



IFS Green Budget

October 2022

Edited by

Carl Emmerson
Paul Johnson
Ben Zaranko

In association with Citi and funded by the Nuffield Foundation



UK Research
and Innovation

The IFS Green Budget: October 2022

Stuart Adam

Bee Boileau

Isaac Delestre

Carl Emmerson

Benjamin Nabarro

Vedanth Nair

Laurence O'Brien

Christian Schulz

Isabel Stockton

Sir Paul Tucker

Tom Waters

Thomas Wernham

Ben Zaranko

Edited by Carl Emmerson, Paul Johnson and Ben Zaranko

Copy-edited by Judith Payne

The Institute for Fiscal Studies

Published by

The Institute for Fiscal Studies

7 Ridgmount Street
London WC1E 7AE
Tel: +44 (0) 20 7291 4800
Email: mailbox@ifs.org.uk
www.ifs.org.uk
@TheIFS

in association with

Citi

Citigroup Centre
33 Canada Square, Canary Wharf
London E14 5LB
www.citigroup.com

funded by

The Nuffield Foundation

100 St John Street
London EC1M 4EH
www.nuffieldfoundation.org

with support from

The Economic and Social Research Council (ESRC)
through the Centre for Microeconomic Analysis of Public Policy
(CPP, reference ES/T014334/1)

Polaris House
North Star Avenue
Swindon SN2 1UJ
www.esrc.ac.uk

© The Institute for Fiscal Studies, October 2022

ISBN 978-1-80103-104-2

Foreword from Citi

We are delighted to be collaborating again with the Institute for Fiscal Studies on the production of the Green Budget. IFS continues to shine a critical and objective light on the key issues facing the UK public finances. IFS reports are always essential reading for policymakers, investors and corporate leaders alike. With the UK economy still grappling with the economic impacts of Brexit and the pandemic, the dislocations to geopolitics and global energy markets caused by the war in Ukraine have created unprecedented conditions for the Treasury and public policy in a modern economy. The crisis in the Conservative Party and the change of Prime Minister have amplified uncertainties. Our analysis is based on what we believe central bank and government policy trajectories to be, but we recognise that policy could change quite rapidly even if the current UK Parliament is to run to its full term in 2024.

Citi's economists have provided two chapters for this year's Green Budget. Our first chapter looks at the global economic outlook. Here we outline a less than rosy outlook for the economy ahead. Post-pandemic supply disruption has proven more persistent than expected, and the addition of the impact of higher energy prices in Europe risks yet further economic pain right on the UK's doorstep. Geopolitical concerns suggest further global supply shocks are likely to keep coming, with transatlantic relations with China under growing strain. In the near term, high inflation looks set to stay and will trigger further significant interest rate hikes from central banks. Fiscal policy seems at growing risk of simultaneously jumping on the accelerator, just as monetary policy slams on the brake.

Our second chapter reviews the UK economy. Here we outline a challenging outlook for both households and firms, with few 'easy answers' from a policy perspective. The full impact of the terms-of-trade shock will, we think, only become clear over the coming months. Alongside the cost shock itself, we also expect higher rates to weigh heavily, pushing any meaningful recovery back into the second half of 2024. This is more than just an issue of low demand. Instead the UK faces a tricky combination of severe supply disruptions, low unemployment and high inflation. With structural economic shocks potentially set to grow more common, we argue this calls for a different policy approach.

I would like to thank Christian Schulz and Benjamin Nabarro from Citi's European Economics team for their detailed work in compiling respectively the global and UK chapters for this year's Green Budget. I would also like to thank IFS for the opportunity to collaborate again on the Green Budget.



Andrew Pitt
Global Head of Research
Citi Institutional Clients Group

Foreword from the Nuffield Foundation

Since 1982, the Green Budget has provided a comprehensive and independent assessment of the state of the public finances ahead of the Chancellor's Budget and Spending Review. Its meticulous analysis secures the foundations for a more transparent, evidence-based public conversation about how to respond to the economic and social challenges currently facing the UK and it enables the government's own account to be held up to scrutiny.

Last year's Green Budget was published in the context of the COVID-19 recovery, Brexit and the transition to net zero. Those issues remain highly relevant but are now overlaid by war in Ukraine and its implications for the UK and world economies. In addition, there is a new government with new economic plans and priorities. The need for a rigorous and impartial analysis of the UK's situation has never been greater.

We are in a time of rapid inflation, rising interest rates, growing national debt and intense pressure on many government services. The IFS Green Budget sets out the difficult choices and trade-offs involved, in a current context where the least well-off face particular vulnerability. Whilst there is an undoubted necessity to set the UK on a path to a growing economy and sustainable public finances, this is set against a need to support vital public services and respond to the immediate pressures on people and families most under strain from rapidly rising food and energy costs.

In addition to setting out valuable economic context, each year the Green Budget also focuses in on chosen topics. These chapters amount to a hugely comprehensive volume of policy analysis and knowledge built up over time. The focus this year on business taxes and investment, income taxes and benefits, and departmental finances including public sector pay could not be more timely.

In its framing of the economic outlook, IFS shows that ultimately, the questions to be addressed are about people's well-being, individually and collectively, in a time of economic uncertainty. These issues are central to the Nuffield Foundation's work to advance social well-being and to understand the foundations and pathways to a more just and inclusive society. That is why we are now in our tenth year of supporting the Green Budget. Thank you to IFS and Citi for once again providing such timely and important analysis.



Tim Gardam
Chief Executive
Nuffield Foundation

Preface

Welcome to the IFS 2022 Green Budget.

It is difficult to overstate the scale of the economic shift since last year's Green Budget. Inflation has returned with a vengeance and forecasts for real economic growth have become much gloomier. Partly as a result of much higher energy prices, a 'terms-of-trade' shock is squeezing household budgets and living standards.

Much of this year's Green Budget focuses on the direct and indirect consequences of lower growth and higher inflation. These combined with rising interest rates, and a large discretionary fiscal loosening, have put the UK public finances in a substantially weaker position. A huge amount depends on the precise forecast for economic growth, but it is difficult to escape the conclusion that, as it stands, we are not on a sustainable fiscal path. The adverse market reaction to the new Chancellor's 'mini-Budget' shows the importance of fiscal and institutional credibility – hard won but easily lost. There is a lot riding on the Medium-Term Fiscal Plan, due later in the autumn.

Higher inflation is also reshaping the tax and benefit system, owing to the large number of parameters in the system that are frozen in cash terms, whether by default or deliberate policy decision. When inflation is higher, freezes to tax thresholds raise more revenue, more earners are dragged into higher tax bands, and policies such as the benefit cap affect more families. One can see the appeal for a tax-hungry Treasury, but there are plenty of less opaque and arbitrary ways to raise revenue.

Inflation also raises the stakes when it comes to the potential gains from structural reform of our corporate tax system. Our current system penalises certain forms of investment, while penalising others – distortions which are only exacerbated during periods of high inflation. A package of reforms to rationalise the system and reduce such distortions could make a genuine contribution to a supply-side, pro-growth policy agenda. Though, as ever, the tax system can only ever be part of the answer.

Public services are not spared from the impacts of higher inflation. Departmental budgets were set last year on the assumption of much lower inflation – and, crucially, lower pay awards than have since been announced. Keeping to those spending plans – as the new government claims it will – would leave departments having to find around £5 billion of savings this year to fund higher-than-expected pay awards. Those awards will, due to high inflation, still mean a real-terms pay cut for millions of public sector workers, after more than a decade in which pay has, for many public sector jobs, already fallen in real terms.

We are thrilled this year to have a Green Budget chapter authored by Sir Paul Tucker, former Deputy Governor of the Bank of England, examining the relationship between quantitative

easing, monetary policy implementation and the public finances. This is an enormously important topic, and one that will no doubt become increasingly prominent as the Bank of England increases its policy rate and the government becomes increasingly creative in its search for revenue.

We are delighted to continue our collaboration with Citi, now in its fifth year. We are grateful both for their financial support for the Green Budget and for their chapters on the global economic outlook and the outlook for the UK economy specifically. Both provide vital context for the rest of the Green Budget's analysis.

We are also very grateful to the Nuffield Foundation for the funding it has provided to support the Green Budget. Our most important aim for the Green Budget is to influence policy and inform the public debate. We feel that this has been especially important this year, given the new Chancellor's decision to make large permanent tax changes without any accompanying forecasts from the OBR. It is particularly appropriate, then, that it should be supported by the Nuffield Foundation, for which these are also central aims.

The continuing support that the Economic and Social Research Council (ESRC) provides for our ongoing research work via the Centre for the Microeconomic Analysis of Public Policy at IFS (ES/T014334/1) underpins all our analysis in this volume and is gratefully acknowledged.

Statistical data from the Annual Survey of Hours and Earnings, provided by the Office for National Statistics (ONS) and accessed through the Secure Research Service, have been used. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. Data from the Labour Force Survey (1993–2022) are available from the UK Data Service, as are the Living Costs & Food Survey and the Family Resources Survey. This work uses research data sets that may not exactly reproduce National Statistics aggregates. The data owners and suppliers bear no responsibility for the interpretation of the data in this book.

As with all IFS publications, the views expressed are those of the named chapter authors and not of the institute – which has no corporate views – or of the funders of the research.



Paul Johnson

Director

Institute for Fiscal Studies

Citi Research

Citi Research focuses on delivering the highest quality company, sector, economic and geographic insights to our clients globally. The unit includes equity and fixed income research, economic and market analysis and product-specific analysis to help individual and institutional clients navigate a complex global marketplace. Citi Research is committed to maintaining the highest level of independence and objectivity in its proprietary products and insights.

Citi Bank

Citi, the leading global bank, has approximately 200 million customer accounts and does business in more than 160 countries and jurisdictions. Citi provides consumers, corporations, governments and institutions with a broad range of financial products and services, including consumer banking and credit, corporate and investment banking, securities brokerage, transaction services, and wealth management. Citi has been in the Nordic countries since the 1970s, with offices in Copenhagen, Helsinki, Oslo and Stockholm.

www.citigroup.com | @Citi

The Nuffield Foundation

The Nuffield Foundation is an independent charitable trust with a mission to advance educational opportunity and social well-being. It funds research that informs social policy, primarily in Education, Welfare and Justice. It also provides opportunities for young people to develop skills and confidence in science and research. The Nuffield Foundation is the founder and co-funder of the Nuffield Council on Bioethics, the Nuffield Family Justice Observatory and the Ada Lovelace Institute.

The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily the Foundation.

www.nuffieldfoundation.org | @NuffieldFound

Contents

1. Global economic outlook: heading for a fall?.....	11
2. UK economic outlook: why we need to do things differently	40
3. Outlook for the public finances.....	111
4. Public spending, pay and pensions	150
5. Reforms, roll-outs and freezes in the tax and benefit system.....	204
6. Corporation tax and investment	233
7. Quantitative easing, monetary policy implementation and the public finances.....	272
List of abbreviations	326

1. Global economic outlook: heading for a fall?

Christian Schulz (Citi)

Key findings

1. **This year's global economic outlook is far less rosy than in 2021.** We expect the global economy to grow by 2.9% this year and 2.5% next year, both well below the long-run average of 3%. Europe, in the short term, and the US, later in 2023, are likely heading for recession.
2. **Post-pandemic supply–demand imbalances have proved more severe and persistent than expected.** Indicators of supply chain disruption such as shipping prices have declined, but not normalised. Expansive government policies have driven up public debt ratios by up to 20% of GDP and boosted money supply by 20–40%. Even leaving aside volatile food and energy prices, where, in our view, idiosyncratic shifts in supply and demand dominate, the ranking of the rises in core prices in the US, the UK and the Eurozone between 2019Q4 and 2022Q2 by 4%, 3% and 2% annualised, respectively, mirrors the ranking of the fiscal and monetary expansions.
3. The war in Ukraine and the stand-off with Russia have aggravated the inflation crisis by eliminating 40% of the EU's gas supply, triggering a severe energy crisis in most of Europe. **The increase in gas prices alone is imposing a burden of up to 8% of GDP on European households and firms.** European gas prices peaked at double Asian rates and 10 times the US's. This price shock is likely to trigger a recession, but also lead to structural changes in the European economy, weighing on growth for many years.
4. The Ukraine conflict also raises questions about the West's reliance on China. **Reducing dependence on the 22% of EU goods imports coming from China, including even higher shares for technology and consumer goods imports, may be an even greater challenge than reducing dependence on Russian energy.** And unlike Russia, China remains tempting as an export market, absorbing 10% of EU

exports and growing at triple the rate of overall exports. Improved resilience of supply chains may come at the cost of a permanent reduction in expected economic potential.

5. **The series of supply shocks has driven global inflation to 7% this year.** Recession, as well as base effects in energy and the gradual unwinding of supply chain disruptions, will likely bring inflation below 6% in 2023 and to 3.5% in 2024. But even that is still above the 3% long-run average. Inflation in energy and goods prices is being replaced by inflation in the price of food and services. **High inflation looks set to stay and should trigger further significant interest rate hikes from central banks.**
6. **Governments can arguably be more effective in fighting inflation than central banks.** They can invest and deregulate to boost energy supply and unclog supply chains, but also reduce demand by fostering industrial adaptation. Many are acting to preserve supply by guaranteeing loans or nationalising critical energy infrastructure, but also by supporting demand with tax cuts and subsidies. In the EU, fiscal measures related to the crisis amount to 3–4% of GDP already and are expanding rapidly. While direct interventions in energy prices have lowered measured inflation rates by 3 percentage points, some measures cause inflation elsewhere or in the future.
7. However, **fiscal policy has to tread a fine line, as it can also distort incentives to save energy and raise the risk of blackouts as well as lower long-term incentives for the economy to adjust to potentially permanently higher energy prices and less efficient supply chains.** So far, finance ministers are enjoying a tax revenue bonanza due to high inflation, but as they expand their support, risks to debt sustainability will grow and limit fiscal space, forcing hard choices.

1.1 Introduction

New shocks threaten to cut post-pandemic recovery short

In the 2021 Green Budget, we painted quite a rosy outlook for the global economy. Successful vaccination programmes as well as a shift in strategy away from containing the pandemic to living with the pandemic had reduced the threat of health restrictions. We expected strong growth in all regions of the world for the rest of 2021 and 2022 as economies reopened and households deployed the savings accumulated during the pandemic. It would take some time to restore global supply chains and inflation was expected to remain high and volatile (Citi's global inflation forecast for 2021 was 3.2% and for 2022 3.0%, close to the long-term average of 3%) but we thought central banks would patiently look through the inflation spike and only tighten

monetary policy gradually. Strong growth and gradually rising borrowing costs would then also allow governments to normalise fiscal policy without the premature and sometimes excessive tightening seen after the global financial crisis in 2008–09.

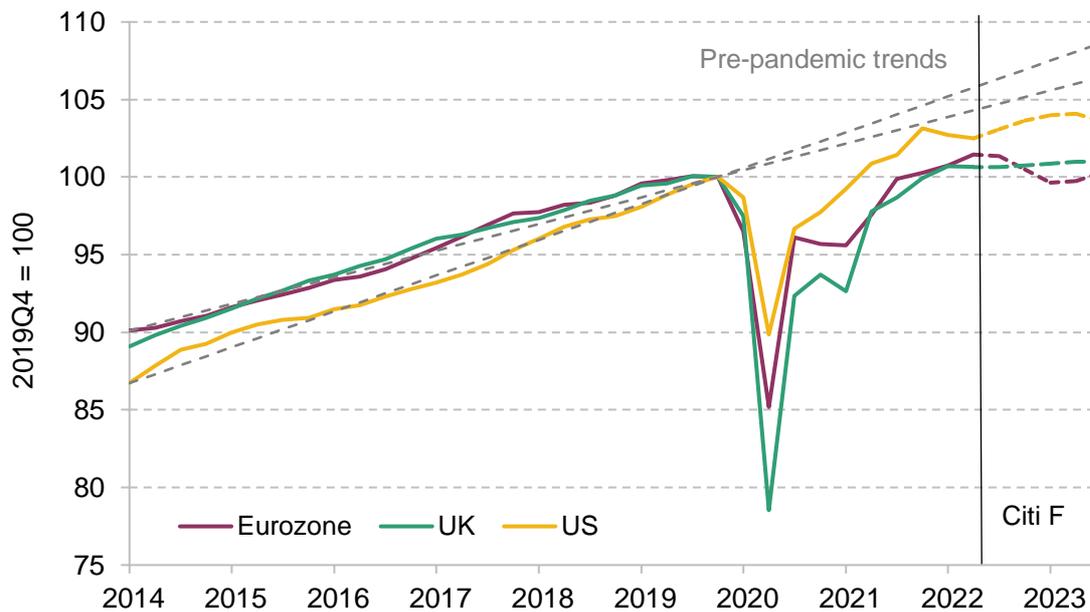
Indeed this picture broadly played out in the second half of 2021. Our growth projections for 2021 proved largely correct (see Table 1.1). Economies gradually reopened and the gaps between post-pandemic recoveries narrowed. By Summer 2022, Europe’s GDP recovery had nearly caught up with that of the US (see Figure 1.1). However, especially in the US, the recovery may have been too fast for its own good. Turbocharged by the extremely generous post-election fiscal stimulus, the American economy began overheating to which, with hindsight, the Fed may have reacted too late. To be sure, the market partly did the tightening for the Fed. Longer-term government and corporate borrowing costs started rising sharply well before central banks started hiking short-term policy rates, as investors priced in expected rate hikes early on. As a result, the US dollar strengthened against most other currencies and exported the US inflation problem to the rest of the world.

Table 1.1. Real GDP growth forecasts, Green Budget 2022 and Green Budget 2021

Real GDP growth (YY %)	2021		2022		2023		2024		2025		2026	
	GB 21	GB 22										
World	5.8	5.8	4.4	2.9	3.1	2.1	3.0	2.9	2.9	3.0	-	2.8
Advanced economies	5.1	5.1	4.0	2.4	2.1	0.4	1.8	1.8	1.7	2.0	-	1.6
US	5.8	5.7	3.8	1.8	1.8	0.7	1.8	2.1	1.8	2.4	-	1.8
Japan	2.2	1.7	3.7	1.5	1.5	1.4	0.7	1.0	0.7	0.7	-	0.7
Eurozone	5.2	5.2	4.7	3.1	2.6	-0.4	2.1	2.2	1.8	1.9	-	1.6
UK	6.6	7.4	4.7	3.4	2.4	-0.5	1.3	0.6	1.5	1.1	-	1.4
Emerging markets	6.6	6.8	4.9	3.5	4.4	4.2	4.3	4.1	4.2	4.1	-	4.1
China	8.2	8.1	5.5	3.3	5.3	6.1	5.1	4.8	4.9	4.8	-	4.8
India	9.5	8.7	9.0	6.7	6.1	5.9	6.3	6.3	6.2	6.2	-	6.4
Brazil	5.1	4.6	1.5	2.7	1.5	0.3	1.5	1.5	1.5	1.5	-	1.5

Source: IFS Green Budget 2021, and Citi Research forecasts as of 21 September 2022.

Figure 1.1. US, UK and Eurozone: real GDP



Source: BEA, ONS, Eurostat and Citi Research.

In these already challenging circumstances, a new and major speed bump appeared in the form of the conflict in Ukraine. With the West sanctioning some Russian energy exports and Russia cutting the rest, energy prices in general, and natural gas prices in Europe in particular, surged to extreme levels. This ‘tax’ on the economy is starting to take its toll on household real income and confidence. Europe looks set for a potentially deep recession. This will eventually probably reduce (and potentially eliminate) Europe’s inflation problem, leaving less for monetary policy to do. In the US, however, monetary tightening will likely have to go a lot further to restore the balance between supply and demand in the labour market and bring inflation under control. While potentially strengthening the dollar further, that will probably also imply a recession, albeit a milder and later one than in Europe.

As a result of aggressive monetary policy tightening and the consequences of the Ukraine conflict, our forecasts in the Green Budget for this year and next look a lot weaker than last year. We expect the global economy to grow by merely 2.9%, despite the reopening of many economies, in 2022 and 2.1% in 2023 despite a strong performance by China, both below the long-run trend of 3% per year. Among advanced economies, we still expect fairly stable GDP growth rates in the US (1.8% in 2022 and 0.7% in 2023), while Eurozone growth may fall from 3.1% this year to –0.4% in 2023. This sharp slowdown in the industrialised West should be mirrored in most emerging markets, with one major exception. In China, we expect an end of COVID-19 restrictions paired with significant stimulus to boost growth from just 3.3% in 2022

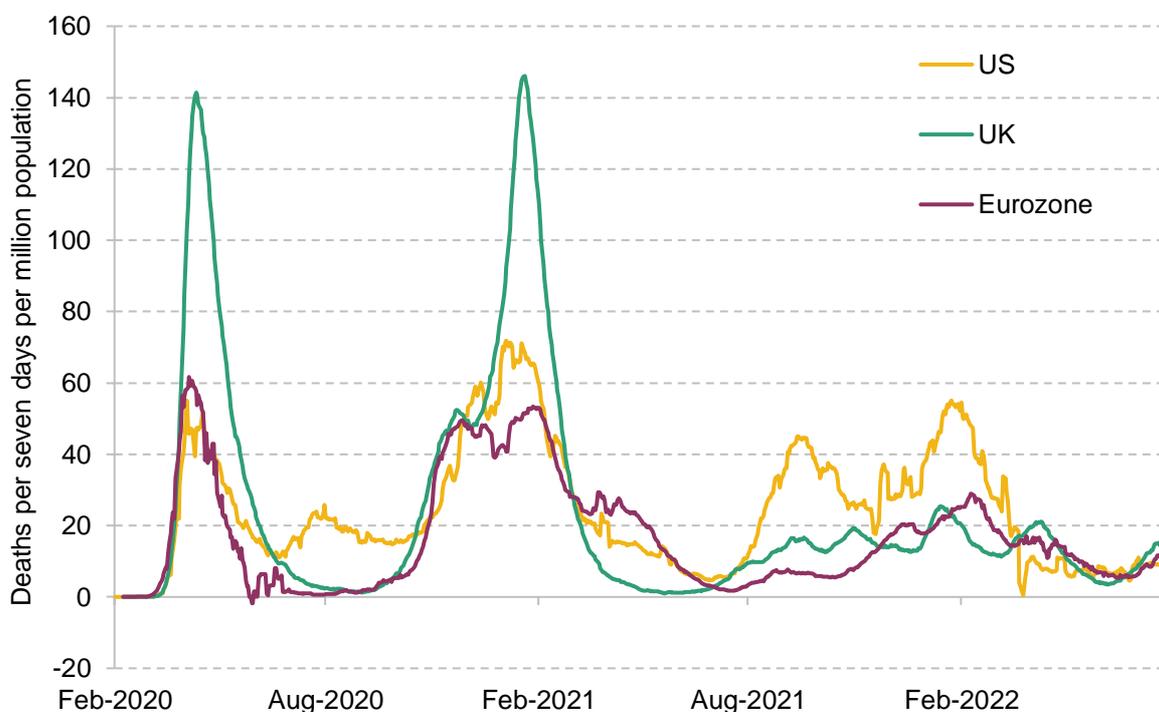
to 6.1% in 2023. Without this idiosyncratic Chinese cycle, global economic growth could fall below 2% and thus into global recession territory.

1.2 The pandemic has left big imbalances

In the last two years, the global pandemic outlook was a key driver of macroeconomic forecasts. At the time of the 2020 Green Budget, the first wave had just passed, raising hopes that the worst might be over – a view which unfortunately proved premature. In the summer of 2021, the pandemic was not over, but western governments had made much progress with their vaccination programmes, raising hopes that inevitable future waves would no longer have the impact on mobility and the economy. Indeed, while case numbers have remained high, the death toll is now much lower (see Figure 1.2).

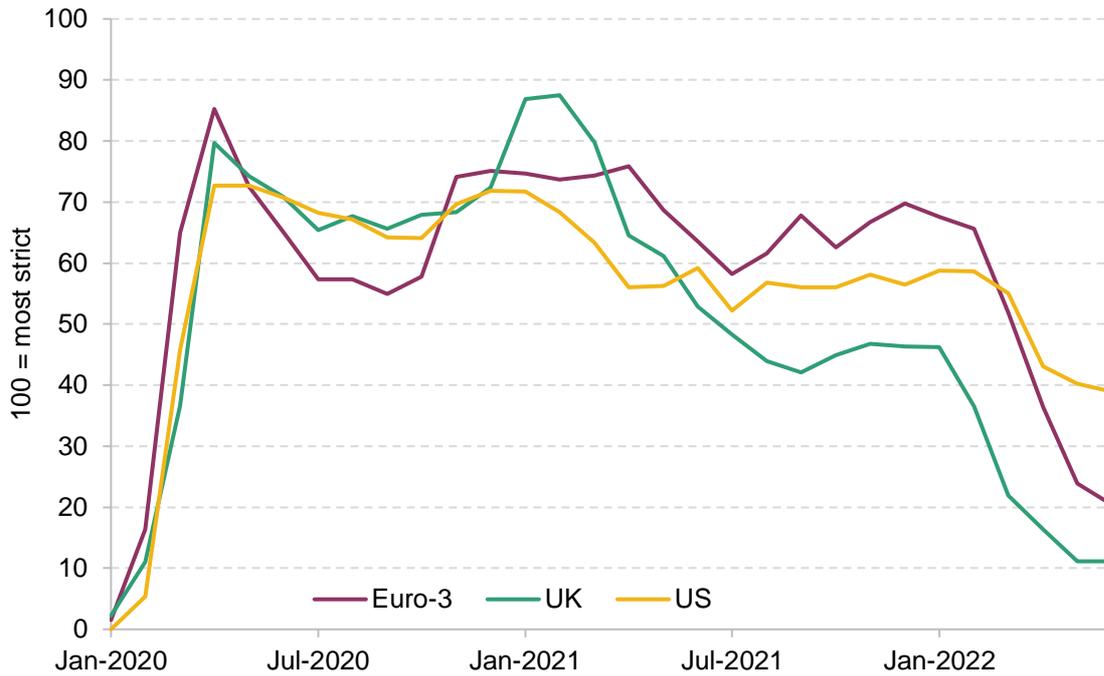
Improved health outcomes have allowed governments to phase out social distancing measures and travel restrictions. Oxford University's health restrictions stringency index has dropped sharply as the US, the UK and continental Europe reopened international travel, domestic hospitality and public transportation (see Figure 1.3). Meanwhile, the remaining restrictions – for example, face masks in public transportation or test or vaccination requirements in international travel – no longer do much harm to economic activity.

Figure 1.2. US, UK and Eurozone: deaths related to COVID-19



Source: Johns Hopkins and Citi Research.

Figure 1.3. US, UK and Euro-3: health restrictions



Note: Euro-3 = average of Germany, France and Italy.

Source: Johns Hopkins and Citi Research.

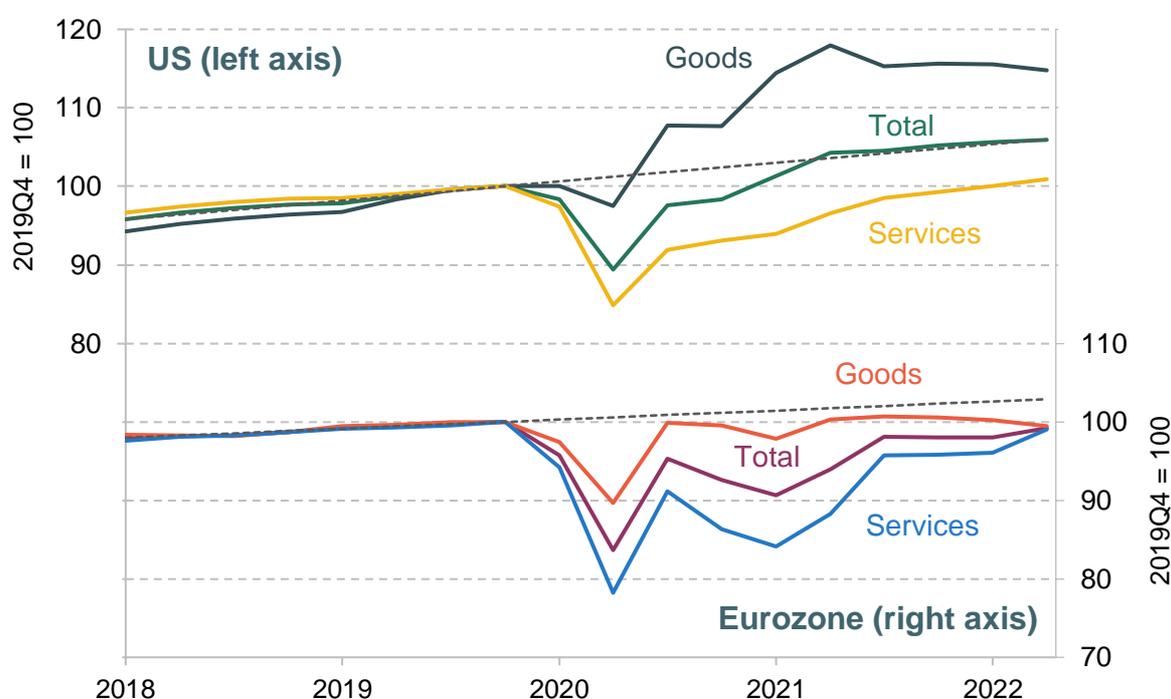
Figure 1.4. US, UK and Eurozone: Google mobility



Source: Google and Citi Research.

The lifting of restrictions, but also the much-reduced risk of serious illness, triggered a normalisation of households' work and leisure behaviour. Mobility data taken from Google Android phones suggest a rebound in activity across western economies. However, mobility data also point to potentially more-lasting shifts in economic behaviour. For example, while Android users in the UK, the US and continental Europe could be found grocery shopping and enjoying leisure activities in similar frequencies to those pre-pandemic, they were far less present at their workplaces or in transit to work, especially so in the US and the UK (see Figure 1.4). It may be that working from home has made an irreversible breakthrough during the pandemic, but this could of course also reflect other factors, such as fewer working hours for health reasons or due to increased parental care for children, for example.¹

Figure 1.5. US and Eurozone: real private consumption



Source: BEA, Eurostat and Citi Research.

Besides lasting changes to where we spend our time, economic data also suggest that how much and what we consume has not fully normalised (yet), especially in the US. In Europe, private consumption remains well below trend, but the mix of goods and services consumption has normalised to roughly the pre-pandemic half-and-half split. In the US, in contrast, the consumption-friendly fiscal stimulus during the pandemic pushed real private consumption back to its pre-pandemic trend much earlier. However, while goods consumption remains far above

¹ See, for example, Barrero, Bloom and Davis (2021) and Bloom, Han and Liang (2022).

the pre-pandemic trend (see Figure 1.5) even after the expiry of stimulus checks and beefed-up unemployment benefits, the share of services consumption has fallen from 65% pre-pandemic to 60% by the summer of 2022. Services consumption is no closer to trend than in Europe, suggesting the consumer rotation still has a long way to run.

Longer-lasting or even permanent changes in economic behaviour due to the pandemic may be one explanation why the US, EU and UK economies all remain somewhat off their pre-pandemic trend (see Figure 1.1), although temporary factors such as disrupted supply chains, a lack of investment or shifts in the labour force probably play a larger role.

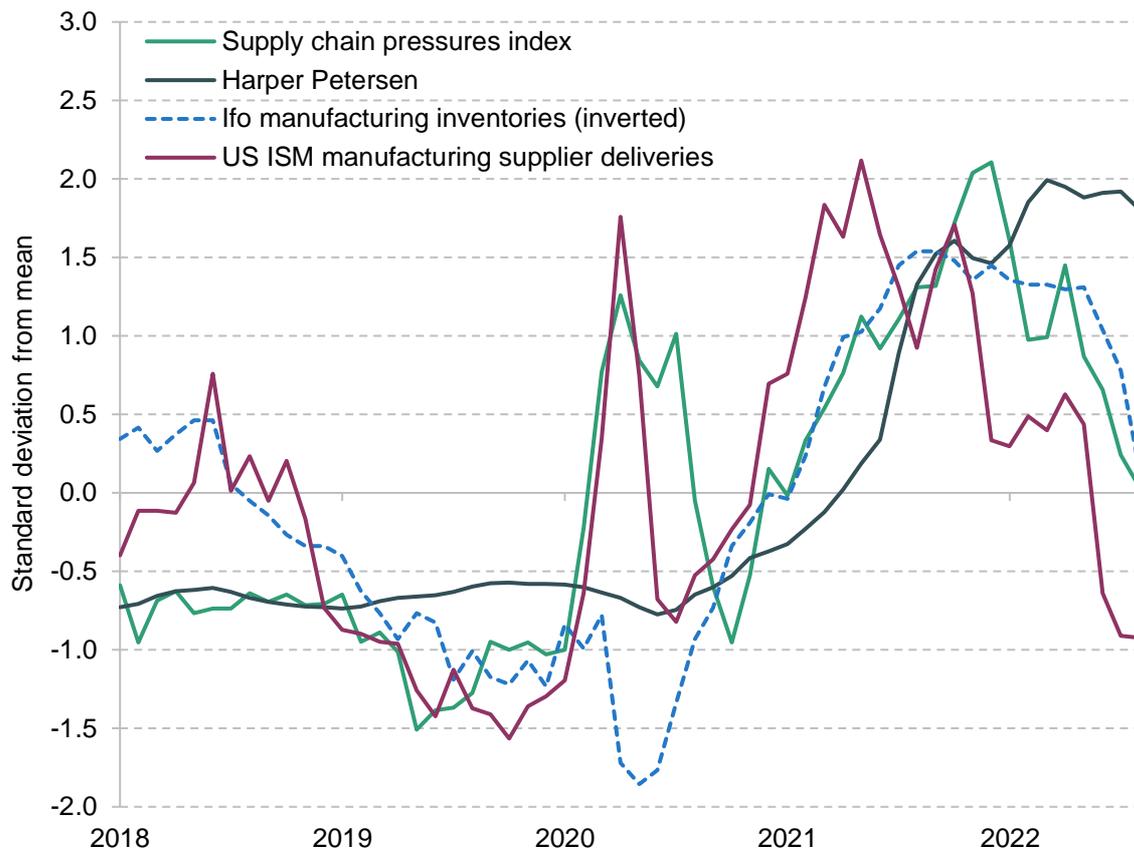
Which brings us to a topic which already took up plenty of last year's global outlook chapter in the Green Budget, namely supply chain disruption. Clearly, supply chain disruptions have proved more persistent than we expected last year. In part this is due to the impact of health restrictions in countries pursuing 'zero COVID strategies' such as China, which also happen to be the manufacturing hubs and thus goods suppliers of the world. In part it is also new disruptions triggered by the Ukraine conflict and high energy prices, which we discuss further below. For example, the Harper Petersen container ship charter rate index is still at the extraordinarily high levels it reached last year. In Europe, the energy crisis seems to be particularly holding back manufacturing production, with firms slowing production to save energy. The gap between manufacturing orders and production in Germany has hardly declined since last year (see Figure 1.6).

Figure 1.6. Germany: factory orders and industrial production



Source: Destatis and Citi Research.

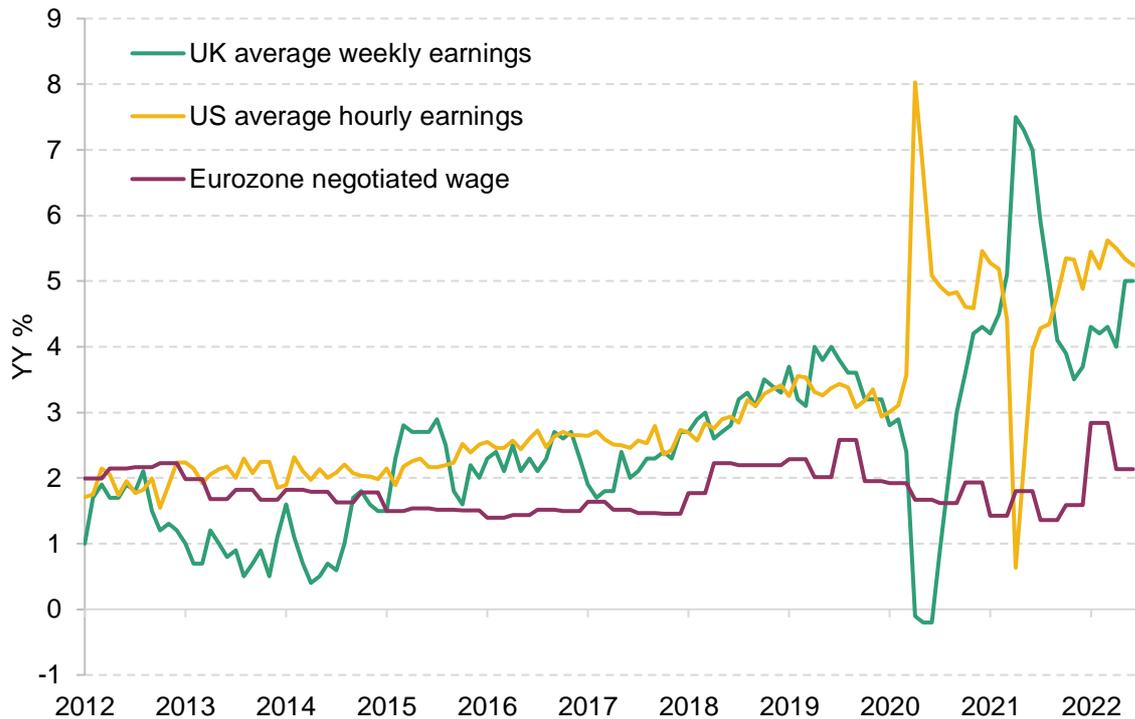
Figure 1.7. Global: supply chain disruption measures



Source: Harper Petersen, NY Fed, Ifo and Citi Research.

However, overall, there are significant signs that some supply chain pressures are easing, albeit not yet to pre-pandemic levels (Figure 1.7). Outside container shipping, freight prices have fallen sharply from their 2021 peaks. Manufacturers as well as traders are reporting shortening supplier lead times and growing inventories. In some industries, such as US discretionary retailers, even excess inventories are building up.

Part of the normalisation is probably also due to the aforementioned gradual rotation of consumer demand from goods back to services. That has meant that shortages have migrated from goods to the labour market. Unemployment rates have fallen to or below pre-pandemic levels, with the US unemployment rate in August 2022 at 3.7% (same as the 2019 average of 3.7%), the UK at 3.6% in July (down from 3.8% in 2019) and the Eurozone at 6.6% (down from 7.6%). Nominal wage growth has picked up sharply, at least in the UK and the US (see Figure 1.8).

Figure 1.8. US, UK and Eurozone: wage growth^a

^aThe opposite dynamics between the most common wage measures in the UK and the US reflect compositional effects. In the US, lower-paid workers were laid off during the pandemic, pushing up average hourly wages during the lockdown. In the UK, workers remained employed, but on reduced hours as they were furloughed.

Source: BEA, ONS, Eurostat and Citi Research.

However, labour shortages and wage pressures are not just driven by rebounding demand for services (see Figure 1.5). With GDP and thus aggregate demand still below pre-pandemic trend levels, a lack of labour supply has emerged, too, especially in the US and the UK. In those two economies, the labour force in 2022Q1 was still smaller than in 2019Q4 (Table 1.2). In the Eurozone, the labour force was 1% larger than before the pandemic but still smaller than pre-pandemic trends would have suggested. Among the reasons for the shrinkage in the pool of available workers are lower immigration and increased prevalence of early retirements (Citigroup, 2022). These should normalise – and potentially at an accelerated pace given the wage gains and heightened inflation – and ease tightness eventually as more people return to the labour force. In the UK, there is some evidence of this normalisation already (see Chapter 2).

Table 1.2. US, UK and Eurozone: overview of post-pandemic data

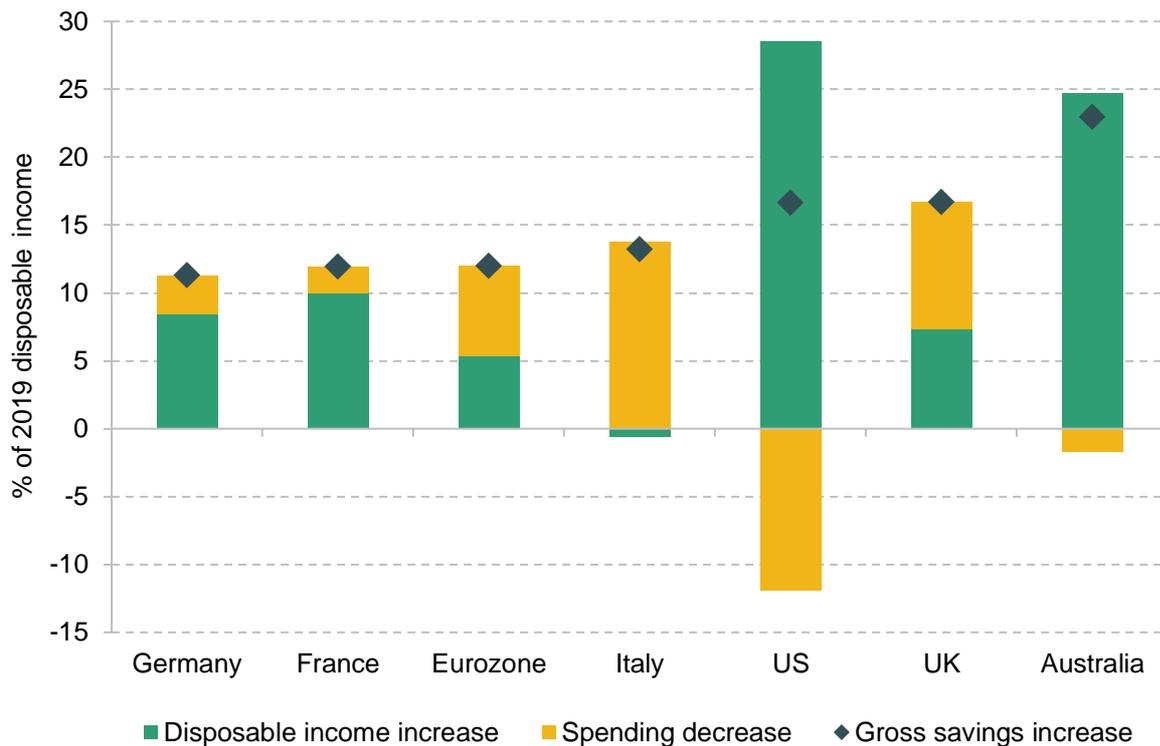
Percentage change during pandemic	US	Eurozone	UK
GDP (2022Q2 vs 2019Q4)	2.6	1.4	0.6
Private consumption (2022Q2 vs 2019Q4)	5.2	-1.7	-0.6
Investment (2022Q2 vs 2019Q4)	4.1	3.3	2.4
Employment (2022Q2 vs 2019Q4)	-0.2	1.3	-0.4
Labour force (2022Q1 vs 2019Q4)	-0.2	0.9	-0.4
Government deficit (2022 vs 2019, percentage points of GDP)	-1.0	3.7	2.1
Government debt (2022Q1 vs 2019Q4, percentage points of GDP)	18.8	11.7	15.8
Private non-financial sector loans (2022Q2 vs 2019Q4, percentage points of GDP)	6.3	7.7	-2.0
Household excess savings (2022Q2 as % of 2019 disposable income)	16.6	12.0	16.7
Central bank balance sheet (2022Q2 vs 2019Q4)	16.6	29.2	16.7
Money supply M2 (2022Q2 vs 2019Q4)	42.2	21.7	21.5
Core prices (2022Q2 vs 2019Q4)	10.2	5.6	8.1

Source: BEA, ONS, Eurostat, Federal Reserve, BoE, ECB, BIS and Citi Research.

Another consequence of the pandemic is the increase in public and, mostly, private debt. Governments borrowed to support the economy, firms borrowed to offset the shock to their incomes, households leveraged their savings to purchase larger homes for teleworking, for example. Non-financial private sector loans-to-GDP increased by 6.3 percentage points in the US and by 7.7ppt in the Eurozone between 2019Q4 and 2022Q2, for example, with around 2ppt in each case coming from households and the rest from corporates. Note that the UK is an outlier because debt in the corporate sector actually shrank by around 3% of GDP between 2019Q4 and 2022Q2.

Households overall still sit on their post-pandemic savings, accumulated because incomes rose and spending fell during the lockdowns. While in the US households clearly started to spend some of their savings as expenditure has risen substantially more above pre-pandemic levels than incomes, European households were still hanging on to pandemic-era excess savings worth around 12% of one year's disposable income by 2022Q2.

Figure 1.9. Selected economies: change in household gross savings



Note: Cumulative change in quarterly savings compared with the 2018–19 quarterly average, as a percentage of 2019 disposable household income.

Source: National statistical offices and Citi Research.

The rise in private debt is modest compared with the debt expansion on the government side. Appropriately, governments borrowed to help tide the economy over the lockdowns and health restrictions, funding furloughing programmes, guaranteeing bank loans, supporting household incomes, and of course also expanding healthcare and purchasing vaccines. On the IMF World Economic Outlook's methodology, the US general government deficit was 14.5% of GDP in 2020 and 10.7% of GDP in 2021. In the UK, deficits were not much smaller at 12.8% of GDP and 8.0% of GDP respectively, while in the Eurozone they were 7.2% of GDP and 5.5% of GDP. By coincidence, the order of magnitude of these deficits was almost identical to those in 2009 and 2010, in the aftermath of the global financial crisis. Now as then, continental Europe proved most frugal, which could be one of the reasons for the growth underperformance.

As a result, government debt ratios rose sharply, by 19% of GDP in the US (to 121% of GDP, Federal Reserve data) between 2019Q4 and 2022Q1, by 16% of GDP in the UK (to 100% of GDP, ONS data) and by 12% of GDP in the Eurozone (to 96% of GDP, Eurostat data). For the current year, the IMF in its July 2022 World Economic Outlook was predicting similar deficits for the US, the UK and the Eurozone of 4–5% of GDP, which would be an improvement of 1% of GDP compared with pre-pandemic levels for the US, but deteriorations of 2% of GDP for the

UK and 4% of GDP for the Eurozone, which had a nearly balanced budget before the pandemic. Given inflation is pushing up government revenue, but also expenditure – aggravated by the growing number of measures to support the economy with the energy crisis – these forecasts are obviously subject to major uncertainty.

These rises in government debt may not have been possible without the determined interventions of central banks, which acknowledged the interdependence of monetary and fiscal policy in delivering price stability in the circumstances. Large-scale bond purchase programmes inflated the balance sheets of the Federal Reserve and the Bank of England by 17% of GDP each between 2019Q4 and 2022Q2, and the ECB's by an even larger 29% of GDP. Monetary–fiscal coordination meant that, unlike during previous episodes of quantitative easing in the aftermath of the financial crisis, not just central bank balance sheets but also broader money supply rose, in the Eurozone and the UK by just over 20% between 2019Q4 and 2022Q2, and in the US by more than 40%.

This monetary–fiscal expansion, in combination with supply shortages, also drove up prices. Leaving aside volatile food and energy prices, where in our view idiosyncratic shifts in supply and demand dominated, the ranking of the rises in core prices in the US, the UK and the Eurozone between 2019Q4 and 2022Q2 by 4%, 3% and 2% annualised, respectively, mirrors the ranking of the fiscal and monetary expansions. Thus we would argue that the current bout of high inflation in the US is driven to a far greater degree by demand supported by aggressive policy action than in Europe.

1.3 Geopolitics returns with a vengeance

Russia's invasion of Ukraine has caused a shock to Europe's energy supply, confidence and trade. Geopolitical tensions and events are always a source of macroeconomic risk, which often transmit via commodity prices. The current crisis reinforces the trend to shorter, more resilient, supply chains and more diversified, less external-dependent energy generation. Governments are supporting households and business with the adjustment. However, weaning western economies off Russian energy and possibly Chinese technology will likely cause a deep recession in the near term. The recovery should be protracted with volatile, but on average potentially sub-par, growth and equally volatile, likely higher, inflation.

The consequences of Russia's invasion of Ukraine

Geopolitical events can affect global macroeconomic forecasts both via supply-side effects (such as less certain supply of commodities or disruptions to supply chains) and via demand-side effects (such as export sanctions or increased uncertainty weighing on investment and consumption). However, usually these effects are temporary. The impact often fades as global

news headlines move to the next story, even if the underlying conflict is not resolved. This was true, for example, of the annexation of Crimea in 2014. Economic sentiment was temporarily dented, and trade relations between Russia and the West changed permanently, but since overall Russia is a relatively small trade partner for the EU, the UK or the US, it is hard to argue that there was a permanent shift in Europe's economic potential.

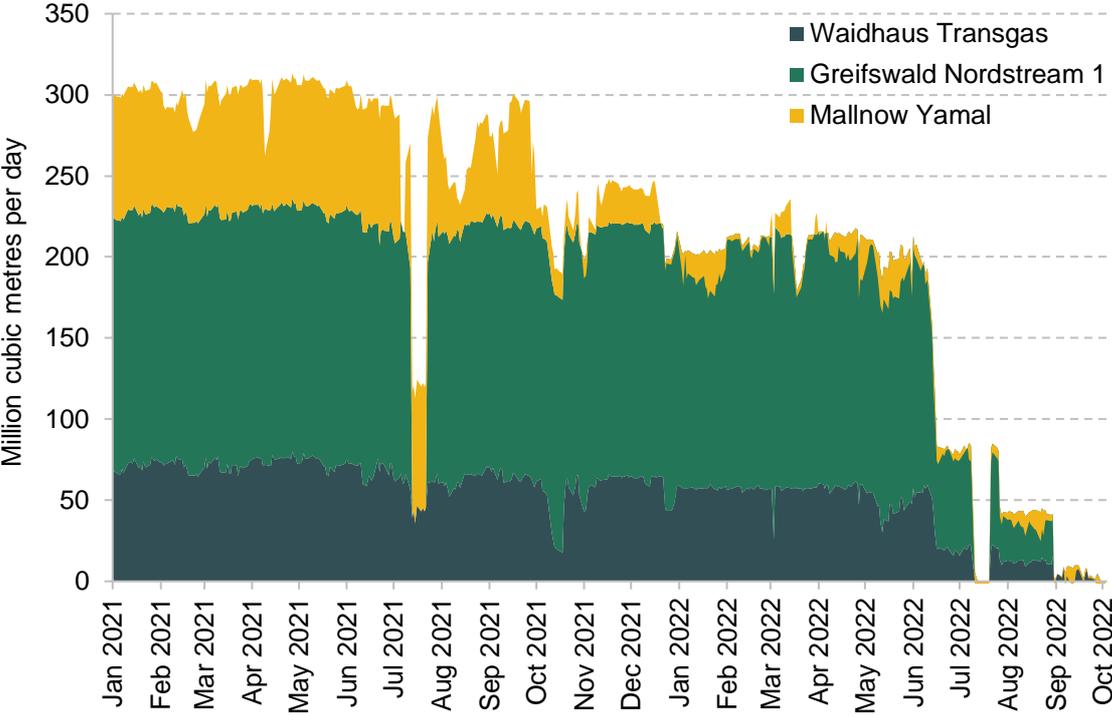
The current conflict in Ukraine and the western response to it are on a different scale from 2014. Even if we cannot rule out that it will eventually fade from the headlines – or even cool down on the ground – in the next few years the impact on the European and global economy is likely to be much larger and longer-lasting. While the shock to business and consumer confidence and the impact of sanctions on trade certainly play a role, the main long-term impact is the change in Europe's energy mix it is forcing.

Europe faces a major challenge in reducing its dependence on its hitherto largest supplier of fossil fuels. In 2021, Russia supplied 40% of the EU's natural gas, 46% of its coal and 27% of its oil, according to EU Commission data (and supplied the UK 4%, 27% and 9%, respectively (Bolton, 2022)). Even though the share of fossil fuels in electricity generation in the EU has fallen from 49% in 2010 to 36% in 2020 according to Eurostat, the overall share of fossil fuels in energy remains much higher. As most of transport and home heating, for example, is still fossil-based, the share of fossil fuels in EU gross available energy fell from 80% in 2000 to 71% in 2019, and from 89% to 80% in the UK.

The war in Ukraine has now undermined the reliability of energy supply from Russia. The EU, the UK and the US have imposed sanctions on Russian oil and coal exports, while Russia has reduced – and by now virtually ended – its gas exports through the Nordstream 1, Yamal and Transgas pipelines to Europe (see Figure 1.10). Even if the conflict were to fade or end, it is highly unlikely that Europe will want to rely on Russian energy again for more than it can replace at short notice.

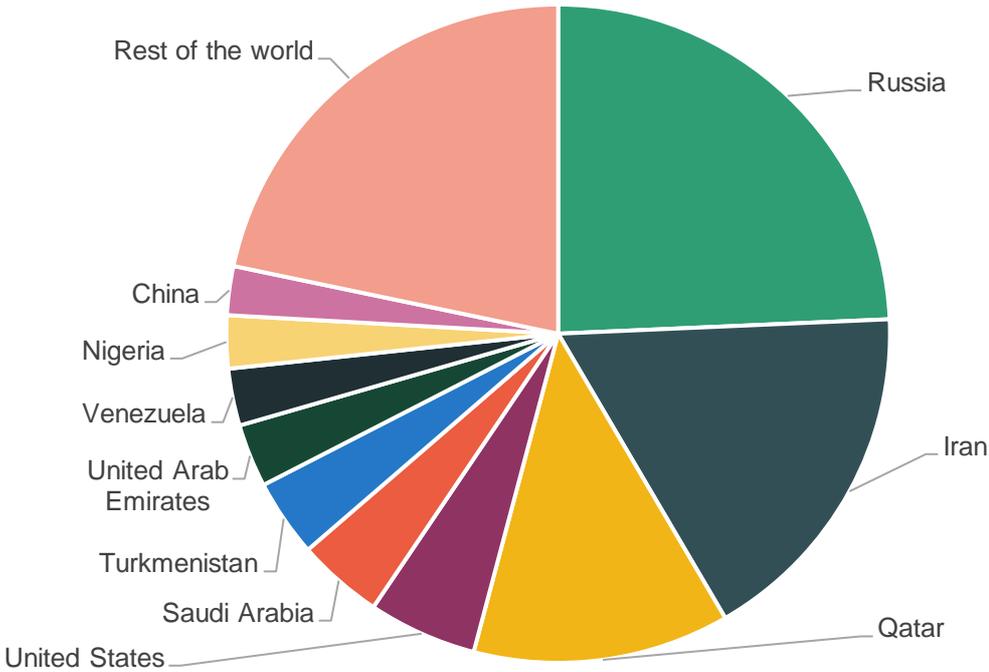
In principle, Europe should be able to wean itself off parts of Russian energy supply fairly easily. Coal and oil are mostly transported by ship or rail and can be rerouted around the world fairly flexibly. Thus, the EU was able to ban direct imports from Russia in August 2022 and buy from other producers instead, while Russia can replace the missing supply in countries that have not sanctioned Russian exports, such as China and India. Thus, global trade flows for crude oil or coal will probably look different, but without a major and lasting impact on price differences between Europe and the rest of the world.

Figure 1.10. Germany: pipeline gas inflow from Russia



Source: Bloomberg and Citi Research.

Figure 1.11. World: share of natural gas reserves

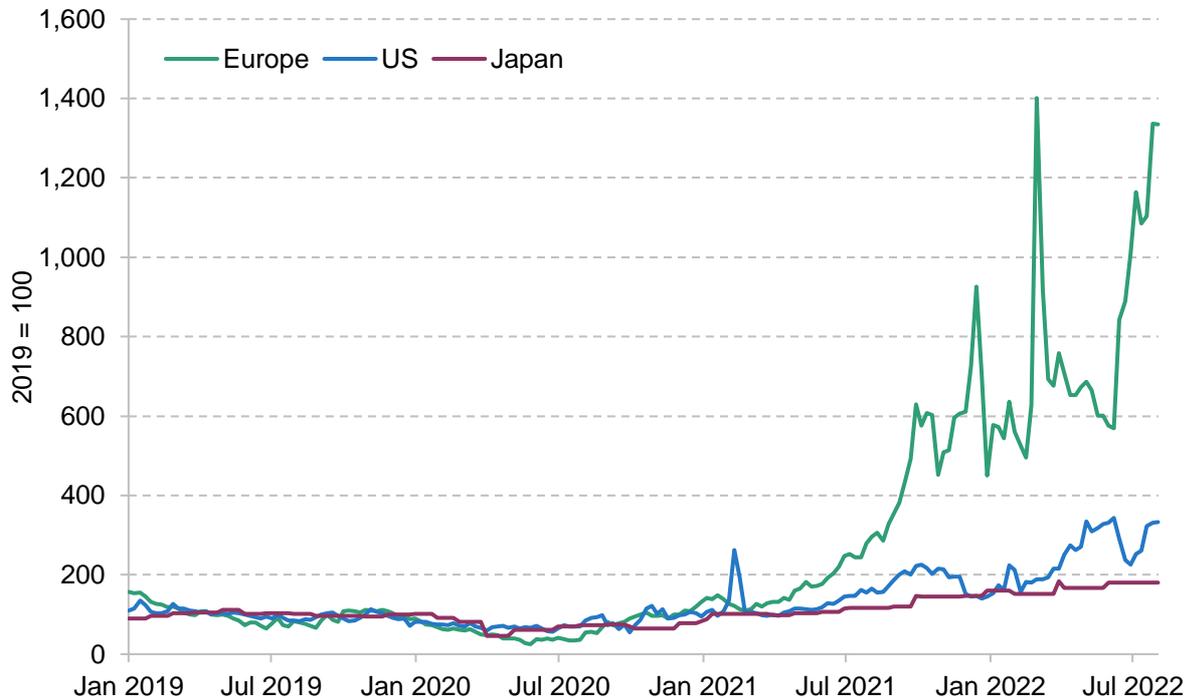


Source: WorldoMeter and Citi Research.

Natural gas, in contrast, is transported from Western Russian fields to Western Europe via thousands of kilometres of pipelines. Pipeline gas also arrives in Europe from other producers such as Norway, Algeria and Azerbaijan, but these are comparatively small. While Russia accounts for 24% of global gas reserves, Europe's other pipeline suppliers' reserves account for less than 5% combined (Figure 1.11). Most other large gas suppliers are out of viable reach for pipelines, either because of distance or the volatility of the regions they would pass through. As a result, Europe will have to either reduce its consumption of gas or switch a greater share of supply to liquefied natural gas (LNG) transported by ship.

The switch from cheap Russian pipeline gas to LNG will require major investments into infrastructure, both terminals and new pipelines. It will also likely be permanently more expensive. Wholesale gas prices in Japan, which relies entirely on LNG, have on average been 30% higher than in Europe before the pandemic. However, a 30% higher gas price in Europe compared with 2019 would mean a price of around €18 per MWh, which would still be 90% lower than at the moment. This could be the scenario for 2024, when Germany, the most Russia-dependent gas consumer, expects – at the earliest – to be independent of Russian gas, according to its economy ministry.

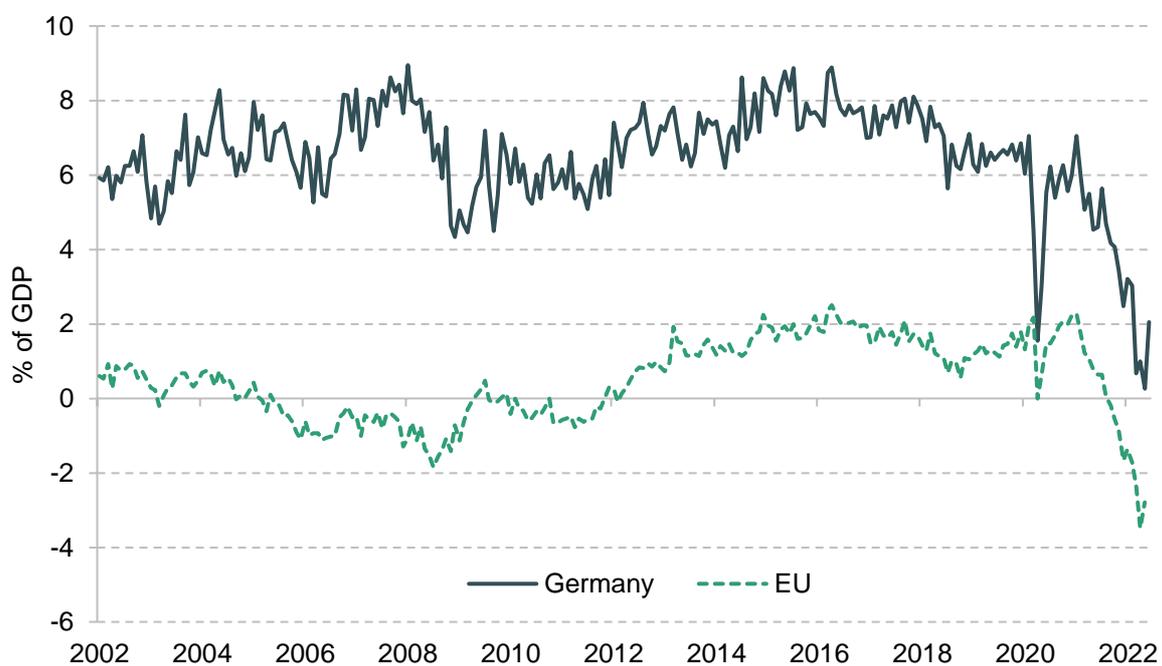
Figure 1.12. Europe, US and Japan: wholesale natural gas prices



Source: Bloomberg and Citi Research.

In the meantime, gas will remain in short supply in Europe, with potentially devastating effects. The price of gas per MWh on the benchmark TTF exchange in the Netherlands has risen from an average of €14.55 in 2019 to around €300 this summer. If all natural gas was purchased at the spot prices of late August, then the cost of the 2019 level of natural gas consumption in the EU would have risen from €62 billion (0.4% of GDP) in 2019 to €1.2 trillion (8.4% of GDP) in 2022. While clearly not all gas is paid at spot prices due to long-term contracts (and a price rise of this magnitude would lead to lower demand), the shift in European trade balances (see Figure 1.13) confirms the order of magnitude of the shock, at least in combination with other commodity price and foreign exchange shifts.

Figure 1.13. EU and Germany: goods trade balance



Source: Eurostat, Bundesbank and Citi Research.

Besides being a drag on the domestic economy, high gas prices also affect Europe's competitiveness in global markets. While in Europe natural gas prices have risen more than tenfold, the US benchmark gas price Henry Hub has risen around threefold since 2019, and in Japan LNG prices have merely doubled in the same period. Partly as a result, energy producer prices have risen far less in the US or Japan than in Europe (see Figure 1.12). This means manufacturers are unable to pass on the cost to their global customers and have to take the hit in their margins. Energy-intensive manufacturers are likely to shut down or move production to places with cheaper energy. A July survey of 3,500 firms by the German chamber of commerce found that 4% of firms had already reduced production due to high energy prices, another 4% had started doing so and 8% were planning reductions. In energy-intensive areas such as steel, glass and paper, 32% of firms were considering reductions or had already done so.

Finally, the gas crisis – alongside idiosyncratic problems – is also affecting the European electricity market, because under merit order pricing, the most expensive electricity producers (currently often gas) determine the electricity price for all. Year-ahead wholesale electricity prices in France and Germany rose from around €40/MWh in 2020 to above €1,000 in August 2022. In this way, higher gas prices, which directly affect 2–3% of household consumption (measured by the weight in the HICP basket²), also affect electricity prices (another 2–3%). Unlike in the case of gas, the beneficiaries here are not foreign gas producers, but the domestic coal, nuclear or renewables energy firms (and the taxpayer who can tax them). This creates a distributional problem which several governments and the EU, for example, are currently trying to resolve. Countries such as Italy have already imposed windfall taxes, while the EU and Germany are proposing a levy on the electricity producers with low production costs. The EU estimates that capping the wholesale price for these producers at €200/MWh (compared with more than €400/MWh in current wholesale markets) would generate a revenue of €140 billion (1% of GDP) which could then be used to fund investment in new energy sources or alleviate the burden on poorer households or critical firms.

What is next in geopolitics?

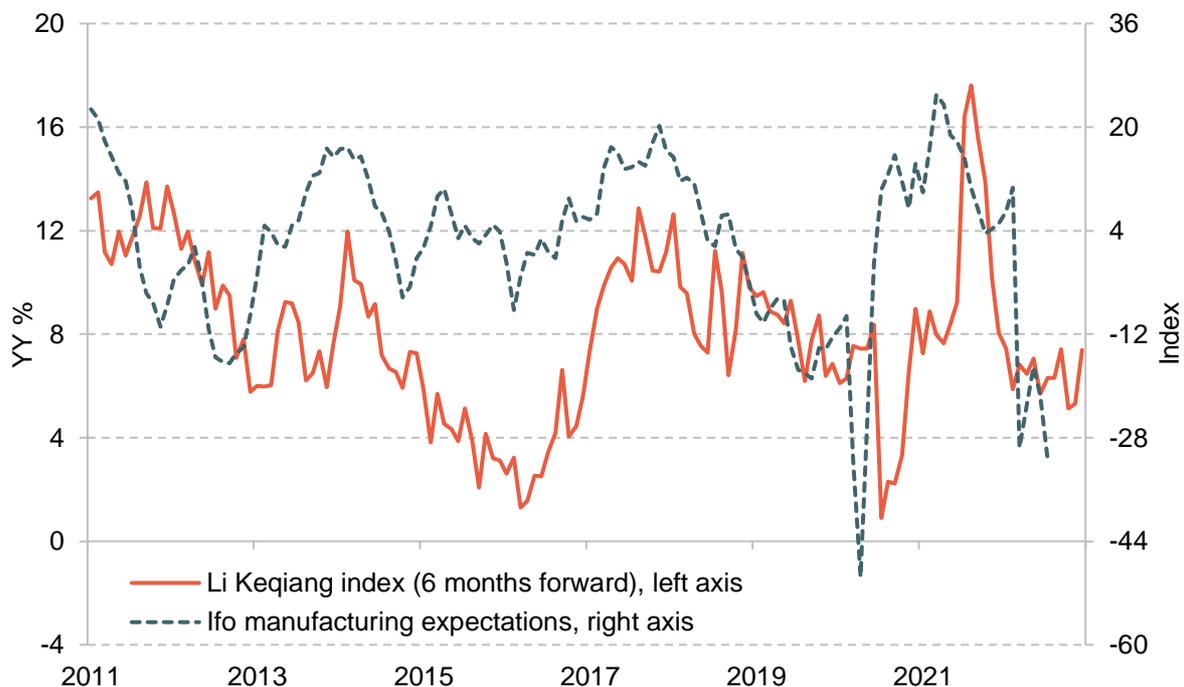
With Russian gas exports to Europe already down to virtually zero, the scope for further macroeconomically relevant escalation may seem small. However, relations between the West and Russia are by no means the only source of macroeconomically relevant risk. Relations between the West and China are also increasingly fraught. The US trade wars against China under the Trump administration in 2017–19 may have been dismissed as idiosyncratic. At the time, Europe still pursued its strategy of ‘Wandel durch Handel’ (change through trade), culminating in the EU–China Comprehensive Agreement on Investment (CAI) in late 2020 under Germany’s EU presidency led by then Chancellor Angela Merkel. However, the US’s China strategy has persisted under the Biden administration, while in Europe Merkel’s departure, as well as the exposure of its reliance on China during the pandemic and China’s unclear role in the conflict with Russia, are leading to a shift in stance. The CAI is ‘on ice’, the criticism of China’s human rights records much more vocal and the agenda of ‘strategic sovereignty’ much more in focus. For example, the EU Commission announced a €300 billion ‘Global Gateway’ infrastructure programme in December 2021 to rival China’s Belt and Road strategy.

² HICP (Harmonised Index of Consumer Prices) weights have been updated to 2021 consumption patterns, but not to 2022 yet. It is likely that the share of energy expenditure in private consumption has risen sharply with the price increases.

Deteriorating relations between the West and China could have significant consequences for both the supply and demand side.

- On the supply side, Europe received 22% of its goods imports from China in 2021, including 77% of its toys imports, 50% of its consumer electronics imports and 40% of its nuclear technology imports. Chances are that it will take at least as long to wean Europe off Chinese technology imports as it does to reduce the reliance on Russian gas. Whether this will also be accompanied by similar price hikes will largely depend on whether China will continue to supply in the meantime.
- On the demand side, 10% of Europe's goods exports go to China. The average annual growth rate over the past decade of goods exports to China was 6% per year, nearly three times that of overall goods exports. The prospect of participating in Chinese demand growth has not just driven investment by western firms in China but also their domestic investment. Chinese growth has been a useful leading indicator of German manufacturing sentiment, which in turn leads business investment over the past decade or so (see Figure 1.14). Greater tensions with China may thus also lower investment in Europe and the US.

Figure 1.14. Germany and China: Li Keqiang index (YY %) and Ifo manufacturing expectations (index)



Note: The Li Keqiang index is the average growth rate of loans, electricity consumption and railway freight volumes in China. Germany's Ifo survey polls around 9,000 German firms monthly on the current state and prospects for their business.

Source: Bloomberg, Ifo and Citi Research.

In sum, Russia's war in Ukraine may have accelerated a process of disentangling global supply chains as industrialised economies try to improve the resilience of their supply chains. This will require large-scale private and public investment, not to raise capacity and economic potential but simply to maintain it. Improved resilience will likely come at the cost of a permanent reduction in economic potential. During the adjustment, this process could create more temporary shortages and higher prices, weighing on consumption. That investment will be strong in these circumstances is not a given, and certainly not in all parts of the world.

1.4 How will inflation come down?

Inflation in Europe is largely caused by a huge terms-of-trade shock, and could correct itself. In the US, inflation is driven by demand and a wage–price spiral which the Fed will have to break sooner or later. We already forecast both the US and Europe to fall into recession, and a global recession looks increasingly likely.

We currently expect global inflation to average 7.1% in 2022, 5.7% in 2023 and 3.5% in 2024 before converging with the long-run average of 3% in 2025. The series of supply shocks economies are experiencing means that the current spike in inflation is not transitory and will not pass without consequence: we think inflation will fall back, but the price level will not. The decline we expect over the coming years is to a large extent driven by base effects and rebounding supply, but partly also by demand developments. Slower growth and reopening output gaps but also higher central bank interest rates should curb consumer and business spending and constrain governments' room for discretionary spending. We cannot rule out temporary bouts of low inflation in the coming years due to volatile energy prices or temporary gluts in tradable goods, but other drivers of inflation such as food and services prices are likely to take over the baton. The risks around the future path of inflation are high, in both directions. Here are some of the drivers we see behind falling inflation rates, but also what could go wrong:

Table 1.3. Eurozone: Citi commodity price forecasts, 21 September 2022

Commodities (\$/unit)	2020	2021	2022E	2023E
ICE Brent	43	70	99	75
NYMEX WTI	39	67	95	72
Henry Hub Natural Gas	2.1	3.7	5.8	6.8
LME Zinc	2265	3002	3680	3525

Source: Bloomberg and Citi Research.

