Office for
Budget
Responsibility

Forecast evaluation report

January 2023

Office for Budget Responsibility: Forecast evaluation report

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

January 2023

This publication is available at www.gov.uk/official-documents

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

ISBN 978-1-5286-3839-5

E02841444 01/23

Printed on paper containing 40% recycled fibre content minimum

Printed in the UK by HH Associates Ltd. on behalf of the Controller of His Majesty's Stationery Office.

Contents

Charts and tables data are available on our website.

Foreword

The Office for Budget Responsibility was created in 2010 to provide independent and authoritative analysis of the UK public finances. Twice a year – at the time of each Budget and Autumn or Spring Statement – we publish a set of forecasts for the economy and public finances over the coming five years in our *Economic and fiscal outlook* (*EFO*). We use these forecasts to assess the Government's progress against its fiscal targets.

In each *EFO*, we stress the uncertainty that lies around all such forecasts. We compare our central forecasts to those of other forecasters. We highlight the limited confidence that should be placed in our central forecast given the scale of shocks that inevitably drive a wedge between any central predictions and subsequent outcomes. We use sensitivity and scenario analysis to show how the public finances could be affected by alternative economic outcomes. And we highlight the residual uncertainties in the public finances, even if one were confident about the path for the economy – for example, because of uncertain estimates of the cost of policy measures.

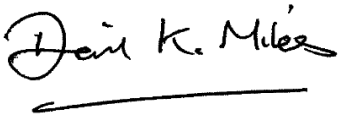
Notwithstanding these uncertainties, we believe that it is important to set out our forecast in detail. We also believe that it is important to examine regularly how our forecasts compare to outturn data and to explain any discrepancies so that we can learn from our experience.

Throughout this report, we describe the arithmetic divergence between our central forecasts and the subsequent outturns. To a significant extent these differences between outturns and previous forecasts are inevitable given unforecastable shocks that hit the economy. But some differences are due to genuine errors, which would have been corrected before the forecast was finalised if we had spotted them. When we identify them, we describe them as such. Errors of this sort are inevitable from time to time in a highly disaggregated forecasting exercise like ours.

This year our report analyses our forecasts for 2021-22, focusing mainly on the March 2021 forecast for the year ahead, as the economy and public finances started to recover from the huge pandemic-induced shock that began a year earlier.

We provided a final copy of this report to the Treasury two working days in advance of publication. This timing has been extended to reflect forthcoming changes to our *Memorandum of Understanding* with HM Treasury and our main forecasting departments.

Richard Hughes



Professor David Miles CBE

Andy King

The Budget Responsibility Committee

1 Executive summary

1.1 The focus of this year's *Forecast evaluation report* (*FER*) is the performance of our forecasts for the financial year 2021-22. This was the year in which the economy and public finances began recovering from the historic, pandemic-induced shock that saw output tumble and the deficit soar in 2020-21. The pandemic resulted in record year-ahead differences between our forecast and outturn for GDP growth and borrowing, which we explored in our December 2021 *FER*. This report therefore focuses on the accuracy of our forecast for the economic recovery from the pandemic and its impact on the public finances in 2021-22.

1.2 Overall, 2021-22 was characterised by a sharp recovery in demand, in the UK and across advanced economies, as vaccines were rolled out and consumers and businesses adapted to the lifting of public health restrictions. But this stronger-than-expected recovery in demand bumped up against domestic and international supply bottlenecks through the autumn and winter, which were compounded by the Russian invasion of Ukraine and associated sharp rise in European gas prices toward the end of the financial year.

1.3 The unexpected strength and speed of the recovery in demand, underestimation of the constraints on supply, and spike in European energy prices meant that we significantly underestimated inflation. Subsequent downward revisions to the level of GDP in 2020-21 mean that we also underestimated real GDP growth in 2021-22 as the economy bounced back from a deeper downturn than previously estimated. The resulting faster-than-expected growth in nominal GDP, coupled with its concentration in tax-rich parts of the income distribution and the economy, explain much of our £108.6 billion *overestimate* of borrowing in 2021-22 – a difference second only in absolute terms to the £258.0 billion *underestimate* of borrowing in our March 2020 pre-pandemic forecast for 2020-21.

Explaining our 2021-22 economy forecast differences

Inflation

1.4 The extent of the CPI inflation overshoot in 2021-22 is the largest difference between forecast and outturn since the OBR began forecasting in 2010 – though this record will be beaten again when we come to evaluate our forecasts for 2022-23. CPI inflation was 4.0 per cent in 2021-22, more than double the 1.7 per cent we expected in our March 2021 forecast. This 2.3 percentage point difference can be explained by several factors – some that were unanticipated, and others that proved more acute or long-lasting than expected. It is largely driven by unexpectedly strong rises in the prices of tradable goods due to:

- **An unexpectedly strong recovery in demand in advanced economies**, meaning global GDP growth in 2021 was 0.5 percentage points stronger than forecast.

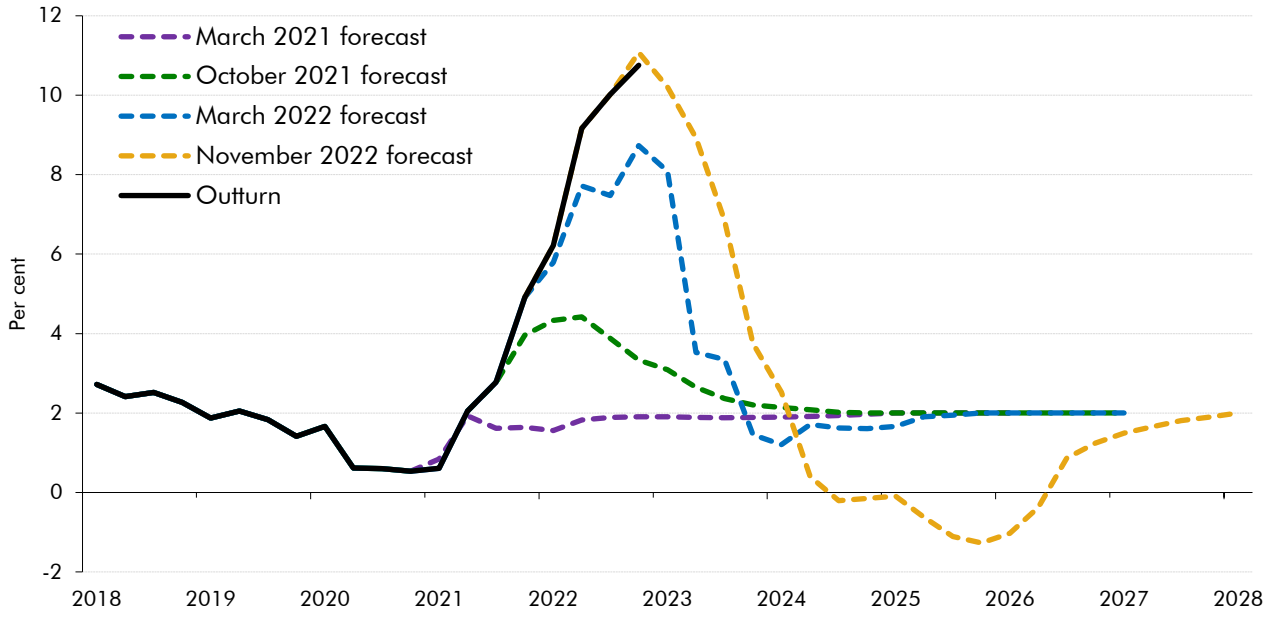
- **Persistent supply and logistics bottlenecks**, especially in emerging economies in Asia, that struggled to respond to that strong growth in demand. As a result, the prices of tradable goods rose by 3.1 percentage points more than expected in 2021-22, explaining around half of the overall forecast difference for CPI inflation (1.1 out of 2.3 percentage points).

- **Rising energy costs** brought on by surging demand for energy-intensive manufactured goods and later by the Russian invasion of Ukraine. This pushed up energy and fuel price inflation, together explaining around one-third of the overall difference (0.2 and 0.5 percentage points respectively).

- **A tighter-than-expected domestic labour market** in the wake of the pandemic. This led to non-tradables inflation coming in 1.1 percentage points above forecast (explaining 0.2 percentage points of the overall difference).

1.5 Since our March 2021 forecast we, and other forecasters, continued to underestimate the strength of CPI inflation in 2022, up until our November 2022 forecast. Inflation was 10.7 per cent in the fourth quarter of 2022, which is 8.8 percentage points higher than our March 2021 forecast. And even our March 2022 forecast, which was completed in the early days of the Russian invasion of Ukraine, underestimated inflation by 2.0 percentage points at the end of last year (Chart 1.1). Our November 2022 forecast was a modest overestimate of 0.3 percentage points. The proximate causes of our repeated underestimate of inflationary pressures were an intensification of the shock to global energy prices, combined with ongoing nominal wage pressures as the domestic labour force contracted by more than we expected while vacancies remained historically high.

Chart 1.1: Successive inflation forecasts

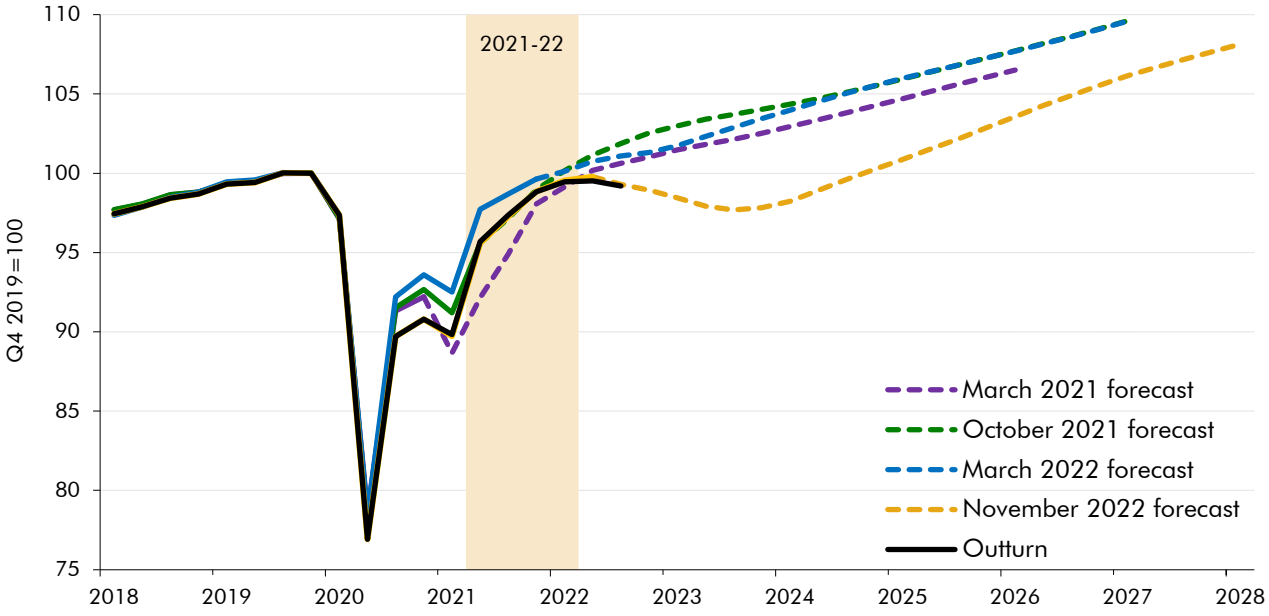


Source: ONS, OBR

GDP

1.6 Despite the hit to real incomes from higher-than-expected inflation, the level of real GDP is broadly in line with our March 2021 forecast by the first quarter of 2022. That forecast anticipated the economy recovering to its pre-pandemic level of output by the middle of 2022, but the latest data suggest that output was still 0.5 per cent below its pre-pandemic peak at that point. The profile of growth was also steeper across the early part of 2021-22 than we expected in March 2021, suggesting an economy that rebounded more quickly following the lifting of the remaining public health restrictions, before slowing as supply bottlenecks and rising energy prices took hold later in the year. Combined with significant subsequent downward revisions to the *level* of outturn GDP in 2020-21, our March 2021 forecast *underestimated* real GDP *growth* in 2021-22 by 3.2 percentage points.

Chart 1.2: Successive forecasts for the level of real GDP



Source: ONS, OBR

Labour market

1.7 The unexpected strength of the post-pandemic recovery in output can also be partly explained by our assumption that the closure of the furlough scheme would lead to a rise in unemployment to 5.9 per cent in 2021-22. This was not borne out, as the Government's support schemes proved more successful than we had assumed in preserving viable businesses and protecting employment, and instead unemployment dipped to 4.2 per cent.

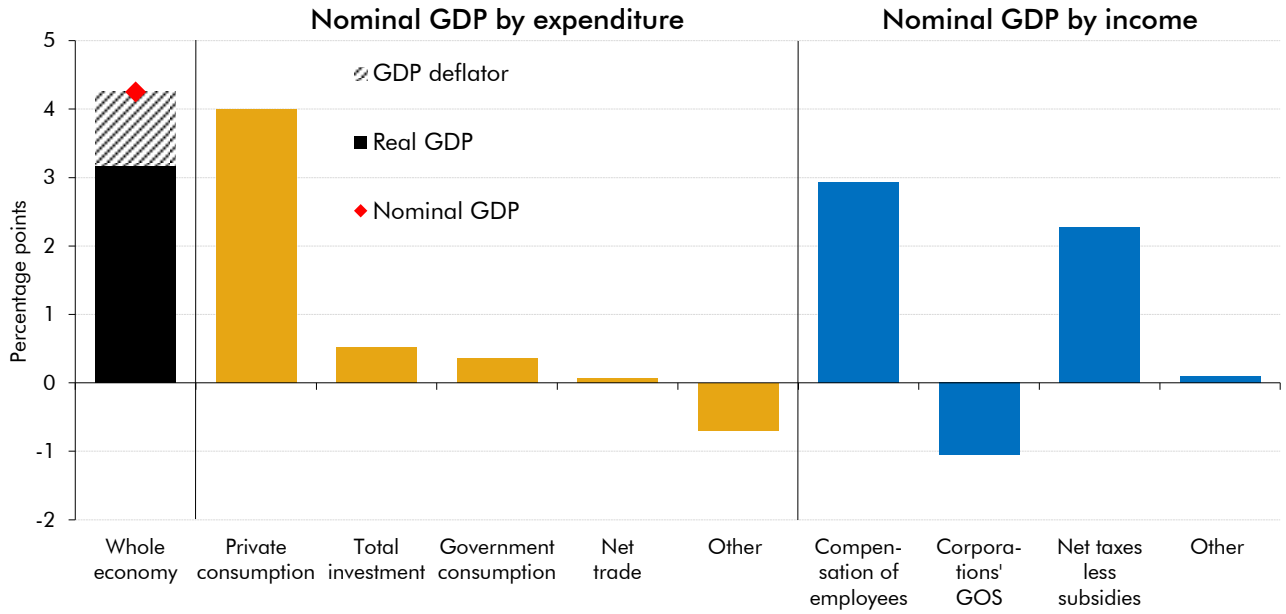
1.8 However, the pandemic appears to have had a more adverse effect on levels of inactivity, which has risen by 575,000 since the start of the pandemic, over 100,000 more than expected. The rise in inactivity appears to be driven by a range of factors, including increases in long-term sickness and early retirement. We intend to explore further the latest trends in inactivity in both our next *Economic and fiscal outlook* and *Fiscal risks and*

sustainability reports. But this adverse news on inactivity has been partly offset by higher levels of net migration than expected (over 500,000 people in the year to June 2022, versus our ONS-based assumption of 150,000 in our March 2021 forecast). The net outcome is that the overall growth of the labour force was 161,000 smaller than we expected.

Explaining our 2021-22 fiscal forecast differences

1.9 Our underestimates of both real GDP growth and inflation in 2021-22 combined to drive a 4 percentage point upside surprise (relative to our March 2021 forecast) in nominal GDP growth – more important than real GDP growth for the public finances. Surprises in the composition of nominal GDP, as well as its overall size, also had important fiscal consequences. Chart 1.3 shows that by expenditure component, private consumption explains almost all of the nominal GDP growth underestimate, while on the income side, a tighter-than-expected labour market contributed to a large upside surprise in labour income growth – the largest tax base of all and the most tax-rich component of nominal GDP. Higher tax bases (such as increased VAT receipts from higher consumption growth) supported net taxes and subsidies, offset by lower-than-expected profits.

Chart 1.3: March 2021 forecast differences in contributions to nominal GDP growth in 2021-22



Note: Corporations' GOS stands for private corporations' gross operating surplus.
Source: ONS, OBR

1.10 These nominal GDP surprises provide a partial explanation for government borrowing in 2021-22 coming in £108.6 billion (46.4 per cent) below our March 2021 forecast. Chart 1.4 shows that this overestimate of borrowing was driven by:

- A £3.8 billion overestimate of borrowing due to **policy changes** announced after our March 2021 forecast. This small contribution is more than explained by spending

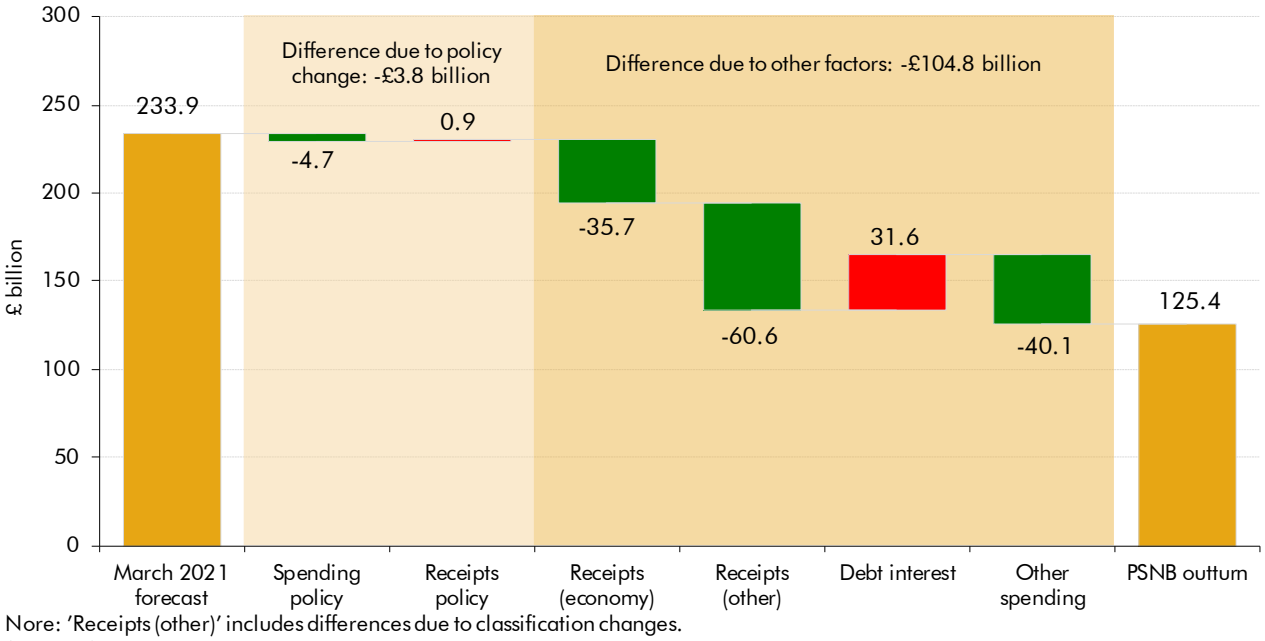
reductions: lower departmental capital spending limits and lower spending on student loans as a result of reforms to terms for new and existing borrowers.

- A £35.7 billion upside surprise in **receipts due to economic factors**, in particular our underestimates of labour income and private consumption, set out above. These are the main tax bases for income tax, NICs and VAT, which together account for £29.8 billion (84 per cent) of the overall surprise in receipts due to economic factors.

- A £60.6 billion upside surprise in **receipts due to other forecasting differences**.[1] Much of this relates to stronger-than-expected fiscal drag bringing more people into more heavily taxed parts of the income distribution, alongside growth being concentrated in tax-rich sectors of the economy, raising effective tax rates for income tax, NICs and corporation tax. Together these taxes account for £37.4 billion (62 per cent) of the overall upside surprise in receipts due to other forecasting differences.

- An £8.5 billion overestimate of **spending due to forecasting differences**. This includes a large £31.6 billion underestimate of debt interest spending, due in particular to much higher-than-forecast RPI inflation, offset by spending in a range of other areas coming in lower than forecast, in particular in respect of pandemic-related income support schemes and loan guarantees, and National Accounts adjustments.

Chart 1.4: Sources of March 2021 borrowing forecast differences for 2021-22



Nore: 'Receipts (other)' includes differences due to classification changes.
Source: OBR

[1] This includes a £1.2 billion reduction in receipts (and therefore addition to borrowing) due to classification changes.

Refining our forecasts

1.11 Previous *FER*s have identified specific issues with elements of our normal forecasting approach that have caused us to refine and develop particular economic and fiscal forecasting models and techniques. But the challenges for forecasting created by the pandemic – which endured into 2021-22 – have been more fundamental in nature and prompted us to reassess elements of our whole approach. The dramatic rise in energy prices due to the Russian invasion of Ukraine late in 2021-22 underscored and added to many of these challenges, and re-emphasised the core lessons of our December 2021 *FER*:

- The need to be **analytically agile**, and capable of developing new analytical tools quickly in response to novel shocks. For example, in our July 2022 *Fiscal risks and sustainability report* we set out a new production function to quantify the effect of energy price rises on the supply potential of the UK economy.

- The need to understand and make use of multiple sources of **high-frequency, real-time data**, such as HMRC's real-time information from the PAYE system and Google mobility data, to understand the impact of the pandemic, lockdowns, and re-opening on employment, incomes, and consumption.

- The need to **draw on international experiences and expertise outside of government**, for example by asking security and energy experts to help us understand the implications of the Russian invasion of Ukraine for European and UK energy prices.

1.12 On the fiscal side, less than half of our large overestimate of the 2021-22 deficit can be explained by the more rapid economic recovery than we had assumed, with the remaining difference highlighting several fiscal forecasting issues that we have already reflected and acted upon, particularly in our March 2022 *Economic and fiscal outlook*. In particular:

- the **unexpectedly strong rise in effective tax rates** led us to bolster our analysis of sectoral receipts data and the rich data on the distribution of employee earnings from the PAYE system to inform our in-year receipts estimates; while

- the **large changes in departmental spending allocations during the pandemic** have prompted us to expand the range of data sources we use when making judgements about the extent to which spending limits set by the Treasury will be underspent.

Comparison with past official forecasts

1.13 In Annex A we compare the performance of our forecasts since 2010 to the average across official Treasury forecasts made in the 20 years before the OBR was created. We assess our forecasts for their accuracy (the *absolute* average difference, capturing the overall size of differences regardless of their direction), and for the first time in our *FER*s, any degree of 'bias' (the average difference, which captures the direction, or *skew*, of differences).

1.14 In terms of **accuracy**, it remains the case that our forecasts for real GDP and net borrowing are more accurate than the Treasury's when measured on a 'median' basis (which puts less emphasis on rare but very large shocks such as the financial crisis or the pandemic). Our median absolute difference for real GDP growth in the third year of the forecast is 0.6 percentage points, 0.2 percentage points lower than the Treasury's. Our median absolute three-year-ahead borrowing difference, at 1.1 per cent of GDP, is 0.3 per cent of GDP lower than the equivalent figure for the Treasury era. But since the pandemic struck, the margins of outperformance relative to the Treasury have been narrowing, and OBR forecasts are no longer more accurate than Treasury ones when measured on a 'mean' basis (due to the historic size of the pandemic shock, which saw outturns differ from forecasts by margins nearly twice as large as seen in the financial crisis).

1.15 In relation to **bias**, both OBR and Treasury forecasts have tended to overestimate real GDP growth and underestimate borrowing, although our forecasts have done this to a slightly lesser extent in each case. The OBR has typically overestimated three-year-ahead GDP growth by 0.5 percentage points, compared to a 0.6 percentage point median Treasury overestimate; and the OBR has underestimated three-year-ahead borrowing by 1.1 per cent of GDP, 0.3 per cent of GDP below the Treasury's median borrowing bias.

