDP in 2020-21, breaching the mandate by £94 billion, while PSND rises by 2.2 per cent of GDP in 2020-21. But the *Charter* states that *“in the event of a significant negative shock to the UK economy, the Treasury will review the appropriateness of the fiscal mandate and supplementary targets as a means of returning the public finances to balance as early as possible in the next Parliament.”*

⁶ Letter from the Governor of the Bank of England to the Treasury Select Committee, 18 December 2015.

Table 9.14: Fiscal aggregates and other indicators

	Per cent of GDP				
	2017-18	2018-19	2019-20	2020-21	2021-22
Receipts and expenditure					
Public sector current receipts	37.5	37.8	37.8	37.2	36.9
Total managed expenditure	44.0	45.6	44.6	44.7	45.0
Fiscal mandate and supplementary target					
Cyclically adjusted net borrowing	5.3	6.0	5.4	6.5	7.4
Public sector net debt ¹	101.2	104.9	107.7	110.0	113.7
Deficit					
Public sector net borrowing	6.5	7.8	6.8	7.5	8.1
Current budget deficit	4.4	5.0	4.2	5.1	5.6
Cyclically adjusted current budget deficit	3.2	3.2	2.8	4.1	4.9
Primary deficit	2.9	3.8	3.0	3.3	3.5
Cyclically adjusted primary deficit	1.6	2.0	1.6	2.2	2.8
Financing					
Central government net cash requirement	8.0	10.3	8.2	8.1	8.5
Public sector net cash requirement	11.8	8.9	7.1	5.9	6.8
IMF indicators					
Government liquidity	14.2	18.5	16.6	11.7	11.1
Government financing burden	10.6	12.3	12.0	13.0	13.7
Alternative balance sheet metrics					
Public sector net debt exc. Bank of England	93.8	98.7	102.6	107.6	113.2
Public sector net financial liabilities	84.0	86.5	89.4	93.9	99.0
£ billion					
Public sector net borrowing	124.5	153.5	139.9	158.1	175.3
Public sector net debt	1942	2109	2238	2351	2500
<i>Memo: Output gap (per cent of GDP)</i>	-2.4	-2.6	-1.8	-1.4	-0.9

¹ Debt at end March; GDP centred on end March.

Table 9.15: Fiscal aggregates: stress test versus March forecast

	Per cent of GDP				
	2017-18	2018-19	2019-20	2020-21	2021-22
Receipts and expenditure					
Public sector current receipts	0.8	0.8	0.6	0.1	-0.2
Total managed expenditure	4.4	6.6	6.4	6.7	7.1
Fiscal mandate and supplementary target					
Cyclically adjusted net borrowing	2.3	4.1	4.5	5.6	6.7
Public sector net debt ¹	12.4	16.4	20.8	27.0	33.9
Deficit					
Public sector net borrowing	3.6	5.9	5.8	6.6	7.4
Current budget deficit	3.5	5.1	5.2	6.4	7.2
Cyclically adjusted current budget deficit	2.3	3.3	3.8	5.5	6.5
Primary deficit	2.0	3.6	3.7	3.9	4.4
Cyclically adjusted primary deficit	0.7	1.8	2.3	2.9	3.7
Financing					
Central government net cash requirement	5.7	8.0	6.8	6.4	6.9
Public sector net cash requirement	7.1	6.4	5.6	6.2	6.9
IMF indicators					
Government liquidity	8.7	13.1	10.9	5.9	6.2
Government financing burden	5.0	7.3	7.1	8.1	8.6
Alternative balance sheet metrics					
Public sector net debt exc. Bank of England	12.7	17.7	22.9	29.4	36.2
Public sector net financial liabilities	7.9	11.5	16.7	23.5	31.2
£ billion					
Public sector net borrowing	66.2	112.7	118.5	137.5	158.5
Public sector net debt	113	224	319	447	596
<i>Memo: Output gap (per cent of GDP)</i>	-2.5	-2.5	-1.7	-1.3	-0.9

¹ Debt at end March; GDP centred on end March.