- **Stabilising, perhaps falling energy prices.** Nearly half of global consumer price inflation is currently driven directly by energy, a third in the US and half in the Eurozone and the UK. Rebounding demand for travel and transport services as well as goods production plays a role in this, but the key driver is on the supply side, most notably the Ukraine conflict as discussed above. It is clearly possible that energy prices rise further, but even if they do, the rates of change are likely to slow. Market futures and Citi's own commodity price forecasts (see Table 1.3) suggest falling energy inflation rates, perhaps even turning significantly negative. This effect on consumer price indices (CPIs) may be aggravated by the fact that statistical offices could raise the weight of energy in CPIs globally, giving falling inflation rates for electricity, gas and oil bigger weights in CPIs. Energy inflation is also partly behind the spike in other parts of consumer price inflation, in particular food but also goods and services prices. With a lag, the rates of price changes in these sectors should also slow. Clearly, these other categories have their own idiosyncratic supply issues.
- **Normalising food supply.** Food price inflation is also driven by fears over global food supply in the wake of the Ukraine crisis as well as Europe's drought, for example. Pass-through from food commodity prices to consumer food prices is typically somewhat slower than in the energy sector, which means global food inflation may not have spiked yet. However, rising prices are likely to elicit both a reduction in demand and an increase in supply, and therefore bring falling inflation rates – perhaps even falling prices.
- **Unwinding of post-pandemic distortions.** As we noted above, some of the supply disruptions caused by the pandemic are starting to unwind, while others continue. There are good reasons to expect non-energy industrial goods inflation to remain high for some time, but overall the trend should be towards lower global inflation rates here. In the services sector, it may take considerably longer for inflation to normalise given some of the post-pandemic distortions may take longer to fix or have not even fully played out yet. However, we do expect high prices to cool the demand for travel and transport services, for example, while strong wage growth and easing health restrictions should entice more workers back into the labour market, alongside resuming international migration. Increasing labour supply should weigh on wage demands and thus ultimately wage growth.
- **Government interventions.** Multiple EU governments have been trying to help households by subsidising energy consumption. In France, electricity price increases are capped at 4% compared with 2021 until the end of 2022 and gas prices at the October 2021 levels (although both will be raised in 2023). In Germany, the government has phased out a renewables fee on electricity which was 20% of the electricity price in 2021. France and Germany have also temporarily reduced indirect taxes on motor vehicle fuels, and Germany introduced a very cheap temporary train ticket, which reduced the price of combined public transportation tickets by two-thirds in June. Italy reduced network fees and taxes on electricity, while in Spain and Portugal governments ended the benchmarking of electricity prices to the costliest input (currently gas). Adding up the measures, they have reduced inflation rates across Europe by around 3ppt already (see Table 1.4) and more measures are

being planned. Clearly, such interventions are not without risk. In economies where gas and electricity are actually scarce, such as Germany or France, the risk is that they lead to blackouts. And where gas and electricity are not scarce directly, such as in Iberia, the interventions risk distorting the single market. Overall, they will raise aggregate demand for energy further and thus ultimately raise, rather than lower, the aggregate cost of energy while preventing adjustment to the long-term challenges on the energy demand as well as supply sides.

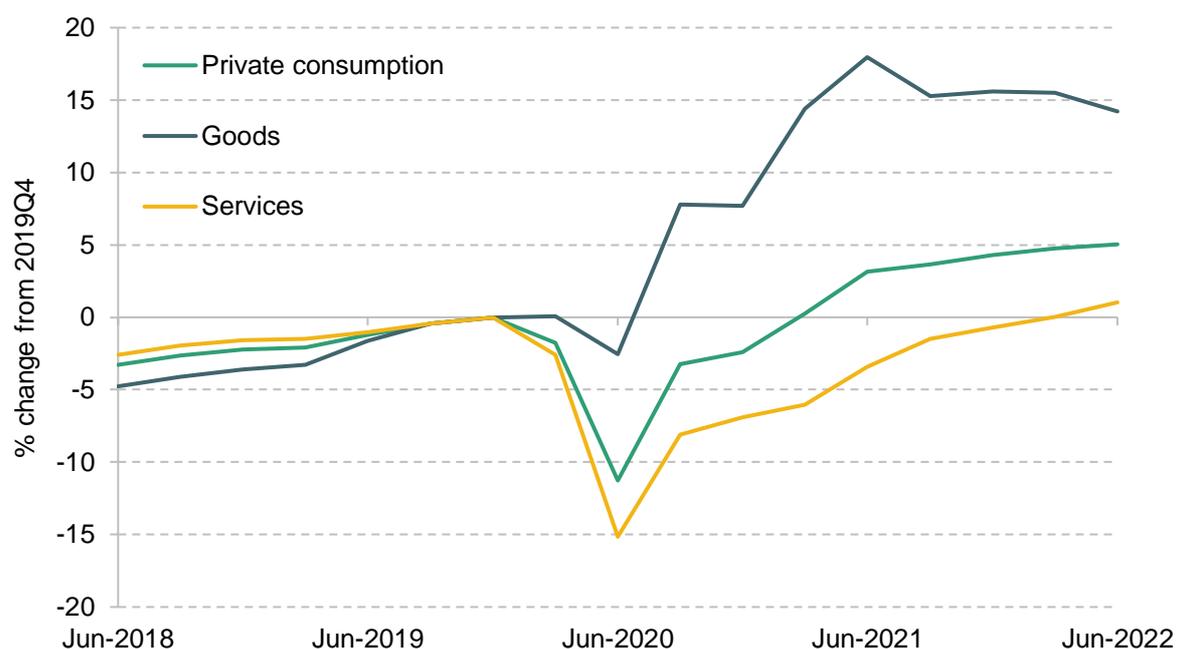
Table 1.4. Eurozone: energy crisis government interventions' impact on inflation

Intervention on taxes / other charges on final energy prices	Estimated peak impact on HICP	When in place
Germany		
100% cut in electricity duty (EEG)	-0.59%	Fully from Jul 2022
-23c on car fuel duties	-0.59%	Jun-Aug 2022
9-euro train ticket	-0.76%	Jun-Aug 2022
2.42c/kWh gas fee offset by cut in VAT from 19% to 7%	0.16%	From Oct 2022
Price cap on basic electricity needs	-0.44%	From Jan 2023
Delay of carbon price increase	-0.10%	From Jan 2023
France		
4% electricity price cap, lower electricity taxes	-0.68%	Since Oct 2021
Regulated gas price capped at Oct 2021 level until Dec 2022	-1.50%	Since Oct 2021
-18c petrol duties Apr-Aug, -30c in Sep-Oct and -10c in Nov-Dec 2022	-0.64%	Apr-Dec 2022
Italy		
Gas VAT at 5%, lower duties and charges, subsidies	-2.33%	Since Jul 2021
-25c petrol duties	-0.79%	Apr-Sep 2022
Spain		
Electricity VAT at 10%, gas price cap at +4.4%, subsidies	-2.54%	Since Jul 2021
-20c petrol duties	-0.74%	Apr-Dec 2022

Note: The Harmonised Index of Consumer Prices (HICP) provides comparable consumer price data across the EU.

Source: Citi Research.

Figure 1.15. US: real private consumption



Source: BEA and Citi Research.

It would be misleading to think that inflation is driven solely by the vagaries of geopolitics and the pandemic, and will thus fade once these pass. Demand has been robust enough to allow companies to pass on much of their cost increases to end customers as well. At least in the US, goods demand has been running 10% above its pre-pandemic trend for the last two years. With US non-energy industrial goods inflation running into double digits already in 2021, when in Europe it was still only 2%, this is arguably a sign of excess demand (see Figure 1.15).

Even outside the US, labour markets are tight in many regions of the world despite economies remaining far off their pre-pandemic growth paths. Even if this tightness may prove temporary, it is helping workers to achieve significant wage gains which could also sustain demand (see Figure 1.8) going forward. A low risk of unemployment should also support household confidence and reduce the need for precautionary saving.

We do not expect the demand side to contribute to high inflation for long, however. Especially in Europe, where inflation is almost entirely driven by exogenous shocks so far, inflation is most likely to remain self-correcting. The extreme terms-of-trade shock acts in a similar way to a big tax on the economy, which reduces household real incomes and thus spending, as we discussed above. Even in the US, real incomes are falling and consumer confidence indicators are very low. In addition, the asymmetric energy price shock diminishes competitiveness and thus Europe's ability to benefit from demand elsewhere. Companies could increasingly struggle to pass on higher costs to their customers and thus have to reduce their margins. Lower profits could mean less investment.

1.5 Monetary policy

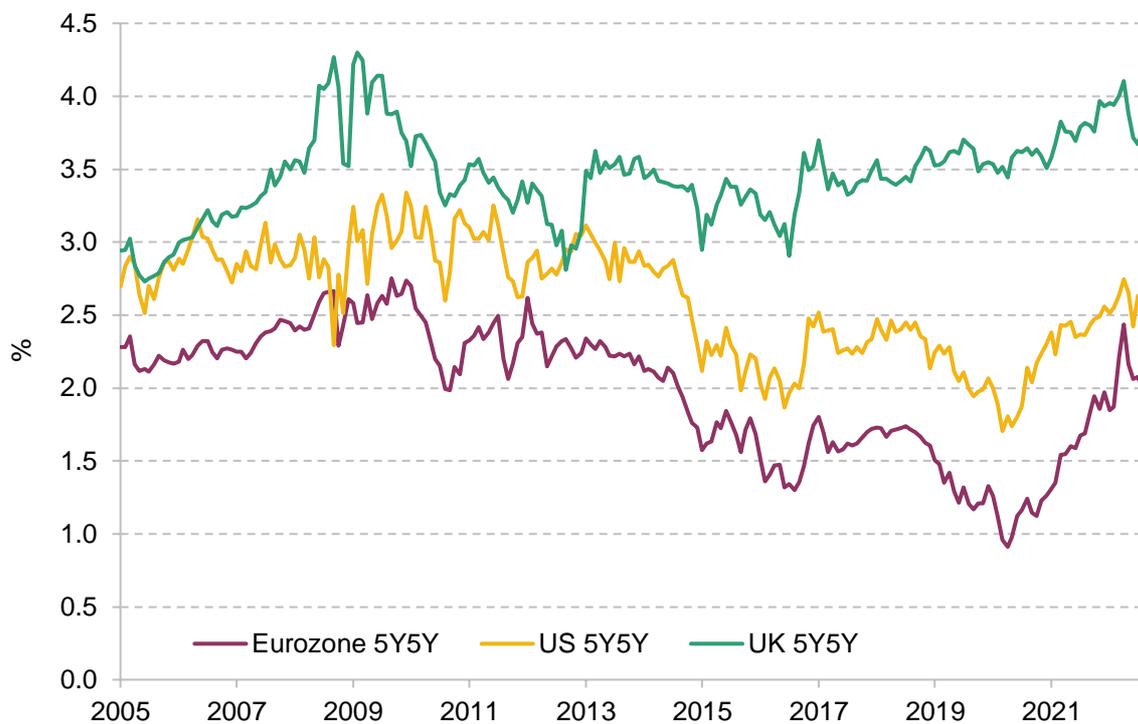
Whatever excess demand is left is likely to be quashed by central banks sooner or later. Already at the time of writing, the Bank of England has raised its policy rate by 215bp to 2.25%, the ECB by 125bp to 0.75% and the Fed by 325bp to 3.00–3.25%. All three have recently stepped up the pace to 50–75bp hikes per meeting. We currently expect the BoE to hike policy rates to 4.25% (a further rise of 200bp), the ECB to 2% (125bp) and the Fed to nearly 5% (150bp) by early 2023. In addition, the BoE and the Fed have started unwinding the asset purchases they have accumulated during the pandemic, exerting upward pressure on longer-term borrowing costs as well.

Even before central banks actually started tightening monetary policy, market interest rates rose sharply in anticipation. Between the start of 2022 and the middle of June when the Fed starting hiking in earnest, US 10-year Treasury yields had risen by 200bp from 1.5% to 3.5%, German 10-year Bund yields from –0.2% to +1.7% and UK 10-year Gilt yields from 1.0% to 2.5%. Riskier government bonds such as Italy saw yields rise even more (+300bp to 4.2%). Corporate bond yields also widened, and bank lending surveys show that banks have tightened credit standards as well.

From the middle of June to early August, financial markets recalibrated expectations somewhat due to the growing risk of recession, highlighting that central banks were not expected to let inflation deviate from target for long. As a result, market inflation expectations remained firmly anchored to central bank targets, although they have clearly moved up from the well-below-target levels of 2021 or even before the pandemic (see Figure 1.16). Since early August, long-term interest rates have risen again, with 10-year yields in the US by late September at 4%, in Germany a bit above 2%, and in the UK with the biggest jump nearly at 4.5%.

While volatile, market inflation expectations have so far not moved significantly beyond central bank targets, so there is no reason for central banks to go beyond what is strictly necessary to rebalance demand and supply, at least in the US and the Eurozone. However, as well as the market expectations shown above, central bankers will also have an eye on household inflation expectations, which are somewhat harder to measure and more difficult to contain once out of kilter. Here the picture is somewhat less reassuring. In the US, longer-term household inflation expectations on the University of Michigan's measure have moved up, but not beyond the pre-2014 range. In the UK, longer-term inflation expectations on the Citi/YouGov measure have risen to record levels (as measured over the period since 2005) but have eased in recent months. Finally in the Eurozone, there is no survey of households' longer-term inflation expectations that goes far enough back in time, but the ECB's Consumer Expectations Survey, which has run since 2020, shows inflation expectations for three years ahead also rising.

Figure 1.16. US, UK and Eurozone: implied market expectation of annual inflation over the five years starting in five years' time (CPI in US and Eurozone; RPI in UK)



Note: Market expectations for annual CPI inflation over five years in five years (UK RPI, which is usually around 80–100bp higher).

Source: Bloomberg and Citi Research.

1.6 Fiscal policy

Governments are not sitting idly by amidst the mix of rising prices and falling growth. The number and size of fiscal and economic policy measures deployed to protect households and firms from high energy costs or at least support their real incomes are growing almost too rapidly to keep track of (see Table 1.5 for an attempt). All are also trying to secure and grow the supply of energy in order to bring down prices, although this is harder to do swiftly. The former sustains demand and thus increases inflation. The latter also creates demand directly because it triggers investment – for example, into renewable energy generation or LNG terminals. However, over time it creates new supply and thus lowers prices.

Table 1.5. Eurozone: overview of energy crisis fiscal interventions

Economy	Amount (€ bn)	Description	% of GDP
Germany	133	<ul style="list-style-type: none"> • Nov 2021: 40% reduction in renewable fees (€4bn) • Mar 2022, first package (€16bn): included abolition of renewable energy fee €6.6bn • May 2022, second package (€24bn): included energy one-off payment €10.4bn, children's bonus €9bn, temporary 23c/l vehicle fuel tax cut €3.15bn, 9-euro train ticket €2.5bn • Jul 2022: €9bn bail-out fund for gas traders since grown to €20bn (funded by gas fee and VAT cut), €2bn fund to help energy-intensive companies • Sep 2022, third package (€65bn): included payments to households and pensioners, price cap on basic energy needs, €10bn income tax cut (raising of thresholds) 	3.7
France	98.8	<ul style="list-style-type: none"> • End 2021: €100 one-off payment to 38 million people; regulated gas price capped at Oct 2021 level; 2022 increase in retail electricity price capped at 4% (through cut in electricity tax and forced increase in discount electricity sales of state utility to competitors) • Mar 2022: temporary 15c/l fuel tax rebate (18c incl. VAT) from April to July; subsidies to energy-intensive firms • Jul 2022: new package of €20bn, including extending the cap on gas and electricity retail prices to end-2022, fuel rebate of 30c incl. VAT in Sep–Oct and 10c incl. VAT in Nov–Dec 2022, a one-off payment to low-income households (€100 plus €50 per child), a 4% increase in pensions and social benefits, and a 3.5% increase in civil servants' wages • Sep 2022: €45bn announced for 2023 to cap electricity price hike to 15%; in addition, €1.8bn for households 	4.0

Economy	Amount (€ bn)	Description	% of GDP
Italy	58	<ul style="list-style-type: none"> • Network charges / excise duties / VAT cuts on electricity and gas bills: from 55% (in 2021Q1) to 20% of final electricity price, from 64% to 8% for final gas price • €200 one-off bonus to low- to middle-income households; subsidised energy bills for low-income households; 25–28% tax credits for energy-intensive businesses/hauliers against gas/fuel costs • –30c/l on car fuel duties in Apr–Sep 2022 • Increased budgeted spending on public procurements due to higher raw material prices • Any contractual clause that allows retail electricity and gas tariffs in the non-regulated market to be modified will be suspended between Aug 2022 and Apr 2023 • Total costs since Jul 2021: €44bn (of which roughly 50% to support households and 50% for businesses); €10.5bn financed by extra taxes on energy producers; mostly via revenues windfall thanks to higher inflation • Sep 2022: €14bn package for firms 	3.3
Spain	26	<ul style="list-style-type: none"> • Jul 2021: VAT cut on electricity bills from 21% to 10% (until Jun 2022) and 5% since Jul 2022; temporary suspension of 7% generation tax; excise duty on electricity bills cut from 5% to 0.5% • Sep 2021: cap on gas price reviews (4.4% maximum) for customers under the regulated tariff (TUIR) • Oct 2021: energy bonuses for low-income households • Mar 2022: support to energy-intensive businesses (transport, food, energy-intensive manufacturers) • Apr 2022: vehicle fuel excise duties cut by 20c/l until Sep 2022 • Jun 2022: cap on gas price used in wholesale auctions for electricity 	2.2
Rest of Eurozone	113	Extrapolated from largest four economies	3.5
Total	428	-	3.5

Note: Measures as of end September 2022.

Source: Local media, Bloomberg, Reuters and Citi Research.

The tools being used by governments across the EU differ widely, but the amounts deployed are so far strikingly similar (see Table 1.5). A key focus has been attempts to bring down energy costs for households (see Section 1.4) – for example, via France’s caps on gas prices (at October 2021 levels) as well as electricity price increases (4%), which account for the bulk of the roughly €100 billion (4% of GDP) package of support from the French government. Cuts in indirect energy taxes, such as Germany’s renewable fee or Italy’s network fees and VAT, have also featured. Some of the measures, such as Spain’s cap on electricity prices, are at least partly funded by energy consumers via additional fees, or by windfall taxes (Italy). Germany in particular also has a large amount of direct payments to households, which is better from the perspective of maintaining incentives to save energy. Overall, support amounts to 3–4% of GDP so far and is likely to continue to grow rapidly.³ Also at the European level, some coordination is starting to come into play – for example, with the proposal to cap prices for low-cost electricity producers and use the estimated revenue of €140 billion to help households as well. The EU’s €750 billion (in 2018 euros) NextGenerationEU fund is being even more targeted towards accelerating the energy transition.

Despite all these interventions, plus the rise in borrowing costs and lower growth than expected, government borrowing is largely evolving in line with projections at the start of the year or even lower. In the Autumn 2021 forecasts, the EU Commission expected Germany’s budget deficit for 2022 at 2.5% of GDP, France’s at 5.3% and Italy’s at 5.8%. The Bundesbank in June this year was still forecasting German borrowing to amount to 2.75% of GDP, the French government in its post-election fiscal update was still projecting borrowing at 5% of GDP, while Italy is still targeting 5.6% of GDP. This is because while expenditure has increased, finance ministers actually benefit from high inflation on the revenue side because of rising wages and indirect taxes. Direct revenues from the energy crisis such as windfall taxes (Italy, Spain) or windfall profits from nationalised utilities (France) are helping, too.

Fiscal space is likely to shrink, however. Falling growth and ultimately inflation will rein in revenue, while rising unemployment and borrowing costs will boost expenditure. Prioritising the investment necessary to relieve bottlenecks in energy production, support households with rising costs of living and boost security spending in the face of geopolitical tensions will be challenging for finance ministers.

³ Germany’s government on 29 September announced an additional €200 billion envelope for energy price caps, but with details such as the level, coverage, timing and funding of these measures unknown, we do not include it in the analysis.

1.7 Conclusion

The outlook for the global economy is far less rosy than in 2021. Supply–demand imbalances after the pandemic, aggravated by excessive fiscal stimulus especially in the US, which the central bank let continue for too long, now make a soft landing of the global economy increasingly challenging. Europe looks to be heading for a hard landing, with a likely winter recession due to the consequences of the Ukraine crisis, especially the sharp rise in gas prices, which takes out up to 8% of EU economies’ incomes.

In the medium term, the recovery from the pandemic remains incomplete, while the West has to wean itself off Russian energy and will potentially also reduce its dependence on Chinese technology and consumer goods exports. More resilient supply chains will likely come at the expense of lower potential growth as well as a decoupling from the fast-growing Chinese market.

Fiscal policy is treading a fine line in these circumstances. It has to protect vulnerable households and boost public and private investment necessary to restore and raise supply in the economy, not least for energy, to lower prices and regain competitiveness. At the same time, it should not thwart incentives for change – for example, by subsidising energy sources which ultimately have no future – or boost demand for scarce resources. If government interventions fuel inflation further, central banks will counteract them with more monetary tightening. Coordination between monetary and fiscal policy, where central banks keep borrowing costs in check but governments borrow to boost supply rather than demand, would be beneficial, but unlikely to materialise in the current institutional set-up.

References

- Barrero, J. M., Bloom, N. and Davis, S. J., 2021. Why Working from Home Will Stick. National Bureau of Economic Research (NBER), Working Paper 28731, <https://www.nber.org/papers/w28731>.
- Bloom, N., Han, R. and Liang, J., 2022. How Hybrid Working from Home Works Out. National Bureau of Economic Research (NBER), Working Paper 30292, <https://www.nber.org/papers/w30292>.
- Bolton, P., 2022. Imports of energy from Russia. House of Commons Library, Research Briefing 9523, <https://researchbriefings.files.parliament.uk/documents/CBP-9523/CBP-9523.pdf>.
- Citigroup, 2022. Where have all the nice workers gone?. *European Economics Weekly*, 10 June.

2. UK outlook: why we need to do things differently

Benjamin Nabarro (Citi)

Key findings

1. **The UK can ill afford any more economic policy mistakes.** After a lost decade, the government is right to focus on increasing growth. However, it must do so amidst two tightening constraints. The first is institutional credibility. The second is the need to develop appropriate tools to manage increasingly frequent adverse ‘supply-side’ shocks.
2. **In the near term, the key challenge facing the UK economy is the terms-of-trade shock** – an increase in the price of imports relative to exports. These effects are boosting inflation, but crimping domestic income. We expect these effects to weigh heavily on demand across both the household and corporate sectors over the coming year. The main upside economic risk remains a sweeping reduction in gas prices. Absent this, however, the UK economy is likely to be structurally poorer. The key policy question is how this loss is allocated.
3. **For households, the looming cost shock will hit hardest those least able to bear it.** Consumption is likely to be weighed down heavily by looming cost increases. The regressive nature of the shock risks exacerbating the near-term economic impact, particularly as consumer credit conditions continue to tighten. We think this should also argue against policies that transfer away from poorer households to their wealthier equivalents. ‘COVID savings’ also seem unlikely to come to the rescue given the mismatch between their accumulation and those suffering the largest real income shocks. In the medium term, sharp increases in mortgage costs may push any consumer recovery into 2024.
4. **The weakness on the supply side of the UK economy is now an urgent concern.** While output is 2.6% short of its pre-COVID trend, we estimate current excess demand in the order of 1.4% of GDP. Supply should gradually recover in the months ahead as

capital and labour gradually reallocate. Targeted support has a key role to play in aiding reconfiguration and boosting incomes, but sweeping fiscal giveaways risk making a bad situation worse. The risk of a greater long-term scarring seems to be increasing.

5. **We expect unemployment to increase from here as demand slows, but only gradually.** Labour supply should continue to recover as cost-of-living concerns bite and NHS waiting times potentially begin to fall. However, in the near term, labour hoarding effects suggest redundancies are likely to materialise only slowly. Firm insolvencies may prove a key driver of slack in the near term. And in the medium term, unlike with the Great Financial Crisis, we think more persistent labour hoarding effects are likely to prove only limited.
6. **Cost pressures remain intense.** We expect CPI inflation to peak at 11.8% in the months ahead. While price growth should fall back during 2023, inflation is likely to stay relatively high for a while. And in the interim, the risks of a more nefarious feedback effect into domestic inflation dynamics will remain elevated. For now, we see the risks here as substantial, but contained. However, the sheer level of inflation means uncertainty is particularly high. More monetary tightening is almost certainly needed. De-anchored and expansionary fiscal policy remains the key upside risk to medium-term inflation.
7. **The adverse market reaction to the ‘mini-Budget’ was qualitatively different from that to previous events.** We think that reflects the now acute conflict between monetary and fiscal policy. In the near term, that calls the UK’s broader institutional credibility into question. In the medium term, it likely means weaker macroeconomic outcomes as the Monetary Policy Committee is forced to ‘overcompensate’ for continued fiscal stimulus. Historically, these shocks have tended to weigh on long-term output as tighter financial conditions weigh on investment.
8. **Recent experience shows you cannot effectively manage supply-driven inflation via demand.** Policy faces a tricky trade-off steering between the risk of a self-propagating recession on the one hand and the risk of de-anchoring inflation on the other. In our view, a different policy approach is not just desirable, but necessary. The fundamental challenge here stems from the supply-driven nature of the economic shock. Such shocks are likely to occur more frequently than in the past. The current approach risks hampering medium-term growth.

2.1 Introduction

The UK is the talk of the town, and not in a good way. The coordinated sell-offs in both gilts and sterling reflect growing concerns about both the health of the economic recovery and the viability of the UK's policy approach. With monetary and fiscal policy still at loggerheads, the risk of further financial disruption remains acute. This engenders a downside skew to the risk profile in the months ahead, and risk of weaker long-term economic outcomes.

The UK begins in a relatively weak position. The UK is the only G7 economy not to have re-attained its pre-COVID level by the second quarter of 2022. And worse likely remains ahead, with our forecast suggesting that GDP will fall by 0.7% through 2023. The predominant driver of the economic outlook here is the large terms-of-trade shock. Recent increases in energy prices compound established increases in both food and core goods prices. In each case, this implies price pressures today and crimped incomes tomorrow. We expect that to mean a limited consumer-driven recession over the coming quarters, despite additional support.

For now, a weak demand side sits alongside a supply picture that is also heavily impaired. Here, a reduction in labour supply alongside ubiquitous matching challenges means the UK labour market remains relatively tight. For the Monetary Policy Committee, the concurrence of a tight labour market and very strong imported inflation means some action is necessary to reduce the risk of a de-anchoring of inflation expectations. But this will come at a longer-term cost. While a limited supply recovery seems likely, without carefully targeted support, the risk of material long-term economic scarring is growing.

Overall, policy faces a tricky trade-off between risks of a self-propagating recession on the one hand and a nominal de-anchoring on the other. Sweeping fiscal stimulus is likely only to mean an outsized monetary response and a weaker long-term recovery. At the same time, doing nothing is also far from optimal. The core conclusion we draw from recent experience is that policy would fare better by focusing more directly on managing the supply side of the economy. With structural shocks likely to grow more frequent in the decade ahead, that suggests a structural shift in approach.

Below, we begin by discussing the near-term outlook for the UK economy, including the drivers behind the looming terms-of-trade shock, and the implications for households, firms and the UK's external balances (Section 2.2). We then turn to the challenges around supply and the labour market (Section 2.3), before turning to the outlook for costs and inflation (Section 2.4). We conclude with both a summary of the overall pattern of economic adjustment and the potential alternative scenarios (Section 2.5), before turning lastly to the policy implications and challenges (Section 2.6).

2.2 The near-term outlook

Economic activity has slowed sharply in recent months. As recently as May, much of the soft economic activity data continued to indicate a robust expansion. But in the months since, cost increases across the economy have begun to weigh. Despite considerable fiscal support, we still anticipate a shallow recession over the coming months. Real GDP, we think, will fall by 0.7% year on year (YY) at the trough in 2023Q3. This is already from a relatively weak starting point, with the UK now the only G7 economy not to have recovered to its pre-pandemic level.

Historically, when annual growth falls below 1.5% in a given quarter, this tends to increase significantly the risk of a subsequent further reduction in growth two quarters ahead – on average implying a further reduction of 0.8%.¹ For much of the forecast horizon, we do not expect the UK economy to escape this ‘stall speed’.

The risks are increasingly skewed towards a larger and more protracted downturn. On the demand side, that reflects the risk lower incomes could collapse into a period of more protracted weak demand. On the other hand, there is a risk that, by loosening too far, policy could engender a de-anchoring of expectations, much higher rates and a disorderly, inadvertent tightening of financial conditions.

In this section, we focus on the risks to demand. Both households and firms look set to be hit hard by the looming terms-of-trade shock.

For households, we argue below that cost increases in areas such as food and fuel are likely to weigh heavily on aggregate consumption – despite discretionary support. As these effects fade, we also expect higher mortgage rates to constitute a notable headwind, pushing any meaningful recovery into the second half of 2024. Robust balance sheets should provide some support in the medium term. However, household wealth inequality seems to have widened sharply through COVID. This means less resilience. It also suggests a particularly low multiplier on policies that reduce transfers in order to fund tax cuts.

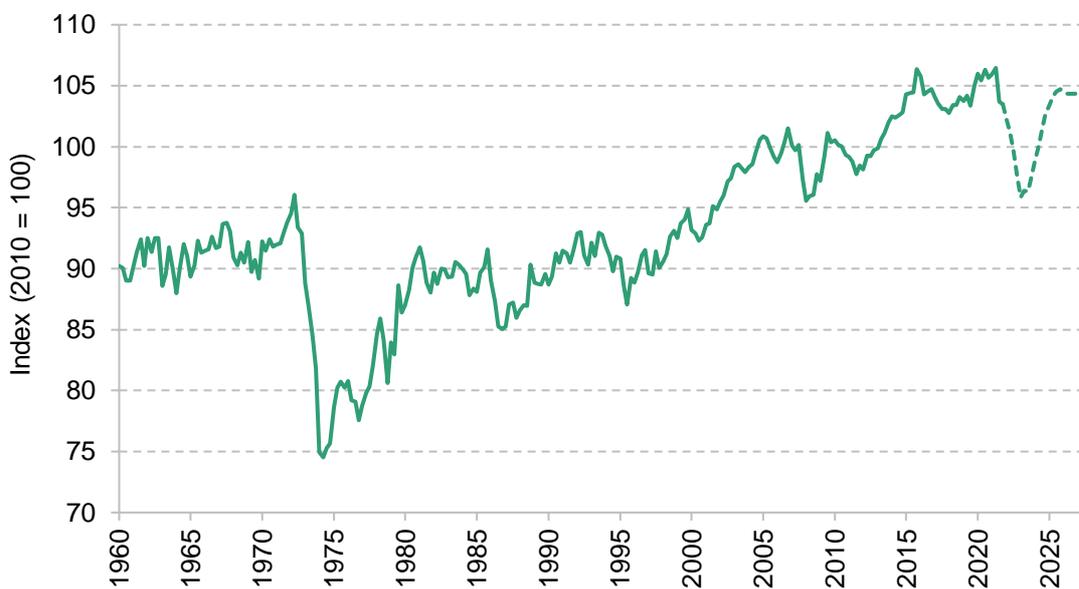
For firms, the primary challenge over the coming months relates to both acute margin compression, and increases in the cost of capital. In both cases, we think that implies only a very gradual recovery in business investment, even from its current low base. The latest data point to large ‘revaluation’ effects as the structure of the economy is beginning to pivot. These write-downs risk casting a longer shadow without more medium-term economic clarity.

¹ This is based on a regression including both year-on-year growth, quarterly GDP growth and a dummy for when the annual growth rate falls below 80bp. For broader details, see Sorkin (2022).

The terms-of-trade shock

The primary driver behind the near-term economic outlook is a once-in-a-generation, adverse ‘terms-of-trade shock’ (an increase in the price of imports relative to exports). The constituents here are threefold. First, in the latter half of 2021, large increases in imported consumer goods prices drove inflation higher (see Section 2.4). Large increases in energy prices have since increased this further. And, in more recent months, food prices have also picked up sharply. In total, the relative price of exports versus imports has fallen by a little over 3% in the past 11 months, the largest reduction since 2016. Worse, we think, lies ahead (Figure 2.1).

Figure 2.1. UK: aggregate terms of trade, 1960–2027

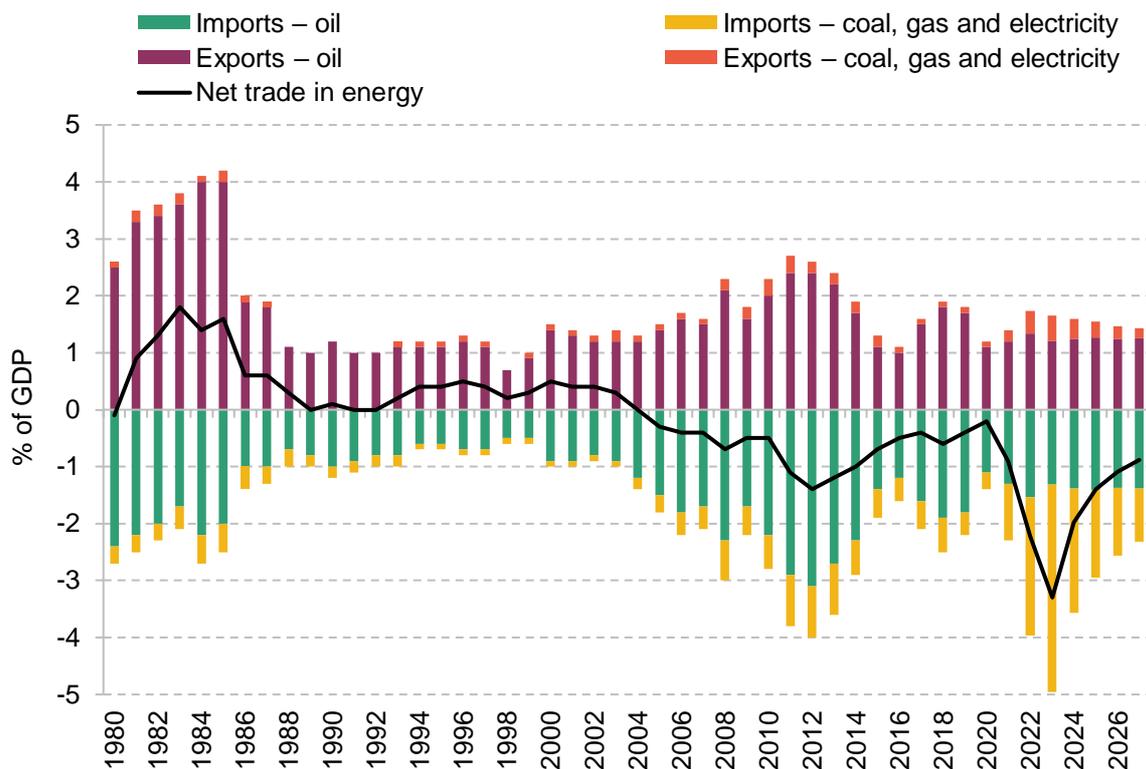


Note: Terms of trade in this case measured as the ratio between the export price deflator and the import price deflator.

Source: ONS and Citi Research.

The key drivers from here are likely to be food and energy (specifically gas). Both items are heavily imported. Food imports, for example, amounted to around £50 billion in 2021, while the equivalent exports amounted to just £21 billion (Office for National Statistics, 2022d). Around 50% of UK gas is also imported, primarily from Norway (via pipeline) and Qatar (via LNG) (Donnarumma, 2022a). While the UK has been a net energy exporter in decades past, this ceased to be true around the turn of the millennium. In the years since, the associated energy deficit has grown episodically (see Figure 2.2). The conflict in Ukraine, alongside broader disruption to Russian gas supplies into Europe, has resulted in a very large increase in prices. Compared with the middle of 2021, futures prices for wholesale gas are now four to five times higher for 2023.

Figure 2.2. UK: net trade in non-oil energy, 1980–2026



Note: Figures are presented here as a share of nominal GDP. Figures for 2022 onwards are a Citi forecast.

Source: ONS, Bank of England, Thomas and Dimsdale (2016) and Citi Research.

How will this affect the economy?

In essence, this is a large, net, economic loss for the UK economy. Typically, an increase in import prices adds to inflation in the near term, but then crimps real incomes, demand and domestic inflation thereafter. An increase in energy prices is especially destructive economically. This adds to the relative cost of imports, but it also drives a revaluation between the energy producing and consuming parts of the domestic economy. Income tends to have a much higher multiplier in the latter case than in the former. In the past decade or so, we estimate that a sustained 10–15 pence increase in the price of a ‘therm’ of gas deducted roughly 0.2 percentage points from UK GDP over the subsequent 18 months. Given the 250p increase since the middle of 2021, a simple extrapolation of these effects alone would therefore suggest a hit of around 2.5ppt.

Of course, the reality here is a little more complicated. The scale of the shock means that these simple ‘rules of thumb’ do not likely do analytical justice to the current outlook. Instead, a more in-depth look is required.

In our view, the overall economic impact of a set of price increases such as this depends on three factors:

- the extent to which the consumption of specific (and more expensive) items can fall (in this case, energy and food);
- the extent to which demand imports can be reduced more generally, and the trade balance restored – via offsetting foreign exchange depreciation and trade substitution elsewhere;
- the speed at which the economy can adjust to produce more imported items domestically.

Unfortunately, in each of these three respects, the prognosis for the UK is not good.

Beginning with demand, food and energy are particularly price-inelastic elements of the UK import basket. The change in import volumes associated with a shock to the trade-weighted exchange rate, for example, is especially low among these categories.² These effects are likely to be compounded by the government’s decision – made for understandable reasons – to cap prices for both firms and households.³

Adjustment is unlikely to be predominantly, or even largely, confined to the UK energy market. Instead, we think the current account deficit for energy alone could widen to over 3.5% of GDP. On the domestic side, we also note that electricity and gas consumption combined could also increase to well over 10% of GDP, from 1–2% in 2015–19 (Figure 2.3).

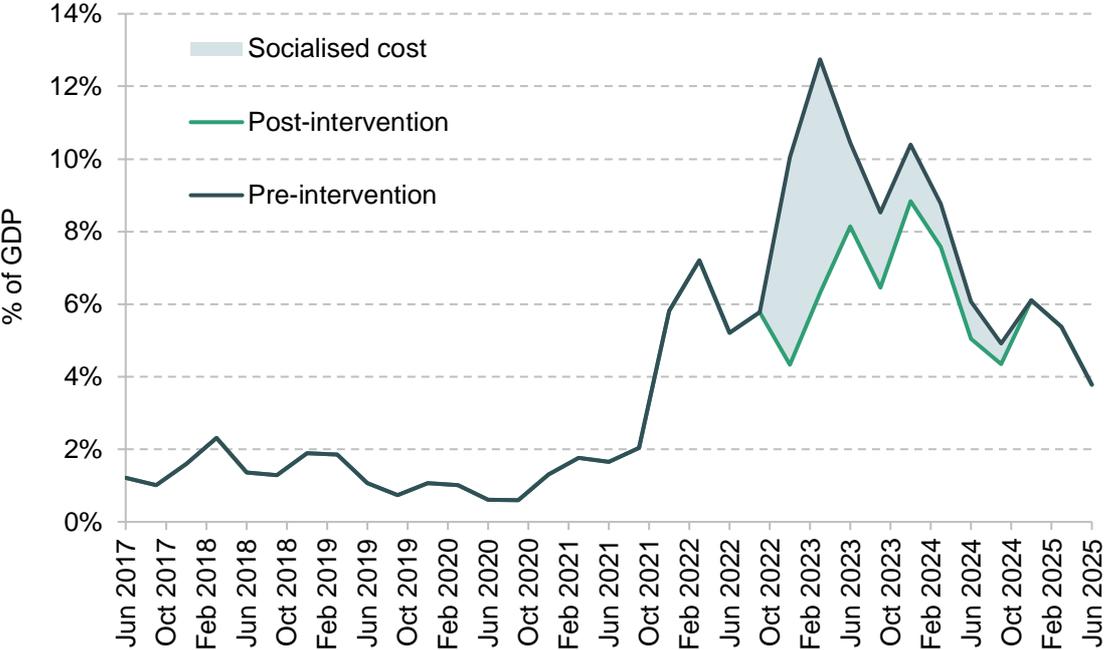
If macroeconomic adjustment cannot be contained within the energy sector, the burden is likely to shift to the broader trade deficit. The sharp deterioration in aggregate terms of trade will, we think, weigh on both the nominal and real exchange rate, slowing growth and, in the UK’s case, reducing demand for imports.⁴

² This is based on a series of linear regressions looking at the sensitivity of volume-based measures of trade components to changes in the effective exchange rate. This approach has several notable drawbacks, including missing nuances in settlement currency, for example. But we think it provides a rough indication of how elastic UK imports are to changes in prices across various categories. Details available on request.

³ This suggests less demand destruction, but a larger deterioration in both the current account and terms of trade. Year to date, total UK gas consumption was down 12% versus a 15% reduction in Germany. With residential consumption a larger share in the UK, this implies higher consumption over the winter. Residential consumption made up roughly two-thirds of all UK gas consumption in 2019 compared with roughly 32% across continental Europe. For the data on the UK and the EU respectively, see <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk-2021> and https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_consumption_in_households.

⁴ Exports volumes have historically proven relatively inelastic to foreign exchange changes owing to the predominance of highly specialised services and manufacturing. See Ayele and Winters (2020).

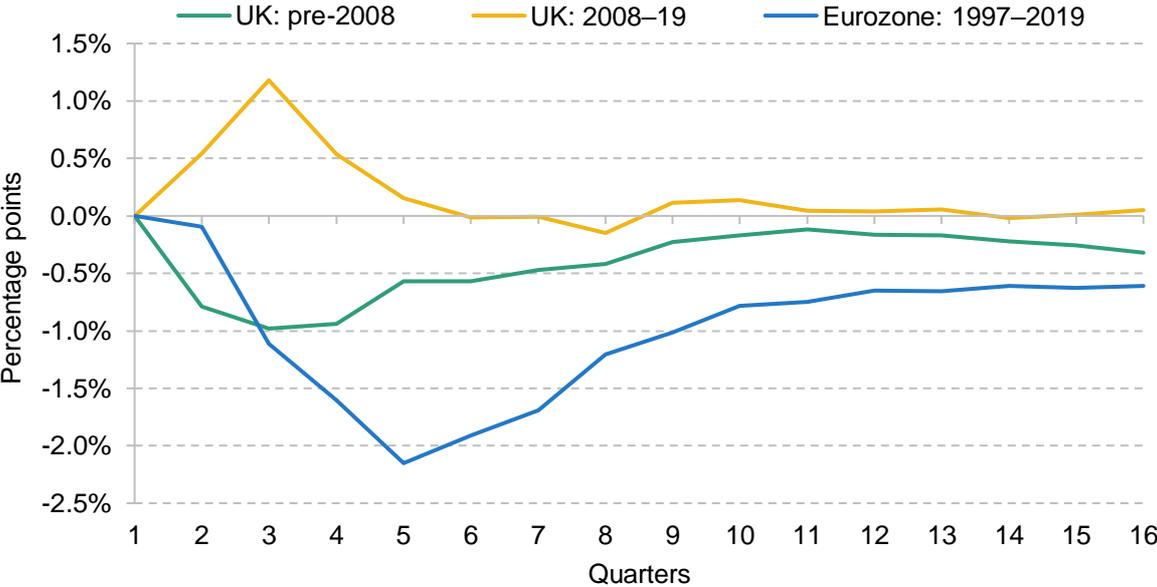
Figure 2.3. UK: spending on gas and electricity, 2017–25



Note: Figures are presented here as a share of quarterly nominal GDP. Spending is conditioned on a Citi VAR model of consumption substitution across sectors, alongside current market futures prices. These data are not seasonally adjusted. Forecast runs from 2022Q2 until 2025Q2.

Source: ONS, Department for Business and Industrial Strategy, Bloomberg LLP and Citi Research.

Figure 2.4. UK and Eurozone: impact of exchange rate depreciation on the level of nominal imports, 1997–2019



Note: This figure shows the impact of a one-standard-deviation shock to the exchange rate on nominal imports.

Source: ONS, Eurostat, Bloomberg and Citi Research.

Here, however, we think adjustment could also prove tricky. For one, UK imports overall seem to have become less sensitive to changes in the exchange rate.⁵ Another important consideration relates to the scale of the domestic ‘tradable’ production versus the current account.⁶ The challenge for the UK is that the share of tradables in the UK economy remains well down on its pre-Great-Financial-Crisis level.⁷ The ‘tradable share’ is also now considerably smaller than the overall current account deficit, further complicating any economic adjustment (Calvo, Izquierdo and Talvi, 2003).

In both cases, these arguments suggest domestic output may have to do more ‘heavy lifting’. This means more downward pressure on output. One of the ways this could materialise is via a larger drop in the ‘real effective exchange rate’⁸ – the nominal exchange rate multiplied by the ratio of UK prices versus those abroad – and an associated drop in domestic demand. While domestic output in the UK is about as sensitive to real effective exchange rate depreciation as, for example, the Eurozone, if the shock is larger this would suggest a larger hit to growth.

This, however, gets to the nub of the issue. That is, it is no longer clear this kind of shock is sufficient to return the UK economy to rude health. Whereas the Eurozone has tended to recover over time from an adverse real effective exchange rate shock, the UK seems to have experienced some permanent scarring. In part, this relates to some statistical challenges around the Great Financial Crisis (GFC).⁹ However, when the real effective exchange rate depreciates, this should

⁵ There are several reasons for this, but the primary factor is a further skew in imports towards ‘essential’ items. This makes it harder for households and firms to substitute into domestically produced items. A reduction in the nominal exchange rate has both an income and substitution effect on the value of imports. On the one hand, it can encourage a reduction as imported items become relatively more expensive. On the other, it can drive a growing share of income abroad as firms and households are forced to spend more in order to secure key inputs. The UK’s external balances have always been relatively inelastic to foreign exchange changes. But the scale of this effect seems to have worsened since the Great Financial Crisis. An especially large currency depreciation is required in order to drive a meaningful reduction in imports. Indeed, we are no longer confident the Marshall–Lerner condition still holds in the UK, at least for relatively moderate devaluations. Instead we think that if a shift is to materialise, it likely operates through weaker domestic demand rather than substitution.

⁶ If the economy is consuming large quantities of tradable items, many of which are also produced domestically, then the level of domestic economic pain required to restore some external balance is less. The intuition here is if consumers are reluctant to shift their consumption pattern in the face of a shift in the external balance, then consumption needs to fall evenly across the economy. However, given only the tradable sector matters for the external account, the larger that is in relative terms, the smaller the economic adjustment overall. See Calvo, Izquierdo and Talvi (2003).

⁷ The tradable share of UK gross value added (GVA) grew during the post-referendum (2016–18) period, as we discussed in Nabarro (2020). However, the current traded share of GVA is 47.5%, several percentage points down on the pre-COVID peak of 49.7%. Definitions here are the same as those in Broadbent et al. (2019). Here a sector is defined as ‘tradable’ if more than 10% of its total supply is traded using the two-digit SIC industry-level classification. This threshold coincides with those suggested by De Gregorio, Giovannini and Wolf (1994) and Betts and Kehoe (2006).

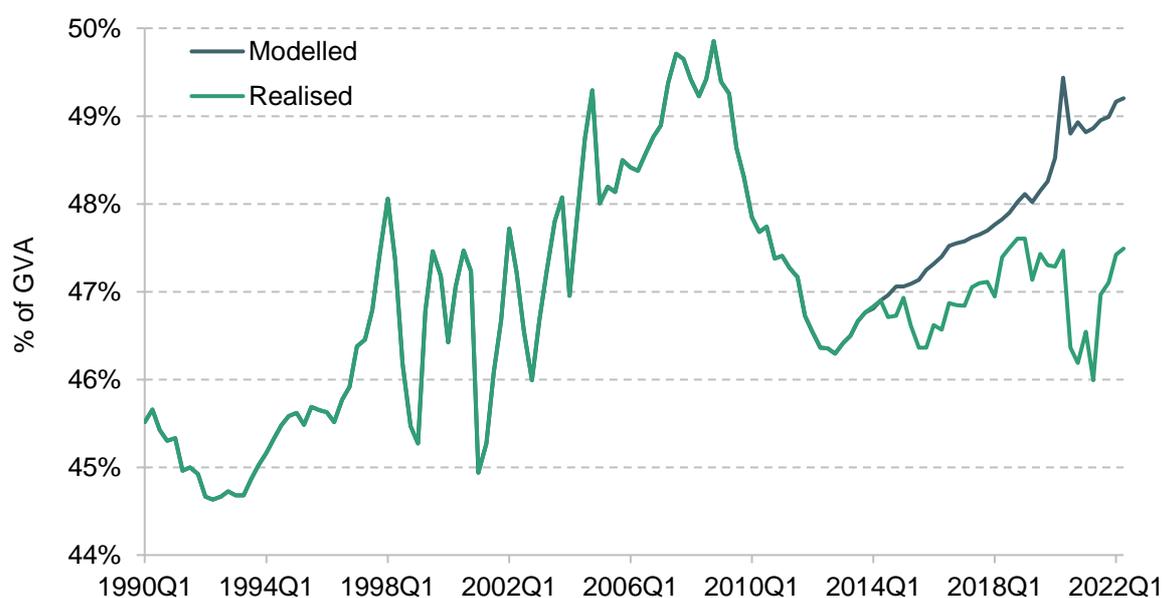
⁸ To a large extent, this is already implied by a larger terms-of-trade shock – the two should map each other relatively closely, if respective import and export prices roughly remain in line with respective countries’ consumer price indices.

⁹ Many of the models we use here are estimated back to 1990. However, the GFC included an especially large real exchange rate depreciation as well as severe medium-term scarring. Within macro models, it can be difficult to effectively isolate the impact of the real effective exchange rate from that of the financial variables associated with the particular scarring during that period.

mean the tradable sector grows as a share of overall GDP. Pre-2008 that does indeed seem to have been the pattern. However, in the period since, the rate of reallocation has fallen (see Figure 2.5).

For now, many of these themes are ‘on ice’. By implementing a cap for both the household and corporate sector, the UK government has stepped in to securitise inflation at scale – absorbing the loss from higher energy prices, and for now preventing these driving domestic prices higher. This is protecting domestic incomes. And if the shock to gas prices does indeed prove temporary, then the widening of the current account deficit should prove only temporary, and broader adjustment unnecessary. This, however, is little more than ‘chancing your arm’, and at macroeconomic scale. If changes do prove necessary, currency depreciation is likely a central part of any associated adjustment. But what the above suggests is that this is no magic bullet. Instead, these effects always leave UK households and firms worse off. These effects are likely to be large, while the slowing rate of substitution between tradable and non-tradable parts of the economy also suggests economic adjustment seems likely to prove considerably more painful than, for example, in the early 1990s, when depreciation alone was sufficient to deliver growth.

Figure 2.5. UK: tradable share of gross value added, 1990–2022



Note: Model here reflects BVAR model of the change in traded share of GVA estimated between 1990 and 2007.

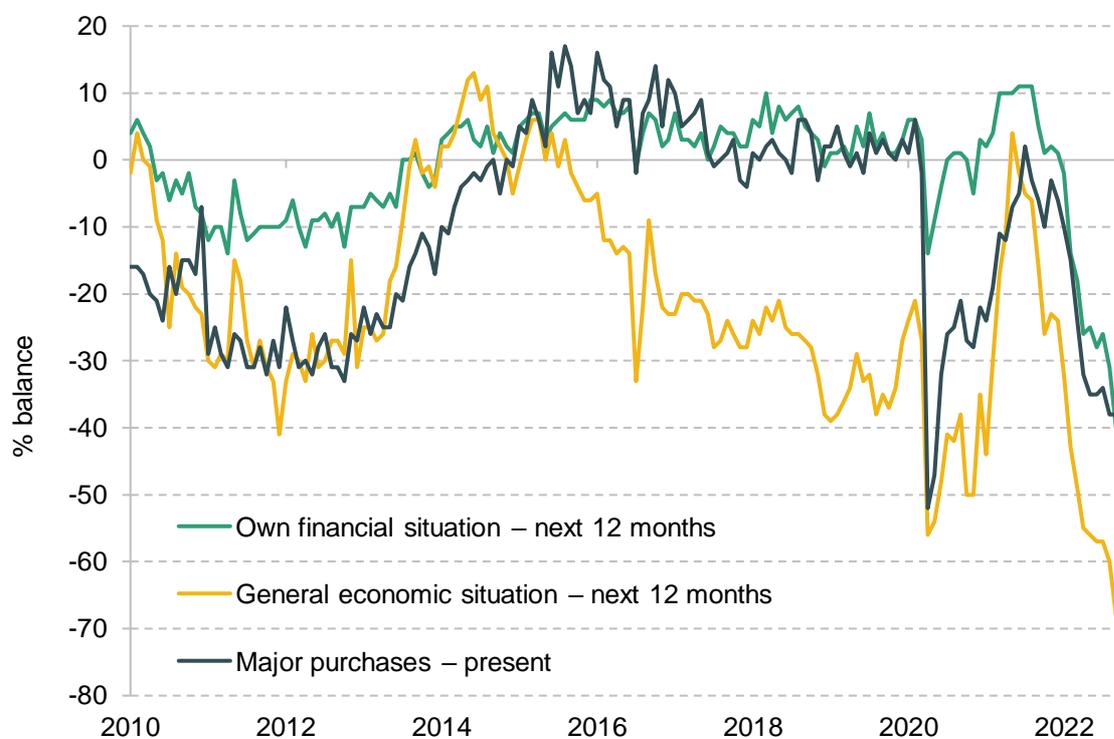
Source: ONS, Eurostat, Bloomberg and Citi Research.

The outlook for household consumption

Households face a challenging few months ahead. Even with significant support, many are still facing up to a large income squeeze.

Here, the recent economic data have already showed a softening outlook. In contrast to most downturns, consumer confidence has led the downturn in both the UK and Europe. Many of the price increases associated with the terms-of-trade shock affect households directly. And as increases in food and energy bills have piled up, households' view of their own financial situation has deteriorated especially quickly.¹⁰ Household consumption growth has decelerated from 0.6–0.7% QQ at the end of 2021 to 0.2% in 2022Q2. Retail sales have contracted by 5.5% cumulatively since October 2021. While reductions here were previously offset by a rotation towards consumer services, these effects seem to have faded during 2022. Recent CHAPS spending data showed overall nominal consumer spending still 4–5ppt below February 2020 levels. These data also now seem to be easing.

Figure 2.6. UK: components of GfK consumer confidence, 2010–22



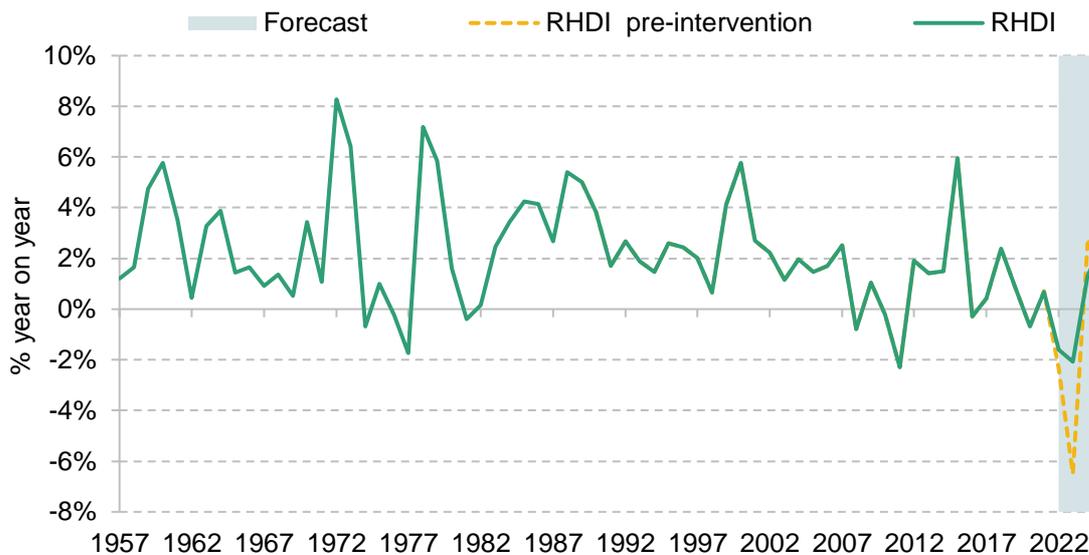
Source: Citi Research and GfK.

As cost-of-living pressures intensify, we expect household consumption to fall by 3% over 2023. Three factors are central to the outlook here:

¹⁰ This has tended to be a more robust indicator of household consumption than other elements of the index, including macroeconomic expectations.

First, even with significant fiscal support, households are already facing up to a crushing set of price increases. As we explain below, wage and employment growth should remain relatively buoyant in the months ahead in nominal terms. However, even with the cap to household energy bills, wage increases are still likely to remain well short of rates of inflation. We think real household disposable income seems set to fall back by a little under 2% on average over 2022 and 2023 (see Figure 2.7).

Figure 2.7. UK: real household disposable income (RHDI) growth, 1957–2025



Note: The difference between the pre-intervention and current RHDI reflects measures announced since the March Spring Statement.

Source: ONS and Citi Research.

Breadth, as much as depth, of the price increases matters here. We count challenges on five fronts:

- **Household energy bills.** Ofgem confirmed a 54% increase in household dual-fuel energy bills in April, with the standard tariff increasing £693 from £1,277 to £1,971. Even with additional support, this still left UK households absorbing £19.5 billion in additional household energy costs. A further £500 increase associated with the price cap increase in October will still leave households a further £14 billion worse off in annualised terms – although these effects should be initially offset by the previously announced £400 rebate. In early September, 48% of households reported they were struggling to pay their energy bills, versus 35–40% in 2022H1.¹¹

¹¹ <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/publicopinionsandsocialtrendsgreatbritain/31augustto11september2022>.

- **Fuel prices.** Despite recent reductions, diesel and petrol prices are still both up 33% and 26% respectively compared with the same month in 2021. The impact of these increases on spending is compounded by compositional normalisation as the economy has reopened – with spending on commuting and other day-to-day travel returning to its pre-COVID range in volume terms. Price increases here over the past 12 months amount to around £330 in additional annual spending for the average UK household. Nominal spending on fuel reached twice the level observed in February 2020 in July, according to data from Revolut (Office for National Statistics, 2022b).
- **Food prices.** Food prices have already contributed to the squeeze on household incomes. Kantar data show the typical UK household is paying £571 more for food annually than it was this time last year,¹² with the latest ONS Opinions and Lifestyle Survey noting this has been the primary driver of the crunch on incomes to date (with 95% of respondents noting food was now significantly eating into household incomes).¹³ We expect food inflation to accelerate to roughly 17% by 2023Q1, up from 10.8% in August. This is primarily owing to higher food, commodity, energy and import prices.
- **Housing costs.** House prices have grown sharply so far during the pandemic, with the latest Nationwide data pointing to roughly a 10% annual increase over the last few months. We expect these increases to feed into higher rental prices over 2023.
- **Lagging benefits uplift.** Last, many of those on the lowest incomes have also been struggling with a relatively low increase in core benefit payments. UK benefits are generally uprated by CPI in September of the previous year. This meant a 3.1% increase from April. However, this is juxtaposed by an increase in annual CPI of 9.9% in August – a 6.2% real terms fall. Though some of these effects were also offset by the large share of the May support package paid to those on means-tested benefits.

In an economy whose median post-tax household disposable income is roughly £30,000, this is a crushing squeeze. Compared with the UK's longer-term economic history, this would still be among two of the weakest years on record, one after another, although the price cap, the £15 billion May package and the further £22 billion in personal tax cuts do reduce the risk of what would have been a much worse outlook (Figure 2.7).

Second, we think the scope for dissaving is likely to prove limited. Household income of course does not translate one-to-one into consumption. Given the large accumulation of saving during the pandemic, the hope for some time has been that some of this accumulated saving could be used to smooth over the looming shock. Unfortunately, we think the scope for

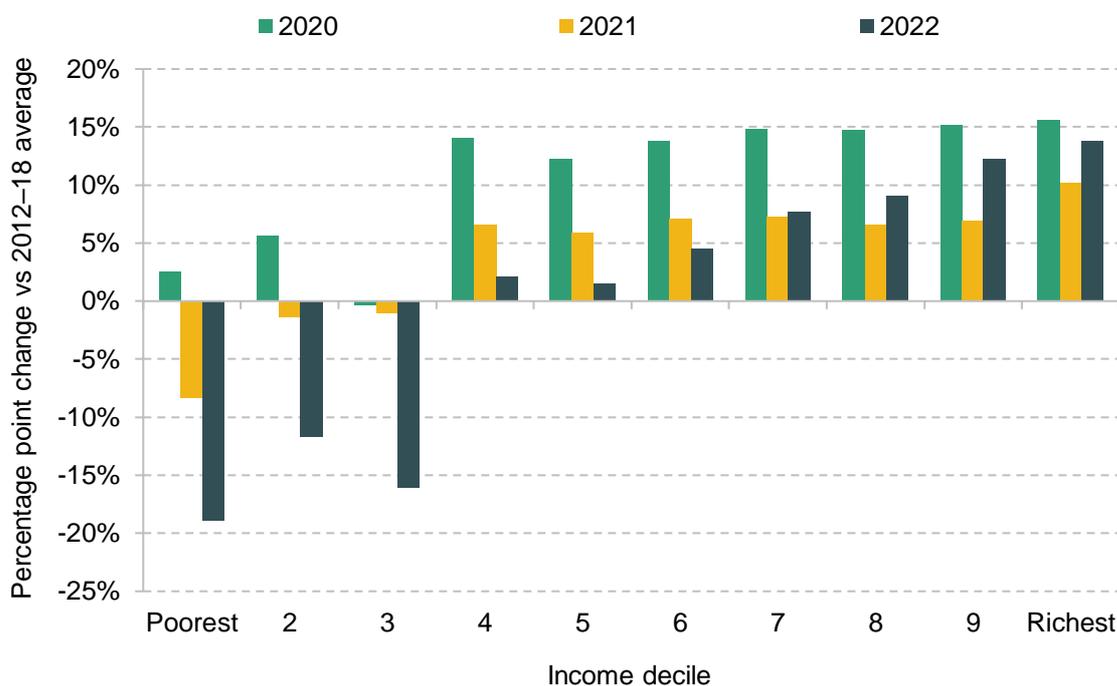
¹² Reported at <https://www.independent.co.uk/business/grocery-price-inflation-hits-new-record-to-add-ps571-to-average-annual-bill-b2166027.html>.

¹³ <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/publicopinionsandsocialtrendsgreatbritain/14to25september2022>.

dissaving is limited. We expect household saving rates to fall to 7.2% at the trough, versus 3.5% in the latest Bank of England estimates.

As we noted in last year's Green Budget (Nabarro, 2021), if widespread dissaving is to materialise, one of three arguments will have to hold: (1) deferred demand; (2) changes in credit constraints; or (3) a large improvement in the net asset positions of households, and robust forward-looking optimism. While we think there is some evidence of deferred demand effects over the summer, many of these effects now seem to be fading.

Figure 2.8. UK: household saving rate by income decile, 2020–22 (forecast)



Note: These data measure income minus expenditure, divided by income. They are therefore not directly comparable to the headline household saving rate. These data are a forecast based on Citi's household income decile model. The data show the deviation in the savings rate from the 2012–18 average. All of these data are Citi forecasts.

Source: ONS and Citi.

Instead, we think that if dissaving is to accelerate, this will relate primarily to changes surrounding credit constraints. The issue here is while household savings accumulated during the pandemic were extensive, they were heavily skewed towards those at the upper end of the income distribution. Our modelling would suggest net household saving became increasingly regressive (see Figure 2.8) – backing up survey data suggesting a strong positive association between income and ‘active’ wealth accumulation (Leslie and Shah, 2021). These higher income groups are suffering a smaller real income squeeze since less of their budgets are spent on

energy and food. This suggests a more limited ongoing boost compared with a conventional baseline.

There are several signs of this in the recent data. The share of households claiming they cannot manage an unexpected £850 expense has been climbing (Office for National Statistics, 2022a), for example, while the overall level of outstanding deposits has remained steady. This suggests that these cash balances are in the ‘wrong place’ macroeconomically speaking. In other cases – for example, towards the middle of the income distribution – there may be scope to borrow on the back of improved housing equity. But this also speaks to the wider issue: while the use of deposits is relatively limited, the use of debt to try to smooth over recent price increases does indeed seem to be on the rise. The ONS Opinion and Lifestyle Survey shows the share of households now leaning on credit to cover day-to-day costs has increased 7 points since the end of 2021, with these data still on an upward trajectory. The Bank of England consumer lending data show similar increases in credit card balances.¹⁴

While there is scope for consumer debt to grow further, the issue in our view is that as monetary policy is tightened, the availability and cost of credit are likely to make this more and more difficult. This means a mechanical widening in credit spreads. Affordability metrics in many parts of the unsecured consumer credit market are coming under strain. The latest data from the Bank of England’s Credit Conditions Survey suggest one of the most abrupt tightening episodes for unsecured consumer credit,¹⁵ even as demand is picking up. This, we think, is likely to limit the scope for further dissaving.

Overall though, net household balance sheets have improved through the pandemic. In comparison with the pre-COVID trend, the total increase in household deposits, as well as the reduction in unsecured consumer credit, amounts to around 7% of GDP. Looking at the total change in household net assets since the start of 2020 overall, we think the ‘real’ net increase amounts to 14.2%. Although net increases seem to have been concentrated almost exclusively among those in the top half of the income distribution (Leslie and Shah, 2021).

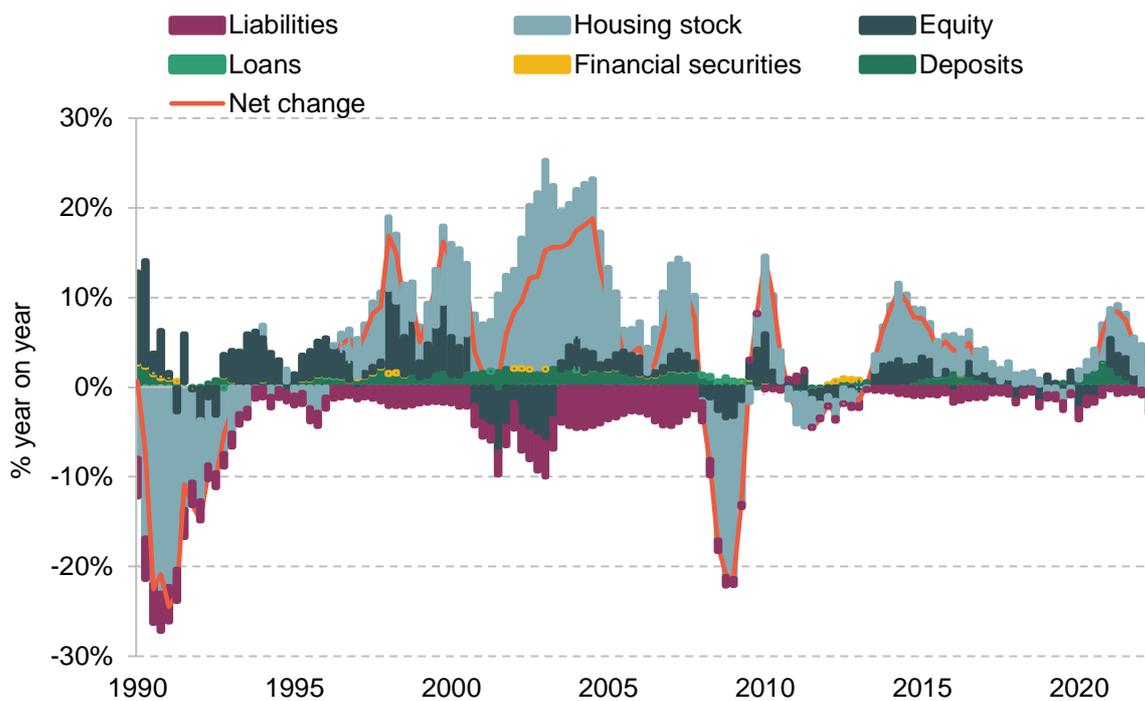
Dissaving is likely to offset some of the adverse shocks looming in 2023, if to a limited degree. One notable question here is whether dissaving could provide a more persistent tailwind further out. We do expect a small net boost from these effects in the latter years of the forecast. In the near term, uncertainty regarding the persistence of some of the recent price increases we think

¹⁴ <https://www.bankofengland.co.uk/statistics/money-and-credit/2022/august-2022>.

¹⁵ <https://www.bankofengland.co.uk/credit-conditions-survey/2022/2022-q2>.

will reduce the incentive to dissave (Bunn et al., 2017).¹⁶ And with more of these positive wealth effects driven by increases in real asset values, we think the marginal propensity to consume out of such increases will be low (Figure 2.9). But unlike the GFC period, households are unlikely to go through a painful and protracted period of deleveraging. And in the medium term that should provide a small relative boost.

Figure 2.9. UK: growth in ‘real’ net household wealth, 1990–2022



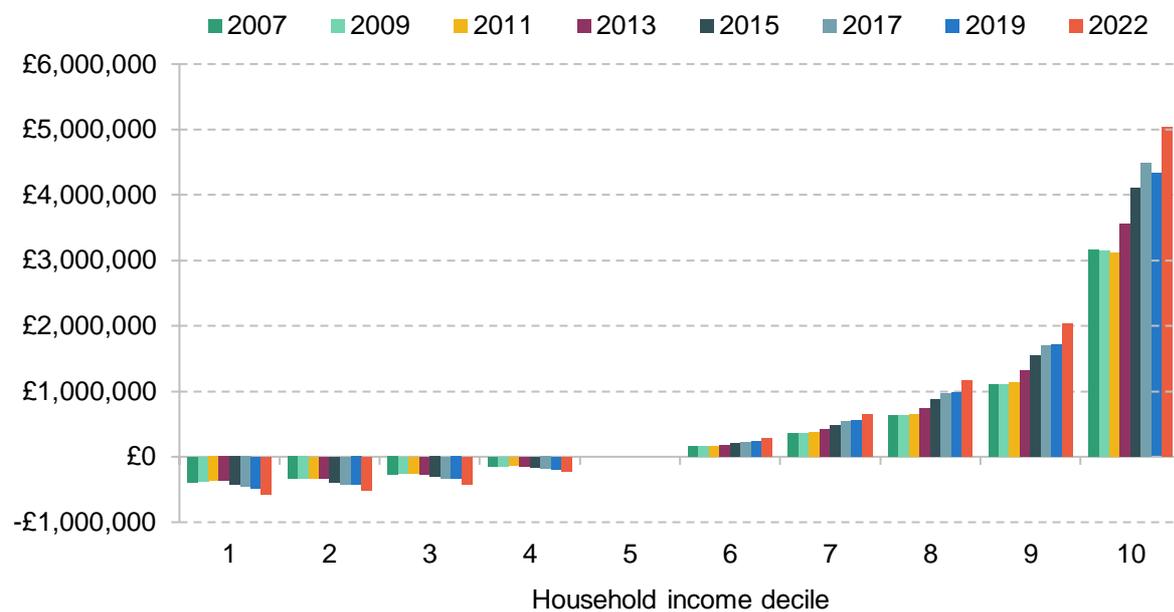
Note: Real household wealth is derived by deflating total nominal household wealth by the consumption deflator.

Source: ONS and Citi Research.

One implication of the argument above is that household wealth inequality has likely widened further through the pandemic (see Figure 2.10). Among lower-income households, we think a limited bout of borrowing over the coming months is likely to worsen further their net assets position. For higher-income households, the boost associated with the pandemic years seems likely to be preserved. With shocks to areas such as food and energy prices likely to grow more common, widening inequalities here reflect a worrying erosion in macroeconomic resilience. Improving the wealth share of those outside of the top income decile is likely essential to allow these shocks to be effectively weathered in the years ahead.

¹⁶ The latest data from the Understanding Society COVID-19 Study suggest marginal propensities to consume out of an unexpected £500 windfall are not especially large at present, with richer households generally more likely to add to their savings, while poorer households are still more inclined to pay down debt. The latest NMG survey data from the Bank of England suggest households still plan to spend less post-pandemic rather than more, even if COVID-related concerns were to dissipate tomorrow, by a net balance of 6ppt.

Figure 2.10. UK: real net household wealth by income decile, compared with median, 2007–22



Note: Findings are based on the ONS Wealth and Assets Survey. Deflated based on CPI inflation for the given income group. Chart shows real household net wealth minus the median in the same period. 2022 is a forecast.