1.16 This optimism bias in OBR economic and fiscal forecasts largely reflects the combination of our overoptimism about the recovery in productivity growth following the financial crisis; increases in departmental spending announced between the Brexit referendum and the 2019 election that our borrowing forecasts could not anticipate; and the impact of the adverse economic shock associated with the pandemic. While in previous *FER*s we have highlighted the time it took for us to adapt to the disappointing post-financial crisis productivity performance, the departmental spending policy changes and the consequences of the pandemic are not outcomes that we could reasonably anticipate in central forecasts (and are proscribed by legislation from doing so in the case of changes to government policy). But they underscore the importance of our assessment of risks and uncertainties – including the sensitivities around our forecasts, alternative scenarios, and discussion of policy-related risks – both in our *Economic and fiscal outlook*s and our annual *Fiscal risks and sustainability reports*.

2 The economy

Introduction

2.1 This chapter assesses the performance of our March 2021 economic forecast for the 2021-22 financial year, a 12-month period that saw the UK economy begin to recover from the Covid pandemic but also suffer the initial consequences of the February 2022 Russian invasion of Ukraine and associated rise in energy prices. In particular, the chapter explores the differences between our forecast and latest outturn data for the:

- rate of **inflation** and its components, including the prices of energy, tradable goods, and non-tradeable services;
- other **market-derived assumptions** including interest rates, equity prices, and the exchange rate;
- rate and composition of **real GDP growth**;
- **labour market** and **productivity**; and
- rate and composition of **nominal GDP growth**, a key determinant of our fiscal forecast.

2.2 We look principally at our March 2021 economy forecast rather than also re-evaluating our March 2020 pre-pandemic forecast (as has been the practice in past *Forecast evaluation reports* (*FERs*)). This allows us to focus on how our forecast for the UK economy's *recovery* from the Covid pandemic compared with outturn. More detailed analysis of our March 2020 forecasts, which were affected by the arrival and evolution of the Covid pandemic in 2020-21, can be found in our July 2021 *Fiscal risks report* and December 2021 *FER*. As Chapter 3 reviews our March 2020 fiscal forecast to help explain our forecast performance for 2021-22, later in this chapter we also briefly summarise the differences between our March 2020 forecast and outturn for cumulative growth from 2019-20 to 2021-22 for nominal GDP and its income and expenditure components.

Inflation

Inflation in 2021-22

2.3 Averaging 4 per cent across the financial year as a whole, the overall rate of CPI inflation was 2.3 percentage points higher in 2021-22 than our March 2021 forecast, one of the largest differences from outturn to forecast in our history to date.[1] As Table 2.1 shows,

[1] As discussed later in Box 2.1, the difference between forecast and outturn for 2022-23 will be larger still.

rather than falling from 1.9 to 1.6 per cent over the course of the financial year as we forecast, inflationary pressures gathered pace from an annual rate of 2.1 per cent in the second quarter of 2021 to 6.2 per cent by the first quarter of 2022. A similar pattern can be seen in RPI inflation, which instead of easing picked up from 3.4 to 8.3 per cent on a quarterly basis between the start and end of the financial year.

Table 2.1: Inflation forecast

	Percentage change on a year earlier				
	2021			2022	2021-22
	Q2	Q3	Q4	Q1	annual average
CPI inflation					
March 2021 forecast	1.9	1.6	1.6	1.6	1.7
Latest data	2.1	2.8	4.9	6.2	4.0
Difference[1]	**0.1**	**1.2**	**3.3**	**4.7**	**2.3**
RPI inflation					
March 2021 forecast	3.1	2.7	2.4	2.0	2.6
Latest data	3.4	4.5	6.9	8.3	5.8
Difference[1]	**0.2**	**1.8**	**4.5**	**6.3**	**3.2**

[1] Difference in percentage points.

2.4 This difference is largely explained by unexpectedly strong rises in the prices of tradable goods in the wake of the pandemic and in energy associated with the Russian invasion of Ukraine. An unexpectedly rapid recovery in post-lockdown demand in advanced economies, particularly in the US, coupled with persistent supply and logistics bottlenecks, especially in Asia, meant that prices of other tradables in 2021-22 rose by 3.1 percentage points more than we forecast, explaining 1.1 percentage points (just under half) of the overall difference in CPI inflation 2021-22. Rebounding demand for energy-intensive manufactured goods and later the Russian invasion of Ukraine also pushed up the contribution of energy and fuel price inflation, explaining 0.2 and 0.5 percentage points respectively (around one-third combined) of the overall difference in CPI inflation in 2021-22. A tighter-than-expected domestic labour market in the wake of the pandemic also contributed to the inflation overshoot, with the contribution from other non-tradables inflation coming in 1.2 percentage points above forecast and explaining 0.2 percentage points of the overall difference in CPI inflation (around one-tenth). These unexpectedly strong price pressures continued to build through 2022, and Box 2.1 explores in more detail why we also significantly underestimated the strength of inflation over the past year.

Table 2.2: Contributions to differences from our March 2021 inflation forecast

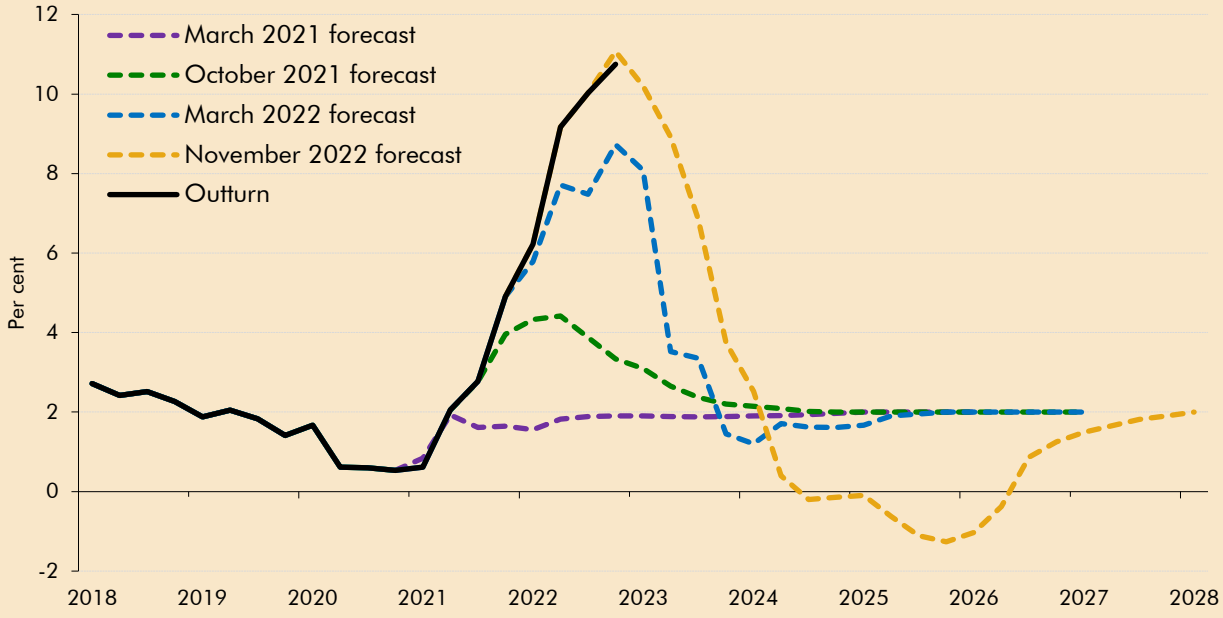
	Percentage point contribution to annual CPI inflation					
	Food, beverages and tobacco	Utilities	Fuels	Other tradables	Other non-tradables	Total
March 2021 forecast	0.2	0.2	0.1	0.3	0.9	1.7
2021-22 outturn	0.3	0.4	0.7	1.4	1.2	4.0
Difference	**0.2**	**0.2**	**0.5**	**1.1**	**0.2**	**2.3**

Box 2.1: Why inflation has been so much stronger than our forecasts in 2022?

Inflation in 2022 has significantly outpaced most of our forecasts since March 2021, with the exception of our most recent *EFO* in November 2022, generating the largest differences from our forecasts for inflation since the OBR was established. As Chart A shows, against an outturn annual average figure of 9.1 per cent across 2022 as a whole:

- Our **March 2021 forecast**, published just as the UK was emerging from the final lockdown, assumed no post-pandemic surge in inflation and forecast that CPI inflation would remain close to its 2 per cent target.
- The forecast in our **October 2021 *EFO*** was published as a post-lockdown surge in global demand and bottlenecks in supply chains was becoming apparent (as discussed in Box 2.1), and it predicted the resulting rises in goods prices would push UK CPI inflation up to a peak of 4.4 per cent.
- Our **March 2022 forecast**, which was closed 19 days after the Russian invasion of Ukraine, assumed that the spike in European gas and oil prices would push CPI inflation to a peak of 8.7 per cent in the fourth quarter of 2022.
- Our **November 2022 forecast**, which was produced after Russia had effectively cut off most pipeline gas exports to Europe and the UK Government had announced its Energy Price Guarantee (EPG), forecast that CPI inflation would peak even higher at 11.1 per cent in the fourth quarter of 2022 (albeit 2½ percentage points lower than it would have been without the EPG).

Chart A: Successive OBR inflation forecasts



Source: ONS, OBR

As Table A shows, all components of the CPI basket contributed positively to the surprise in inflation in 2022 relative to our March 2021 forecast. However, many of these inflationary pressures emerged at different stages and compounded each other over time. So, while subsequent forecasts for 2022 inflation were more accurate than our March 2021 forecast, the

cumulative effect of these prices pressures was not fully captured until our November 2022 forecast. The remainder of this box discusses the factors that explain our underestimation.

Table A: Contributions to the difference from our forecasts for 2022 inflation

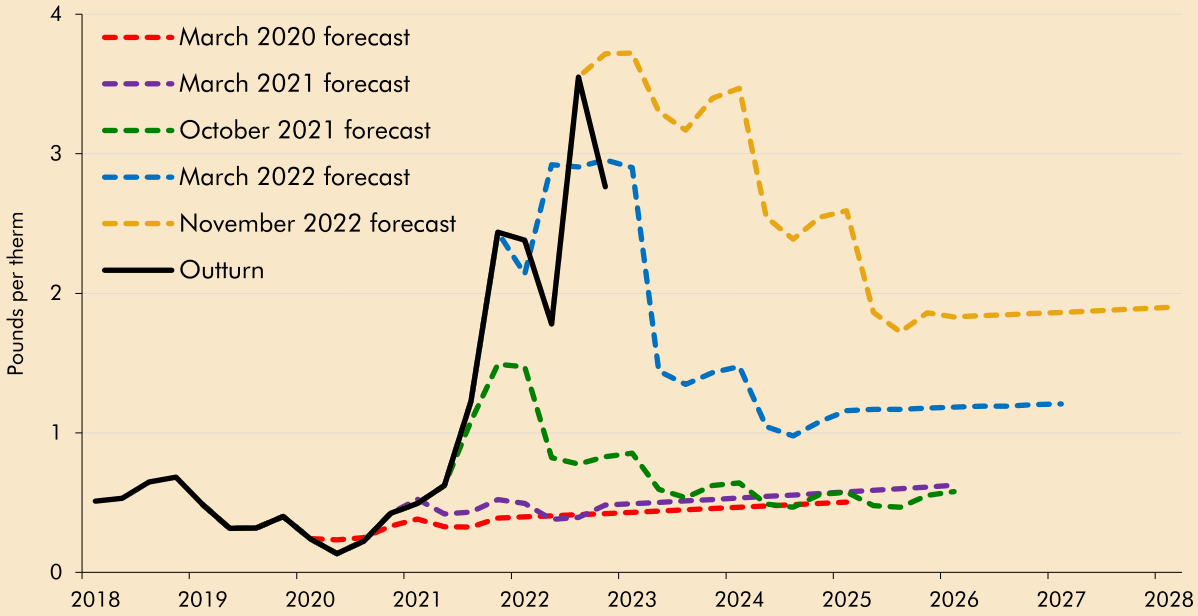
	Percentage point contribution to annual CPI inflation					
	Food, beverages and tobacco	Utilities	Fuels	Other tradables	Other non-tradables	Total
March 2021	0.3	0.2	0.0	0.3	1.1	1.8
October 2021	0.3	0.7	0.0	0.9	2.0	4.0
March 2022	0.7	2.5	0.6	1.8	1.8	7.4
November 2022	1.5	2.2	1.0	2.5	1.9	9.1
2022 CPI outturn	**1.5**	**2.2**	**1.0**	**2.4**	**2.0**	**9.1**
Difference to forecast						
March 2021	1.2	2.0	1.0	2.1	0.9	7.3
October 2021	1.1	1.5	1.0	1.5	0.0	5.1
March 2022	0.7	-0.3	0.3	0.6	0.2	1.6
November 2022	0.0	0.0	0.0	-0.1	0.1	-0.1

Larger-than-expected increases in the prices of **'other tradables' (mainly manufactured goods)** explain around a quarter of the overshoot in CPI inflation relative our March 2021 forecast. For instance, prices of clothing and footwear rose by 8 per cent in 2022, compared to a rise of only 0.3 per cent in the previous year. This unexpected spike in tradable goods prices was due in large part to our failure to anticipate the combination of: (i) the strength of the post-lockdown surge in demand for tradable goods among advanced economies, especially in the US;[a] (ii) the persistence of pandemic-driven constraints on the capacity of emerging market countries, especially China, to produce those goods; and (iii) the severity of the logistical challenges in transporting those goods between producers and consumers. The resulting 'bottlenecks' pushed up global prices for tradable goods which, as a net importer of manufactured goods, added 2.4 percentage points to UK consumer price inflation in 2022. Our October 2021 and March 2022 forecasts anticipated some of these pressures on tradable good prices, which were subsequently exacerbated by rising energy prices that further pushed up the cost of energy-intensive products.

Larger-than-expected increases in the prices of **utilities and fuels** explain a further two-fifths of the surprise in inflation relative to our March 2021 forecast. This was driven almost entirely by developments in gas (and to a lesser extent oil) prices leading up to and following the Russian invasion of Ukraine. We base our forecasts for oil and gas prices on market expectations, which have been more volatile as a result of the Russian invasion. As shown in Chart B, pressures on European energy prices started to emerge in mid-2021 when Russia began reducing gas deliveries to Europe, sending futures prices up to a peak of £1.50 per therm in the fourth quarter of 2021 in the vintage of the forward curve reflected in our October 2021 forecast. Following the Russian invasion in February 2022, gas prices futures spiked even higher to £3.00 per therm in fourth quarter of 2022 in the curve used in our March 2022 forecast. The cessation of Russian pipeline gas deliveries and concerns about the sufficiency of European storage capacity in the Autumn of 2022 drove gas futures prices higher still, peaking at £3.70 per therm for delivery in the first quarter 2023 in our most recent forecast in November 2022. The impact of this latest surge on retail gas and electivity prices was partly offset by the Government's Energy Price

Guarantee, announced in September, which reduced consumer price inflation by about 2 percentage points in the final quarter of 2022. By the end of 2022, gas prices were nearly five times higher and oil prices twice as high as we had anticipated 22 months earlier.[b]

Chart B: Successive market forecasts for gas prices



Source: Datastream, OBR

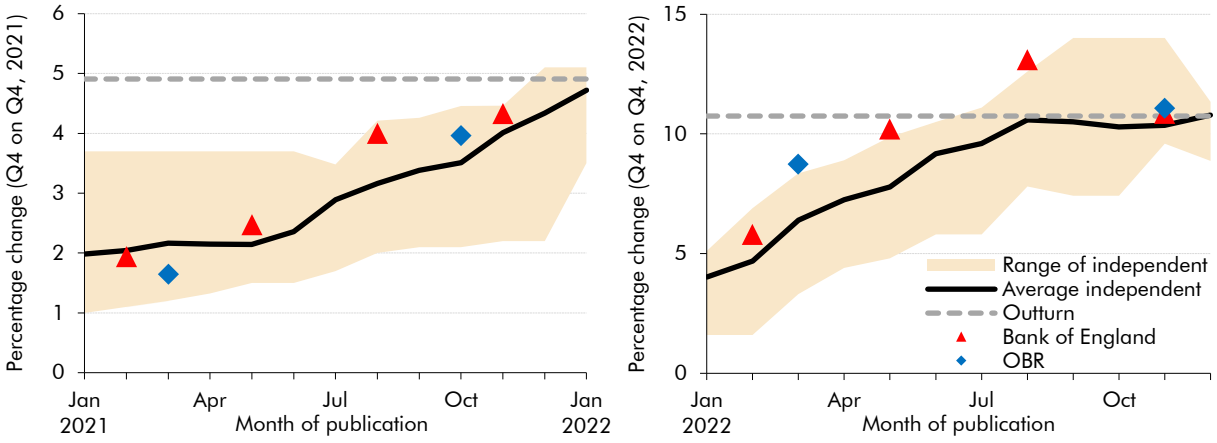
In addition, **food, beverages and tobacco** contributed a further 1.2 percentage points to the surprise in inflation and one-sixth of the overshoot in CPI relative to our March 2021 forecast. At 16.8 per cent, the December 2022 figure for food and non-alcoholic beverage inflation was the highest since 1977. In part, this reflects the further consequences of higher energy prices (both because energy is used in the production and transportation of agricultural products and because natural gas is an important input to nitrogen-based fertilisers) and the war in Ukraine more generally (such as disruption to Ukrainian wheat production and the Russian blockade of exports). But other factors have also played a role, such as la Niña weather phenomena returning for a third year in 2022, causing droughts in Europe and the Americas.

Inflation in **other non-tradables (mainly services)** of 6.1 per cent in 2022 also surprised to the upside and accounted for another one-eighth of the overshoot in CPI inflation relative to our March 2021 forecast. This unexpectedly large rise in the prices of domestically-produced services reflected a combination of: (i) higher energy and other input costs; (ii) pressures for higher wage increases to offset at least some of the increased cost of living; and (iii) a larger than anticipated reduction in the size of the labour force in the aftermath of the pandemic, which put further upward pressure on wages. Some of this increase in the cost of non-tradables was anticipated in our October 2021 forecast, and our March and November 2022 forecasts predicted the 2022 outturn more or less exactly.

[a] Tauber, K., Van Zandweghe, W., Tauber, K., Van Zandweghe, W., 2021, *Why has durable goods spending been so strong since the Covid-19 Pandemic*, Federal Reserve Bank of Cleveland Economic Commentary.
[b] To better capture the transition between past and expected prices, we have switched to using spot prices to represent outturn gas prices rather than front-month futures prices.

2.5 We were not alone in underestimating the build-up in inflationary pressures mounted across 2021 and 2022. As Chart 2.1 shows, both the average and range of independent forecasts for CPI inflation increased sharply across 2021 and 2022, as forecasters realised the extent of inflationary pressures in those years. On average, independent forecasts produced in the first quarter of 2021 underestimated annual inflation by the fourth quarter of that year by around 3 percentage points. And independent forecasts produced in the first quarter of 2022 underestimated inflation by the fourth quarter of that year by 6 percentage points on average. All independent forecasts produced in the first quarter of both years underestimated the ultimate rate of inflation by at least 1 percentage point in 2021 and by at least 2 percentage points in 2022.

Chart 2.1: Range of forecasts for CPI inflation in 2021 and 2022



Note: Range of independent forecasts pooled over previous 3 months.
Source: Bank of England, HM Treasury, OBR

Other market-derived assumptions

2.6 Other market-derived assumptions evolved broadly in line with our March 2021 forecast in 2021-22. The initial pace of monetary tightening was only slightly faster than assumed, reflecting the upside news on inflation, though Bank Rate has risen much further since. At only £30 billion less than we had assumed, the stock of assets held in the APF in 2021-22 was broadly in line with our March 2021 expectations of £900 billion. The successful rollout of vaccines, a tight labour market, and surging inflation supported nominal equity prices, which came in 3.4 per cent higher than our forecast. And the effective exchange rate came in 3.0 per cent higher than expected.

Table 2.3: Other market-derived assumptions for 2021-22, financial year average

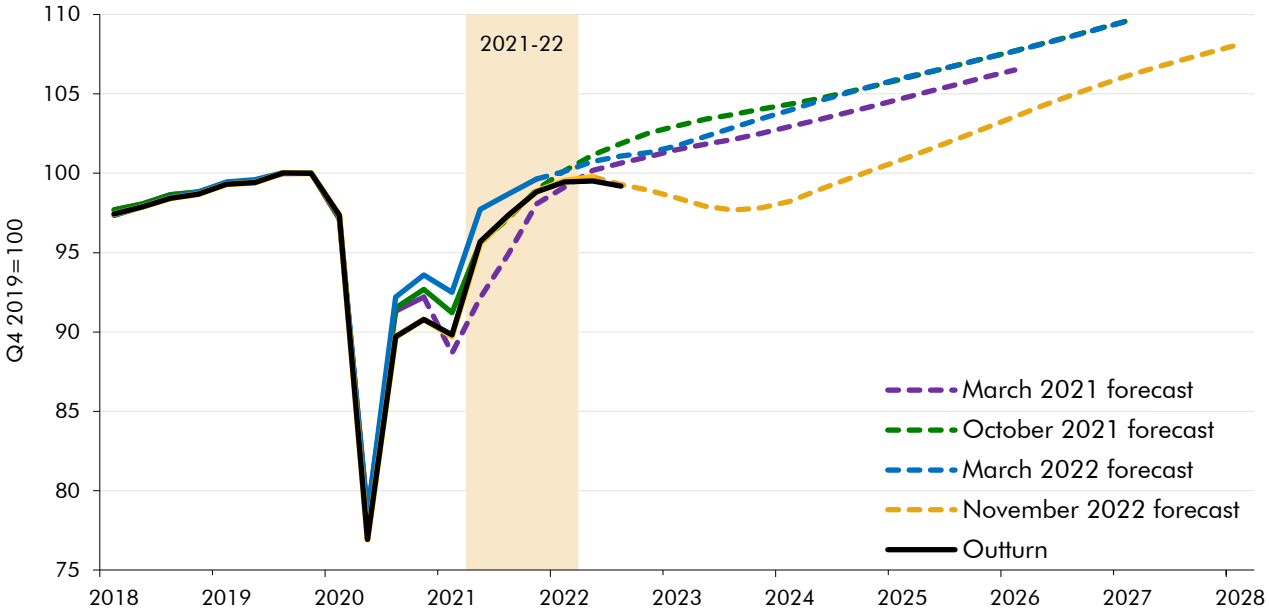
	Bank rate (per cent)	Market gilt rates (per cent)	Quantitative easing[1] (£ billion)	Equity prices (FTSE All-share)	Exchange rate (index)
March 2021 forecast	0.03	0.6	900.3	3958	79.5
Latest data	0.19	1.0	866.8	4092	81.9
Difference[2]	**0.16**	**0.4**	**-33.5**	**3.4**	**3.0**

[1] Total asset purchases, including corporate bonds, at the end of the 2021-22 financial year.
[2] Per cent difference except Bank Rate (percentage points) and quantitative easing (£ billion).

Real GDP: level, growth and composition

2.7 Despite the hit to real incomes from higher-than-expected inflation, the level of real GDP is broadly in line with our March 2021 forecast by the first quarter of 2022. That forecast anticipated the economy recovering to its pre-pandemic level of output by the middle of 2022, but the latest data suggest that output was still 0.5 per cent below its pre-pandemic peak at that point. In our latest forecast from November 2022, the pre-pandemic level of output is now not expected to be recovered until the last quarter of 2024 due to the recession triggered by the subsequent rise in energy prices.

Chart 2.2: Successive forecasts for the level of real GDP



Source: ONS, OBR

2.8 Significant downward revisions to the *level* of outturn GDP in 2020-21, mean that the profile of growth was steeper across the early part of 2021-22 than we expected in March 2021, and we *underestimated* real GDP growth in 2021-22 by 3.2 percentage points. The latest vintage of data therefore suggest that the economy initially rebounded less strongly from the first wave of the pandemic than we had thought at the time of our March 2021 forecast, but then rebounded more quickly than expected to the few public health restrictions that remained in place.[2] The economic recovery slowed in the latter part of the year as the rebound in demand bumped up against supply bottlenecks and rising energy prices associated with the Russian invasion of Ukraine. Table 2.4 breaks this 3.2 percentage point forecast difference down into the different expenditure components of GDP:

- Stronger **consumption growth** explains 2.7 percentage points, or more than four-fifths of the difference. A faster-than-expected recovery in demand due to the effective

[2] For more discussion of the economy's adaptability to the pandemic, see our December 2021 *Forecast evaluation report*.

rollout of vaccines and supported by consumers and businesses surprising adaptability to public health restrictions, boosted consumption and GDP.