The stress test versus the financial crisis and recession

9.73 Useful insights can be gained by comparing the stress test results with the evolution of the public finances in the late-2000s crisis and its aftermath.

The economy

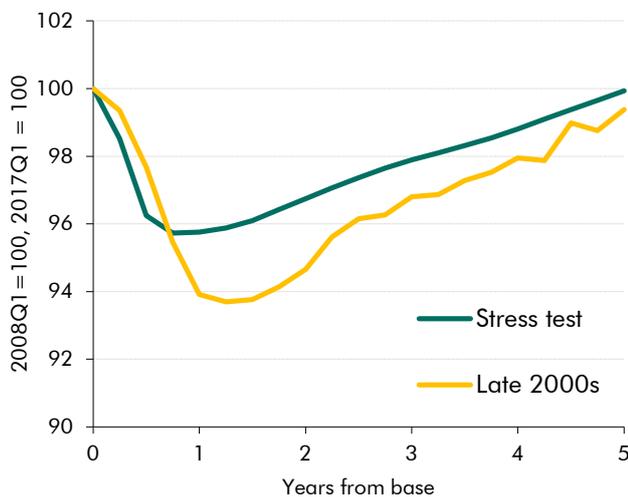
9.74 Charts 9.2 to 9.9 compare a number of key economic variables in the stress test with their evolution from the first quarter of 2008:

- The profiles of **real GDP** are similar, although the peak-to-trough fall of 4.7 per cent in the stress test is smaller than the 6.3 per cent drop in the crisis. The recovery is slightly slower in the stress test. The evolution of **nominal GDP** is also similar, with a slightly stronger recovery in the stress test due to domestic inflationary pressures.
- The stress test and crisis both result in large hits to **potential output** relative to the preceding trend. The assumed paths are very similar in the first two years; thereafter potential output growth is weaker in the stress test.

A fiscal stress test

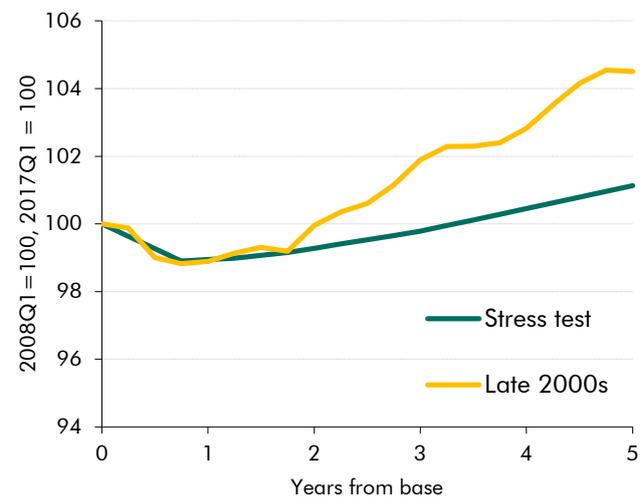
- The path of **Bank Rate** differs significantly: it was cut sharply between autumn 2008 and spring 2009, but is assumed to increase to around 4 per cent over the first year of the stress test, reflecting a more challenging trade-off between growth and inflation.
- The peak in **CPI inflation** in the stress test is similar to the peak in the aftermath of the crisis, but the profile through the five years is somewhat different. Inflation was relatively volatile from 2008, reflecting large fluctuations in the oil price, VAT rate changes and the lagged effects of the depreciation in sterling during the crisis. The stress test incorporates a more sustained increase in CPI inflation, as the initial effects of a weaker pound are followed by a build-up of domestic inflationary pressure as inflation expectations become unanchored from the inflation target.
- The stress test includes a **house price** shock that is more prolonged and deeper than that in the crisis. The peak-to-trough fall in house prices is around twice as large in the stress test as it was in the crisis.
- The stress test includes a much larger initial increase in **unemployment** than was seen in the crisis. Thereafter the unemployment rate falls steadily in the later years of the stress test, reaching a similar point after five years to that reached post-crisis.
- **Average earnings growth** is generally stronger in cash terms in the stress test scenario, as domestic inflationary pressure builds up.