Source: ONS and Citi Research.

Third, we expect higher rates to weigh meaningfully from 2023H2. The Monetary Policy Committee has engaged in the fastest monetary policy tightening since Bank independence. It seems certain more is to come (see Section 2.6). As we explained above, we think changes here are already feeding into the availability of riskier consumer credit products. But pass-through into mortgage costs also seems likely to drag.

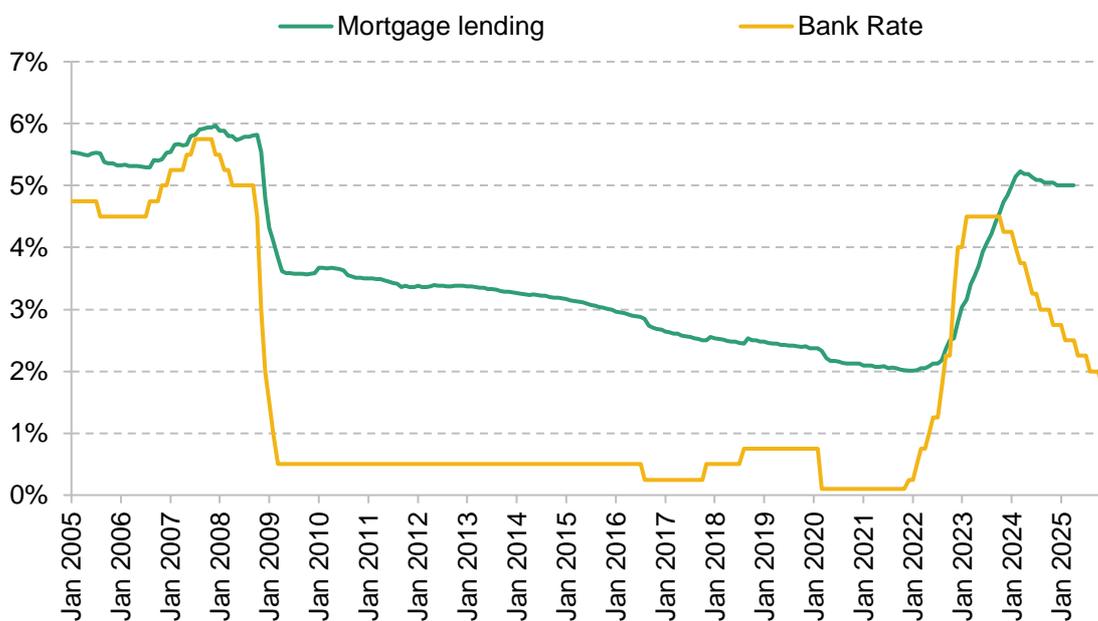
Compared with previous tightening cycles, the impact on household finances is attenuated by the shift towards fixed-rate mortgages. Whereas these made up just 40% of all outstanding mortgage lending in the early 2010s, today the equivalent proportion is roughly 85%. However, whereas in other economies where mortgages can be fixed in long durations (10 years +), in the UK the vast majority (95%+) of all mortgage lending is fixed at either a two- or five-year duration. Increases in Bank Rate therefore still feed through into household debt servicing costs relatively quickly.

Over the coming months we see this as an increasingly important headwind for household consumption. With Bank Rate set to increase to 4.5% in the months ahead under our central forecast, we expect quoted mortgage rates on two- and five-year fixed-rate tariffs to increase by roughly 5ppt versus their trough in early 2020. This would suggest an annual increase in debt servicing of roughly £8,500 for a household with the average outstanding mortgage balance of

£181,000.¹⁷ Mortgaged owner-occupiers make up just over 30% of households – meaning a smaller aggregate impact on demand overall. But even so, this would still suggest a multi-thousand-pound increase in average household costs.

These effects will not materialise all at once. But while some households took the opportunity to refinance at the start of 2022, there is still a large glut of fixed-rate mortgage tariffs that are likely to roll off over the coming months. These reflect the surge in activity following the introduction of a stamp duty holiday in 2020. We expect the effective interest rate on outstanding mortgage lending effectively to double over the coming months from a trough of 2.0–2.1% in the early part of 2022 to 5.0% at the start of 2024, weighing on household disposable income by roughly £1,600 on average per household.

Figure 2.11. UK: effective interest rates, 2005–25



Source: Bank of England and Citi Research.

In order to meet these higher debt servicing burdens, we think the hit to consumption will be relatively large, constituting a further headwind through 2023 and 2024.¹⁸ Despite the robust position of better-off households, we also expect UK house prices to fall by roughly 7% by 2023Q3. Last month's cut to stamp duty will provide some offsetting support to prices, if not

¹⁷ <https://www.fca.org.uk/data/mortgage-lending-statistics> (September 2022).

¹⁸ Using Citi's 'Household Available Cashflow' model, these increases in mortgage costs would suggest a persistent drag from gradual refinancing throughout much of 2023 and 2024. While many of the first-order headwinds from the current terms-of-trade shock should ease by then, we think the sharp increases in rates will likely push the lion's share of the consumption recovery into 2025. For more details, see Coulter and Brahmabatt (2022).

activity. But we think rates at these levels will be sufficient to drive some forced selling among owner-occupiers, particularly those in the middle of the income distribution.

We expect these effects to be compounded by vulnerabilities in the private rented sector. In recent years, mortgage lending within the buy-to-let sector has made up 10–15% of all new mortgage advances.¹⁹ Given the growing share of the private rental sector overall (HM Government, 2021), we see some potential for forced selling here too. For the first time, landlords may have to manage with mortgage rates notably above average annual rental income (as a share of the property value). Recent restrictions surrounding tax deductibility on mortgage interest income add to the risks.

Combined, this outlook suggests any meaningful recovery in household consumption is likely some years away. While, as we have noted in previous years, it is always dangerous writing off the UK consumer, we think the headwinds here are likely insurmountable. In the near term, price increases associated with the terms-of-trade shock seem likely to weigh. From the second half of next year, increases in mortgage costs are likely to become the key headwind. More policy support could offset these effects in the near term, though as we discuss below that would likely only push the downturn further out.

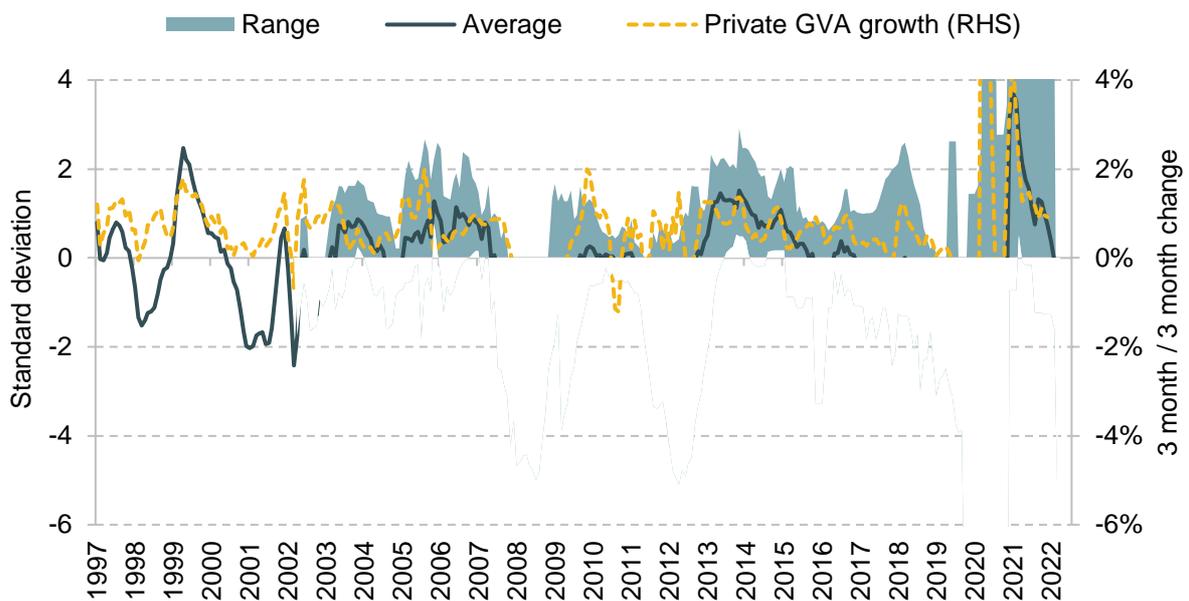
We should stress that such a protracted period of consumer weakness has been a rarity for the UK, certainly since the 1950s. In the near term, the implication of the household saving discussion suggests that any efforts to boost incomes for lower-income households would have a particularly high multiplier. From a macroeconomic perspective, cutting benefits in order to finance cuts to direct taxes seems likely to only weigh on the outlook.

The looming challenge for firms

While consumer sentiment has deteriorated sharply in recent months, the business equivalents have generally proven more resilient. The latest business sentiment surveys are on average 0.8 standard deviations below their long-term average – soft, but substantially better than the record lows observed for consumer confidence. Indeed, some had suggested that business investment could take over responsibility for driving the recovery, even as consumption begins to slow (Bank of England, 2022a). This would have some notable advantages. After years of consumption-driven growth, some recovery here is likely necessary if any economic recovery is to prove sustained.

¹⁹ <https://www.fca.org.uk/data/mortgage-lending-statistics> (September 2022).

Figure 2.12. UK: survey indicators for private sector economic activity (S.D), 1997–22



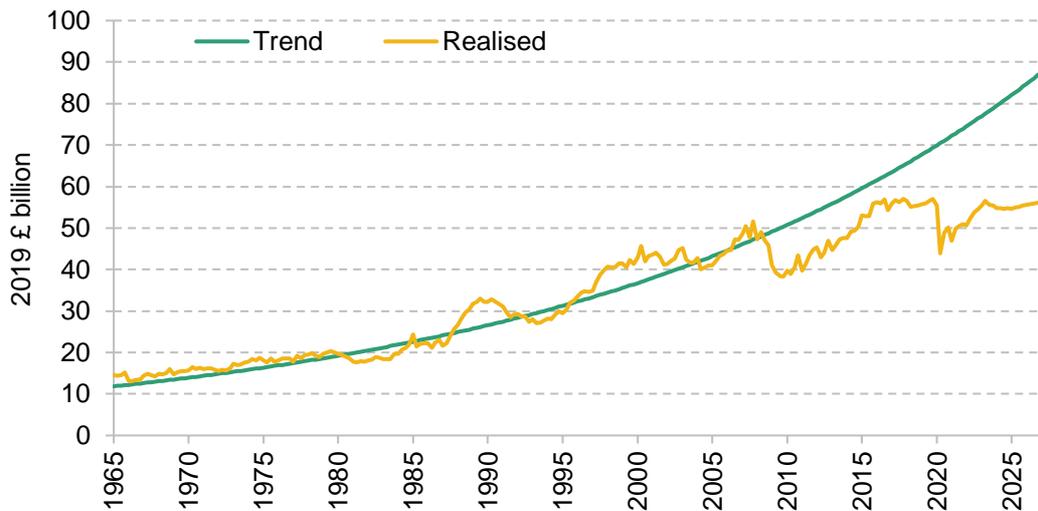
Note: Each series is normalised over the 2010–19 period. The swathe shows the range of soft activity indicators.

Source: Citi Research, ONS, CBI, BCC, BRC, IHS Markit, Deloitte CFO Survey, Lloyds and Nowcasting Economics.

Unfortunately, we think the relative resilience in business sentiment primarily reflects a handful of transitory effects. In particular, intense supply disruption during COVID had resulted in record backlogs across both the consumer- and business-facing sectors. The latest data show these are now decelerating. Weakening demand within the consumer-facing economy is broadening. New work balances within the Purchase Managers Index are now at a 20-month low. Business optimism has also fallen to its lowest level since May 2020.

The outlook for investment merits special attention in our view (see Figure 2.13). Productive investment has been the key blemish for the UK economy not just since 2016, but even prior to that – where rates of investment have increasingly diverged from historical user costs of capital. In part, these trends reflect (1) a large substitution into intangible investment (Haskel and Westlake, 2018) and (2) evidence in some cases of capital rationing – especially in the period post-GFC. But even so, some residual ‘under-investment’ seems to remain (Bailey et al., 2022). Unfortunately, near-term prospects are likely to remain weak. We expect investment to be weighed down by three headwinds:

Figure 2.13. UK: business investment, 1965–2027



Note: Trend business investment growth is based on growth between 1965 and 2007. Forecast period is from 2022Q3.

Source: ONS and Citi Research.

First, margins are likely to come under extensive and sustained pressure. Firms face challenges on two fronts. First, cost pressures are likely to intensify further. While government support announced to date should offer firms considerable help, electricity remains a particular issue.²⁰ Recent increases would still suggest total corporate energy spending increasing from around £5 billion per quarter in 2021 to £10 billion per quarter through the end of this fiscal year, and potentially to £20 billion when support is unwound. This sits alongside a range of other imported cost pressures.

On the other hand, softening demand also means firms are increasingly struggling to pass on further cost increases to customers.²¹ So far, dynamics here have been relatively healthy. Within consumer-facing sectors, output prices have roughly kept pace with their input equivalents. While this has been relatively asymmetric across sectors (Bunn et al., 2022), firms have generally reported stronger pricing power than usual.²² But broader signs of stress have begun to emerge in recent months. Within the PMI data, for example, the spread between input and output prices widened to a record extent through the start of 2022. Output price growth has also

²⁰ BEIS data suggest that while households drive two-thirds of gas consumption, firms make up two-thirds of all electricity consumption.

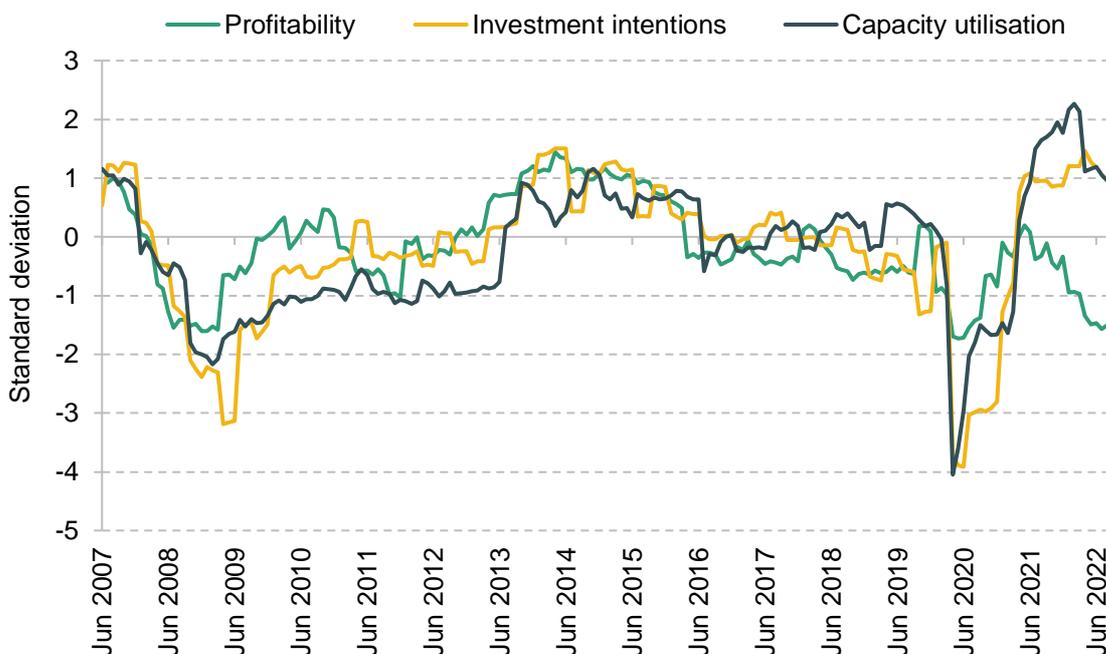
²¹ See, for example, the IHS PMI release from September.

²² See, for example, the <https://www.bankofengland.co.uk/agents-summary/2022/2022-q3>.

moderated seven months in a row. PPI inflation – charged to firms – has continued to accelerate among manufactured goods, even as CPI inflation has eased back.

The latest survey data show profitability expectations among their weakest on record (see Figure 2.14). Our own models would also suggest gross operating surplus falling by 1ppt by the middle of next year. This need not in all cases be a mark of low investment, especially when capacity utilisation rates are high – as they are today. However, the impact on investment tends to hinge on business optimism, and the associated growth backdrop. For example, within the CBI Service Sector Surveys, there is little clear correlation between costs and investment intentions, but during periods of softer growth the correlation tends to be much stronger, and negative. In the current circumstances, we would expect a reduction in profitability to have a negative impact on investment.²³

Figure 2.14. UK: survey indicators of capacity utilisation, investment and profitability, 2007–22



Note: Data are normalised over the 2007–22 period.

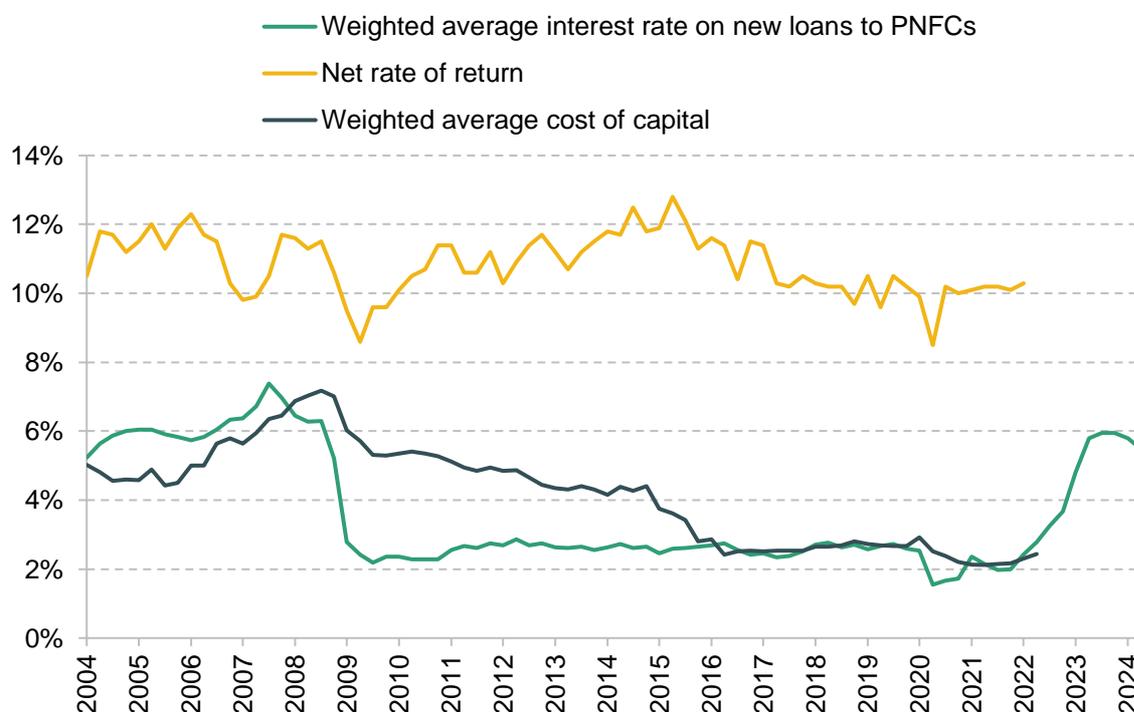
Source: Citi Research, Bank of England, BCC, CBI and Deloitte.

²³ A more formal way of looking at the same principle is to use a ‘structured’ VAR model. This essentially allows one to look at the impact of reduced profitability – in this case measured using gross operating surplus – in a period where demand is relatively strong versus one where output is softening. We have conducted this exercise previously (Nabarro, 2022a). This also points towards weak investment.

Second, firms are facing higher financing costs. We expect Bank Rate to increase to 4.5% in the months ahead. Markets have priced in an even larger increase. Whereas households have insulated themselves somewhat via the shift towards fixed-rate mortgages, corporates remain heavily exposed. Some shorter-duration money market and floating loans have been refinanced at longer, fixed terms. The issue is that that is not sufficient to compensate for legacy financial agreements. As a share of bank lending, therefore, over 75% of the outstanding balance is still payable on a floating rate. This amounts to just under 41% of all corporate debt. Among SMEs the share is similar – around 70% – despite the fixed-term lending under the Bounce Back Loan Scheme.

Higher rates are therefore likely to bite hard. Lending rates on outstanding non-financial corporate sector lending have already increased by 90bp since March 2021 – a much larger increase than that on outstanding mortgage lending. Recent volatility on both equity and corporate lending markets suggests the increase in the total weighted average cost of capital is likely somewhat greater. The latest survey data show firms are now beginning to adjust their plans in the face of higher rates. The proportion of services firms, for example, noting the cost of capital as a constraint in investment decisions is up 9 points on average compared with the end of 2019 (CBI, 2022). We expect this to weigh on investment through 2023 and 2024.

Figure 2.15. UK: net rate of return and cost of capital, 2004–24



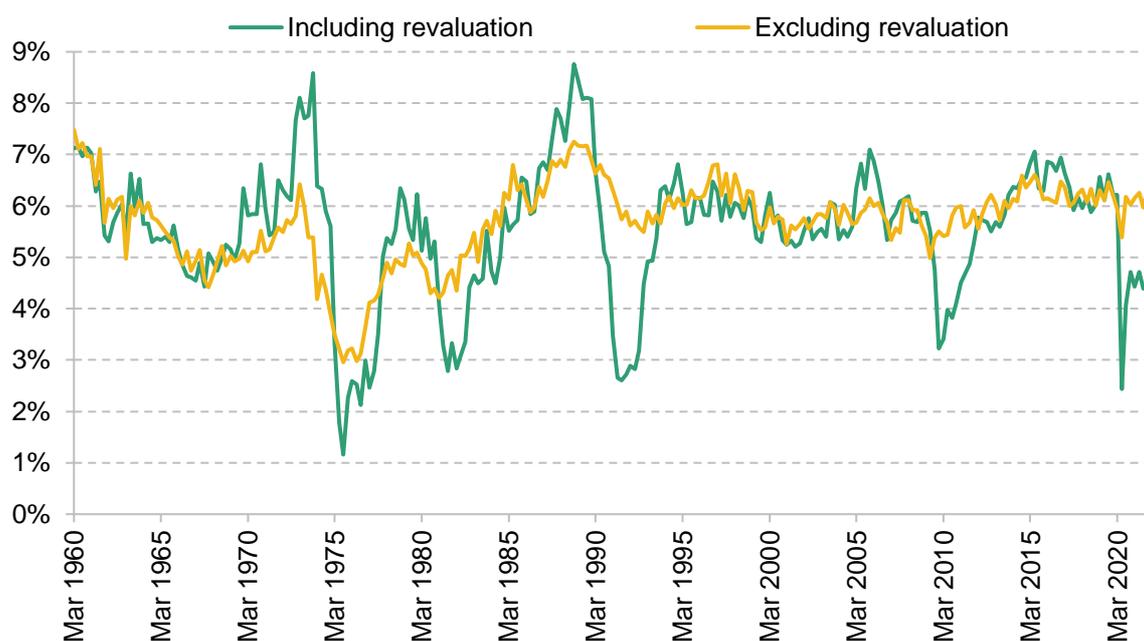
Note: PNFCs are private non-financial corporations. Net rate of return is measured here as gross operating surplus, net depreciation and revaluation, as a share of total assets.

Source: ONS, Bank of England, Cunliffe (2017) and Citi Research.

One important issue here has been a notable widening between the cost of capital for many firms and the rate of return on investment (see Figure 2.15). Some have argued that in the years to come this ‘additional risk premium’ could begin to narrow (Haldane, 2021). We are less sure. Many of the factors that contributed to these effects, including growing economic tail risks (Vlieghe, 2019), and broader increases in economic uncertainty, remain as salient today as they were in the years post-GFC.

Third, and last, we think firms are also likely paring back their investment plans in light of a weaker medium-term economic outlook. One notable feature of the current data is the marked divergence between the ‘effective rate of return’ on current capital assets including and excluding valuation effects (Figure 2.16).²⁴ What this effectively means is that the future productive potential of many assets is being written down. While such divergences are common during sharp downturns, in general the two series tend subsequently to converge. However, write-downs seem to be increasing, rather than beginning to fall back. This points to a more structural revaluation.

Figure 2.16. UK: effective rate of return including and excluding revaluation, 1960–2022



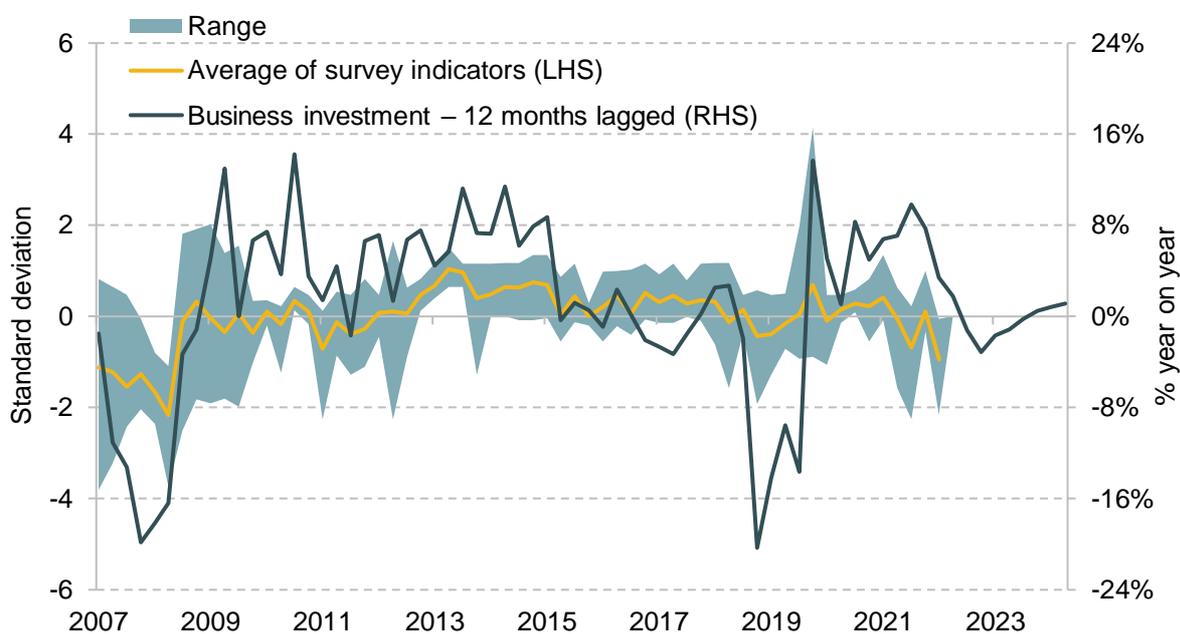
Note: The effective rate of return is calculated as the gross operating surplus divided by the overall stock of capital. Revaluation effects are calculated in the conventional fashion, based on the approach of Hall and Jorgenson (1967).

Source: ONS and Citi Research.

²⁴ Valuation effects here are calculated using the approach of Hall and Jorgenson (1967).

Why does this matter? There are two issues here. The first, and more direct, concern is when assets are written off this can weigh directly on business investment – which is calculated as a net measure. The second, and perhaps more interesting, implication relates to firms’ willingness to invest. Usually this is a function of returns, as well as interest rates, expected depreciation and the expected change in the value of the asset. If asset prices are falling, this can make firms considerably more cautious. However, this also points to the potential for better investment outcomes if policymakers are able to separate expected returns from a weak contemporaneous reality. For now, the UK seems locked on a more pessimistic trend.

Figure 2.17. UK: survey indicators of investment and lagged business investment growth, 2007–24



Note: Data normalised over the 2007–22 period. The swathe displays the range of soft indicators. Forecast period is from 2022Q3.

Source: Bank of England, CBI, Deloitte, ONS and Citi Research.

We should stress here the near-term outlook is of course not pure doom and gloom. In the very near term, investment is likely to be supported by the 130% ‘super deduction’ implemented by former Chancellor Rishi Sunak.²⁵ Alongside the 50% first-year allowance, we think these changes alone imply a reduction in the user cost of capital of 1.5–2.0ppt. Ordinarily, this would suggest an increase in investment of 10–15%. With the offsetting increase in the rate of corporation tax now dropped, we expect this policy to offer a stronger near-term boost to

²⁵ Under this policy, if a company invests £10 million in qualifying assets (including investment in new computer or plant equipment), this reduces its corporate tax liability by £13 million. Taxed at 19%, this would save the company in question £2.5 million. See <https://www.gov.uk/guidance/super-deduction>.

investment in March, before softening back thereafter. Several specific supply constraints – especially surrounding labour – should also ease.

However, investment itself is also relatively energy intensive. Recent increases in energy prices are therefore likely to weigh. And given the UK government has also chosen to prioritise consumption over investment, we think that also implies further weakness on the investment side. With investment in 2022Q2 still 5.7% below its pre-COVID (2019Q4 level), we expect this level to be surpassed only now in 2026. This is likely to leave the UK in a worse medium-term position.

Is the current account sustainable?

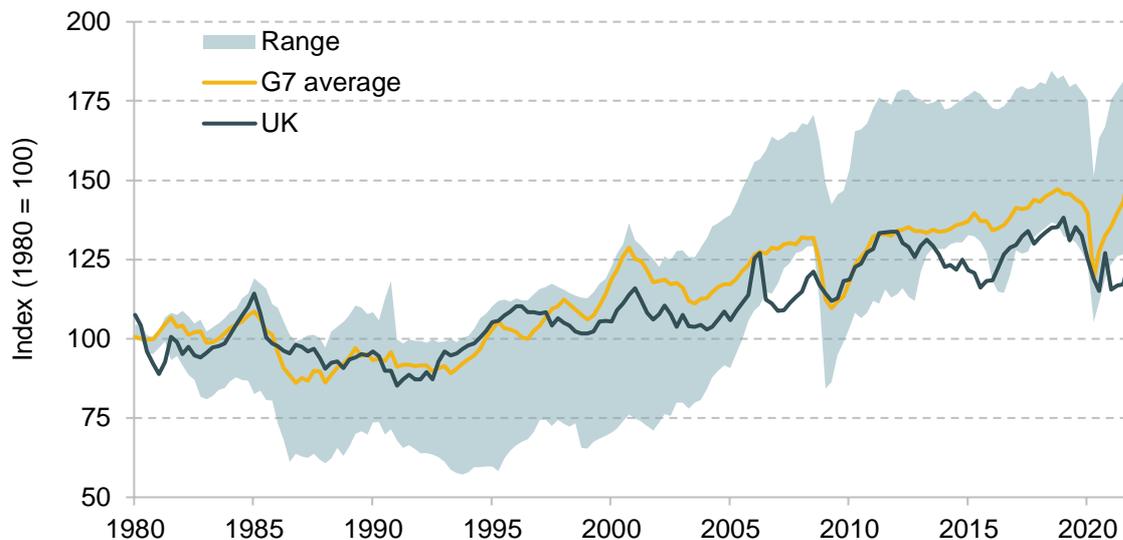
The external side of the UK economy is now an urgent concern. As we noted above, the government's response to the current energy crisis seems likely to weigh further on the current account. In Q1 of 2022, the external deficit already widened to 7.2% of GDP – a new record. We expect a further widening to over 8% in the months ahead, before moderating thereafter. A due dose of humility is required here. The UK trade data are volatile at the best of times. And the most recent estimates are especially uncertain. The current account deficit for Q1 alone was revised by 2.8ppt.²⁶ However, in our view, the underlying data here remain very weak.

As in 2017, UK trade has once again failed to capitalise on a buoyant global environment through 2021. Instead, total goods exports to both EU and non-EU countries are around 15–20% off G7 averages. A synthetic control unit that seeks to control for the industrial composition of UK trade would suggest UK trade is lagging its pre-Brexit/COVID benchmarks by around 25–30% overall.²⁷ Differences between UK and EU trade data suggest volumes are likely to continue to fall somewhat – with the UK still a conduit for goods produced elsewhere in the world into continental Europe. Compared with G7 peers, the UK is becoming a less open economy.

²⁶ Imports from the EU to Great Britain moved from being accounted for using Intrastat (a survey of VAT payees) to being based on import declarations. This seems to now include a larger number of smaller importers – boosting volumes overall. The basis on which UK exports were accounted for also changed, with HMRC altering the assumed departure period for goods exports from five to fifteen days – effectively removing five days from the data in January. See Donnarumma (2022a and 2022b).

²⁷ This figure reflects the divergence between trade volumes and what we would have otherwise expected given pre-2016 cross-correlations with trade and growth elsewhere. This figure is based on the same approach we outlined in Nabarro and Schulz (2019).

Figure 2.18. G7: total trade, 1980–2022



Note: Range here reflects G7 performance excluding the UK.

Source: ONS, national statistical offices and Citi.

Overall volumes here should continue to recover somewhat. The combination of both Brexit and COVID seems to have generated a series of compounding disruptions. This seems to be especially true of imports where border disruption and reported delays have been especially severe. In the months ahead, we expect these transitional difficulties to continue to fade.²⁸

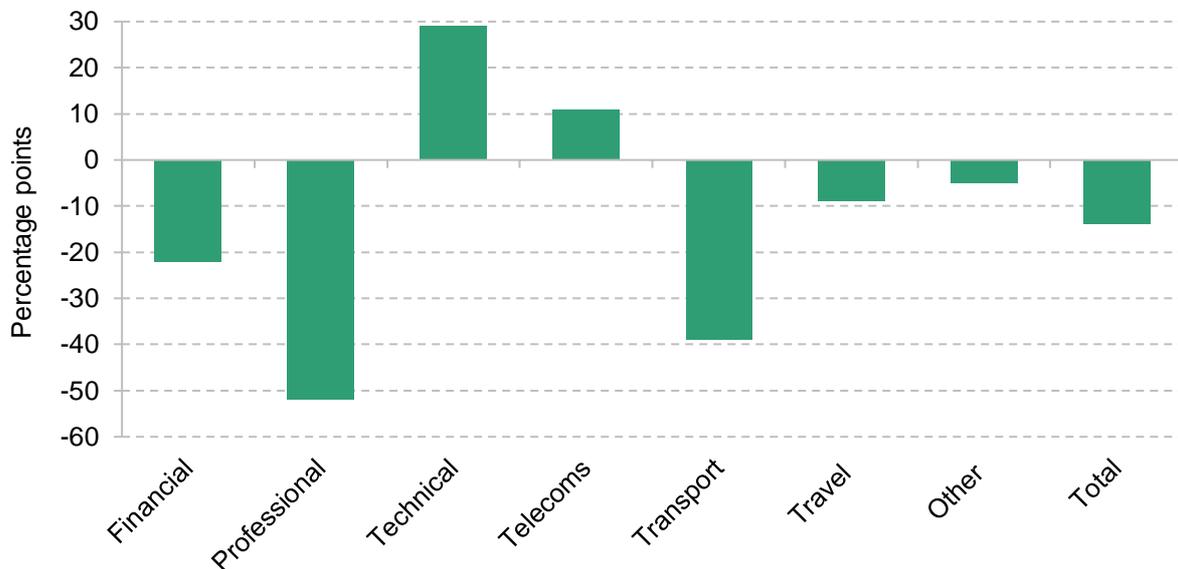
As volumes normalise, we expect the associated recovery to drive a further widening in the UK trade deficit.²⁹ Among exporters, there seem to be signs of structural adjustment. A larger share of exporters – for example – report a more persistent shift away from EU markets. This is corroborated by Freeman et al. (2022), who have shown a sharp fall in the number of firms exporting to the EU in 2021 not matched by fewer UK residents importing. In our view, these structural changes are a key signal. Exiting international markets can be expensive. When temporary disruption adds to trading costs, firms tend to respond by reducing trade volumes overall. This is the pattern observed among imports. But when a shift is more structural, this tends to drive acute changes in composition. As demand and supply conditions normalise further in the years ahead, we think this implies persistent downward pressure on net trade.

²⁸ Among various survey data, for example, more of the disruption to imports has been attributed to the combined impact of COVID and Brexit than among exports, suggesting transitional disruption may have bitten harder. This is especially true of the ONS Business Impact of COVID-19 Survey (BICS).

²⁹ While import disruption was primarily attributed to the impact of an abrupt transition, 49% of reported disruption to exports, according to the BICS data, is associated with Brexit alone. See Office for National Statistics (2022c).

One area of particular concern is exports of professional and financial services. COVID has weighed on services trade in general in recent years – with services imports and exports lagging their pre-COVID levels in July 2022 by 21% and 13% respectively. However, looking under the surface, the drivers in each appear quite different. Services imports in particular tend to be more heavily focused in areas that depend on the movement of people. In total, 45% of all UK services imports are via so-called mode 2 and mode 4 of services trade which depend on the movement of people (versus 12% of services exports). This we think points to a stronger recovery in imports as conditions normalise. In financial and professional services in particular, much of the relative weakness has been driven by weaker export growth to the EU (Barfield, 2022). With regulatory divergence set to gather steam in the years ahead, these effects seem likely to worsen.

Figure 2.19. UK: changes in services exports (difference in growth 2018–21 between EU and rest of world)



Note: The value here shows the percentage point difference in cumulative growth 2018–21 between services exports to the EU and those to the rest of the world.

Source: ONS, Barfield (2022) and Citi Research.

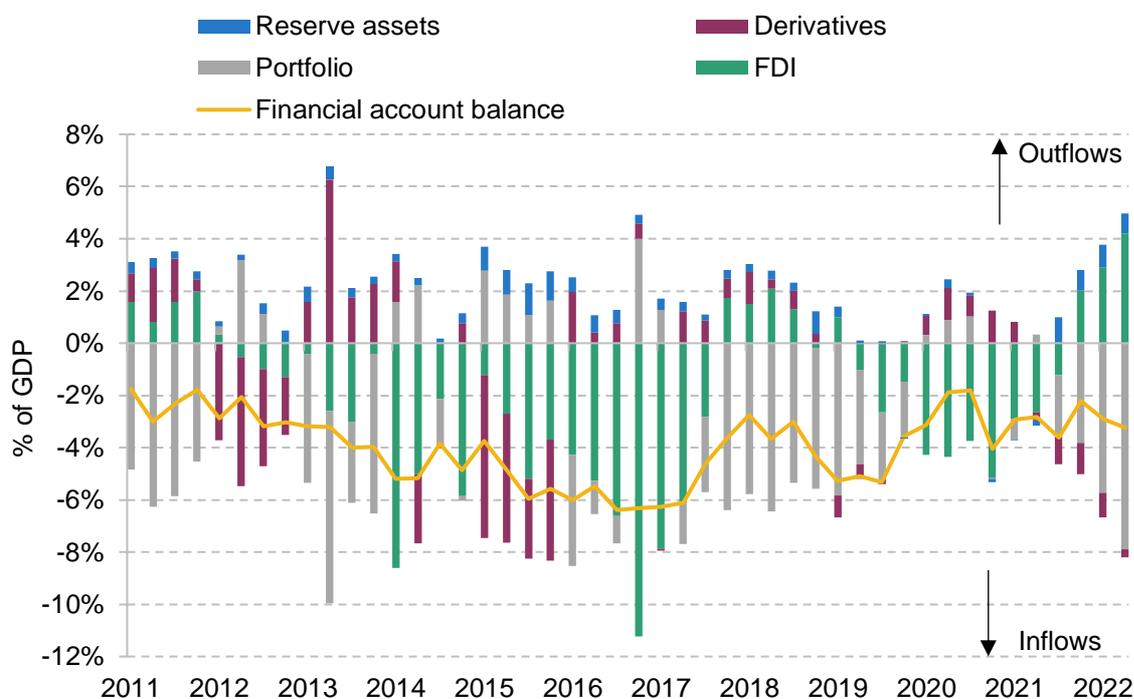
A large and persistent trade deficit opens a second question – namely how is the UK likely to fund itself?

In recent years the UK's net investment position has continued to deteriorate (now at 123% of GDP). Unlike in the years pre-GFC where the UK generally recycled portfolio flows into foreign direct investment (FDI), these processes have ceased – at least in net terms. The UK has instead been increasingly using inflows to fund its own domestic consumption.

In the months ahead, we think the UK may find this increasingly difficult. Unlike in the years post-GFC, the UK will also have to secure funding in a context where the share of incoming FDI is much lower, and competition for capital across the transatlantic economy is likely to be considerably greater. The outlook here is directly linked to the outlook for government borrowing, with international portfolio inflows increasingly focused on the purchase of government debt.

This, we think, is a more structural concern for the UK. While the UK has run large current account and fiscal deficits for some time, the scale of these seems set to grow. Most of the UK's net liabilities are focused in portfolio debt instruments. That means that should the UK economy shrink, there is no fall in the nominal value of the instrument. That shifts more of the burden of adjustment onto the exchange rate.

Figure 2.20. UK: net financial account, 2011–22



Note: Data show four-quarter moving averages.

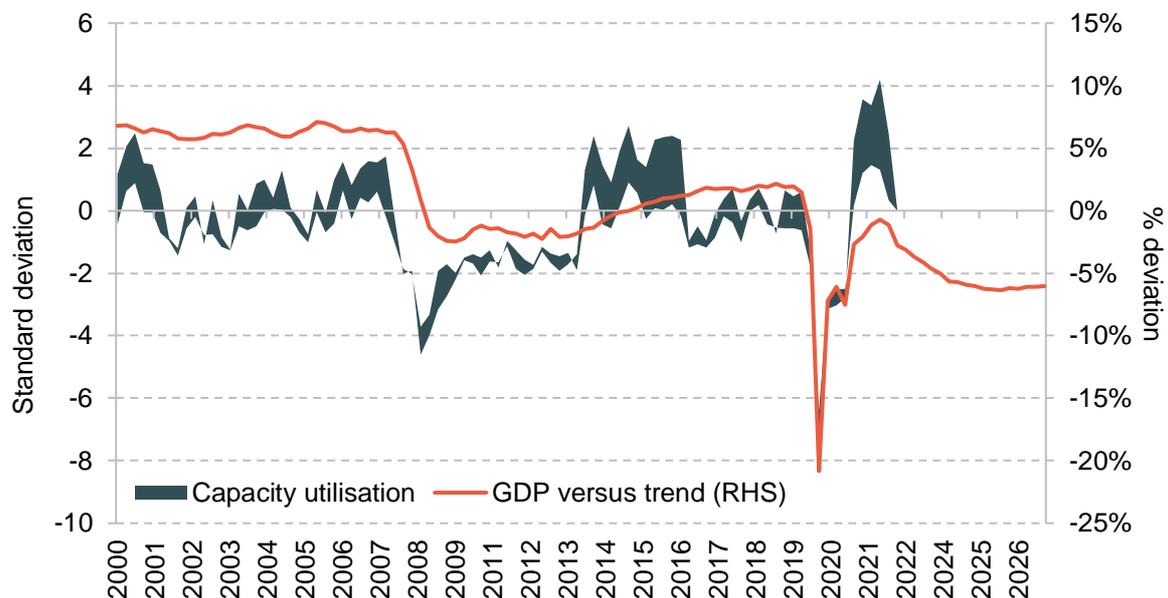
Source: ONS and Citi Research.

Neither of these factors means the UK is at immediate risk of a 'sudden stop' with respect to capital inflows. However, they highlight the risks. With a large fiscal and current account deficit, UK monetary and fiscal credibility are likely to be under particular scrutiny. These effects point to another interdependence, namely that associated with domestic household saving. If dependence on foreign capital is to be reduced, the easiest way of doing so would be to encourage more household saving. However, as we noted above, that would come at the expense of near-term growth.

2.3 Supply, capacity and adjustment

The UK has been subject to a series of large, successive supply shocks. By virtue of both their scale and the fact they have occurred in quick succession, the impact has been especially severe. While UK GDP is currently 2.6% below its pre-COVID trend, we therefore think the economy is currently around 1.4ppt above capacity (see Figure 2.21). In the months ahead, we expect adjustment to accelerate, driving a gradual if meaningful recovery. However, we see substantial challenges ahead with respect to both labour and capacity mismatch. With rates of economic reconfiguration likely to accelerate, we think these challenges constitute a more structural challenge for economic policy over the coming decade.

Figure 2.21. UK: GDP and capacity utilisation, 2000–26



Note: The GDP deviation is taken as the gap between realised GDP and the level implied by medium-term trend growth, divided by the latter. The trend series is based on output in 2014, where the deviation is zero. The capacity utilisation measure is normalised across the period as a whole. Forecast period is from 2022Q3.

Source: ONS, Bank of England, CBI, BCC and Citi Research.

As we explain in Section 2.6, we think this necessitates a change in policy approach. While the previous section highlights the risk of doing too little, this section highlights the risk of doing too much – at least via conventional means. Simply stoking demand risks aggravating the underlying supply challenges, worsening inflation. Policy must support incomes where essential. But this also suggests efforts to foster effective reconfiguration must be more central to the UK’s policy response. This requires supply-focused policy. For now, the current fiscal discussion remains a long way away.

Mismatch: challenges for both labour and capital

While the composition of demand across the UK economy has normalised significantly, we are still working through a series of structural economic changes. Today, these relate in part to efforts to adjust to higher energy prices. They also reflect changes associated with a sharp depreciation in the exchange rate, and legacy changes associated with both Brexit and the pandemic. While rates of sectoral reallocation have decelerated in recent quarters, these remain around double the rate seen just before the pandemic, and we see potential for some modest further acceleration in the months ahead.

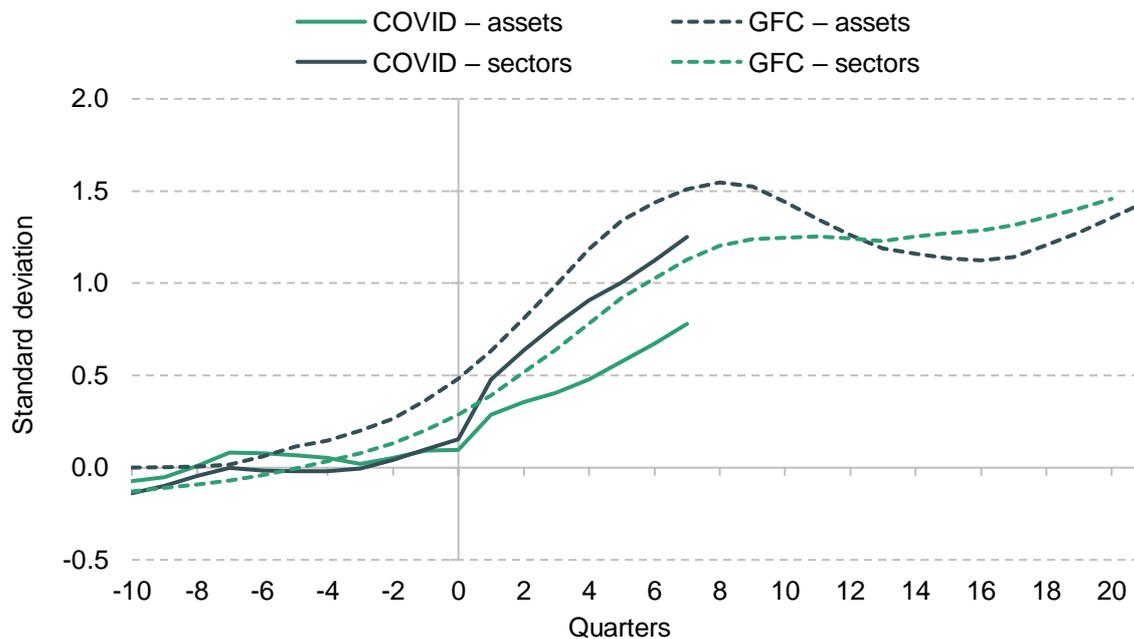
Ordinarily, structural economic change should not play a major role in conventional macroeconomic discussions. Economic reconfiguration is assumed to be ubiquitous and continuous, but largely irrelevant for policymakers thinking about the overall stance of fiscal and monetary policy. One sector may grow at the expense of another, but the net result for macroeconomic aggregates should be relatively limited. The problem when these effects are both large and sudden is that such an assumption is clearly false. Some employees and capacity are fixed in place – at least for a period. That weighs on supply in the interim (Broadbent, 2021a).

One way of examining these effects is to look at dispersion in price growth across sectors. As we explained in last year's Green Budget (Nabarro, 2021), reallocative challenges would tend to mean prices rising faster in certain parts of the economy as strong demand clashes with warped supply. Earlier in the pandemic, there was clear evidence for these effects within output prices – with price growth through 2021 heavily focused in those areas with the strongest demand (Bunn et al., 2022). These effects tend to add to inflation overall as downward nominal rigidities preclude offsetting reductions elsewhere.

While these effects have begun to ease, we think there is still some evidence of the same 'reallocative' challenges both in the labour market and across various capital services.

On the capital side, price dispersion has increased sharply since the start of the pandemic (see Figure 2.22). Here we look at user costs across two-digit industrial sectors. Since 2020Q2, there has been a marked increase in dispersion in capital costs across sectors of the economy – more so than in the aftermath of the GFC (Broadbent, 2012). This, we think, points to some misallocation of capital. Of course, there is a question of how easily capital can be effectively redeployed. Looking instead across different assets, dispersion has also grown. But the scale of price dispersion here is actually somewhat less than in the aftermath of the GFC. This offers hope that capital can be reallocated, not scrapped.

Figure 2.22. UK: capital services costs across various capital forms, GFC and COVID



Note: On the horizontal axis, 0 reflects 2008Q3 in the case of the GFC and 2020Q1 in the case of COVID. The measure here is based on the normalised change in capital services user costs compared with the pre-GFC or pre-COVID period. The cross-sectional dispersion of these normalised series is shown.

Source: ONS and Citi Research.

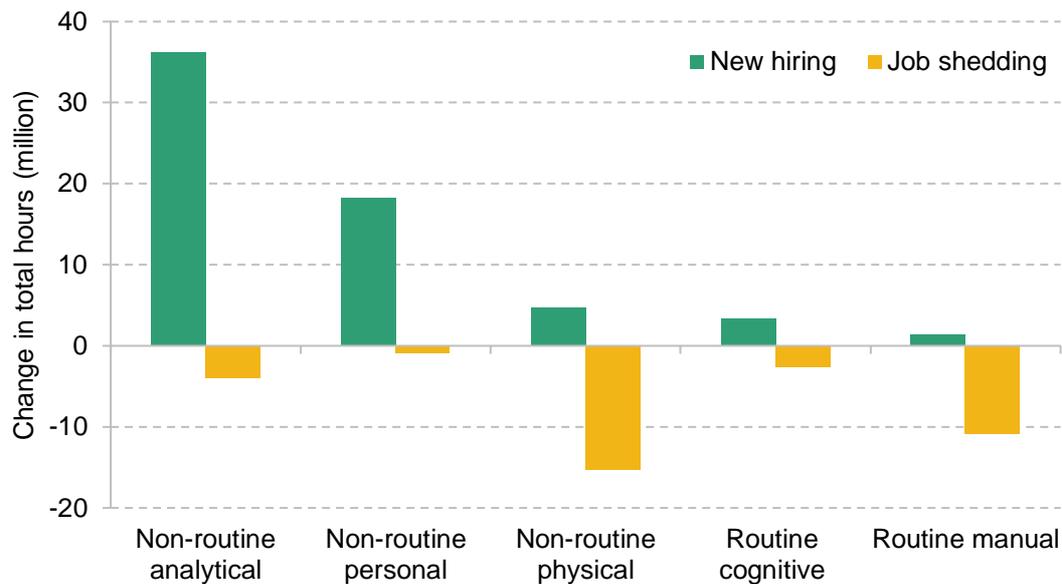
In comparison with the GFC, perhaps the starker difference is within the labour market. While during the GFC there was a moderate pickup in wage dispersion – primarily owing to a sharp drop in income within financial services – across the economy overall growth remained subdued, but relatively uniform. In part that reflected that the shock initially affected those at a higher skill level disproportionately. That eased any associated matching challenge.³⁰

Outcomes since the pandemic remain a little more disrupted. Dispersion in wage growth has jumped sharply across both sectors and regions. Increases have been greater in those areas enjoying stronger demand. In Figure 2.23, we look at the total changes in hours worked between 2016 and the end of 2021 by occupation. We then decompose those changes by the average task composition.³¹ This provides an indication of whether the task composition of the jobs that have been lost is similar to the task composition of those that have been created. Demand for non-routine tasks seems to be greater, and we see a skew towards human capital intensity. These data in our view suggest the potential for a more lasting mismatch issue. Wage growth has been strongest in capital-intensive sectors since 2020.

³⁰ In many cases this did mean substantial losses of human capital – with workers often forced to ‘de-skill’, but for the economy overall the degree of mismatch was relatively limited – see Holmes and Mayhew (2015).

³¹ Here the task composition is actually taken from US rather than UK data from Acemoglu and Autor (2011). This should therefore be seen only as a very rough indication.

Figure 2.23. UK: task composition of job shedding versus new hiring, 2016–21



Note: These data show the change in the total number of hours worked between 2016 and 2021, broken down by task of those roles that have disappeared and those roles that have been created.

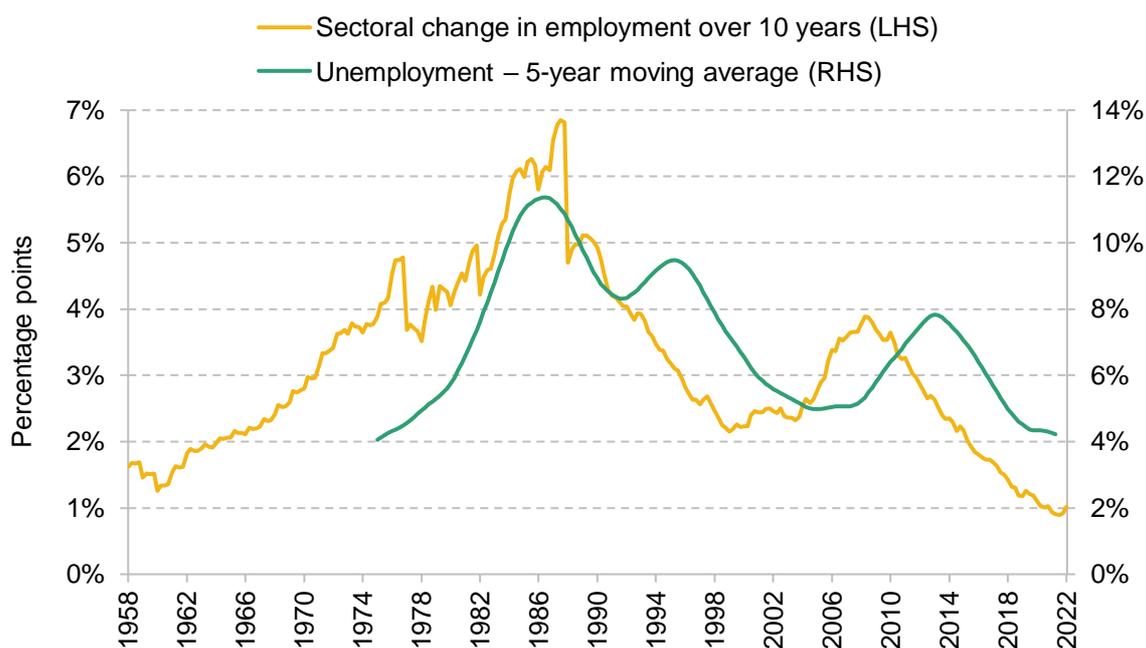
Source: Citi Research, ONS, Resolution Foundation (2022), O*NET and Acemoglu and Autor (2011).

This we think poses a more lasting policy challenge for the UK economy. In particular, whereas post-GFC the UK could adjust through differential and lower wage growth, the challenge now is to build new skills in order to plug these matching issues. This task is likely made more urgent by lower rates of immigration, with many firms previously filling these ‘skills gaps’ from overseas.³² Despite the skills-intensive nature of the recovery, labour market outcomes in recent years have been characterised by a further acceleration in ‘de-skilling’. This suggests some need to generate not just more but different skills.

Further supply shocks likely lie ahead. After two decades in which reconfiguration rates have proven mercifully low, this is likely to pose a challenge for labour market policy. Historically, this has placed much greater weight on how effectively institutions are able to reallocate workers in demand sectors (Wells, 2022). The UK has a mixed record with such policies. Notable reconfigurations through the late 1960s did little to add to unemployment – in part reflecting the intensive work of Employment Exchanges. By contrast, outcomes in the 1980s and early 1990s were considerably worse.

³² There is a strong correlation between the change in the share of new starters who are migrants in a given sector, and the overall change in the share of employment. This suggests migration has played a key role in recent years in easing labour market adjustment (see Goldin et al. (2018)).

Figure 2.24. UK: rate of sectoral change in employment, 1958–2022



Note: Sectoral reallocation here is measured as the weighted average of the change in employment share. Measure based on Chodorow-Reich and Wieland (2020).

Source: Citi Research, ONS, Bank of England, and Thomas and Dimsdale (2016).

On the capital side, these effects mean the orderly management of insolvency is likely to become more important. In some respects, the UK is relatively well positioned here. A relatively lightly regulated economy in both product and labour market terms is helpful.³³ The UK also has relatively accommodative insolvency laws, making it easier to recognise and reallocate where economical (Adalet, Andrews and Millot, 2017). Post-GFC, factors such as the weakness of banks' balance sheets was seen as an impediment to effective reallocation, with fewer banks willing to recognise when firms were likely unviable, and their loans subsequently written down. These effects have been less severe through COVID – reflecting widespread macro-prudential reforms over the past decade. Although in recent months we think there has been some evidence of 'diabolical sorting' that could cause concern (Acharya, Lenzu and Wang, 2021). There may also remain some issues with the recognition of Bounce Back Loan losses (Leslie, 2022).

However, rates of business dynamism (firm formation and closure) have fallen in recent years.³⁴ One factor that could increasingly weigh in reallocation rates is the increase of intangible capital. These assets have grown significantly as a share of the UK's capital base. They also often constitute firm-specific capital – meaning they are harder to reallocate in a case of insolvency.

³³ See OECD indicators of employment protection and indicators of product market regulation.

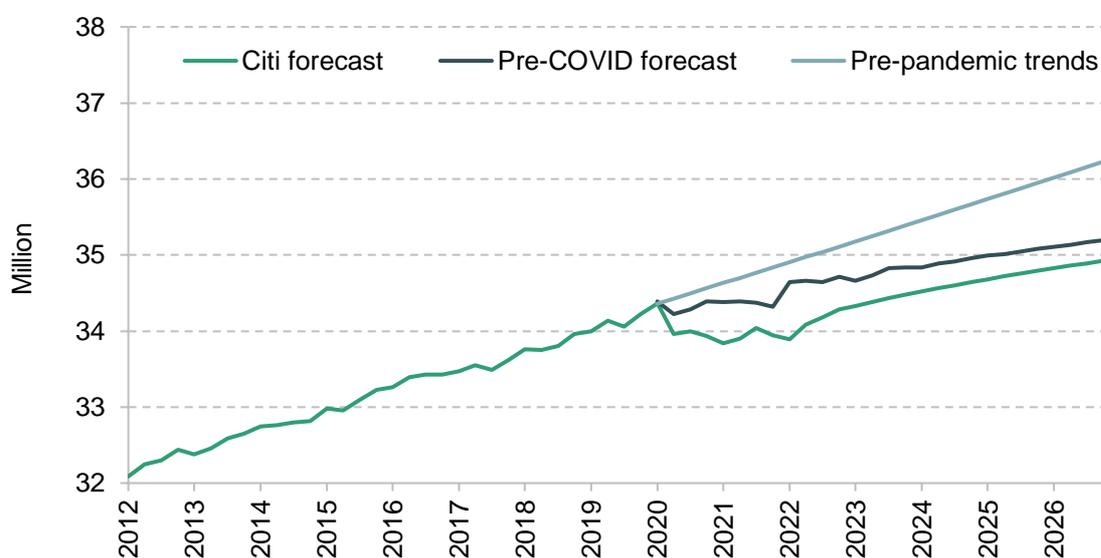
³⁴ <https://www.ons.gov.uk/businessindustryandtrade/changestobusiness/businessbirthsdeathsandsurvivalrates/bulletins/businessdynamismintheukeconomy/quarter1jantomar1999toquarter4octtodec2019>.

This should not mean losses are not recognised ultimately. However, it does increase the risk financial firms are slower in winding down. And in recent years it does seem that intangible-intensive sectors have contributed most extensively to the slowdown in productivity.³⁵

Will labour supply stay low?

The UK also faces a more specific associated issue – a shortage of labour. While the UK is not alone in seeing participation drop post-pandemic, the effects do now appear especially severe. Total labour activity is roughly 900,000 (2.4%) below where it would be had growth observed since 2012 continued (Figure 2.25). Total hours worked are even weaker – around 3.7% below, versus a shortfall of 2.6% for GDP.

Figure 2.25. UK: workforce, 2012–26



Source: ONS and Citi Research.

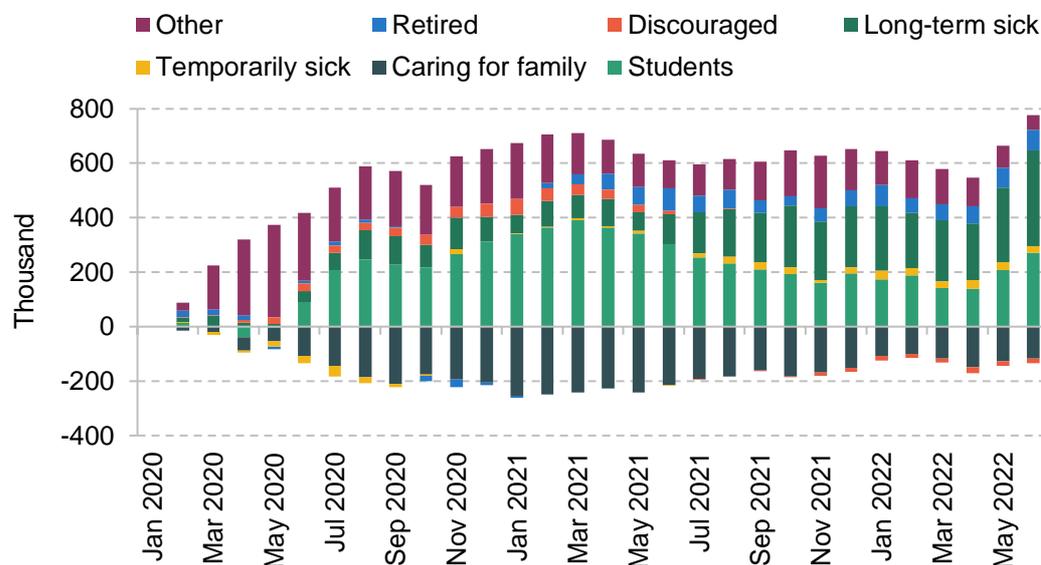
Over time, the impact of these changes should attenuate. A shortfall in total labour supply of 3.7% would usually mean long-term scarring of 2.1% in the medium term as production rebalances. In reality, the contribution versus our pre-pandemic baseline is a little less, around 1.0ppt, as we had already assumed a reduction in EU migration would weigh on workforce growth in the medium term. But when these shocks occur quickly, the supply side of the economy struggles to rebalance. This weighs more heavily, at least for a time.

³⁵ In part, this could relate to financial constraints that tend to be more acute for firms without recognisable collateral. However, another explanation is that these effects may also be slowing rates of creative destruction.

A more important question for the outlook here is whether this hit to supply does indeed prove permanent. We think there are some grounds for optimism.

First, we think the size of the workforce should recover some of the losses that have emerged so far during the pandemic. We have been encouraged by the pickup in non-EU migration. Visa approvals in total were up 50% in 2022 above levels in 2019–20, with skilled applications up 66%.³⁶ Strong EU applications to the UK’s settled status scheme suggest further EU net emigration is likely only limited – a finding corroborated by the ONS’s initial estimates. We also see potential for further increases in non-EU immigration, even beyond our 2019 assumptions. These primarily relate to the decision to reintroduce the ‘Skilled Worker Route’ – a substantially more liberal system than the Tier 2 visa it replaced.

Figure 2.26. UK: change in inactivity by reason, 2020–22



Note: Numbers are given relative to January 2020.

Source: ONS and Citi.

Second, we think participation should also gradually recover. Since the start of the pandemic, the increase in inactivity has been concentrated among two groups: (1) older workers between the ages of 50 and 64 (who have added a net ~400k inactive) and (2) (younger) working-age men (~180k). These effects are generally limited to those who claim they currently do not want to work. The most common reason is either long-term sickness (~460k) or retirement (~80k). Despite an offsetting 250k drop in inactivity owing to more flexible working, these effects still

³⁶ Home Office, UK immigration statistics.

amount to a 2.1ppt hit to the UK workforce (690k workers) – equivalent to the reduction in employment relative to trend.

Superficially, the prognosis here is not good. The concentration of older workers in particular would ordinarily suggest a slower rate of return to the workforce, and a more persistent subsequent labour supply challenge (Office for National Statistics, 2022e). Two further developments compound the risk:

- **Growing numbers suffering long-term sickness.** This trend precedes the pandemic, with the number suffering from long-term sickness increasing from around 6 million in 2017 to 7 million today – 17% of the workforce. The participation rate amongst this group, while increasing between 2014 and 2018, has also since begun to stall (Haskel and Martin, 2022). In total, increases amongst this group now amount to half the total increase in inactivity, with students the next-largest contributor.
- **A significant increase in house prices.** This rise has been the main factor in the aggregate net increase in household wealth. Ordinarily, one would expect this to have a larger marginal effect among older workers who are closer to retirement. Indeed, Disney and Gathergood (2016) note that a local 10% jump in house prices can drive a reduction in participation among older men of around 4%.

The first issue is the main concern. House prices, and changes in nominal household wealth, seem unlikely to weigh on a persistent basis.³⁷ Long-term sickness, by contrast, may well prove a trickier issue. While flows from inactivity to activity amongst this group narrowed somewhat in the mid 2010s, the gap here has increased since – indeed to record levels in recent quarters. This suggests higher levels of inactivity amongst this group seem likely to prove persistent.

On the one hand, reduced COVID incidence and a gradual recovery in the health service should, we think, mean the net increase in inactivity associated with longer-term illness should fall back to around 200–250k above its pre-COVID level. One notable change in recent years has been a reduction in the average age of those reporting long-term sickness, with a particular increase in the density of those suffering under the age of 35 (Haskel and Martin, 2022). We think this suggests more hope for a recovery in the medium term as NHS waiting times come down. However, further setbacks could yet drive these data higher still.

³⁷ The Disney and Gathergood finding is based on a local micro-data approach, reflecting the impact of a 10% jump in real house prices. Realised growth has been well below this. The more fundamental point here is ordinarily we would think labour supply decisions are primarily based on the marginal return to work. This means the adverse impact on labour supply of higher house prices actually tends to be driven by ‘second earners’ (see Cantore et al. (2022)) and mortgaged households (see Bunn et al. (2021)). In that respect, the concentration of the current drop in participation among older households may paradoxically be a basis for optimism (at least from a labour supply perspective).

While this issue is rightly the focus of extensive policy discussion, we would note that it accounts still for only half of the overall increase in inactivity since the start of the pandemic. Instead, as Boileau and Cribb (2022) have noted, many of these more recent reductions reflect economic rather than health decisions. Here we think the picture may prove more positive, at least from a labour supply point of view.

And elsewhere the picture seems more positive.

First, reductions in COVID cases have driven a marked reduction in the number temporarily off work with COVID. In Q4 of 2021, as many as 376k workers – 1.5% of the UK workforce – were either sick or self-isolating at any one time owing to the pandemic. Reduced rates here should also weigh on fears amongst older groups. Of those over the age of 50 who have exited the workforce since the start of the pandemic, COVID was still identified by 15% as a reason why they have not returned to work as late as March (Office for National Statistics, 2022e). This can help to explain the bounce in participation amongst the over-65s in recent months.

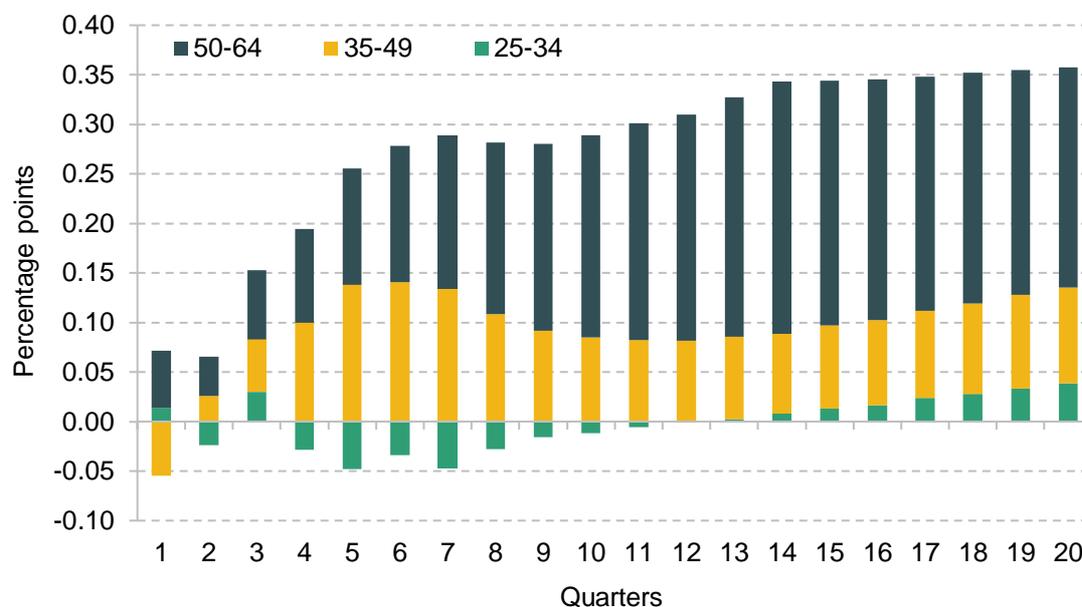
Second, the reversal of the IR35 (off-payroll working) reforms of 2017 and 2022 will likely drive a notable improvement in participation among the previously self-employed. This had been a key area of growth for the UK labour market since the GFC, in part because of its lower effective tax rate. Since the beginning of the last fiscal year, that changed with the IR35 tax reform. Reduced take-home pay disincentivises work (a ‘substitution effect’). In a range of high-profile sectors – including HGV drivers – these tax changes seem to have been instrumental in shortages (Zangana, 2021). Previously we thought these effects could have meant a net loss of 250k in participation. While it is unlikely all of these will return, these effects should now be less severe.

Third, high inflation in the months ahead is also likely to push more back into the labour market. The impact here hinges on what exactly is driving prices higher. When driven by discretionary components of the consumption basket, higher inflation can weigh on the incentive to work – similar to the increase in taxation. However, as we discuss in Section 2.4, price rises are currently being driven by necessities such as energy and food. In this case, an increase in the price level is better thought of as a reduction in income (Nabarro, 2022a). This increases the incentive to work.

We therefore expect the recent surge in non-core costs to add to labour supply. Generally, given energy and food tend to be larger shares of the budgets of not only poorer but older households, the effect may be especially large. For these households, there are unfortunately few alternatives but to work in order to plug the gap in non-discretionary consumption. For the same reason, monetary tightening tends to have the largest positive impact on labour supply amongst mortgaged and lower-income households (see Bunn et al. (2021) and Cantore et al. (2022)

respectively). The asymmetric distribution of household savings suggests these effects should remain relatively large. Historically, the effect associated with non-core inflation has also been focused amongst older age groups (see Figure 2.27).

Figure 2.27. UK: impact of non-core inflation shock on headline participation rates by age



Note: Product of Citi's BVAR participation model. Shock reflects a five-standard-deviation shock to non-core inflation, roughly equivalent to that the UK faces over the next 12 months.

Source: ONS and Citi Research.