- **Business investment** growth was broadly in line with our forecast, although the housing market recovered from the pandemic faster than we had expected in March 2021 with the 'race-for-space' and stamp duty holiday fuelling **private residential investment,** the contribution of which was 0.5 percentage points stronger than our forecast.

- **Government spending** contributed 0.5 percentage points less to real GDP growth than forecast. This in part reflects lower measured covid- and non-covid-related health activity than we expected.

- **Net trade** proved to be less of a drag on growth than expected, contributing 1.3 percentage points more to GDP growth than we forecast in March 2021 As discussed above, even prior to the Russian invasion of Ukraine, the unexpected growth in the *costs* of tradable goods weighed on the *volume* of UK imports while demand for UK exports grew more quickly as the economies of our trading partners also bounced back more quickly than anticipated from the pandemic. But changes in data collection mean that these data are even more prone to revision than normal.[3]

- **Other components** contributed 0.8 percentage points less to growth than we anticipated in March 2021. Over three-quarters of this is driven by changes in inventories, as firms built up less stocks than anticipated recovering from the pandemic likely owing to supply bottlenecks and global shortages. Inventories is also a highly volatile series subject to large revisions.

Table 2.4: Expenditure contributions to real GDP growth in 2021-22

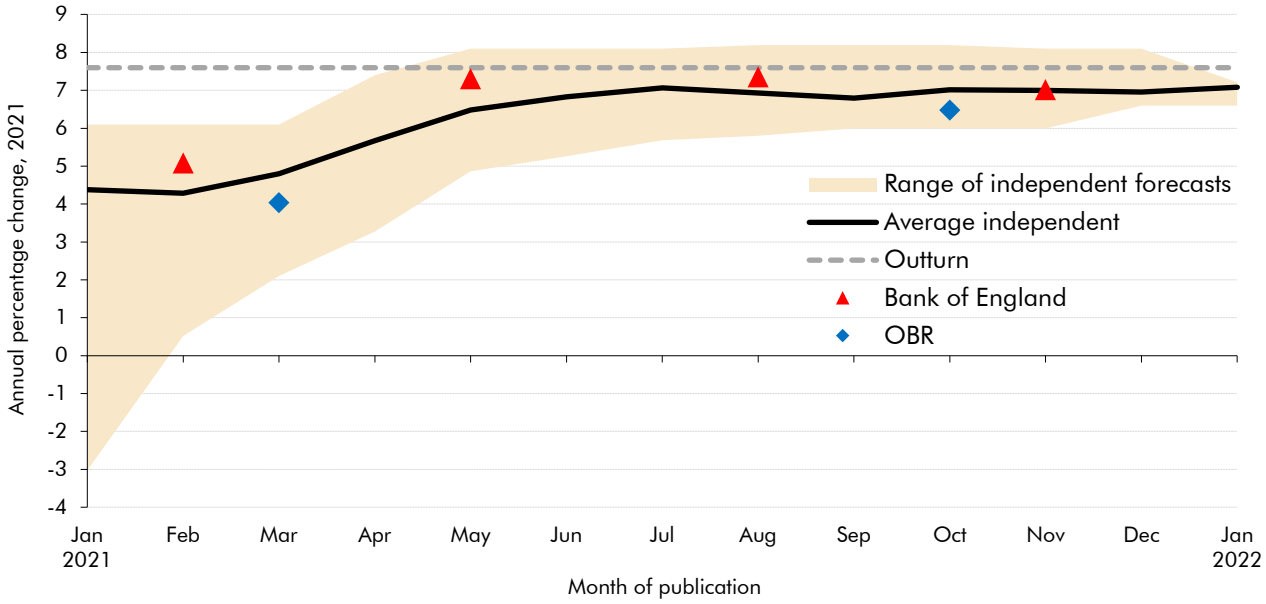
	Percentage points						
	Private consumption	Business investment	Private residential investment	Total government	Net trade	Other	GDP
March 2021 forecast	5.9	0.7	0.4	3.7	-3.1	1.9	9.5
Latest data	8.6	0.7	0.9	3.2	-1.8	1.2	12.7
Difference[1]	**2.7**	**-0.1**	**0.5**	**-0.5**	**1.3**	**-0.8**	**3.2**

[1] Difference in unrounded numbers.

2.9 Our forecasts for real GDP growth over calendar year 2021 were broadly in line with, if slightly below, those of other contemporaneous independent forecasters. As Chart 2.3 shows, we and other forecasters revised up our projections for real GDP growth between March 2021 and October 2021, as we got more information over the course of the year about both downward revisions to 2020 and the upside surprise to demand in the wake of the pandemic. However, even our forecast of 6.5 per cent growth in our October 2021 forecast turned out to be lower than the 7.6 per cent growth rate in outturn for 2021.

[3] ONS, *Understanding the latest changes to UK trade figures with the EU*, March 2022.

Chart 2.3: Range of forecasts for real GDP growth



Note: Range of independent forecasts pooled over previous 3 months.
Source: Bank of England, HM Treasury, OBR

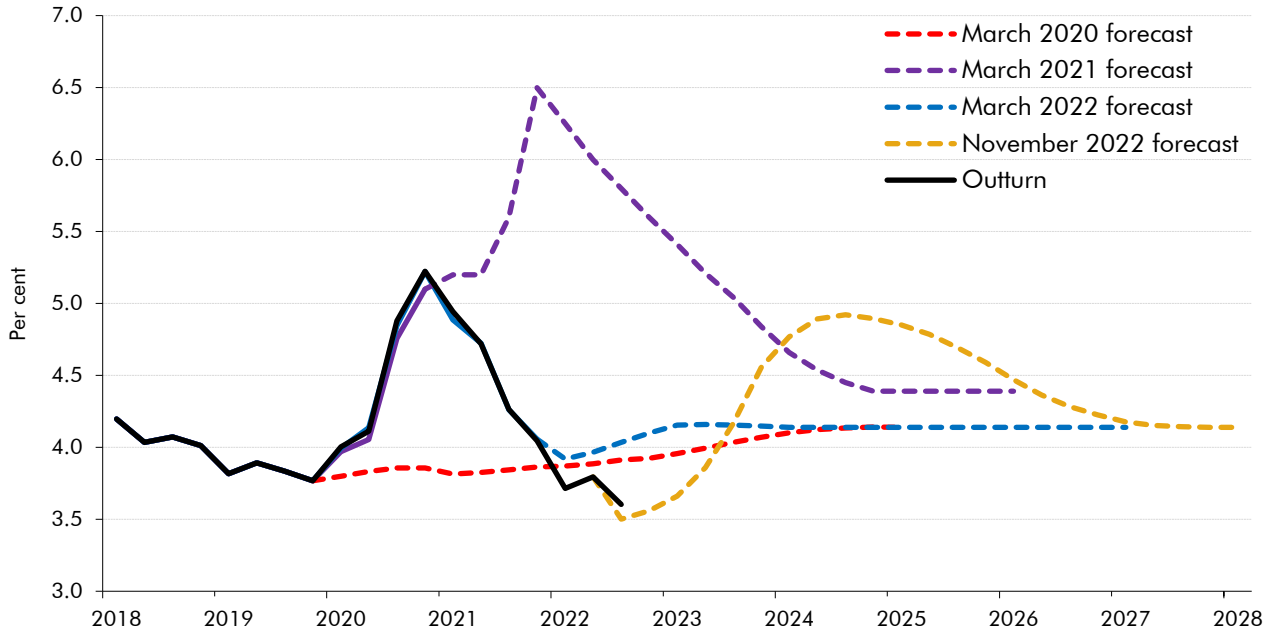
Labour market and productivity

2.10 One of the factors behind our underestimating the strength of the post-pandemic recovery in output was an assumption that the closure of the coronavirus job retention scheme (the CJRS or 'furlough scheme') would lead to a rise in the unemployment rate from 4.8 per cent in 2020-21 to 5.9 per cent in 2021-22 (and a peak of 6.5 per cent on a quarterly basis). As shown in Chart 2.4, this post-pandemic rise in unemployment did not materialise and, instead, the rate fell slightly to 4.2 per cent in 2021-22 as a whole (and has fallen to a multi-decade low of 3.6 per cent on a quarterly basis in the third quarter of 2022). The CJRS, and other pandemic-related business support, thus proved more successful than we had assumed in preserving viable businesses and protecting employment through one of the largest peacetime economic shocks.

2.11 However, the pandemic seems to have had a more adverse effect on the overall size of the labour force than we forecast in March 2021, where we assumed that the labour force would recover from its pandemic level of 34.1 million in the second quarter of 2020 and average 34.3 million people in 2021-22.[4] In fact, in the first quarter of 2022 the labour force remained at 33.9 million, close to where it was at the height of the pandemic in the second quarter of 2020. The flipside of this shortfall in the size of the labour force has been the rise in inactivity post-pandemic of 575,000, discussed in paragraph 2.13. The Labour Force Survey shows that this rise has been driven by increases in the numbers of students (227,000) and those reporting long-term ill health (325,000). And, as Chart 2.5 shows, later forecasts have taken account of lower post-pandemic rates of economic activity, but still assumed some recovery in the overall size of the labour force.

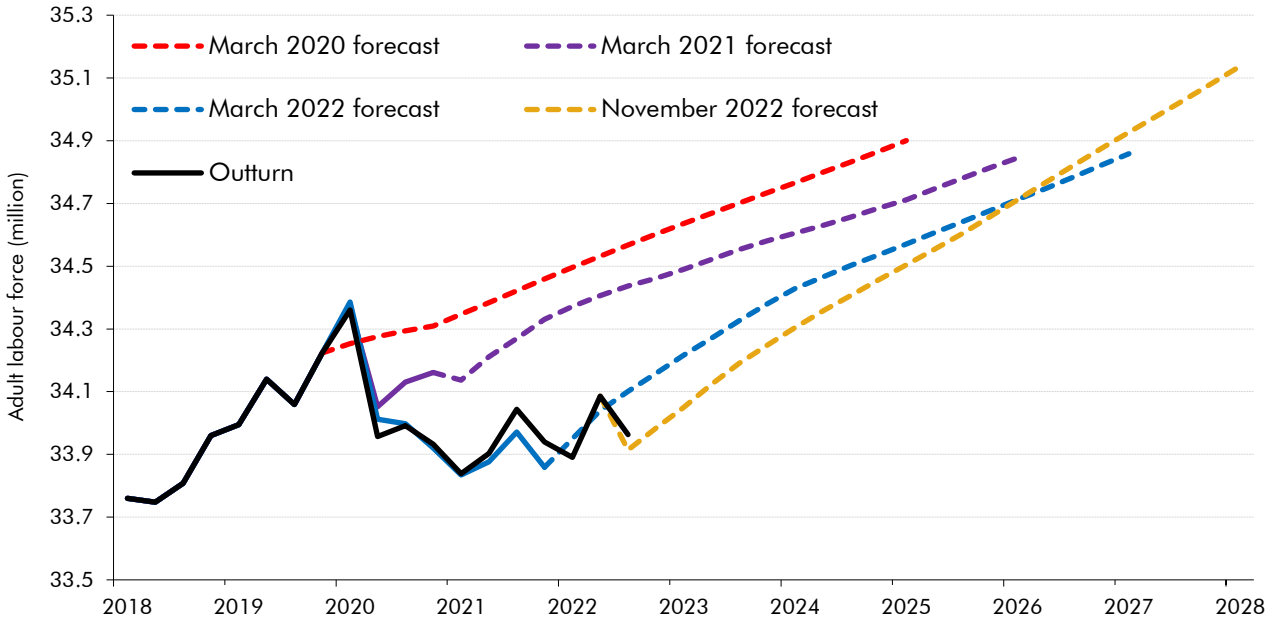
[4] The adult labour force is defined as those aged 16 and over who are either employed or are unemployed (seeking a job and able to start within two weeks) as recorded in the Labour Force Survey.

Chart 2.4: Forecast and outturns for unemployment rate



Source: ONS, OBR

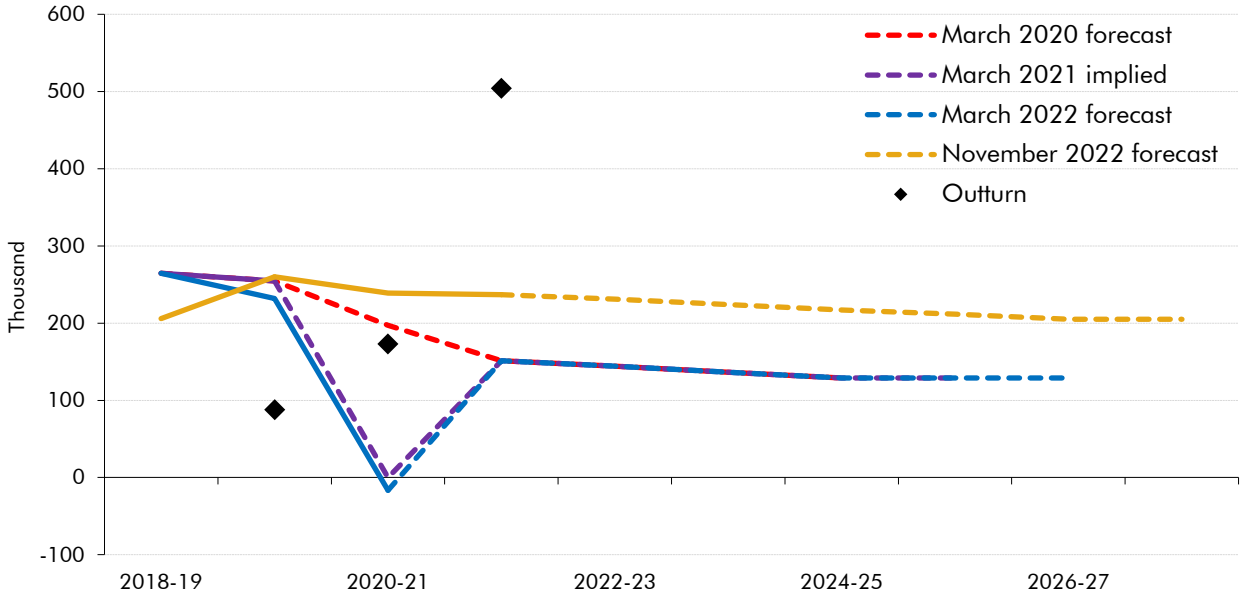
Chart 2.5: Successive forecasts and outturn for the adult labour force



Source: ONS, OBR

2.12 By contrast, net inward migration has surprised on the *upside* relative to our forecast. For the March 2021 forecast, we thought net migration would be around 150,000 in the year to mid-2022, consistent with the ONS net-zero-EU-migration variant of its population projections.[5] The latest data suggest that net inward migration was over half a million in the year to June 2022 – more than three times the amounts in our March 2021 forecast. A number of factors have coincided to lead to high immigration in the recent past, including the continued recovery in travel following the pandemic, the new immigration system following Brexit, the British National Overseas visas for Hong Kong nationals, and the ongoing support for Ukrainian nationals and others requiring protection.[6]

Chart 2.6: Net migration

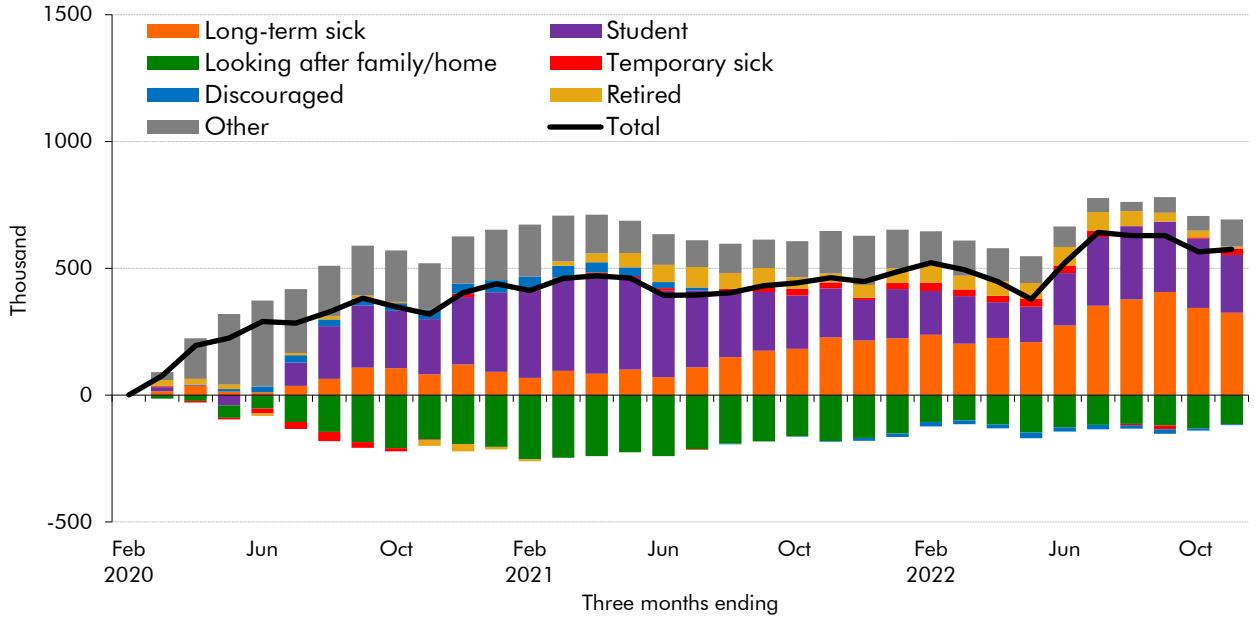


Note: Net migration measured as the flow to the middle of each calendar year.
Source: ONS, OBR

2.13 The net result of our *overestimation* of the overall rate of labour force participation, but *underestimation* of the level of net migration,[7] was that our March 2021 forecast *overestimated* growth in the total adult labour force in 2021-22 by 161,000 people. And while migration may be an upside risk to our existing outlook, there is also downside risk from long-term sickness, with the latest data suggesting that those reporting long-term sickness as the reason for inactivity accounting for 57 per cent of the overall 575,000 rise in working-age inactivity since the start of the pandemic. The prevalence of ill health continues to be a risk to our forecast (Chart 2.7), and this risk is exacerbated by large numbers on NHS waiting lists, with the total for November 2022 standing at 7.2 million.

[5] Our population forecasts are based on variants of ONS National Population Projections. The migration element of these projections is broadly based on historical averages. For more detail on our assessment of net migration in successive forecasts, see *Briefing paper No.8: Forecasting potential output – the supply side of the economy*.
[6] ONS, *Long term international migration, provisional: year ending June 2022*.
[7] It is not clear what net migration number is consistent with the latest vintage of labour market data, as the labour market data are currently based on real-time tax information, which does not show flows such as net migration.

Chart 2.7: Changes in 16-64 inactivity



Source: ONS, OBR

2.14 Total hours growth also surprised by 1.2 percentage points to the upside at 11.4 per cent in 2021-22, reflecting the combined influence of the factors set out above (as well as the more modest influence of average hours underperforming our March 2021 expectations). But with the upward revision to GDP growth greater still, growth in productivity per hour was 1.7 percentage points higher than our March 2021 forecast at 1.1 per cent in 2021-22. This was one of the factors that caused us to revise down our judgement regarding the long-run scarring effect of the pandemic on potential productivity levels from 2 to 1 per cent in October 2021, and lower again to 0.8 per cent in March 2022.[8]

2.15 The upside surprise on productivity growth and the combined influence of higher inflation and a tighter-than-expected labour market, with high churn in the labour market (job-to-job moves reached record highs of 997,000 in the first quarter of 2022), meant that average growth in nominal earnings was 4.4 percentage points above our March 2021 forecast of 2.4 per cent. Earnings data were distorted in mid-2021 by compositional and base effects from the height of the pandemic, but these should have unwound in late 2021.[9]

[8] See Annex C of our March 2022 *EFO*.
[9] See Bank of England, *Monetary Policy Report*, August 2021.

Table 2.5: Labour market indicators

	Change, per cent, unless otherwise stated									
	Total hours	(million)	Average hours	(hours)	Total employment	(thousand)	Labour force	(thousand)	Unemployment rate ppts	Average earnings	Productivity per hour
March 2021 forecast	10.2	(94)	10.9	(3.1)	-0.7	(-213)	0.5	(176)	1.1	2.4	-0.6
Latest data	11.4	(105)	10.6	(3.0)	0.7	(219)	0.0	(15)	-0.6	6.9	1.1
Difference to forecast[1]	**1.2**	**(12)**	**-0.3**	**(-0.1)**	**1.3**	**(432)**	**-0.5**	**(-161)**	**-1.7**	**4.4**	**1.7**

[1] Difference in unrounded numbers.

Growth and composition of nominal GDP

2.16 Our economy forecast provides the basis for the fiscal forecasts that we use to estimate the costs of Government policies and assess the Government's performance against its fiscal targets. The most fiscally important elements of the economy forecast are those that drive the major tax bases, namely the income and expenditure components of nominal rather than real GDP. These are influenced by both real GDP and whole economy inflation, as well as by changes in the share of whole economy nominal GDP accounted for by each component. The fiscal forecast differences discussed in Chapter 3 have been influenced heavily by surprises in the composition of nominal GDP as well as its overall size. In particular, fiscal support measures were sufficient to leave labour income – the largest tax base of all – little changed from our *pre-pandemic* March 2020 forecast despite nominal GDP falling well short of that forecast due to the pandemic. In this section we briefly review the key nominal forecasts that underpin the analysis of fiscal forecast differences in 2021-22 that is presented in Chapter 3.

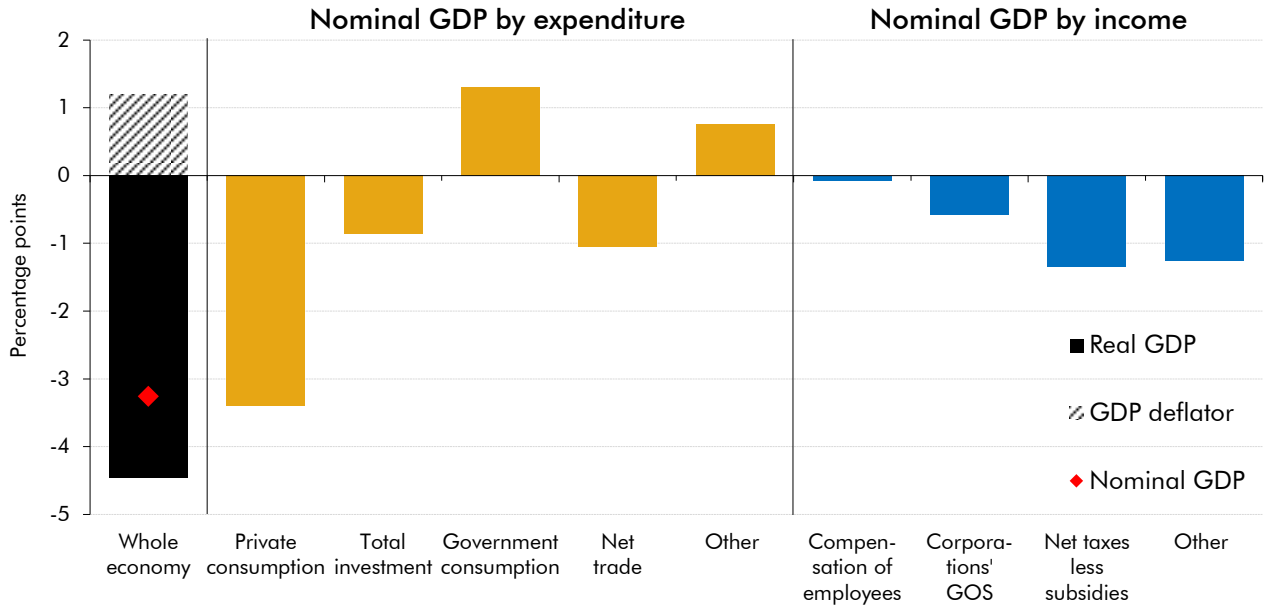
Differences relative to our March 2020 nominal GDP forecast

2.17 Nominal GDP in 2021-22 fell well short of our March 2020 forecast (cumulative growth between 2019-20 and 2021-22 was 3.3 percentage points weaker than forecast), as one would expect since we did not initially anticipate the full extent of the pandemic. But the composition of that forecast difference in terms of expenditure and income components varied considerably, which had material implications for the surprisingly modest difference between our forecast for the deficit in 2021-22 and the latest outturn. In particular:

- **By expenditure component**, private sources of demand fell well short of our forecast, and particularly household consumption, the contribution of which grew by 0.3 per cent in nominal terms over the two years to 2021-22, 3.4 percentage points less than forecast and more than explained the overall shortfall in nominal GDP by expenditure.