Chart 9.2: Real GDP



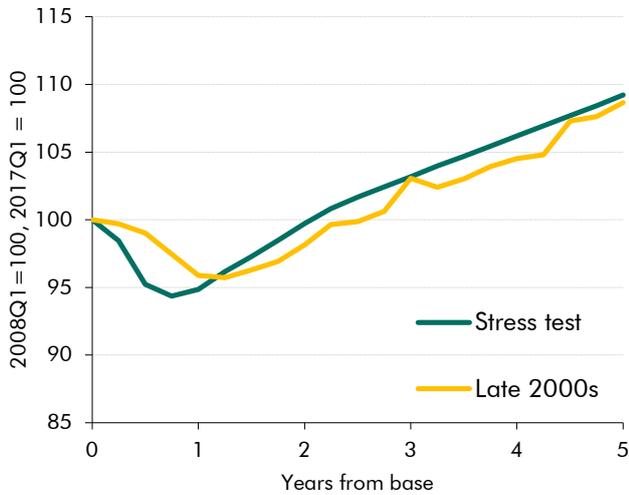
Source: ONS, OBR

Chart 9.3: Potential GDP



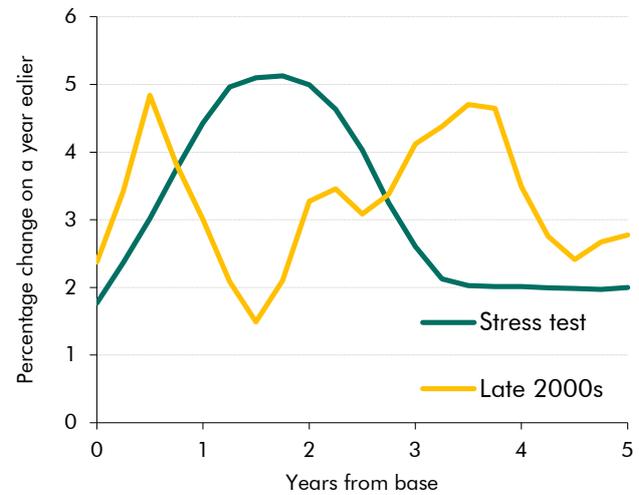
Source: ONS, OBR

Chart 9.4: Nominal GDP



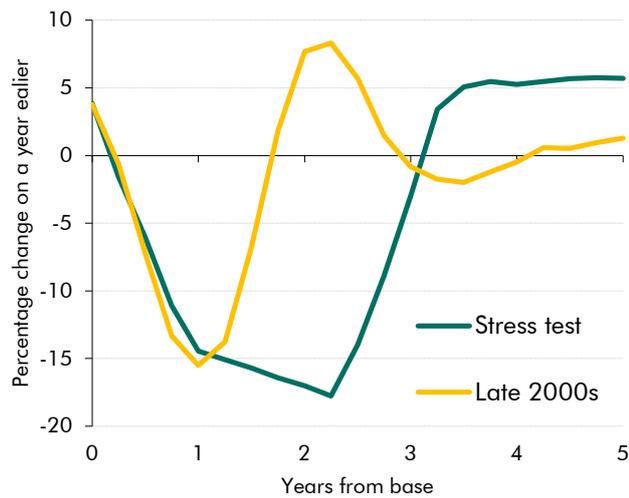
Source: ONS, OBR

Chart 9.5: CPI inflation