How large could this effect be? There are two channels to consider here. The first is participation itself, where we estimate a 4ppt surge in non-core (food and energy) inflation is usually sufficient to push the headline participation rate up by around 0.1ppt all else equal. We currently expect annual non-core inflation here to accelerate to just under 25% over the coming 12 months, enough to add 0.4–0.5ppt to the headline participation rate. As important is the effect of such inflation on net desired hours. When inflation is driven by discretionary spending inflation, these tend to fall. But when driven by energy and food, the effect is large and positive. Alongside the impact of higher participation rates, this could further ameliorate the impact. Across recent survey data, working longer hours is one of the most common responses to the current cost of living shock – with 23% of households citing this as one of their top three actions (Bank of England, 2022b).

The outlook for unemployment

What might this mean for slack? The starting point here is unambiguously tight. Unemployment fell to 3.6% in the three months to July, the lowest rate since 1974. Short-term unemployment has fallen by 161k compared with pre-pandemic levels, meaning that the average duration of

around 15% versus 18% in the US and 8.2% in the European Union.³⁸ However, the policy response to the pandemic favoured protecting existing employment relationships. The implication, especially when extending the scheme in 2021, was the accumulation of a very large backlog of hiring. Alongside the drop in participation, this helps explain why the supply side of the UK labour market appears quite so tight, even as GDP is so weak.

These effects are hard to differentiate from more conventional labour market tightness.

The reason why we think these ‘backlog’ effects may be playing at least some role is that, looking across sectors, levels of pre-COVID ‘churn’ tend to be a much stronger indicator of growing tightness than the change in aggregate demand (Nabarro, 2022a). If the current shock was being driven primarily by a conventional excess of supply versus demand, one would expect the largest increase in tightness to be observed within those sectors with the strongest net growth. However, this does not seem to be the case. Instead those sectors with the largest increase in their vacancy to unemployment ratio (versus 2019Q4) include both those with very strong demand – such as professional services – and others where demand is weak – such as hospitality. While it is not the sole driver we think, some of these effects reflect the hiring backlog associated with the pandemic.

Of course, this is not to say the UK labour market is not currently tight. These effects are in essence a further adverse labour supply disruption. But this logic does suggest that some of the current tightness will take some time to abate.

In the interim, three further factors are likely instrumental in determining the speed at which the labour market loosens.

First is the rate at which weak aggregate demand feeds into labour demand. Traditionally vacancies have tended to follow growth with around a three-month lag. It has been a similar story through 2022, with growth peaking in January and vacancies in April. In the months since, much of the soft data have also pointed to a softening demand outlook. In recent months the KPMG–REC survey, for example, has pointed to marked reductions in both hiring and open adverts. Net hiring is now below its long-term average, though outstanding vacancies are a little above. In the months ahead we think the acute margin squeeze we noted in Section 2.2 will weigh on labour demand as well as investment.

³⁸ Sources:

UK – <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/adhocs/10685employeeturnoverlevelsandratesbyindustrysectionukjanuary2017todecember2018>;

US – <https://www.bls.gov/news.release/pdf/jolts.pdf> (August 2022);

EU – <https://www.cedefop.europa.eu/en/tools/skills-intelligence/job-turnover?year=2019&country=EU#1>.

Vacancies may be sticky on the way down. Acute skill shortages are evident in several sectors. High vacancies and poorer matching are likely to prove a little more structural. In some cases the shift towards online job advertising should also mean the cost of advertising is structurally lower, adding to the number of adverts. Both could mean higher rates of ‘fishing’ whereby firms keep vacancies open in the hope of finding the right skills (Saunders, 2017).

But overall, we think the net trajectory of UK vacancies is downwards. The latest timely data from Adzuna and indeed.com show vacancies now at their lowest level since 2021Q2. As the margin squeeze intensifies, we expect the rate of new job postings to decelerate. One important driver here is likely to be the rate of firm formation. Ordinarily this accounts for 30–40% of all gross hiring. With credit conditions now tightening, uncertainty rising and demand softening, we expect demand here to now begin to drop back more quickly.

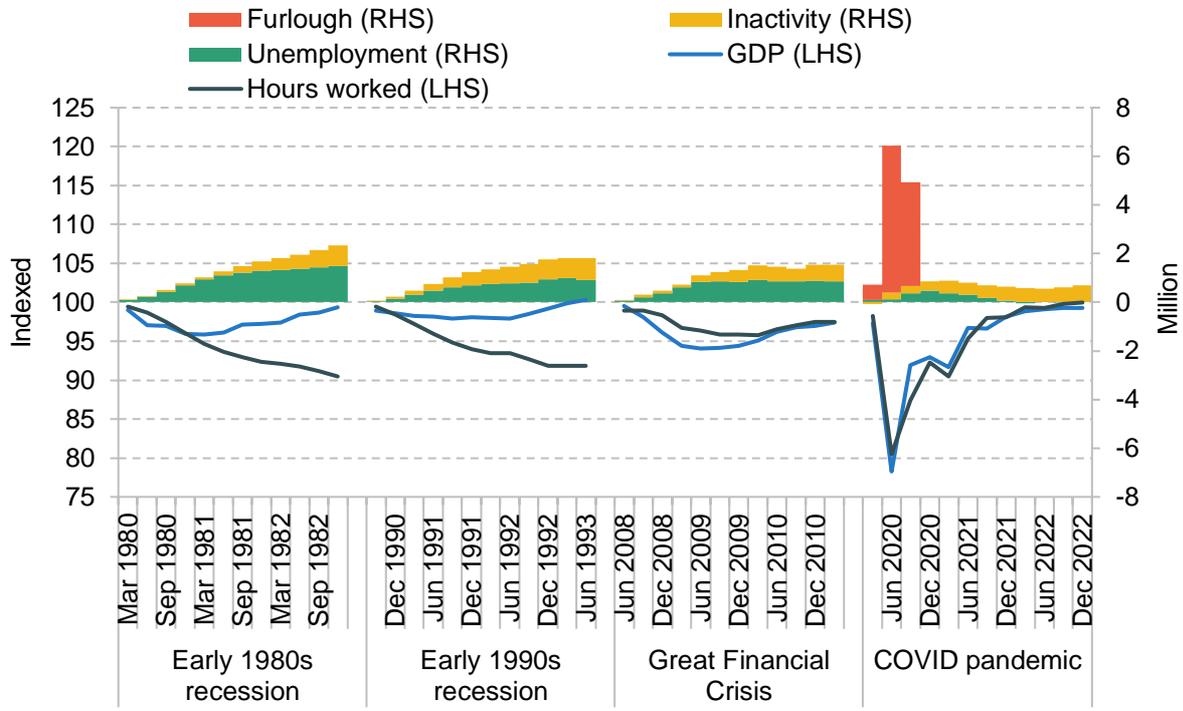
The second question concerns labour hoarding, and in particular the extent to which firms feel both able and willing to hold onto uneconomical staff. In the period post-GFC, this played a key role in attenuating the labour market impact of the downturn. The key feature of that shock was that the adverse hit to GDP was focused in sectors with relatively skilled workers, and often those who were initially working more hours than they would ideally like to (Daly et al., 2014). Many employees were therefore willing to reduce their hours. Employers also often had an incentive to hold onto valuable skills.

In the current shock, we think there is also evidence firms have worked hard to retain staff. We think this reflects three drivers. First, during the acute phase of the pandemic, was by design. Labour hoarding was actively encouraged in the early part of the pandemic as part of the furlough scheme. This aimed to maintain labour relationships that were themselves immediately uneconomical, in the expectation that longer term many were worth preserving. Second, in the period since, we think uncertainty added to the incentive to retain staff. This included uncertainty over demand, market share and pricing power. Third, and last, has been the scale of market dysfunction and the subsequent hiring challenges. As the labour market has tightened – especially in certain occupations – we think firms have held onto employments for longer than they otherwise might for fear of the potential costs of rehiring.

The question now is whether we could see some of these effects persist into a more lasting element of the looming economic adjustment. This could be a plausible narrative for unemployment remaining low, even as supply gradually recovers. Here we are relatively sceptical. Current redundancy intentions do remain low. But unlike the GFC, the current crisis is not concentrated in sectors that saw widespread overworking or a concentration of higher-skilled people (Crawford, Jin and Simpson, 2013). With living costs also now increasing, we find it hard to explain why those in more affected sectors might be willing to work fewer hours. Similarly, for employers, there is not an obvious rationale as to why they may want to reduce

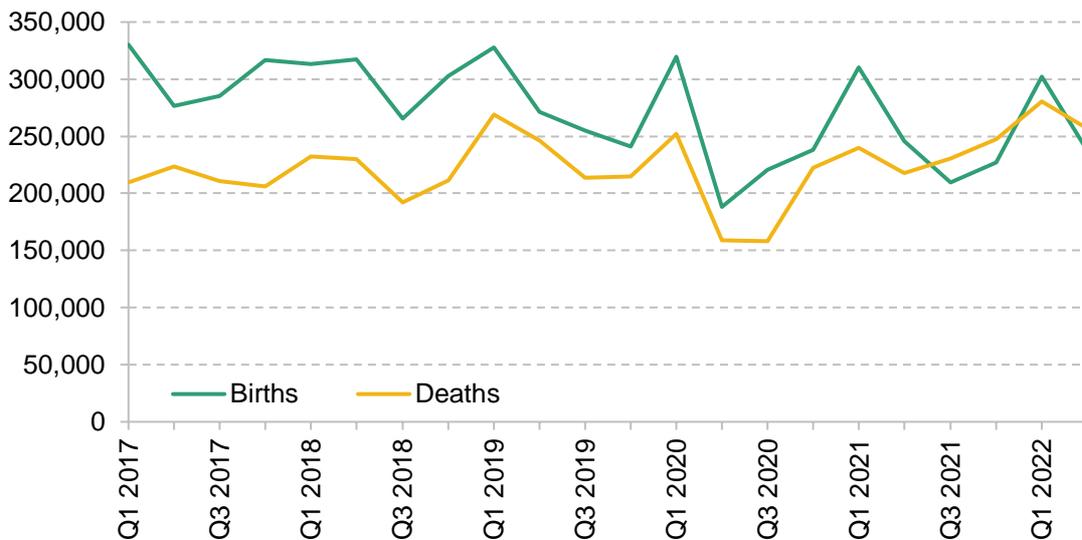
average working hours at the benefit of more employees. Ordinarily, higher fixed costs would lean in the opposite direction. We expect some of these effects, but only to a limited extent.

Figure 2.29. UK: hours worked and output, post-COVID recovery and previous recessions



Source: ONS.

Figure 2.30. UK: job creation and destruction as a result of firm formations, 2017–22

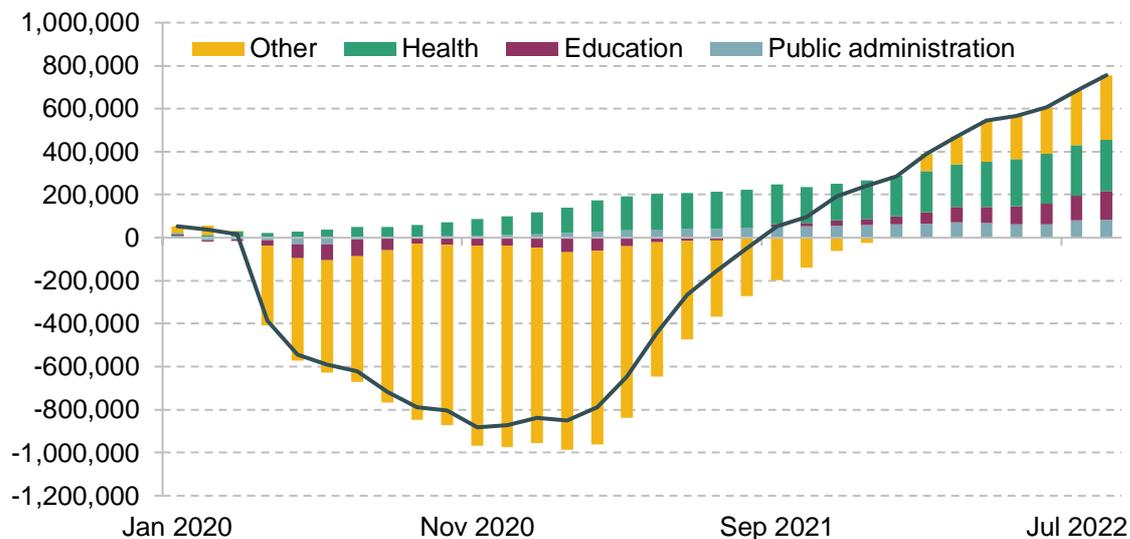


Source: ONS.

One important issue here concerns ‘involuntary’ hoarding – namely firms holding onto staff when they themselves are fundamentally insolvent. In recent weeks we have begun to see the faster moving data here suggest some deterioration. Insolvencies, having already reached a new record in Q2, seem to have picked up further in Q3, even as firm formation rates have fallen back. In the months ahead, we expect weak demand, higher cost burdens and higher rates to all add to the rate of insolvencies here. In Q2, the level of job destruction associated with firm insolvencies exceeded the rate of job creation for only the third time on record (Figure 2.30). We expect more such quarters ahead.

The third factor concerns developments in the public sector. Employment growth has been massive here since the start of the pandemic. Looking just at PAYE employees, for example, of the net 750k increase since before the pandemic, 460k is made up of workers within sectors dominated by the public sector, with 240k of this accounted for by health alone. Actual public sector employment has increased by 220k. But in many cases workers, while not directly working for the state in these sectors, do depend on public spending. In 2021, total public sector staff costs were 23% higher than their equivalent in 2019 and consumption was 25% higher.

Figure 2.31. UK: change in PAYE employees since December 2019, 2020–22



Source: ONS/HMRC and Citi.

Much will depend here on how public spending decisions develop over the coming year. If, as currently suggested, allocations to government departments are not topped up, staffing levels are likely to fall (see Chapter 4). The unwind of further temporary pandemic interventions also seems likely to mean some employment – particularly that based on contracted rather than directly employed staff – will also ease. However, we are sceptical all of this increase will unwind anytime soon. Total public sector employment is only now back to similar levels to

2013. With service demands continuing to grow, it is not clear to us that a meaningful reversal is likely in the near term.

Summary

Overall, we expect unemployment to increase in the months ahead, but only gradually. From here, we expect headline unemployment to increase from 3.6% to 4.6% in the second half of 2023, and a peak of 5% in 2024H1. The risks here are probably to the upside. The most plausible drivers here would be if some labour market softening drives a simultaneous unwind of labour hoarding, or public sector employment falls faster than we currently expect.

2.4 Inflation, costs and wages

With inflation already at multi-decade highs, the key risk in the months ahead is that the large relative price change that has characterised inflation to date transitions into a more problematic, self-sustaining, domestic inflation problem. The risks here are greater than at any time in the last 30 years, and relate to three dimensions of the current inflation outlook: (1) scale; (2) length; and (3) the recent strength of coincident domestic demand conditions. The first-order impact of recent energy interventions means the risks associated with the first dimension are now somewhat less. However, the second and third remain highly problematic.

For now, the inflationary surge in the UK primarily reflects particularly large, and widespread, relative price changes. These relate primarily to the increase in imported energy and food prices, but also to residual revaluations associated with structural changes post-pandemic. When such adjustments occur quickly, downward nominal rigidities across wages and prices mean these almost invariably feed into headline price increases. These are an inevitable part of the reconfiguration process.

In the months ahead, we think the risks remain skewed towards a largely self-correcting inflation shock. The key risk in our view is fiscal policy. If this seeks to offset the adverse shock to incomes and demand – chasing the slowdown – then this risks tipping the UK into a much more challenging inflation and policy environment.

A sequence of severe price shocks

The combined impact of the COVID pandemic and war in Ukraine has unleashed three large cost shocks on the UK economy:

First was a surge in traded goods prices. Since the start of the pandemic, a combination of production interruptions (especially in China), supply chain disruption and a coordinated global rotation of consumer demand away from services and towards goods has bid up the prices of

traded goods. The UK, as a large net importer of many of these items, has been especially exposed. Trade disruption associated with the transition to the Trade and Cooperation Agreement with the EU has also likely added.

Second has been the remarkable spike in household energy prices. Both oil and gas prices accelerated as the global economy has reopened. Petrol reached record levels in July – but has fallen back marginally since. Gas shortages and the conflict in Ukraine are, however, now the main drivers. While the UK is not dependent on Russian gas, its energy mix leaves it exposed to changes in European wholesale prices. We think energy could have added as much as 8–9ppt to headline CPI in January absent the government intervention. Even so, households are still looking at a near-doubling of their electricity and gas bills, alongside sharp increases in fuel costs. We expect annual energy inflation to reach 62% in October, adding 3.5ppt to headline inflation.

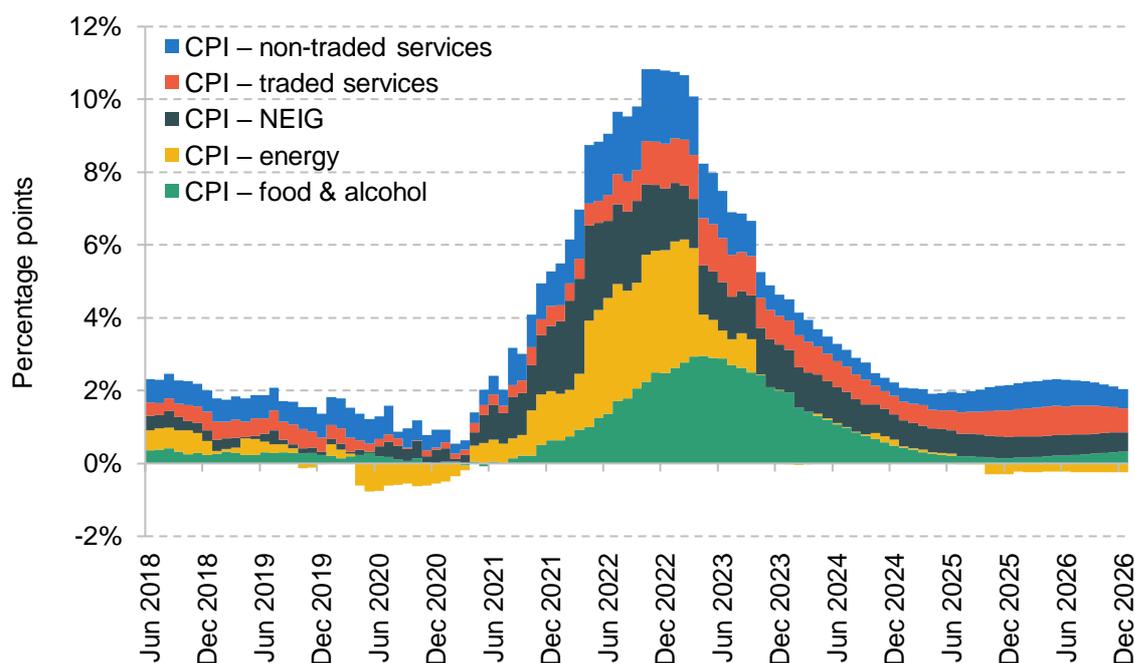
Third, and last, have been sharp increases in global food prices. Price discipline here seems to have effectively broken in recent months, with rates of pass-through seemingly accelerating. Increases in energy prices tend to have significant effects on UK food prices with a lag of 6–12 months. In recent months we think the feedback effects here have been exacerbated by the specific impact of the gas shortage. Food production uses inputs such as CO₂ gas relatively intensively.³⁹ These supplies have come under growing pressure across Europe in recent months as gas shortages have continued to bite. In our view, the transition to the Trade and Cooperation Agreement is likely having a further effect here, with 35% of foodstuffs imported from continental Europe.

Food is now an increasingly pressing concern. Costs here are increasingly being driven by industrial inputs, rather than soft commodity prices overall. While many of these firms should now receive some notable support as a result of the corporate price cap announced on 23 September, we still see scope for some substantial second-round effects. One particularly concerning development in our view here is less the scale of food inflation, but its breadth (see Figure 2.32). We suspect that may mean faster and more complete pass-through in the months ahead as substitution effects that would ordinarily weigh are effectively priced out. We now expect food inflation to peak at around 20% YY in 2023Q1.

Combined, these effects would suggest a peak in CPI of 11.8% YY in October.

³⁹ For example, see reporting at <https://www.ft.com/content/bbb4e5d1-3c3e-41bc-a52a-61b378b2a9cf>.

Figure 2.32. UK: composition of the headline CPI inflation overshoot, 2018–26



Note: NEIG is non-energy industrial goods.

Source: ONS and Citi Research.

Sticky, but not persistent

Inflation is also unlikely to be here today but gone tomorrow. In the period post-GFC, it took two years for high inflation to break. We think a similar timescale is appropriate here too. Hence while we expect inflation to peak in October of this year, we think it will now only fall below the 2% target in 2025. Here, we see three propagating factors at work.

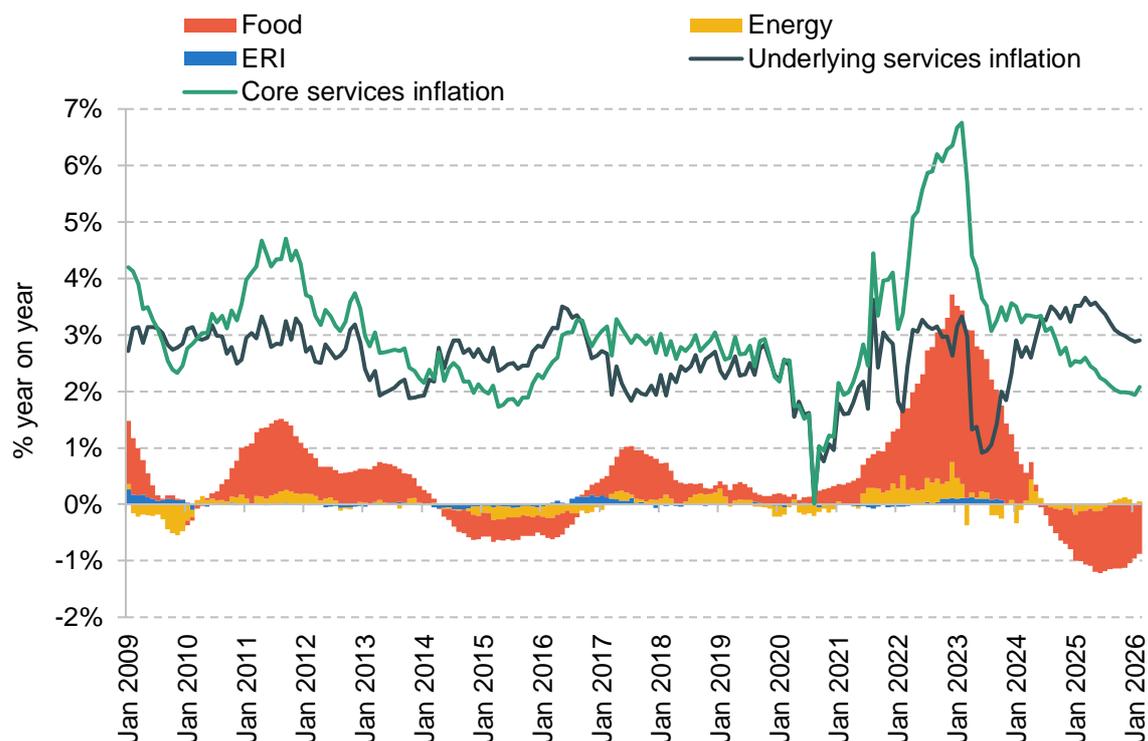
The first is the second-round effect from very high energy inflation. The first-order impact of energy will, we think, be heavily attenuated by the household energy price cap. Previously energy prices suggested a particularly high peak to inflation in the coming months, but subsequent disinflation as prices subsequently came down – at least based on the current futures curve. Capping prices at £2,500 means this effect is more effectively smoothed out. This does not mean a lower price level in the medium term, only lower inflation volatility. Inflation in October 2024 is also clearly sensitive to the level at which gas and electricity prices settle. On the basis of the current futures curve, electricity and gas prices would fall below the current cap threshold through the middle of 2024 – suggesting a relatively smooth roll-off. However, if one adopts the Bank of England’s forecasting convention of assuming prices follow their futures curve for the first six months, and are then flat, this would point to a 1–2ppt jump in 2024Q4.

Regardless of the direct effect here though, the primary drivers of persistence associated with the current price shock are the result of so-called ‘second-round’ effects. We think these may prove

unexpectedly large. Historically, an increase in energy prices – especially oil – has tended to add to food and goods inflation, but then weigh on services inflation. This reflects the tendency of such shocks to weigh on demand, and subsequent pricing power. In this case though, we think the scale of the shock is simply too large for firms to absorb the impact in margins. There is likely to be something of a ‘non-linearity’. Rather than weighing on existing firm margins, these effects are more likely to come through via inflation and insolvencies.

Looking at food and energy inflation in particular, these suggest relentless upward pressure on service firms’ input prices. There are signs here that these effects are already coming through – with core services inflation currently running at 5.9% YY versus the 2.5–3.0% range observed pre-pandemic. Of this, we think 2.8ppt is accounted for by second-round effects from both energy and food. While services inflation seems likely to accelerate to well over 6.5% in the months ahead, we expect a majority of this reflects second-round effects (see Figure 2.33).

Figure 2.33. UK: headline and underlying services inflation, 2009–25



Note: ERI is the sterling effective exchange rate index.

Source: ONS and Citi Research.

The second propagating mechanism here is the exchange rate. Since the start of 2022 the UK has seen a steady depreciation in sterling. This has been most acute versus the dollar – where sterling has fallen roughly 20% since late February. Versus the Euro, sterling has depreciated by a more modest 6% – leaving the trade-weighted index down by roughly 7.5%. Ordinarily, that would suggest a 1.5ppt boost in the CPI price level over the coming three years, with around 0.7ppt in

the first 12 months. However, the disproportionate role of the dollar in the current shock implies slightly faster pass-through than we would otherwise expect. We expect a marginally larger 0.8–0.9ppt impact over the coming 12 months as a result. Second, while pass-through into domestic prices tends to be strongly related to domestic demand conditions, in the current circumstances we think pass-through is likely to remain strong. That reflects first the fact that margins are already heavily compressed, and that many firms are likely to perceive the current shock as at least semi-structural.

Third, we expect indexation to also exert a considerable impact on headline inflation over the coming months. Prices in roughly 20% of the UK inflation index tend to be at least partly linked directly to inflation either in the previous September or, in some cases, the previous July. This includes components such as mobile phone bills (which are often linked to RPI), rail fares and some education services. As we saw in the period post-GFC, this can contribute to some persistent high inflation 12–24 months after the initial shock. We expect those trends to continue through next year – adding around 80bp to the divergence from target. Ultimately we think inflation will then fall back further, but only through 2025–26.

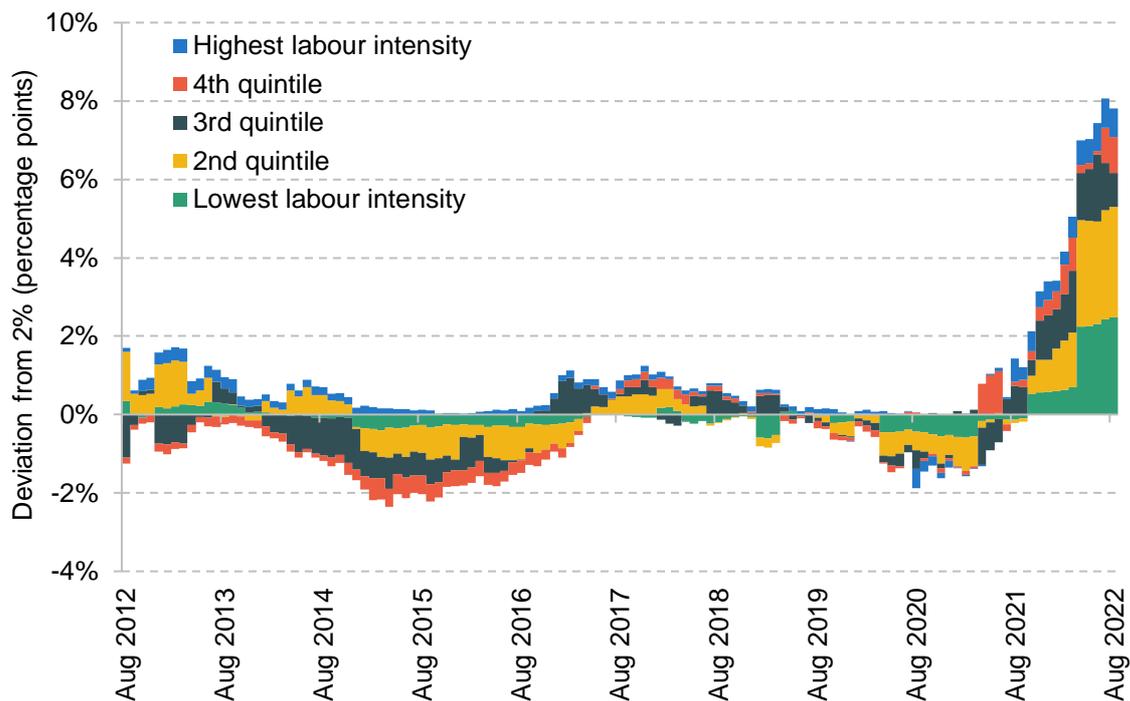
What are the risks of embedded inflation?

The obvious question here is, given the scale and persistence of the current shock, how large is the risk that this could yet morph into a more nefarious self-sustaining inflation problem? For now, we think the probability here is relatively contained; however, if this were to materialise, it would be incredibly costly – both in the near and medium term.

In recent months, the essence of the current price surge has been a very large relative price shock. As very large increases in energy, food and import prices have filtered through to the economy at a record rate, these effects have tended to add to the overall price level – as downward nominal rigidities preclude offsetting reductions elsewhere. With domestic allocation issues layered on top, this has resulted in additional ‘convexity’ effects where prices have jumped sharply in areas seeing strong demand, but only softened marginally in those areas seeing weak demand (Broadbent, 2021a). These effects have also added to headline inflation. In each case, this has meant a particularly large jump in the price level. However, these effects would not in and of themselves imply a more persistent shift in price *growth*. Instead, if left alone, these effects should ultimately fall back.

For now, we think these effects broadly summarise the nature of the UK’s current inflation issue. While price growth is indeed high, it remains characterised by very high rates of growth in certain sectors. CPI inflation has been broadening, reflecting some of the second-round effects above, but broadly the vast majority of the current inflation overshoot remains concentrated in sectors well away from those more domestically driven areas of inflation. This suggests only limited medium-term momentum (Figure 2.34).

Figure 2.34. UK: CPI inflation overshoot decomposed by labour intensity, 2012–22



Note: Inflation here decomposed across single-digit industrial codes. Labour intensity is derived using the supply and use tables. For each quintile, the plot shows its contribution to the inflation deviation from 2%.

Source: ONS and Citi.

However, we are still in only the early stages. Historically, many of the feedback effects into more persistent inflation are highly non-linear, with these effects often becoming more pervasive once a certain threshold is breached (Rudd, 2021). At this stage, real rigidities can become much more pervasive.

... there appears to be some threshold at which the rate of change in living costs becomes a pervasive factor of which account has to be taken in wage decisions ...

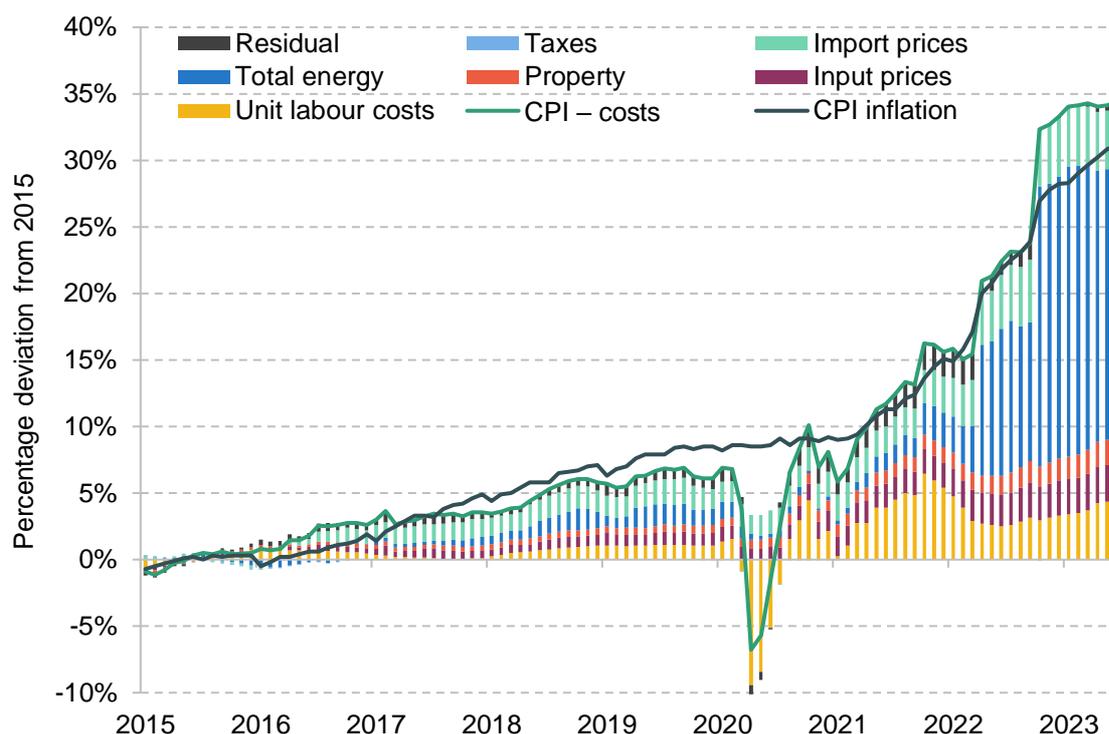
It is when the upward movement of prices quickens, and extends substantially throughout the whole range of consumer goods and services, that wages begin to respond directly to price movements.

Douty, 1975

How severe is the risk of more persistent inflation as we stand today? There are three factors that are especially important here in our view.

The first is the rate of pass-through. If there are signs that cost shocks were being passed through into other price inflation at a faster-than-usual rate, then there could be a sense in which services firms were acting to not just offset the cost shock, but expand their margin. Robert Lucas noted this dynamic when thinking about relative price changes, noting that when inflation expectations were de-anchored, this could easily transition into a more generalised dynamic (Lucas, 1972). In recent months, pass-through has indeed remained strong (see Figure 2.35).

Figure 2.35. UK: CPI versus unit costs, 2015–23



Note: Unit costs are reweighted by exposure across consumer-facing firms. Unit labour costs (ULC) include the cost of furlough, which was not actually incurred by firms. Unit labour costs are discounted by 15% for the duration of the furlough scheme.

Source: Citi Research, ONS and Tenreyro (2020).

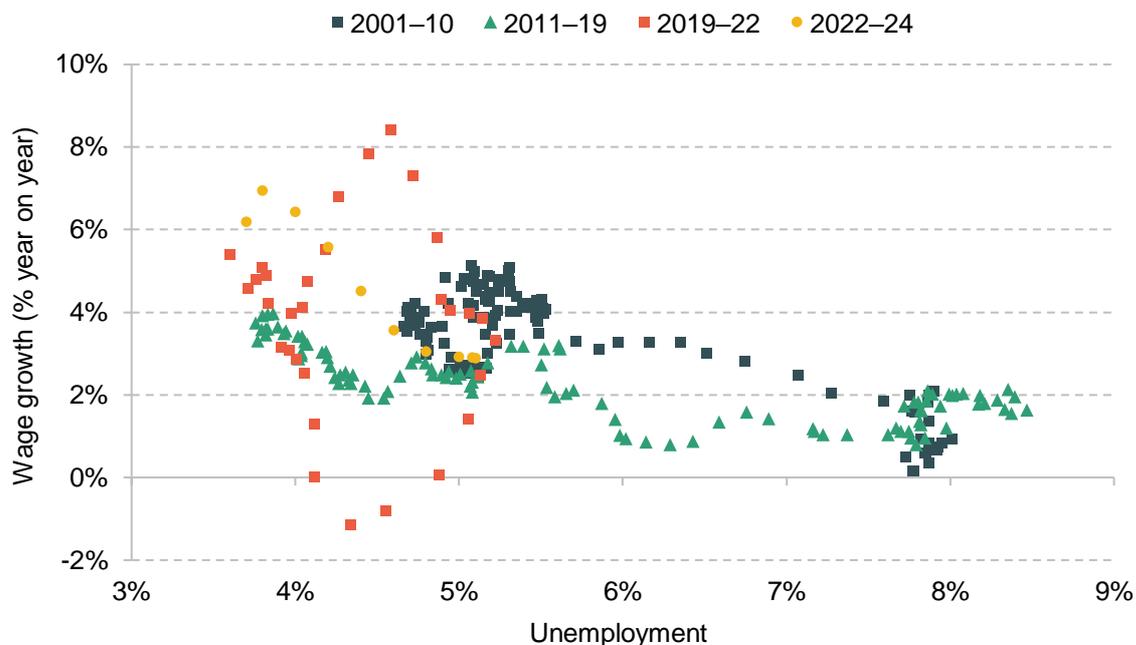
For now though, most of the data here point to risks that are relatively well contained. While some survey data, such as the Bank's Decision Maker Panel (DMP) survey, point to strong continued expectations, these data also seem to be overstating inflation out-turns. And looking more systematically across the matrix of CPI categories, pass-through from energy and food inflation into other – particularly services – categories is generally a little more subdued than what would conventionally be expected based on the UK's post-1992 experience,⁴⁰ deteriorating

⁴⁰ We can look at this by looking at the rate at which inflation in certain sectors is importing/exporting to others. Here we employ a General Forecast Error Variance Matrix based on the methodology of Lombardi and Zakrajšek (2022). Results available on request; also published in Nabarro (2022b).

alongside profit expectations. While firms seem to be securing higher prices to offset cost shocks where they can, for now there is very little sign of firms being successful. This is in contrast to, for example, the situation in the United States where pass-through is stronger (Bank for International Settlements, 2022).

The second issue here concerns wage growth. The question here is whether workers, alongside domestic firms, are able to secure compensation for higher prices and offset the shift in relative prices. For now, the evidence suggests not. Regular private sector pay growth in July accelerated to 6.0% on a 3M YY, up from 5.1% in the three months to May. These data are now at their third-highest level on record. However, this remains a long way off the rate of inflation. Overall, underlying nominal pay growth also remains broadly in line with pre-COVID models of the UK wage Phillips curve – at least for now.

Figure 2.36. UK: wage Phillips curve, 2001–24



Note: Forecast is from 2022Q3.

Source: Citi Research and ONS.

In the months ahead, wage growth is likely to accelerate. The DMP survey shows wage expectations picking up further into August. The updated Agents' data also show wage expectations for the coming 12 months continuing to accelerate (Bank of England, 2022c). And with unemployment a long way below long-run equilibrium, we think this is likely to add to the inflationary pressure. The important issue here is that at present the level of unemployment that would be needed to prevent these kind of feedback effects is likely significantly greater than the long-run equilibrium. This reflects (1) the matching and supply challenges we noted in Section

2.3, but also (2) the very low level of real wages and the associated divergence from conventional growth norms (Broadbent, 2014). We expect regular pay to accelerate to around 7% by Q4.

The important point in our view is that this is unlikely to last. While workers have been securing bonus top-ups in recent months to cope with higher living costs, these interventions have generally been temporary. And more generally, there is little evidence of ‘anticipatory effects’ whereby workers rebase expectations to a higher inflation rate – we think this would at least be necessary if a more nefarious wage dynamic was beginning to develop. Instead, most expectations reflect moderate catch-up demands. Elsewhere, there are also growing signs of moderation, especially in the KPMG–RECs starting salaries. Xpert HR and IDR data have also suggested pay growth has begun to stabilise, if at high levels.⁴¹ Overall, we think stronger wage growth in the second half of 2022 will add around 20–30bp to headline CPI in 2023, but little beyond as growth subsequently falls back.

The outlook here will continue to merit vigilance. However, we think the risks here remain contained for now. To secure sweeping offsets, workers must be focused on higher inflation, and have the ability to secure immediate and widespread increases. This is rare. In the 1970s, it was made possible by collective wage bargaining and the loss of a credible monetary anchor. In the current circumstances, workers can secure pay rises by making (tacit) threats to leave. Power here is a function of tightness in the labour market and consumer confidence. The latter is already fading, with the quit rate likely to fall from here, reducing worker bargaining power.

Third, and last, we think, are inflation expectations. Given the discussion above, changes here are central to a more persistent inflationary shock – facilitating the shift from ‘catch-up effects’ to a more persistent inflationary process. Changes here are therefore likely sufficient, rather than necessary – at least in the near term. In recent months, the data here have shown signs of stabilisation. Three measures are especially important: (1) financial market expectations, (2) household surveys and (3) professional forecasters. In the last case, longer-term expectations remain relatively well anchored. Market expectations have also fallen. The data here are likely to remain sensitive to further shocks. Indeed the Citi/YouGov measure of expectations accelerated sharply in August, as a result of inflation-focused headlines, only to then fall in September. For now, these data show signs of pressure, but no immediate red flags.

Summary

The inflation forecast we discuss above is effectively one of two halves. Initially, inflation is overwhelmingly driven by the impact of the current terms-of-trade shock, with CPI inflation

⁴¹ See reporting at <https://www.reuters.com/markets/europe/uk-pay-deals-hold-4-fifth-month-xperthr-2022-09-20/>.

accelerating to just shy of 12% in October. Thereafter, the sticky profile on the way down is a product of more gradual second-round effects as these initial shocks permeate through the wider matrix of domestic prices.

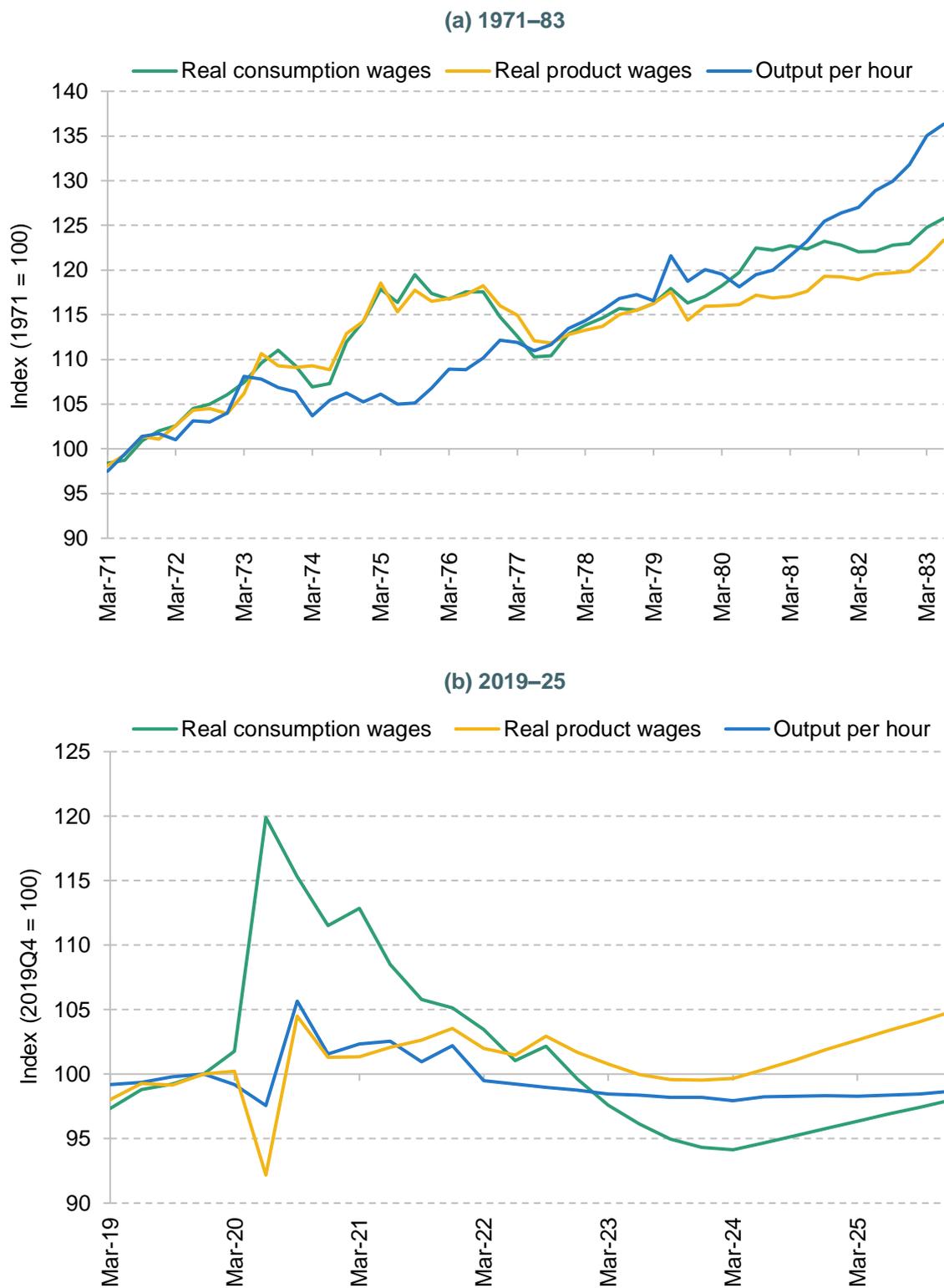
In this context, inflation should be primarily thought of as an allocative mechanism – reflecting the economic implications of the terms-of-trade shock. The implication is that, at present, high inflation still reflects inflationary dynamics that should prove largely self-correcting. However, this will take time. And uncertainty is high – given the continued risk of propagation into wages and domestic price setting. In our view, policymakers should be especially wary of policies that drive blanket indexation. These risk only perpetuating the underlying inflation problem.

2.5 Dimensions of adjustment: how to understand the current shock?

The implication is that we expect wages and real household incomes once again to bear the brunt of another supply shock. Despite the scale and suddenness, this is not materially different from the manner by which the UK economy adjusted to a weaker economic reality following the Great Financial Crisis. In this case, this reflects: (1) the large adverse terms-of-trade shock; (2) the associated hit to consumer demand; (3) a limited retrenchment of capacity; and (4) downward pressure on domestic input prices. The more fundamental point here is that the large increase in import prices reflects a fundamental impoverishment of the UK economy. This, we expect, will leave real wages lower than pre-pandemic, in line with overall output but in stark contrast to the 1970s experience (Figure 2.37).

It is worth emphasising the extent of uncertainty here. To the degree supply challenges drive more persistent labour market tightness, this could facilitate greater momentum on the wage side of the economy. We also have no good analogy as to how labour market institutions behave when realised inflation climbs to these sorts of levels. In the above, we effectively emphasise (1) that consumers do not expect to be compensated for higher inflation, and so pull back on demand, and (2) that absent effective collective bargaining, it is difficult to envisage wages keeping up with inflation, let alone accelerating beyond. The shift to a higher-pass-through, wage economy therefore seems something of a stretch.

Figure 2.37. UK: real wages and productivity, 1971–83 and 2019–25



Note: Real consumption wages reflect employee and mixed income, divided by the number of hours worked and the private consumption deflator. Real product wages reflect the same calculation minus net household subsidies, and deflated by the GVA deflator.

Source: Citi Research, ONS and Haskel (2021).

However, we should not dismiss the idea that wage dynamics could prove different from those that went before. We do expect the wage Phillips curve to steepen somewhat in the years ahead. And a broader regime shift cannot be ruled out. The largest risk here is likely fiscal policy. If the government responds to the current inflation shock with widespread demand stimulus, wage and benefit indexation, and broader efforts to offset the shock, then more embedded inflation is a very real risk. More persistent inflation in the current environment therefore reflects less an inevitable tendency of domestic economic institutions, and more the failure to find an acceptable means to allocate the economic loss associated with the shock.

Indeed, alongside our basic forecast, we see two other potential, and significantly weaker, scenarios for the UK economy in the months ahead:

- **Dislodged expectations.** In this scenario, the scale of the current inflation shock means some downward real rigidities do begin to emerge. Real wages and profits are initially better protected – meaning stronger economic momentum into the second half of 2022. However, more persistent inflation subsequently emerges – with CPI inflation settling at around 5–6% YY. Policy is forced to respond by aggressively tightening. This would mean rates accelerating up to 6–7% in our view, with the result a much longer, and more protracted, policy recession. In this case, we have modelled the scenario by assuming a similar Phillips curve behaviour to that evidenced through the 1970s and 1980s. In this scenario, unemployment may have to increase to around 8% in order to pull inflation back down.
- **Policy capitulation.** In this scenario, similar embedded inflation emerges, but the Bank of England fails to credibly manage inflation back down. The associated loss of institutional credibility means a sharp increase in long-term yields and a 20% knee-jerk sterling depreciation, as the UK’s large external deficit comes under pressure. Much would of course depend on the fiscal response – and the subsequent willingness of policymakers to run a large primary surplus. In the first instance, however, the immediate challenge for monetary policy would be securing the external position. This means increasing Bank Rate sharply so as to weigh on domestic demand, and imports, while also offering global investors an unambiguously positive real yield. We should stress we do not see this as likely, but we do not think this can be dismissed entirely.

Each of these scenarios is materially weaker than our current baseline expectation, with GDP falling peak to trough by 6.6% and 11.2% in each case respectively (versus 0.9% in our current baseline).

Figure 2.38. UK: real GDP in various scenarios, 2021–28

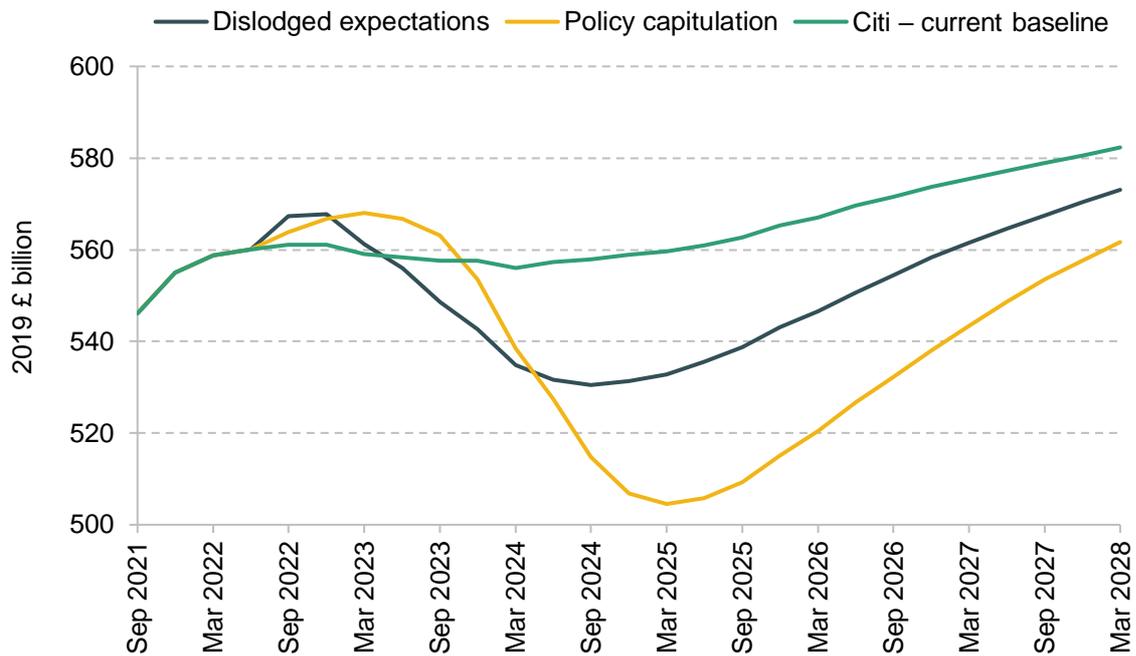
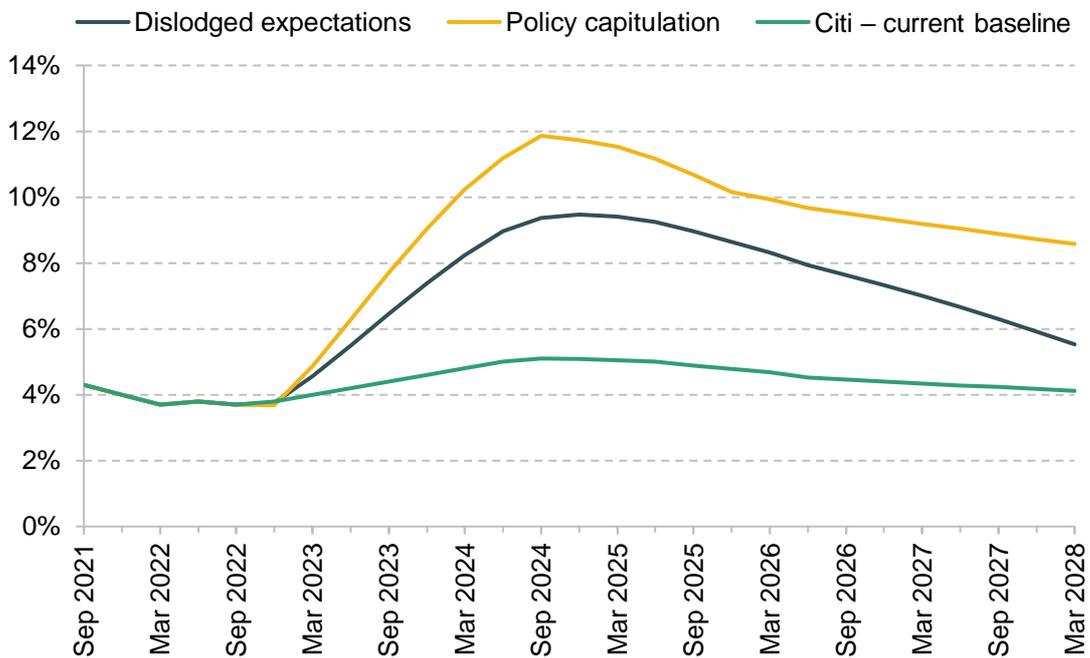


Figure 2.39. UK: unemployment rate in various scenarios, 2021–28



Source: ONS and Citi Research.

2.6 Policy conclusions: is this the best we can do?

It has been a periodic mistake to assume policy institutions that underpin monetary stability in one period have solved the ‘inflation problem’ ad infinitum. Efforts, for example, to reimpose the gold standard after the First World War proved misconceived as it turned out its success had in fact been contingent on unusually strong growth in the gold supply (Eichengreen, 2003), and certain assumptions about broader political economy. The Bretton Woods system proved similar. In the main, such shifts reflect changes faced by policymakers. For large swathes of the 20th century, this has been primarily an issue of demand. During the post-1990 period in particular, global economic supply has grown strongly. Supply has also been relatively stable. This left policy focused on managing demand to ensure both remain in balance.

However, in the sections above, we described a fine equipoise between the need to avoid both self-perpetuating adverse income dynamics on the one hand and a more embedded inflation on the other. For conventional ‘demand management’, this is effectively an impossible choice. This, we think, reflects more acute challenges on the supply side of the economy. More specifically, we think policymakers increasingly have to grapple with a period of structural adjustment. These themes we think are well evidenced by recent UK experience. But with both the geopolitical and ecological transition that now loom, policymaking has to adjust to a global supply environment that is likely to be considerably more volatile.

The maintenance of medium-term price stability will still be essential. But if supply shocks are set to be more frequent – for example, owing to the ecological transition, and deglobalisation – we think this will require a revolution in the balance between monetary and fiscal policy, as well as profound changes to the manner in which the latter is executed. In the face of the supply challenges to come, changes here are likely to prove central in determining whether we face a ‘GRIM’ economic decade across Europe (Growth Retrenching, Inflation Mitigation) or a ‘VIABLE’ one (Variable Inflation, Adjustment Boosting, Limited Expansion).

The recent actions of the Monetary Policy Committee

In the face of a conventional bout of supply-driven inflation, the empirical and theoretical learning since the Great Financial Crisis is that monetary policy should do as little as possible. Exogenous price shocks mean acute changes in relative prices – and increases in the overall price level. However, a shock such as a devaluation in the exchange rate or an increase in energy prices is unlikely to fuel inflation more than two years out. There is therefore a limit to how much monetary policy can offset the shock on the one hand (Broadbent, 2021b). On the other, there is a justifiable question regarding how desirable such a move would be, given the associated further hit to output (Carney, 2017).

For the Bank of England, these various ‘trade-offs’ pushed the Monetary Policy Committee (MPC) to strike a relatively cautious tone when hiking rates during the first half of 2022. In February, for example, Andrew Bailey noted the increase in Bank Rate to 0.5% was not ‘a standard demand-driven rise in Bank Rate’, adding it would be ‘a mistake to extrapolate simplistically from what we have done today and assume that rates are now on an inevitable long march upwards’ (Bailey, 2022). What instead pushed the Bank of England to act, initially at least, was the coincidence of very high exogenous inflation with a tight domestic labour market. That complicated the outlook in two respects:

- First, absent policy action, a more persistent domestic supply shock did pose a risk of persistent economic overheating.
- Second, given the risk high realised inflation could feed back into domestic wage and price setting, this meant acting relatively quickly to forestall such feedback effects.

In both cases, that meant returning policy rates to neutral – the level consistent with the economy running consistently at potential – relatively quickly. But not going much beyond.

In the months since, however, the Bank has had to become more and more aggressive. This was reflected in the decision to hike by 50bp in August and September. We now expect a 100bp and 75bp hike in the coming two meetings. The market expects something even more aggressive.⁴²

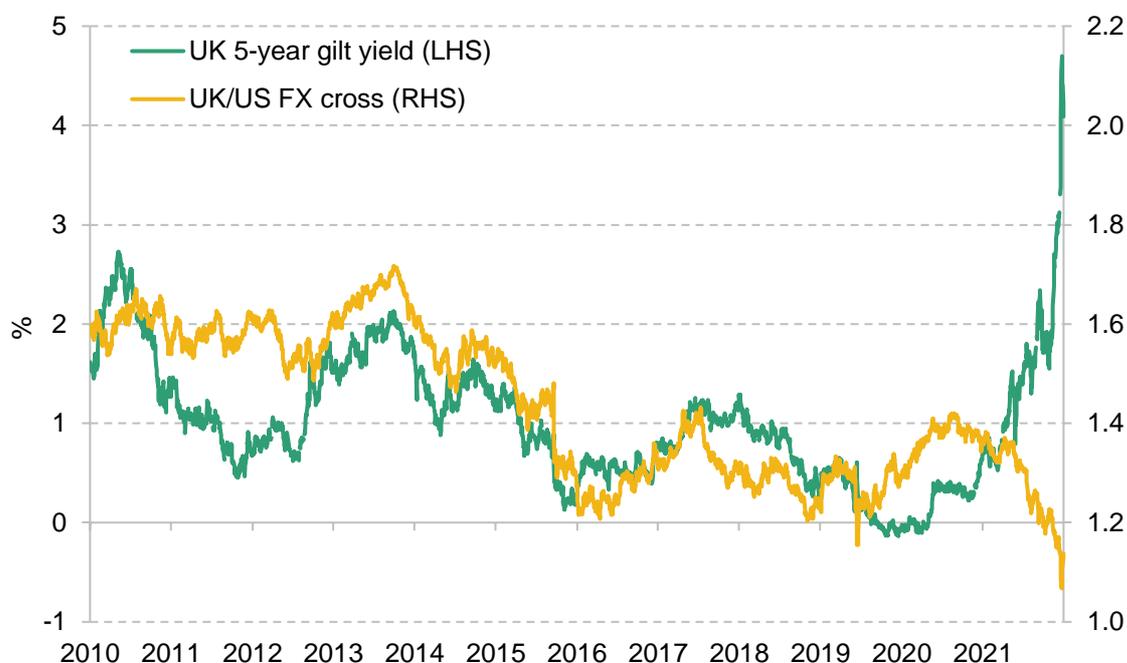
In part, this has reflected a continued intensification of the supply-based challenges facing the UK. The conflict in Ukraine meant imported inflation effects took a further leg higher. The labour market has remained stubbornly tight. This has meant an intensification of the same risks. However, for the MPC, we think the current circumstances pose two additional challenges:

- **Very high uncertainty.** As inflation has climbed to levels not just well above target, but well above any recent experience, the feedback effects into domestic inflation have become more uncertain. While post-GFC higher uncertainty engendered more ‘dovish’ policy as the costs of further disinflation (owing to limits on policy) were greater than those of higher inflation, in current circumstances the additional risk of a de-anchoring has meant these ‘cost’ considerations have essentially inverted. This means more of a focus on near-term inflation, and greater willingness to be aggressive.
- **Institutional credibility.** The second concern is that with fiscal policy now likely to add to inflation over the coming 18 months, this has forced the Bank to send a clear signal it remains committed and able to offset the impact. The urgency here is especially acute given the external vulnerabilities we noted in the third scenario above (Section 2.5). But this also

⁴² As of close on 4 October, the market was pricing Bank Rate increasing by 200bp at the coming two meetings, with terminal rate of 5.5%.

forces the MPC to be especially forceful, especially in light of recent uncertainties. One mark of these developments in recent months has been the concurrent sell-off in both UK gilts and the pound. This suggests some risks are at least beginning to grow.

Figure 2.40. UK: five-year gilt yields and cable, 2010–22



Source: Bloomberg and Citi.

Combined, we think these concerns will drive the MPC to hike to 4.5% in the months ahead.

In the context of elevated inflation uncertainty, we think fiscal policy is now a key driver in pushing the MPC. The scale of the market reaction on the day of the ‘mini-Budget’ itself was qualitatively different from that seen in previous years. This is not an issue of the market failing to anticipate a small additional series of tax cuts; it more reflected deeper institutional concerns with the trajectories of fiscal and monetary policy so clearly in conflict.

Is this really the best we can do?

We must stress here that we find it hard to argue with much the MPC has done given (1) the current circumstances and (2) its mandate. Indeed given the current institutional framework, we see little the MPC would have been able to do differently. However, the current policy mix in the UK betrays two key errors: one narrow, the other more institutional.

The narrow, discretionary error is to have monetary and fiscal policy pulling in opposite directions. Given the longer outside lags for monetary policy, that almost inevitably forces a more aggressive reaction on rates to offset the impact. The trade-off is likely especially poor in

current circumstances given (1) the risk of near-term de-anchoring and (2) the scale of the uncertainty. The implication is that whatever benefit is delivered by fiscal policy, if it has the effect of boosting demand it is likely to be more than offset by additional monetary tightening – as we show in our forecast.

The second, and more involved, challenge is institutional. To begin here, it is worth taking a step back to consider the basis of the current institutional economic set-up. We would characterise this as consisting of: (1) an operationally independent, inflation-targeting, central bank; (2) (generally) passive fiscal policy; and (3) a floating exchange rate. This works well when changes in interest rates / asset purchases are sufficient to manage demand and managing demand is also sufficient to manage inflation. In an economy with sticky prices but no real rigidities, these conditions are satisfied – at least as long as equilibrium rates are well away from the effective lower bound. In this context, an operationally independent inflation-targeting central bank can be both necessary and sufficient to maximise macroeconomic welfare (Blanchard and Galí, 2007).

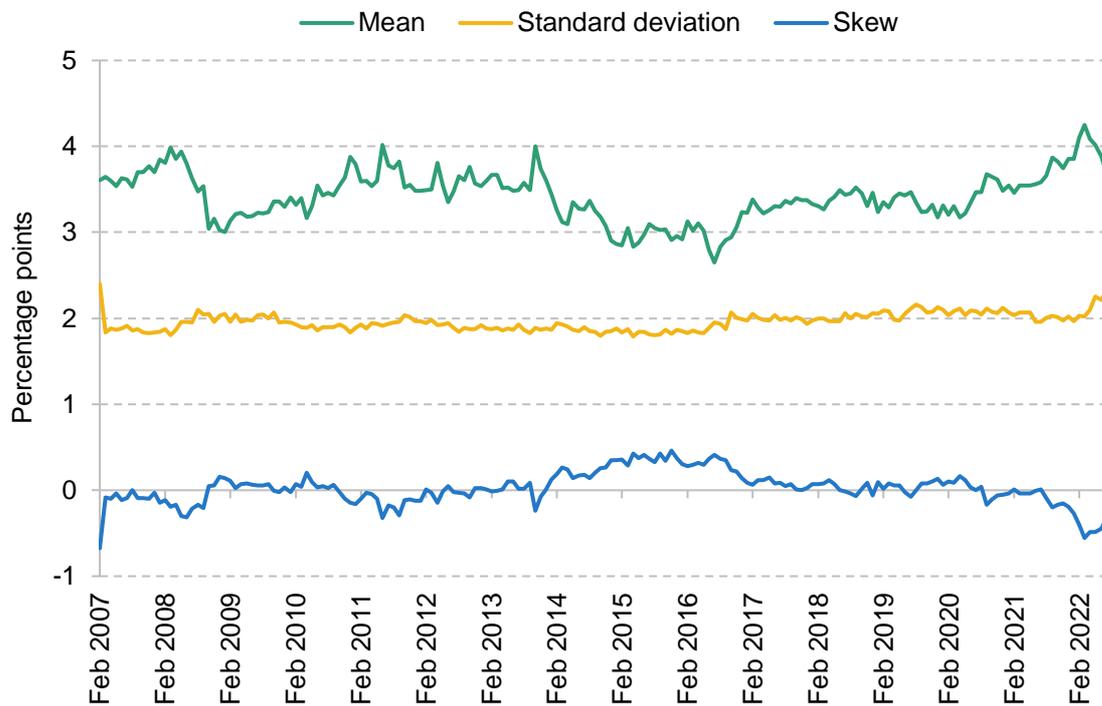
The issue today is we are of course a world away from this ‘idealised’ framework. Inflation is not being driven by an excess of demand, but by specific imported price shocks and extensive real rigidities. When inflation is driven in this way, price changes are both an essential and inevitable part of the adjustment process. Monetary policy can in effect only offset the impact of specific price shocks by weakening growth *ex post*. But even if these shocks are perfectly anticipatable, this means a large softening of the domestic economy, and generalised disinflation, in order to offset the impact. In reality, these shocks are of course rarely predictable. But even if they were, this would be demonstrably suboptimal.

What does this mean?

First, managing demand (and rates) is probably no longer sufficient to manage inflation. Perhaps more specifically, monetary policy alone cannot reduce inflation volatility. Whereas policymakers can anticipate and forestall increases in demand-driven inflation, when working with these kinds of supply shocks it is much harder for policymakers to do much other than react. This could reduce the risk of de-anchoring today, but at the expense of the recovery thereafter. This trade-off is only likely to get worse. As inflation overshoots become more common, central banks are likely to come under greater pressure to respond, and more quickly.

Generally, inflation expectations bear the scars of previous inflationary episodes. COVID is no different. During the pandemic, inflation expectations have shifted higher, but the distribution of expectations has also shifted – with the emergence of an increasingly pronounced ‘negative skew’. Historically, this has been an indication of a growing risk of de-anchoring in the years ahead (Reis, 2021). The current overshoot is likely to cast a long, vulnerable, shadow.

Figure 2.41. UK: mean, dispersion and skew of household long-term inflation expectations, 2007–22



Note: Inflation here is left undefined, so should not be benchmarked to any specific index.

Source: YouGov and Citi Research.

Second, the trade-off between managing inflation, via demand, and the strength of the overall recovery is likely much greater. If, as in current circumstances, policymakers are forced to react to higher spot inflation, they are effectively taking out an insurance policy against a more persistent price growth by further weakening demand and slowing the recovery. This may be prudent. But it does not mean it is not expensive – especially given these shocks should ultimately resolve themselves alone, at least theoretically.

In the current circumstances, the latter point is especially important. The Bank's decision to hike rates, while justified, will weigh on the recovery through 2024 and 2025. More important, we think this also implies a weaker long-term recovery. The intuition here is that as these supply shocks materialise, the key economic focus should be to accelerate the process to reallocation. This requires investment. By hiking rates, monetary policy slows the process. This means more supply drives inflation for longer. As policymakers still try to bear down on inflation, this can push the economy into a worse medium-term equilibrium.⁴³

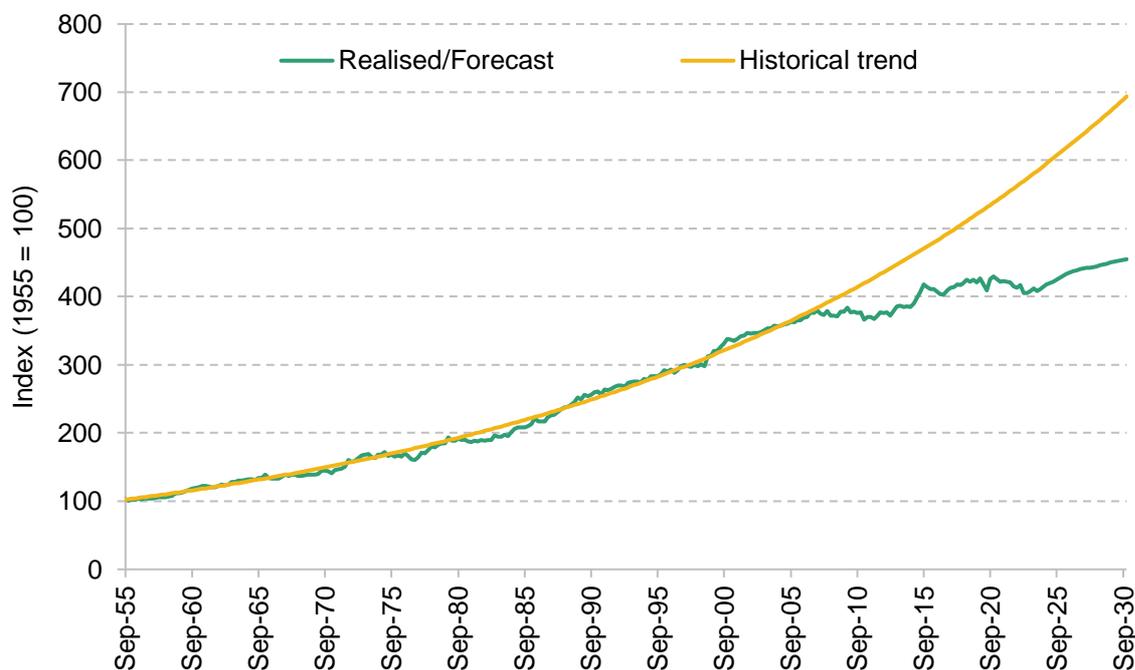
⁴³ There are several different ways to think about this. One could be in terms of becoming locked in a soft growth, poor expectations and low investment equilibrium (see Carlin and Soskice (2018)). Another is in terms of a shift in asset price valuations, and expected return to capital. This is roughly explained in the framework put forward by Krugman (2003). For more discussion, see Vines and Wills (2020).

The observation that unwarranted monetary tightening can have long-term macroeconomic impacts is nothing new. Indeed, Jordà, Singh and Taylor (2020) have shown that these effects during the Bretton Woods era weighed on long-term output by 3–4%, primarily owing to lower capital accumulation. The argument here is that these long-term effects risk proving even more extensive as demand is pulled down to a lower level of supply, rather than vice versa. Given the inflationary dynamics above, these effects are likely to grow worse and worse.

This, by definition, leaves monetary policy in a much more precarious position. The social costs of price stability – at least via this mechanism – are likely to grow. By reacting to specific price shocks with generalised disinflation, the distributional implications of monetary policy also become more acute. That leaves monetary policy more politically exposed.

Even if central banks are initially allowed to do what is necessary, in the medium term we think that leaves credibility subject to greater doubt. Already, the weakness of real income growth over the last decade is causing problems – including around household resilience, as we noted in Section 2.2. If these effects are compounded by an episodic monetary policy battering, we are not at all sure that the current set-up will prove either politically or fiscally viable.

Figure 2.42. UK: real household disposable income, 1955–2030



Source: ONS and Citi Research.