- **By income component**, labour income held up remarkably well, reflecting the still considerable fiscal support in place in 2021-22. Indeed, the contribution from compensation of employees grew by 4.0 per cent in the two years to 2021-22, only 0.1 percentage points less than we predicted ahead of the pandemic. Instead, it was net taxes and benefits and other incomes (of which over half is accounted for by the statistical discrepancy, but also includes mixed income and the operating surpluses of households and public sectors) that fell short of expectations.

Chart 2.8: March 2020 forecast differences in contributions to cumulative nominal GDP growth between 2019-20 and 2021-22



Note: Corporations' GOS stands for private corporations' gross operating surplus.
Source: ONS, OBR

Differences relative to our March 2021 nominal GDP forecast

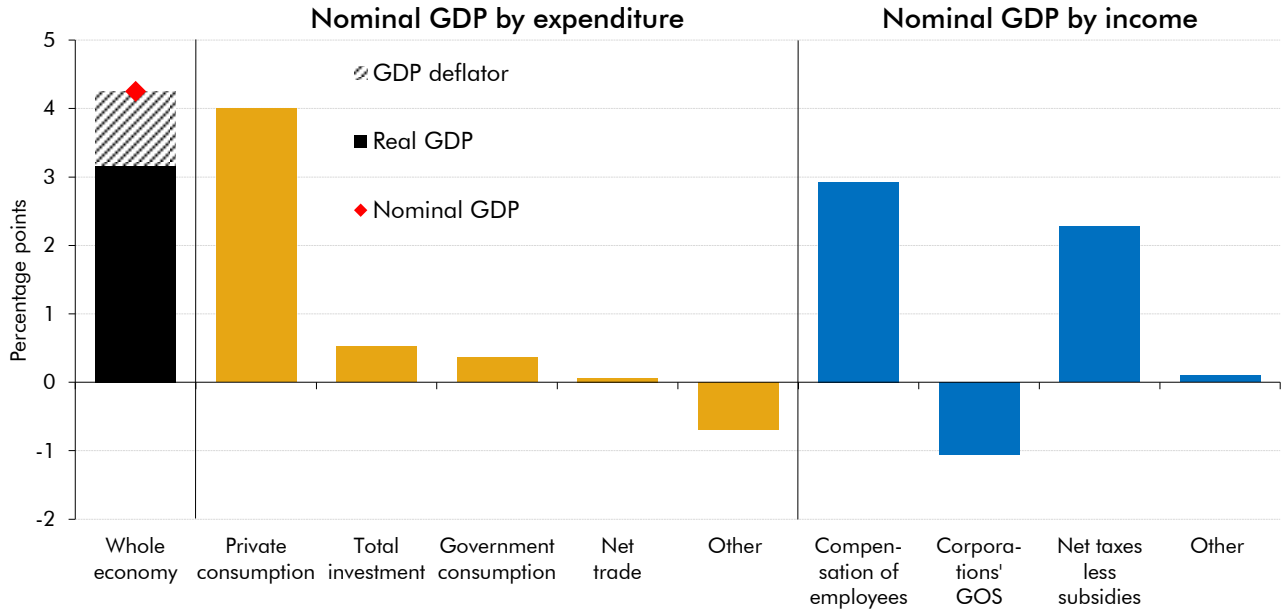
2.18 Turning to our first 'post-pandemic' forecast, nominal GDP growth was over 4 percentage points higher in 2021-22 than we expected in March 2021. Stronger-than-expected real GDP growth accounts for over 3 percentage points of this difference, while a higher-than-expected deflator accounts for around 1 percentage point.[10] This stronger-than-expected performance of nominal GDP reflected:

- **By expenditure component**, it was almost entirely due to private consumption recovering more quickly than expected from a low base, and an upside surprise to the prices of consumption goods (as discussed earlier in the chapter).

- **By income component**, compensation of employees contributed to over two-thirds of the upside surprise to growth as a tighter-than-expected labour market supported earnings growth, as discussed above. Higher tax bases (e.g. increased VAT receipts from higher consumption growth) supported net taxes and subsidies offset by lower-than-expected gross operating surplus (GOS, a measure of profits in the National Accounts). The contribution from growth in GOS was 1.2 percentage points, 1.1 percentage points lower than we expected in March 2021.

[10] The difference in the deflator is less than the difference in consumer price inflation discussed earlier in the chapter because the deflator measures a wider range of prices.

Chart 2.9: March 2021 forecast differences in contributions to nominal GDP growth in 2021-22



Note: Corporations' GOS stands for private corporations' gross operating surplus.
Source: ONS, OBR

3 The public finances

Introduction

3.1 This chapter assesses the performance of our pre-pandemic March 2020 fiscal forecast and – in more depth – our March 2021 fiscal forecast for the 2021-22 financial year. In each case we explore the differences between our forecast and the latest outturn data for:

- **public sector net borrowing** (PSNB), beginning with a summary of how our estimates of PSNB in 2021-22 evolved over successive forecasts, and how these compared to estimates produced by other forecasters;
- the **receipts** and **spending** forecasts that underpin our March 2020 and March 2021 PSNB forecasts for 2021-22; and
- our March 2020 and March 2021 **public sector net debt** (PSND) forecasts for 2021-22.

3.2 Differences between outturn data and our forecasts have been broken down into **policy changes** – differences due to policies announced after the publication of the forecast being assessed – and **other factors**. For our receipts forecasts we further split this second category into: **economic factors** (due to the underlying economic forecasts); **classification changes** (due to items being reclassified into or out of the public sector following the forecast); and **fiscal forecasting differences** (any remaining differences that cannot be explained by the other categories, such as those related to how well the underlying forecast model matches reality or judgements that we impose on top of the effects of economic determinants).

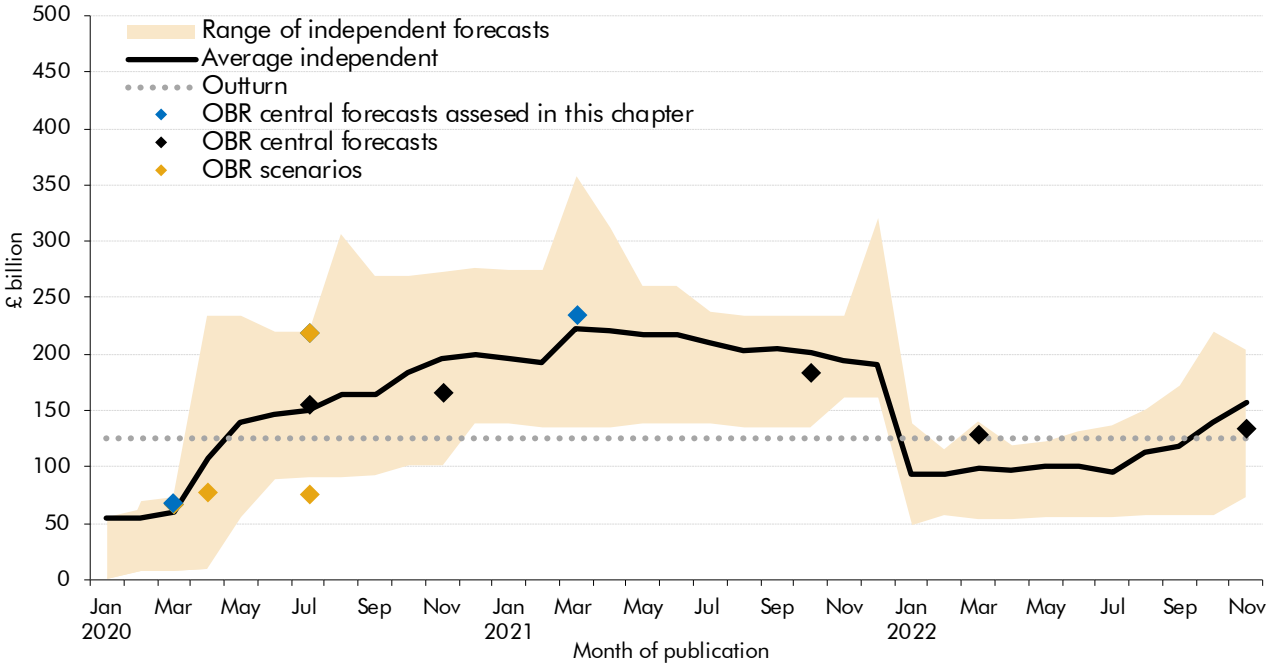
The evolution of our borrowing forecast for 2021-22

3.3 After the record peacetime deficit of 15.0 per cent of GDP (£312.8 billion) in 2020-21 when the public finances felt the full force of the Covid pandemic and the cost of associated fiscal support measures, the deficit fell back to 5.4 per cent of GDP (£125.4 billion) in 2021-22 on the latest ONS estimates. That was £58.7 billion higher than in our pre-pandemic March 2020 forecast – an unsurprising overshoot, though perhaps not as large as one might have expected. Thereafter, borrowing in 2021-22 came in *below* each of our subsequent four central forecasts – by as much as £108.6 billion in our March 2021 forecast. Understanding the drivers of this pre-pandemic borrowing overshoot, and in particular the larger March 2021 borrowing undershoot, is the core task of this chapter.

3.4 Given we have access to much more public finances data and information on policies being announced at fiscal events than other forecasters, our borrowing forecasts typically lead the consensus (as Chart 3.1 largely confirms for 2021-22). The main difference between our

fiscal forecasts and those of many other outside forecasters is that ours must be conditioned on current stated government policy, so cannot, for example, anticipate temporary support measures being extended at a future fiscal event.

Chart 3.1: Evolution of the range of forecasts for PSNB in 2021-22



Note: The OBR produced an illustrative coronavirus scenario in April 2020, and upside and downside scenarios around its July2020 central forecast based on different assumptions about the pandemic.
Source: HMT, OBR

Our March 2020 fiscal forecast differences for 2021-22

Public sector net borrowing

3.5 In our March 2020 forecast, which was completed before the extent of the pandemic's impact in the UK was known, we expected borrowing in 2021-22 to be £66.7 billion, an underestimate of £58.7 billion. Table 3.1 shows that this difference is more than explained by spending exceeding our forecast by £62.7 billion (6.4 per cent), thanks to the £65.8 billion cost of (largely pandemic-related) policies announced after this forecast was published. Remarkably, receipts *exceeded* our forecast by £4.0 billion (0.4 per cent) despite tax cuts announced after the March 2020 Budget and the lingering effects of the pandemic on the cash size of the economy in 2021-22.

Receipts

3.6 The £4.0 billion receipts surplus masks larger and offsetting effects from policy changes (which reduced receipts by £24.3 billion relative to the forecast) and a positive difference of

£28.3 billion spread across classification changes (which added £0.7 billion)[1] and the combined effect of differences in underlying economic determinants and other fiscal forecasting differences (which contributed a surplus of £27.6 billion). Across individual taxes, these differences are attributable to:

- **Income tax and NICs** outperforming the March 2020 forecast by £11.5 billion (3.1 per cent). This is not explained by policy changes, which accounted for only £0.2 billion of the difference, or by economic factors (with growth in wages and salaries falling slightly short of our forecast, explaining a £2.9 billion shortfall). Instead it is more than explained by a fiscal forecasting difference of £14.2 billion. Within PAYE income tax and NICs, the surplus reflects the effective tax rate on PAYE income exceeding our forecast as fiscal drag proved more powerful than expected. Within self-assessed income tax, the relatively modest £1.1 billion surplus reflects the combination of two largely offsetting differences. First, a *shortfall* of £6.7 billion due to economic determinants, reflecting in particular weaker-than-expected self-employment and dividend incomes as recorded in the National Accounts. But second, a surplus of £7.4 billion recorded as a fiscal forecasting difference, which reflects those taxable income streams and associated tax payments performing far better than the National Accounts measures would suggest.[2]

- A **VAT** shortfall of £3.3 billion, more than explained by a £5.8 billion cost from policy measures, mainly a temporary reduced rate for the retail, hospitality and leisure sectors, offset by £2.5 billion of positive surprise from other factors.

- **Onshore corporation tax** was £3.8 billion above forecast, despite a £9.3 billion policy-related reduction from the super-deduction measure. Profits in 2021-22 were helped by government grant, loan and furlough schemes as well as the fact that many large companies and high-paying sectors (such as financial services, professional services and parts of retail) were less affected by the pandemic. Both of these issues are discussed in more detail below in relation to the March 2021 forecast difference.

- **Other receipts** fell £8.0 billion short of our forecast. This reflects policy changes that reduced receipts from a range of taxes, in particular business rates (£7.2 billion) and stamp duty land tax (SDLT, £2.3 billion). In terms of other forecasting differences, air passenger duty had the largest relative difference between forecast and outturn (a £3.0 billion or 72 per cent shortfall), reflecting the ongoing impact of travel restrictions on air passenger numbers in 2021-22.

[1] For our March 2020 forecast, these include the reclassification of the immigration health surcharge from negative expenditure to positive receipts – bringing in £1.2 billion in 2021-22, our inclusion of capacity markets in environmental levies (£0.9 billion), which has not yet been included in ONS figures and changes to the ONS's methodology for business rates (adding £0.4 billion).
[2] We explored the disparity between the National Accounts and self-assessment tax return data for difference income streams in paragraph 3.34 and Table 3.8 of our March 2022 *Economic and fiscal outlook*.

Spending

3.7 The £62.7 billion underestimate of spending in 2021-22 is attributable to:

- £47.3 billion of additional **departmental spending** (DEL), largely related to the ongoing effects of the pandemic. £51.8 billion of our DEL underestimate relates to decisions to increase departmental spending limits to fund vaccines, the test-and-trace programme, and pandemic-related support for businesses and households. This is partly offset by departments underspending against these limits by £4.5 billion more than expected (as discussed in relation to more recent forecasts in Box 3.2).

- **Welfare spending** coming in £7.4 billion higher than forecast. Most of this difference (£6.0 billion) relates to subsequent policy decisions, in particular the £20 a week increase to universal credit that extended into the first half of 2021-22.

- **Debt interest** spending being £18.5 billion higher than forecast, more than explained by accrued interest on index-linked gilts, which overshot by £22.3 billion thanks to higher-than-forecast RPI inflation. This was partially offset by the debt interest savings associated with the Bank of England's Asset Purchase Facility (APF) coming in £6.4 billion higher than expected, largely thanks to the more than £400 billion increase in the size of the APF's gilt holdings and Bank Rate being cut to 0.1 per cent.

- £17.0 billion of spending on **pandemic-related income support schemes** – the coronavirus job retention scheme (CJRS, £8.6 billion) and self-employment income support scheme (SEISS, £8.4 billion) – in the first half 2021-22. These schemes were introduced shortly after our March 2020 forecast, and then extended several times.[3]

3.8 These underestimates relative to our March 2020 forecast were partially offset by a £27.6 billion overestimate of **other spending**, which included:

- **Local authority self-financed current expenditure** coming in £9.5 billion lower than forecast (largely as a consequence of business rates measures that reduced local sources of financing and shifted spending from this category to DELs);

- £4.4 billion of *negative* spending relating to downward revisions to **the expected cost of pandemic loan guarantee schemes** introduced after the March 2020 forecast (the initial estimated cost of which was recorded as spending in 2020-21); and

- £14.3 billion in **National Accounts adjustments** that align our bottom-up spending-control-based forecasts to the definitions of current and capital expenditure used in the public sector finances data.

[3] For a discussion of the evolution of these schemes and their implications for the accuracy of our forecasts for 2020-21, see our December 2021 *Forecast evaluation report*.

Table 3.1: Breakdown of March 2020 borrowing, receipts and spending forecast differences for 2021-22

	£ billion				
	Forecast	Outturn	Difference, *of which:*		
			Total	Policy	Other
PSNB	**66.7**	**125.4**	**58.7**	**90.2**	**-31.5**
Receipts	**910.8**	**914.7**	**4.0**	**-24.3**	**28.3**
of which:					
Income tax & NICs	374.4	385.9	11.5	0.2	11.3
VAT	145.9	142.6	-3.3	-5.8	2.5
Onshore corporation tax	58.9	62.6	3.8	-9.5	13.2
Other receipts	331.6	323.7	-8.0	-9.3	1.3
Spending	**977.4**	**1,040**	**62.7**	**65.8**	**-3.2**
of which:					
Departmental spending	443.5	490.7	47.3	51.8	-4.5
Welfare	237.8	245.2	7.4	6.0	1.4
Debt interest	37.8	56.4	18.5	0.0	18.5
Pandemic-related income support	0.0	17.0	17.0	17.0	0.0
Other spending	258.3	230.7	-27.6	-9.0	-18.6

Note: this table uses the convention that a negative figure means a reduction in PSNB i.e. higher-than-forecast receipts or lower-than-forecast spending reduces PSNB in outturn relative to forecast.

Public sector net debt

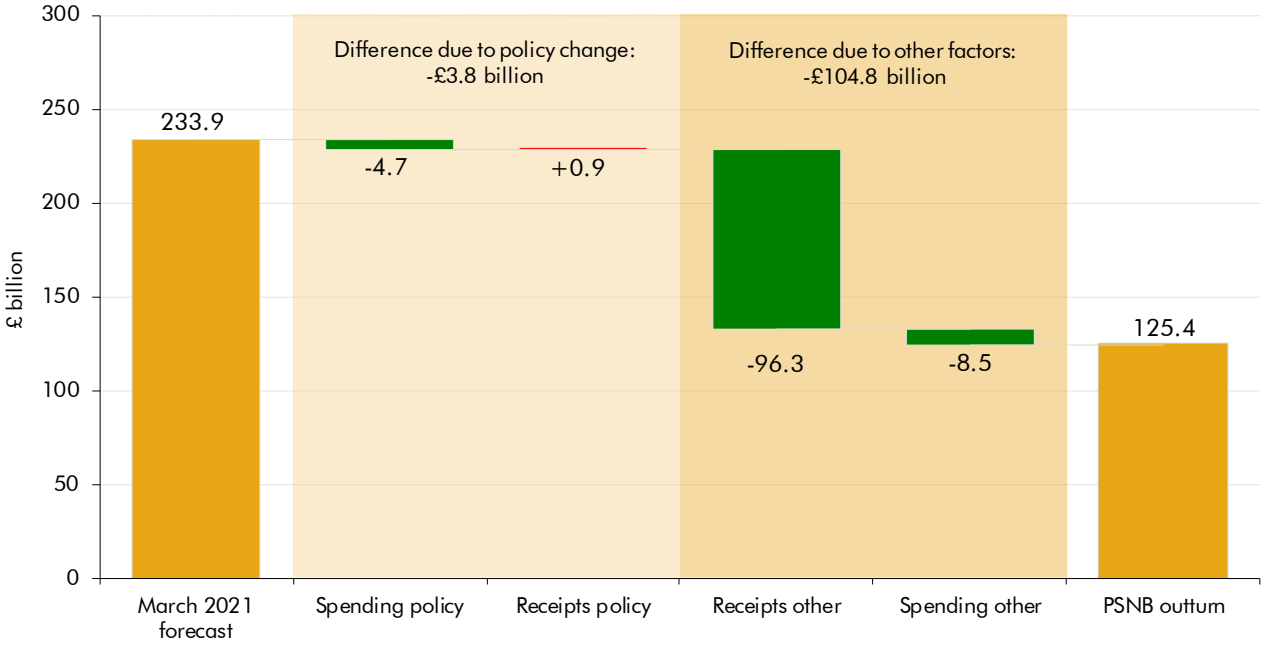
3.9 Public sector net debt ended 2021-22 at £2.4 trillion, £545 billion higher than forecast in March 2020. Of this, £344 billion came from higher debt at the start of the year, largely thanks to the effects of the pandemic on borrowing in 2020-21; £59 billion from higher PSNB in 2021-22; and £143 billion from higher-than-expected financial transactions. This difference in financial transactions is more than explained by a £153 billion underestimate in relation to the Term Funding Scheme, the size of which we expected to decline by £63 billion, whereas it actually rose by £90 billion as a result of being extended by the Bank of England to provide additional support to the economy through the worst of the pandemic.

Our March 2021 fiscal forecast differences for 2021-22

Public sector net borrowing

3.10 Borrowing in 2021-22, at £125.4 billion, fell short of our March 2021 forecast by £108.6 billion (46.4 per cent), our second largest absolute year-ahead forecast difference in a Spring forecast after the pandemic-induced £258.0 billion underestimate for 2020-21 relative to our March 2020 forecast. As Chart 3.2 shows, this difference is very largely the result of receipts exceeding our forecast by £95.4 billion (11.6 per cent) – driven by economic factors and fiscal forecasting differences rather than subsequently announced policy. In addition, we overestimated spending by £13.2 billion as a result of both policy changes and other factors.

Chart 3.2: Sources of March 2021 borrowing forecast difference for 2021-22



Source: ONS, OBR

Receipts

3.11 By re-running our March 2021 forecast models using outturn determinants in place of our March 2021 economy forecast, we can drill down into the sources of the £95.4 billion underestimate of receipts (detailed in Table 3.2). This exercise shows that this historically large forecast difference is explained by a combination of:

- **Economic factors** (£35.7 billion) – in particular our underestimate of wages and salaries and private consumption (discussed in Chapter 2) which are the main tax bases for income taxes and VAT, the largest sources of tax revenue.

- **Fiscal forecasting differences** (£61.8 billion) – particularly in relation to growth in tax-rich parts of the income distribution and the concentration of profits in certain sectors (and very large companies) that have typically been large payers of corporation tax. These differences are explored for the main taxes below.

- Contributions from tax **policy changes** and **classification changes** only had a modest offsetting effect, lowering receipts by £0.9 billion and £1.2 billion respectively.[4]

[4] For our March 2021 forecast, these classification changes include: the reclassification of reduced liability tax credits within onshore corporation tax; ONS methodological changes in September 2022 to measuring business rates; and capacity market auctions not yet included in ONS outturn data.

Table 3.2: Breakdown of March 2021 receipts forecast differences for 2021-22

	£ billion						
			Difference, *of which:*				
	Forecast	Outturn	Total	Classification changes	Policy changes	Economic factors	Fiscal forecast difference
Income tax and NICs	344.9	385.9	40.9	0.0	0.0	24.2	16.8
Value added tax (VAT)	127.9	142.6	14.7	0.0	0.0	5.7	9.0
Onshore corporation tax	39.5	62.6	23.1	-0.7	0.2	2.3	21.2
Fuel duties	26.0	25.9	-0.1	0.0	0.0	0.3	-0.3
Business rates	23.8	25.4	1.5	0.4	-1.0	0.0	2.2
Stamp duty land tax[1]	11.6	14.6	3.0	0.0	0.0	2.1	0.9
Air passenger duty	1.3	1.2	-0.2	0.0	0.0	0.1	-0.3
Tobacco duties	9.6	10.2	0.6	0.0	0.0	0.1	0.5
Alcohol duties	12.4	13.2	0.8	0.0	-0.1	0.5	0.4
Environmental levies	10.2	6.6	-3.6	-0.9	0.0	-2.2	-0.4
EU ETS auction receipts	1.3	1.0	-0.2	0.0	0.0	0.0	-0.2
Other taxes[2]	123.0	136.6	13.7	0.0	-0.1	2.5	11.2
National Accounts taxes	731.6	825.8	94.2	-1.2	-1.0	35.5	60.9
Interest and dividends	25.1	24.1	-1.0	0.0	0.1	0.2	-1.3
Gross operating surplus	58.7	62.2	3.5	0.0	0.0	0.0	3.5
Other non-tax receipts	3.9	2.6	-1.3	0.0	0.0	0.0	-1.3
Current receipts	819.3	914.7	95.4	-1.2	-0.9	35.7	61.8

[1] Excludes Scottish LBTT.