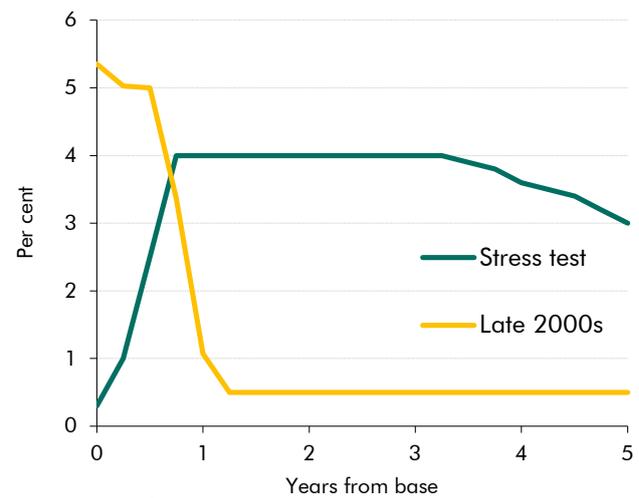
Source: ONS, OBR

Chart 9.6: House price inflation



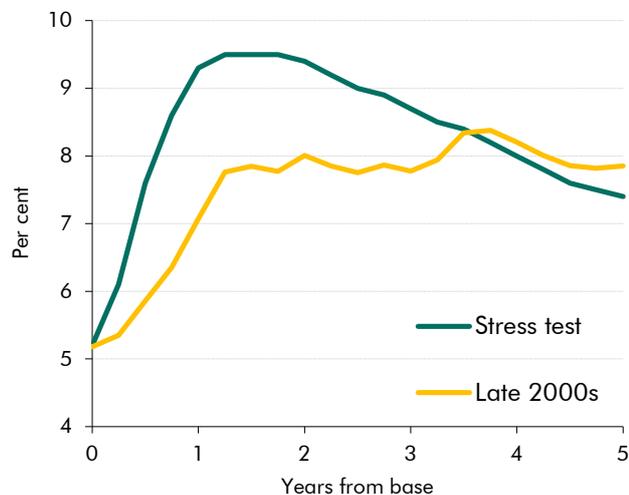
Source: ONS, OBR

Chart 9.7: Bank Rate



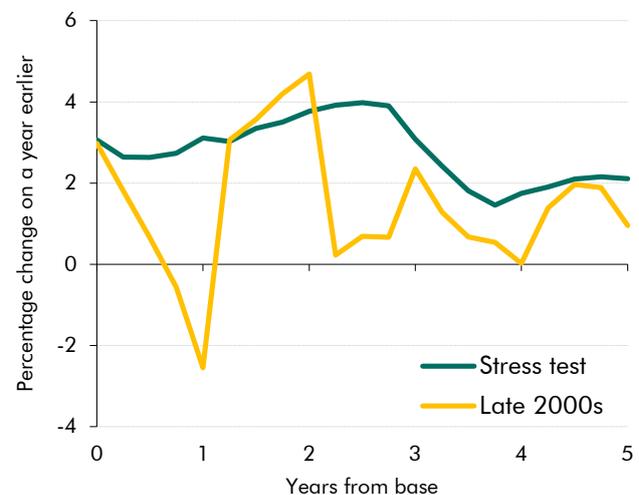
Source: Bank of England, Datastream, OBR