Institutional not policy failure

In no circumstances do we think the loss of medium-term price stability would serve UK interests. In that sense, whatever the response, credible ‘monetary dominance’ – the primacy of medium-term price stability – must remain. The question is how to secure that, at the lowest possible cost.

The crucial point here is that in the decade ahead, these kinds of supply-driven shocks are likely to become more frequent. The ecological and geopolitical transitions imply profound changes to the way the international and UK economies will work. Reductions in international collaboration also suggest more supply volatility, and associated inflation (Kahl and Wright, 2021). The weak starting point for the UK economy means that allowing repeated pivots to the ‘weaker’ equilibrium is likely not viable. One way of addressing this is of course an effort to boost trend real growth – which is a ‘no-brainer’. But given the headwinds, the question here is whether we should change the way we manage economic shocks.

There are potential, if challenging, chances for reform here. Specifically, rather than managing inflation via demand, institutions could manage supply-driven inflation *ex ante*. In this scenario, when faced with a price shock, policy could (1) support adjustment and (2) smooth over the price shocks temporarily. This would limit the risks to inflation expectations, while also aiding (rather than inhibiting) economic adjustment.

What would this imply in the current context?

Well, rather than attempting to offset and absorb the economic pain associated with the increase in energy prices in a blanket fashion, this approach would suggest targeted income support, but also maintaining a high marginal cost of energy – especially for higher earners – in order to encourage reconfiguration. Of course, to do this we would need to ensure the levers were in place so that support could be appropriately targeted.

Given investment itself is relatively energy intensive, this could suggest public support for some ‘investment-producing’ sectors – including construction and some heavy manufacturing. While they of course also have to adjust, they also offer ‘adjustment capacity’ to other sectors in the economy. Controlling prices here, at least initially, may therefore be important to ensure those elsewhere in the economy are still incentivised to shift tack. It would also suggest much greater emphasis on structural interventions to drive behavioural change – for example, targeted subsidy schemes or government-backed finance.

Last but perhaps most important, it would also suggest a broader shift in mindset – dialling up efforts to identify potential structural vulnerabilities *ex ante*, and offering targeted investment in scalable potential responses. As the UK found both during the pandemic and in light of the

recent energy cost shock, these vulnerabilities are numerous. Building a sense of how capacity can be best redeployed in the event of foreseeable shocks, and plugging potential bottlenecks, could be highly effective in terms of reducing supply volatility.

There is a broader point here. The implication of these very sudden supply shocks is what Mares (2022) has described as ‘destructive creation’.⁴⁴ Many of the shocks to come – including, for example, the ecological transition – require the cession of some economic activity. But this comes without an obvious sense of what might replace it. If left unattended, this means a large aggregate loss.

From a policy perspective, avoiding this requires two things:

- The first is a clear industrial strategy in order to ensure broader social priorities are respected and to guide innovation, in some cases directly when the adjustment is obvious.
- Second is a reduction in the cost of capital, and the protection of liquidity, to ensure the best possible environment for innovation.

As we noted above, no one – least of all the state – can know what the innovative replacement to this kind of shock is. Instead, monetary, fiscal and regulatory policy must work in tandem to foster private innovation as effectively as possible.

We should stress that coordination here must not compromise price stability. Instead the central bank must maintain both the means and authority to do what is necessary here – so-called ‘monetary dominance’. However, this does not necessitate isolation. A high degree of institutional trust and a broad associated commitment to ‘monetary dominance’ is instead likely key to making this agenda work.

This shift is, of course, fiendishly difficult:

- For one, this will require much closer coordination between monetary and fiscal policy, a break with recent policy practice and a shift that poses new challenges in terms of protecting ‘monetary dominance’.
- Second, this would require vast improvement in fiscal policy design, and a new set of supply-orientated subsidy instruments.
- Third, and perhaps most important, this also requires the effective differentiation between necessary price ‘smoothing’ and more permanent (supply-destructive) controls and/or political interventions.

⁴⁴ This is in contrast to the Schumpeterian concept of ‘creative destruction’.

One factor that risks complicating the outlook here is the political context in which these efforts will likely take place. A period of economic reconfiguration implies intense investment will be required to stop output falling back, rather than necessarily sustaining strong growth. This reflects writing-down of assets elsewhere in the economy. Politically, as well as economically, this is likely to be tricky. The historical impulse – as was the case during the 1970s – is towards preservation, rather than innovation.

However, in our view there is little alternative but to try. In the face of a decade of supply disruption, we think reform here may prove the difference between an environment characterised by repeated policy-driven recessions to offset bouts of inflation – a ‘GRIM’ economic decade – and a ‘VIABLE’ one.

References

- Acemoglu, D. and Autor, D., 2011. Skills, tasks and technologies: implications for employment and earnings. In O. Ashenfelter and D. Card (eds), *Handbook of Labor Economics*, edition 1, volume 4, Elsevier.
- Acharya, V. V., Lenzu, S. and Wang, O., 2021. Zombie lending and policy traps. Working Paper.
- Adalet, M., Andrews, D. and Millot, V., 2017. Insolvency regimes, technology diffusion and productivity growth: evidence from firms in OECD countries, OECD Economics Department, Working Paper 1425.
- Ayele, Y. and Winters, L. A., 2020. Should the Brexit sterling depreciation have boosted exports? How exchange rates affect trade and prices. UK Trade Policy Observatory, Briefing Paper 44.
<https://blogs.sussex.ac.uk/uktpo/publications/should-the-brexit-sterling-depreciation-have-boosted-exports-how-exchange-rates-affect-trade-and-prices/>.
- Bailey, A., 2022. Opening remarks: Monetary Policy Report Press Conference, February 2022.
<https://www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2022/february/opening-remarks-february-2022.pdf>.
- Bailey, A. J., Cesa-Bianchi, A., Garofalo, M., Harrison, R., McLaren, N., Piton, S. and Sajedi, R., 2022. Structural change, global R* and the missing-investment puzzle. Available at SSRN:
<https://ssrn.com/abstract=4180693> or <http://dx.doi.org/10.2139/ssrn.4180693>.
- Bank for International Settlements, 2022. Inflation: a look under the hood. In *Annual Economic Report 2022*.
<https://www.bis.org/publ/arpdf/ar2022e2.pdf>.
- Bank of England, 2022a. *Monetary Policy Report*, February.
- Bank of England, 2022b. *Monetary Policy Report*, May.

- Bank of England, 2022c. *Monetary Policy Report*, August.
- Barfield, R. 2022. Services trade – mind the gap. UK in a Changing Europe. <https://ukandeu.ac.uk/services-trade-mind-the-gap/>.
- Betts, C. M. and Kehoe, T. J., 2006. U.S. real exchange rate fluctuations and relative price fluctuations. *Journal of Monetary Economics*, 53(7), 1297–326.
- Blanchard, O. and Galí, J., 2007. Real wage rigidities and the new Keynesian model. *Journal of Money, Credit and Banking*, 39, 35–65. <https://doi.org/10.1111/j.1538-4616.2007.00015.x>.
- Boileau, B. and Cribb, J., 2022. The rise in economic inactivity among people in their 50s and 60s. IFS Report. <https://ifs.org.uk/publications/rise-economic-inactivity-among-people-their-50s-and-60s>.
- Broadbent, B. 2012. Productivity and the allocation of resources. Bank of England, speech.
- Broadbent, B. 2014. Unemployment and the conduct of monetary policy in the UK. Bank of England, speech.
- Broadbent, B. 2021a. Mismatch. Bank of England, speech.
- Broadbent, B. 2021b. Lags, trade-offs and the challenges facing monetary policy. Bank of England, speech.
- Broadbent, B., Di Pace, F., Drechsel, T., Harrison, R. and Tenreyro, S., 2019. The Brexit vote, productivity growth and macroeconomic adjustments in the United Kingdom. External MPC Unit, Discussion Paper 51.
- Bunn, P., Anayi, L., Bloom, N., Mizen, P., Thwaites, G. and Yotzov, I., 2022. Firming up price inflation. Bank of England Staff Working Paper 993.
- Bunn, P., Le Roux, J., Reinold, K. and Surico, P., 2017. The consumption response to positive and negative income changes. Bank of England Working Paper 645.
- Bunn, P., Chadha, J., Lazarowicz, T., Millard, S. and Rockall, E., 2021. Household debt and labour supply, Bank of England Working Paper 941.
- Calvo, G. A., Izquierdo, A. and Talvi, E. 2003. Sudden stops, the real exchange rate and fiscal sustainability: Argentina's lessons. NBER, Working Paper 9828.
- Cantore, C., Ferroni, F., Mumtaz, H. and Theophilopoulou, A., 2022. A tail of labour supply and a tale of monetary policy. Bank of England Staff Working Paper 989.
- Carlin, W., and Soskice, D., 2018. Stagnant productivity and low unemployment: stuck in a Keynesian equilibrium. *Oxford Review of Economic Policy*, 34(1–2), 169–94.

- Carney, M. 2017. Lambda. Bank of England, speech.
- CBI, 2022. Service Sector Survey, Q3.
- Chodorow-Reich, G. and Wieland, J. 2020. Secular labor reallocation and business cycles. *Journal of Political Economy*, 128(6), 2245–87.
- Coulter, N. and Brahmabatt, V., 2022. HAC-ette: contextualising the UK mini Budget for discretionary retail spend. Citi Research.
- Crawford, C., Jin, W. and Simpson, H. 2013. Productivity, investment and profits during the Great Recession: evidence from UK firms and workers. *Fiscal Studies*, 34(2), 153–77.
- Cunliffe, J. 2017. Are firms underinvesting – and if so why? Bank of England, speech.
- Daly, M., Fernald, J., Jordà, Ò, and Nechio, F., 2014. Labour markets in the Global Financial Crisis: the good, the bad and the ugly. *National Institute Economic Review*, 228, R58–64.
- De Gregorio, J., Giovannini, A. and Wolf, H. C., 1994. International evidence on tradables and nontradables inflation. *European Economic Review*, 38(6), 1225–44.
- Disney, R. F. and Gathergood, J. (2016). House prices, wealth effects and labour supply. Centre for Financial Studies (CFS), Working Paper 556. Available at SSRN: <https://ssrn.com/abstract=2869144> or <http://dx.doi.org/10.2139/ssrn.2869144>.
- Donnarumma, H., 2022a. Trends in UK imports and exports of fuels. <https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/articles/trendsinukimportsandexportssoffuels/2022-06-29>.
- Donnarumma, H., 2022b. Impact of trade in goods data collection changes on UK trade statistics: 2020 to 2022. <https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/articles/impactoftradeingoodsdatacollectionchangesonuktradestatistics/2020to2022>.
- Douty, H. M., 1975. *Cost-of-Living Escalator Clauses and Inflation*. Executive Office of the President, Council on Wage and Price Stability Staff Report.
- Eichengreen, B. (1996). *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*. Oxford University Press. <https://doi.org/10.1093/0195101138.001.0001>, accessed 27 Sept. 2022.
- Freeman, R., Manova, K., Prayer, T. and Sampson, T. 2022. Unravelling deep integration: UK trade in the wake of Brexit. Centre for Economic Performance, Discussion Paper 1847.

- Goldin, I., Pitt, A., Nabarro, B. and Boyle, K., 2018. Migration and the economy: economic realities, social impacts and political choices. Available at <https://www.oxfordmartin.ox.ac.uk/publications/migration-and-the-economy-economic-realities-social-impacts-and-political-choices/>.
- Haldane, A. 2021. Inflation: a tiger by the tail? Bank of England, speech.
- Hall, R. and Jorgenson, D., 1967. Tax policy and investment behavior. *American Economic Review*, 57(3): 391–414.
- Haskel, J. 2021. Inflation now and then. Bank of England, speech.
- Haskel, J. and Martin, J., 2022. Economic inactivity and the labour market experience of the long-term sick.
- Haskel, J. and Westlake, S., 2018. *Capitalism without Capital*. Princeton University Press.
- HM Government, 2021. English Housing Survey, Headline Report.
- Holmes, C. and Mayhew, K., 2015. Have UK earnings distributions polarised? INET Working Paper.
- Jordà, Ò., Singh, S. R. and Taylor, A. M. 2020. The long-run effects of monetary policy. Federal Reserve Bank of San Francisco, Working Paper 2020-01. Available at <https://doi.org/10.24148/wp2020-01>.
- Kahl, C. and Wright, T., 2021. *Aftershocks: Pandemic Politics and the End of the Old International Order*. St Martin's Press.
- Krugman, P., 2003. Crises: the next generation. In E. Helpman and E. Sadka (eds), *Economic Policy in the International Economy: Essays in Honor of Assaf Razin*. Cambridge University Press.
- Leslie, J., 2022. Bouncebackability: the UK corporate sector's recovery from Covid-19. Resolution Foundation.
- Leslie, J. and Shah, K., 2021. (Wealth) gap year. Resolution Foundation.
- Lombardi, M. and Zakrajšek, E., 2022. Measuring price spillovers across sectors. BIS Working Paper, forthcoming.
- Lucas, R. E., Jr, 1972. Expectations and the neutrality of money. *Journal of Economic Theory*, 4(2), 103–24. CiteSeerX 10.1.1.592.6178. doi:10.1016/0022-0531(72)90142-1.
- Mares, A., 2022. ECB: what to do when supply shocks can no longer be ignored. Citi Research.
- Nabarro, B., 2020. UK economic outlook: the long road to recovery. IFS Green Budget 2020. <https://ifs.org.uk/books/uk-economic-outlook-long-road-recovery>.

- Nabarro, B., 2021. UK economic outlook: the future isn't what it used to be. IFS Green Budget 2021.
<https://ifs.org.uk/books/uk-economic-outlook-future-isnt-what-it-used-be>.
- Nabarro, B., 2022a. Navigating the twilight zone. Citi Research.
- Nabarro, B., 2022b. UK economics and rates – BoE: Hit it? Citi Research.
- Nabarro, B. and Schulz, C., 2019. UK economic outlook in four Brexit scenarios. IFS Green Budget 2019.
<https://ifs.org.uk/books/uk-economic-outlook-four-brexit-scenarios>.
- Office for National Statistics, 2022a. Opinions and Lifestyle Survey.
- Office for National Statistics, 2022b. Economic activity and social change in the UK.
- Office for National Statistics, 2022c. Business insights and impact on the UK economy.
- Office for National Statistics, 2022d. UK trade: July 2022,
<https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/bulletins/uktrade/july2022>.
- Office for National Statistics, 2022e. Reasons for workers aged over 50 years leaving employment since the start of the coronavirus pandemic. 14 March.
- Reis, R. A. M. R. (2021). Losing the inflation anchor. CEPR, Discussion Paper 16664, Available at SSRN:
<https://ssrn.com/abstract=3960248>.
- Resolution Foundation, 2022. Changing jobs – change in the UK labour market and the role of worker mobility.
- Rudd, J. B., 2021. Why do we think that inflation expectations matter for inflation? (And should we?). Board of Governors of the Federal Reserve System, Finance and Economics Discussion Series 2021-062.
<https://doi.org/10.17016/FEDS.2021.062>.
- Saunders, M., 2017. The labour market. Bank of England, speech.
- Sorkin, 2022. Global economics – are we approaching stall speed? Citi Research.
<https://www.citivelocity.com/t/r/eppublic/2UMJZ>.
- Tenreyro, S. 2020. Monetary policy during pandemics: inflation before, during and after Covid-19. Bank of England, speech.
- Thomas, R. and Dimsdale, N., 2016. A Millennium of Macroeconomic Data. Available at
<https://www.bankofengland.co.uk/statistics/research-datasets>.
- Vlieghe, G., 2019. Monetary policy: adapting to a changed world. Bank of England, speech.

Vines, D. and Wills, S. 2020. The rebuilding macroeconomic theory project part II: multiple equilibria, toy models, and policy models in a new macroeconomic paradigm. *Oxford Review of Economic Policy*, 36(3), 427–97.

Wells, B., 2022. Full employment and the ‘office of hope’. In *National Institute UK Economic Outlook – Summer 2022*.

Zangana, K., 2021. How IR35 legislation is affecting the UK’s HGV driver shortage. Lawrence Stephens. <https://www.lawrencestephens.com/ir35-legislation-hgv-driver-shortage/>.

3. Outlook for the public finances

Carl Emmerson and Isabel Stockton (IFS)

Key findings

1. The most recent official economic and fiscal forecasts, from March 2022, had the government meeting its fiscal targets with a current budget surplus (i.e. total revenues exceeding day-to-day spending) from 2023–24 onwards and underlying public sector net debt on course to fall, albeit modestly, as a fraction of national income from the same year. **The Office for Budget Responsibility (OBR) calculated that the government’s mandate to have debt forecast to fall was met by a margin of £28 billion.**
2. **Much has changed.** Under Citi’s macroeconomic forecast, which underpins our analysis of the public finances, **rising inflation and interest rates will add to public spending on working-age benefits, state pensions and debt interest.** Recent policy decisions, such as the Energy Price Guarantee and the new government’s package of permanent tax cuts, will also add to borrowing. Overall, we forecast that borrowing this year will be £194 billion, which would be £94 billion higher than the £99 billion forecast in March. Of this increase, £68 billion is explained by support for energy bills announced since March (net of revenues from the new energy profits levy).
3. But more important for the sustainability of the public finances is the outlook for borrowing in the medium term. Even once the energy support packages are assumed to expire, borrowing remains elevated. There is huge uncertainty around the exact magnitude, but under a central forecast **in 2026–27 we expect borrowing of £103 billion, which would be £71 billion higher than forecast in March.** Much of this increase is uncertain – it will in particular depend on the path of the economy, inflation and interest rates – but less uncertain is £43 billion of the increase in borrowing, which is explained by the direct impact of the permanent tax cuts announced by the new Chancellor, Kwasi Kwarteng.

4. We forecast that **spending on debt interest will be £103 billion in 2023–24, double the £51 billion forecast by the OBR in March and which was already an upwards revision on the £39 billion the OBR forecast in October 2021**. Much of this increase in debt interest spending will dissipate as long as inflation falls back. But even in 2026–27 we forecast that debt interest spending will be £66 billion, some £18 billion higher than forecast by the OBR in March, £26 billion more than forecast in October 2021 and £9 billion more than was spent in 2021–22, as a result of higher interest rates and a higher level of accumulated debt.
5. In line with stated government policy, **we assume that the government keeps broadly to the departmental spending plans set out a year ago. This is despite rising inflation eating into the implied real increases**: restoring their generosity would require an additional £14 billion of spending in 2023–24 and £23 billion in 2024–25. Keeping to the existing cash spending plans is essentially imposing a rather hidden form of austerity on departments, and doing so in a rather arbitrary way, as it depends on the extent to which rising prices are adding to the spending pressures of each department – which will not be equivalent across the public sector.
6. The Chancellor has promised a ‘fully costed plan to get debt falling in the medium-term’. Pushing back the definition of the medium term from three years to five years could make this aim easier, but still far from easy, to meet. **Under Citi’s central forecast, it would require a fiscal tightening of £62 billion in 2026–27 to stabilise debt as a fraction of national income – so even reversing all of the permanent tax cuts in Mr Kwarteng’s ‘mini-Budget’ would not be enough**. Higher growth would help – but even if growth turned out to be 0.25 percentage points a year stronger than Citi expects, a fiscal tightening of £41 billion would be required to stabilise debt.
7. The government might be inclined to deliver any fiscal tightening through spending cuts. Supposing £62 billion of cuts were required, one way to achieve this would be as follows. Indexing working-age benefits to growth in earnings rather than prices in the next two years would cut spending by £13 billion, with most of the losses being felt by working-age households in the bottom half of the income distribution. A further £14 billion could come from cutting investment spending plans to 2% of national income, though this might be difficult to square with a government intent on boosting growth. The remaining £35 billion could come from a 15% cut to day-to-day spending on public services outside of the NHS and Ministry of Defence budgets, but this would require cutting spending in many areas where deep cuts were delivered between 2010 and 2019. **Such spending cuts could be done, but would be far from easy**.

8. Uncertainty around any public finance forecast means it is possible debt will fall as a share of national income. But being able to realistically expect it to fall requires a central view of economic growth and what tax and spending policies will actually be pursued. **While we should hope for better growth, the rationale for an independent OBR is to ensure that politically motivated wishful thinking is not incorporated into economic and fiscal forecasts.** The OBR should continue its practice of not incorporating hoped-for growth improvements arising from supply-side reforms until evidence of stronger growth starts to emerge.

9. Recent events have illustrated the importance of a credible strategy and plan for fiscal sustainability. Just as financial markets – which ultimately have to lend the money required to plug the gap in the government’s fiscal plans – might be unconvinced by plans underpinned by an assumption of a miraculous uptick in growth, so too might they be unconvinced by plans underpinned by vague promises of public spending cuts far into the future. **We need to avoid the situation Mr Kwarteng wrote about in 2012 where ‘in each new budget the government promised their books would balance tomorrow – but tomorrow never seemed to arrive’.** The OBR should therefore be very wary of a promise to cut spending in four or five years’ time without sufficient detail of where the axe would fall.

3.1 Introduction

Rishi Sunak’s March 2022 Spring Statement feels like a long time ago. Economic growth was forecast to be steady, although unspectacular. Significant tax-raising measures – in particular a four-year freeze to income tax thresholds, the introduction of the health and social care levy, and a big rise in the rate of corporation tax – meant that planned real-terms spending increases were still consistent with borrowing being forecast to fall. Overall government revenues were forecast to exceed day-to-day government spending from 2023–24 onwards (i.e. the current budget was forecast to return to surplus) and debt, which had climbed to levels not seen since the early 1960s, was forecast to fall as a share of national income.

Two Chancellors later and much has changed. Soaring inflation has pushed up debt interest spending and depressed growth prospects. The settlements for departmental spending made just one year ago now look much more challenging than they did at the time. Support for rising energy bills was announced by Mr Sunak on 26 May and by the new Prime Minister Liz Truss on 8 September. This provides welcome help to households and non-domestic users and will support the economy in coming months, but at a considerable cost to the public finances in 2022–23 and 2023–24. Also substantial, and intended to be permanent, were the new Chancellor

Kwasi Kwarteng's other measures announced on 23 September. This 'mini-Budget' confirmed the abolition of the health and social care levy and the scrapping of the planned big rise to the main rate of corporation tax – both of which had been committed to by Ms Truss when she sought leadership of the Conservative Party – alongside some other big tax cuts, such as cuts to stamp duty land tax and bringing forwards a planned 1p cut to the basic rate of income tax, that had not featured in that campaign. The subsequent announcement (3 October) by Mr Kwarteng that the additional 45p rate of income tax is now not to be abolished from April 2023 makes little difference to the overall picture: the planned permanent tax cuts, relative to Mr Sunak's Spring Statement plan, now total around £43 billion a year rather than around £45 billion a year by 2026–27.

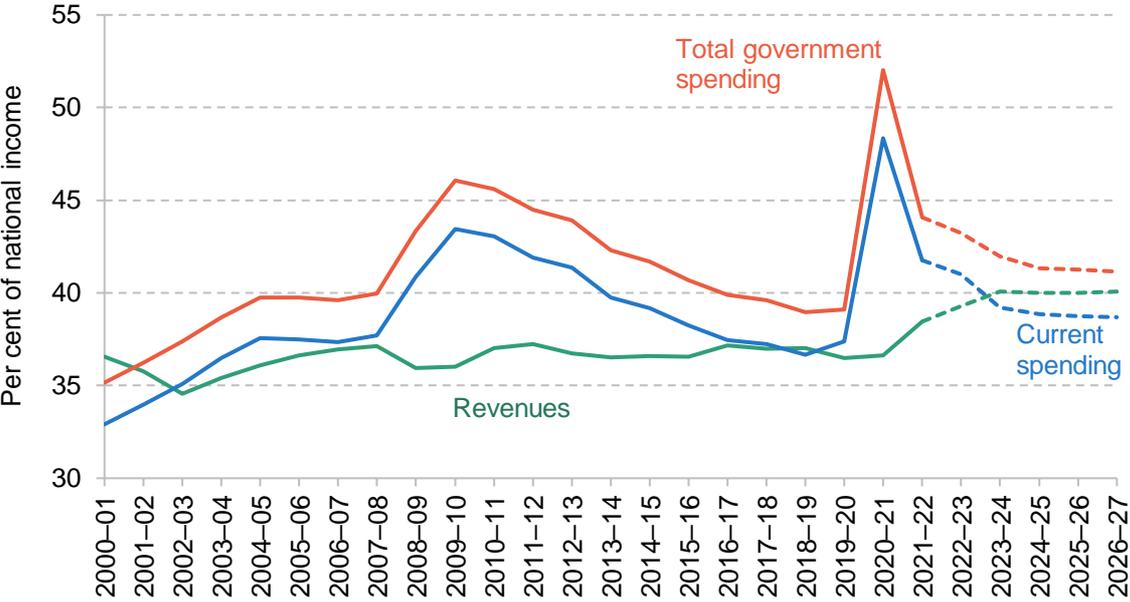
This chapter starts by setting out the path of the public finances since the turn of the millennium and the bequest left by Mr Sunak (Section 3.2). We then turn to discuss the outlook for revenues (Section 3.3) and spending (Section 3.4) in light of Citi's latest forecast for the UK economy, and the substantial policy measures that have been announced since March. In Section 3.5, we set out what this would mean for the path of government borrowing and government debt and the extent to which the government's own fiscal mandate, to be on course to have debt falling as a share of national income in three years' time (which was only legislated in January 2022), would now be missed by a considerable margin. In Section 3.6, we assess the Chancellor's options given his stated desire of 'ensuring that debt falls as a share of GDP in the medium term'. Section 3.7 concludes.

3.2 How did we get here?

The Global Financial Crisis and the COVID-19 pandemic inevitably had huge impacts on the public finances. The path of government spending and revenues since the turn of the millennium is shown in Figure 3.1. A decade after the financial crisis and on the eve of the COVID pandemic, total government spending had returned to its 2006–07 level as a share of national income. In 2018–19, revenues were sufficient to cover day-to-day ('current') spending for the first time since 2001–02, meaning that the government was only borrowing for investment spending. In other words, the current budget – borrowing excluding investment spending – was in surplus, rather than in deficit.

Even before the huge increase in spending to mitigate the economic impact of the pandemic and associated lockdowns on households, businesses and public services, the 2019 Spending Round had 'ended' – though by no means undone – austerity for public services. Following the pandemic, plans for non-virus budgets were topped up in the autumn of 2021. The March 2022 forecasts implied current spending and total public spending settling at a higher share of national income after the pandemic than they had been in 2019–20.

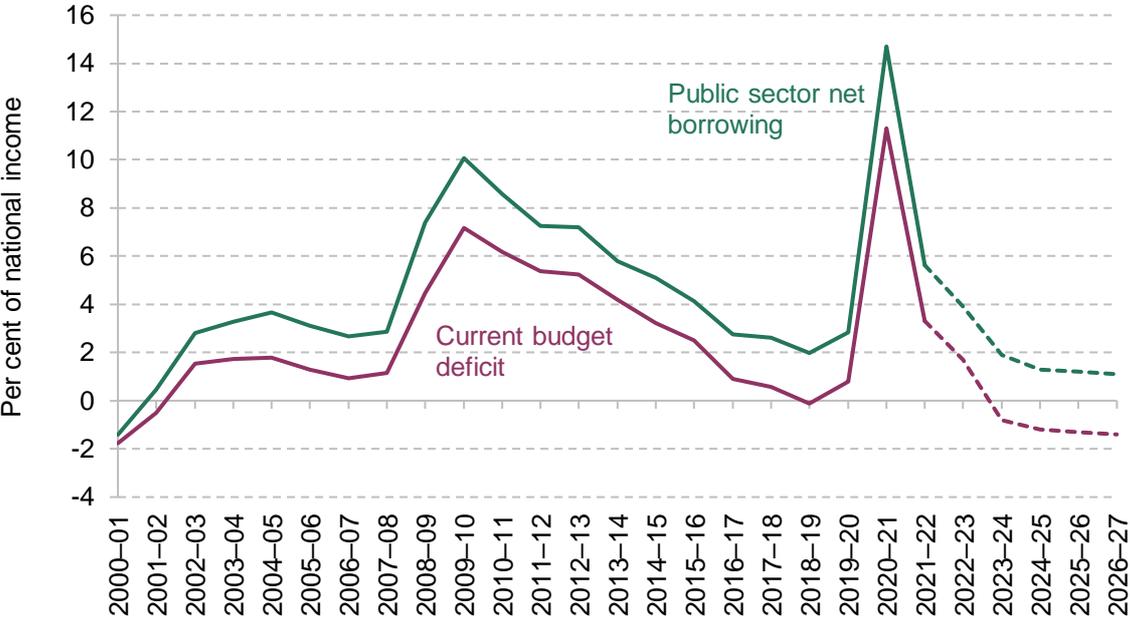
Figure 3.1. Government revenue and spending: out-turn and official March 2022 forecasts



Note: Current expenditure including depreciation.

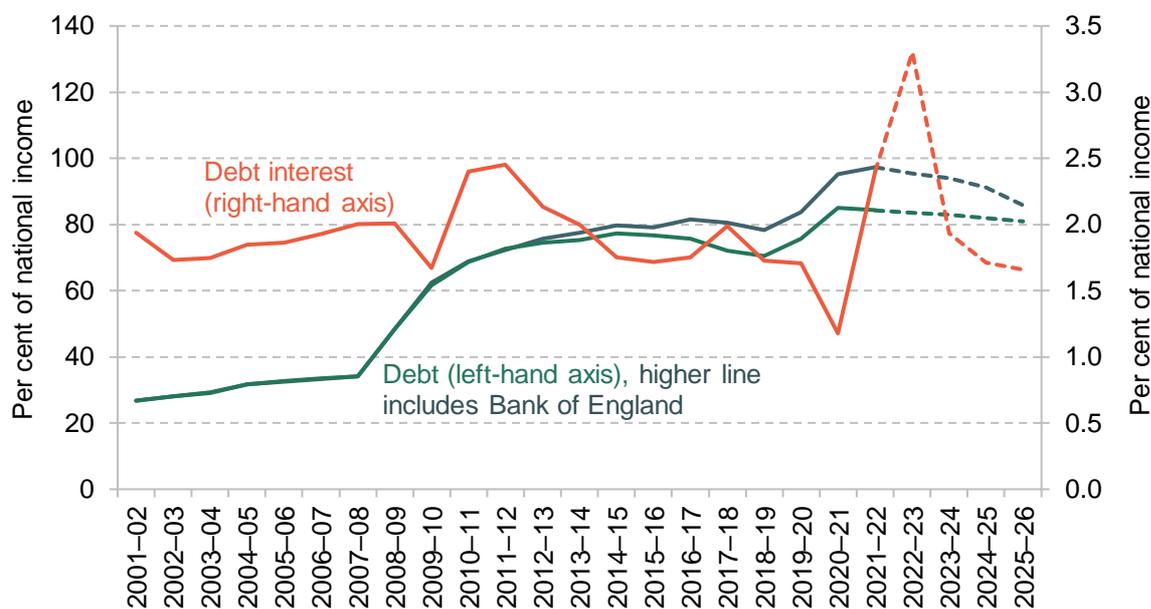
Source: Office for Budget Responsibility, Public Finances Databank, obr.uk/data/.

Figure 3.2. Government borrowing: out-turn and official March 2022 forecasts



Source: Office for Budget Responsibility, Public Finances Databank, obr.uk/data/; Office for National Statistics, 'Public sector finances, UK: August 2022'.

Figure 3.3. Government debt and debt interest: out-turn and official March forecast



Note: Central government debt interest net of income from the Asset Purchase Facility shown.

Source: Office for Budget Responsibility, Public Finances Databank, obr.uk/data/; Office for National Statistics, 'Public sector finances, UK: August 2022'.

A relatively strong recovery in revenues as the economy reopened and substantial tax rises (in particular a four-year freeze in income tax thresholds from April 2022 alongside, from April 2023, the introduction of the health and social care levy and a sharp rise in the rate of corporation tax) meant that tax revenues were forecast to increase as a share of national income. Total government revenues (i.e. from taxes and non-tax revenues) were forecast to reach 40% of national income which would be their highest level since 1982–83.

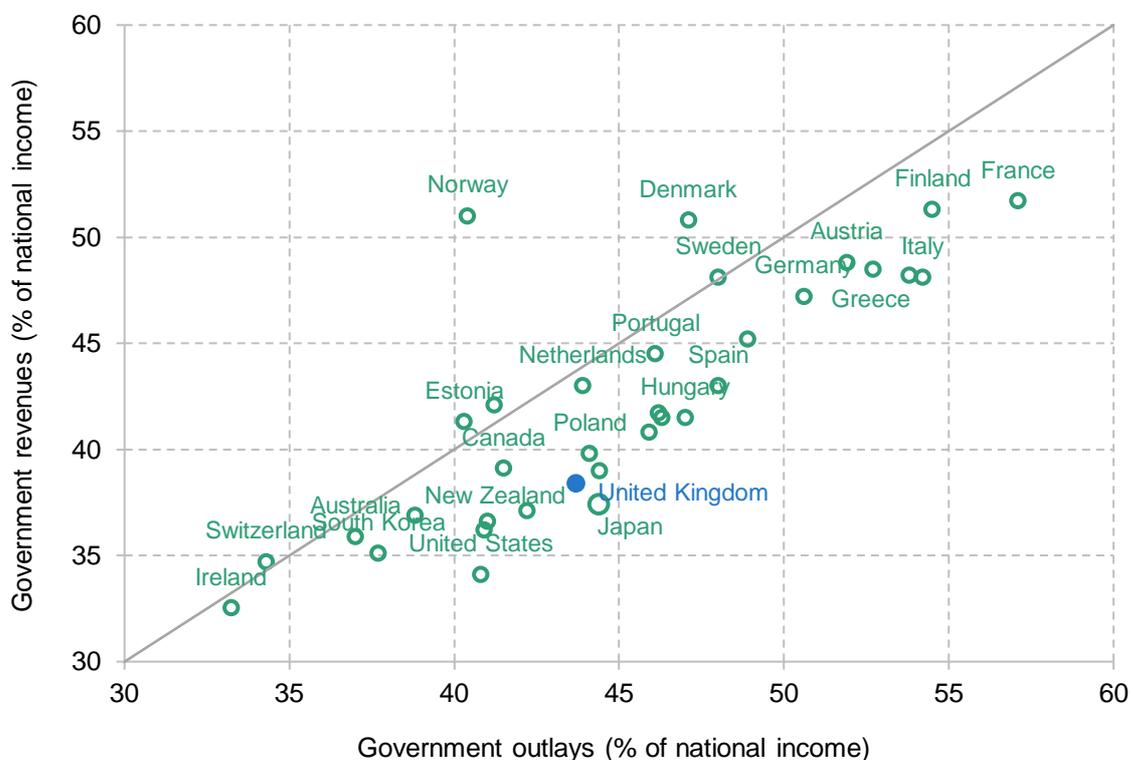
As a result, borrowing – the gap between what the government spends and what it raises in taxes and other revenues – fell by more than half from its pandemic peak in 2020–21 to 5.6% of national income in 2021–22, as shown in Figure 3.2. This is still high compared with the pre-pandemic long-run average of 2.5% of national income. Under official forecasts at the time of the March 2022 Spring Statement, borrowing was set to continue to fall – to 3.9% of national income in 2022–23, to below 2% of national income in 2023–24, and to below the pre-pandemic (March 2020) forecast by the end of the forecast horizon.

The peacetime record levels of government borrowing in response to the financial crisis and the COVID-19 pandemic pushed up government debt as a share of national income. This is shown in Figure 3.3. In 2021–22, headline debt (i.e. including the Bank of England) reached 97% of national income, its highest level since 1962–63 and three times as high as it had been at the turn of the millennium. Despite this large increase in debt, low gilt rates and the fact that an

increasing part of the debt was effectively borrowed at (very low) Bank Rate through the Bank of England's programme of quantitative easing (see Chapter 7) kept debt interest spending at an extremely low level by historical standards.

In recent months, rises in Bank Rate, gilt rates and high inflation – which directly feeds into the government debt interest bill through the quarter of the debt that is index-linked – have pushed up debt interest spending. In 2022–23 it will exceed the March 2022 Spring Statement forecast of 3.3% of national income by a considerable margin. If inflation returns to target quickly and sustainably after its current spike, as OBR forecasts typically assume, then growth in the RPI will return to a more normal rate and debt interest will fall sharply in turn – although it would still remain above the level expected pre-pandemic.

Figure 3.4. International comparison of spending and revenue in 2022 (June 2022 forecast)



Note: OECD projection for 2022 shown. The measures are general government total receipts and outlays, which differ slightly from the measures shown in other figures for international comparability. Ireland's ratios increased by 1.42 since its GDP is currently running 42% above GNP and using the latter might be considered a better indicator of the size of the state.

Source: OECD Economic Outlook June 2022 database; Irish GDP and GNP from <https://www.cso.ie/en/releasesandpublications/ep/p-na/quarterlynationalaccountsquarter22022/data/>.

An international comparison of government revenues and government spending, as a share of national income, is shown in Figure 3.4. These forecasts were produced in June and therefore pre-date many of the expensive interventions in energy markets that have been announced (see

Chapter 1) – and therefore give a better sense of the position excluding interventions that are intended to be temporary. Most countries have higher government spending than government revenues (i.e. most countries are located below the 45-degree line in the figure). One noticeable exception is Norway, which generates substantial revenues from oil and gas reserves that it is choosing to save. The size of the state in the UK is around the average of OECD countries. But it is lower than most of its European neighbours: in 2022, the OECD expects (or, at least, in June did expect) the UK's spending to be 7 percentage points lower, and its receipts 8 percentage points lower, than the Eurozone average. But it also expects receipts and spending in the UK to be much larger than in many other English-speaking countries such as Australia, Ireland, New Zealand and the United States.

3.3 The outlook for revenues

This section sets out our latest forecast for revenues, which is much lower than that forecast in the March 2022 Spring Statement. This is due to a combination of a weaker outlook for the economy and the substantial package of permanent tax cuts announced by the new government in September 2022.

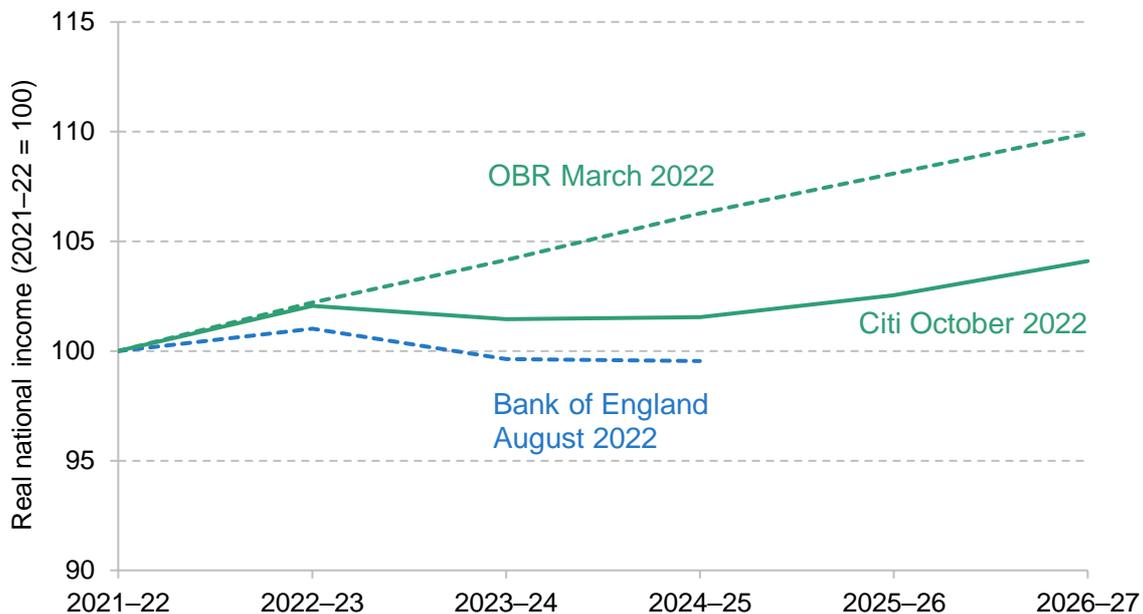
Changes to the economic outlook

A crucial determinant of tax revenues is the size of the economy. The OBR forecast that accompanied the March 2022 Spring Statement was for the UK economy to grow steadily over the next five years from 2021–22 to 2026–27. With an average real rate of growth of just 1.9% a year this was unspectacular, and especially so given that in the early part of this period the economy would still be bouncing back from the pandemic.

This forecast had been prepared prior to Russia's invasion of Ukraine and the subsequent sharp increase in European gas prices (see Chapter 1). These price rises led the Bank of England, in August, to forecast a protracted recession, with the economy starting to contract at the end of this year and not returning to growth until the middle of 2024. This represented a material deterioration from previous forecasts, as shown in Figure 3.5.

This Bank of England forecast was produced prior to Ms Truss announcing the Energy Price Guarantee. This is a huge intervention in energy policy. Household energy prices are to be capped substantially below expected market rates for up to two years, while non-domestic prices will be held down for six months with a promise of more targeted support to follow. By cushioning the impact of the rise in energy prices on households and businesses, the Energy Price Guarantee will lead to a much shallower recession.

Figure 3.5. Forecast growth in real-terms national income



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

The latest Citi forecast therefore has the UK economy performing more strongly than forecast by the Bank of England in August. But Citi's forecast still implies the UK economy only growing by an average of 0.8% a year over the five years from 2021-22 to 2026-27 – slightly less than half the growth rate forecast by the OBR in March. If correct, this would leave the UK economy almost 5% smaller than forecast by the OBR by 2026.¹ Of course there is considerable uncertainty around these – and any – forecasts for the size of the economy. For example, the most recent survey of independent forecasts published by HM Treasury has September forecasts for growth in 2023 from nine different forecasters; these vary from a contraction of 1.9% to growth of 2.1%, i.e. a range of 4%.² The degree to which the outlook has changed since March also only serves to illustrate this.

Inflation is now forecast to run at a much higher rate than forecast in March, although the peak in measured inflation is forecast to be much lower than it would have been without the Energy Price Guarantee. This means that the outlook for the cash size of the economy will not be nearly as depressed as the weaker outlook for the *real* economy (shown in Figure 3.5) alone would imply. But the boost to economy-wide inflation – the GDP deflator – will be smaller than the

¹ In some part, this reflects a long-standing difference in judgements about the medium-term real growth outlook, not just the impact of the recent crisis. Back in autumn of 2021, Citi already expected cumulative real growth over the four years to 2024-25 to be 0.4% of national income lower than the OBR did. However, this accounts for only a small part of the difference between the OBR's March forecast and Citi's current one.

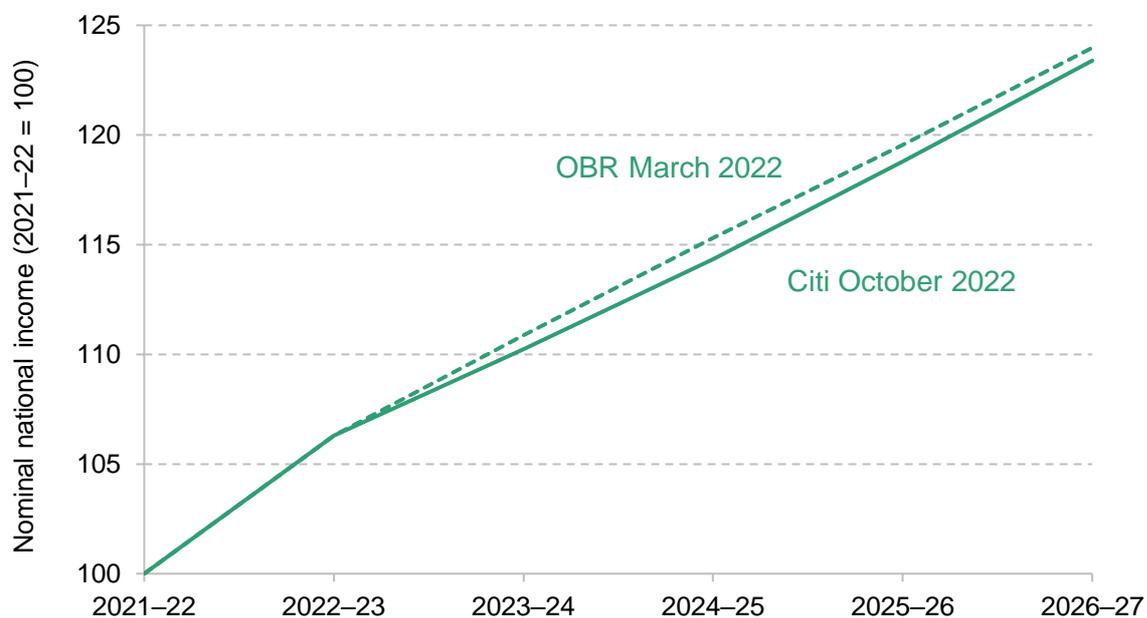
² <https://www.gov.uk/government/statistics/forecasts-for-the-uk-economy-september-2022>.

increase in the Consumer Prices Index (CPI). This is for a range of reasons (for a discussion, see paragraph 2.27 of Office for Budget Responsibility (2022)). For example, spending on private consumption is about two-thirds of GDP, with much of the remainder being government consumption (loosely day-to-day spending on public services) and investment. In both these areas, inflation is not expected to be as high as it is for households. As the UK is a net importer of energy, rising energy prices also increase household inflation but not the GDP deflator. Despite this, Citi forecasts that faster growth in the GDP deflator will be sufficient to offset most of the forecast weaker outlook for real GDP. As shown in Figure 3.6, by 2026–27 the Citi forecast is for the cash size of the economy to be only about ½% lower than forecast by the OBR in March.

This matters for the public finances as taxes are levied on nominal rather than real amounts (most importantly, earnings, profits and household spending). They will therefore depend more strongly on the path of cash national income than that of real national income.

It must be emphasised that there is also a considerable amount of uncertainty around the forecast for the size of the economy over the medium term and this will translate into considerable uncertainty around the path of revenues and therefore borrowing and debt.

Figure 3.6. Forecast growth in nominal national income



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

Tax policy changes since March

The outlook for revenues will also be affected by the substantial new tax policies announced since the March Spring Statement. In May 2022 Mr Sunak announced additional support for households for the rising cost of living, with increases in payments to households worth a total of £15 billion. This energy package also included a new temporary energy profits levy, widely dubbed a windfall tax. At the time, the Treasury said that this ‘will raise around £5 billion over the next year’.³ However, with energy prices subsequently rising substantially, the estimated yield has also increased: the latest Treasury estimate is that this measure will now raise £7.7 billion in 2022–23 and a total of £28 billion over the four years from 2022–23 to 2025–26 (HM Treasury, 2022b).

In a move in the opposite direction, Mr Kwarteng’s ‘mini-Budget’ of September 2022 contained a substantial package of permanent tax cuts. These included the two high-profile tax cuts that Ms Truss had committed to in her campaign to become leader of the Conservative Party – reversing the planned rise in the rate of corporation tax (discussed in more detail in Chapter 6) and scrapping the health and social care levy – at a combined estimated cost of £34 billion in 2026–27. In addition, Mr Kwarteng announced other tax cuts such as the abolition of the additional 45p rate of income tax, a cut to stamp duty land tax, and the reintroduction of VAT-free shopping for tourists. The total cost of this package, as estimated by HM Treasury, was put at £45 billion in 2026–27. The subsequent decision, announced by Mr Kwarteng on Twitter on 3 October 2022,⁴ not to go ahead with the abolition of the additional rate of income tax reduces the size of the new permanent tax cuts announced since March to £43 billion in 2026–27. Table 3.1 sets out in more detail the main tax measures that have been announced since the March 2022 Spring Statement.

There are other tax-cutting policies that are likely to happen but have not yet been formally announced. Formally, under current policy, the temporary 5p cut to rates of fuel duties expires at the end of March, and rates are to be increased each year by growth in the RPI. But far more likely is that the 5p cut is made permanent and that rates are also frozen at this lower level throughout the forecast horizon. This would reduce revenues in 2026–27 by £9 billion. Another possible tax cut is to business rates: absent any new announcements, many business rate bills will increase sharply due to the current elevated CPI, the revaluation that comes into force in April, and the end of temporary relief for retail, leisure and hospitality. It seems more likely than not the government will produce additional support on at least a temporary basis for those who would otherwise see big increases.⁵

³ <https://www.gov.uk/government/news/millions-of-most-vulnerable-households-will-receive-1200-of-help-with-cost-of-living>.

⁴ <https://twitter.com/KwasiKwarteng/status/1576820620293468160>.

⁵ For more detail, see presentation by Stuart Adam (<https://ifs.org.uk/events/look-ahead-fridays-mini-budget>).

Table 3.1. Tax policy measures announced since March 2022

	Cost/revenue included in scenarios
Mr Sunak's May 2022 package	
Energy profits levy ('windfall tax')	In force since May 2022 Initially expected to raise £5bn over one year; Treasury now expecting £28bn over four years
Mr Kwarteng's September 2022 'mini-Budget' measures	
Cancel planned introduction of the health and social care levy (and from November reverse associated temporary rise in rates of National Insurance contributions, NICs)	£16bn/year by 2026–27
Cancel planned rise in the rate of corporation tax from 19% to 25% scheduled for April 2023	£18bn/year by 2026–27
Increase Annual Investment Allowance; reforms to employee share schemes and venture capital schemes	£1.5bn/year in the medium term
Bring forward cut to basic rate of income tax by a year to April 2023	One-off £5bn in 2023–24
Remove additional rate of income tax	Just over £2bn/year in the medium term
Increase stamp duty land tax allowances	Less than £2bn/year in the medium term
VAT exemption for overseas visitors	Just over £2bn/year in the medium term
Off-payroll working	£2bn/year in the medium term
Freeze alcohol duties	£0.6bn/year in the medium term
Mr Kwarteng's 3 October announcement	
U-turn on planned removal of the additional rate of income tax	Cancels tax cut of just over £2bn/year in the medium term

Note: Costing for health and social care levy includes associated changes to dividend tax. Costing for corporation tax includes associated changes to the bank surcharge.

Source: Table 4.2 of HM Treasury (2022b).

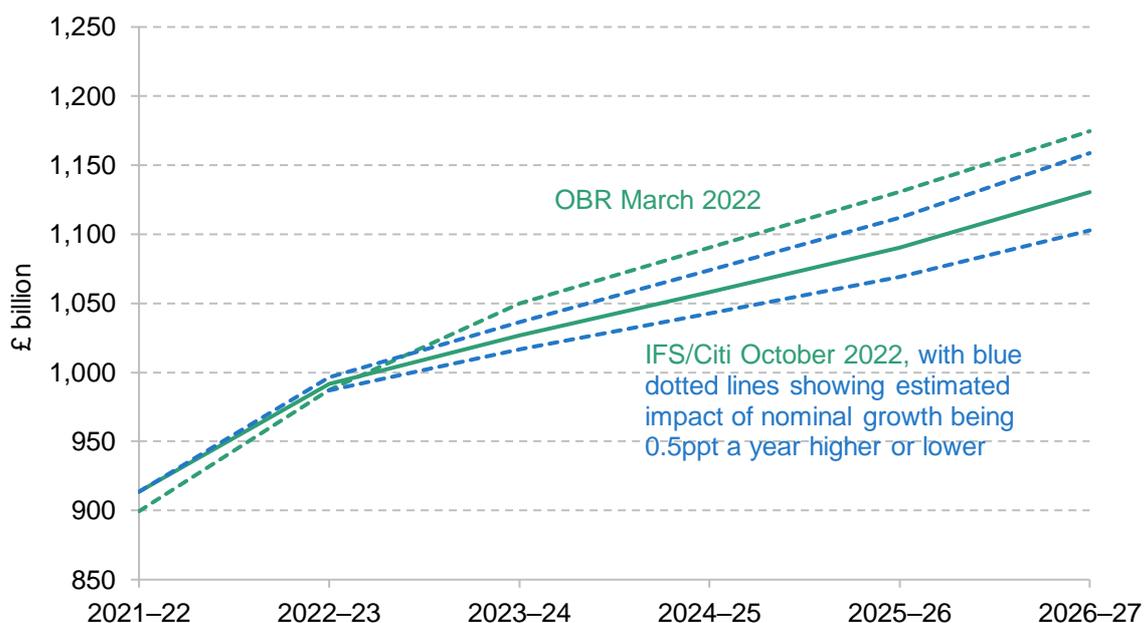
Forecast revenues

The large permanent tax cuts announced by Mr Kwarteng in September (Table 3.1) and the very modestly weaker outlook for growth in the cash size of the economy, as implied by Citi's forecast (Figure 3.6) combine to depress forecast government revenues. This is shown in Figure

3.7. Under Citi’s central forecast for the economy, we forecast that revenues in 2024–25 would be £32 billion lower than forecast by the OBR in March (£1,058 billion compared with £1,090 billion) while by 2026–27 the gap is forecast to increase to £44 billion (£1,130 billion compared with £1,175 billion). This is almost entirely explained by the £43 billion cut to taxes announced by Mr Kwarteng in September 2022 (net of the subsequent U-turn on the plan to abolish the additional rate of income tax). The remainder is the net effect of a slightly weaker outlook for cash national income being partially offset by an upwards revision to forecast receipts from interest income. There is, of course, particular uncertainty around the path of the cash size of the economy and therefore the revenues that this will deliver: the blue dotted lines on Figure 3.7 show that revenues in 2026–27 would be expected to be £28 billion higher were growth to be 0.5 percentage points a year stronger, and £28 billion lower were growth to be 0.5 percentage points a year weaker.

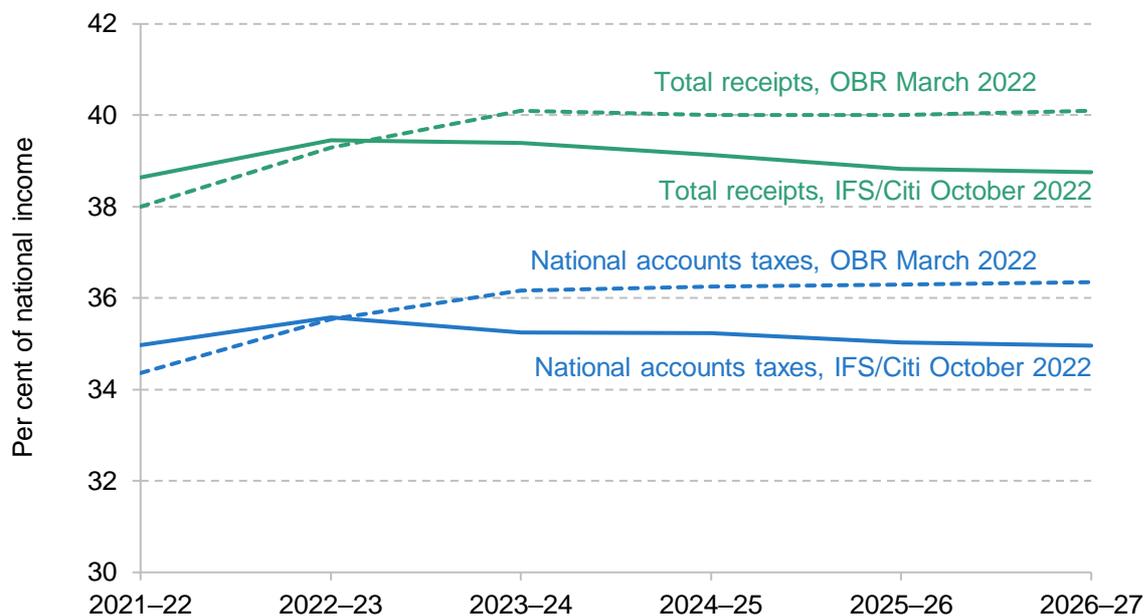
These tax cuts come after a substantial rise in taxes as a fraction of national income since the pandemic, when revenues held up relatively well given the damage to the economy, and substantial discretionary tax rises introduced by the then Chancellor Rishi Sunak in an effort to consolidate the public finances (while increasing spending on health and social care, and not cutting spending in other areas). Despite this trend now beginning to reverse, as shown in Figure 3.8, total receipts are still forecast to amount to more than 38% of national income at the end of the forecast period. Receipts from national accounts taxes (that is total tax receipts, and not including other income received by the government) are also now forecast to fall rather than rise. But they would still remain around the highest sustained level seen in the UK.

Figure 3.7. Forecast revenues, £ billion



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors’ calculations.

Figure 3.8. Forecast revenues, % of national income



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

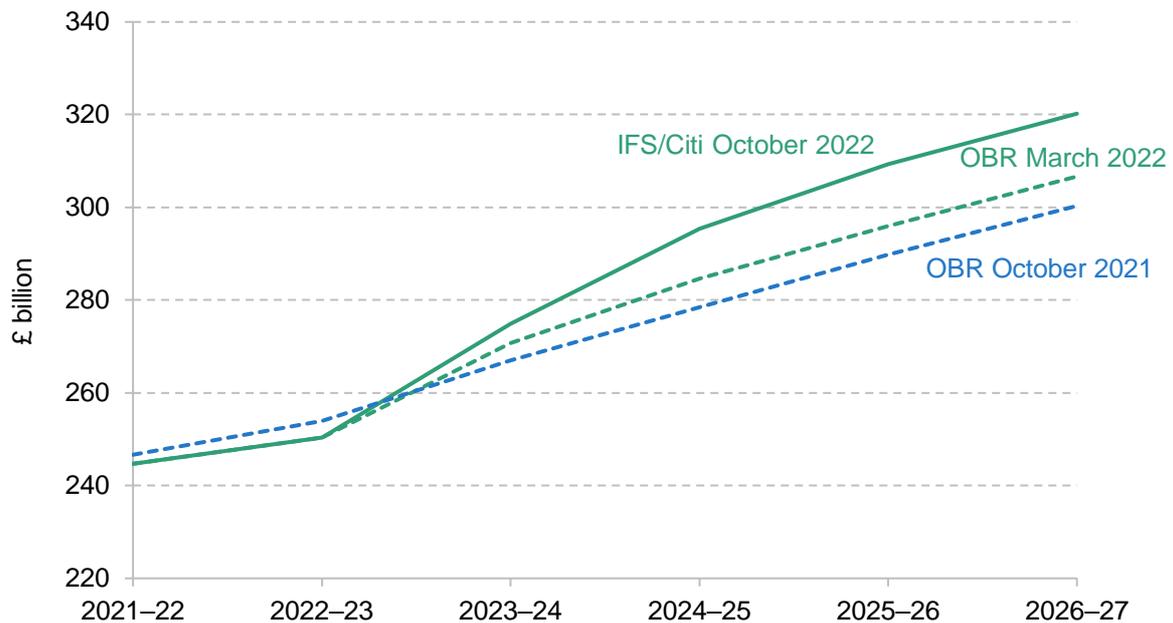
3.4 The outlook for spending

We now turn to describe how our forecasts for spending differ from the March 2022 Spring Statement, with big increases arising from higher inflation, higher interest rates, and the large spending increases announced in May 2022 and September 2022 intended to provide temporary support with rising energy bills.

State pensions and working-age benefits

One way in which household inflation feeds directly into the public finances is through its impact on the normal uprating of most working-age benefits and state pensions. Specifically, by default each April most working-age benefits increase by the rate of the CPI measured the previous September. The OBR estimates that a 1 percentage point rise in CPI inflation will push up welfare spending by about £1.6 billion a year from the following April (Office for Budget Responsibility, 2021). In addition, when prices are growing faster than earnings (and more quickly than 2½%) a higher September CPI will also push up cash spending on state pensions via the triple lock (under which the basic state pension and the new state pension are increased by the greater of growth in earnings, inflation or 2½%). The OBR estimates that a 1 percentage point increase in triple-lock uprating increases spending on state pensions in the subsequent year by about £0.8 billion.

Figure 3.9. Spending on pensions and working-age benefits



Source: Office for Budget Responsibility, Economic and Fiscal Outlook (October 2021, March 2022); authors' calculations.

So higher inflation in September 2022 than previously forecast, and with this running above growth in earnings or 2½%, will increase cash spending on working-age benefits and state pensions in April 2023. The March 2022 Spring Statement forecast was for inflation in September to be 7½%, whereas it is likely to be around 10%. In addition, with inflation expected to remain elevated in September 2023 and September 2024, cash spending on benefits and state pensions will be pushed up further in both April 2024 and April 2025 under our forecast. To the extent that higher inflation is expected to result in a permanent increase in the price level (rather than being offset by subsequent deflation), it will lead to permanently higher cash spending in these areas. This is appropriate: unless active decisions are made to do otherwise, working-age benefits and state pensions should not see their real value fall from one year to the next.

A comparison of our forecast for spending on working-age benefits and state pensions, with those published by the OBR in March 2022, is shown in Figure 3.9. We forecast that higher inflation will push up spending by £4 billion in 2023–24, by £11 billion in 2024–25 and by £13 billion in 2025–26.

New spending measures announced since March

The energy support packages announced in May and September 2022 will also add to spending. While these packages are substantial, especially so in the case of the September measures, both are intended to be temporary. The costings we include in our forecasts are set out in Table 3.2.

Table 3.2. Cost of the energy support packages announced in May and September 2022

	Cost
May 2022 package	
Household energy support package	£15bn in 2022–23 (limited impact thereafter)
Energy Price Guarantee	
Total included in scenarios	Highly uncertain and depending on both the evolution of prices and details of the policy yet to be set out, but likely over £100bn over two years
<i>Of which:</i> Household element	In place until end September 2024 We use the government’s costing of £31bn in the first six months, and Resolution Foundation’s costing of ca. £54bn thereafter
Non-domestic element	£29bn in the winter of 2022–23; government has committed to provide targeted support beyond that, but without any details we have not made an allowance for this
Illustrative alternative scenarios for the Energy Price Guarantee	
<i>Household element</i>	
Based on prices on 21 September	£50bn in 2023–24, less than £5bn thereafter
Based on ‘lower’ prices (£1,000 lower for an average household)	£22bn in 2023–24, nothing thereafter
Based on ‘higher’ prices (£1,000 higher for an average household)	£78bn in 2023–24, £31bn in 2024–25

Source: Table 4.2 of HM Treasury (2022b); authors’ calculations using Bell et al. (2022).

Mr Sunak’s May 2022 household energy support package – which increased the payment to all households to £400 with additional targeted support for pensioners and those in receipt of certain disability or means-tested benefits – is estimated to cost £15 billion in the current year but not to add directly to spending in subsequent years.

The new government’s Energy Price Guarantee, announced last month, is even more substantial. But because it places a cap on the price of each unit of energy purchased by households for two years, and for non-domestic users for six months, its cost is also extremely uncertain. The higher energy bills would have been absent this reform, the more it will cost, and gas prices have been extremely volatile in recent months.

The government has costed the non-domestic element at £29 billion in 2022–23. While it has committed to providing more targeted support beyond this point, no details are yet available on how this scheme might work and therefore it is not possible to cost. Therefore we make no allowance for this in our forecasts.

The government has costed the household element at £31 billion in 2022–23 but declined to provide a costing beyond that on the basis it is too uncertain. This is a poor reason not to provide a costing. Rather, the government should have provided a central costing alongside estimates of how the cost might vary under different plausible scenarios for gas and electricity prices. For 2023–24 and 2024–25, we take the Resolution Foundation’s costing (as of 24 September) of £54 billion over those two financial years. This gives a total cost of £85 billion. For comparison, Cornwall Insight (2022) costs the policy at £89 billion.

As shown in Table 3.2, while our costing allows for the household element to cost about £85 billion over the two years from October 2022 (£31 billion in 2022–23 and £54 billion over the subsequent 18 months), the cost could easily be much higher or lower than this. As an illustration, rather than costing £50 billion in 2023–24, were energy prices to end up higher by the equivalent of £1,000 per household, the exchequer cost would increase to £78 billion. In contrast, were energy prices to end up lower by the equivalent of £1,000 per household, the exchequer cost would fall to £22 billion in that year.

Spending measures not announced since March

The final area of spending is departmental spending on the delivery and administration of public services. Spending plans for each department were set in the October 2021 Spending Review for the three years 2022–23, 2023–24 and 2024–25, with separate cash limits for day-to-day spending and for investment spending. The government has been clear that it intends to keep to these cash limits, stating on 26 September that it ‘is sticking to spending settlements for this spending review period’.⁶

Therefore we assume that these spending plans will be kept to, with one exception. The plans included a provision for spending on overseas aid to return to the legislated target level of 0.7% of national income in 2024–25 from its current level of 0.5% of national income. This was on the basis that the government was forecasting that by then it would no longer be running a current budget deficit and that public sector net debt would be falling as a share of national income. Given that our forecasts imply a persistent current budget deficit with debt continuing to rise as a share of national income (see Section 3.5), we assume that overseas aid remains at the

⁶ <https://www.gov.uk/government/news/update-on-growth-plan-implementation>.

lower level of 0.5% of national income. This 0.2% of national income reduction in planned spending is equivalent to £5 billion in today's terms.

The assumption that, other than overseas aid, spending will remain at the same cash levels as those planned in the October 2021 Spending Review is questionable. Departments are facing higher rates of inflation than expected when those plans were set, reducing their real-terms generosity. For example, while the non-domestic component of the Energy Price Guarantee will help considerably, energy costs will still be higher than expected a year ago. More significantly, public sector pay awards are being set at a higher rate than was planned for when budgets were set (see Chapter 4 for more details). Keeping to the existing cash spending plans is essentially imposing a rather hidden form of austerity on departments, and doing so in a rather arbitrary way, as it depends on the extent to which rising prices are adding to the spending pressures of each department – which will not be equivalent across the public sector. To give three examples: social care is both more labour intensive and more energy intensive than many public services; schools – and in particular special needs schools, which employ more teaching assistants – are also very labour intensive; while the Ministry of Defence will be particularly exposed to rising costs associated with the weakening of the pound against the dollar. Even if the government wanted to keep to the same overall cash spending limit, there would be a case for reviewing whether these funds remain allocated appropriately across departments.

An alternative scenario might be one where the government decided that rather than keep to the existing cash spending plans, it wanted to restore them to the same real-terms level of generosity as intended in last October's Spending Review. This would have the advantage of helping public sector employers manage the cost of elevated public sector pay awards. But it would come at the cost of adding considerably to spending. On Citi's forecasts for the GDP deflator, this would require an additional £5 billion in 2022–23, £14 billion in 2023–24 and £23 billion in 2024–25.

Debt interest

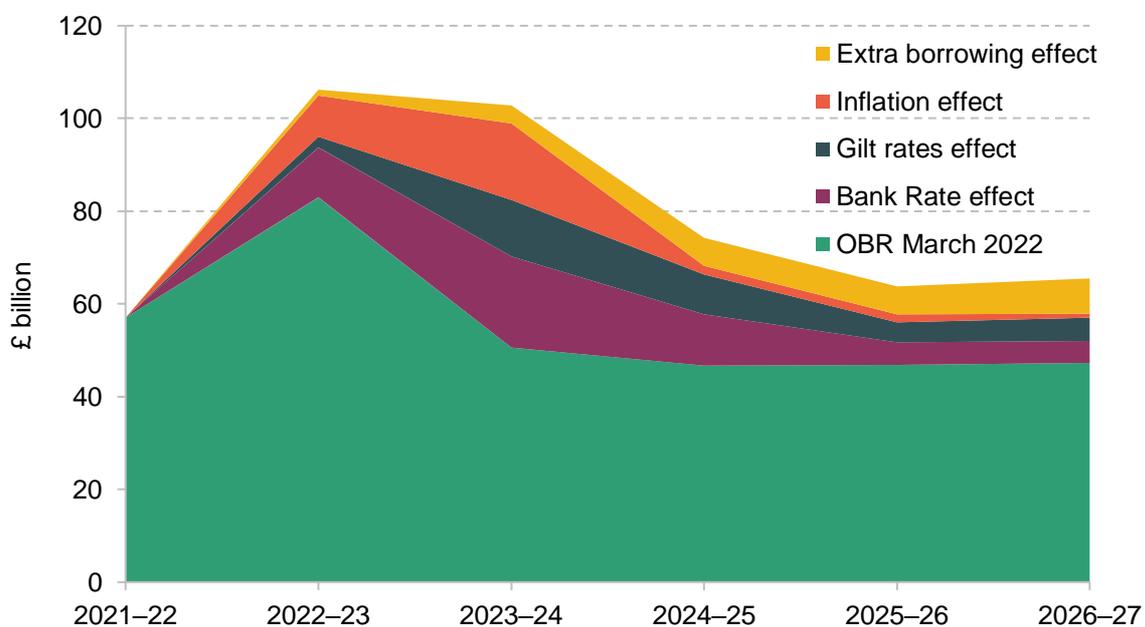
Spending on debt interest, put simply, will depend on how much debt the government has and what the rate of interest is on that debt. With our forecasts implying more borrowing due to large permanent tax cuts (Table 3.1), increased spending on working-age benefits and tax credits (Figure 3.9) and a substantial temporary package of support with energy bills (Table 3.2), this will, all else equal, inevitably push up debt and thus forecast subsequent spending on debt interest.

The effective interest rate paid by the public sector depends on how debt has been financed. The cost of new borrowing will depend on the prevailing gilt rate when the borrowing occurs. Where gilts have subsequently been purchased from the open market by the Bank of England through its programme of quantitative easing, interest is instead immediately incurred at the

contemporaneous Bank Rate set by the Bank of England.⁷ Finally, roughly a quarter of government debt is index-linked, meaning that after being issued the cost of servicing will vary according to growth in the Retail Prices Index.

Alongside increased inflation, recent months have also seen big rises in both gilt rates and Bank Rate. The Citi forecast is for these to continue to run ahead of what was forecast by the OBR in March 2022. As a result, we forecast that debt interest spending will be pushed up further in coming years. This is shown in Figure 3.10. The bottom (green) section of the chart shows the OBR's March 2022 forecast for debt interest spending. Separated out on top of this are the increases in debt interest spending that we forecast will occur from Bank Rate, gilt rates, growth in the RPI, and additional borrowing.

Figure 3.10. Spending on debt interest, £ billion



Note: Central government debt interest net of income from the Asset Purchase Facility shown. 2021-22 figure relates to the latest out-turn rather than the OBR's March forecast.

Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; Office for National Statistics, 'Public sector finances, UK: August 2022'; authors' calculations.

⁷ Interest paid by the Treasury on these gilts is received by the Bank of England and therefore retained in the public sector. But to finance the gilt purchases the Bank of England has increased the size of private bank reserves that it holds, and under current policy it remunerates the entirety of these reserves at Bank Rate. See Chapter 7 for a discussion.

The overall impact is substantial. In the current financial year we forecast that debt interest spending will be £106 billion, which would be £23 billion higher than the £83 billion forecast by the OBR in March. This OBR forecast already represented a substantial upward revision: its previous forecast, from a year ago in October 2021, was for debt interest spending in 2022–23 to be £42 billion. The increase in forecast debt interest spending in 2023–24 is even bigger: we forecast that spending will be £103 billion, which would be twice that forecast by the OBR in March (£51 billion). After that point, the increases in forecast debt interest, while still substantial, are not as enormous. In 2026–27 we forecast debt interest spending of £66 billion, which would be £18 billion higher than the £47 billion forecast by the OBR in March and £26 billion more than the £40 billion forecast in October 2021.

As detailed in Figure 3.10, the extent to which each factor pushes up forecast debt interest spending varies across the forecast horizon. The role of increased borrowing adding to debt, and therefore higher debt interest spending, increases throughout the horizon. The other components, which affect the interest rate paid on the debt, contribute more to the increase in the forecast for debt interest spending in the next two years than they do for subsequent years. For index-linked debt, this is because the impact of higher RPI on debt interest spending will only persist for the period in which the RPI remains elevated. The impact of higher gilt rates and higher Bank Rate is bigger in the next two years than subsequently because, while the Citi forecast is for these to run ahead of the OBR's forecast over the next two years, they are then forecast to drop back. In 2026–27, while the increase is smaller, both higher Bank Rate and higher gilt rates are still adding £5 billion each to debt interest spending (i.e. £10 billion in total).