[2] Excludes Scottish LFT and Welsh LBT.

Income tax and NICs

3.12 Our March 2021 forecast underestimated 2021-22 income tax and NICs receipts by £40.9 billion (11.9 per cent). This large upside surprise mostly reflects the unanticipated strength in economic factors, contributing £24.2 billion of the difference, while fiscal forecasting differences explain a further £16.8 billion. Taking the different elements of income tax and NICs in turn (detailed in Table 3.3):

- The £35.9 billion underestimate of **PAYE income tax and NICs** receipts was largely driven by a £23.9 billion underestimate relating to economic factors, in the form of higher average earnings and higher employee numbers than anticipated. This partly reflects the fact that our PAYE income tax and NICs forecasts were framed by judgements around what would happen after CJRS closed: we anticipated a large rise in unemployment following the end of the scheme at the end of September 2021 that did not materialise, as explored in Box 3.5 of our March *2022 Economic and fiscal outlook* (*EFO*). Fiscal forecasting differences of £12.0 billion account for the rest of our PAYE underestimate, largely due to stronger-than-expected aggregate pay growth within higher tax bands as fiscal drag brought more people than anticipated into higher tax brackets (explored in Box 3.2 of our March 2022 *EFO*). As a result, the effective tax rate on PAYE income in 2021-22, at 36.1 per cent, was 2.1 percentage points higher than that implied in our March 2021 forecast. A further £2.3 billion of

the fiscal forecasting difference for PAYE income tax stems from the previous year's estimate being too low, so the starting point for the forecast was higher.

- We underestimated **self-assessed (SA) income tax** in 2021-22 by £6.3 billion. This is more than explained by a fiscal forecasting difference of £6.4 billion. With SA income tax receipts in 2021-22 largely relating to tax liabilities incurred during 2020-21, this reflects incomes recorded in SA returns performing much better than implied by the corresponding economic determinants in 2020-21. For example, SA returns data show growth in sole-trader and partners income of 6.0 per cent, relative to a forecast *fall* of 5.1 per cent. This discrepancy was driven by the fall in the number of sole traders and partnerships being smaller than implied by the Labour Force Survey data that underpinned the forecast,[5] alongside the SEISS cushioning incomes for those who were eligible to a greater extent than anticipated (both explored in detail in paragraph 3.34 of our March 2022 *EFO*). Similarly, SA returns show a 7.6 per cent fall in dividend income in 2020-21, smaller than the 13.7 per cent fall in our March 2021 forecast.

Table 3.3: Breakdown of March 2021 income tax and NICs forecast differences for 2021-22

	£ billion						
			Difference, *of which:*				
	Forecast	Outturn	Total	Classification changes	Policy changes	Economic factors	Fiscal forecasting difference
Income tax (gross of tax credits)	**198.2**	**225.0**	**26.8**	**0.0**	**0.0**	**15.5**	**11.3**
of which:							
Pay as you earn (PAYE)	170.8	192.6	21.8	0.0	0.0	15.2	6.6
Self assessment (SA)	30.7	37.0	6.3	0.0	0.0	0.0	6.4
Other income tax	-3.3	-4.6	-1.3	0.0	0.0	0.2	-1.6
National insurance contributions	**146.8**	**160.9**	**14.1**	**0.0**	**0.0**	**8.7**	**5.4**

VAT

3.13 VAT receipts in 2021-22 were £14.7 billion (11.5 per cent) higher than expected in our March 2021 forecast. Economic factors explain around a third of the difference (£5.7 billion), with nominal consumption outperforming our economy forecast due to faster-than-expected recovery of demand (discussed in Chapter 2). The remaining £9.0 billion difference between our March 2021 forecast and outturn is due to fiscal forecasting differences, including: a £5.1 billion difference related to allocating cash payments at the turn of the financial year between accruals years;[6] a £1.4 billion difference stemming from a smaller-than-expected VAT gap; higher-than-expected spending on standard-rated goods accounting for £1.4 billion; and a further £0.4 billion difference from policy measures

[5] This partly reflects an increase in the number of self-employed people who reclassified themselves as an employee in the Labour Force Survey (LFS) around the beginning of the pandemic (despite not changing jobs). The ONS has suggested that this reflects a clearer understanding of their employment status based on eligibility for the furlough scheme, or preparations to be compliant with changes to off-payroll working ('IR35' reforms) in April 2020 (which were delayed until 2021), with the implication that the LFS numbers therefore overstate the true fall in self-employment. See: ONS, *Comparison of labour market data sources*, February 2022.
[6] Pandemic-related support measures resulted in large shifts in the timing of cash VAT payments relative to normal years. This created greater uncertainty over the appropriate accruals adjustments to align those cash payments to accruals years.

announced before March 2021 having a more positive impact on VAT receipts than anticipated. The remaining £0.7 billion is an unexplained residual difference.

Onshore corporation tax

3.14 Onshore corporation tax (CT) receipts in 2021-22 were £23.1 billion (58.6 per cent) higher than expected in our March 2021 forecast, the largest forecast difference for this tax since the OBR's inception. Receipts from non-oil, non-financial companies were £15.9 billion higher and receipts from the financial sector £6.0 billion higher. Our March 2021 forecast assumed a 12 per cent year-on-year fall in receipts in 2021-22, more than explained by the introduction of the two-year super-deduction capital allowance measure from April 2021 being expected to reduce receipts in 2021-22 by £12.3 billion.

3.15 Economic factors, mainly higher-than-expected 2021 profits for both the non-oil, non-financial sector and the financial sector, explain £2.3 billion of the overall difference. Non-oil, non-financial profits rose by 5 per cent in 2021, compared with a fall of 0.1 per cent in our March 2021 forecast. Financial company profits rose by 25 per cent in 2021, compared with a forecast of 8 per cent growth. These estimates remain subject to change given the likelihood of National Accounts revisions and the fact that that the CT returns available later in the year will provide a better estimate for financial company profits.

3.16 The much larger £21.2 billion fiscal forecasting difference reflects a range of factors:

- The **starting point for the CT forecast was stronger than we assumed** in March 2021. Helped by government grants and loan schemes as well as the furlough scheme, profits in 2020 held up better than expected: profit growth in the non-oil, non-financial sector is now estimated at 2.2 per cent, whereas in March 2021 we assumed a 3.6 per cent fall. Likewise, cash receipts in 2021-22 relating to 2020 profits (and therefore accruing back to 2020-21) were stronger than expected, raising the latest accrued CT outturn for 2020-21 by £8.4 billion relative to our March 2021 forecast.

- The **estimated cost of the super-deduction in 2021-22 has been revised down** from £12.3 billion to £9.3 billion, reflecting a lower estimate of the peak amount of business investment brought forward by the measure from 10 per cent to 5 per cent.[7] These figures are still subject to uncertainty given the difficulty of establishing the counterfactual of how business investment would have evolved absent the measure.

- The **strength of receipts in 2021-22 was concentrated in a few, relatively tax-rich sectors of the economy and among very large companies**. HMRC administrative data indicate that over 60 per cent of the growth in receipts during 2021-22 comes from three sectors (the financial sector, professional services and retail) that have typically been large payers of corporation tax and performed better than the economy as a whole through the pandemic (Chart 3.3). Receipts from the financial sector benefited

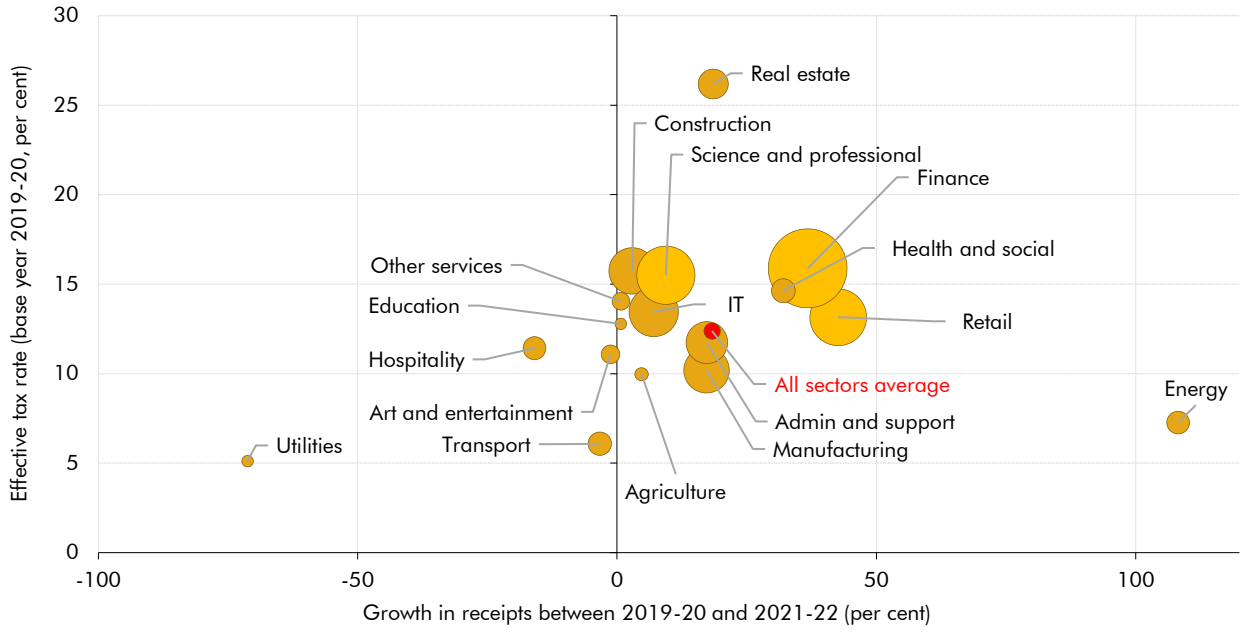
[7] It may seem surprising that the estimated cost of the measure has been revised down by only around a quarter when our estimate of the additional investment it incentivised has been revised down by half. That reflects the fact that most of the cost of the measure comes from applying more generous capital allowances to investment that would have taken place in the absence of the measure.

from strong profits in investment banking and the writing back of some of the loan-loss provisions made in 2020. Professional services benefited from stronger demand for consultancy services and the rise in government procurement, while supermarkets saw rises in profits as people switched to online deliveries. In contrast, some of the sectors most affected by the pandemic such as hospitality, arts and entertainment were not large payers of corporation tax prior to the pandemic. Our March 2021 forecast did not sufficiently anticipate these sectoral shifts. By size of company, very large companies (those with profits greater than £20 million) explain around £18 billion of the overshoot.

- Our **assumption that a pandemic-related spike in losses in 2020-21 would be, in part, carried forward and used against future profits was not borne out.** While we do not have information on 2021-22 losses yet, CT returns data from 2020-21 do not point to a spike in losses, reducing the scope for losses to be used to offset 2021-22 profits.

- Finally, it is possible that **profits growth – an area that is particularly difficult to measure – was faster in 2021-22 than is currently recorded** in the National Accounts. This would result in a greater share of our CT underestimate being accounted for by economic factors and a smaller share by fiscal forecasting differences (as explored in Box 3.1 in our March 2022 *EFO*).

Chart 3.3: Onshore corporation tax growth in 2021-22 versus pre-pandemic average effective tax rates by sector



Note: The size of the bubbles represents the sector's contribution to CT receipts. The highlighted bubbles are the main three sectors which account for approximately half of all CT receipts. The red bubble is the average of all sectors and is not to scale. Missing sectors and other sectors (including public administration, activities of household and activities of extraterritorial organisations) were excluded from the chart.
Source: HMRC, OBR

Other receipts

3.17 Our March 2021 forecast underestimated 2021-22 receipts from other areas by £16.7 billion (5.4 per cent), largely explained by fiscal forecasting differences. This includes:

- **Capital gains tax** (CGT) receipts in 2021-22, at £15.3 billion, exceeded our March 2021 forecast by £6.6 billion (76.1 per cent) – the largest surprise relative to our CGT forecasts since our inception. This is almost entirely explained by a fiscal forecasting difference of £6.4 billion, primarily driven by a small number of high-value financial asset disposals in 2020-21 (like SA income tax, CGT receipts largely relate to liabilities in the previous financial year). As discussed in our March 2022 *EFO*, this could reflect forestalling against feared tax rises (precipitated by an Office of Tax Simplification report in November 2020)[8] that did not come to pass.

- We underestimated **stamp duty land tax** (SDLT) receipts by £3.0 billion (26 per cent), which can largely be attributed to economic factors (accounting for £2.1 billion of the difference), thanks to faster-than-expected growth in property prices and transaction volumes. The remaining difference (£0.9 billion) largely relates to our commercial SDLT forecast, reflecting above-average growth in high-value commercial property purchases. For example, the annual growth in liable commercial transactions with a value of over £2 million in 2021-22 was 50 per cent, compared to aggregate growth of 31 per cent. As the SDLT forecast is based on a model that uses aggregate expected growth rates to calculate receipts, this compositional shift towards higher-value properties will not have been fully captured in our March 2021 forecast.

- We underestimated **business rates** receipts by £1.5 billion (6.5 per cent), despite subsequent policy changes in the Autumn Budget 2021 in the form of additional pandemic-related reliefs to sectors outside retail, hospitality and leisure, lowering receipts by £1.0 billion. This was offset by a classification change of £0.4 billion in relation to methodological changes that the ONS introduced in September 2022, and a £2.2 billion fiscal forecasting difference mainly related to the additional relief being paid out during 2022-23 rather than 2021-22 as originally assumed.

[8] Office of Tax Simplification, *Capital Gains Tax review – first report: Simplifying by design*, November 2020.

Box 3.1: Evaluating customs duties receipts in 2021-22, the first post-Brexit year

The UK's post-Brexit trading regime with the EU was set out in the 'UK-EU Trade and Cooperation Agreement' (TCA), which was concluded on 24 December 2020 and came into effect from 1 January 2021. Following our departure from the EU, UK trade with non-EU countries that is not subject to other free-trade agreements is now subject to the new UK Global Tariff (UKGT), which typically imposes lower average tariffs than the EU's Common External Tariff it has replaced. The UKGT rates are also levied on those imports from the EU that do not meet the terms of the TCA (for example, rules-of-origin requirements).[a]

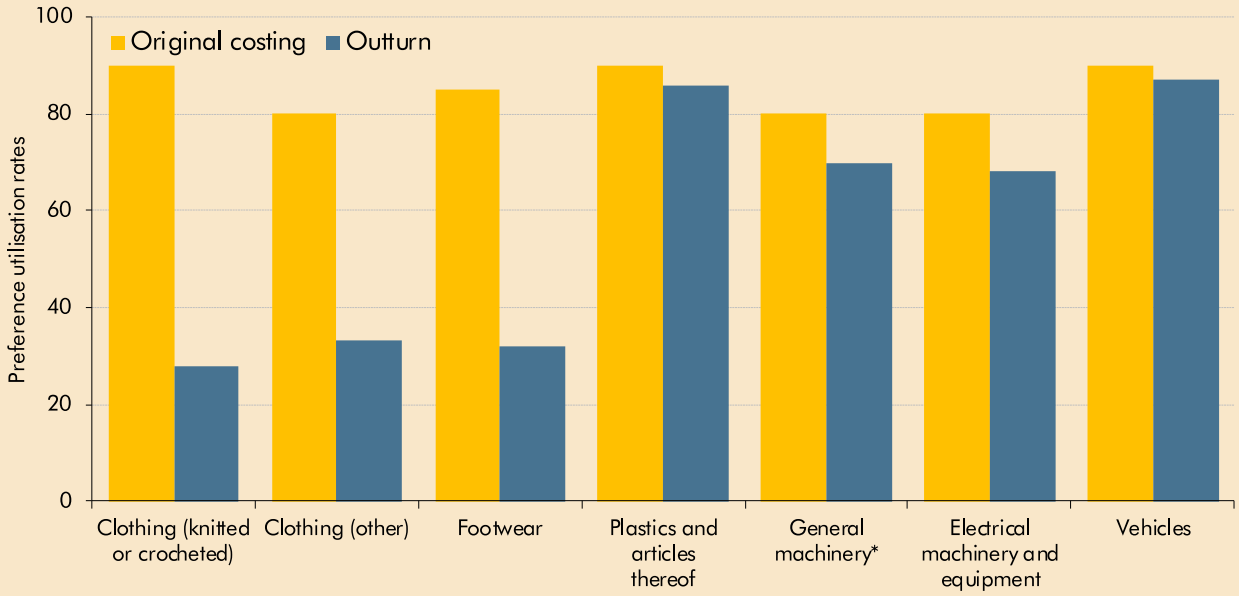
Customs duties raised a total of £4.8 billion in 2021-22, £0.9 billion (23 per cent) higher than we forecast in March 2021, and £1.6 billion (49 per cent) higher than our March 2020 forecast (which did not factor in the TCA). The total value of imports in 2021-22 was not materially different from these previous forecasts, although the composition in terms of goods and services and EU versus non-EU trade did differ (with fewer EU imports and more non-EU imports). Rather, the main factors explaining the observed surpluses in revenues from customs duties have been higher-than-expected receipts from EU imports (due to a lower-than-expected share of EU imports arriving tariff-free) and a shift in the composition of imports (notably a rise in electric vehicle imports from China). We explore each factor in this box.

EU imports: lower-than-expected preference utilisation rates

The UKGT was first included in our forecast as a policy costing in our November 2020 *EFO*. We expected it to raise £1.4 billion in additional customs duties from EU imports in 2021-22.[b] The two sources of this revenue are those imports now subject to tariffs that were previously exempt, and imports from traders that are unable or unwilling to take advantage of tariff-free trade under the terms of the TCA – captured via assumptions about the share of imports in different categories that are expected to utilise the preferential treatment on offer.

Preference utilisation rates (PURs) record the degree to which the favourable terms agreed in FTAs such as the TCA are used in practice, with 100 per cent signifying full usage. In every FTA there are some traders that cannot meet the rules-of-origin requirements and others for whom the administrative cost of doing so is greater than the tariff saving on offer. In the original costing, using evidence from previous FTAs, we assumed that PURs would typically fall in the 80 to 90 per cent range. Chart A shows several key sectors that have fallen well short of this.

Chart A: Preference utilisation in selected sectors in 2021-22: assumed vs outturn



* Nuclear reactors, boilers, machinery and mechanical appliances.
Source: TradeInfo, OBR

The largest shortfalls are in the clothing and footwear sectors, where the average PUR during 2021-22 was only around 30 per cent, less than half the rate originally assumed. The shortfall in the other sectors is less pronounced in percentage terms but is material for revenue because they account for higher values of imports. We estimate that these sectors combined generated £1.3 billion of customs duties from EU imports in 2021-22 (with £0.6 billion of the total coming from clothing and footwear). That was £0.8 billion (170 per cent) more than assumed in the original costing. We now estimate that EU imports in total raised £2.1 billion of customs duties in 2021-22 – all of which is additional to our March 2020 forecast, which pre-dated the TCA, and £0.7 billion of which is additional to the March 2021 forecast (a 50 per cent overshoot).

Having initially thought that the low PURs might reflect teething problems that would pass, we now assume only a modest rise in PURs during our current forecast horizon since some of the contributory factors (such as more existing supply chains in European clothing and footwear retailing originating outside the EU) appear to be structural.

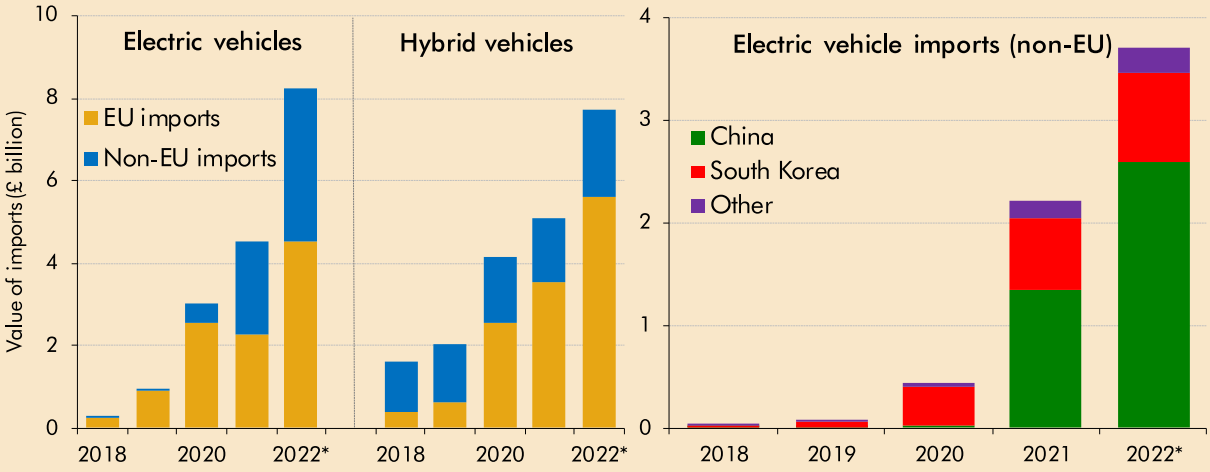
Changes in the composition of imports

A second factor that explains higher-than-expected receipts in 2021-22 is the **growth in the imports of electric and hybrid vehicles**. Chart B (left panel) shows an eight-fold increase in imports over just four years, from £1.9 billion in 2018 to £15.9 billion in 2022. The impact from EU imports is captured in the discussion above, so we focus here on non-EU imports. The forecasts we are evaluating made no explicit assumptions about these imports, instead implicitly assuming that they would grow in line with total imports, so this rapid growth in relatively high-tariff imports represents news relative to our forecasts.[c] While non-EU imports of hybrid vehicles have increased relative to expectations, the growth in electric vehicles has been more surprising still, with negligible imports in 2019 rising to £3.7 billion in 2022.

The most notable growth (Chart B, right panel) is from China (and the UK's FTA with South Korea makes the growth in imports from there less relevant when explaining the customs duty surplus). We estimate that the unanticipated growth in imports from China explains around £0.2 billion of the surplus relative to both our March 2020 and March 2021 forecasts.

Given the importance of this trend to our customs duty revenue forecast, we have since aligned our assumptions about future growth in dutiable imports of electric vehicles to the growth in electric vehicle sales assumed in our fuel duty and vehicle excise duty forecasts.

Chart B: Imports of electric and hybrid vehicles



* 2022 figures are provisional
Source: TradeInfo, OBR

A second compositional factor is the **share of non-monetary gold** in total imports. Non-monetary gold is traded tariff-free. Its share of total imports is large because London is the world's major centre for such trade, and it can be volatile from year to year – it was 11 per cent in 2019-20, rose to 14 per cent in 2020-21 but then fell to 7 per cent in 2021-22. We estimate that the drop in the proportion of non-monetary gold imports increased receipts by an average of £0.3 billion relative to the flat shares assumed in our March 2020 and March 2021 forecasts.

[a] Rules-of-origin are the criteria used to determine the source country of an imported good and, among other things, whether it qualifies for most-favoured or preferential treatment. This is sometimes called the good's 'economic nationality'. Trade agreements between countries usually specify that, to qualify for preferential rates, a trader must demonstrate that a proportion of the value of the good, say 50 per cent, has originated in the exporting country. This threshold can be challenging to meet for those goods produced within a global supply chain spanning several countries, where multiple components add value. It also disqualifies goods that are offloaded in the EU before being 'transhipped' to the UK from benefiting from preferential TCA rates.

[b] Additional yield from EU imports outweighed the expected £1 billion cost of lower revenue from non-EU imports (compared to the Common External Tariff) and a further £0.2 billion cost from an expected increase in non-compliance. The original costing also included £0.8 billion of yield from EU trade deals with third countries that the UK had yet to rollover. Most of those deals were in place by the time of our March 2021 forecast when the revenue impact was removed, so this element is not a factor in this evaluation. The Government delayed introducing comprehensive customs controls until 1 January 2022, to ease the initial burden on business. Traders were allowed to delay customs declarations by up to six months (the scheduled start date was originally July 2022). Outturn data suggest this 'staged' approach affected the monthly profile of receipts but not the annual amount.