Chart 9.8: Unemployment rate



Source: ONS, OBR

Chart 9.9: Average earnings growth



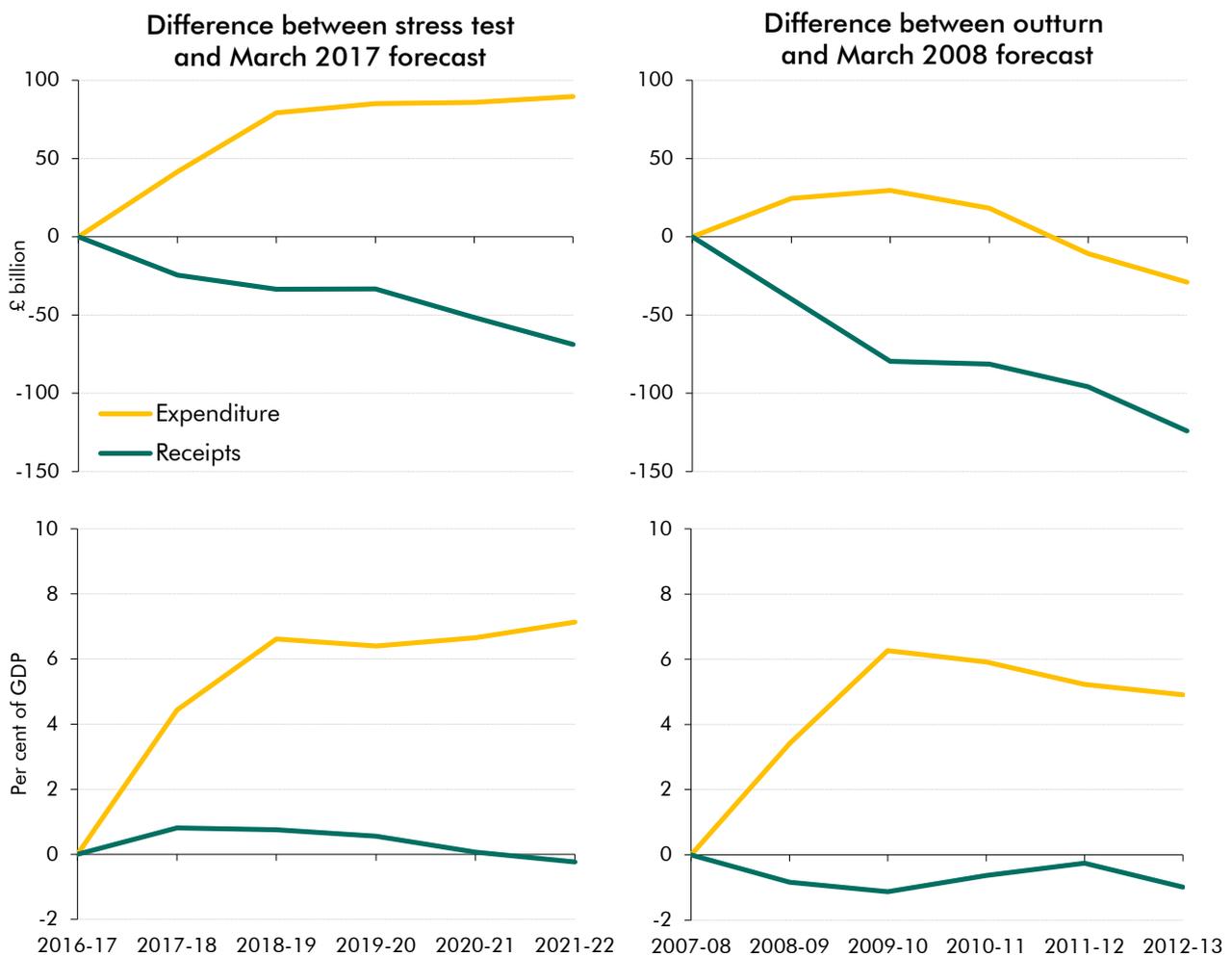
Source: ONS, OBR

The public finances

9.75 Public sector net borrowing increases significantly in the early years of both the stress test and following the late 2000s crisis, but somewhat less in the former. In both cases, much of the increase in borrowing is structural and would therefore require fiscal consolidation at some point to return it to a sustainable level.

9.76 There are, however, significant differences in the composition of the fiscal damage, reflecting the different nature of the shocks. The left panels of Chart 9.10 show how revenues and spending evolve relative to the baseline in the stress test, first in cash terms and then as shares of GDP. The right panels show how the outturns following the crisis evolved relative to the Treasury’s pre-crisis March 2008 forecast. Of course, the latter also reflects the discretionary policy responses by both the Government and the MPC.