This outlook for debt interest has increased since the 23 September 'mini-Budget'. This is because the permanent tax cuts were bigger than had been expected and because Bank Rate and gilt rates have risen in the intervening period, with some of this increase expected to persist. A comparison of the forecast we published two days prior to the 'mini-Budget' with our latest forecast for debt interest spending is shown in Table 3.3. In 2023–24 we now forecast that debt interest spending will be £10 billion higher than we thought just prior to Mr Kwarteng's statement. By the end of this forecast horizon, as the difference in assumed Bank Rate and gilt rates between the two forecasts decreases, the increase in forecast debt interest spending is just £1 billion. The large changes in the forecast for debt interest over the space of just a few weeks reflect not just the scale of the 'mini-Budget' but also the sensitivity of such projections to market conditions.

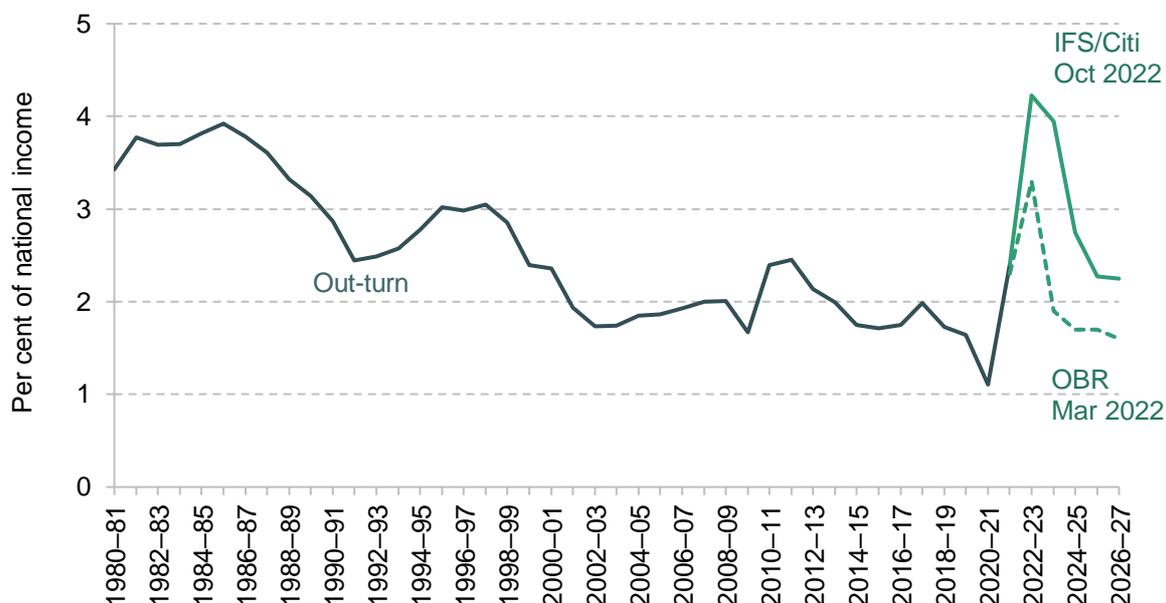
Table 3.3. Successive vintages of forecasts suggesting higher debt interest spending

	2022–23	2023–24	2024–25	2025–26	2026–27
OBR, October 2021	42	39	37	38	40
OBR, March 2022	83	51	47	47	47
IFS pre-‘mini-Budget’, September 2022	108	93	69	62	65
IFS Green Budget, October 2022	106	103	74	64	66

Note: October 2021 restated from the March 2022 Economic and Fiscal Outlook.

Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; Emmerson and Stockton (2022); authors’ calculations.

Our forecast is for substantially more debt interest spending in 2022–23 and 2023–24 than forecast by the OBR in March. While most of the increase then dissipates, we still forecast that debt interest spending will remain at an elevated level. Our forecast implies debt interest spending in 2026–27 running at about 2.2% of national income. This would, as shown in Figure 3.11, be slightly above that seen over the 20-year period from 2001 to 2020 but still below what was typically spent over the 20-year period from 1981 to 2000.

Figure 3.11. Spending on debt interest, % of national income

Note: Central government debt interest net of income from the Asset Purchase Facility shown.

Source: Office for Budget Responsibility, Public Finances Databank, obr.uk/data/; Office for National Statistics, ‘Public sector finances, UK: August 2022’.

Table 3.4. The OBR's debt interest ready reckoner

£ billion	Year 1	Year 2	Year 3	Year 4	Year 5
Permanent increase of 1 percentage point in:					
Gilt rates	0.6	1.9	3.4	4.9	6.0
Short rates and Bank Rate	9.9	9.6	9.0	8.3	7.9
Total gilt rates and short rates	10.5	11.5	12.4	13.2	13.9
Inflation	5.2	6.0	6.2	6.9	7.2

Source: Table 3.21 of Office for Budget Responsibility, 'March 2022 economic and fiscal outlook – supplementary fiscal tables: expenditure', <https://obr.uk/download/march-2022-economic-and-fiscal-outlook-supplementary-fiscal-tables-expenditure/>.

While debt interest spending is forecast to drop back after 2023–24 (Figure 3.10), a combination of elevated debt (Figure 3.3) and the fact that a large proportion of this debt is effectively financed at the contemporaneous Bank Rate means that the public finances remain more exposed to the risk that debt interest spending will again end up higher than forecast.⁸ Were higher interest rates associated with higher productivity growth then this should not be problematic, as the associated boost to tax revenues would likely be more than sufficient to outweigh increased debt interest spending. But recent months have seen an increase in interest rates which – at least under our forecasts – is not associated with a stronger outlook for growth, and therefore has contributed to a weaker outlook for the public finances.

An estimate of the sensitivity of debt interest forecasts to different interest rates and inflation rates can be found in the OBR's debt interest 'ready reckoner', which is reproduced in Table 3.4. A one-year increase in gilt and short rates of 1 percentage point would add just over £10 billion to debt interest spending in the coming year. If interest rates then dropped back, this impact would dissipate. But if interest rates remained 1 percentage point higher, the impact would increase over time (to almost £14 billion by the fifth year of the forecast). This is because more of the gilts in issuance would have been refinanced by the Debt Management Office at higher gilt rates, and this effect would outweigh the fact that the impact of elevated Bank Rate is expected to fall as the Bank of England unwinds its programme of Quantitative Easing (both through not replacing tranches of gilts as they expire and through active gilt sales). Recent rapid increases in gilt yields, alongside market expectations for Bank Rate to rise further and faster

⁸ A shift to tiered remuneration of reserves would, as discussed in Chapter 7, lessen the sensitivity of the public finances to changes in Bank Rate.

than previously thought, highlight the risks of substantially and permanently increasing borrowing and putting debt on an ever-increasing path.

Forecast spending

Our central forecast for spending, both in cash terms and as a share of national income, is shown in Table 3.5. Over this year and next, the temporary responses to high energy prices add considerably to spending, which is pushed up further through higher spending on working-age benefits, state pensions and debt interest. In total we forecast that spending will be just over £100 billion higher than forecast in the March 2022 Spring Statement in 2022–23 and 2023–24. Just under half of this increase is from energy-related policies. Once these are assumed to expire, we forecast that spending will continue to run above the March forecast, by almost £30 billion in 2026–27. With higher cash spending and a slightly smaller cash size of the economy under our forecast, spending is a bigger share of national income, at 42% of national income in 2026–27 compared with the 41% forecast by the OBR in March.

Table 3.5. Government spending

	£ billion		Percentage of national income	
	OBR March forecast	IFS/Citi October	OBR March forecast	IFS/Citi October
2021–22	1,027	1,047	43%	44%
2022–23	1,087	1,185	43%	47%
2023–24	1,100	1,201	42%	46%
2024–25	1,127	1,165	41%	43%
2025–26	1,166	1,192	41%	42%
2026–27	1,206	1,233	41%	42%

Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

It is important to note here that while we project total spending to be higher both in cash terms and as a fraction of national income, that spending will be buying us less than previously expected. The increases are entirely down to higher inflation pushing up spending on working-age benefits and state pensions, and higher spending on debt interest. The real value of spending on public services in 2026–27 would actually be 5% less than expected back in March. Economic failure means the state will be bigger than intended as a fraction of national income but services will be worse than intended.

3.5 Medium-term outlook under two scenarios

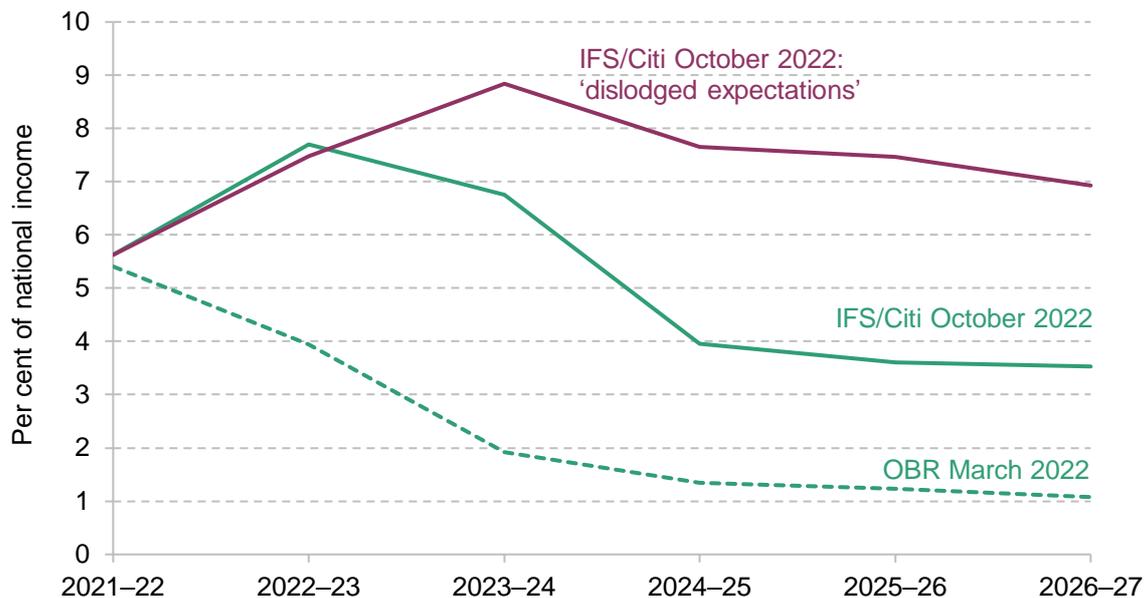
In this section, we take the forecasts for government revenues and government spending presented in the previous section and set out what they would imply for borrowing and debt. As well as presenting our forecasts under the central Citi scenario, we also present the outlook for borrowing and debt under Citi's more pessimistic 'dislodged expectations' scenario (see Chapter 2 for more details). Under this scenario, inflation becomes more embedded and persistent; interest rates increase further and faster than in the central scenario as a result, and remain higher throughout the forecast horizon. This adds further to debt interest spending, while the protracted recession which results leads to reduced revenues.⁹ Of course higher growth – such as the 2½% growth target set by Mr Kwarteng – would deliver a better outlook for the public finances. The next section discusses the contribution that higher growth could make.

Forecasts for borrowing

The forecast for borrowing under each of these two Citi scenarios (the central and the 'dislodged expectations' scenarios), alongside the OBR's March 2022 Spring Statement forecast, are shown in Figure 3.12. In 2022–23 under both Citi scenarios we forecast that borrowing would be around 7½% of national income, considerably higher than the 4% of national income official March forecast. Borrowing of this scale would be the third-highest peak in UK borrowing since the Second World War, after the Great Financial Crisis and the COVID-19 pandemic (as was shown in Figure 3.2). Under our central forecast, borrowing would then fall as the energy price measures announced in May and September are assumed to expire. But from 2024–25 it would settle at around 3½–4% of national income, considerably above the level under the March 2022 forecast. It should be stressed that there is a considerable amount of uncertainty around this. One indication of this is how different the outlook for borrowing looks now compared with the situation in March. Another is provided by the 'dislodged expectations' scenario, under which borrowing is forecast to rise in 2023–24 and even by 2026–27 would be running at around 7% of national income.

⁹ In Chapter 2, Citi also sets out a much worse 'policy capitulation' scenario for the economy, where inflation also becomes more embedded but the Bank of England fails to manage inflation back down. In this scenario, Citi forecasts a sharp increase in long-term yields and a sharp depreciation in sterling as the UK's institutional credibility suffers and the UK's large external deficit comes under pressure. We do not produce a forecast for the public finances under this scenario, since with such large changes in the economic environment the relationship between the economy and the public finances would be much more uncertain and, in any case, in such a scenario the scale and nature of fiscal policy responses would be a large factor in determining the eventual path of the public finances. Put simply, a central assumption of no further changes to tax or spending policy would be too inappropriate. But it is clear that were such a bad outcome for the UK economy to come to pass, ensuring the appropriate and careful management of the public finances would become even more challenging. It serves as a useful illustration of the importance of maintaining the UK's institutional credibility, including its fiscal framework, and the potential costs if such credibility – hard won – is lost.

Figure 3.12. Forecast borrowing



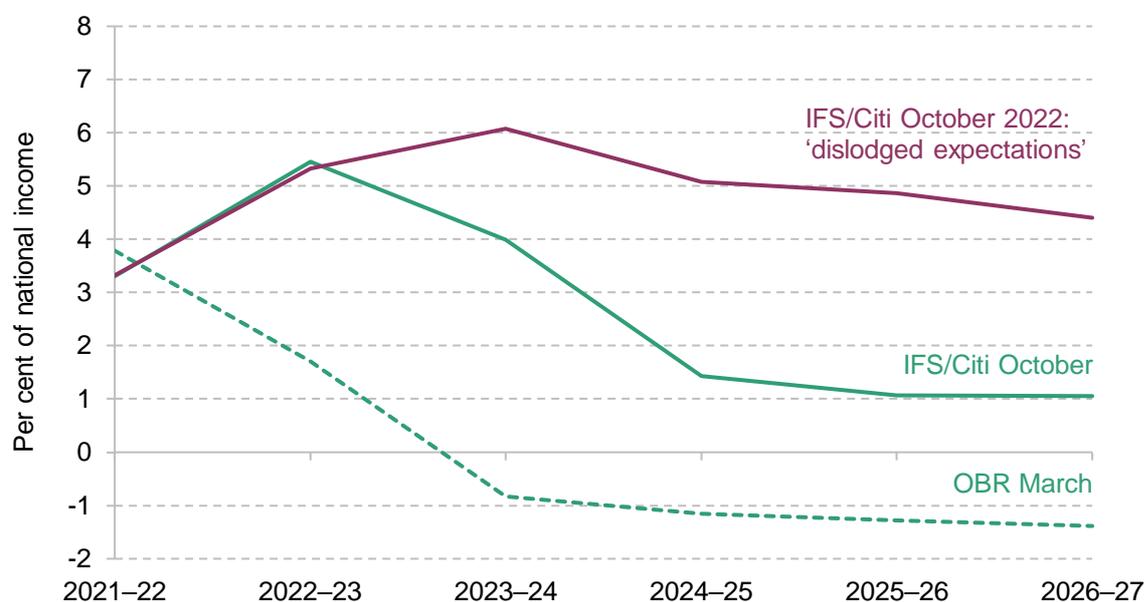
Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

We assume investment spending to be unchanged, in cash terms, from plans at the March 2022 Spring Statement. As a result, under our scenarios, borrowing would comfortably exceed planned investment spending, meaning a forecast current budget deficit (see Figure 3.13). In March, the OBR forecast that the current budget deficit would fall, moving into a current budget surplus in 2023–24 (which would only be the second current budget surplus since 2001–02). These surpluses were forecast to increase slightly throughout the forecast horizon, reaching 1.4% of national income in 2026–27. In contrast, under our central scenario, there would be sizeable current budget deficits in 2022–23 and 2023–24, and even once the packages of support for energy bills are assumed to expire the current budget is forecast to remain in deficit. The government would be consistently borrowing not just for investment, but also to fund day-to-day spending. In 2026–27 under our central scenario, the current budget is forecast to be in deficit by 1% of national income. As well as being bigger than forecast in March, it would also be bigger than prior to the pandemic and also bigger than the long-run average (as shown in Figure 3.2). As with overall borrowing, there is considerable uncertainty around the outlook for the current budget deficit.

A comparison of the headline forecasts for borrowing and the current budget deficit in billions of pounds is presented in Table 3.6. Under our central forecast, borrowing this year will be £194 billion, which would be £94 billion higher than the £99 billion forecast by the OBR in March. Of this increase in borrowing, £68 billion would be explained by the support for rising energy bills, net of revenue from the new energy profits levy, announced in May and September

2022 (as shown in Table 3.2). Under the ‘dislodged expectations’ scenario, borrowing in 2026–27 would – at £199 billion – be almost twice as high as under our central scenario.

Figure 3.13. Forecast current budget deficit



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

Table 3.6. Comparison of forecast borrowing and forecast current budget deficit

£ billion	2022–23	2023–24	2024–25	2025–26	2026–27
Public sector net borrowing					
OBR, March 2022	99	50	37	35	32
IFS/Citi October 2022 central	194	176	107	101	103
<i>Difference</i>	94	126	70	66	71
IFS/Citi 'dislodged expectations'	196	230	202	204	199
Current budget deficit					
OBR, March 2022	43	-22	-32	-36	-41
IFS/Citi October 2022 central	137	104	39	30	31
<i>Difference</i>	94	126	70	66	71
IFS/Citi 'dislodged expectations'	140	158	134	133	127

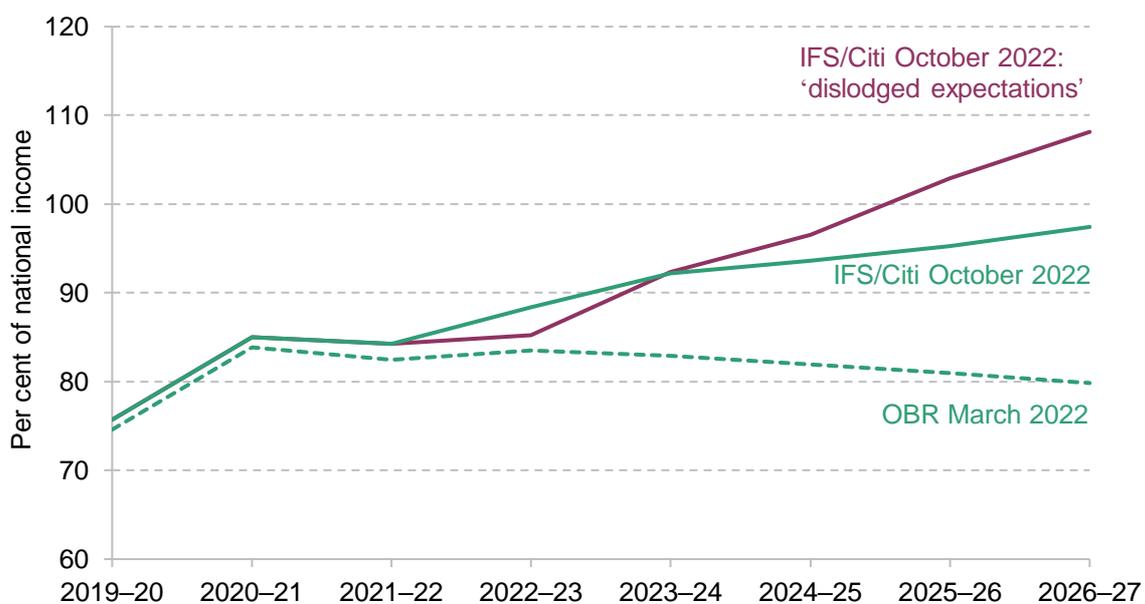
Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

Even once these schemes are assumed to have long expired, our central forecast is for borrowing to remain much above that forecast by the OBR. In 2026–27 our forecast is for borrowing to be £103 billion, which would be £71 billion above the OBR’s March forecast of £32 billion. Of this increase, £43 billion would be the direct result of the permanent tax cuts announced by Mr Kwarteng (see Table 3.1) and the remainder due to the unpleasant combination of higher inflation and higher interest rates without a stronger outlook for the cash size of the economy. Under our assumption that cash investment plans remain unchanged, this leads to a forecast current budget deficit of £31 billion in 2026–27 (rather than a surplus of £41 billion). Under the ‘dislodged expectations’ scenario, the current budget would be in deficit in that same year by £127 billion.

Forecasts for public sector net debt

Under our central forecast, with higher borrowing and lower cash national income, public sector net debt is forecast to be above that forecast in the March 2022 Spring Statement – and by an increasing amount each year. In fact, as shown in Figure 3.14, debt in our central forecast continues to rise throughout the forecast horizon; that is, to rise even once the big packages of support for rising energy prices are assumed to have expired. Under the ‘dislodged expectations’ scenario, debt is forecast to grow as a share of national income at an even faster rate. While the optimal level of debt is not known – and will depend on a wide range of factors – having debt relentlessly rising as a share of national income would at some point become unsustainable.

Figure 3.14. Forecast underlying public sector net debt (i.e. excluding Bank of England)



Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors’ calculations.

3.6 Fiscal targets and options for the Chancellor

Following the commitments made in the Conservative Party’s 2019 general election manifesto, in January 2022 legislation was passed updating the Charter for Budget Responsibility. The Treasury’s objectives for fiscal policy were set as ‘to ensure sustainable public finances, economic growth and stability, value for money for the taxpayer, a strong balance sheet, and intergenerational fairness’ (HM Treasury, 2022a). In this section, we describe the government’s fiscal targets and the degree to which they are now on course to be missed. We then turn to the question of what action could lead to them being met.

Missing the fiscal targets

To achieve the government’s fiscal objectives, the Charter set out two main fiscal targets: first, the fiscal mandate ‘to have public sector net debt (excluding the Bank of England) as a percentage of GDP falling by the third year of the rolling forecast period’; and second, a supplementary target to aim to ‘balance the current budget by the third year of the rolling forecast period’.¹⁰ A detailed discussion of the design of fiscal targets in general, and these in particular, can be found in chapter 4 of last year’s Green Budget (Emmerson and Stockton, 2021).

At the time of the March 2022 Spring Statement, both these fiscal targets were met under the OBR’s forecast. The OBR was forecasting that public sector net debt would fall between 2023–24 and 2024–25 (by a margin of £28 billion) and that there would be a current budget surplus in 2024–25 (of £32 billion). At the time of the next Budget (expected in Spring 2023), the rolling nature of the targets means that the requirement for debt to fall would apply to the change between 2024–25 and 2025–26, while the requirement to have a current budget balance would apply to 2025–26. Had the forecasts remained unchanged from Spring 2022, both would be met with an increased margin: debt was forecast to fall by a margin of £28 billion and the current budget was forecast to be in surplus by £36 billion.

These margins may sound big, but relative to the errors in public finance forecasts they are not. The margin with which debt is expected to fall is particularly sensitive to the forecast for growth in nominal national income in that year. On unchanged policies at the time of the Spring Statement, the OBR judged – on the basis of forecast errors made in the past – that there was a one-in-three chance that the current budget would actually end up in deficit in 2024–25 and a

¹⁰ Additional limits were placed on planned public sector net investment (at 3% of national income) and on planned welfare spending (a predetermined cap and margin). These are not considered in this chapter. In addition, the Charter, sensibly, sets out a range of indicators relating to debt affordability and wider measures of the public sector balance sheet. For brevity these are not discussed here.

four-in-ten chance that debt would rise rather than fall as a share of national income between 2023–24 and 2024–25.

So delivering a current budget surplus and falling debt was never a given. On the forecasts presented in Section 3.5, both rules would be missed. Public sector net debt would be rising as a share of national income between 2024–25 and 2025–26 by a margin of £48 billion and there would be a forecast current budget deficit in 2025–26 of £30 billion. In other words, under our forecast, a combination of tax rises and spending cuts totalling £48 billion (1.7% of national income) would be required in 2025–26 to be on course for debt to be stable as a share of national income between 2024–25 and 2025–26. Reversing the entirety of the £43 billion of permanent tax cuts announced by Mr Kwarteng would therefore not be quite sufficient, on our forecast, to have debt falling in 2025–26. And of course this course of action seems unlikely.

How might falling public sector net debt be delivered?

Rather than meeting the fiscal targets that were legislated in January, it seems much more likely that they will be scrapped. This follows a pattern: as we described in last year’s Green Budget, following the announcement by then Chancellor George Osborne of his second set of fiscal targets in 2014, the following seven years saw a total of 11 fiscal targets being announced. Many were missed (or on course to be missed) before they were dropped. The new Chancellor has stated that in a Medium-Term Fiscal Plan to be released on 23 November he will ‘set out further details on the government’s fiscal rules, including ensuring that debt falls as a share of GDP in the medium term’.¹¹

So how might Mr Kwarteng ensure that public sector net debt does fall as a share of GDP? The short answer is that this cannot be ensured over the next five years. A clear lesson from the Global Financial Crisis, the COVID-19 pandemic and the current cost-of-living crisis is that when severe adverse shocks hit, it can be appropriate – and desirable – for government to provide substantial additional support and for this to be financed through increases in debt. That is precisely why it matters that, in normal times, debt should be falling as a share of national income over the longer term. Most obviously, doing this can help create ‘fiscal space’ to allow debt to rise when the next severe adverse shock hits. We cannot have a situation where, relative to national income, debt increases during bad years but is not reduced at any other time.

Under the current set of fiscal targets, the government’s fiscal mandate is to have debt falling by the third year of the forecast horizon. One obvious strategy would be for the public sector to sell assets (either physical assets or long-run financial assets that do not net off public sector net debt, such as the student loan book). This should be avoided. Decisions on asset sales should be

¹¹ <https://www.gov.uk/government/news/update-on-growth-plan-implementation>.

motivated by whether these assets would be better managed in the public or private sector, not by a desire to reduce the headline level of debt. The previous government – following the recent balance sheet review (HM Treasury, 2020) – committed to focusing on ‘public sector net worth’ which considers the balance between public sector assets and public sector liabilities. This is the right approach to take. The flip side of this argument is that debates around the merits (or otherwise) of nationalisation should not centre on the additional public debt that nationalisations would entail, but instead on whether those assets (companies) would be better managed in the public sector.

Another obvious thing that the Chancellor could do is to push the target year back so that debt only needs to be on course to fall by the final (fifth) year of the forecast horizon, rather than the third year. So in the forthcoming Medium-Term Fiscal Plan this would be between 2026–27 and 2027–28. Extending the horizon would allow more time either for any improvement to the outlook for growth to feed through, or for any discretionary fiscal tightening, such as a squeeze on public spending, to come into effect. There was nothing sacrosanct about aiming to have debt falling in three years’ time, and therefore one could reasonably argue that a longer time frame would be appropriate. However, it is not clear that the economic case for a longer time horizon is any stronger now than it was in the spring: in particular, while the government’s new energy market interventions will add considerably to debt, they are intended to expire in two years’ time and therefore do not make it harder to deliver a fall in debt by the third year. If anything, they make it easier.

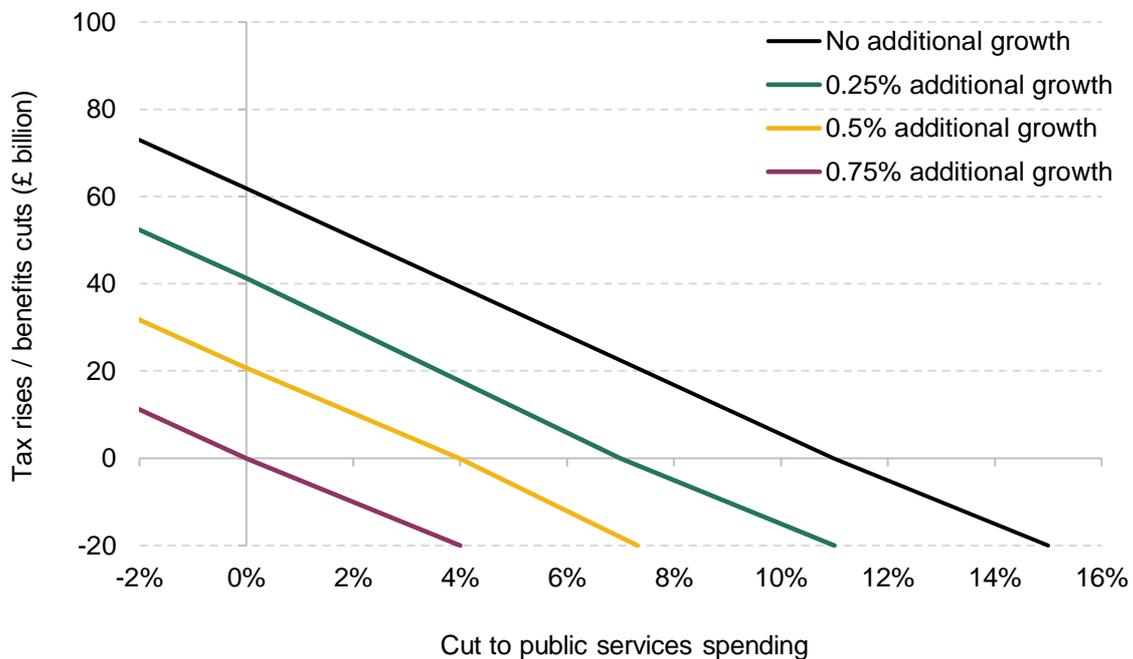
While our forecasts only extend forwards four years (as they build up the OBR’s March 2022 forecasts which run to 2026–27), it is clear that pushing back the requirement to have debt falling as a share of GDP to five years out would, on our forecasts, still mean the fiscal mandate being missed under current policy. In the final year of our forecast horizon – between 2025–26 and 2026–27 – we have public sector net debt rising by a margin of £62 billion. And our central forecast is for the current budget to still be in deficit by £31 billion in 2026–27. This gives a sense of the scale of the challenge if the Chancellor is to restore some semblance of fiscal sustainability.

To achieve his desired fall in debt, the Chancellor would therefore need a combination of: (1) the underlying public finances to be stronger than our forecasts suggest; and (2) new policy measures that boosted revenues or cut spending. Now there is much uncertainty around the public finances and therefore it is not implausible that even on unchanged policies debt could end up falling as a share of national income. Some good news might turn up, in other words. But in our view it is also not implausible that debt ends up considerably higher. Given that it is important that debt starts falling in the medium term, it would be risky indeed simply to assume that ‘something will turn up’.

Stronger growth would definitely help. What matters here is not the headline amounts of growth that we get over the next year or two (which reflect temporary changes in demand in the economy) but rather the underlying, sustainable, level of growth forecast into the medium term. Finding a way to somehow boost this would change the picture for the better and make easier some of the trade-offs facing the Chancellor. And it could be that the OBR takes a more optimistic view of the outlook for growth than Citi does.

The degree to which higher growth would reduce the scale of fiscal tightening needed to stabilise debt is presented in Figure 3.15. Each line shows the trade-off between tax rises and cuts to working-age benefit or state pension spending (on the vertical axis) against the required percentage cut to public service spending (on the horizontal axis), relative to current plans, that would be required to stabilise public sector net debt in the final year of the forecast horizon. Under our central forecast, a fiscal tightening of £62 billion would be required in the final year of the forecast horizon. This could be done by a combination of tax rises and cuts to working-age benefit spending of this amount; or it could be done through an 11% cut to spending on public services and no change to taxation or social security policy. This is shown by the outermost line in Figure 3.15 and would lead to debt being stabilised at 95% of national income.

Figure 3.15. Trade-off between changes to taxes/benefits and to public service spending in order to have debt falling in 2026–27 under our central forecast



Note: Public service spending is TDEL as planned in the March 2022 Economic and Fiscal Outlook. All £ billion are cash terms. Additional growth is from 2022–23 to 2026–27.

Source: Office for Budget Responsibility, Economic and Fiscal Outlook, March 2022; authors' calculations.

Higher sustainable growth could make a big difference. Adding 0.75 percentage points to growth would mean that no additional fiscal tightening would be required to have debt stabilised in the final year of the forecast horizon. This is shown by the innermost line in Figure 3.15.

Essentially, a combination of higher growth, the erosion of the margin built into the March 2022 forecast, and pushing back the requirement to have debt falling as a share of national income to 2026–27 would be enough to cover the deterioration of the public finances seen since March (including the £43 billion cost of the permanent tax cuts set out in the September ‘mini-Budget’).

To put such an increase in context: on average over the quarter of a century from 1983 to the financial crisis in 2008, the UK economy grew by 2.8% a year, whereas over the 2010s it grew by an average of just 2.0% a year. So the difference between these periods is 0.8% a year. This shows that it might be possible that we get an extra 0.8% a year of growth. But under current policy settings, and current forecasts, it remains more likely than not that we will not. In our judgement, the OBR is unlikely suddenly to become so much more optimistic about the outlook for growth.

The middle lines in Figure 3.15 show scenarios where better growth (of an additional 0.25 and 0.5 percentage points per year) emerge. Such outcomes would be extremely welcome, and perhaps (if one is optimistic) lie within the realms of possibility – certainly more so than a sudden jump in growth of 0.75% a year. But under these scenarios a fiscal tightening of £41 billion (0.25ppt growth increase) or £21 billion (0.5ppt) would still be required to stabilise debt as a share of national income.

Higher growth could emerge through luck. Or it could emerge as a result of a concerted effort across government to deliver supply-side reforms that bring about higher growth. Such an effort would be welcome. But often these policies individually could at best only make very incremental – and very gradual – improvements to sustainable growth. Reducing the main rate of corporation tax and abolishing the health and social care levy are examples of where the impact on growth might well be positive, but relative to the overall size of the economy it could only be small.

A government serious about boosting growth would implement reforms across tax policy, liberalise planning, improve regulation and competition policy, refine immigration policy, enhance trade opportunities, and increase investment in education and infrastructure. In some areas – most obviously tax policy and planning – it would mean implementing reforms that previous governments have shied away from. Even if the government intends to do better than its predecessors, that does not necessarily mean the reforms will actually follow or that they will be implemented in a way that realises the desired effects. The OBR should continue its longstanding policy of not incorporating speculative improvements in productivity growth into

its forecasts until hard evidence of such improvements starts to emerge. For example, in 2011, following a government growth review which announced measures such as changes to the planning system and regulation policy, the OBR sensibly decided that:

Such measures could affect growth. For example, a number of studies point to a link between productivity growth and the operation of planning systems. However, there remains significant uncertainty around the size of these effects. In the event that these measures have an impact on growth, there is likely to be some lag before the effects are realised; the effects will also depend on how the measures are implemented.

As a result, identifying the quantitative impact of such policies may not be possible for some time. Set against this uncertainty, we judge there is insufficient evidence at this stage to adjust our trend growth assumptions in light of these measures. It is also important to bear in mind the considerable uncertainty that surrounds the baseline estimate of trend productivity growth. To make a small and precisely calibrated change to this estimate would involve a spurious degree of precision.

Box 3.1, page 39 of Office for Budget Responsibility (2011)

Despite this, over the subsequent five years it turned out that the OBR had been too optimistic rather than too pessimistic in its forecast of productivity growth. In short: a policy of ‘show, not tell’ remains appropriate.

Would pencilling in a future fiscal tightening be credible?

Delivering a fiscal tightening of the size implied above would be far from easy. Absent any improvement in the outlook for growth, a fiscal tightening of £62 billion would, under our central scenario, be required to have debt stabilised at the end of the forecast horizon. To give a sense of how difficult this would be, Table 3.6 provides a costing for some illustrative options. The first is the largest: to reverse all of the remaining permanent tax cuts set out by Mr Kwarteng, which would raise £43 billion. The opposition Labour Party has said that it is opposed to abandoning the planned rise in the main rate of corporation tax. Going ahead with this rise might raise around £18 billion in 2026–27. So were a fiscal tightening of £62 billion required, this would make a sizeable contribution but would still leave some way to go.

A credible plan to restore the health of the public finances could also be rewarded with a lower cost of financing debt. But even if gilt yields and Bank Rate were lower than expected, and this knocked £10 billion off debt interest in every year (the increase in our estimate for 2023–24 between 21 September and today), this would still require a major tightening. There are also areas where further tax cuts are likely: for example, making the 5p cut to fuel duties permanent and then freezing rates in cash terms would reduce revenues in 2026–27 by £9 billion.

A tax-cutting government might be expected to focus instead on measures that reduce spending. After all, the only way to deliver a sustainable cut in the tax burden is to ensure that public spending represents a smaller share of national income. Recent speculation has focused on the possibility of uprating working-age benefits (but notably not the state pension) in April 2023 in line with average earnings (5.5%) rather than prices (10%). This would reduce spending in 2023–24 by £7 billion, with this rising to £13 billion if it were extended to April 2024. Of course, most of these savings would come from the bottom half of the working-age income distribution and it would lead to some of the poorest households in the country seeing a fall in their real incomes. Including the state pension would increase the cut to spending to £11 billion in 2023–24, rising to £20 billion from 2024–25 onwards.

Rather than cuts to benefits (or for that matter increases in personal taxes) which directly hit household incomes, the other alternative would be to implement a fresh squeeze on public service spending. As was set out in Figure 3.15, a £62 billion cut to spending could, in principle, be delivered by an 11% cut to spending on public services in 2026–27.

One option could be to rein back planned investment spending, not least because this is running – and forecast to continue running – at a rate that is high by UK standards of the last 40 years. Cutting back investment spending to 2% of national income would reduce planned spending by £14 billion in 2026–27, while going further and halving planned spending – which would return it to its lowest share of national income since 2001–02 – would reduce spending by £36 billion. Of course it might be difficult to square such a deep cut to investment spending with the government’s stated determination to focus on boosting growth.

Planned day-to-day spending on public services could also be cut. As set out in Table 3.7, a 10% cut would deliver a cut of £45 billion. One area where this would seem particularly unlikely to occur is the NHS. The fact that health services are struggling post-pandemic has been well documented. In addition, while spending plans for 2021–22 and 2022–23 have been topped up to help the NHS deal with post-pandemic pressures, no additional allowance has yet been made for subsequent years (Warner and Zaranko, 2021). On top of this, the large cohort born in the years following the Second World War are reaching ages where they put additional demands on the NHS. Any promise to ‘balance the books’ via large cuts to the NHS budget might, to put it lightly, be looked upon with some doubt.

Table 3.7. Reductions in borrowing from illustrative measures

	£ billion
Examples of how borrowing could be reduced	
Reverse remaining permanent tax cuts set out in September 2022 mini-Budget	£43 billion a year tax rise by 2026–27 (of which corporation tax rate rise around £18 billion)
Index working-age benefits by lower of growth in average earnings and prices	£7 billion cut to spending in 2023–24 rising to £13 billion from 2024–25 onwards This would rise to £11 billion in 2023–24 and £20 billion from 2024–25 were the state pension also included
10% cut to day-to-day spending on public services in 2026–27	£45 billion cut to spending
As above, but with defence and NHS spending protected	£23 billion cut to spending from 2026–27
Reduce planned investment spending to 2% of national income	£14 billion cut to spending in 2026–27
Reduce planned investment spending by 50%	£36 billion cut to spending in 2026–27
Likely policies that would push borrowing up	
Making temporary 5p cut to fuel duties permanent and continuing policy of freezing rates	£6 billion tax cut in 2023–24, rising to £9 billion in 2026–27

Source: Office for Budget Responsibility, Economic and Fiscal Outlook (March 2022) and Tax and Spending Ready Reckoners (October 2021); HM Treasury, 'Fuel duty rates 2022-23' (policy paper, March 2022); authors' calculations.

Another area where cuts to spending seem unlikely is the defence budget. The UK is one of the few countries that complies with the NATO commitment to spend at least 2% of national income on defence. The Russian invasion of Ukraine has led to many countries – most notably France and Germany – pledging to increase spending. Following this pattern, Ms Truss has committed to increase defence spending to 3% of national income by 2030 (with an increase from 2% of national income to 3% of national income representing an annual budget increase of £25 billion in today's terms). Given the intent to deliver such a large budget increase by 2030, it would be odd and inefficient to cut spending in the interim period. Ramping up defence spending from 2% to 3% of GDP between 2024–25 and 2029–30 could require real-terms budget increases well in excess of 10% per year, which could pose efficiency challenges of its own.

Excluding the NHS and defence from public service spending cuts would reduce the scope for savings to come from that source. As set out in Table 3.7, implementing a 10% cut to day-to-day

public service spending in 2026–27 and exempting these two public services would reduce the resulting cut to spending to £23 billion (down from £45 billion if these two services were included). And many of these public services saw big cuts to their budgets during the ‘austerity’ years of 2010 to 2019: in particular, spending in areas such as prisons, policing and services provided by local government saw deep real-terms cuts of in excess of 20% over this period.

Delivering big additional cuts in these areas would be far from easy. And finding further efficiencies would be harder still: this would require either the delivery of efficiencies that could not be found or, at least, could not be realised over the period of ‘austerity’ or that new inefficiencies have emerged since. This is not impossible, but like claims that economic growth will be increased, it is easier said than done. It also ignores the fact that departments are already being asked to find efficiencies, just to stay within existing budgets in the face of higher cost pressures (especially from higher-than-budgeted pay awards – see Chapter 4).

Of course a combination of the measures above could – and perhaps most likely would – be deployed. Suppose a £62 billion cut to planned spending in 2026–27 is required. £13 billion could come from indexing working-age benefits to growth in earnings rather than prices in the next two years. A further £14 billion could come from cutting investment spending plans to 2% of national income. The remaining £35 billion could come from a 15% cut to day-to-day spending on public services outside of the NHS and Ministry of Defence budgets. Such spending cuts could be achieved, but would be far from easy.

It is possible that the Chancellor, having extended the time horizon for when debt needs to be falling, chooses to achieve this in the OBR’s forecast by cutting back on planned spending growth in 2025–26 and 2026–27. Since this is beyond the current spending review period, this would not have to affect any of the allocations already made to spending departments, and the Chancellor could avoid specifying where the cuts would fall. But the risk here is obvious. As we put it in last year’s Green Budget, extend fiscal targets forwards ‘too long and governments may have more scope to promise future tax rises or spending cuts that they do not intend – or are perhaps unable – to implement’ (Emmerson and Stockton, 2021). Mr Kwarteng is aware of this concern. Writing in 2012 (with Jonathan Dupont), he critiqued Gordon Brown’s golden rule, describing a situation where ‘spending plans were based on over-optimistic forecasts’ and that forward-looking targets risked an environment where ‘in each new budget the government promised their books would balance tomorrow – but tomorrow never seemed to arrive’ (Dupont and Kwarteng, 2012). We agree.

We need the OBR to do what it can to protect against this scenario. In the past it has tended to accept the Treasury’s planning assumption for spending on public services beyond the current spending review period, and to highlight what this would mean in a historical context and relative to public spending in other comparable advanced countries. It should extend this

analysis as far as it can: at the very least, it should compare spending growth in years beyond the spending review settlement in its medium-term forecast with the pressures for additional spending. Notably, this includes spending pressures arising from factors such as changing demographics and net zero commitments that the OBR typically focuses on in its long-term fiscal analyses. Certainly the OBR should be very wary of a promise to cut spending in four or five years' time without sufficient detail of where the axe would fall.

3.7 Conclusion

Uncertainty around any public finance forecast means that it is always possible that debt will fall as a share of national income. But no Chancellor can claim, as Mr Kwarteng has said he will, that they will ensure debt will fall over a specific future period. A clear lesson from the Global Financial Crisis, the COVID-19 pandemic and the current cost-of-living crisis is that there are emergency periods where government needs to provide temporary support and it is appropriate for debt to rise. Trying to prevent debt from rising during a sharp economic downturn would be wrong and, most likely, futile.

But it is certainly unsustainable for policies to leave debt on a path where it relentlessly grows as a share of national income. And wanting the ability to raise debt when the next sizeable adverse shock hits provides a reason to aim to have debt falling outside of crises. Doing this can open up more 'fiscal space', giving greater capacity for the government to step in when it needs to. But being able to realistically expect public sector net debt to fall requires the government – and other forecasters – to form a central view of the outlook for economic growth and what tax and spending policies will actually be pursued.

We should not forget that all this will become harder over the coming decades as the population ages and spending on pensions, health and social care is likely to be forced upwards. If we cannot balance the current budget and get debt under control over the next few years, we will only leave ourselves with an even harder task in the years after that.

While we should hope for better growth, the rationale for an independent OBR is to ensure that politically motivated wishful thinking is not incorporated into economic and fiscal forecasts. The OBR should continue its practice of not incorporating hoped-for growth improvements arising from supply-side reforms until evidence of stronger growth starts to emerge. Saying reforms will happen does not mean they will be legislated, and even if enacted it is still unclear what real change they will deliver. Quite often policies can be likely to boost growth on the margin, but their effects will be very modest.

We also need to avoid the situation Mr Kwarteng wrote about in 2012, when critiquing the performance of the last Labour government, where 'in each new budget the government

promised their books would balance tomorrow – but tomorrow never seemed to arrive’. If the government wishes to turn to spending constraint to finance its recent tax cuts, and still have public sector net debt falling as a share of national income, then that is a valid choice. But cutting spending in areas where such large cuts were made between 2010 and 2019 will not be easy. The NHS is quite clearly already under much strain. Demographic pressures are adding to the demands on both health and social care. And Ms Truss has made a clear commitment to increase spending on defence significantly by 2030. Therefore the OBR should be very wary of a promise to cut spending in four or five years’ time without sufficient detail of where the axe would fall.

Finally, it is not possible to say exactly when fiscal policy becomes unsustainable. It likely is possible to run persistent current budget deficits and have debt growing for a number of years. The rules we have been talking about are rules of thumb, not hard-and-fast economic necessities. But as we have seen in recent weeks, there are constraints that can bite. And it looks as if we are running up against them, perhaps for the first time in a long time. We have seen the warning shots. This would not be the right moment to abandon fiscal discipline. The Chancellor needs to set out a credible path to fiscal sustainability. He has a tough job on his hands.

References

- Bell, T., Broome, M., Cominetti, N., Corlett, A., Fry, E., Handscomb, K., Judge, L., Leslie, J., Murphy, L., Shah, K., Slaughter, H., Smith, J., Thwaites, G. and Try, L., 2022. Blowing the budget. Resolution Foundation, Briefing, <https://www.resolutionfoundation.org/app/uploads/2022/09/Blowing-the-budget.pdf>.
- Cornwall Insight, 2022. Energy Price Guarantee – counting the costs. 5 October 2022, <https://www.cornwall-insight.com/energy-price-guarantee-counting-the-costs/>.
- Dupont, J. and Kwarteng, K., 2012. Binding the hands of government – a credible fiscal rule for the UK. Institute of Economic Affairs, Current Controversies Paper 36, <https://iea.org.uk/publications/binding-the-hands-of-government-a-credible-fiscal-rule-for-the-uk/>.
- Emmerson, C. and Stockton, I., 2021. Rewriting the fiscal rules. In C. Emmerson, P. Johnson and B. Zaranko (eds), *The IFS Green Budget: October 2021*, <https://ifs.org.uk/books/rewriting-fiscal-rules>.
- Emmerson, C. and Stockton, I., 2022. Reversing NICs and corporation tax rises would leave debt on an unsustainable path. Institute for Fiscal Studies, Report, <https://ifs.org.uk/publications/reversing-nics-and-corporation-tax-rises-would-leave-debt-unsustainable-path>.

HM Treasury, 2020. The Balance Sheet Review Report: improving public sector balance sheet management. <https://www.gov.uk/government/publications/the-balance-sheet-review-report-improving-public-sector-balance-sheet-management>.

HM Treasury, 2022a. Charter for Budget Responsibility: Autumn 2021 update. https://obr.uk/docs/dlm_uploads/Charter_for_Budget_Responsibility_FINAL.pdf.

HM Treasury, 2022b. The Growth Plan 2022. <https://www.gov.uk/government/topical-events/the-growth-plan>.

Office for Budget Responsibility, 2011. Economic and fiscal outlook – March 2011. <https://obr.uk/efo/economic-and-fiscal-outlook-march-2011/>.

Office for Budget Responsibility, 2021. Tax and spending ready reckoners, October 2021. <https://obr.uk/monthly-profiles-and-ready-reckoners/>.

Office for Budget Responsibility, 2022. Economic and fiscal outlook – March 2022. <https://obr.uk/efo/economic-and-fiscal-outlook-march-2022/>.

Warner, M. and Zaranko, B., 2021. Pressures on the NHS. In C. Emmerson, P. Johnson and B. Zaranko (eds), *The IFS Green Budget: October 2021*, <https://ifs.org.uk/books/pressures-nhs>.

4. Public spending, pay and pensions

Bee Boileau, Laurence O'Brien and Ben Zaranko (IFS)

Key findings

- 1. The public sector pay settlements announced this July will pose severe budgetary challenges for many areas of government.** Overall funding for public services was fixed in cash terms for the next three years in last October's spending review, at which this year's double-digit inflation was not predicted. Departmental budgets were predicated on pay awards in the region of 3%, far below the current rate of inflation, and below the pay awards of roughly 5% (on average) announced over the summer. **These pay awards are estimated to increase departmental staffing costs by around £5 billion this year**, compared with the (approximate) 3% baseline built into existing spending plans. Offering an inflation-matching pay award to all public sector employees would add more like £18 billion.
- 2. Departmental funding settlements have not been increased to account for these additional costs.** Meeting them from within existing budgets will be especially challenging given the context of sharply rising energy prices and elevated general inflation, which reduces the scope for savings elsewhere. **If costs were met entirely through cuts to employment (i.e. to keep the total wage bill to what was expected when the spending settlements were made), a reduction of approximately 110,000 public sector workers (or 1.9% of the projected 2022–23 public sector workforce) would be necessary this year.** Full inflation protection for public sector employees would increase that number to 390,000 (or 6.8% of the workforce). If some areas of government (e.g. the NHS) were exempt from any headcount cuts, the required cuts elsewhere would be deeper.
- 3. The challenge is, if anything, more acute in future years. Compensating departments for the additional costs of the pay awards this summer would mean an additional £5 billion or so this year (2022–23); if pay awards matched inflation after this year, that figure would rise to more than £10 billion by 2024–25.** If no such

compensation were forthcoming, the government would have to cut headcount by more than 220,000 by 2024–25 (or 3.8% of the projected 2024–25 public sector workforce) to stay within existing plans for the staff pay bill. If, instead, the government offered inflation-matching pay awards this year and each of the next two years, the additional costs would rise to around £25 billion by 2024–25, or the headcount reduction required to stay within existing budgets to 500,000 (8.6% of the public sector workforce).

4. **The new Chancellor Kwasi Kwarteng must either top up those spending plans to fund these higher-than-expected pay awards or accept that the quality of public services will (further) deteriorate.** This is one of the central fiscal choices for this autumn. Indeed, this could be among the defining decisions of the remainder of this parliament.
5. **There is a case for reforming the fiscal framework** to lessen the disconnect between the planning horizons for public sector pay (set annually) and departmental budgets (set on a multi-year basis). That could be achieved by setting the same planning horizons for both; longer-term horizons, though, would exacerbate pre-existing problems of public sector pay inflexibility, and shorter-term horizons might impede departments' ability to budget effectively. Our preference would be to instead reform the spending framework, so that settlements are automatically reopened and reassessed in exceptional circumstances, defined as occurring when pay and/or other cost increases deviate sufficiently from the assumptions made (and published) when plans were originally set.
6. **Even the higher-than-budgeted pay awards this year may not be enough to head off concerns around recruitment and retention – or widespread industrial action.** The vast majority of public sector workers will experience a real-terms pay cut this year, and are likely to experience a bigger real-terms cut than their counterparts in the private sector. Public sector pay awards of 4–5% this year imply real-terms cuts of more than 5%, and are broadly similar to expected private sector pay settlements of around 6% (though may compare less favourably when bonuses, more widespread in the private sector, are taken into account).
7. The gap between pay growth in the two sectors this year is unlikely to be especially large, but **comes after a decade in which public sector pay has been falling relative to the private sector and, for many public sector jobs, falling in real terms.** The government needs to ensure it has the right number and mix of staff to provide its desired range and quality of public services. It is therefore essential to consider trends in public and private sector pay (and overall remuneration) together:

the private sector helps define outside options for public sector workers. **The continuing fall in public sector pay relative to the private sector poses recruitment and retention challenges for public services**, and could threaten the government's ability to deliver on its public service objectives (such as clearing the NHS backlog, 'levelling up' primary education and reforming adult social care funding).

8. The raw difference between public and private sector hourly pay levels, which does not take account of the different characteristics of employees in the two sectors, has fallen from 13% in 2007–08 to 7% in 2021–22. The conditional public–private pay differential, which controls for the fact that public sector workers tend to be more educated, older and more experienced, has fallen steadily from around 3% in 2007–08 to slightly below zero in 2021–22. **This public–private pay differential is now less favourable to the public sector than at any point in the past 30 years.** This is true of both men and women, though the estimated public–private pay differential for women in 2021–22 remains positive (+2.2%) and considerably higher than for men (–4.6%).
9. Alongside pay, **employer contributions to pension schemes are an important part of the overall difference between public and private sector remuneration.** Public sector workers are much more likely to be enrolled in a workplace pension (91% had a workplace pension in April 2021, compared with 75% of private sector employees) and more likely to be in – typically much more generous – defined benefit schemes (82% were in a defined benefit scheme in 2021, compared with 7% of private sector workers). **Whereas almost half (47%) of public sector employees received an employer pension contribution of at least 20% of their pay in 2021, the same was true of just 2% of private sector employees.**
10. **The relative generosity of employer pension contributions in the public sector has been growing over time.** The average employer contribution rate in the public sector grew by around 5 percentage points between 2012 and 2021, rising to 18% of pay in 2021. **The average employer contribution rate in the private sector is considerably lower and has been growing more slowly:** the average across all private sector employees (including those who do not participate in a pension scheme) rose by around 2 percentage points over the same period, reaching almost 6% of pay in 2021.
11. When taking an estimate of employer pension contributions into account, there was a raw difference of 21% between average public and private sector remuneration in 2021. **When controlling for employee characteristics, we estimate the average public–private remuneration differential to be around 6%** (meaning that public sector workers are paid roughly 6% more than their private sector counterparts on

average, once pensions are accounted for). This total remuneration differential has fallen in recent years, but to a lesser extent than when considering pay alone, as a result of the increasing relative generosity of public sector pension contributions.

12. **There is a strong case for rebalancing public sector remuneration away from pensions and towards pay.** A far greater share of overall public sector remuneration is deferred, in the form of both employer and employee pension contributions, compared with the private sector (20.1% versus 7.6% on average in 2021), and this difference has been increasing over time. That means for a given level of remuneration, take-home pay is lower in the public sector. **One option, as a starting point, would be to reduce employee pension contributions in the public sector, alongside a commensurate decrease in pension generosity.** That would increase take-home pay for public sector employees with no change to the costs for their employers.
13. **The public sector pay differential varies considerably across the UK,** implying that regions may face varying levels of difficulty with recruitment and retention, and potentially creating unintended and undesirable variation in the quality of public services. **The conditional public–private pay (and total remuneration) differential is lowest in London and the South East, and highest in Wales, Scotland and the North East.** The average nurse in the North East earns 17% more than the average employee in the region, versus just 5% more in the East of England and 9% less in London. The average secondary school teacher in the North East or Wales earns over 50% more than the average in their region; a secondary school teacher in the South East earns 22% more than the average. Pay is not, of course, the only factor affecting the public sector’s ability to recruit and retain skilled workers, and it is not obvious that the areas with the lowest public–private differential are those facing the greatest difficulties with recruitment.

4.1 Introduction

The public sector pay bill amounted to £233 billion in 2021–22, representing more than 20% of total government spending, 33% of what government spends on public services and almost 10% of national income. Decisions over what happens to the pay of the 5.7 million public sector employees are therefore of considerable fiscal significance – as well as being of obvious importance to those employees and their families. In the current climate, with the UK economy staring down the barrel of a recession and double-digit inflation, these decisions are fraught with even more difficulty than usual.

Ultimately, public sector pay policy should be set with regard to the public services that the government wishes to deliver. From this flows a staffing need, and pay can then be set in order to ensure that the government can recruit, retain and motivate the appropriate number and mix of employees. That suggests a focus on labour market conditions and, in particular, a focus on how public sector pay and remuneration compare with the private sector. Providing such a comparison is one of the key aims of this chapter.

Of course, the government should be considering the trade-off between higher public service spending and the taxes, or borrowing, required to pay for it, and so choices over the range and quality of desired service provision should be made in the round, at fiscal events. Public sector pay decisions are constrained by whether or not the government is willing to countenance the level of taxes and/or borrowing associated with them. Public sector pay policy ought not to be restricted by, or calibrated in order to achieve, broader distributional objectives (such as helping low-income households with soaring energy bills) nor macroeconomic objectives (such as limiting aggregate demand to curb inflation). Better tools for each of these tasks are available.

With this in mind, the situation for the new Chancellor heading into the autumn Budget is as follows:

1 In the face of elevated private sector pay awards, pushed up by much elevated inflation, public sector pay awards need to be higher than what was assumed a year ago.

Pay awards of 2–3% (as originally budgeted) would not be sufficient in the current context. This has been recognised by the pay review bodies in their recommendations (which cover around 42% of all public sector employees) and by departments, which have accepted those recommendations. Most public sector employees will now receive a pay rise of roughly 4–5% (with some receiving more than this and some receiving less).

2 The spending plans set out last year are not able to accommodate those higher pay awards without making painful cuts to headcount or other budgets.

The pay awards announced by government will increase departments' staff costs by approximately £5 billion (or around 2%) a year, relative to what was budgeted for in October 2021. Meeting these additional costs will be made all the more difficult by soaring gas, fuel and food prices, all of which push up departments' costs and reduce the scope for savings elsewhere.

3 The new Chancellor must either top up those spending plans or accept that the quality of public services will (further) deteriorate.

Those spending plans need to be topped up if – and it is a crucial if – the government still wishes to provide the same range and quality of public services. Delivering on all the government’s previous public service objectives (such as clearing the NHS backlog, ‘levelling up’ primary education or ‘fixing’ adult social care) already looked challenging under the spending envelope set out last autumn. Now, it looks nigh on impossible.

4 Choosing not to compensate departments, and instead allowing public service quality to (further) deteriorate, would be one possible response to the UK becoming poorer as an energy- and food-importing nation.

There are no easy options here. As ever, there are trade-offs. Leaving spending plans unchanged would mean public services having to make difficult cuts at a time when many are already showing signs of severe strain. Topping up spending plans would, all else being equal, push up borrowing and lessen the scope for tax cuts. Whatever choice is made, it should be made openly, honestly and transparently – ideally at a full fiscal event.

5 Whether or not departments are compensated for the additional costs of the pay awards announced so far, these awards will be below inflation and likely below the average pay awards seen in the private sector.

The government has effectively announced that the vast majority of public sector workers will experience a real-terms pay cut this year. Average pay in the private sector is not expected to keep pace with inflation either, but it is expected to grow by more than in the public sector. Public sector workers are therefore likely to see their pay fall behind not just prices, but also the pay of their private sector counterparts.

6 This comes after a decade in which public sector pay (and remuneration) has already fallen in real terms, and fallen relative to the private sector.

After more than 10 years of pay restraint, public sector workers are now paid less on average than similar workers in the private sector. This is especially true for higher earners and those living in London and the South East. After accounting for employer pension contributions, public sector workers do have higher remuneration, but this gap has narrowed considerably over time. Ongoing pay restraint in the public sector could threaten the government’s ability to recruit, retain and motivate the skilled people required to provide its desired range and quality of public services.

These challenges will extend beyond this autumn: the costs of pay increases compound over time, and departmental budgets for future years may also need to be revisited. There is also a broader set of longer-term policy questions raised by this analysis. These include – but are by no means limited to – the appropriate structure of public sector remuneration (with a strong case for rebalancing away from employer pension contributions and towards pay), and options for addressing the disconnect between the planning horizons for departmental budgets and public sector pay awards (which must be met from those budgets).

This chapter proceeds as follows. Section 4.2 outlines the pay announcements already made. Section 4.3 considers what this means for the Budget and the key options and trade-offs for the new Chancellor. To place these in context, Section 4.4 compares headline pay in the public and private sectors: how pay levels in each sector have evolved over time, how the two wage distributions compare, and how these findings differ after accounting for differences in the characteristics of workers. Section 4.5 then considers how this public–private pay differential varies across the wage distribution, between men and women, and across different regions. Section 4.6 turns to another important form of remuneration – employer pension contributions – and examines how these compare across the public and private sectors. Building on this, Section 4.7 provides estimates for how pay compares in each sector after accounting for employer pension contributions. Section 4.8 considers some of the longer-term policy implications of this analysis. Section 4.9 concludes.

4.2 Pay announcements so far

Pay review bodies' announcements

Public sector pay is set by the government, but informed by eight independent pay review bodies, which cover around 42% of public sector workers (Office of Manpower Economics, 2021).¹ These bodies collect evidence from various sources – including employers, government departments and unions – and make (non-binding) pay recommendations.

In July this year, the government published seven of the eight pay review bodies' reports, alongside its response, which determined 2022–23 pay levels for the 2.3 million or so workers covered by the agreements. The NCARRB report (which covers the National Crime Agency) for 2022 has not yet been released. The recommendations ranged broadly across pay increases of

¹ These are the Armed Forces' Pay Review Body (AFPRB), the Review Body on Doctors' and Dentists' Remuneration (DDRB), the NHS Pay Review Body (NHSPRB), the Prison Service Pay Review Body (PSPRB), the School Teachers' Review Body (STRB), the Review Body on Senior Salaries (SSRB), the National Crime Agency Remuneration Review Body (NCARRB) and the Police Remuneration Review Body (PRRB).

3.75–5%, with higher pay awards recommended for the lowest-paid staff. These increases were, in general, accepted by departments.

Specifically, this financial year NHS workers will receive a rise of £1,400, enhanced for staff in Agenda for Change bands 6 and 7 so that overall it is equivalent to a 4% rise.² Doctors and dentists will receive a raise of 4.5%. Teachers will receive an increase of between 5% (for top-band workers) and 8.9% (newly qualified teachers outside London). Prison staff will receive at least a 4% raise, armed forces 3.75% and police an uplift of at least £1,900. Senior civil servants will receive a 2% raise.

These changes, for the vast majority of public sector workers, amount to a real-terms pay cut: using September Citi forecasts, CPI inflation is set to average 10.5% over the 2022–23 financial year (see Chapter 2). They are, though, above what was originally budgeted for and built into departmental spending allocations, an issue to which we return below.

Other pay announcements

The pay review bodies cover less than half of all public sector workers. There is no pay review body for local government staff, for instance, nor for junior civil servants.

The National Employers for Local Government Services (who represent the employers of more than 1.5 million local government employees in England, Wales and Northern Ireland) also published their pay offer in July 2022.³ Council employees were offered a flat-rate pay increase of £1,925, equating to a pay rise of more than 10% for those on the lowest pay points and around 4% for senior council and school staff.⁴

The guidance for pay-setting for junior civil servants was published in March 2022. In 2022–23, departments were able to make average pay awards of up to 2%, with some flexibility to make awards of up to 3% where additional conditions were met.⁵

² Examples of bands 6 and 7 roles include senior nurses, experienced paramedics and biomedical scientists, with salaries varying from £33,706 to £47,672 depending on seniority and experience (<https://www.healthcareers.nhs.uk/working-health/working-nhs/nhs-pay-and-benefits/agenda-change-pay-rates/agenda-change-pay-rates>).

³ <https://www.local.gov.uk/our-support/workforce-and-hr-support/local-government-services/green-book-payscales-and-other-7>.

⁴ The pay scale covered by this offer went up to £47,665 in 2021–22; pay above this level was determined separately (https://www.nicva.org/sites/default/files/d7content/attachments-articles/payscales_april_2021.pdf).

⁵ <https://www.gov.uk/government/publications/civil-service-pay-remit-guidance-2022-to-2023/civil-service-pay-remit-guidance-2022-to-2023>.

Targeting the lower-paid

One effect of the pay review settlements has been to narrow the relative pay differences between the lowest and highest public sector earners. This continues the trend of the last decade, where higher-paid workers have seen their pay grow more slowly than their lower-paid counterparts.

In particular, teachers' and NHS workers' pay scales have been further flattened by the 2022–23 pay settlements. Newly qualified teachers (outside London) have been awarded a pay increase of 8.9%, compared with 5% for teachers at the top pay bands. NHS workers' pay will be increased by £1,400, which amounts to a 9.3% increase for the lowest earners, compared with 4% for more experienced, higher-earning staff (such as senior nurses and midwives in bands 6 and 7).

This could lead to increasing difficulty with recruitment and retention of higher-paid public sector workers, particularly as private sector wages are rising particularly strongly at the higher end of the wage distribution, potentially providing more attractive outside options.⁶

Progression into management and supervisory roles may also become less attractive, as a result of the increasingly meagre financial returns for progressing up the pay scale. The dentists' and doctors' pay review body report, for example, discussed a growing difficulty in recruiting for higher-paid roles, with 'interest in senior, leadership and contractor roles ... waning' (DDR, 2022).

While lower-earning workers are likely to be worst affected by the cost of living crisis, and policymakers are therefore understandably keen to provide support, public sector pay policy is not the best method by which to do so (Zaranko, 2022a). More targeted distributional policies – such as changes to universal credit, or direct support with energy bills – would be preferable, and would apply across both the public and private sectors. Instead, public sector pay policy should focus on those areas where recruitment and retention concerns bite most deeply.

This is not to say that pay increases should not be focused at the bottom end of the pay scales, as lower pay bands may in fact be the areas for which recruitment and retention concerns are most acute. Some review body reports this year emphasised particular difficulties at lower pay grades: the Prison Service Pay Review Body report described a 'crisis in the recruitment and retention of Band 2 and 3 staff', saying that 'pay, in particular take home pay, is a significant contributory factor to this' (PSPRB, 2022). The report discussed the role played by supermarkets, coffee shops and online retailers in providing attractive outside options in the private sector. Similar

⁶ As will be discussed in more detail in Section 4.4, the raw public–private wage differential was negative at the 90th percentile of both sectors' wage distributions in 2021: those at the 90th percentile of the public sector wage distribution earned £29.16 an hour (equivalent to £60,819 annually for a full-time worker), while in the private sector the equivalent figure was £29.88 (equivalent to £62,321 annually). We conduct detailed analysis of how the public–private pay differential varies across the wage distribution in Section 4.5.

concerns were raised in the NHS Pay Review Body report, which discussed an ‘active alternative employment market for lower banded staff’, referring again to the competition from supermarkets and warehouse work (NHSPRB, 2022). Non-pecuniary aspects of public sector roles – such as the potentially greater stress associated with working in the health service during a pandemic, relative to an alternative role in the private sector – could well be just as important as pay.

Teaching is another occupation for which further pay compression may be sensible, with recruitment concerns particularly stark at lower bands. Teachers’ decisions are more sensitive to pay earlier in their career, a point at which they also have a higher propensity to leave. Previous work at IFS has argued that higher initial salaries for teachers and lower pay rises would be likely to help with retention concerns (Sibieta, 2022b).

More generally, targeting pay awards at the lower-paid may well be the most appropriate use of resources, given the specific recruitment and retention challenges in each sector. But such an approach should be justified on those grounds on a case-by-case basis, rather than on the grounds of broader distributional or macroeconomic objectives.

How does this compare with the private sector?

On the basis of the pay offers discussed above, most public sector workers will not see their pay rise as fast as prices and so will experience a real-terms pay cut. But that is also true for most workers in the private sector. Private sector pay settlements are perhaps the most important point of comparison when considering public sector pay awards, since they help to define public sector workers’ outside options, and thus affect the ability of the public sector to recruit and retain workers.

We provide a detailed comparison of average earnings in the public and private sectors in Section 4.4. For now, it is sufficient to note that private sector earnings are currently growing considerably faster than public sector earnings, with annual growth in nominal private sector earnings at 6.2% in the three months to July 2022, compared with 1.8% in the public sector (excluding financial services). In the three months to April 2022, the gap was even greater: 8.0% average annual growth in the private sector and 1.5% in the public sector.

Looking at what is happening to average earnings, though, may not give the best indication of the ‘true’ change in pay for the same worker in the same job. Compositional change within the public and private sector workforces has an effect on average pay, and this compositional change is typically especially marked during recessions. As discussed in Box 4.1 later, compositional change and furlough in the private sector during the first nine months of 2021, in particular, will mean that private sector pay growth is overstated to some extent. Changes in average pay could also reflect changes in hours worked: if workers choose to pick up extra overtime shifts in the

face of rising energy bills, that would increase their weekly earnings but should be considered distinct from an inflation-matching rise in their hourly wage.

Median pay settlements in the private sector, which are – the government argues – ‘most comparable to ... pay review body decisions’, were equal to 4% in the three months to May 2022.⁷ According to the Bank of England’s August 2022 Monetary Policy Report, employers ‘expect pay settlements to average 6% over the next year’ – though many firms reported that they were waiting to see how much further CPI inflation rose before deciding or reporting their expected pay settlements (Bank of England, 2022). As discussed in Section 4.4, private sector employers are also more likely to award one-off bonuses. Around a quarter of firms surveyed by the Bank of England had given, or were considering giving, these sorts of payments to compensate staff for the higher cost of living in the next year.

This implies that this year’s public sector pay settlements of 4–5% will be slightly below private sector settlements, but to a lesser extent than might be implied by average earnings figures. Although (at the time of writing) the difference between pay growth in the two sectors seems likely to be reasonably modest – say, 1 or 2 percentage points – it is important to note that this would come after a decade in which public sector pay has already fallen both in real terms and relative to pay in the private sector (see Section 4.4).

Moreover, the labour market is tight, with vacancies across the public and private sectors. The NHS Pay Review Body report, in particular, warned about the number of vacancies – 100,000 – across the service, as did the Prison Service Pay Review Body report, which mentioned the ‘increasing number of vacancies across the current prison estate’ (NHSPRB, 2022; PSPRB, 2022). In these conditions, a competitive pay offer is especially important in order to recruit and retain staff.

4.3 Options and challenges for the new Chancellor

Additional costs for departments

There are around 5.7 million employees working in the public sector (around 4.8 million full-time equivalents, FTE), employed at an annual cost of £233 billion in 2021–22. Of these, around 5.5 million (4.6 million FTE) are employed by general (i.e. central and local) government, with the remainder employed by public corporations. What happens to their pay is of considerable import for the overall level of government spending. Even relatively small-sounding differences

⁷ <https://www.gov.uk/government/news/nhs-staff-to-receive-pay-rise>.

in the percentage pay increases awarded to these workers can mean a multi-billion-pound increase in the cost of employing them.

When the government set out three years of departmental spending plans last October, the outlook for inflation was benign, at least relative to what we are now experiencing. CPI inflation was forecast to peak at 3.7% in 2022–23 and average 2.7% over the three years covered by the spending review (2022–23, 2023–24 and 2024–25). Plans were underpinned by assumptions over the likely scale of pay awards over the period. These assumptions – which in any case will have varied across departments, services and staffing groups – were not made public. To get a sense of how much the government was expecting to spend on public sector pay when setting out its spending plans, we therefore need to make an assumption about the assumptions.

For the purposes of illustrating the broad scale of the additional pay costs facing departments, we assume that departmental budgets were predicated on annual pay awards of 3%. Under the inflation forecasts at the time, this would have amounted to modest real-terms pay growth over the three-year spending review period. This also would have been broadly in line with the Office for Budget Responsibility’s concurrent forecast for average earnings growth, and so consistent with the government’s stated policy of having public sector pay maintain ‘broad parity with the private sector’ (HM Treasury, 2021, paragraph 1.83).