[c] Our forecasts implicitly assume that the composition of imports remains constant and thus so does the effective tax rate on total imports. In reality the composition is changing all the time, but those changes rarely lead to material changes in the effective tax rate as some higher or lower duty imports rise and others fall with typically limited net impact at the aggregate level. It is unusual for growth in imports of a single good from a single country to have a material impact on customs duty revenues.

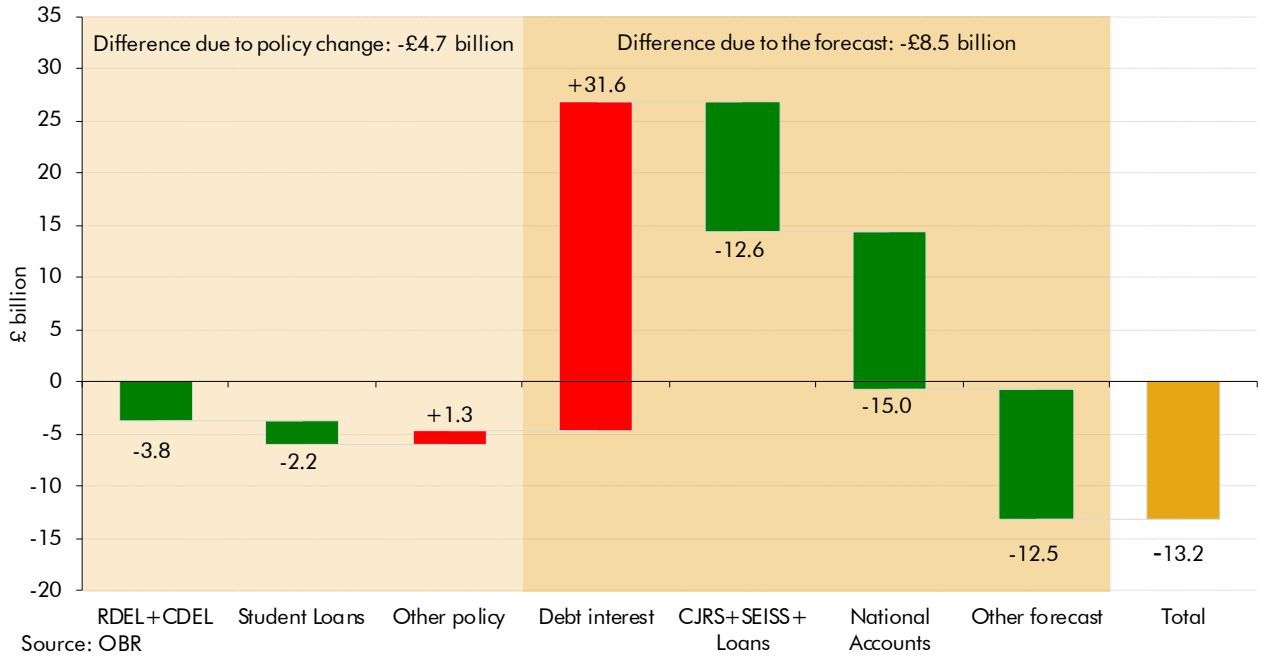
Spending

3.18 Our March 2021 forecast overestimated spending by £13.2 billion (1.3 per cent). As Chart 3.3 shows, this overestimate is explained by:

- **Policy changes reducing spending** by £4.7 billion, largely explained by reductions to departmental spending, alongside lower spending on student loans as a result of reforms to terms for new and existing borrowers.
- A large £31.6 billion **overshoot of debt interest spending** relative to our March 2021 forecast, due in particular to higher RPI inflation.
- **Spending in a range of other areas coming in lower than forecast**, in particular in respect of pandemic-related income support schemes and loan guarantees and National Accounts adjustments. Taken together, these other overestimates more than offset the underestimate of debt interest spending to result in an £8.5 billion net overestimate of total spending as a result of non-policy-related factors.

3.19 These differences are set out in more detail in Table 3.4 and discussed for individual areas of spending below.

Chart 3.4: Sources of our March 2021 spending forecast differences for 2021-22



Source: OBR

Table 3.4: Breakdown of March 2021 spending forecast differences for 2021-22

	£ billion				
	Forecast	Outturn	Difference, *of which:*		
			Total	Policy	Other
Public sector current expenditure (PSCE)					
PSCE in RDEL	**413.6**	**413.8**	**0.2**	**5.8**	**-5.6**
PSCE in AME	**520.9**	**521.9**	**1.0**	**1.4**	**-0.4**
of which:					
Welfare spending	249.1	245.2	-3.8	0.7	-4.6
Scottish Government current spending	39.8	41.2	1.4	0.5	0.9
Pandemic-related income support schemes[1]	24.3	17.0	-7.3	0.2	-7.5
Locally financed current expenditure	51.5	45.6	-5.9	-0.2	-5.7
CG debt interest ex APF[2]	24.8	56.4	31.6	0.0	31.6
EU financial settlement	11.0	8.3	-2.7	0.0	-2.7
Net public service pension payments	0.4	3.3	2.9	0.1	2.8
Company and other tax credits	8.3	8.0	-0.4	0.0	-0.4
BBC current expenditure	4.1	3.9	-0.2	0.0	-0.2
National Lottery current grants	1.3	1.4	0.1	0.0	0.1
General government imputed pensions	1.3	1.1	-0.3	0.0	-0.3
Public corporations' debt interest	0.4	0.1	-0.3	0.0	-0.3
Funded public sector pension schemes	19.7	19.2	-0.5	0.1	-0.6
General government depreciation	49.6	48.0	-1.6	0.0	-1.6
Current VAT refunds	20.3	19.4	-0.8	0.0	-0.8
Environmental levies	11.3	8.4	-2.8	0.0	-2.8
Other PSCE items in AME	2.9	2.0	-0.9	0.0	-0.9
Other National Accounts adjustments	0.8	-6.6	-7.4	0.0	-7.4
Total public sector current expenditure	**934.5**	**935.7**	**1.2**	**7.2**	**-6.0**
Public sector gross investment (PSGI)					
PSGI in CDEL	**81.8**	**77.0**	**-4.8**	**-9.6**	**4.8**
PSGI in AME	**37.0**	**27.4**	**-9.6**	**-2.3**	**-7.3**
of which:					
Scottish Government capital spending	5.4	4.5	-0.9	0.1	-1.0
Locally financed capital expenditure	8.8	11.4	2.5	-0.2	2.7
Public corporations' capital expenditure	9.3	11.1	1.8	-0.1	1.9
Student loans	11.2	12.7	1.5	-2.2	3.8
Funded public sector pension schemes	2.0	1.1	-0.9	0.0	-0.9
Tax litigation	0.7	0.0	-0.7	0.0	-0.7
Pandemic-related loan schemes	0.7	-4.4	-5.1	0.0	-5.1
Other PSGI items in AME	-0.7	-1.0	-0.3	0.0	-0.3
Other National Accounts adjustments	-0.4	-8.0	-7.6	0.0	-7.6
Total public sector gross investment	**118.8**	**104.4**	**-14.4**	**-11.9**	**-2.5**
Less public sector depreciation	-56.6	-55.1	1.5	0.0	1.5
Public sector net investment	**62.2**	**49.3**	**-12.9**	**-11.9**	**-1.0**
Total managed expenditure	**1,053**	**1,040**	**-13.2**	**-4.7**	**-8.5**

[1] Includes the coronavirus job retention scheme and the self-employment income support scheme.

[2] Includes reductions in debt interest payments due to the APF.

Departmental spending

3.20 Overall departmental spending totalled £490.7 billion in 2021-22, £4.6 billion lower than we forecast in March 2021. This reflected a very small difference in resource spending, which was just £0.2 billion (less than 0.1 per cent) higher than forecast. By contrast, capital spending was £4.8 billion (6.2 per cent) lower than forecast. Table 3.5 shows that in both cases these differences reflect larger, offsetting, changes to the spending limits set by the Treasury and differences in the degree of underspending relative to these limits:

- **Resource spending** limits were increased by £5.8 billion relative to our March 2021 forecast, reflecting increases to budgets to fund pandemic-related pressures late in 2021. But this increase was almost entirely offset by underspending being £5.6 billion higher than we estimated in our March 2021 forecast.

- **Capital spending** limits were reduced by £9.6 billion following the March 2021 forecast, with the Treasury lowering them in light of emerging underspending due to reported supply bottlenecks in early 2021. Departments then underspent those lower limits by significantly less (£4.8 billion) than we expected in March 2021.

3.21 It is not straightforward to estimate a meaningful split between policy and non-policy sources of forecast difference within DELs. For simplicity in this *Forecast evaluation report* (*FER*), we attribute the changes to spending limits to 'policy' and the residual to 'other'. As the discussion of the capital spending shortfall shows, the policy decision to reduce limits as greater underspending emerged was in some senses the March 2021 forecast judgement of large underspends being realised rather than underspending being smaller than expected. This issue tends not to be material in our forecast evaluations but is this time due to the pandemic-related movements in limits and the ability of departments to spend them.

Table 3.5: Breakdown of March 2021 DEL forecast differences for 2021-22

	£ billion	
	Actual resource spending	Actual capital spending
March 2021 forecast	413.6	81.8
Outturn	413.8	77.0
Difference	**0.2**	**-4.8**
of which:		
Treasury limits	5.8	-9.6
Underspending	-5.6	4.8

Note: A positive number for underspending represents an increase in actual spending.

3.22 Surprises in the degree of underspending relative to Treasury limits have been a particular issue in our forecasts since the pandemic struck. To address the challenges we have faced, we have sought to draw on more sources of information about in-year DEL spending in order to triangulate between them to reach our final forecast for actual spending (and thus underspending relative to DEL limits). Box 3.2 sets out how we arrive at our judgements for underspending, in the context of the difference between our more recent March 2022 forecasts for departmental spending in 2021-22 and outturn.

Box 3.2: The difference between our March 2022 forecast for departmental spending and the latest outturn

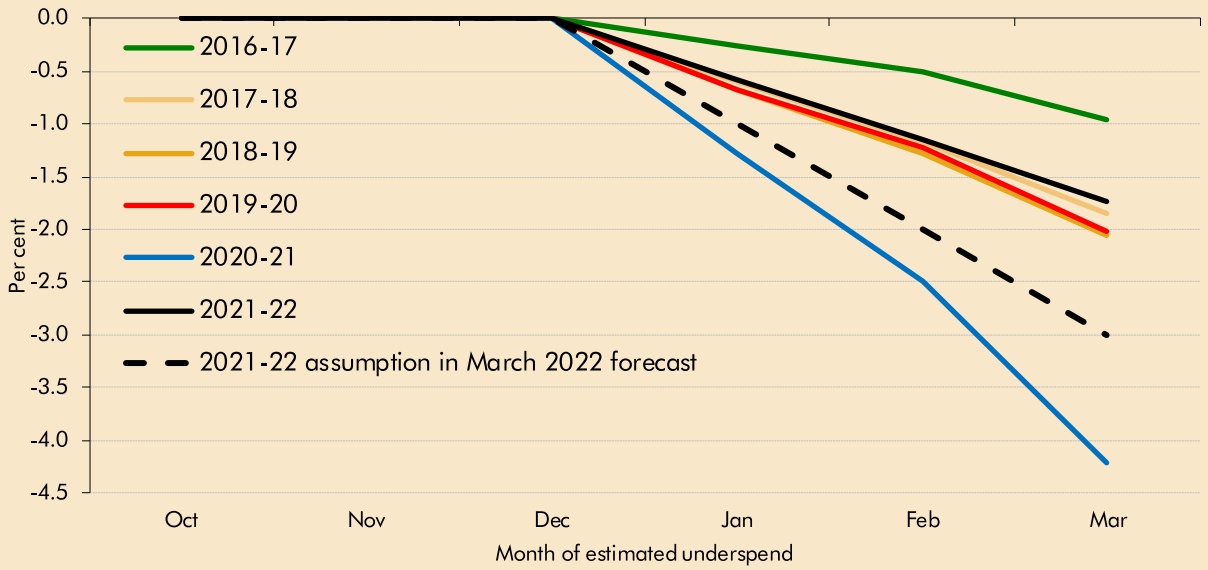
Forecasts tend to become more accurate over time as the date of their production converges on the year in question, but the gap between outturn resource and capital departmental spending in 2021-22 and our two forecasts produced during that year actually increased relative to our March 2021 forecast difference, standing at £8.7 billion for resource spending and £7.8 billion for capital spending in our March 2022 forecast. With government decisions on departmental spending limits finalised by that point as part of the Treasury's annual Supplementary Estimates process, these differences related entirely to our judgements on underspending.

Our March 2022 forecast judgement for departmental underspending in 2021-22 was based on three sources of information: a top-down view of the latest estimates of accrued departmental spending recorded in the ONS public finances data; a bottom-up view of accrued spending by department provided to the Treasury by departments each month; and cash spending in the year to date monitored by the Treasury's cash management team. The cash data suggested lower spending than the accrued data. Based on the patterns observed in 2020-21, when accrued spending estimates converged on the cash data over time, leading to a large upside surprise in underspending between our March 2021 forecast for 2020-21 and outturn, we placed relatively more weight on the signal from the cash data for 2021-22.

We also considered the extent to which final cash spending in 2021-22 would follow the pattern of 2020-21 (when departments underspent by an unusually large amount on both Covid and non-Covid programmes), versus the usual patterns of large amounts of cash being spent in the final months of the year. There is always some further fallaway in actual spending relative to the final sums allocated at Supplementary Estimates (as shown in the monthly profiles in recent years in Chart C), so our forecasts always include an estimate of the extent of that underspending. With significant amounts of Covid funding allocated in 2021-22 (including some quite late in the year), and reports of supply bottlenecks, we judged that 2021-22 underspending would fall between the very high level seen in 2020-21 and the more typical levels seen in the three years prior to the pandemic, and revised up our estimates of underspending in 2021-22 accordingly.

In the event, Chart C shows that at 1.7 per cent relative to final budgets allocated at Supplementary Estimates, underspending in 2021-22 was actually slightly lower than the pre-pandemic average of around 2 per cent, and well below the 4.2 per cent seen in 2020-21.

Chart C: Cash underspending by month following Supplementary Estimates



Note: As cash spending cannot be readily split into departmental spending and annually managed expenditure, this chart uses a proxy for total resource and capital departmental underspending. This removes non-cash adjustments from the totals allocated at Supplementary Estimates, as well as those elements of expenditure that are particularly volatile (e.g. debt interest spending).
Source: HM Treasury, OBR

To understand these patterns, we can explore spending on an accrued basis in the final month of 2021-22. The share of 2021-22 resource spending occurring in March 2022 was fairly similar to both 2020-21 and the pre-pandemic years, at around 10 per cent. But capital spending was higher in March than in pre-pandemic years, at 20 per cent in 2021-22 versus 17 per cent pre-pandemic. This suggests that towards the end of the year departments found ways to end-load capital spending, despite the reports of significant supply bottlenecks.

The lesson we took from our March 2021 forecast difference for 2020-21 was to ensure cash data were given some weight in our departmental spending judgements. In the event, we placed too much weight on the cash data in 2021-22: departments' forecasts for resource spending at the time were closer to final outturn than was the case in 2020-21, with large amounts of cash spending occurring towards the end of the year closing the gap between cash and accrued resource spending, while capital spending was an outlier in terms of the amount of spending occurring late in the year. At the time, we discussed these forecasts with the Department of Health and Social Care, as well as the Treasury. For our most recent forecast, we spoke to a wider range of departments to supplement the three data sources and insights from the Treasury.

Welfare spending

3.23 Conventional welfare spending in 2021-22 (i.e. not including the CJRS and SEISS schemes) was £3.8 billion (1.5 per cent) lower than expected in our March 2021 forecast. This is more than explained by a £4.6 billion underlying forecast difference, largely thanks to overestimates of pensioner and universal credit (UC) spending. These overestimates were partially offset by subsequent policy changes adding £0.7 billion to spending, almost all of which reflects the reduction in the UC taper and increases to work allowances from 1 December 2021, announced at the 2021 Autumn Statement.

3.24 The underlying forecast-related difference reflects (Table 3.6):

- A £2.1 billion overestimate of **pensioner benefit** spending, primarily in relation to the state pension (£1.1 billion). This mostly reflects lower-than-expected total caseloads, as a result of higher-than-expected excess mortality which persisted into 2021-22. In addition, we overestimated pensioner housing benefit spending by £0.9 billion due to lower caseloads and an error in the housing benefit forecast model, which incorrectly attributed £0.5 billion of pensioner housing benefit spending to working-age spending. This error has since been corrected.

- Overestimating spending on **UC and its legacy benefit predecessors** by £1.7 billion, primarily due to lower-than-expected unemployment. Unemployment fell by 0.3 million between Q2 2021 and Q1 2022, in contrast to the 0.4 million increase we expected in March 2021. A further £0.8 billion of the difference is attributable to more benefit overpayments being detected than expected. Once detected, overpayments are treated as recoverable debt rather than spending, and therefore reduce spending.

- A £0.4 billion underestimate of **disability benefits** spending, which is more than explained by spending on personal independence payment (PIP) and disability living allowance (DLA) payments coming in £0.5 billion higher than expected. We covered the recent increase in PIP caseloads in greater detail in a supplementary release to our November 2022 *EFO*.[9]

- **Child benefit** spending coming in £0.2 billion lower than forecast, reflecting lower-than-expected take-up. The reduction in take-up during the pandemic persisted further into 2021-22 than we expected, as discussed in our 2022 *Welfare trends report*.

Table 3.6: Breakdown of our March 2021 welfare spending forecast differences for 2021-22

	£ billion				
	Forecast	Outturn	Difference, *of which:*		
			Total	Policy	Other
Total welfare spending	**249.1**	**245.2**	**-3.8**	**0.7**	**-4.6**
of which:					
Pensioner spending[1]	118.4	116.3	-2.1	0.0	-2.1
UC and legacy equivalents[2]	77.6	75.9	-1.7	0.7	-2.4
Disability benefits[3]	25.7	26.1	0.4	0.0	0.4
Child benefit	11.6	11.4	-0.2	0.0	-0.2
Other spending[4]	15.8	15.5	-0.2	0.1	-0.3

[1] Pensioner spending includes pensioner housing benefit, pension credit, state pension expenditure and winter fuel payments.

[2] UC and legacy equivalents includes personal tax credits, housing benefit (excluding pensioner part), incapacity benefits, contributory ESA, income support and income-based and contributory jobseeker's allowance. It also includes industrial injuries benefit - the Scottish element of which is devolved to Scotland.

[3] Disability benefits includes disability living allowance, personal independence payment, and attendance allowance.

[4] Other spending includes Northern Ireland social security expenditure.

[9] OBR, *Supplementary forecast information release: Upward revisions to welfare spending since March*, November 2022.

Debt interest spending

3.25 Outturn debt interest spending in 2021-22 was more than double our March 2021 forecast, overshooting by £31.6 billion. Table 3.7 shows that this difference is explained by:

- An overshoot of £25.4 billion from the **uplift on index-linked gilts.** Outturn RPI inflation, which acts on the £500 billion stock of index-linked gilts, was 7.8 per cent rather than the 2.3 per cent we forecast (our inflation forecast differences are discussed in detail in Chapter 2).
- A £0.9 billion overshoot from higher interest rates, largely from financing the £168 billion of newly issued **conventional gilts** at 1.0 per cent on average rather than the 0.6 per cent we expected.
- Spending on the **Asset Purchase Facility** coming in £1.5 billion higher than forecast, thanks to Bank Rate acting on the £840 billion of reserves issued to finance gilt purchases of 0.2 per cent in outturn, nearly 0.2 percentage points higher than the market expectations that formed the basis of our forecast.
- A number of **classification changes**,[10] which explain a further £3.1 billion of the difference, alongside a range of other smaller effects that sum to £1.6 billion.
- These were partially offset by lower-than-expected spending of due to lower **financing**, which reduced the difference by £0.9 billion. The outturn central government financing requirement was £150 billion, half our March 2021 forecast, for the reasons discussed elsewhere in this chapter.

Table 3.7: Breakdown of our March 2021 debt interest spending forecast differences for 2021-22

	£ billion		
	Outturn	Forecast	Difference
Central government debt interest, net of APF	**56.4**	**24.8**	**31.6**
of which:			
Central government debt interest	**72.5**	**42.6**	**29.9**
of which:			
Interest rates			0.9
Inflation			25.4
Financing			-0.9
Classification changes			2.3
Other factors			2.2
Asset Purchase Facility	**-16.1**	**-17.8**	**1.7**
of which:			
Volume of gilt purchases			0.0
Interest rates			1.5
Classification changes			0.7
Other factors			-0.6
Memo: Public sector net debt	*2,373*	*2,500*	*-128*

[10] Classification changes include £1.6 billion from changes to the recording of leases, £0.8 billion from unwinding the discount applied to Covid loan guarantees, and £0.7 billion from the treatment of corporate bond receipts in the APF.

Pandemic-related spending

3.26 Spending on **pandemic-related income support schemes** (the CJRS and SEISS), which closed at the end of September 2021, fell short of our March 2021 forecast by £7.3 billion (30.1 per cent). For the CJRS, this was due to a faster-than-expected decline in the caseload and the overestimation of the share of full-time jobs on furlough. For the SEISS, this largely reflects HMRC's financial impact declaration test for claimants having more of a restrictive impact on the value of SEISS claims than anticipated (discussed in more detail in paragraph 3.90 of our October 2021 *EFO*).

3.27 We overestimated spending on the **expected calls on guarantees for Covid loan schemes** by £5.1 billion, reflecting the faster economic recovery and an almost halving of loans assumed to have been taken out fraudulently (from 14.9 per cent to 7.5 per cent). This led to a downward revision to expected lifetime losses on the guarantees, which was recorded as negative spending in 2021-22 (with the initial estimate of £27.2 billion of expected calls on the £72 billion of guarantees issued in 2020-21 recorded as positive spending in that year).

National Accounts adjustments

3.28 Our March 2021 forecast overestimated **National Accounts adjustments** by £15.0 billion. These adjustments are used to align our bottom-up spending-control-based forecasts to the definitions of current and capital expenditure used in the public sector finances data. The gap largely relates to unallocated differences between the outturn estimates we use for the various detailed components of spending and the latest total spending outturns included in the ONS public finances release. We expect these to reduce as large spending departments such as the Department for Health and Social Care and local authorities provide the ONS with final outturn figures for 2021-22. This difference is often several billion pounds when we produce each *FER*, so a £15 billion difference is unusually large. It is possible that the interaction between business rates measures and local authority budget setting – with some measures for 2021-22 being announced after local authorities' budgets had been submitted – may be a material factor.

Other spending

3.29 Other differences between our March 2021 forecast for spending in 2021-22 and outturn include:

- A £5.9 billion overestimate of spending on **locally financed current expenditure**, reflecting a large drop in retained business rates which shifted spending from local authorities to central government DEL spending, and further additions to reserves.

- A £2.7 billion overestimate of spending on the **EU financial settlement**. This is largely a timing effect that has no bearing on the overall cost of the settlement. The ONS decided to record spending at the time of payment whereas our forecast had assumed that spending would be accrued to the time of the invoice being received. This means payments made for invoices received in late 2021-22 fall into 2022-23.

- A £2.9 billion underestimate of spending on **net public service pension payments**, reflecting the correction of a double-counting error related to adjustments in previous forecasts that were included when departmental resource budgets were raised. We consider the impact of this in paragraph 3.101 of our October 2021 *EFO*.

Public sector net debt

3.30 Our March 2021 forecast overestimated public sector net debt (PSND) as a share of GDP at the end of 2021-22 by 10 percentage points. A little under half of this was due to higher-than-expected GDP, with 1.5 per cent of GDP coming from an overestimate of the starting value of debt, and the remaining 3.7 per cent of GDP (£90 billion) due to lower-than-expected debt accumulation during 2021-22.