Chart 9.10: Receipts and spending: stress test versus last recession



Source: ONS, OBR

- 9.77 Viewed in cash terms, borrowing rose sharply compared with pre-crisis expectations over the two years from 2007-08, primarily due to a shortfall in receipts. These fell sharply and continued to disappoint in later years. The shortfall was spread across the major taxes, reflecting the weakness of nominal GDP (which fell in absolute terms), falling real wages and weaker financial and asset markets. Spending was slightly higher, reflecting welfare bills and discretionary stimulus spending.
- 9.78 In the stress test, the rise in borrowing in cash terms comes more from spending than receipts. The spending overshoot is £79.1 billion by 2018-19 (£52.5 billion of which is debt interest), and rises to £89.5 billion by 2021-22. The receipts shortfall is £33.6 billion by 2018-19, rising to £68.3 billion in 2021-22.
- 9.79 Viewed relative to nominal GDP, it was spending that drove higher borrowing in the crisis. Total spending jumped by 6.3 per cent of GDP over the first two years, compared to the minimal increase expected at Budget 2008. It fell thereafter as the fiscal consolidation began. Higher cash spending was part of the explanation, but the main reason was that existing cash spending plans were a larger proportion of a smaller-than-expected economy. Meanwhile, thanks in part to a temporary VAT cut, receipts fell by 1.0 per cent of GDP in the first two years, rather than rising slightly as had been expected.
- 9.80 Viewed relative to GDP, higher spending more than explains the rise in borrowing in the early years of the stress test and explains the vast bulk of it thereafter. Spending is 6.6 per cent of GDP above the baseline in 2018-19, rising to 7.1 per cent by 2021-22. Higher cash spending and lower nominal GDP both contribute to the rise in the spending-to-GDP ratio. Receipts are 0.8 per cent of GDP above the baseline in 2018-19 (helped by the initially favourable composition of GDP) and only 0.2 per cent of GDP below it in 2021-22.
- 9.81 Chart 9.11 looks at how borrowing rises as a share of GDP over the first two years of the stress test and the first two years of crisis, relative to their starting point rather than to baseline expectations. In terms of spending components:
- **Departmental spending** rose by 2.7 per cent of GDP between 2007-08 and 2009-10, more than a third of the rise in total spending. Cash spending increased by more than planned at Budget 2008, partly reflecting discretionary stimulus spending. Importantly, these spending limits were not reduced in line with the shortfall in nominal GDP (and receipts) relative to the Budget 2008 forecast, so spending rose sharply as a share of GDP. In the stress test, we have assumed no major changes in cash departmental spending. It only rises by 0.8 per cent of GDP over the first two years despite nominal GDP weakness, which reflects the fact that the rise in cash DEL spending in the baseline (4.4 per cent) is much less than the rise in the crisis (11.8 per cent).
 - **Welfare spending** rose by 2.1 per cent of GDP over the first two years of the crisis, reflecting higher caseloads (driven by unemployment) and higher average awards (as inflation uprating outstripped nominal GDP growth). In the stress test, welfare spending rises by only 0.9 per cent of GDP, despite the greater rise in unemployment and inflation. This partly reflects policy measures, in particular the four-year freeze to

working-age benefits announced in July 2015, which means that the burden of higher inflation falls on benefit recipients rather than adding to spending.