The forecasts for inflation that underpinned the spending review have swiftly been overtaken by global events and changing economic conditions. So too have the pay assumptions built into spending plans. As described above, the precise pay awards vary across sectors and staffing groups, but most staff will receive a pay award in the region of 5% (with some receiving more and some receiving less). Relative to a world of 3% pay awards, this would be expected to increase the government’s pay bill by approximately £4.8 billion.

Table 4.1 provides a rough breakdown of this 5% award across broad sectors of government, based on the fraction of (FTE) general government employment accounted for by each. The size of the NHS and education sectors as employers (1.7 million and 1.1 million FTE employees, respectively) means that more than half of the additional costs would fall there.

These figures are approximate and are intended only to provide a broad illustration of the scale of the issue at hand. If instead government spending plans were based on 2.5% annual pay awards, the estimated additional cost of the recent round of pay awards would rise to around £6.0 billion in 2022–23. Alternatively, if the plans were based on average annual awards of 3.6% (the OBR’s October 2021 assumption for average annual growth in pay bill per head between 2022–23 and 2024–25), the additional cost would fall to £3.4 billion.

Table 4.1. Estimated additional costs for central and local governments arising in 2022–23 from a 5% or inflation-matching (10.5%) pay award, relative to a 3% baseline

	Estimated additional cost arising from a 5% pay award (relative to a 3% baseline)	Estimated additional cost arising from an inflation-matching pay award
Overall public sector	£4.8 billion	£17.9 billion
<i>Approximate split:</i>		
NHS	£1.7 billion	£6.4 billion
Education	£1.1 billion	£4.3 billion
Public administration	£1.0 billion	£3.8 billion
Police (incl. civilians)	£0.3 billion	£1.0 billion
HM Forces	£0.2 billion	£0.6 billion
Other	£0.5 billion	£1.8 billion

Note: The approximate split across sectors is based on the proportion of full-time-equivalent general government workers employed in each. The assumed rate of CPI inflation in 2022–23 (10.5%) is taken from September 2022 Citi CPI forecasts. Figures are UK-wide.

Source: Authors' calculations using table 5.3 of HM Treasury PESA 2022, Citi September 2022 CPI inflation projections and ONS public sector employment statistics.

At the time of writing, it is possible that trade unions representing large swathes of public sector workers will choose to reject the government's pay offer and ballot their members for strike action. Table 4.1 also shows an estimation of the additional costs that might arise from an inflation-matching pay award. A pay award of 10.5% – the average rate of CPI inflation forecast in September 2022 by Citi for the 2022–23 financial year – would, relative to a 3% baseline, increase departments' costs by almost £18 billion.

Even that would fall short of what some unions are demanding (the Royal College of Nursing demanded a pay rise of 5% *above* inflation, for example) but would see public sector pay grow much more quickly than private sector pay over the coming year. The £13 billion difference between the two figures in the first row of Table 4.1 represents the aggregate cut to the public sector pay bill, relative to expected CPI inflation, under the government's proposals.

To top up, or not to top up: that is the question

Regardless of the precise figure, it is clear that unexpectedly high pay awards will increase staffing costs for public services and, unless accompanied by additional funding, pose budgetary challenges for departments.

Departmental funding has not been adjusted from its level set in October last year. The fact that pay settlements were higher this year than was expected means that departments must make savings elsewhere in order to stay within their spending limits. This challenge is exacerbated by higher-than-expected general inflation, and rising bills for things such as energy, food and fuel. Recent work at IFS estimated that higher inflation would erode more than 40% of the real-terms increases in departments' day-to-day budgets originally planned between 2022–23 and 2024–25 (Zaranko, 2022b).

Separate IFS calculations imply that cost increases for schools – accounting both for the increases to teachers' pay and for energy and food prices rising – will be 'just about affordable' on average in 2022–23, but that existing spending plans imply real-terms cuts after that point (Sibieta, 2022a). Schools have already warned about their inability to cover the costs of payroll increases within existing budgets, with many schools having set budgets for the next academic year on the basis of a 3% pay rise.⁸ One way in which increased payroll costs could be met without increasing the overall level of spending (and thus staying within existing budgets) is through staffing cuts, which some schools are warning are likely.⁹

The NHS Confederation has warned about the consequences of the additional pay rise for NHS staff coming without any additional funding, saying that it could mean cuts to patient care and increased waiting times.¹⁰ An NHS spokeswoman said that, in order to fund the pay rise within existing Department of Health and Social Care budgets, the NHS would 'need to release money from existing programmes, regrettably impacting on the planned rollout of tech and diagnostic capacity across the health service'.¹¹

Trade-offs between spending, pay and employment

Trade-offs for 2022–23

To illustrate the scale of the budgetary challenge facing departments from 5% rather than 3% pay awards, we estimate the reduction in headcount that could be required for departments to stay within existing budgets.¹² If savings were entirely made through reductions in headcount (rather than cuts to non-staff budgets), a reduction of approximately 110,000 public sector employees would be necessary. If half of the overall savings came from headcount reductions – which would imply making cuts to other budgets at a time when energy, food and fuel bills are

⁸ <https://www.tes.com/magazine/news/general/teacher-pay-rises-school-budget-deficits-funding>.

⁹ <https://teachertapp.co.uk/school-funding-and-the-cost-of-living-in-2022/>.

¹⁰ <https://www.nhsconfed.org/news/nhs-leaders-facing-real-terms-cut-funding-and-impossible-choices-over-which-areas-patient-care>.

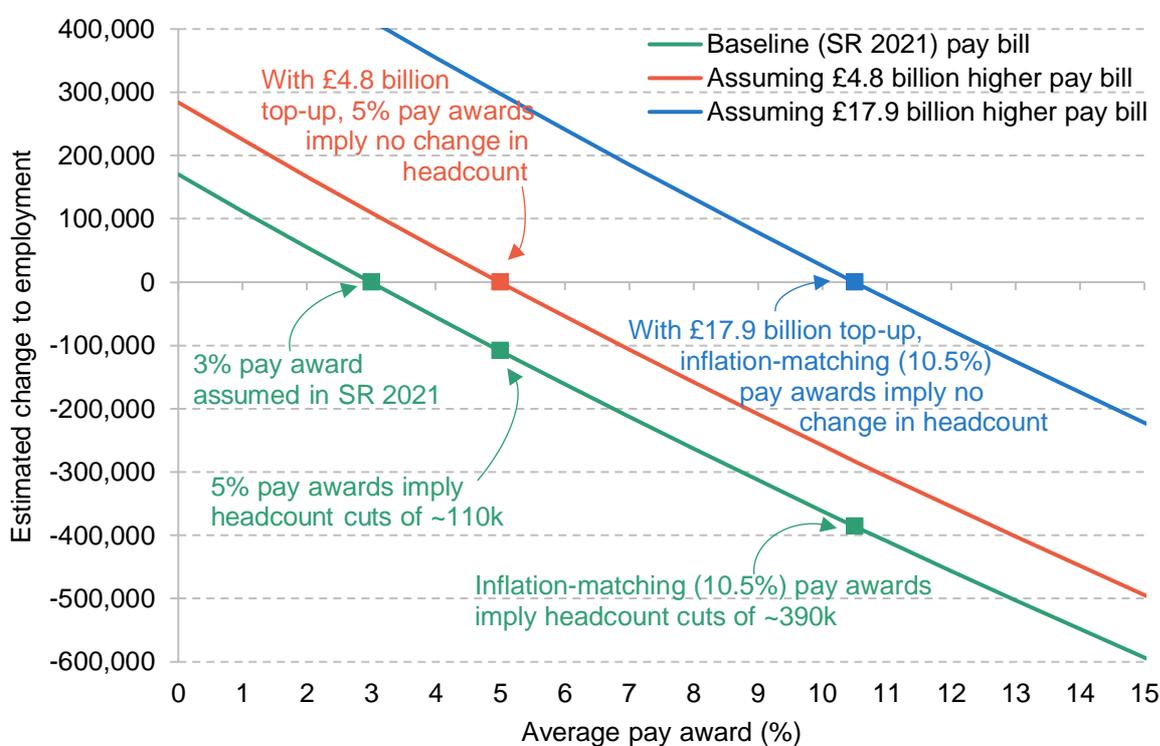
¹¹ <https://www.bbc.co.uk/news/uk-politics-62238338>.

¹² Specifically, we calculate the pay bill implied by the government's Autumn 2021 spending plans (assuming a 3% pay award) and the OBR's March 2022 forecasts for general government employment, and estimate the headcount reduction in order to spend the same amount while offering a 5% average pay award.

soaring – this would still mean a reduction of around 55,000 employees. This would make it challenging to meet the kinds of public sector targets currently in place, and would likely lead to a deterioration in the quality of public services more generally.

Between 2010 and 2016, the public sector workforce headcount (excluding nationalised corporations) fell by around 600,000, before rising again by almost 400,000 between 2016 and 2022. A reduction in public sector employment running into the hundreds of thousands would not, therefore, be unprecedented, but would have to be made rapidly, and against the backdrop of already-challenging targets for public services (such as clearing the NHS backlog or ‘levelling up’ primary education).

Figure 4.1. Combinations of pay awards and changes to public sector employment consistent under different illustrative overall pay bills for 2022–23



Note: The assumed rate of CPI inflation in 2022–23 (10.5%) is taken from Citi’s September 2022 CPI forecasts. All figures are illustrative and assume that budgetary savings are (can be) made only through changes in headcount. Baseline (SR 2021) refers to the approximate pay bill consistent with 3% pay awards, as per Spending Review 2021.

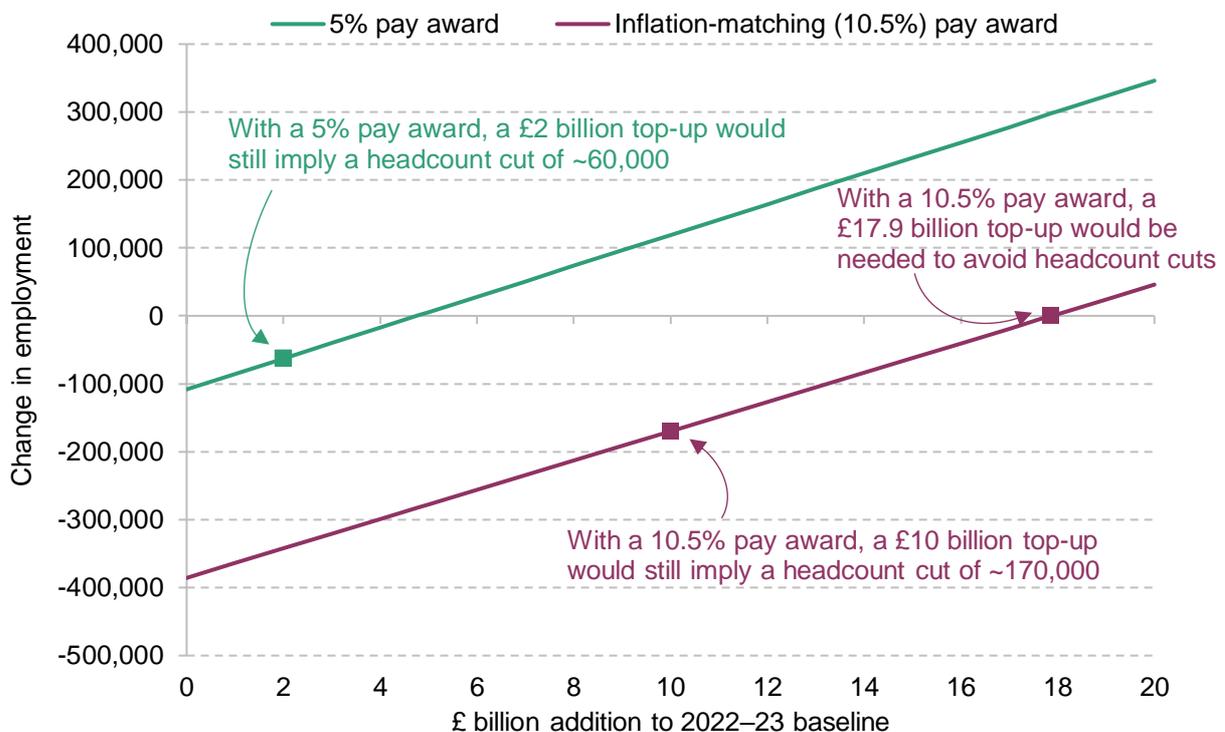
Source: Authors’ calculations using HM Treasury PESA 2022, Citi September 2022 CPI forecasts and ONS public sector employment statistics.

Figure 4.1 illustrates the broader trade-off between pay and employment for the financial year in progress (2022–23). This exercise makes the simplifying assumption that cuts to headcount are the only way in which departments can make budgetary savings, in order to make a simple point. For a given level of spending on staffing, a higher pay award implies a smaller workforce, and

vice versa. The figure illustrates, for instance, that under the estimated pay bill consistent with Spending Review 2021 plans (the green line), a 5% pay award would require headcount cuts of around 110,000, or 1.9% of the projected public sector workforce in 2022–23. An inflation-matching 10.5% pay award, in contrast, would require headcount cuts of around 390,000, a 6.8% cut to the projected 2022–23 workforce.

If the government provided £4.8 billion of additional funding for staff costs (the red line), a 5% pay award could be met without changing headcount, but a 10.5% award would still require cuts to headcount of around 280,000, a 5.0% cut to the public sector workforce. As per Table 4.1, £17.9 billion of additional funding would have to be provided for 10.5% pay awards to be possible without requiring cuts elsewhere.

Figure 4.2. Spending increases and changes in public sector employment consistent with different pay awards in 2022–23



Note: The assumed rate of CPI inflation in 2022–23 (10.5%) is taken from Citi's September 2022 CPI forecasts. All figures are illustrative and assume that budgetary savings are (can be) made only through changes in headcount.

Source: Authors' calculations using HM Treasury PESA 2022, Citi September 2022 CPI forecasts and ONS public sector employment statistics.

Of course, other options on spending are possible: the government might wish to compensate departments for some but not all of the additional costs in 2022–23 of this year's pay award, for instance. This is illustrated in Figure 4.2. With a 5% average pay award, shown by the green line

in Figure 4.2, providing £2 billion of additional funding would partially compensate departments, but still require headcount cuts of around 60,000 (a 1.1% cut to the workforce).

With a 10.5% average pay award (the yellow line), even a £10 billion top-up would imply a cut to headcount of around 170,000, or 3.0% of the projected workforce (if savings were found entirely through this channel). Other combinations of spending increases and changes in headcount can be read from the graph.

Trade-offs beyond 2022–23

This is not a fiscal question for 2022–23 alone. Higher public sector pay awards affect not just spending this year but spending in future years as well, because future pay awards are made with respect to a higher baseline. In other words, the effects compound over time, meaning that, if anything, the challenge becomes more acute over time.

To illustrate this, and the trade-offs involved further into the future, we consider two scenarios. In the first, we assume that the government sticks with 5% pay awards this year (2022–23) and then holds pay constant in real terms (specifically, by increasing pay in line with Citi's September 2022 forecast for CPI: 10.5% in 2022–23, 6.2% in 2023–24 and 2.0% in 2024–25). That would reflect the fact that imposing further real-terms pay cuts after this year would be fraught with risks and difficulty, but would bake in the real-terms pay cuts planned for this year.

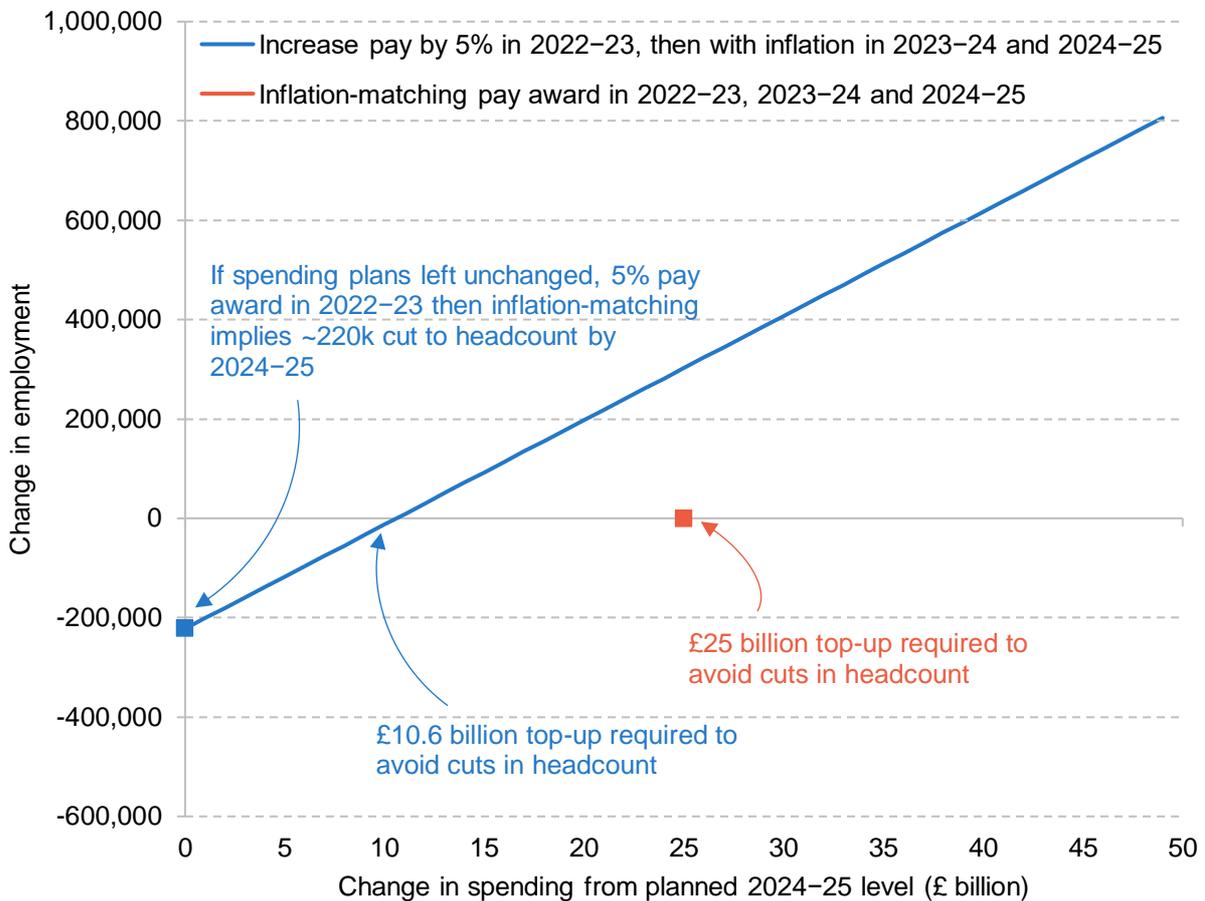
In our second scenario, we assume that public sector workers are offered an inflation-matching pay award this year, and again in 2023–24 and 2024–25, so as to hold pay constant in real terms at 2021–22 levels. This is to illustrate how the trade-off would change if the government changed its policy and opted not to impose real-terms pay cuts on public sector workers. Figure 4.3 shows the trade-off between additional spending in 2024–25 (relative to current plans) on the one hand, and changes in headcount in 2024–25 (relative to the OBR's latest forecasts) on the other, in both of these scenarios.

In the case where pay is increased by 5% this year and then held flat in real terms, a £10.6 billion top-up to spending plans in 2024–25 relative to current plans would be required. If pay were increased in line with inflation this year and then held flat in real terms, a £25 billion top-up would be required to avoid cuts to headcount; a £10.6 billion top-up would in that scenario still require cuts to headcount of almost 300,000 (a 5.0% cut to the projected 2024–25 workforce).

These numbers are sensitive to assumptions around inflation and, to repeat, they assume that all savings would have to come via headcount, and so provide something of an upper bound on the cuts to headcount that could be required (as some savings could presumably be found from elsewhere). But they serve to illustrate the point: in this year and over the rest of the parliament,

offering higher pay awards without increases in funding would eventually mean the public sector employing fewer people.

Figure 4.3. Trade-off between spending and public sector employment in 2024–25 under illustrative paths for public sector pay



Note: The assumed path of CPI inflation between 2022–23 and 2024–25 (10.5%, 6.2%, 2.0%) is taken from Citi's September 2022 CPI forecasts.

Source: Authors' calculations using HM Treasury PESA 2022, Citi September 2022 CPI forecasts and ONS public sector employment statistics.

The choice for the autumn

Theoretically, departmental spending limits for the next three years are 'firm and fixed'.¹³ But these plans could of course be increased to reflect updated inflation and pay assumptions, if the government so wished.

The new Chancellor must either top up existing spending plans or accept that the quality of public services will (further) deteriorate. Delivering on all of the government's previous public

¹³ For a discussion, see Crawford, Johnson and Zaranko (2018).

service objectives (such as clearing the NHS backlog, ‘levelling up’ primary education or ‘fixing’ adult social care) already looked challenging under the spending envelope set out last autumn.¹⁴ Now, it looks virtually impossible.

Choosing to abandon those public service promises, and scaling back the government’s desired range and quality of public services, would be one possible response to the UK becoming poorer as an energy- and food-importing nation. The economic hit has to be distributed somehow. But although leaving public spending plans as they are (and thus imposing an unintended real-terms cut to public service budgets) is the default option, this would still represent a deliberate choice. That choice should be made openly and transparently, alongside choices over taxes and broader public finances, at a fiscal event.

Liz Truss has announced that she plans to hold a spending review at the end of 2022, which would seem the natural place to do this. Given the scale of the tax cuts that she has announced, which amount to almost £30 billion per year, it is far from clear that more money will be available to departments at this review (Emmerson and Stockton, 2022). It is perfectly possible that public service budgets will be reduced rather than increased.

4.4 How does pay compare in the public and private sectors?

The chapter has so far focused on the most recent round of public sector pay announcements and their fiscal implications. But to provide a more complete assessment of these announcements, and to place them in full context, it is important to compare trends in the level and structure of pay in both the public and private sectors. The outside option for public sector employees will be in part determined by what is on offer in the private sector, and so such comparisons are important for what the government ought to be ultimately concerned with: ensuring that the government can attract, motivate and retain the right number and mix of people. The following subsections aim to provide such a comparison.

Recent trends in headline earnings

Figure 4.4 shows mean annual earnings in the public and private sectors between 2007 and 2022, adjusted for inflation.¹⁵ In July 2022, average annual earnings (which reflect both hourly pay and

¹⁴ For a discussion of the challenges facing the health service, see Warner and Zaranko (2021), and for those facing councils (which have responsibility for adult social care), see Ogden, Phillips and Siôn (2021).

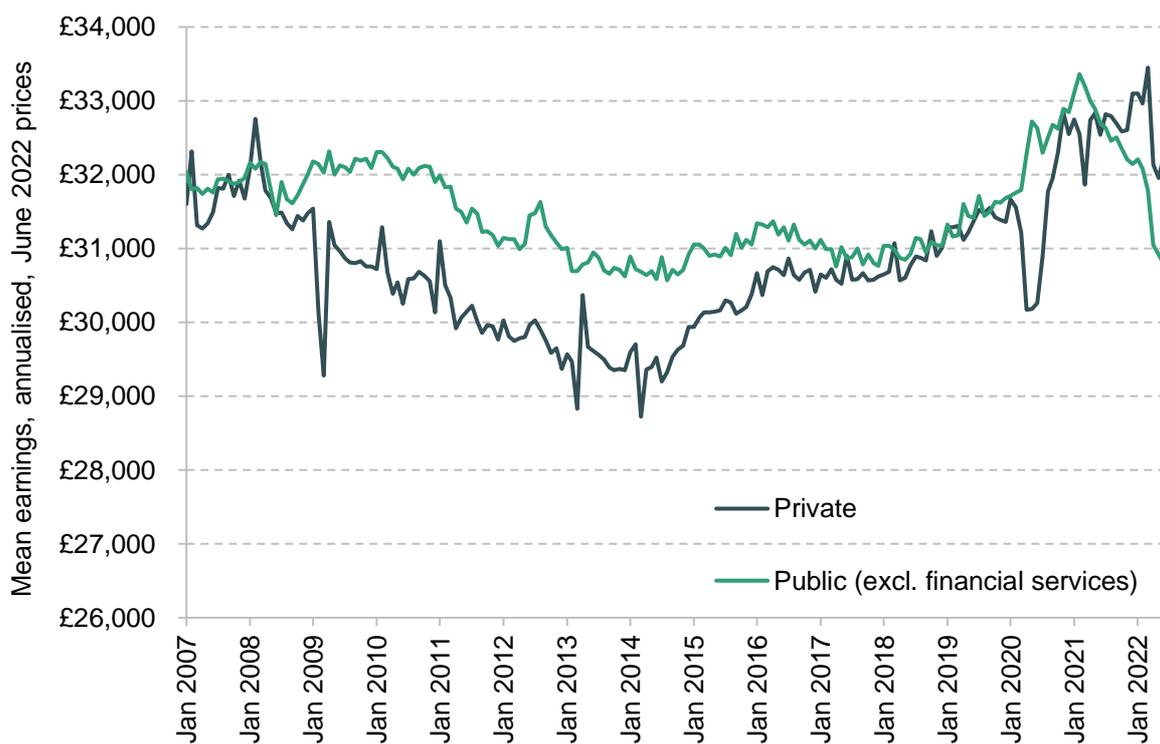
¹⁵ The public sector here is defined to exclude nationalised financial services. Also note that here and throughout, we look only at employees and exclude the self-employed.

the number of hours worked) stood at £32,102 in the private sector, 4.7% higher than in the public sector (£30,657).¹⁶

Looking at the trend over time, the lack of growth in average real-terms earnings since the financial crisis is clear: mean public sector earnings in July 2022 were in fact 4.0% lower in real terms than in July 2007. Private sector earnings fared slightly better, but were still only 0.9% higher on average in July 2022 than in July 2007.

A significant gap opened up between average earnings in the two sectors after the financial crisis, with private sector earnings rapidly falling, while public sector earnings stayed relatively stable (as a result of three-year pay agreements made pre-recession being largely honoured). From around 2011, average real-terms earnings were falling in both sectors. After 2014, private sector earnings began to rise again, while public sector earnings remained stagnant, with pay awards capped at an average of 1% across departments between 2013 and 2017.

Figure 4.4. Real average (mean) annual earnings in the public and private sectors, 2007–22



Note: Figures shown are the mean weekly earnings in each sector in each month, multiplied by 52.

Source: [ONS average weekly earnings tables](#), deflated using [CPIH](#) (MM23).

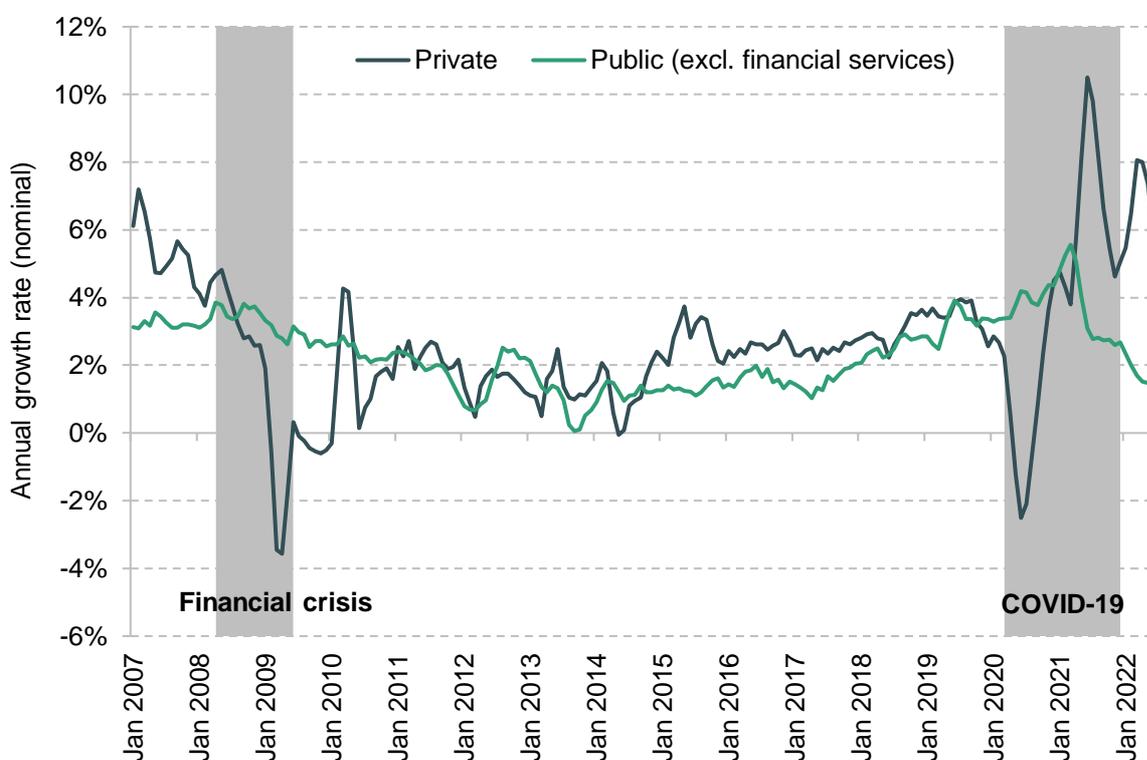
¹⁶ Note that these differences between average earnings in the two sectors reflect both how much employees earn per hour and how many hours they work, with part-time work more prevalent in the public sector. We examine differences in hourly pay later in this section.

Immediately before the COVID-19 pandemic, the raw gap between public and private sector earnings had almost closed (average earnings were 0.6% higher in the public sector in February 2020). In March 2020, following the onset of the pandemic and associated government restrictions, real-terms private sector earnings plummeted, falling 3.3% between March and April, while public sector earnings increased. As happened after the financial crisis, the effects of the economic downturn took longer to be reflected in public sector pay, and were reflected less intensely.

Average earnings in the public sector began to fall sharply in real terms from February 2021, reflecting the freezing of public sector pay in cash terms in 2021–22 for all except those earning under £24,000 and those working in the NHS. Average earnings in the private sector, meanwhile, rebounded strongly in the second half of 2020. From July 2021, average earnings in the private sector were consistently above those in the public sector.

The general lesson here is that the public sector tends to outperform the private sector during downturns (owing to its more stable pay and greater job security), whereas private sector pay typically grows more strongly in the ‘good’ (or inflationary) times. In particular, when the economy is booming or when inflation spikes – as it is currently doing – the greater degree of flexibility in the private sector manifests in stronger pay growth.

Figure 4.5. Three-month annual growth rates in nominal private and public sector pay since 2007



Source: Authors' calculations using [ONS average weekly earnings tables](#).

Box 4.1. Private sector earnings growth during the COVID-19 pandemic

The government furlough programme was taken up almost entirely by private, rather than public, sector employees. Most furloughed employees worked reduced hours, meaning that weekly earnings fell for many private sector employees. As workers came off furlough during 2021 and 2022, and returned to full-time employment, weekly wages mechanically rose, as a result of more hours being worked. This rise in weekly wages is real, but does not capture an underlying increase in hourly wages. When comparing wages in the second half of 2021, or in 2022, with wages a year earlier, they will appear to have risen substantially, since we are comparing a period during which furlough was not prevalent to one during which it was: this is referred to as a ‘base effect’, and leads to private sector earnings growth being overstated.

A ‘composition effect’ also means average private sector wage growth may be biased upwards during the pandemic. Fewer part-time – generally lower-paid – jobs were undertaken during COVID-19, and fewer jobs in elementary occupations. During that time, there were also fewer new entrants to the labour market, who tend to be lower-paid than average. This shift in the composition of the workforce means the private sector contained a larger proportion of higher-paying jobs, which also acted to increase measured average earnings.

Private sector earnings growth figures should therefore be interpreted with caution throughout the COVID-19 period.

This is evident in Figure 4.5, which shows annual growth rates in nominal earnings over time, by sector. The stronger performance of the public sector in ‘bad’ times is particularly clear. During both the financial crisis and COVID-19 recessions, private sector earnings growth immediately fell, while public sector earnings growth remained relatively stable. But there is also a general tendency for public sector earnings to grow less quickly in ‘good’ times (if any of the period since 2007 can be described as such). Private sector earnings bounced back after both crises, while growth in public sector earnings tended not to keep pace. The pronounced uptick in private sector earnings growth in recent months can also be seen.

Much of the growth in private sector earnings in 2021 and 2022 was underpinned by strong bonus payments. Bonuses were 8.4% of mean private sector total compensation between August 2021 and July 2022 (up from 7.5% in the same period the year before), while they were 0.4% of mean public sector compensation in this period.

Bonuses are an important way in which private sector employers adjust flexibly to macroeconomic conditions. Banks such as Lloyds Bank and Virgin Money are offering ‘cost of living payments’, with Virgin Money offering their staff earning less than £50,000 a £1,000

payment.¹⁷ Bonuses in other sectors, such as construction, manufacturing and retail, have also been growing strongly – often at an annual rate in excess of 20% – in recent months, indicating that strong growth in bonuses is not limited to sectors such as financial services and has instead become more widespread (Office for National Statistics, 2022). Around a quarter of businesses surveyed by the Bank of England in July 2022 reported that they had given, or were considering giving, one-off payments as a response to retention challenges or the cost of living crisis (Bank of England, 2022). While bonuses are also a tool available to the public sector, they are used much more rarely. This has contributed to the divergence in growth rates between the two sectors over the course of 2022.

The distribution of earnings

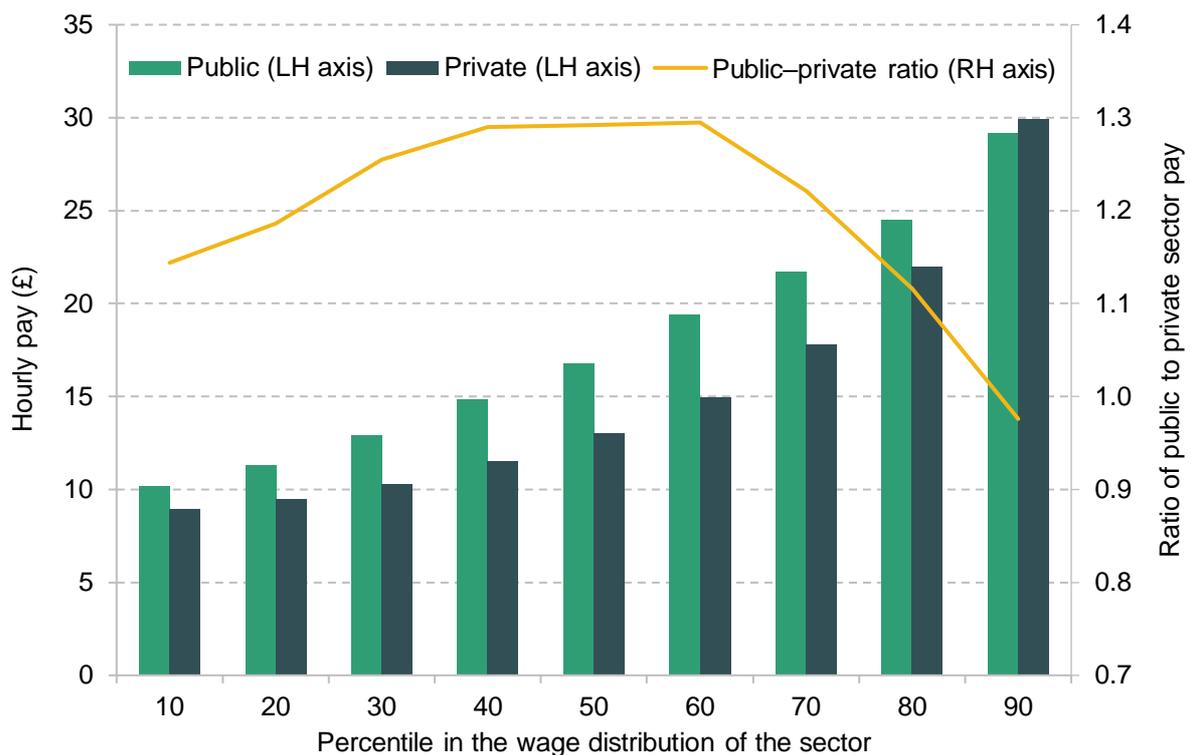
The comparisons so far have used data on average (mean) annual earnings in each sector, which do not capture all differences in public and private remuneration. For one, focusing on weekly or annual earnings captures differences in both hourly pay and the number of hours worked. This is important, given that part-time work is more prevalent in the public sector.¹⁸ In addition, looking only at the average provides no insight into the overall distribution or what is happening at the top and bottom ends of the earnings scale. Figure 4.6 illustrates the public–private differential in hourly wages at deciles of each sector’s wage distribution, allowing us to control for differences in the number of hours worked and to look in more detail at the overall distribution of wages in the public and private sectors.

The ratio between public and private sector earnings is not constant over the wage distribution. From the 10th to the 80th percentiles of the wage distribution in each sector, public sector pay is higher than that in the private sector. For example, someone at the 10th percentile of the wage distribution in the public sector earns around 14% more than someone at the 10th percentile of the private sector wage distribution; at the median wage (50th percentile) in each sector, the public sector employee earns around 29% more, with gross hourly pay in the public sector being £16.81 (equivalent to £35,061 annually for a full-time worker), versus £13.01 in the private sector (equivalent to £27,135 annually). In contrast, at the 90th percentile, the ratio falls below 1: those at the top of the private sector earnings distribution earn more than those at the top of the public sector earnings distribution. Gross hourly pay at the 90th percentile of the public sector pay distribution is £29.16 (equivalent to £60,819 annually), compared with £29.88 at the 90th percentile of the private sector pay distribution (equivalent to £62,321 annually). (Data are not available on the very top end – such as the 99th percentile – but this pattern would likely be even more pronounced there.)

¹⁷ <https://www.bbc.co.uk/news/business-62218706>.

¹⁸ Part-time work is also more prevalent among women, who are themselves more likely to work in the public sector. We explicitly examine differences between men and women in Section 4.5.

Figure 4.6. Distribution of hourly wages, by sector



Source: [Table 13.5a of Annual Survey of Hours and Earnings 2021](#).

Figure 4.6, in summary, shows that the public sector wage distribution is relatively compressed. There are relatively few very low-paying and very high-paying jobs in the public sector, compared with the private sector.

The distributions of hourly wages for men and women separately follow a similar pattern, with the sex-specific public sector wage distribution relatively compressed in both cases. The ratio between public and private sector wages for women is lower than that for men at the lower points of the wage distributions, as illustrated in Figure 4A.1 in the appendix: the extent to which lower-paid women do better in the public sector is less than the extent to which lower-paid men do better in the public sector. From the 40th percentile upwards, this situation reverses, and the ratio between public and private sector wages is higher for women than for men.

This exercise still does not provide a complete picture, however. There are important differences between the workforces of the public and private sectors: public sector workers are, on average, more highly educated and older, and are more likely to work part-time. Making direct comparisons between average pay in the private and public sectors thus does not give a full picture of the differences in pay in the two sectors for similar workers.

To address this, in what follows, we continue to focus on *hourly* pay, and control for a range of characteristics: sex, age, experience, education and region. We use the quarterly Labour Force

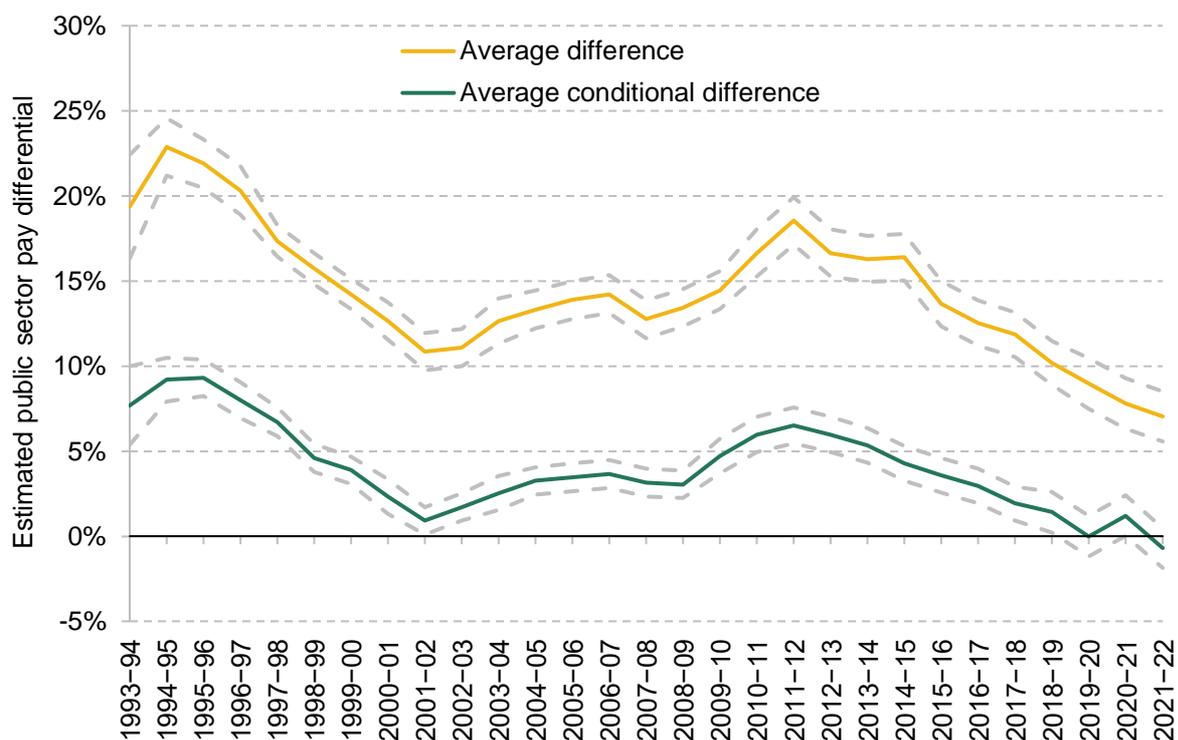
Survey (LFS), which enables us to show differences in pay between the two sectors after accounting for a rich set of individual characteristics.

The public–private pay differential

Figure 4.7 illustrates the public sector hourly pay differential from 1993–94 to 2021–22, calculated using the LFS. It does not include an estimate of the value of employers’ contributions to workplace pensions in the two sectors, which will be discussed later in the chapter.

Public sector pay has been falling relative to private sector pay from around 2011. The raw average public–private pay differential, which does not control for the variation in observed workers’ characteristics in the two sectors, remains positive, but has fallen by 12 percentage points, from 19% in 2011–12 to 7% in 2021–22.

Figure 4.7. Average public–private hourly pay differentials, 1993–94 to 2021–22



Note: The average conditional difference is calculated using age, education, experience and region controls, all interacted with sex, and interactions between education and experience. Figures shown are the coefficient on an indicator variable for whether the individual works in the public sector, transformed into a percentage differential based on Halvorsen and Palmquist (1980). Figures are for hourly pay and exclude pension contributions. The dashed lines represent 95% confidence intervals.

Source: Authors’ calculations using the quarterly Labour Force Survey.

When controlling for workers' characteristics – age, experience, qualifications, region and sex – the difference is much smaller, reflecting the dissimilar composition of workers in the two sectors, with public sector workers tending to be more highly educated and more experienced. The conditional differential was negative in 2021–22, falling to –0.7% (its lowest level since at least the early 1990s). The key takeaway is that the public–private differential has fallen steadily over the past decade, and is now less favourable to the public sector than at any point in the past 30 years.

4.5 Variation in the public–private pay differential

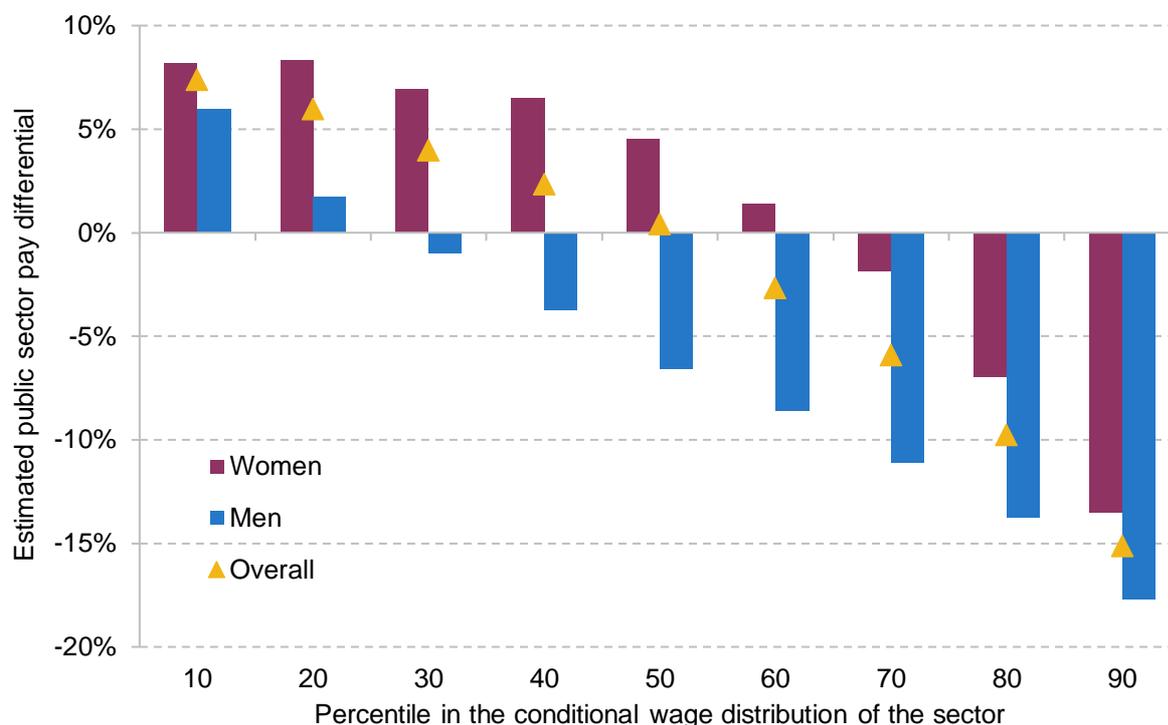
How does the public–private pay differential vary across the wage distribution?

As Figure 4.6 (in which percentiles of the wage distribution in the two sectors were shown) illustrated, there are significant differences in the raw pay differential across the wage distributions in the public and private sectors. Looking at average (mean) differences alone will therefore fail to capture the full range of differences in public and private pay. In particular, the greater degree of compression in the public sector wage distribution will not be accounted for.

Figure 4.6 did not account for the different characteristics of the private and public workforces, meaning its estimate of the differences between public and private sector wages at each percentile of the wage distributions will fail to adjust for the fact that public sector workers at each point will tend to be older, more educated, and so on. For example, in 2021–22, 18% of private sector employees at the 20th percentile of the private sector wage distribution had a degree compared with 34% of public sector workers at the 20th percentile of the public sector wage distribution, according to the LFS.

Here, we use a technique called quantile regression to allow us to compare percentiles of the two wage distributions while accounting for workers' characteristics such as age and education. In effect, this compares the pay of an individual in the x^{th} percentile of the public sector pay distribution with that of someone in the x^{th} percentile of the private sector pay distribution, after adjusting for the fact that those workers may look different in terms of their age, experience, education and so on. A positive number indicates that someone at that point of the pay distribution in the public sector earns more than someone at the same point of the private sector distribution, but not because of differences in their observed characteristics.

Figure 4.8. Estimated public–private hourly pay differential by percentile in the conditional wage distribution, 2021–22



Note: Results are from quantile regressions, controlling for age, education, experience, and region, and interactions between education and experience. All controls are interacted with sex for the ‘Overall’ results. The height of a bar at the x^{th} percentile represents the gap between the x^{th} percentile of the (conditional) public sector wage distribution and the x^{th} percentile of the (conditional) private sector wage distribution.

Source: Authors’ calculations using the quarterly Labour Force Survey, 2021Q2 to 2022Q1.

Figure 4.8 shows the results of this exercise. The pay compression previously observed, where those at the higher end of the wage distribution in the public sector earn less, and those at the lower end earn more, holds when background characteristics are accounted for.¹⁹

The overall differential is negative in the top half of the conditional wage distributions: given individuals’ observed characteristics, public sector workers above the public sector median are paid less than private sector workers above the private sector median. For men, this is the case for the top 70% of earners, while for women it is only the case for the top 30%, reflecting the fact that public sector women tend to be more highly paid per hour than women in the private sector. The differential is positive for men in the lowest 20% of the conditional wage distributions, with lower-earning public sector men paid more than lower-earning private sector men; for women, the differential remains positive until the 60th percentile.

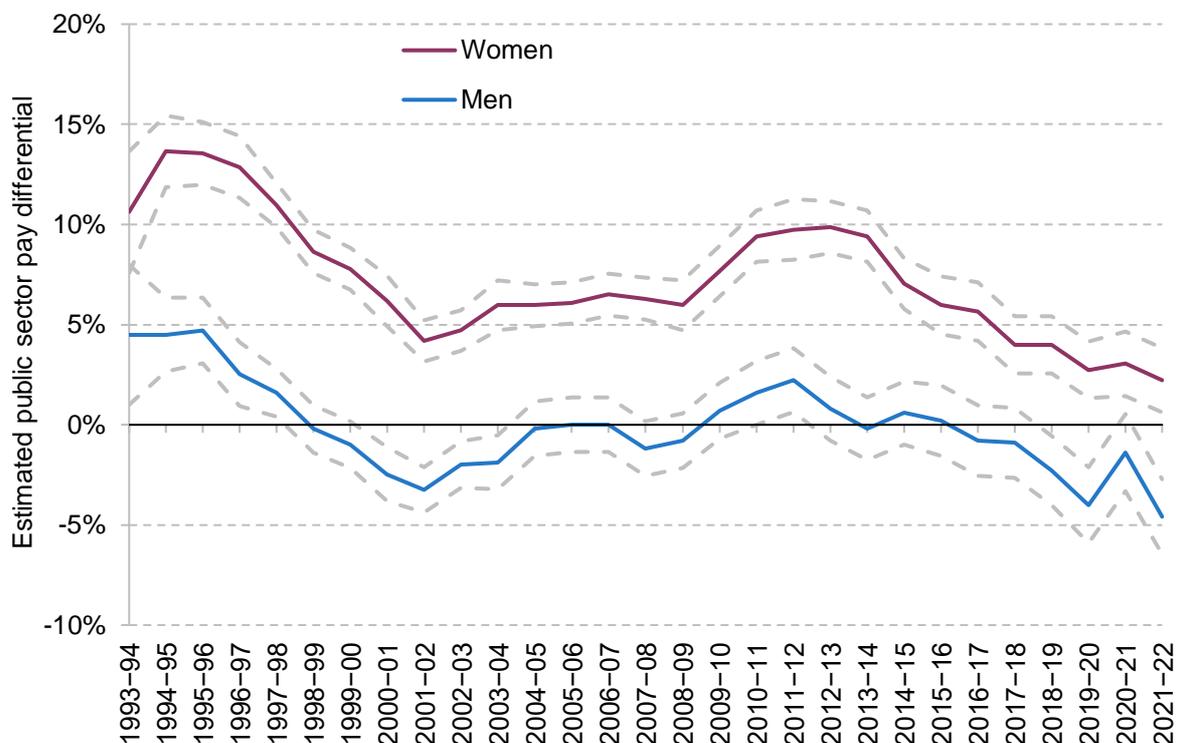
¹⁹ We see a similar, but less pronounced, trend in previous years: Figure 4A.2 in the appendix shows the public sector pay differential at various percentiles of the conditional wage distributions in 2015–16.

How does the public–private pay differential vary between men and women?

Women make up a higher proportion of the public sector than the private sector: in 2021–22, 64% of public sector workers were female, compared with 44% of private sector employees, according to the LFS.

We estimate that the public–private pay differential in 2021–22 stood at +2.2% for women and at –4.6% for men. Looking further back, the differential has been consistently higher for women than for men. Figure 4.9 shows that the pay differential for male public sector employees has hovered at around zero for much of the last decade, whereas women working in the public sector have enjoyed a positive pay differential during that period (albeit a smaller one than in the past).

Figure 4.9. Estimated public–private conditional hourly pay differential over time, by sex



Note: The average conditional difference is calculated using age, education, experience and region controls, with interactions between education and experience. Figures shown are the coefficient on an indicator variable for whether the individual works in the public sector, transformed into a percentage differential based on Halvorsen and Palmquist (1980). Figures are for hourly pay and exclude pension contributions. The dashed lines represent 95% confidence intervals.

Source: Authors' calculations using the quarterly Labour Force Survey.

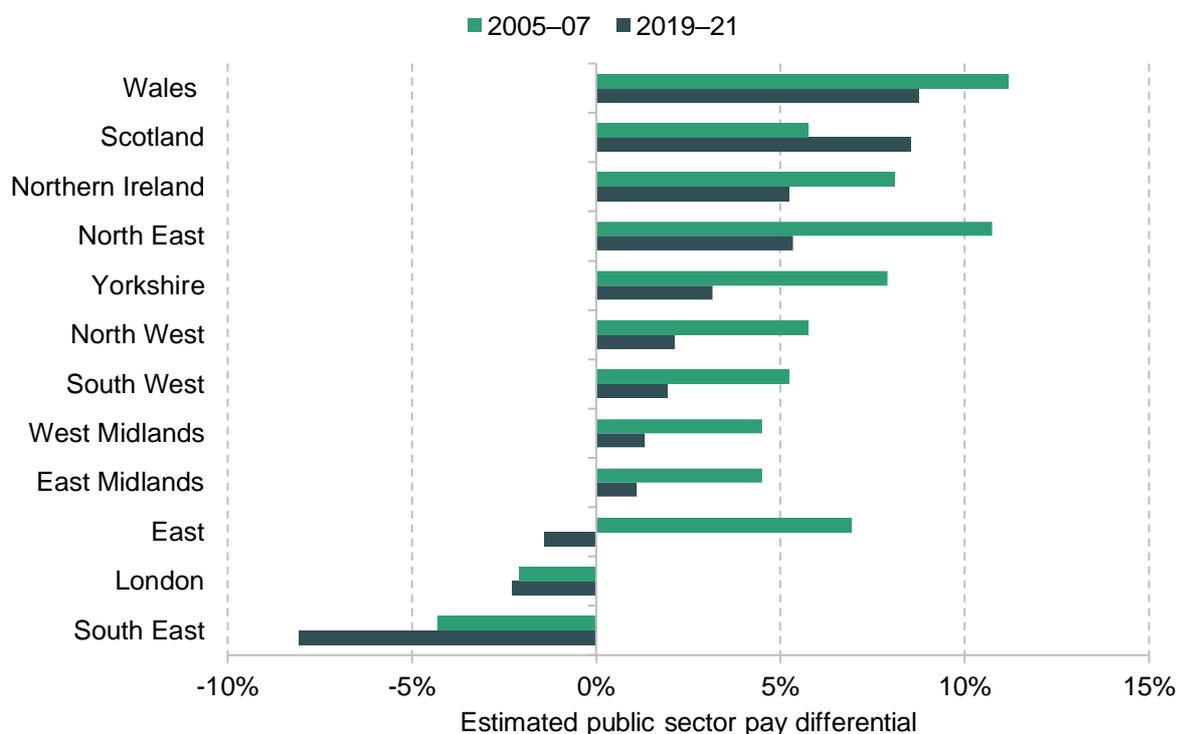
This is largely driven by the gender composition of various occupations. More women work in lower-paying public sector occupations where the public pay differential is higher: women represent more than 90% of teaching assistants, and more than 80% of social workers and care

workers. Men are more likely to work in more highly paid occupations such as NHS consultants or judges, where the pay differential is lower (Office for National Statistics, 2019).

How does the public–private pay differential vary by region?

Figure 4.10 illustrates the average public sector pay differential by region, comparing two periods (2005–07 and 2019–21).²⁰ The differentials are conditional on workers' characteristics, as previously described.

Figure 4.10. Public sector pay differential conditional on workers' characteristics, by UK region and nation



Note: The differential is calculated controlling for age, education, experience and region controls, all interacted with sex, and interactions between education and experience. Figures are for hourly pay and exclude pension contributions.

Source: Authors' calculations using the Labour Force Survey.

As shown, there is considerable variance in the public pay differential across the UK. This is largely driven by private sector pay variation: public sector pay is set on a national level, for the most part, with limited flexibility on a local level. Public sector pay relative to private sector pay was lowest in the South-East, in London and in the East of England over the period 2019–21: in all three regions, the differential was negative (–8.1%, –2.3% and –1.4%, respectively). In

²⁰ Years are pooled together in order to ensure adequate sample size.

contrast, in Wales, Scotland, Northern Ireland and the North East, public sector pay was considerably higher than private sector pay (with public sector premiums of 8.8%, 8.5%, 5.2% and 5.3%, respectively).

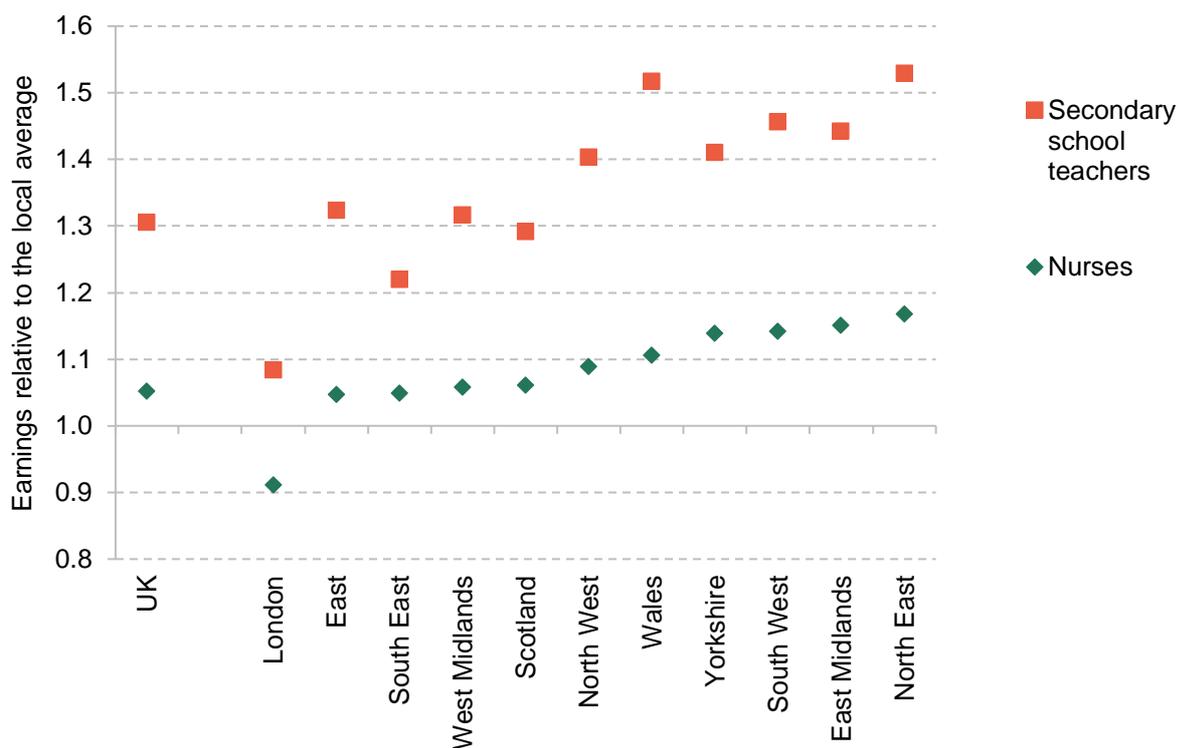
Figure 4.10 also shows the way in which the differential has changed between 2005–07 and 2019–21: in all regions apart from Scotland, the conditional public pay premium has fallen over this period. The fact that relative public sector pay has risen in this period in Scotland could be a result of more generous public sector pay settlements allowed by additional per-person funding the Scottish Government receives via the Barnett formula: the rise in Scotland has been driven by especially strong public sector pay growth.²¹ In the East of England, the differential has turned from positive to negative: the expansion of the tech and pharmaceutical sectors around Cambridge, and consequent booming of the private sector in this area, could be one factor behind this change. The fall in the differential, however, has predominantly been driven by relatively weak public sector pay growth in the East.

This regional variation in the public–private pay differential also varies by occupation: in Figure 4.11, we show how average hourly earnings in two large occupations – nursing and secondary school teaching – compare with average earnings by region. On average, nurses in the North East earn 17% more than the average employee in the region, versus just 5% more in the East of England and 9% *less* in London. On average, secondary school teachers in the North East or Wales earn over 50% more than the average employee in their region; a secondary school teacher in the South East earns 22% more than the average. Similar patterns can be seen when a broader set of occupations are considered. There is clearly substantial variation across the country in the level of public sector pay relative to what is on offer in the private sector.

Finally, there is considerable variation in the relative pay of different public sector professions across the country. In Wales, the average secondary school teacher earns 37% more than the average nurse, while secondary school teachers in the South East earn, on average, only 16% more than nurses in the South East. While teachers and nurses both earn least – relative to the local labour market – in London, and most in the North East, the ordering of relative regional earnings by occupation between these two extremes differs. This variation (whether it arises from differences in the characteristics of the public sector workforce by region, or differences in similar workers’ pay by region) may not be deliberate or optimal.

²¹ In 2020–21, Scottish Government funding per person was more than 30% higher than the equivalent in England (Phillips, 2021).

Figure 4.11. Average (mean) hourly earnings of workers in selected full-time public sector occupations relative to local average earnings, by region



Note: Full-time workers only. The height of each data point represents the mean wage of each occupation divided by the average full-time wage in the same region.

Source: [Table 15.5a of Annual Survey of Hours and Earnings 2021](#).

Regional public sector pay deals: a very brief discussion

During the Conservative leadership campaign, Liz Truss proposed the introduction of regional public sector pay boards, claiming that this would eventually save up to £8.8 billion per year (by paying less to public sector employees in areas with lower cost of living), before subsequently dropping the policy.²² A full appraisal and discussion of this proposal is beyond the scope of this chapter, but there are a number of points worth making.

In principle, a targeted approach to public sector pay is a sensible one – including targeting by geographic region. We already have, for instance, a system of ‘London weighting’ whereby public sector employees in the capital receive higher pay to reflect the higher cost of living. There are potential efficiency gains from more refined targeting. But this does *not* mean that the optimal policy would be to have all regional public–private differentials equal to zero, and there are several key caveats.

²² See, for example, <https://www.bbc.co.uk/news/62392031>.

First, public sector pay policy should be set with regard to the public services that the government wishes to deliver, with a focus on recruitment and retention. In other words, if the government wishes to introduce a greater amount of regional targeting in pay-setting, it would be sensible to target the regions and places that struggle most to recruit and retain skilled workers. It is far from obvious that the places struggling most to recruit new teachers, for instance, are those with the lowest public–private pay differentials. Relatively deprived rural areas or coastal towns might struggle to attract the requisite number of dentists, despite dentists in those places enjoying high pay relative to the local private sector. Pay is not the only thing that matters.

Second, one of the key attractions for a government seeking to cut taxes without increasing borrowing and/or seeking to reduce the size of the state might be the possibility of budget savings. But introducing more regional pay variation (or, indeed, variation along any other dimension) is much easier to achieve when pay is rising across the board, because pay can just be increased faster in some places than others. Doing it by cutting pay in some places and increasing it in others is considerably more politically difficult.

Finally, a greater degree of regional pay variation or local pay determination might be theoretically attractive but would face considerable challenges in its practical implementation.

Summary so far

Average annual earnings are now higher in the private sector than in the public sector, but average *hourly* pay in the public sector – where part-time work is more prevalent – is higher. Public sector employees also tend to be more educated and to have more experience in the labour market. The conditional public–private pay differential, which controls for these differences, has fallen steadily from around 3% in 2007–08 and around 7% in 2011–12 to slightly below zero in 2021–22. This differential is now less favourable to the public sector than at any point in the past 30 years. This is true for both men and women, though the estimated differential remains substantially higher for women than for men. The pay differential is also higher for lower-paid public sector workers, and for those living outside of London, the South East and East of England.

4.6 How do pensions in the public and private sectors compare?

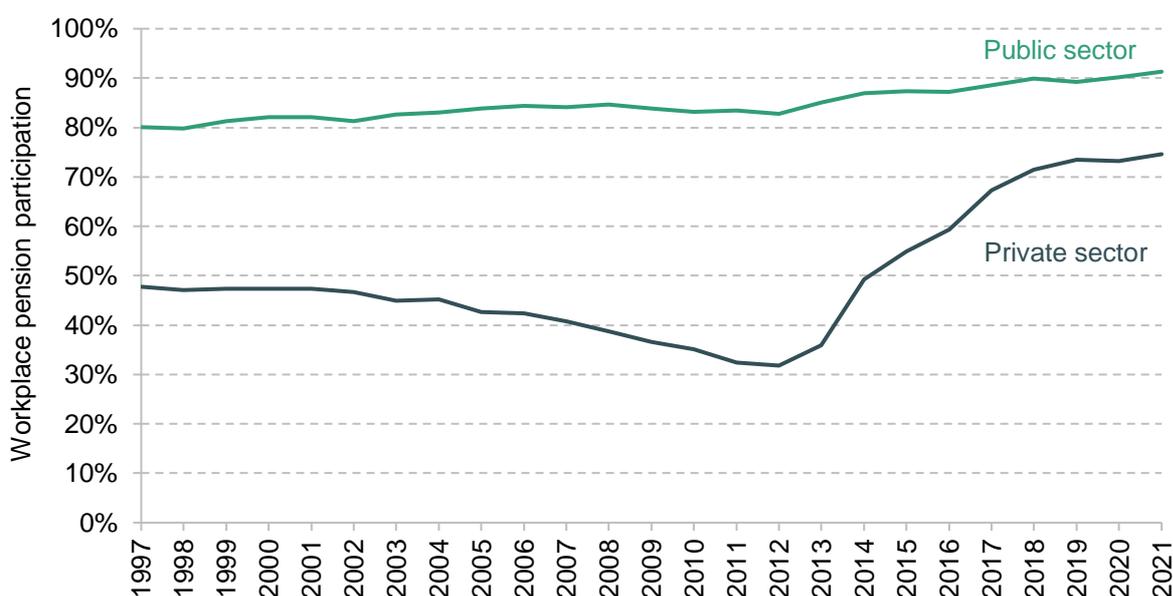
Why pensions matter

Up to this point, all of our analysis has focused on differences in *pay* between employees in the public and the private sector. However, pay is not the only form of remuneration that employees

receive. In particular, another important (but deferred) form of remuneration is contributions made by employers to pension schemes.²³ Past research has demonstrated that the average value of employer-provided pensions differs substantially between the public and the private sector (Cribb and Emmerson, 2016), and reforms have likely changed this difference over recent years. In this section, we use data from the Annual Survey of Hours and Earnings (ASHE) to examine how accounting for employer pension contributions changes our estimate of the public–private pay differential.

Figure 4.12 plots the share of employees in the public and private sectors who are saving into a workplace pension over time, and provides a first indication of why accounting for employer pension contributions might be important for estimating both the level and the trend of the public pay differential. In every year between 1997 and 2021, public sector employees were much more likely than private sector employees to be enrolled in a workplace pension. Since 2012, the gap in participation has narrowed due to the introduction of automatic enrolment. Whereas in April 2012 only 32% of private sector employees were enrolled in a workplace pension, compared with 83% of public sector employees, by April 2021 pension participation rates were 75% in the private sector and 91% in the public sector.

Figure 4.12. Workplace pension participation in the public and private sectors, 1997 to 2021



Note: Data measured in April of each year.

Source: [ONS ASHE pension table P2.1](#).

²³ The level of *employee* pension contributions will also differ between public and private sectors. This will matter for individuals' take-home pay, but not for the total level of remuneration they receive from their employer. However, many employees, particularly in the public sector, have to commit to making employee pension contributions in order to receive a contribution from their employer. We discuss recent trends in employee pension contributions and differences in the structure of remuneration more broadly between the two sectors in Section 4.8.

Differences in pension participation rates are only part of the story: the type of workplace pensions that employees tend to be enrolled in also differs between the sectors. Public sector employees are much more likely to be in (typically much more generous) defined benefit schemes, but these schemes are far less common in the private sector. Table 4.2 shows that more than 80% of public sector employees were enrolled in defined benefit schemes in 2021, compared with just 7% of private sector employees.²⁴ Notably, while the share of private sector employees with a defined benefit pension has fallen slightly since 2012 (from 8% to 7%, compared with 38% in 1997), the proportion in the public sector has actually increased (from 76% to 82%, and compared with 77% in 1997).²⁵

Table 4.2. Pension participation by type and contribution band for private and public sector employees, 2012 and 2021

	2012		2021	
	Private sector	Public sector	Private sector	Public sector
Participation	32%	83%	75%	91%
Defined benefit	8%	76%	7%	82%
Defined contribution	22%	5%	66%	8%
Unknown	1%	2%	2%	2%
% with employer contributions				
≥ 4%	25%	82%	36%	90%
≥ 10%	12%	80%	11%	86%
≥ 20%	3%	14%	2%	47%
% with employee contributions				
≥ 4%	16%	73%	41%	88%
≥ 7%	5%	31%	8%	43%

Note: Employer contribution rates as a percentage of pensionable pay, defined as the amount of pay upon which pension contributions are based. Data measured in April of each year. Employers typically use one of three different definitions of pensionable pay: basic pay (basic salary before bonuses, overtime or other additional pay), total pay (pay including bonuses, overtime and other additional pay) or qualifying earnings (total pay between the lower and upper earnings limits for National Insurance, which in 2022–23 are £6,396 and £50,270, respectively).

Source: Authors' calculations using ONS ASHE pension tables [P2.1](#) and [P10.1](#).

²⁴ We compare 2012 with 2021 in Table 4.2 because 2012 is the last year in ASHE before automatic enrolment started to be rolled out.

²⁵ 1997 numbers from Cribb and Emmerson (2016).

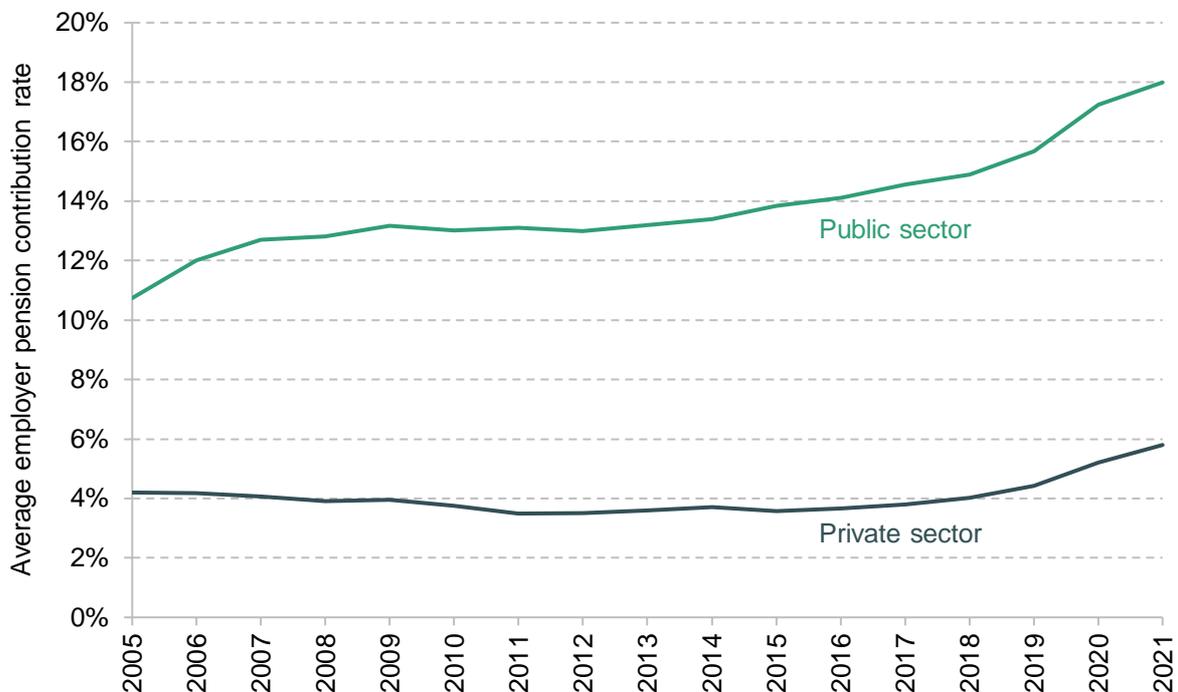
The type of pension scheme employees are enrolled in is heavily linked with the generosity of the pension promises they receive, with defined benefit pensions typically being more generous than defined contribution schemes. Indeed, this is one of the reasons why the private sector has moved away from them. There are different ways to value the generosity of employers' pension promises, as discussed below, one being the value of employer pension contributions reported in ASHE. Table 4.2 shows there are large differences in the share of employees who are receiving valuable employer pension contributions between the two sectors: in 2021, 86% of public sector employees received an employer pension contribution of at least 10% of pay (with the majority of the remainder being those public sector workers who have opted out of the pension scheme), compared with just 11% of private sector employees. In addition, nearly half of public sector employees received an employer pension contribution of at least 20% of pay, but this was the case for only 2% of employees in the private sector. There is also a gap in the share of employees making large employee contributions between the two sectors – while this does not directly enter total remuneration, we return to the implications of this in Section 4.8.