3.31 The difference due to the smaller year-on-year rise in debt in 2021-22 is more than explained by our £109 billion overestimate of borrowing, partially offset by financial transactions adding £18 billion more than expected to debt. The latter overshoot was more than explained by £40 billion of extra lending through the Bank of England's Term Funding Scheme, partially offset by a £20 billion increase in the sterling value of the foreign exchange reserves as the value of the pound fell to 9 per cent lower than assumed.

Table 3.8: Breakdown of March 2021 PSND forecast differences for 2021-22

	Per cent of GDP		
	Outturn	Forecast	Difference
Total	**97.3**	**107.2**	**-9.9**
of which:			
Nominal GDP			-4.7
Cash debt at end 2020-21			-1.5
Change in cash debt 2021-22			-3.7
	£ billion		
Total	**210**	**301**	**-90**
of which:			
PSNB			-109
Term Funding Scheme			40
Reserves			-20
Other			-1

4 Refining our forecasts

Introduction

4.1 We strive to provide transparency around our forecasts, to facilitate understanding and to ensure that we can be held to account for the judgements we make. Transparency makes us scrutinise our forecasts in detail, examining and explaining the inevitable differences between those forecasts and subsequent outturns. This will help people gauge whether our forecasts are based on impartial professional judgement, rather than politically motivated wishful thinking. The process also affords an opportunity to learn lessons that can be applied in future forecasts.

4.2 In this chapter, we summarise:

- **lessons learnt from forecasting** the economy and public finances during the recovery from the Covid pandemic; and
- actual and planned **improvements to our models** for economic and fiscal forecasting.

Lessons learnt

4.3 After a very substantial shock like the Covid pandemic, it is unsurprising that 2021-22 represented another year of very large differences between our central forecasts and outturns for both the economy and the public finances. For our March 2020 forecast, the shock was the arrival of the pandemic itself, the dramatic economic contraction it brought about, and the extent of fiscal support provided to households and businesses. For our March 2021 forecast, the surprise was just how rapidly the economy rebounded (thanks to the rapid rollout of vaccines, ongoing and very large-scale government support, and the adaptability of consumers and businesses to remaining public health restrictions). But this unexpectedly strong rebound in demand in the UK and other advanced economies came up against bottlenecks emerging in global supply chains and tightness in the UK labour market, which resulted in consumer price inflation rising much higher than expected. This was then greatly exacerbated by the dramatic rise in European energy prices associated with the Russian invasion of Ukraine.

4.4 The lessons learnt from this experience are, once again, the significant challenges of forecasting the economic impact of unprecedented, idiosyncratic, exogenous shocks like the pandemic, and predicting the speed and scale of the recovery. The experience of the past year has underscored the core lessons of our December 2021 *Forecast evaluation report (FER)*, which we have sought to implement as we attempt to forecast the economic impact of

the latest shock from the Russian invasion of Ukraine and associated rise in the cost of energy. Those lessons highlight the need to:

- Be **analytically agile**, and capable of developing new analytical tools quickly in response to novel shocks. In recent forecasts we have extended the more sectorally driven approach to forecasting output that we adopted in the pandemic, and now publish a more detailed decomposition of our inflation forecast. That has facilitated a better understanding of the key judgements as to how, and how fast, the energy price shock would pass through to prices and demand in the rest of the economy. As a result, in our November 21 forecast we started to forecast changes in the weights applied to the components of the inflation basket as it had become a material issue for our forecast. To consider the longer-term implications of the energy price shock, our July 2022 *Fiscal risks and sustainability report* set out a newly developed production function that explicitly modelled the impact of changes in energy costs on the supply potential of the UK economy.

- Understand and make use of **multiple sources of high-frequency, real-time data**. We are continuing to make further use of these data from both the public sector (e.g. HMRC's real-time information from the PAYE system) and the private sector. In particular, the private sector surveys (e.g. Google mobility data) helped us to track how people were responding to the relaxation of public health restrictions, and also to follow developments in global supply bottlenecks as we put together our forecasts (e.g. see Box 2.1 in our March 2022 *Economic and fiscal outlook (EFO)*).

- Draw on **international experiences and expertise outside of government**. Our forecasts during the pandemic benefited greatly from the expertise of others – from epidemiologists, public health experts and behavioural scientists, to other economic forecasters in the UK and overseas. Understanding the implications of the Russian invasion, and in particular the risks to our central forecast, has required us to draw on different sources of expertise, including defence experts (e.g. at the Royal United Services Institute and Brookings Institute) and energy experts (e.g. at the International Energy Agency). And our ongoing assessment of the economic impact of Brexit will continue to require us to draw on external expertise to deepen our understanding of trade and migration flows between the UK and the rest of the world.

4.5 On the fiscal side, borrowing fell far short of our March 2021 forecast, but less than half the difference can be explained by the faster-than-expected economic recovery. The remaining difference highlights several issues that we have explored in detail – in particular in our March 2022 *EFO*[1] – and where lessons have been learnt, and to a considerable extent already acted upon. In particular:

- **The unexpectedly strong rise in effective tax rates.** Revenues exceeded our forecasts even after correcting for the stronger-than-expected economic recovery. This reflected

[1] See, for example: Box 3.1, Why have receipts recovered so strongly in the wake of the pandemic?; Box 3.2, Why is the economy generating such strong income tax revenues?; and the discussion around Chart 3.6 on growth in corporation tax revenues by sector.

more powerful fiscal drag in income tax leading to more pay being taxed at higher rates, as well as post-pandemic sectoral shifts in activity that benefited highly taxed sectors of the economy. We have bolstered our analysis of sectoral receipts data and the rich data on employee earnings from the RTI (real-time information) system to inform our in-year receipts estimates and to reach judgements about the extent to which the strength being seen in outturn relative to our forecast models will persist. Despite this progress, considerable uncertainties remain, particularly with respect to onshore corporation tax.

- **Departmental spending.** The large changes in departmental spending allocations through the pandemic – particularly for health services – has been a major implementation challenge for the departments concerned and a major source of forecasting uncertainty for us too. Our March 2021 forecast for departmental spending in 2020-21, for example, was much too high because departments underspent by unprecedented amounts. We have taken steps to use more data sources when making judgements about the extent to which limits set by the Treasury will be underspent and have also increased our direct engagement with large spending departments on their spending plans, as described in Box 3.2 in Chapter 3.

Review of forecasting models

Economy forecast models

4.6 The pandemic required us to develop new analytical tools as economic developments were being driven more by public health decisions, and people's response to them, than by economic policy choices. But the unprecedented size of the economic shock also meant our usual time series econometric models (which were all estimated using historical time periods that did not include a shock of this size) did not produce reliable forecasts. As movements in the economy have shifted back into more typical ranges (notwithstanding the energy price shock) we have also reviewed our standard approach to economic modelling and forecasting. We have concluded that we should:

- **Continue to use and maintain our large-scale macro model** as the central organising tool to compile our forecast. This model has the advantages of being fully consistent with the National Accounts data that we are required to forecast, as well as providing the necessary detailed outputs to produce our fiscal forecast. We regularly review the model's equations and re-estimate parameters to improve its accuracy.

- **Focus model development on new smaller models** to provide cross-checks to our key forecast judgements and to increase the richness of our treatment of the risks and uncertainties around our central forecast. For example, we have developed a vector auto-regression model to produce stochastic simulations as a way of illustrating uncertainty. For the first time this allowed us to assess the probability of the government meeting its fiscal rules jointly, as well as individually.[2]

[2] OBR, *Working paper No.17: Evaluating forecast uncertainty with stochastic simulations,* December 2021.

- **Improve our scenario modelling capability** by acquiring and using the National Institute of Economic and Social Research's Global Econometric Model (NiGEM). NiGEM will allow us to model the impact of several different shocks quickly using a consistent general equilibrium framework.

4.7 While the impact of shocks is often the key short-term influence over the path for the economy, it remains the case that our assessment of the medium-term outlook for potential output is the most important determinant of the likely future health of the public finances – one that is influenced both by slow-moving trends and by the lasting effects of shocks. As well as further disaggregating our forecasts for potential output to reflect the capital deepening and total factor productivity components of labour productivity separately, we have also set out in more detail how we take account of policy measures that could have a meaningful impact on potential output using a transparent set of criteria (that they are: significant, durable, additional, and evidence-based) to assess their impact.[3]

Fiscal forecast models

4.8 As outlined in recent *FER*s, we employ a systematic approach to following up our analysis of fiscal forecasting differences and issues raised in *EFO* forecasting rounds. We described the criteria and analysis we deploy when reviewing fiscal forecast models in Chapter 4 of our 2016 *FER*. Given the tight timescales to produce this report after the unusual November 2022 *EFO* process, we have not fully updated our model assessment database, but we continue to work closely with our partners across government to monitor progress against the priorities identified in the 2021 *FER*. In this section we set out what progress has already been made against existing and newly identified priorities, as well as outlining additional priorities for fiscal model development.

Model improvements and reviewed assumptions

4.9 Of the priorities outlined in the 2021 update to our model assessment database, progress has been made in the following areas:

- DWP has improved the modelling of **universal credit (UC)** health cases to better identify the health status of individuals and more accurately model transitions between health status groups. These changes led to an upward revision of the UC caseload in 2027-28 by 295,000. Given the extent of underlying changes in health-related caseloads,[4] we will continue to monitor model performance against caseloads as outturn data become available over the coming year.

- We have revised the **VAT repayment model** to incorporate the number of working days in each month as an explanatory variable to better forecast the repayments profile. This aims to improve the accuracy of the monthly cash profiles in our forecast.

[3] OBR, *Briefing paper No. 8: Forecasting potential output – the supply side of the economy,* November 2022.
[4] As described in the supplementary release to the November 2022 *EFO, Upward revisions to welfare spending since March*.

- We have reviewed the assumptions made in our **air passenger duty (APD)** forecast. Evidence suggests that the air travel industry is recovering faster than previously anticipated, and we have revised our recovery profile to reflect this. We still assume full recovery by 2024-25 with a five per cent permanent scarring when compared to our March 2020 forecast but we continue to review this assumption during each forecast.

- As discussed in Box 3.3 of our March 2022 *EFO*, **electric vehicle (EV) sales** have repeatedly exceeded our forecasts. As a result, we significantly increased our EV uptake assumptions in our March 2022 forecast. We anticipate EV sales to reach 59 per cent of new car sales by 2026-27, up from the previously assumed 29 per cent for the same year. In our March 2022 forecast, we estimated this would reduce tax receipts by £2.1 billion in 2026-27, impacting fuel duty, vehicle excise duty and corporation tax capital allowances. In November 2022 we updated this assumption to EV shares reaching 62 per cent of new car sales by 2026-27 and will keep the assumption under review as more data become available.

- While not identified as a priority at the 2021 *FER,* we have worked together with analysts in HMRC to simplify and improve the **betting and gaming** model. In the new model we forecast overall betting and gaming receipts as opposed to forecasting each tax individually. Large volatility in individual tax receipts tend to cancel out at the aggregate level, so this benefits forecast accuracy as well as modelling simplicity.

4.10 The top priority in our December 2021 *FER* was establishing a methodology for the **health and social care (H&SC) levy**, so that it could be forecast on the same basis as other elements of income tax and NICs. As the levy was cancelled before being implemented, this is no longer a priority. But we would like to record our thanks to the HMRC analysts who had completed the necessary work under this priority before the measure was dropped.

Future forecast developments

4.11 In addition to further work on the priorities identified in the 2021 *FER,* we are focusing on the following fiscal forecast models for development activity in the coming year:

- We will review our **tobacco duties model**, revisiting the assumptions in our cigarettes forecast to account for the trend towards e-cigarettes and other tobacco products, and growth rate assumptions for other tobacco products. This latter category has grown significantly in the past few years, driven by the introduction of heated tobacco, and we expect this growth to continue, albeit at a decreasing rate. We also plan to update the price elasticity assumptions in our cigarettes and hand-rolled tobacco models.

- The ONS has recently updated the **depreciation model** used to derive its outturn statistics to use a perpetual inventory method, which includes sector-level aggregated capital stock data. We have been engaging with the Treasury on the development of a new forecast model based on the perpetual inventory method and richer input datasets. The aim is a dual run of the old and new models at the March 2023 forecast.

A Comparison with past forecasts

Introduction

A.1 This annex compares the OBR's forecasts for real GDP, public sector net borrowing (PSNB), receipts and spending against the latest outturns. It compares the average differences between forecasts and outturns since we were created in 2010 with those for official Treasury forecasts produced during the 20 years before the OBR was established, and considers how ours have been affected by the Covid shock and subsequent recovery.

A.2 The charts and tables below update previous *Forecast evaluation report* (*FER*) analyses of our forecast performance with the forecast and outturn data for 2021 – the second forecast year that we have evaluated which has been affected by the Covid pandemic.[1] In keeping with previous *FER*s, we start this analysis by looking at how our forecast differences compare to the Treasury's over a three-year horizon for real GDP and PSNB, before later evaluating our differences over shorter and longer timeframes.

A.3 The principal metric we use to evaluate the relative *accuracy* of our forecasts compared to the preceding Treasury forecasts is the *median absolute forecast difference*. The median provides a better measure of the long-run accuracy of our forecasts than the simple average, or mean, as it abstracts from large unforeseen shocks, such as the pandemic or the financial crisis, which skew the mean.[2] While there is significant value in understanding and modelling the impact of low-probability risks such as the pandemic (as we do in our *Fiscal risks and sustainability* reports, which try to anticipate and analyse potential large shocks that are not reflected in our central forecast), when evaluating the track record of our central forecasts overall, we focus on the median as it provides a guide to typical forecasting performance outside those periods that were affected by large shocks.

A.4 We moved to using the *median* absolute difference, instead of the *mean* absolute forecast difference, in our 2018 *FER*, after it became clear that comparing performance based on the mean flattered us relative to the Treasury. That was because the Treasury sample included the large differences associated with the late-2000s financial crisis and recession. These outliers meant that the mean under the Treasury was much larger than the corresponding median, whereas that was not true for OBR forecasts at that time. Now that our forecast record is affected by the pandemic, using the median to assess our track record relative to the Treasury's has the benefit of not being skewed by the pandemic having delivered a large economic and fiscal shock relative to our pre-pandemic forecasts.

[1] 2021-22 is used as the basis for our comparisons of receipts, spending and borrowing.
[2] Large adverse shocks like these skew the mean difference between forecast and outturn because it is so rare for there to be similarly large upside surprises, so the distribution includes some very large differences at the 'bad news' end but not at the 'good news' end.

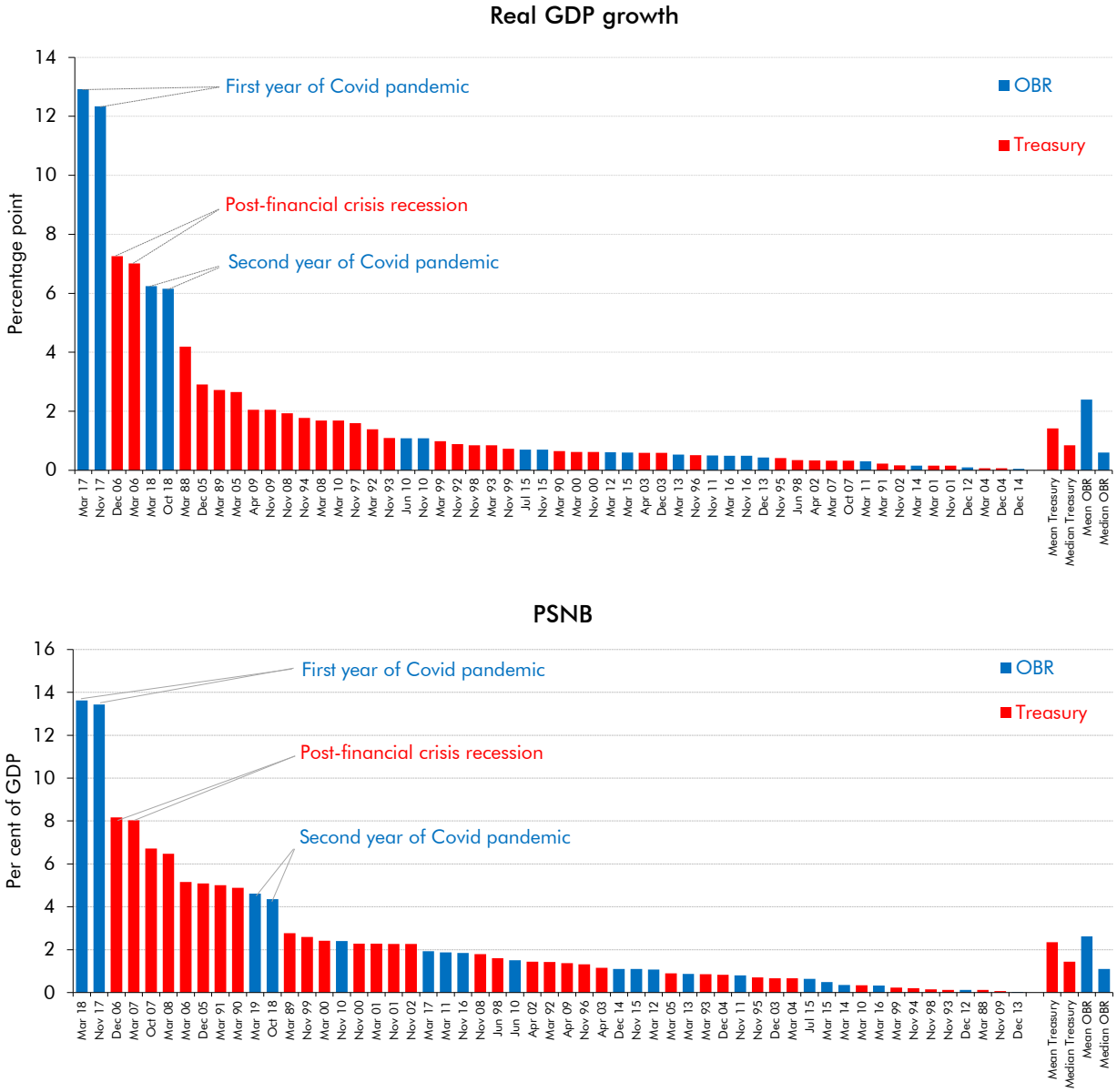
A.5 For this year's annex, we also supplement the analysis on accuracy with analysis of the tendency of our forecasts relative to the Treasury's towards overoptimism or overpessimism – known as forecast *bias*. We do this by looking at our *average differences* (as opposed to average *absolute* differences), which net off positive differences against negative ones, and comparing them with those of the Treasury before 2010. This offers an indication of whether our forecasts are systematically skewed in a positive or negative direction, and how any positive or negative bias compares with the Treasury's forecasts. Once again we focus on the *median* rather than the *mean* as the measure of average difference, as it gives a better indication of forecasting track record by abstracting from the handful of large adverse shocks that have skewed the distribution of forecast differences for both us and the Treasury.

Summary of forecast accuracy

A.6 Real GDP rose by 7.6 per cent in 2021, while borrowing in 2021-22 fell sharply from its pandemic high of 15.0 per cent of GDP to a still elevated 5.4 per cent of GDP. Both far exceeded our pre-pandemic three-year-ahead forecasts, with the difference to outturn for real GDP the second-largest since our establishment – second only to our March 2017 three-year-ahead forecast for 2020, at the height of the pandemic. The difference for borrowing is over four times greater than our median absolute average difference, though still smaller than the differences relative to outturn in the first year of the pandemic (2020-21) and the worst year of the financial crisis (2009-10), as Chart A.1 shows. These large forecast differences relative to outturn in 2021 have raised our median absolute forecast difference for real GDP growth from 0.5 to 0.6 percentage points, while our median absolute borrowing difference is little changed at 1.1 per cent of GDP.

A.7 The OBR's median absolute differences for both real GDP growth and borrowing are smaller than those for official Treasury forecasts in the 20 years prior to the OBR's creation, with our real GDP growth forecasts 0.2 percentage points more accurate, while our borrowing forecasts are 0.3 per cent of GDP more accurate. It remains the case that, despite the OBR era containing the largest forecast differences on record as a result of the pandemic, more often than not our differences for real GDP growth and net borrowing have been smaller than the median absolute difference in official Treasury forecasts during the preceding 20 years. But the enormity of the pandemic-related forecast differences means that the simple absolute average (mean) of OBR-era forecast differences is now materially larger than those over the preceding 20 years for real GDP growth and somewhat larger for net borrowing.

Chart A.1: Three-year-ahead absolute forecast differences for real GDP and PSNB



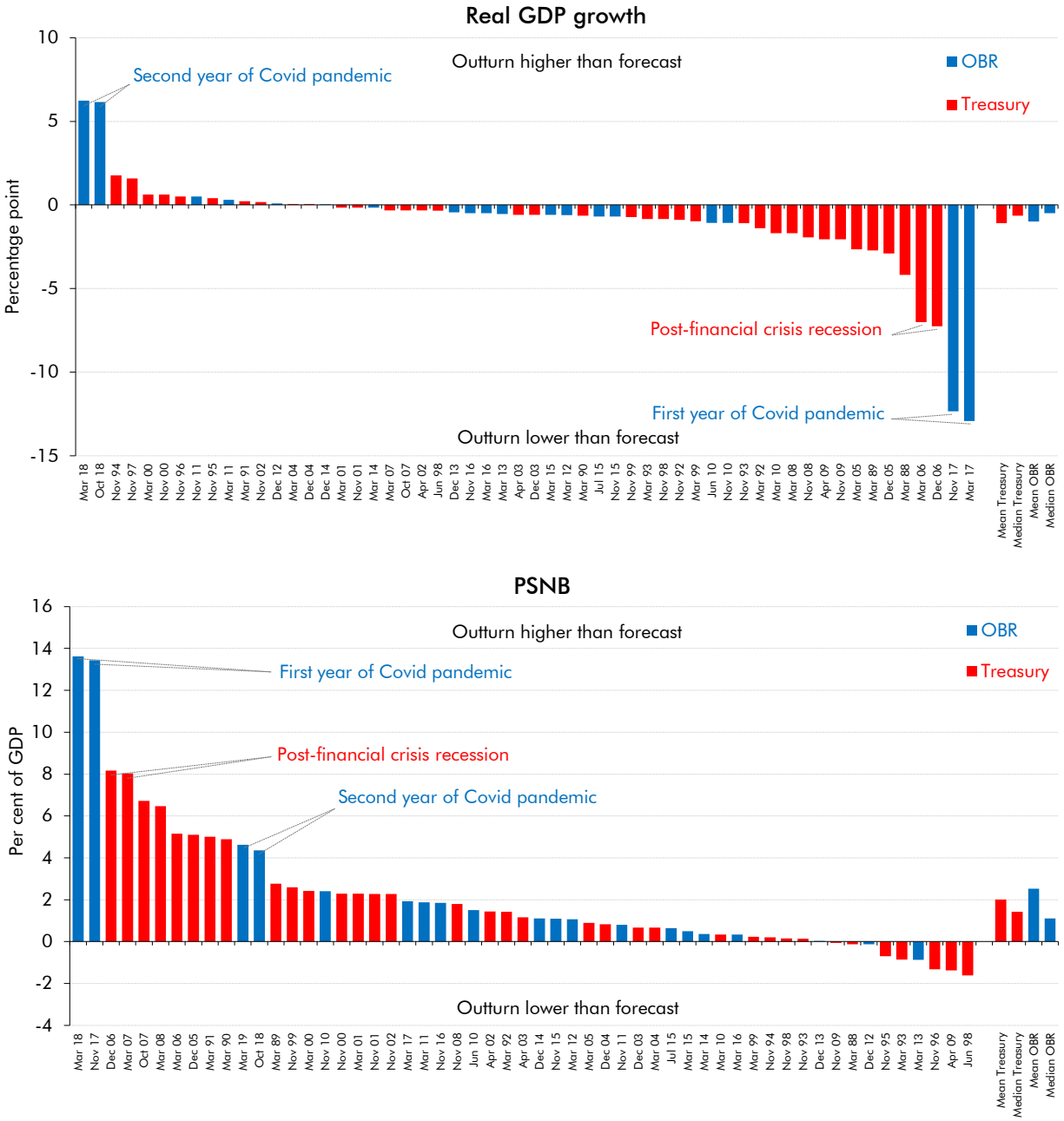
Note: Includes HM Treasury forecasts back to March 1988.
Source: HM Treasury, ONS, OBR

Summary of forecast bias

A.8 Given one of the motivations for the creation of the OBR was to remove the risk of political interference in forecasting, we also evaluate the bias in our economic and fiscal forecasts relative to those produced by the Treasury. Chart A.2 shows the same three-year-ahead forecast differences as Chart A.1 but this time including their sign – i.e. whether outturn was better or worse than forecast rather than just the extent to which it differed from forecast. As shown by the *negative* mean and median differences (i.e. outturn being below forecast on average), both the Treasury and the OBR exhibit a tendency to *overestimate* real GDP growth – though to a somewhat lesser extent in the OBR era than was the case under the Treasury. This bias towards overoptimism in our GDP forecast reflects, especially in the early

years, our overoptimism about the recovery in productivity growth after the financial crisis and, more recently, the impact of the (essentially unforecastable) economic and fiscal shock associated with the Covid pandemic.[3]

Chart A.2: Three-year-ahead forecast differences for real GDP and PSNB



A.9 We would generally expect differences in real GDP growth to be correlated with differences in borrowing, given that receipts are positively correlated with the economic activity that is being taxed while public spending as a share of GDP is inversely correlated with GDP since it fluctuates less and therefore tends to rise when GDP is weak and fall when it is strong. And this is indeed what we find, with both our and the Treasury's forecasts on average *underestimating* borrowing (with deficits turning out to be larger than forecast). As well as

[3] *OBR Briefing Paper No. 8: Forecasting potential output – the supply side of the economy*, November 2022.

the simple correlation between overoptimism about the economy resulting in borrowing exceeding forecasts on average, this could also reflect the inclination of governments to respond to forecast revisions asymmetrically – in essence, absorbing bad news in higher borrowing but spending good news.[4] As with real GDP, our *median* bias for borrowing is below that of the Treasury. However, our *mean* bias for borrowing is greater than the Treasury's, since borrowing overshot our forecasts by even larger margins in the pandemic years than it did relative to the Treasury's forecasts during the worst of the financial crisis.