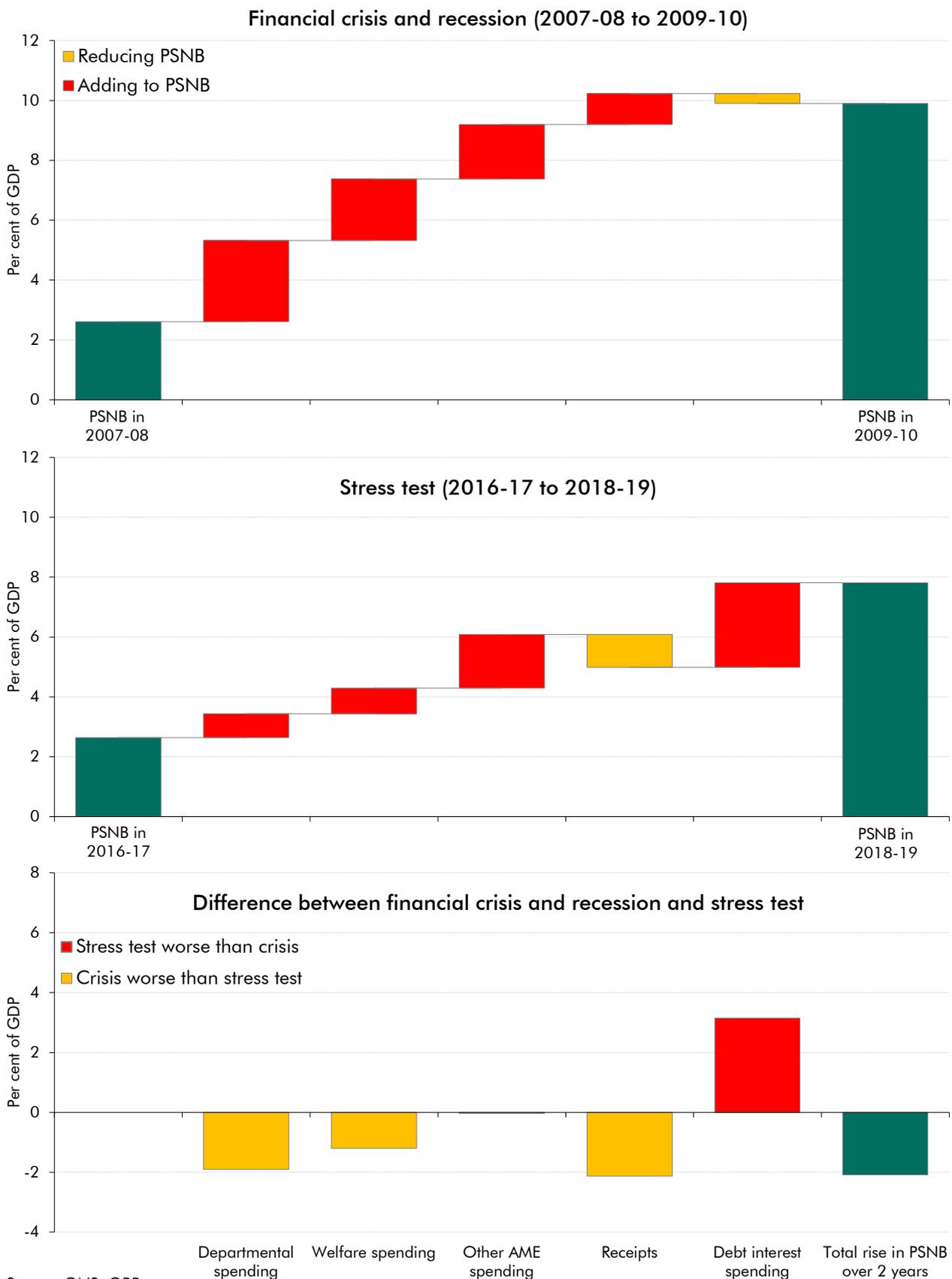
- **Debt interest spending** is the one area where the stress test inflicts significantly more fiscal damage than the crisis. Debt interest spending fell by 0.3 per cent of GDP during the crisis, but rises by 2.8 per cent of GDP in the stress test. That reflects four factors:
 - **interest rates** rise sharply in the stress test, having fallen sharply during the crisis;
 - the **stock of debt** is much higher, amplifying the effect of those higher rates;
 - the **APF** is assumed to sell gilts rather than buying them, while the beneficial gap between Bank Rate and gilt yields is smaller or even negative; and
 - the peak in **RPI inflation** is higher and more sustained than during the crisis, affecting the larger stock of index-linked gilts.

9.82 Receipts fell by 1.0 per cent of GDP in the first two years of the crisis, but rise by 1.1 per cent of GDP at the start of the stress test. This largely reflects that:

- **PAYE income tax and NICs receipts** fell by 0.2 per cent of GDP during the crisis, but rise by 0.3 per cent of GDP in the stress test. This is more than explained by effective tax rates. These dropped sharply during the crisis, reflecting falling real wages, a rise in the share of lower-paid part-time workers, fewer high earners in the financial sector, and policy measures. In contrast, the effective tax rate rises early in the stress test, largely reflecting the relative strength of real earnings growth.
- **Onshore corporation tax** fell by 0.3 per cent of GDP during the crisis, but falls by just 0.1 per cent of GDP in the stress test. This is again explained by effective tax rates, which again fell sharply during the crisis as companies (particularly in the financial sector) accumulated large stocks of tax-deductible losses. Policy changes in recent years have restricted the use of these losses, which partly explains why the effective tax rate remains relatively more buoyant in the stress test than it was in the crisis.
- **VAT** receipts fell by 0.4 per cent of GDP during the crisis, largely reflecting the temporary cut in the main rate. VAT receipts are more buoyant in the stress test, despite rising VAT debt and a fall in the share of spending on standard-rated goods.

9.83 By the end of the stress test, PSNB remains 5.5 per cent of GDP higher than in 2016-17, with debt interest spending 3.2 per cent of GDP higher, thanks to the rise in the stock of debt and higher interest rates. Compared with the late 2000s, the initial deterioration is smaller, reflecting the smaller shock and the more favourable composition of GDP, but greater further out. Five years after the crisis hit, the rise in PSNB had already moderated from 7.3 to 4.6 per cent of GDP. Fiscal consolidation was under way, with departmental spending having been cut by more than 3 per cent of GDP from its peak.

Chart 9.11: Sources of two-year rise in net borrowing: crisis versus stress test



Source: ONS, OBR

Conclusion

- 9.84 The stress test allows us to draw some obvious conclusions: a deep recession and the crystallisation of multi-billion pound contingent liabilities would be fiscally damaging. But the key conclusion for fiscal sustainability is not the damage itself, but what it would mean for the years beyond the stress test. As with the crisis, the most important issue is not the hit from contingent liabilities or the recession, but the lower path for potential GDP. This implies permanently smaller tax bases and lower cash receipts than in the baseline, rendering cash spending plans that appeared affordable in the baseline unaffordable in the stress scenario.
- 9.85 To restore the public finances to a sustainable path, fiscal consolidation would inevitably have to follow at some point. A structural deficit of more than 7 per cent of GDP in 2021-22 would leave a fiscal challenge every bit as daunting as the one that faced the Coalition in 2010. And it would be faced with net debt already at 114 per cent of GDP. Similar choices would be required over the extent to which cash spending plans should be cut to bring spending back to a desired share of GDP or the tax-to-GDP ratio raised to accommodate those cash spending plans.
- 9.86 The stress test also highlights the increased vulnerability of the public finances to shocks that result in higher interest rates. In the stress test, the rise in interest rates reflects an increase in the risk premia on UK government bonds, but the same effect could be generated by a higher global real interest rate (which, as discussed in Chapter 8, is an important potential fiscal risk). With the debt-to-GDP ratio in 2016-17 over twice as high as it was pre-crisis, this amplifies the effect of any change in interest rates. And with more debt linked to RPI inflation, shocks to inflation will also quickly raise spending. In the stress test, debt interest costs rise to a post-war high despite interest rates that are only 3 or so percentage points higher than the baseline.
- 9.87 The stress test also builds on the analysis we have presented in earlier chapters by illustrating some ways in which the public finances are more or less exposed to some types of shock now than they were in the crisis. As well as debt interest spending, the new stamp duty regime is more sensitive to house price shocks, particularly at the top end, than its predecessor. There are also areas of reduced sensitivity. These include the effects of greater restrictions on the use of losses against tax in the corporation tax system and the four-year cash freeze on most working-age benefits and tax credits, which has shifted inflation risk from government to benefit recipients.
- 9.88 The stress test is only illustrative. It is not a forecast of what we think would happen in a situation like this. In particular it does not factor in any policy changes that might be prompted. In reality, policies would no doubt be changed as events unfolded. For example, fiscal stimulus measures could be deemed necessary, or the burden placed on working-age benefit recipients by the cash freeze could be deemed too great.