Real GDP growth

A.10 Table A.1 shows our forecast differences for real GDP growth across a range of different forecast horizons. Across all forecast horizons, our largest forecast differences have been for those years where outturns were affected by the pandemic (2020 and 2021) – the largest single forecast difference being our July 2015 five-year-ahead forecast, which overestimated real GDP growth by 13.4 percentage points. Since the onset of the pandemic, differences between forecast and outturn, while smaller, have nonetheless consistently exceeded the pre-pandemic average, illustrating the challenge of forecasting output throughout the pandemic. Fiscal forecasters in other countries also struggled to predict output growth during the pandemic (see Table 2.2 in our 2021 *FER*).

A.11 Comparing our forecasts to the Treasury's, our average forecast difference relative to outturn for real GDP growth is lower over one-, two-, and three-year horizons but larger over four- and five-year horizons. Our four-year forecast difference for real GDP growth is lower than the Treasury's when removing pandemic-affected years (2020 and 2021), although our five-year forecast difference is higher. The Treasury five-year forecast difference for real GDP growth is smaller than any other time horizon despite the fact that we would tend to expect forecasts differences to increase over longer horizons as uncertainty rises – although this could partly reflect the smaller sample size of five-year forecasts.

A.12 When abstracting from the pandemic years (2020 and 2021), 69 per cent of our forecasts for real GDP growth were more accurate than the Treasury's median forecast difference, with 28 per cent equal to or within half a standard deviation of that benchmark.

Public sector net borrowing

A.13 Like-for-like comparisons of fiscal forecasting performance over long time periods are affected by significant revisions to nominal GDP over time. This does not greatly affect our interpretation of how the public finances have evolved, but it does change the ratios of fiscal measures expressed relative to GDP. To facilitate historical comparisons, we therefore compare:

[4] We discussed this tendency in Chapter 8 of our 2019 *Fiscal risks report*.

Table A.1: Forecast differences relative to outturn for real GDP growth

	Percentage points					
Calendar years ahead:	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median)						
June 2010	1.2	-1.2	-1.4	-1.1	0.5	-0.3
November 2010	0.6	-1.0	-1.2	-1.1	0.4	-0.3
March 2011	-0.6	-1.1	-1.1	0.3	-0.4	
November 2011	0.2	0.7	-0.3	0.5	-0.6	-0.8
March 2012	0.6	-0.2	0.5	-0.6	-0.8	
December 2012	1.5	0.6	1.2	0.1	-0.5	-0.4
March 2013	1.2	1.4	0.1	-0.5	-0.4	
December 2013	0.4	0.8	0.2	-0.4	-0.3	-1.0
March 2014	0.5	0.1	-0.4	-0.2	-0.8	
December 2014	0.2	0.0	0.0	0.0	-0.6	-0.7
March 2015	-0.1	-0.1	0.1	-0.6	-0.8	
July 2015	0.0	-0.1	0.0	-0.7	-0.8	-13.4
November 2015	0.0	-0.2	-0.1	-0.7	-0.7	-13.3
March 2016	0.2	0.2	-0.4	-0.5	-13.1	
November 2016	0.1	1.0	0.0	-0.5	-13.1	5.6
March 2017	0.4	0.2	-0.1	-12.9	5.6	
November 2017	0.9	0.3	0.3	-12.3	6.1	
March 2018	0.2	0.3	-12.3	6.2		
October 2018	0.4	0.0	-12.5	6.1		
March 2019	0.4	-12.5	6.0			
March 2020	-12.1	5.8		Smaller than median absolute difference		
November 2020	0.3	2.1		Median sized difference		
March 2021	3.6			Less than ½ std. dev. above median absolute		
October 2021	1.1			More than ½ std. dev. above median absolute		
Median absolute differences:						
HMT period (20 years)	*0.7*	*0.9*	*0.7*	*0.7*	*0.7*	*0.3*
OBR period	*0.4*	*0.5*	*0.4*	*0.6*	*0.7*	*0.8*
Forecast differences (colours reflect magnitude relative to pre-OBR mean)						
June 2010	1.2	-1.2	-1.4	-1.1	0.5	-0.3
November 2010	0.6	-1.0	-1.2	-1.1	0.4	-0.3
March 2011	-0.6	-1.1	-1.1	0.3	-0.4	
November 2011	0.2	0.7	-0.3	0.5	-0.6	-0.8
March 2012	0.6	-0.2	0.5	-0.6	-0.8	
December 2012	1.5	0.6	1.2	0.1	-0.5	-0.4
March 2013	1.2	1.4	0.1	-0.5	-0.4	
December 2013	0.4	0.8	0.2	-0.4	-0.3	-1.0
March 2014	0.5	0.1	-0.4	-0.2	-0.8	
December 2014	0.2	0.0	0.0	0.0	-0.6	-0.7
March 2015	-0.1	-0.1	0.1	-0.6	-0.8	
July 2015	0.0	-0.1	0.0	-0.7	-0.8	-13.4
November 2015	0.0	-0.2	-0.1	-0.7	-0.7	-13.3
March 2016	0.2	0.2	-0.4	-0.5	-13.1	
November 2016	0.1	1.0	0.0	-0.5	-13.1	5.6
March 2017	0.4	0.2	-0.1	-12.9	5.6	
November 2017	0.9	0.3	0.3	-12.3	6.1	
March 2018	0.2	0.3	-12.3	6.2		
October 2018	0.4	0.0	-12.5	6.1		
March 2019	0.4	-12.5	6.0			
March 2020	-12.1	5.8				
November 2020	0.3	2.1		Smaller than mean absolute difference		
March 2021	3.6			Mean sized difference		
October 2021	1.1			Bigger than mean absolute difference		
Mean absolute differences:						
HMT period (20 years)	*0.8*	*1.3*	*1.4*	*1.3*	*1.3*	*1.1*
OBR period	*1.1*	*1.4*	*1.9*	*2.4*	*2.7*	*4.0*

Note: The black outlines around some figures indicate that these outturn years were affected by the pandemic.
Positive figures denote outturn above forecast.

- **cash borrowing** (Table A.2) and **cash spending** (Table A.3) forecast differences **relative to outturn nominal GDP**; and
- **changes in receipts as a share of GDP against outturns**, which largely abstracts from changes due to revisions to the GDP denominator (Table A.4).[5]

A.14 As with real GDP, the pandemic-induced differences for our PSNB forecasts are large. Our 2021-22 borrowing forecast differences are second only in size to those in respect of 2020-21, and are similar in size to the Treasury's forecast differences for 2008-09, which is the first year that the financial crisis and recession affected the public finances. Excluding the pandemic-affected years of 2020-21 and 2021-22, 75 per cent of our forecasts were more accurate than the median difference in the preceding 20 years of Treasury forecasts, while 19 per cent of our forecasts had a difference to outturn which was either equal to or within half a standard deviation of the pre-OBR median difference.

A.15 Our spending forecasts have generally been more accurate than those from the pre-OBR period, with 72 per cent of our forecasts more accurate than the Treasury median forecast difference. But, even before the pandemic years of 2020-21 and 2021-22, our forecast differences had been rising. This largely reflected the increases in departmental spending that were announced between the 2016 Brexit referendum and the 2019 general election. Parliament requires our forecasts to reflect government policies as they stand at the time that each is produced, so these are not forecast differences that could have been avoided.

A.16 Looking only at pre-pandemic forecasts, our receipts forecasts generally performed worse than our spending forecasts. For instance, only half of our receipts forecasts were more accurate than the Treasury median forecast difference (Table A.4). This was particularly true for our earlier forecasts over longer horizons, which were affected by disappointing productivity growth and its consequences, in particular for income tax and NICs receipts.

A.17 Forecasts differences for spending during the pandemic have been large – the largest being our March 2016 forecast for five years ahead, which underestimated spending for 2020-21 by 13.2 per cent of GDP. These large differences reflect both spending, in cash terms, rising sharply due to government support schemes, such as the furlough scheme, and the sharp fall in nominal GDP. Our forecasts differences for receipts in cash terms were also historically large in 2020-21 – albeit on average smaller than those for spending – as receipts were hit by much weaker economic activity. Previously, when viewed relative to GDP, these forecast differences were small in historical terms, but recent large downward revisions to GDP mean that receipts as a proportion of GDP actually *increased* much faster than expected in 2020-21 – outperforming our forecasts for 2020-21 on this metric. Differences for receipts as a share of GDP in 2021-22, by contrast, reflect cash receipts outperforming our forecasts.

[5] In our *Forecast evaluation reports* (*FER*s), we restate our previous forecasts so that they are broadly consistent with the latest statistical treatments in outturn data published by the Office for National Statistics (ONS). This usually involves generating forecasts for items that have subsequently been classified into the public sector (and thus into the scope of our forecasts) or removing them for those that have been classified out. For the former, we tend to assume that our forecasts would have been correct, so that they do not affect the analysis of why outturn differed from forecast. The forecasts have been adjusted to be consistent with outturn data where necessary.

Table A.2: Forecast differences relative to outturn for cash PSNB

	Per cent of outturn GDP					
Fiscal years ahead:	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median) [1]						
June 2010[1]	-0.1	-0.7	0.1	1.5	2.4	3.0
November 2010	-0.7	0.0	1.4	2.4	3.1	3.1
March 2011	-0.5	-0.3	0.8	1.9	2.5	2.5
November 2011	-0.6	-0.3	0.2	0.8	1.3	1.3
March 2012	-0.5	-0.2	0.4	1.1	1.4	1.5
December 2012	-0.2	-0.4	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.9	-0.8	0.2
December 2013	-0.4	0.0	0.0	0.0	1.2	1.7
March 2014	-0.2	0.0	0.2	0.4	1.5	1.8
December 2014	-0.3	-0.3	0.1	1.1	1.4	3.8
March 2015	-0.6	-0.7	-0.4	0.5	0.6	3.0
July 2015	-0.2	0.1	-0.1	0.6	0.9	3.2
November 2015	-0.1	-0.2	0.8	1.1	3.3	15.8
March 2016	0.0	-0.5	0.2	0.3	3.3	15.7
November 2016	-1.2	-0.8	-0.8	1.8	14.2	4.8
March 2017	-0.3	-0.8	-0.5	1.9	14.2	4.8
November 2017	-0.4	-0.6	1.2	13.4	4.1	
March 2018	-0.2	-0.5	1.2	13.6	4.3	
November 2018	0.0	1.3	13.7	4.4		
March 2019	0.2	1.4	14.0	4.6		
March 2020	0.6	12.4	2.5			
November 2020	-3.9	-1.7		Smaller than median absolute difference		
March 2021	-2.0	-4.7		Median sized difference		
October 2021	-2.5			Less than ½ std. dev. above median absolute		
March 2022	-0.1			More than ½ std. dev. above median absolute		
Median absolute differences:						
HMT period (20 years)	*0.2*	*0.8*	*1.4*	*1.7*	*2.4*	*2.8*
OBR period	*0.4*	*0.6*	*0.8*	*1.1*	*1.4*	*2.5*
Forecast differences (colours reflect magnitude relative to pre-OBR mean) [1]						
June 2010[1]	-0.1	-0.7	0.1	1.5	2.4	3.0
November 2010	-0.7	0.0	1.4	2.4	3.1	3.1
March 2011	-0.5	-0.3	0.8	1.9	2.5	2.5
November 2011	-0.6	-0.3	0.2	0.8	1.3	1.3
March 2012	-0.5	-0.2	0.4	1.1	1.4	1.5
December 2012	-0.2	-0.4	-0.2	-0.1	-0.2	0.8
March 2013	-0.3	-0.8	-0.7	-0.9	-0.8	0.2
December 2013	-0.4	0.0	0.0	0.0	1.2	1.7
March 2014	-0.2	0.0	0.2	0.4	1.5	1.8
December 2014	-0.3	-0.3	0.1	1.1	1.4	3.8
March 2015	-0.6	-0.7	-0.4	0.5	0.6	3.0
July 2015	-0.2	0.1	-0.1	0.6	0.9	3.2
November 2015	-0.1	-0.2	0.8	1.1	3.3	15.8
March 2016	0.0	-0.5	0.2	0.3	3.3	15.7
November 2016	-1.2	-0.8	-0.8	1.8	14.2	4.8
March 2017	-0.3	-0.8	-0.5	1.9	14.2	4.8
November 2017	-0.4	-0.6	0.9	13.4	4.1	
March 2018	-0.2	-0.5	0.9	13.6	4.3	
November 2018	0.0	1.3	13.7	4.4		
March 2019	0.2	1.4	14.0	4.6		
March 2020	0.6	12.4	2.5			
November 2020	-3.9	-1.7				
March 2021	-2.0	-4.7		Smaller than mean absolute difference		
October 2021	-2.5			Mean sized difference		
March 2022	-0.1			Bigger than mean absolute difference		
Mean absolute differences:						
HMT period (20 years)	*0.4*	*1.0*	*1.8*	*2.4*	*2.5*	*2.4*
OBR period	*0.9*	*2.6*	*4.0*	*3.9*	*4.1*	*4.7*

[1] For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.
Note: The black outlines around some figures indicate that these outturn years were affected by the pandemic.
Positive figures denote outturn above forecast. Forecasts adjusted for major ONS classification changes.

Table A.3: Forecast differences relative to outturn for cash spending

	Per cent of outturn GDP					
Fiscal years ahead:	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median) [1]						
June 2010[1]	0.6	0.2	0.0	-0.3	-0.2	-0.3
November 2010	0.1	-0.2	-0.2	0.0	0.0	-0.7
March 2011	0.3	-0.6	-0.8	-0.6	-0.6	-1.3
November 2011	-0.1	-0.4	-0.2	-0.2	-0.4	-0.3
March 2012	0.2	-0.2	0.0	0.0	-0.2	-0.1
December 2012	0.3	0.0	0.2	-0.1	0.1	0.9
March 2013	0.4	0.1	0.3	-0.1	0.1	0.9
December 2013	0.2	0.2	-0.1	0.0	1.0	1.4
March 2014	0.3	0.1	-0.1	0.2	1.2	1.5
December 2014	0.3	0.2	0.8	1.8	2.3	4.8
March 2015	-1.6	-1.5	-0.9	0.3	0.6	4.0
July 2015	0.4	0.4	0.5	1.0	1.4	3.7
November 2015	0.1	0.0	0.6	1.0	3.3	12.4
March 2016	0.2	0.1	0.8	1.0	3.8	13.2
November 2016	-0.3	0.2	0.5	3.2	12.6	7.1
March 2017	0.0	0.0	0.4	3.1	12.6	7.1
November 2017	0.1	0.2	2.7	12.3	7.3	
March 2018	0.0	0.1	2.4	12.2	7.2	
November 2018	0.1	2.1	11.5	6.3		
March 2019	0.1	2.1	11.6	6.4		
March 2020	0.0	8.6	2.7			
November 2020	-2.8	1.3		Smaller than median absolute difference		
March 2021	-1.6	-0.5		Median sized difference		
October 2021	-0.2			Less than ½ std. dev. above median absolute		
March 2022	0.6			More than ½ std. dev. above median absolute		
Median absolute differences:						
HMT period (20 years)	*0.8*	*0.9*	*1.0*	*1.3*	*1.7*	*2.1*
OBR period	*0.2*	*0.2*	*0.5*	*0.8*	*1.1*	*1.5*
Forecast differences (colours reflect magnitude relative to pre-OBR mean) [1]						
June 2010[1]	0.6	0.2	0.0	-0.3	-0.2	-0.3
November 2010	0.1	-0.2	-0.2	0.0	0.0	-0.7
March 2011	0.3	-0.6	-0.8	-0.6	-0.6	-1.3
November 2011	-0.1	-0.4	-0.2	-0.2	-0.4	-0.3
March 2012	0.2	-0.2	0.0	0.0	-0.2	-0.1
December 2012	0.3	0.0	0.2	-0.1	0.1	0.9
March 2013	0.4	0.1	0.3	-0.1	0.1	0.9
December 2013	0.2	0.2	-0.1	0.0	1.0	1.4
March 2014	0.3	0.1	-0.1	0.2	1.2	1.5
December 2014	0.3	0.2	0.8	1.8	2.3	4.8
March 2015	-1.6	-1.5	-0.9	0.3	0.6	4.0
July 2015	0.4	0.4	0.5	1.0	1.4	3.7
November 2015	0.1	0.0	0.6	1.0	3.3	12.4
March 2016	0.2	0.1	0.8	1.0	3.8	13.2
November 2016	-0.3	0.2	0.5	3.2	12.6	7.1
March 2017	0.0	0.0	0.4	3.1	12.6	7.1
November 2017	0.1	0.2	2.7	12.3	7.3	
March 2018	0.0	0.1	2.4	12.2	7.2	
November 2018	0.1	2.1	11.5	6.3		
March 2019	0.1	2.1	11.6	6.4		
March 2020	0.0	8.6	2.7			
November 2020	-2.8	1.3				
March 2021	-1.6	-0.5		Smaller than mean absolute difference		
October 2021	-0.2			Mean sized difference		
March 2022	0.6			Bigger than mean absolute difference		
Mean absolute differences:						
HMT period (20 years)	*1.1*	*1.0*	*1.1*	*1.4*	*1.8*	*2.1*
OBR period	*0.4*	*0.8*	*1.8*	*2.5*	*3.0*	*3.7*

[1] For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.
Note: The black outlines around some figures indicate that these outturn years were affected by the pandemic.
Positive figures denote outturn above forecast. Forecasts adjusted for major ONS classification changes.

Table A.4: Forecast differences for changes in receipts as a share of GDP

Fiscal years ahead:	Per cent of GDP					
	In-year	One	Two	Three	Four	Five
Forecast differences (colours reflect magnitude relative to pre-OBR median) [1]						
June 2010 [1]	0.6	0.8	0.3	-0.7	-1.0	-1.3
November 2010	0.4	0.1	-0.8	-1.0	-1.3	-1.0
March 2011	0.1	-0.3	-0.9	-1.3	-1.4	-1.1
November 2011	-0.1	-0.6	-0.7	-0.9	-0.5	0.0
March 2012	0.2	-0.5	-0.7	-1.0	-0.6	-0.2
December 2012	-0.6	-1.0	-1.1	-1.0	-0.5	-0.4
March 2013	-0.6	-0.8	-0.9	-0.7	-0.6	-0.5
December 2013	0.4	0.1	-0.1	0.0	0.0	0.3
March 2014	0.3	0.1	-0.1	0.1	0.2	0.6
December 2014	0.3	0.4	0.4	0.5	0.9	1.4
March 2015	0.0	0.5	0.5	0.8	1.3	3.0
July 2015	1.6	1.6	1.6	1.6	2.0	2.5
November 2015	0.1	0.0	-0.3	0.1	0.7	1.8
March 2016	-0.4	-0.4	-0.3	0.0	0.1	1.5
November 2016	0.3	-0.1	0.3	0.8	2.0	3.1
March 2017	0.1	0.2	0.2	0.6	2.0	3.1
November 2017	0.1	0.2	0.7	2.0	3.2	
March 2018	-0.1	0.1	0.6	1.8	3.1	
November 2018	-0.2	0.6	1.7	2.8		
March 2019	-0.4	0.4	1.4	2.5		
March 2020	-0.7	0.3	1.2			
November 2020	1.3	1.5		Smaller than median absolute difference		
March 2021	1.0	3.4		Median sized difference		
October 2021	1.8			Less than ½ std. dev. above median absolute		
March 2022	0.1			More than ½ std. dev. above median absolute		
Median absolute differences:						
HMT period (20 years)	*0.2*	*0.7*	*0.9*	*0.7*	*0.6*	*1.1*
OBR period	*0.3*	*0.4*	*0.7*	*0.8*	*1.0*	*1.2*
Forecast differences (colours reflect magnitude relative to pre-OBR mean) [1]						
June 2010 [1]	0.6	0.8	0.3	-0.7	-1.0	-1.3
November 2010	0.4	0.1	-0.8	-1.0	-1.3	-1.0
March 2011	0.1	-0.3	-0.9	-1.3	-1.4	-1.1
November 2011	-0.1	-0.6	-0.7	-0.9	-0.5	0.0
March 2012	0.2	-0.5	-0.7	-1.0	-0.6	-0.2
December 2012	-0.6	-1.0	-1.1	-1.0	-0.5	-0.4
March 2013	-0.6	-0.8	-0.9	-0.7	-0.6	-0.5
December 2013	0.4	0.1	-0.1	0.0	0.0	0.3
March 2014	0.3	0.1	-0.1	0.1	0.2	0.6
December 2014	0.3	0.4	0.4	0.5	0.9	1.4
March 2015	0.0	0.5	0.5	0.8	1.3	3.0
July 2015	1.6	1.6	1.6	1.6	2.0	2.5
November 2015	0.1	0.0	-0.3	0.1	0.7	1.8
March 2016	-0.4	-0.4	-0.3	0.0	0.1	1.5
November 2016	0.3	-0.1	0.3	0.8	2.0	3.1
March 2017	0.1	0.2	0.2	0.6	2.0	3.1
November 2017	0.1	0.2	0.7	2.0	3.2	
March 2018	-0.1	0.1	0.6	1.8	3.1	
November 2018	-0.2	0.6	1.7	2.8		
March 2019	-0.4	0.4	1.4	2.5		
March 2020	-0.7	0.3	1.2			
November 2020	1.3	1.5				
March 2021	1.0	3.4		Smaller than mean absolute difference		
October 2021	1.8			Mean sized difference		
March 2022	0.1			Bigger than mean absolute difference		
Mean absolute differences:						
HMT period (20 years)	*0.5*	*0.9*	*1.0*	*1.1*	*1.1*	*1.3*
OBR period	*0.5*	*0.6*	*0.7*	*1.0*	*1.2*	*1.4*

[1] For comparability, 'in-year' is assumed to be 2009-10 and 2014-15 for the June 2010 and July 2015 forecasts respectively.
Note: The black outlines around some figures indicate that these outturn years were affected by the pandemic.
Positive figures denote outturn above forecast. Forecasts adjusted for major ONS classification changes.

Index of charts and tables

E02841444

ISBN 978-1-5286-3839-5