These differences in the proportion of workers in each sector who receive valuable employer pension contributions have actually grown since 2012 despite reforms that might have been expected to narrow the gap. First, automatic enrolment into workplace pensions was rolled out between 2012 and 2018, which hugely boosted workplace pension participation among private sector employees (Cribb and Emmerson, 2021). However, while some private sector employers do offer higher contribution rates than the legal minimum (currently set at 3% of qualifying earnings), very few employees in the private sector receive an employer contribution of anything close to 20% of pay. Second, there were reforms aimed at reducing the value of public sector pensions between 2011 and 2015. In particular, there was a reduction in the indexation of benefits (from RPI to CPI) and an increase in the age at which many public sector workers can receive an unreduced pension (known as the normal pension age) to be aligned with their state pension age for future accrual.

Figure 4.13 shows that in spite of these reforms, the gap between average employer pension contributions (as reported in ASHE) in the public and private sectors has been growing. The average employer contribution rate in the private sector did grow between 2012 and 2021, from just under 4% of pay in 2012 to almost 6% of pay in 2021. However, the average employer contribution rate in the public sector grew by more, from around 13% of pay in 2012 to 18% of pay in 2021 (principally due to reductions in the discount rate used by HM Treasury for estimating the future value of pension payments, as discussed below). Note that in Figure 4.13 and henceforth we impute pension contributions in 2021 for both sectors, because ASHE

microdata with pension saving information for that year have not been released to researchers at the time of this publication.²⁶

Figure 4.13. Average employer pension contribution rate (% of gross pay) across all employees, by sector and year



Note: Employer pension contribution rate is calculated as weekly employer pension contributions divided by weekly gross pay. Pension contributions for 2021 have been imputed based on the method outlined in footnote 26. Data measured in April of each year.

Source: Authors' calculations using Annual Survey of Hours and Earnings.

Estimating the value of employer pension contributions

Throughout this section and the analysis that follows, we measure the generosity of employers' pension promises using reported employer pension contributions in ASHE. Specifically, employers are asked how much they contribute to the employee's pension, excluding any lump-sum contributions that cover more than one employee, and excluding any employee contributions made through salary sacrifice. We then divide this figure by the employee's gross pay in the same period to calculate the employer pension contribution rate.

²⁶ We use the following method to impute employer pension contribution rates for 2021. First, for employees who we observe working for the same employer in 2020 and 2021, we assume their employer contribution rate in 2021 is equal to their employer contribution rate in 2020. For those employees who we observe working for a different employer in 2021 compared with 2020, or who we do not observe in ASHE in 2020, we first regress the employer pension contribution rate on a set of explanatory variables using 2020 data, and then predict 2021 employer pension contribution rates based on the results of this regression. The explanatory variables used for this regression are sex, age (in quadratic), occupation group, region, firm size, an indicator for full-time work, an indicator for temporary contract, log hourly earnings, share of earnings from basic pay, total weekly hours worked, firm type (including whether public or private), and age (in quadratic) interacted with both sex and occupation group.

However, the value of employer contributions (as reported in ASHE) is not the only way to estimate the value of employers' pension promises. Cribb and Emmerson (2016), for example, instead estimate the value of employer-provided pensions as the change in the (discounted) value of future pension income from one year to the next, estimated under simplifying assumptions about the rules of the scheme and the appropriate discount rate. This tends to lead to larger estimates of the value of public sector defined benefit pensions than suggested by looking at employers' reported pension contributions.

This difference is principally a result of the discount rate – that is, the rate at which future income is discounted relative to income received today. All else being equal, using a higher discount rate will lead to a smaller estimated employer pension contribution, and vice versa. Total contributions in public sector schemes are intended to cover the cost of future payments to pensioners in retirement; however, the discount rate used by HM Treasury when calculating the employer contributions needed to cover these costs is higher than the discount rate used in many other places. Currently, the discount rate used by HM Treasury to estimate the future value of pension payments for unfunded schemes (the SCAPE rate), is CPI+2.4%: that is, a nominal discount rate of 4.4%, assuming that on average the 2% CPI inflation target is met.²⁷ This discount rate was reduced in 2016 and in the 2018 Budget, which led to increases in reported employer contributions in recent years in unfunded public sector pensions (one contributing factor to the increase in average employer contributions in the public sector in Figure 4.13).

There are arguments for using a lower discount rate than the SCAPE rate, and indeed the public sector schemes themselves use lower discount rates for calculating their liabilities. For example, in the NHS Pension Scheme Accounts, the Actuary used a nominal discount rate of 1.25% in 2021 (the yield on high-quality corporate bonds at the time).²⁸ Using this much lower discount rate of 1.25%, rather than the SCAPE rate of approximately 4.4%, leads to an average current service cost of 62.2% of pay for the NHS Pension Scheme, which is more than double the sum of the average employer contribution rate (20.6%) and the average employee contribution rate (9.8%). This lower discount rate therefore implies the total contribution from the employer and the Treasury is over 50% of pay, rather than the 20.6% contribution rate that the employer (the NHS) pays, and which would be reported in ASHE.

The key question when estimating the value of employer pension promises in defined benefit schemes is what the appropriate discount rate is – whether it should be the SCAPE rate (which

²⁷ Most public service pension schemes operate on an unfunded basis, with employee and employer pension contributions today (along with additional funding from HM Treasury) used to pay pension benefits to members currently in retirement. Some public service pension schemes, such as the Local Government Pension Scheme, are funded, meaning that pension contributions today are invested in a pension fund, which accumulates returns and is used to pay for future pensions.

²⁸ See page 15 of NHS Business Services Authority (2021).

approximates the long-run nominal GDP growth rate expected by the OBR), or a much lower rate, such as typical discount rates used by the public sector schemes themselves or by schemes in the private sector. Indeed, it also matters whether the appropriate discount rate should vary by sector – for example, due to differences in how the schemes are ultimately funded. Given that unfunded public sector schemes pay pensions out of future tax revenue, the expected long-run rate of nominal GDP growth may be a sensible discount rate, as this will approximate the growth in the tax base. On the other hand, for funded schemes, a risk-free bond rate, such as the long-run gilt rate, may be a more sensible discount rate. Such a rate may also be more sensible when estimating the ‘value’ to employees. Calculating the value of pension promises using a different discount rate, as in Cribb and Emmerson (2016), is beyond the scope of this chapter, but this is an important caveat to keep in mind when interpreting our results.

4.7 How does total remuneration compare in the public and private sectors?

Figure 4.14 shows our estimate of the public–private pay differential in 2021. When looking at pay without bonuses or employer pension contributions, public sector employees earn around 13% more per hour than private sector employees on average. Of course, as discussed above, the composition of workers can differ between the two sectors, which could be one reason for the difference in pay. To account for this, we then control for factors such as age, sex and region (see footnote b in Box 4.2 for a full list) in our analysis, which reduces the estimated public pay differential to 0% (the leftmost yellow bar in Figure 4.14).

Including bonuses in pay reduces the unadjusted differential and the differential after accounting for observed characteristics to 8% and –3%, respectively (as shown by the middle set of bars in Figure 4.14). These figures are broadly comparable to the corresponding differentials for 2021–22 estimated using the LFS in Figure 4.7 (7% and –1%).²⁹

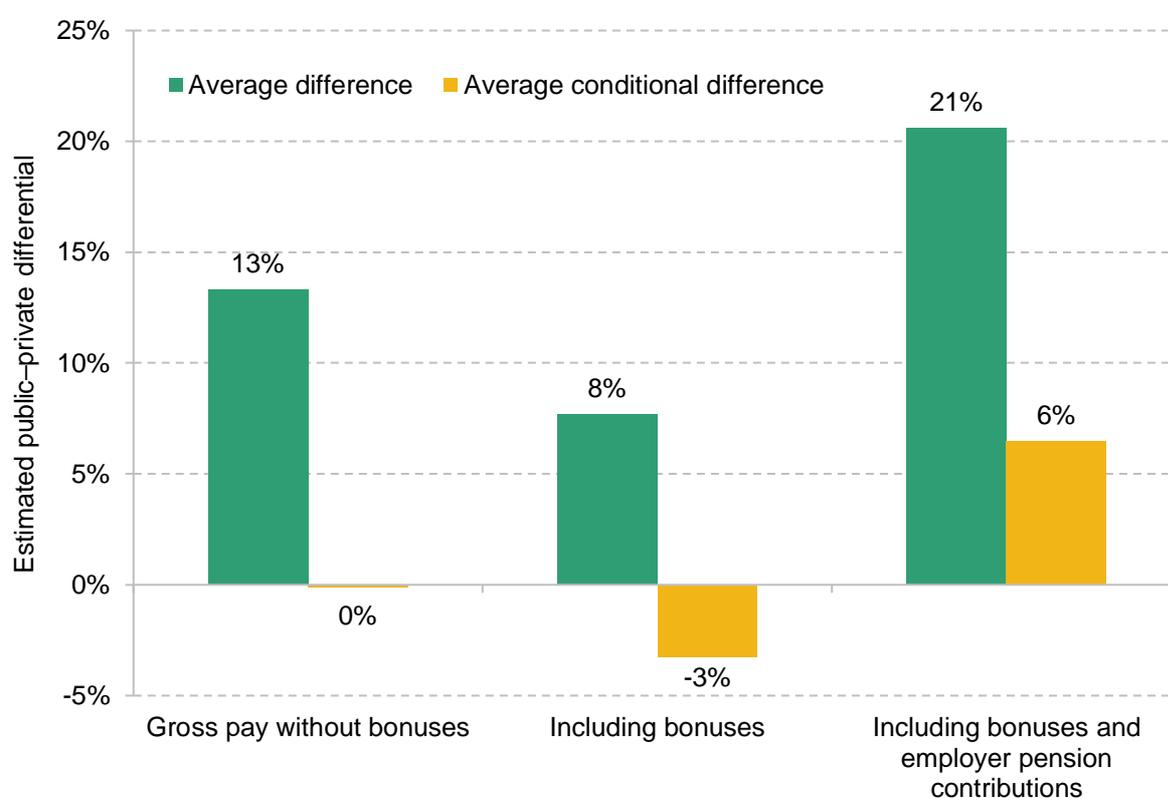
Finally, adding the measure of employer pension contributions reported in ASHE onto pay significantly increases the differentials to 21% (unadjusted) and 6% (after taking account of observed background characteristics), as shown by the rightmost set of bars in Figure 4.14. This highlights the greater generosity of pension schemes in the public sector. It means that, after accounting for bonuses and employer pension contributions, and after accounting for differences

²⁹ This could be due to a difference in timing (the ASHE figures are for April 2021 while the LFS figures correspond to the whole 2021–22 financial year), differences in controls (e.g. the fact that we cannot adjust for differences in education in ASHE) or other differences between the surveys (such as how we calculate or approximate bonus pay, or the fact that ASHE does not cover Northern Ireland).

in employee characteristics (to the extent that is possible in ASHE), there is an average public sector remuneration differential of around 6%.

It is important to note that including bonuses in our measure of remuneration reduces the estimated public pay differential, while including employer pension contributions significantly increases it. This highlights a key difference in the structure of remuneration between the two sectors, with bonuses on average forming a significant part of remuneration in the private sector, but employer contributions being more important in the public sector. We return to this in Section 4.8.

Figure 4.14. Average public–private hourly pay and remuneration differentials in 2021



Note: The differentials are calculated using a regression of hourly pay or remuneration on a public sector dummy. The controls mentioned in footnote b of Box 4.2 are included when calculating the average conditional difference. We then transform the coefficient into a percentage differential based on Halvorsen and Palmquist (1980). Pension contributions have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

Box 4.2. Data used for total remuneration calculations

Ultimately, we are interested in comparing total remuneration between the public and private sectors: accounting for pay, bonuses and pensions.^a To examine this, we cannot use the Labour Force Survey, as in Sections 4.4 and 4.5, because the LFS does not contain any information on employer pension contributions. Instead, we use the Annual Survey of Hours and Earnings, which is a survey completed by employers each April with data on around 1% of employees in Great Britain. While ASHE contains comprehensive data on workplace pension contributions, it does not contain information on all of the individual characteristics we used for our analysis using the LFS (such as education and experience). For this reason, we use a different set of controls in this section to adjust for differences in the composition of workers between the two sectors, following Office for National Statistics (2020).^b In addition, while ASHE does include incentive pay in its measure of gross pay, bonuses paid in April may not be representative of bonuses throughout the year. Therefore, to make bonus data more comparable with data on average weekly earnings (AWE) and from the LFS used above, we instead impute bonuses using AWE at the broad industry level.^c

^a This will not capture the entirety of remuneration (it would not capture provision of a company car, for example, or other forms of benefits-in-kind) but data limitations preclude us from a complete analysis.

^b In particular, we control for sex, age, age-squared, a part-time dummy, job tenure, occupational classification, organisational size, a benefits-in-kind dummy, a temporary contract dummy and region, and we include interactions between sex and age, sex and age-squared, occupation and age, occupation and age-squared, occupation and organisational size, and occupation and region.

^c Specifically, for the 24 industries in the publicly available AWE industry-level data ([ONS table EARN03](#)), we calculate the share of pay that is from bonuses during the period 2012–21. Then, for each observation in ASHE, we subtract ASHE incentive pay from gross pay, and then multiply this number by the industry-level bonus factor calculated using AWE to obtain an estimate of the average bonus over the full year.

How has this total remuneration gap changed over time?

Figure 4.15 shows how the estimated public pay differentials (after taking account of observed differences in the characteristics of the two workforces) have changed over time. All of the estimated public pay differentials have fallen since 2013, although there was a slight, temporary, jump up in 2019. When including bonuses but not employer pension contributions in pay, the estimated differential falls from 8% in 2013 to –3% in 2021 (compared with a fall from 5% to –1% in the LFS).

Box 4.3. Comparison with previous ONS estimates

Figure 4.15 also shows our estimates for the public–private differential in 2019, the final year covered by previous ONS analysis of the public–private remuneration differential (Office for National Statistics, 2020). The ONS’s modelled average public sector earnings differential (after controls) was significantly lower, at 7% in 2019 (versus 14% in our analysis – which is also substantially higher than our estimate for 2021). There are several potential reasons for this discrepancy. First, the ONS analysis takes a different approach to the estimation of bonuses.^a Second, there are some differences in methodology between the analyses. For example, as far as we are aware, the ONS reports the differential as the estimated coefficient on the public sector dummy variable in its regression.^b However, as Halvorsen and Palmquist (1980) point out, this will understate the percentage effect of working in the public sector on pay; applying the appropriate transformation to the ONS estimate would reduce the discrepancy between its figures and ours.^c

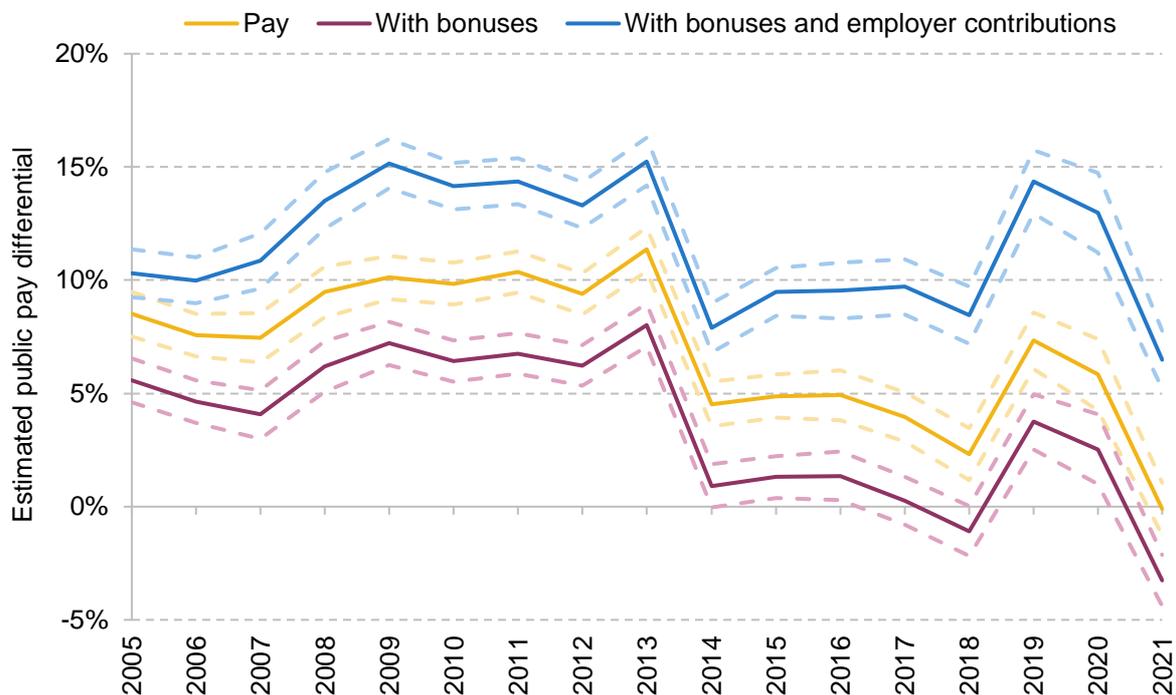
^a To be precise, the ONS uses the AWE microdata to calculate the share of pay from bonuses for each year, sector and two-digit industry (of which there are 88), and then adjusts pay in ASHE using this factor. Our factor is calculated for each year and broad industry (of which there are 24), and does not vary by sector.

^b The ONS report states: ‘the coefficient to [the public sector dummy] indicates the average earnings difference for working in the public sector’.

^c The ONS kindly provided its code to us for replication purposes. Unfortunately, we were unable to replicate its analysis. This could be due to differences in the raw ASHE data sets used. We also found a possible coding error when (re)constructing the remuneration variables, but were unable to confirm this without access to the underlying data set used by the ONS team in 2019.

The differential in total remuneration including employer pension contributions has also fallen, but by slightly less, from 15% in 2013 to 6% in 2021. The widening gap in average employer pension contributions between the two sectors (with the public sector becoming increasingly more generous relative to the private sector) has therefore somewhat dampened the reduction in the *pay* differential since 2013 (with the public sector becoming steadily less generous relative to the private sector). But overall, the increase in the relative generosity of public sector pensions was enough only to partially offset the reduction in the relative generosity of public sector pay. The gap in overall public–private remuneration therefore narrowed. Importantly, regardless of the measure of remuneration used, Figure 4.15 shows that the estimated differential is at its lowest level over the period since 2005.

Figure 4.15. Average conditional public–private hourly pay and remuneration differentials, 2005–21



Note: The differentials are calculated using a regression of hourly pay or remuneration on a public sector dummy with the controls mentioned in footnote b of Box 4.2. We then transform the coefficient into a percentage differential based on Halvorsen and Palmquist (1980). Pension contributions in 2021 have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

4.8 Longer-term policy issues

The analysis in this chapter of the fiscal policy trade-offs facing the new Chancellor, and of the nature and evolution of the public–private pay differential, raise a number of longer-term policy issues. Here, we discuss two of these.

The planning horizon for public spending and pay

The crux of the problem for departments is that three years of budgets were fixed in cash terms on the basis of pay assumptions that have turned out to be inaccurate. The fact that pay awards are around 2 percentage points higher than originally budgeted for, combined with pressures from higher energy bills, is causing severe budgetary challenges for public services. This reflects the fact that staff costs account for well over one-third of departments' day-to-day budgets, and so relatively small-sounding changes in pay can have significant impacts. The short-term fiscal choice is whether to provide additional funding to compensate departments for these unexpected costs.

This raises bigger, longer-term questions, though, about the way in which public spending is planned. There is a disconnect between the planning horizons for public sector pay and for departmental budgets: decisions are made at different intervals, despite the fact that the two are inherently linked. Departmental spending limits are typically fixed in cash terms for three or four years at a time at an autumn Budget or Spending Review.³⁰ Public sector pay decisions are made annually and typically announced over the summer (often for the financial year already in progress).³¹ This means that three years of spending limits can be set out under a certain set of pay assumptions, only for the pay awards actually offered to turn out higher or lower. The November 2015 Spending Review, for instance, set out departmental budgets for the 2019–20 financial year, but pay awards for that year were not announced until July 2019.³²

In ‘normal times’, with low and stable inflation, this is not a major issue. Since the advent of multi-year budgeting in 1998, inflation has rarely deviated much from its 2% target and, even if pay awards have differed from what was originally assumed, the difference has not been large enough to pose significant problems. Challenges arise when, as in the current environment, inflation and pay awards are more volatile. This raises the question of whether the system could be altered to better deal with this challenge.

One possible solution: align the two planning horizons

One option would be to plan both pay and departmental budgets over the same horizon and at the same frequency. That could mean, for example, setting three years of departmental spending limits and agreeing three-year pay deals with (most) public sector workers concurrently. That would provide more certainty to departments over the staffing costs they are likely to face and prevent budgets and pay awards from falling out of step. Alternatively, the government could return to the previous (pre-1998) system of annual spending rounds and revisit both public sector pay and departmental budgets each year.³³ This, too, would prevent pay awards and budgets from falling out of kilter. But each of these options would come with considerable downsides.

Planning everything on a three- or four-year basis would come at the cost of reduced flexibility over pay and reduced ability to adapt to labour market conditions. Public sector pay is already

³⁰ This is not always the case: the 2013, 2019 and 2020 spending reviews each covered just a single year, for example.

³¹ This is also a simplification: multi-year pay deals are sometimes agreed in the public sector. An example is the four-year pay deal agreed with junior doctors in the English NHS in 2019, which means that those doctors are receiving a 2% pay rise in 2022–23 (lower than what their NHS colleagues who did not have a multi-year pay deal are receiving).

³² <https://www.gov.uk/government/news/almost-a-million-public-sector-workers-handed-a-second-year-of-inflation-busting-pay-rises>.

³³ Prior to 1998, government spending was planned on an annual basis via a regime of annual Public Expenditure Surveys. This system was abandoned in favour of multi-year budgeting because it was felt that revisiting departmental budgets each year created uncertainty and led to overly short planning horizons. For a recent history and discussion of the issues, see Crawford, Johnson and Zaranko (2018).

less responsive to economic conditions than pay in the private sector – this can be seen in the fact that public sector pay did not fall during either the post-financial crisis or COVID-19 recessions, and the fact that public sector pay is only sluggishly responding to rapid nominal pay growth in the private sector in 2022. Moving to multi-year pay deals across the board would exacerbate this.

On the other hand, returning to an annual budgeting process would come at the cost of reduced medium-term certainty for departments, potentially impeding their ability to plan effectively. Multi-year budgeting is seen as a strength of the UK's system for planning and control of public expenditure (and one that is unusual internationally). Abandoning that would not be costless, and could bring back (or exacerbate) some of the short-termism that multi-year budgeting was introduced to address. An annual spending round could also take up huge amounts of civil servants' time.

Our preferred option: multi-year budgeting with flexibility

An alternative option would be to largely stick to the current arrangement – multi-year spending settlements and annual pay deals – and instead adapt to shocks through discretionary adjustments to the spending plans. This would, with caveats, be our preferred option.

Under this proposed system, the Treasury would set out several years of departmental (cash) spending limits in advance, at a spending review – as it does now. Alongside this, the Treasury ought to publish the (broad) pay assumptions upon which those plans are based. These spending plans would form the basis of the 'affordability constraint' within which pay review body recommendations have to be made.³⁴ But if circumstances change – as they have this year – the pay review bodies would have the ability to deviate from those pay assumptions and justify their reasons for doing so. If these deviations are outside of a pre-specified range, the Treasury would then automatically reopen spending review settlements and adjust spending plans – either up or down – or explicitly explain its reasons for not doing so. This would introduce a degree of automaticity into the reassessment of spending plans without placing any obligation on the Treasury.³⁵

This proposed system would aim to achieve the best of both worlds. Departments would be provided with the certainty of multi-year budgets; the Treasury would still be able to plan the overall level of public spending alongside decisions over tax and spend, and determine how

³⁴ This is a desirable feature from a Treasury perspective, as it tends to put a cap on the sorts of pay awards that pay review bodies can make within their remit. This sequencing probably improves the overall degree of public spending control.

³⁵ One could also imagine a more general version of this set-up, whereby the Treasury would agree that if overall cost pressures (as measured by the GDP deflator) deviated beyond a pre-specified range around the forecast upon which plans were based, settlements would automatically be reopened. This would work symmetrically: unexpectedly low inflation (or deflation) could lead to reductions in departmental budgets under this framework.

much the government can ‘afford’ to increase pay by. In normal times, those plans would be ‘firm and fixed’. But in exceptional circumstances, when pay awards are outside of a pre-specified range, budgets could and would be adjusted as required. This feature need only be used rarely, but its existence would help prevent changes in departmental budgets and pay awards from falling too far out of kilter, and would prevent departments from bearing all of the inflationary risk.

This model would crucially rely on HM Treasury being both able *and willing* to make use of such flexibility, and an understanding that it will do so in exceptional circumstances. COVID-19 was one such circumstance. An inflation shock on the scale of what we are currently experiencing is, in our view, another. Building a larger contingency ‘reserve’ into overall spending plans would help, but building in a reserve on the scale necessary to absorb a shock such as this would not be desirable.

On this occasion, the question of whether or not to open spending plans is entirely at the behest of the new Prime Minister and Chancellor. Looking ahead, in anticipation of future shocks, it would be an improvement to build such a process into the framework for planning and controlling public spending.

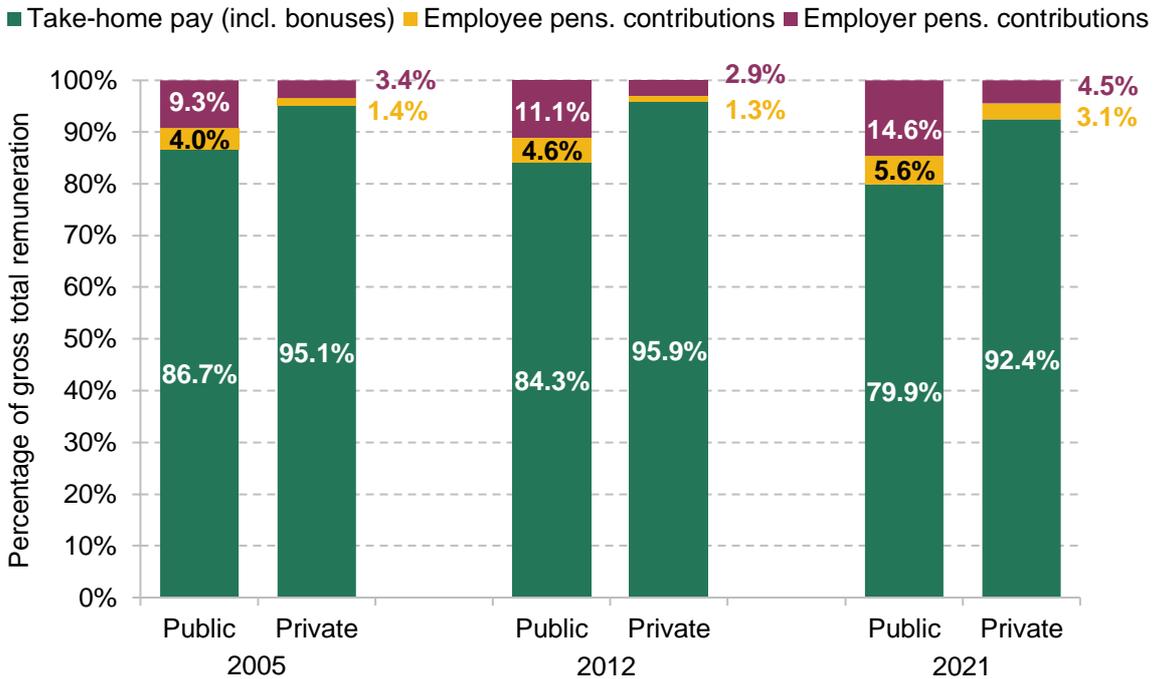
The structure of public sector remuneration

The analysis in Sections 4.6 and 4.7 shows that there are large differences in the structure of remuneration between the public and private sectors, with public sector employees receiving more compensation in the form of employer pension contributions, and private sector employees receiving more in the form of bonuses. Whether or not this difference in structure is optimal is an open policy question.

Figure 4.16 shows the fraction of hourly remuneration made up by take-home pay (including bonuses) and deferred pay, split into employer and employee contributions.³⁶ There are two key takeaways. First, a far greater share of overall remuneration is take-home pay in the private sector than in the public sector (92.4% versus 79.9% in 2021). Second, the take-home share has been falling over time in both sectors as pension contributions have risen, but it fell by 2.7 percentage points in the private sector between 2005 and 2021 (from 95.1% to 92.4%) and by 6.9 percentage points in the public sector (from 86.7% to 79.9%).

³⁶ This is the same measure of total remuneration used in the analysis above – the difference is that gross pay (i.e. the non-employer-pension-contribution element) here is separated into take-home pay and employee pension contributions. For the purposes of this section, we use ‘take-home pay’ to mean pre-tax, non-deferred pay.

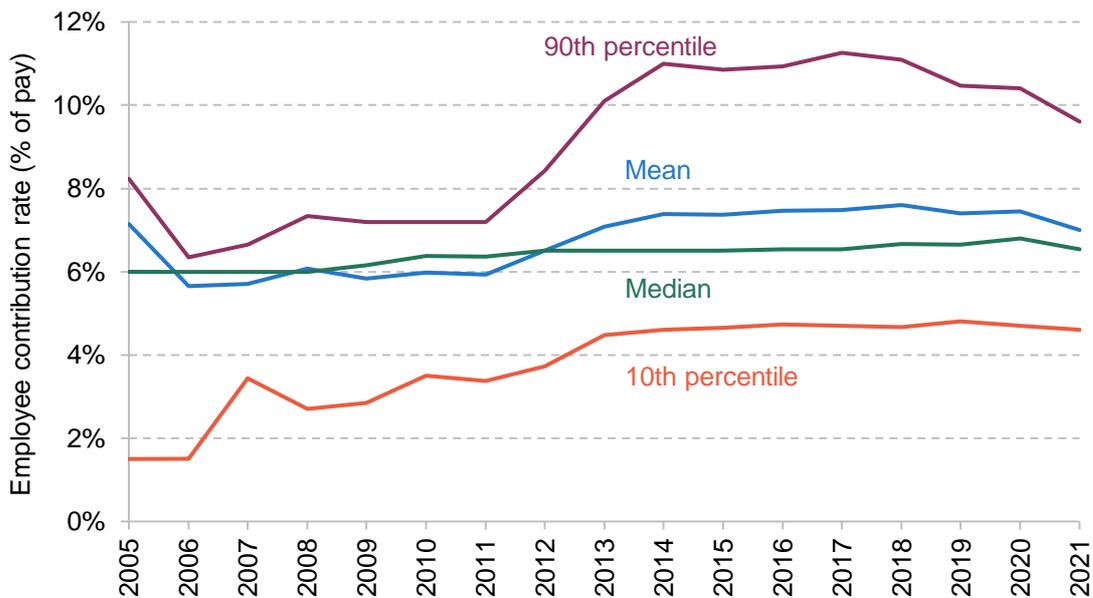
Figure 4.16. Share of hourly remuneration in the form of take-home and deferred pay, by year and sector



Note: 'Take-home pay' is used to mean pre-tax, non-deferred pay. Pension contributions for 2021 have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

Figure 4.17. Mean, median, 10th percentile and 90th percentile of employee pension contribution rates among public sector employees participating in a pension, over time



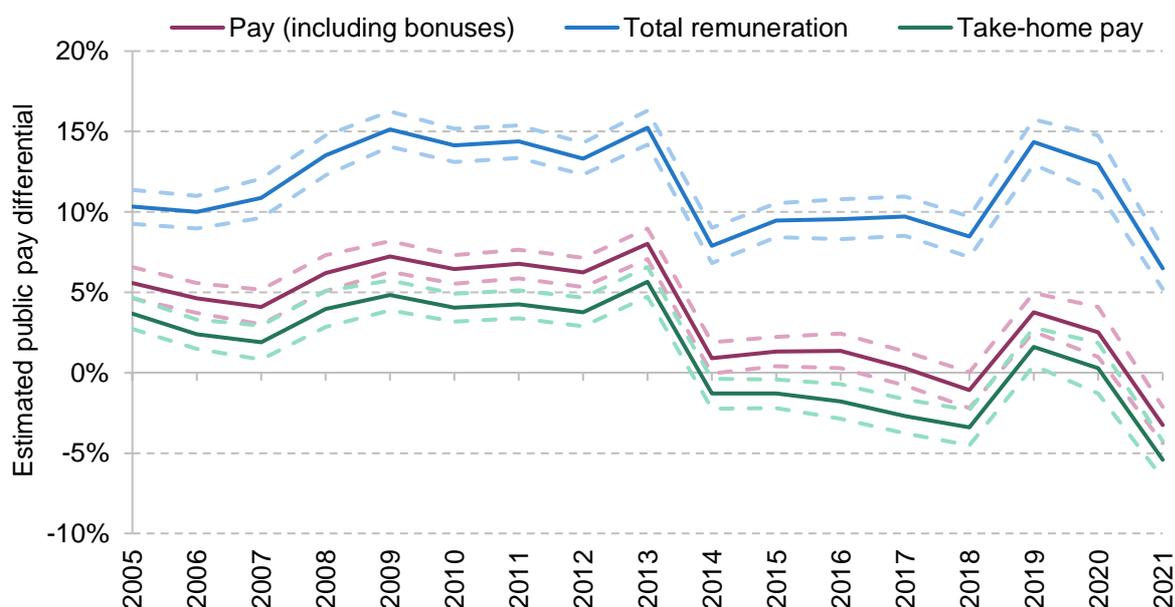
Note: Pension contributions for 2021 have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

In sum, remuneration in the public sector is considerably more skewed towards deferred pay, in the form of pension contributions, and this has been increasingly true over time. That is in part due to rising employer pension contributions, but *employee* pension contributions have also been rising, as shown in Figure 4.17. The mean employee pension contribution rate (among participants) has increased over time in the public sector, from 5.7% in 2006 to 7.0% in 2021, while it has remained fairly constant at around 4% of pay in the private sector (as shown in Figure 4A.3 in the appendix). Within the public sector, employee pension contribution rates have increased slightly more at the top and the bottom of the distribution than in the middle: the median contribution rate has only increased by 0.5 percentage points of pay between 2006 and 2021, compared with increases of over 3 percentage points at the 10th percentile of the distribution (from 1.5% to 4.6%) and at the 90th percentile (from 6.3% to 9.6%). Since employee pension contribution rates tend to increase with pay in the public sector, the distribution of take-home pay will be even more compressed in the public sector than the distribution of pay.

All else being equal, higher employee pension contributions mean lower take-home pay. During a cost of living crisis in particular, take-home pay may be a more salient measure of remuneration and more important to employees. Put simply, you cannot heat your home with a pension promise for 30 years hence. For public sector employees (or would-be public sector employees) weighing up their options between the two sectors, take-home pay could well be the key determinant.

Figure 4.18. Average conditional public–private hourly pay differentials, 2005–21, including take-home pay



Note: 'Take-home pay' is used to mean pre-tax, non-deferred pay. The differentials are calculated using a regression of hourly pay on a public sector dummy with the controls mentioned in footnote b of Box 4.2. Pension contributions in 2021 have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

In Figure 4.18, we therefore show how the public–private differential in terms of take-home pay has evolved over time, and how it compares with the pay and total remuneration differentials. While the trends are similar between the three series, the level of the differential for take-home pay is lower than that for pay, reaching –5% in 2021. Clearly, the public sector looks much less attractive if employees are evaluating the two sectors based on take-home pay, rather than on total remuneration.

An additional issue is that with high and rising employee pension contributions, some employees may choose to opt out of their workplace pension – particularly when household budgets are being squeezed. This is of particular concern in the public sector, where defined benefit (DB) schemes are more prevalent. That is because whereas in a defined contribution (DC) scheme employees have the flexibility to choose their own employee contribution rates, in DB schemes there is a set level of employee pension contributions the employee has to pay to enrol in the scheme. It is an in–out, binary decision. As the level of these required public sector employee pension contributions rises, employees have to sacrifice more and more take-home pay in order to receive the generous pension promises from their employer. An increasing number may decide that they are no longer willing – or able – to do so. For many in the public sector, that could mean losing 20% of their total remuneration, due to the loss of the generous employer pension contribution. Private sector employees with more flexible DC schemes, in contrast, could reduce their employee contributions without losing such a large amount of employer contributions.

Potential for a win–win reform?

There is potentially a strong case, therefore, for rebalancing public sector remuneration away from pensions and towards pay. This could be done without increasing the overall level of remuneration in a cost-neutral fashion that could potentially improve the welfare of public sector workers, who might prefer higher pay today in return for a moderately less generous pension tomorrow, without increasing costs for public sector employers. It might also help prevent a fall in pension scheme membership.

Public sector employees (and their trade unions) might be reluctant to trade away employer pension contributions in return for promises on pay which might be easier for a future government to erode. But one option – or at least a starting point – would be to reduce *employee* pension contributions, alongside a commensurate decrease in pension generosity. That would increase take-home pay for public sector employees with no change to the costs for their employers. There is perhaps a particularly strong case for this at the top end of the public sector pay distribution, where employee contributions are higher and where (as shown in Section 4.5) the public–private pay differential is most unfavourable. Clearly, there would be many details to iron out, and a full discussion lies beyond the scope of this chapter. But revisiting the

appropriate balance between pension and take-home pay ought to be on the government's medium-term policy agenda.

4.9 Conclusion

Public sector pay is a complex, contentious and fiscally significant policy area. The government employs more than 5½ million workers at an annual cost of more than £230 billion. What happens to public sector pay is clearly important for those workers and their families. It is also important for the government's overall spending plans and fiscal policy, and its ability to recruit, retain and motivate the skilled individuals required to provide high-quality public services.

This year, the backdrop makes decisions around public sector pay even more difficult than usual. The cost of living is soaring. The economic outlook is increasingly gloomy, with both double-digit inflation and a possible recession looming. The UK is becoming poorer as a nation. Many public sector roles pay considerably less than in the past, and many public sector workers have themselves experienced a real-terms pay cut over the past 12 years or so. As a result, the public–private pay differential is now less favourable to the public sector than at any point in the past 30 years – with this especially true for higher-paid public sector workers and those living in London and the South East. When pensions are accounted for, a public sector pay premium remains – but a much smaller one than in the past.

In short, the prospect of another real-terms pay cut for public sector workers is understandably unappealing, and widespread industrial action remains possible.

The pay offers made to public sector workers so far would indeed mean, for the vast majority, a further real-terms pay cut. While private sector wages are also falling in real terms, it is likely that they will outperform wages in the public sector. That will only worsen existing challenges around recruitment and retention in the public sector.

Amidst a sharp rise in the cost of living, take-home pay is likely to be particularly salient for those in work, as family budgets are squeezed. High and inflexible employee pension contributions reduce take-home pay for public sector employees. The government might consider whether rebalancing public sector remuneration away from pensions and towards pay would represent an improvement – one that could be achieved with no increase in overall staffing costs.

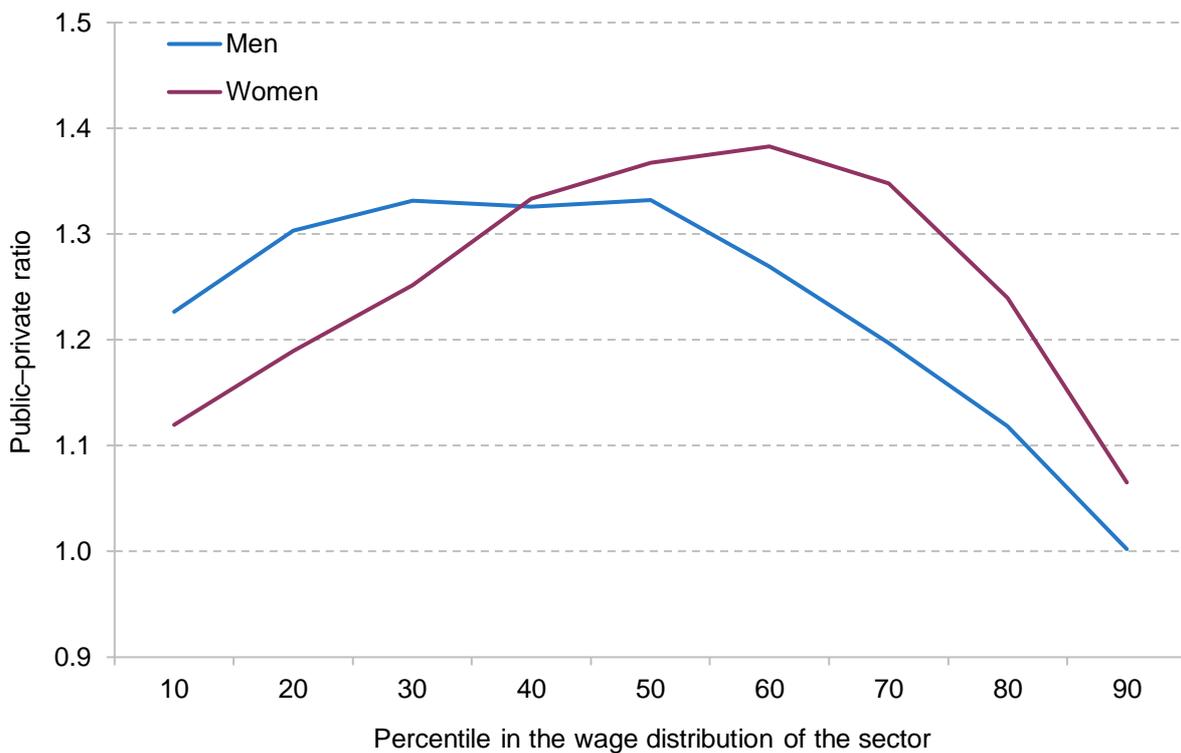
Importantly, the pay awards announced over the summer are above what was budgeted for when departmental spending plans were set out last autumn. Without additional funding to compensate, public services will be forced to make cuts elsewhere to meet the additional costs of a higher-than-expected pay award. That is true this year but, if anything, the challenge is more

acute over the next two, as the costs of higher-than-budgeted pay awards compound over time. Compensating departments would mean spending an additional £5 billion or so this year (2022–23); if pay were frozen in real terms after this year (i.e. pay awards matched inflation), that figure would rise to £10.6 billion by 2024–25. If no such compensation were forthcoming, staying within existing plans for the staff pay bill would require a cut to government headcount of around 110,000 this year, rising to 220,000 by 2024–25.

One major decision for the new Chancellor will be whether to top up existing spending plans, or allow public service quality to (further) deteriorate. This will certainly be the key choice at the spending review promised later this year, and could be one of the defining fiscal choices for the remainder of this parliament.

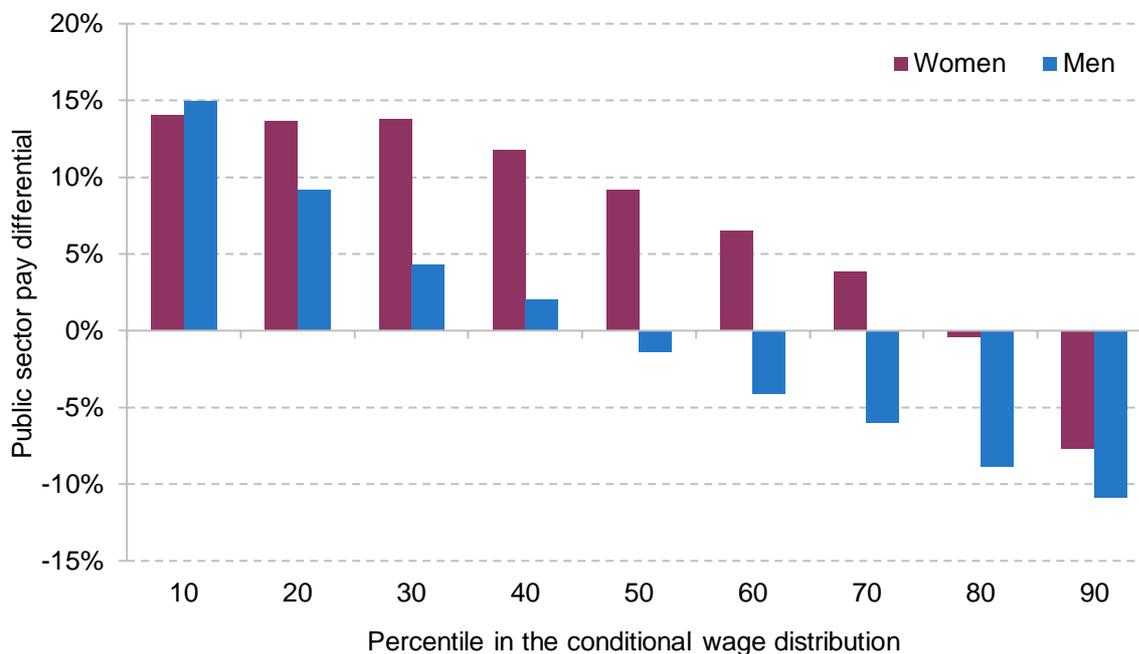
Appendix

Figure 4A.1. Ratio between public sector and private sector hourly wages, by sex



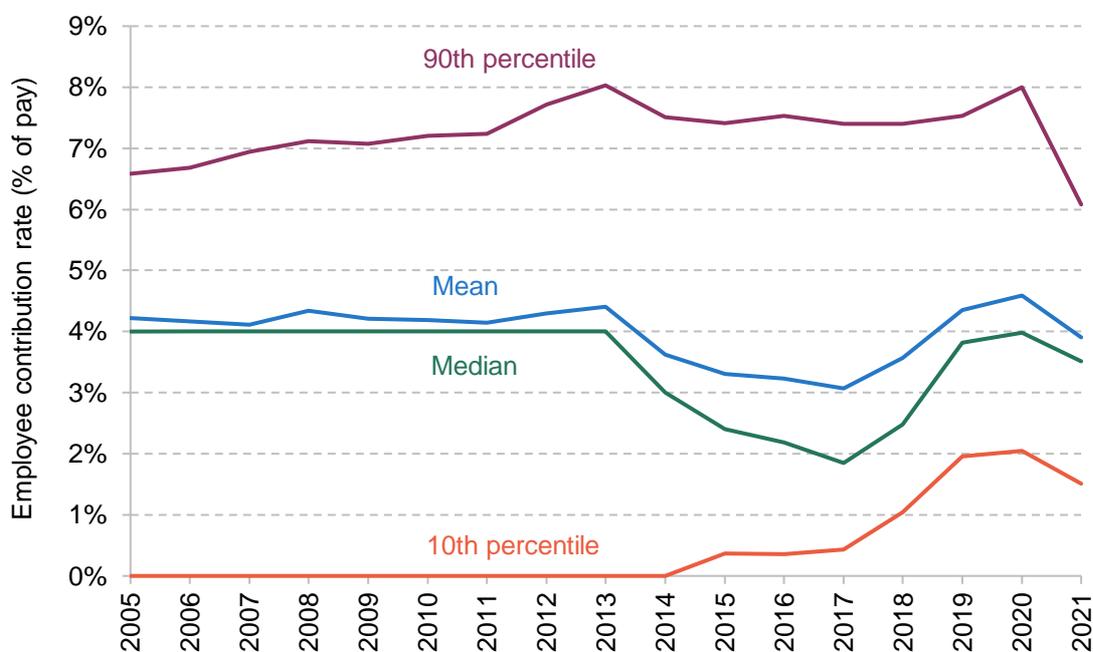
Source: [Table 13.5a of Annual Survey of Hours and Earnings 2021](#).

Figure 4A.2. Estimated public–private wage differential by percentile in the conditional wage distribution, 2015–16



Source: Authors' calculations using the quarterly Labour Force Survey, 2015Q2 to 2016Q1.

Figure 4A.3. Mean, median, 10th percentile and 90th percentile of employee pension contribution rates among private sector employees participating in a pension, over time



Note: Pension contributions for 2021 have been imputed based on the method outlined in footnote 26.

Source: Authors' calculations using the Annual Survey of Hours and Earnings.

References

- Bank of England, 2022. Monetary Policy Report – August 2022. <https://www.bankofengland.co.uk/monetary-policy-report/2022/august-2022>.
- Crawford, R., Johnson, P. and Zaranko, B., 2018. The planning and control of UK public expenditure, 1993–2015. Institute for Fiscal Studies (IFS), Report R147, <https://ifs.org.uk/publications/planning-and-control-uk-public-expenditure-1993-2015>.
- Cribb, J. and Emmerson, C., 2016. Workplace pensions and remuneration in the public and private sectors in the UK. *National Institute Economic Review*, 237, R30–7, <https://doi.org/10.1177/002795011623700114>.
- Cribb, J. and Emmerson, C., 2021. What can we learn about automatic enrollment into pensions from small employers?. *National Tax Journal*, 74(2), 377–404, <https://doi.org/10.1086/714113>.
- DDRB, 2022. Review Body on Doctors’ and Dentists’ Remuneration: Fiftieth Report 2022. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/109225/9/DDRB_2022_report.pdf.
- Emmerson, C. and Stockton, I., 2022. Reversing NICs and corporation tax rises would leave debt on an unsustainable path. Institute for Fiscal Studies (IFS), Report R217, <https://ifs.org.uk/publications/reversing-nics-and-corporation-tax-rises-would-leave-debt-unsustainable-path>.
- Halvorsen, R. and Palmquist, R., 1980. The interpretation of dummy variables in semilogarithmic equations. *American Economic Review*, 70(3), 474–5, <http://www.jstor.org/stable/1805237>.
- HM Treasury, 2021. Autumn Budget and Spending Review 2021. <https://www.gov.uk/government/publications/autumn-budget-and-spending-review-2021-documents>.
- NHS Business Services Authority, 2021. NHS Pension Scheme Annual Report and Accounts 2020-21. https://www.nhsbsa.nhs.uk/sites/default/files/2021-07/CCS001_CCS0521624740-001_NHS%20Pension%20Accounts%202020-21_Web%20Accessible.pdf.
- NHSPRB, 2022. NHS Pay Review Body: Thirty-Fifth Report 2022. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/109227/0/NHSPRB_2022_Accessible.pdf.
- Office for National Statistics, 2019. Who works in the public sector?. <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicspending/articles/whoworksinthepublicsector/2019-06-04>.

Office for National Statistics, 2020. Public and private sector earnings: 2019.

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/publicandprivatesectorearnings/2019>.

Office for National Statistics, 2022. Average weekly earnings in Great Britain: August 2022.

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/averageweeklyearningsingreatbritain/august2022>.

Office of Manpower Economics, 2021. OME Stewardship Report 2020 to 2021.

<https://www.gov.uk/government/publications/ome-stewardship-report-2020-to-2021>.

Ogden, K., Phillips, D. and Siôn, C., 2021. What's happened and what's next for councils?. In C. Emmerson, P. Johnson and B. Zaranko (eds), *The IFS Green Budget: October 2021*, <https://ifs.org.uk/books/whats-happened-and-whats-next-councils>.

Phillips, D., 2021. How and why has the Scottish Government's funding changed in recent years? Institute for Fiscal Studies (IFS), Report BN321, <https://ifs.org.uk/publications/how-and-why-has-scottish-governments-funding-changed-recent-years>.

PSPRB, 2022. Prison Service Pay Review Body: Twenty First Report on England and Wales 2022.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/109225/3/PSPRB_2022_E_W_report.pdf.

Sibieta, L., 2022a. School spending and costs: the coming crunch. Institute for Fiscal Studies (IFS), Report BN347, <https://ifs.org.uk/publications/school-spending-and-costs-coming-crunch>.

Sibieta, L., 2022b. The even longer squeeze on teacher pay. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/even-longer-squeeze-teacher-pay>.

Warner, M. and Zaranko, B., 2021. Pressures on the NHS. In C. Emmerson, P. Johnson and B. Zaranko (eds), *The IFS Green Budget: October 2021*, <https://ifs.org.uk/books/pressures-nhs>.

Zaranko, B., 2022a. What should public sector pay policy be trying to achieve? Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/what-should-public-sector-pay-policy-be-trying-achieve>.

Zaranko, B., 2022b. The inflation squeeze on public services. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/inflation-squeeze-public-services>.

Data

Office for National Statistics. (2022). *Annual Survey of Hours and Earnings, 1997-2021: Secure Access*. [data collection]. *20th Edition*. UK Data Service. SN: 6689, DOI: 10.5255/UKDA-SN-6689-19

Office for National Statistics. Social Survey Division, Northern Ireland Statistics and Research Agency. Central Survey Unit. (2022). *Quarterly Labour Force Survey, 1993-2022*. Retrieved from <https://beta.ukdataservice.ac.uk/datacatalogue/series/series?id=2000026>

5. Reforms, roll-outs and freezes in the tax and benefit system

Tom Waters and Tom Wernham (IFS)

Key findings

1. Many tax and benefit thresholds, allowances and amounts ('parameters') are by default uprated every year in line with prices or in some cases earnings. But others are frozen in cash terms, sometimes temporarily by explicit policy choices but often indefinitely. Compared with uprating, such freezes reduce household incomes and strengthen the public finances – all the more so in the high-inflation environment we currently find ourselves in. **These freezes – which represent a stealthy and arbitrary way to raise tax revenue – often have a bigger impact on household incomes than more eye-catching discretionary measures.** Several benefit reforms are also being rolled out over the coming years, which also overall act to reduce household incomes.
2. **The range of frozen parameters is wide, covering many aspects of the tax and benefit system.** For example, we are one year into a four-year freeze in the income tax personal allowance and higher-rate threshold, which is set to raise the government £30 billion per year when finished. But other parameters are frozen indefinitely – including the £100,000 threshold where the personal allowance begins to be withdrawn, the benefit cap, the maximum assets that universal credit claimants can have, and local housing allowance rates which cap recipients' housing benefit.
3. Freezes to personal tax parameters alone will reduce households' income by £1,250 on average by 2025–26. Adding in freezes to benefits and gradual policy roll-outs brings that figure to £1,450, or 3.3% of income, and means a £41 billion boost to the exchequer. That is double the £20 billion gain in household income (and loss to the exchequer) from the high-profile personal tax giveaways – the reduction in National Insurance contributions and 1p cut to the basic rate of income tax. **In other words, on**

average for every £1 households gain from high-profile cuts to rates of income tax and National Insurance, they lose £2 from the freezes and policy roll-outs. Not only does this hold in total, but **in every income decile the average impact of gradual roll-outs and freezes outweighs the impact of the explicit discretionary policy changes.**

4. **The combined impact of headline tax changes, policy roll-outs and frozen taxes and benefits by 2025–26 is broadly regressive**, with the poorest seeing income falls of 2.8% of income and the richest falls of only 1.1%. Headline cuts to income tax and National Insurance will benefit higher-income households who are more likely to get more of their income from employment, while the poorest tenth of households will gain only £13 per year from these measures. Because some tax thresholds and – especially – benefits values are indefinitely frozen, the impact of freezes only grows over time. As a result, by 2030–31 the total changes to the tax and benefit system are more clearly regressive, with the highest-income tenth seeing a 1.3% fall in income and the lowest-income tenth a 4.7% fall.
5. **Freezes to tax thresholds and benefit values combined with higher-than-expected inflation change the shape of the tax and benefit system.** The four-year freeze to the personal allowance and higher-rate threshold (scheduled to run to March 2026) is expected to increase the share of adults paying income tax to 66% (35 million) and the share paying the higher rate to 14% (7.7 million), compared with 63% (34 million) and 11% (6.1 million) today. The point at which the personal allowance begins to be tapered away (£100,000) and the additional-rate threshold (£150,000) have both been frozen since their introduction in 2010. By 2025–26, 3% of adults (1.6 million) will have some of their personal allowance withdrawn, and 1.4% (760,000) will pay additional-rate tax – in both cases around triple the equivalent number in 2010 when the thresholds were created.
6. **The freezing of the £50,000 threshold at which child benefit begins to be withdrawn has led to 26% of families with children (2 million) now losing some or all of their child benefit** – double the proportion when the policy was introduced a decade ago. In addition, **the frozen benefit cap means the number of families with capped benefits could hit around quarter of a million in 2025–26 – double the current figure**, and three-and-a-half times as many as when the cap was last actively reformed in 2016.
7. Freezes mean the shape and size of the tax and benefit system change in an uncertain and arbitrary manner, depending on unpredictable changes in inflation. Millions more are set to be paying higher tax rates by 2025–26 than the government could have

predicted when income tax thresholds were frozen in April 2021, purely because prices have increased at an unexpectedly high rate. These problems are worse in a high-inflation environment, but even in times of lower inflation, freezes reduce the transparency of tax and benefit reforms, allowing the size of the system to be changed by stealth. **All tax and benefit parameters should be updated by a sensible index.** If the government wants to raise taxes or cut benefits, it should tell us what real value it thinks the parameter in question should be, and not let it be unpredictably buffeted around by inflation.

5.1 Introduction

High-profile reforms to the tax and benefit system have long been a core part of the economic policy landscape, and that is no different today. The new Prime Minister and Chancellor have announced reforms to scrap the health and social care levy and reverse the associated recent National Insurance contributions (NICs) rise; scrap the planned rise in the rate of corporation tax for April 2023; and cut the basic rate of income tax by 1p in 2023–24 (rather than in 2024–25 as originally announced by then-Chancellor Rishi Sunak in March 2022). These are big, deliberate and high-profile fiscal decisions which will increase disposable household income. The Energy Price Guarantee and other energy support measures also represent significant income boosts for household incomes, though this chapter focuses on policies with a permanent effect on the tax–benefit system rather than this one-off support package.

But as well as explicit policy changes such as these, the tax and benefit system is gradually and stealthily changed over time, as various thresholds, allowances and benefit amounts (herein ‘parameters’) are frozen either for a defined period or permanently, resulting in falls in their real value as prices rise. This matters all the more in the high-inflation environment – and the more uncertain inflation environment – we now find ourselves in. In addition, other reforms (especially benefit changes) are often slowly rolled out, meaning that their impact grows over time.

This chapter will show the impact of freezes and gradual roll-outs on personal taxes and benefits, as well as considering some large discretionary changes to the tax system that are planned in the coming years. We show that the combined impact of freezing various parameters is highly significant, and larger than the effect of explicitly announced reductions in the rates of income tax and NICs.

By default, many tax and benefit parameters rise by growth in some index: the Retail Prices Index (RPI; mainly duties), average earnings (mainly state pensions) or, most commonly, the Consumer Prices Index (CPI). Indexing parameters this way is entirely sensible: it ensures that,

without deliberate policy intervention, the levels of these parameters keep up with some meaningful real values, so that, for example, the level of support the out-of-work benefit system provides delivers roughly the same purchasing power over time, and the incomes of pensioners reliant on the state pension keep pace with the income of the average earner. However, for various historical reasons, and sometimes for reasons of deliberate policy reform, not all parameters are indexed in this way. In Section 5.2, we give a list of frozen parameters, and illustrate the impact of some of these freezes on the shape of the tax–benefit system.

As well as these freezes, there are a number of benefits policies being steadily rolled out, affecting the shape of the tax–benefit system:

- **Replacement of the ‘legacy’ working-age benefit system with universal credit (UC).**

This occurs for three reasons: new benefit claimants can generally only make claims for UC; changes in circumstances can cause claimants to transition from the legacy benefits to UC; and the recently rebooted ‘Move to UC’ scheme transitions existing legacy claimants across to UC even if they have not had a change in circumstances. On current plans, the UC roll-out will be finished by the end of 2024,¹ at which point it will be received by 7 million families (Waters and Wernham, 2021), and in the long run will cost the government roughly £5 billion per year more than the system it replaces,² though with a large number of winners and losers (see Brewer et al. (2019)). As of May 2022, roughly 60% of the roll-out had occurred.³ One additional complication is that those who are transferred to UC under the ‘Move to UC’ scheme will be eligible for ‘transitional protection’. This means that, if they would receive less under UC than they had been receiving under the legacy system, they will continue to receive the (cash) amount they got previously until they have a change in circumstances or their UC entitlement becomes higher. DWP estimates that 600,000 families will receive transitional protection when they are transitioned (Department for Work and Pensions, 2022b) As these transitional protections expire, UC therefore becomes slightly less generous.

- **The ‘two-child limit’ in tax credits and universal credit.** Prior to this policy, a child born to a family in receipt of tax credits or UC would generate an additional ‘child element’ in the benefit in question, currently worth £2,935 per year. The so-called ‘two-child limit’ means that, in the vast majority of cases, a third or subsequent child born on or after 6 April 2017 will not generate this element. Because of the link to the date of birth, this policy is in effect being slowly rolled out, and this process will not finish until the mid 2030s when all dependent children will have been born on or after 6 April 2017. When fully rolled out, the reform will affect 750,000 households who will lose around £3,600 per year each, saving the

¹ <https://www.gov.uk/government/news/managed-move-of-claimants-to-universal-credit-set-to-restart>.

² Calculated from Office for Budget Responsibility (2018a) and HM Treasury (2021).

³ DWP Stat-Xplore states that 4.2 million households were on UC in May 2022.

government roughly £2½ billion (Joyce and Waters, 2019). As of April 2022, about half of the roll-out had been completed (Department for Work and Pensions & HM Revenue and Customs, 2022).

- **Abolition of the family premium in tax credits and universal credit.** Prior to this policy, recipients of tax credits and universal credit received a £545 annual premium for having any children (in addition to the child elements discussed above). This is now only available to families where the eldest child was born before 6 April 2017. As with the ‘two-child limit’, this means that the policy will not be fully rolled out until the mid 2030s. When it is, 3.2 million households will be without that £545 premium, saving the government £1.8 billion per year (Joyce and Waters, 2019).
- **Abolition of work-related activity premium in employment and support allowance and the equivalent in universal credit.** Both universal credit and employment and support allowance (an incapacity benefit for those whose disabilities affect how much they can work) assess the degree of incapacity of claimants. Prior to this policy, claimants who were deemed to have a ‘limited capability for work’, but who may be able to engage in ‘work-related activity’ such as CV preparation, were awarded £1,500 per year for being in that group, on top of their other entitlements. This premium has been abolished for those who began a new claim from 3 April 2017. When fully rolled out, this reform will affect around 500,000 people at any point in time (Department for Work and Pensions, 2015), saving the government £0.75 billion a year. We estimate that in November 2021, 160,000 claimants were still in receipt of the premium.
- **Ending entitlement to pension-age benefits for ‘mixed-age couples’.** Low-income couples where one partner is above state pension age and the other below – what DWP calls ‘mixed-age couples’ – have historically been able to claim pension credit (and, for renters, housing benefit). Mixed-age couples who begin a benefit claim from 15 May 2019, however, will only be able to claim the rather less generous universal credit. When fully rolled out (i.e. when all benefit claims by mixed-age couples began from 15 May 2019), around 115,000 families will lose out from this policy, to the tune of £5,900 per year each, saving the government £0.7 billion (Cribb and Waters, 2019). An estimated 50,000 families are currently affected by the policy (Department for Work and Pensions, 2019).

Lastly, there are two explicit big personal tax reforms planned for the next six months: the scrapping of the health and social care levy and reversal of the associated NICs rise, and a 1p cut to the basic rate of income tax.

This chapter will first focus on a few specific freezes: those to income tax thresholds, child benefit taper thresholds and the benefit cap. We will show how these freezes have already affected, and are due to affect, the real value of these parameters, as well as how they change the number of (higher-rate) taxpayers and the number of benefit-capped benefit recipients (Section 5.2). We will then move on to study the distributional impacts of freezes to taxes and benefits,

policy roll-outs, and planned tax policy changes (Section 5.3). In Section 5.4, we will then consider why freezing parameters in this way is a problem, and make some recommendations for how policy should be changed.

Our basic methodology is as follows. We take household survey data (2019–20 Family Resources Survey, FRS) and uprate them to 2022–23 terms using Bank of England forecasts from August 2022 for key variables (in particular earnings). We then use TAXBEN, the IFS tax–benefit microsimulation model (Waters, 2017), to simulate incomes under alternative future tax and benefit systems. In the baseline system, policy evolves according to current plans, including freezing parameters, rolling out policies, and implementing the two discretionary policy reforms described above. We compare this with a system where all tax–benefit parameters are uprated from their 2022–23 level by the CPI (or earnings, where that is the existing default; in both cases, again we use the Bank of England’s August forecast⁴), all policy roll-outs are halted at the point they are at in 2022–23, and no planned discretionary policies are implemented. In Box 5.1 later, we discuss in more detail how we model policy roll-outs.

5.2 Long-term freezes change the shape of the tax–benefit system

In this section, we show some of the huge range of tax and benefit parameters that are subject to freezes. We then examine some specific frozen parameters and show how they steadily change the shape of the tax and benefit system, before showing how the freezes affect the value of the parameters, and the implications for the number of taxpayers and benefit recipients.

Summary of frozen parameters

Tables 5.1 and 5.2 provide a non-exhaustive list of frozen parameters in the tax and benefit systems respectively, when they were frozen, and what level they would be today if they had been CPI uprated since then. The impacts of most of these freezes on household incomes are modelled in Section 5.3. This chapter will take a closer look at three of these freezes (income tax thresholds, child benefit taper thresholds and the benefit cap), giving detail on the size of the impacts and the implications of these.

⁴ The forecast that matters for this analysis is cumulative inflation to 2025–26 (strictly speaking it is inflation in Septembers that we use, since that is the measure used for uprating). Although there have been several important changes to the inflationary outlook since August, the Bank’s August estimate of cumulative inflation to 2025–26 (23.6%) is similar to Citi’s latest forecast (20.8%).

Table 5.1. Frozen tax parameters

Parameter	Frozen nominal value	When frozen	2022–23 value if CPI updated
Income tax personal allowance, until March 2026*	£12,570 p.a.	April 2021	£12,950 p.a.
Income tax higher-rate threshold, until March 2026*	£50,270 p.a.	April 2021	£51,792 p.a.
Additional-rate threshold	£150,000 p.a.	April 2010	£193,571 p.a.
Income tax threshold for personal allowance withdrawal	£100,000 p.a.	April 2010	£129,047 p.a.
NICs primary threshold, until March 2026*	£12,570 p.a.	July 2022	£12,570 p.a.
Personal savings allowance	£1,000 p.a. for basic-rate taxpayers, £500 for higher-rate taxpayers	April 2016	£1,122 p.a. for basic-rate taxpayers, £561 for higher-rate taxpayers
Starting rate for savings in income tax [†]	£5,000 p.a.	April 2015	£5,603 p.a.
Pensions annual allowance [†]	£40,000 p.a.	April 2014	£45,368 p.a.
ISA allowance [†]	£20,000 p.a.	April 2017	£22,235 p.a.
Pensions minimum reduced annual allowance [†]	£4,000 p.a.	April 2020	£4,144 p.a.
Pensions lifetime allowance [†]	£1,073,100	April 2020	£1,105,559
Inheritance tax threshold, main [†]	£325,000	April 2009	£424,274
Inheritance tax threshold, for primary residence [†]	£175,000	April 2020	£181,290
Stamp duty thresholds (England and Northern Ireland non-first-time buyers only) ^{*††}	0% rate: £250,000 5% rate: £925,000 10% rate: £1,500,000	0% rate: September 2022 5% and 10% rates: December 2014	0% rate: £250,000 5% rate: £1,049,142 10% rate: £1,701,312
Student loan repayment threshold [†]	Plan 2: £27,295 Postgraduate loans: £21,000	Plan 2: April 2021 Postgraduate loans: August 2016	Plan 2: £28,121 Postgraduate loans: £23,557
Corporation tax annual investment allowance ^{*††}	£1,000,000	January 2019 (initially temporary, now permanent)	£1,079,731
VAT registration threshold, until March 2024 ^{*†}	£85,000	April 2017	£94,500

Note: Freezes not modelled in this chapter are marked with a †. Parameters frozen due to recent policy decisions are marked with a *; other parameters are frozen by default. Parameters marked with a ‡ were temporarily increased from July 2020 to September 2021. p.a. = per annum.

Table 5.2. Frozen benefit parameters

Parameter	Frozen nominal value	When frozen	2022–23 value if CPI updated
Benefit cap	Couples & lone parents: £20,000 p.a., + £3,000 in London Single adults: £13,400 p.a., + £2,010 in London	April 2016	Couples & lone parents: £22,435 p.a., + £3,365 in London Single adults: £15,032 p.a., + £2,255 in London
Asset limits for most means-tested benefits	Working-age benefits: lower capital limit of £6,000, upper capital limit of £16,000 Pension credit capital limit: £10,000	April 2006	Working-age benefits: lower capital limit of £8,580, upper capital limit of £22,880 Pension credit capital limit: £14,300
Earnings disregards for legacy benefits	Single person: £5 p.w. Couple: £10 p.w. Disabled: £20 p.w. Lone parent: £25 p.w.	Single person: April 1988 Couple: April 1988 Disabled: April 2001 Lone parent: April 1989	Single person: £12 p.w. Couple: £23 p.w. Disabled: £31 p.w. Lone parent: £56 p.w.
Local housing allowance rates*	30 th percentile of 2019 local rents	April 2020	
Full-time earnings disregard for housing benefit	£17.10 p.w.	April 2010	£22 p.w.
Child benefit taper thresholds	Child benefit tapered away for incomes of £50,000–£60,000	January 2013	Child benefit tapered away for incomes of £56,710–£68,052
Maximum childcare support for tax credits & universal credit (UC)	UC: 1 child, £646 p.m.; 2+ children, £1,108 p.m. Tax credits: 1 child, £122.50 p.w.; 2+ children, £210 p.w.	UC: April 2015 Tax credits: April 2005	UC: 1 child, £724 p.m.; 2+ children, £1,242 p.m. Tax credits: 1 child, £180 p.w.; 2+ children, £308 p.w.
Free school meals earnings threshold for universal credit	£7,400 p.a.	April 2018	£7,990 p.a.
Family premium for tax credits & universal credit	£545 p.a. (or monthly equivalent for UC)	April 2003	£819 p.a. (or monthly equivalent for UC)
Sure Start maternity grant	£500 one-off payment	April 2002	£758 one-off payment
Maximum income for eligibility for 'tax-free childcare'	£100,000 p.a.	October 2018	£107,973 p.a.
Maximum income for eligibility to extra 15 hours p.w. childcare for 3- & 4-year-olds	£100,000 p.a.	September 2017	£111,177 p.a.
Winter fuel payment	£100–£300 p.a.	April 2011	£125–£376 p.a.
Cold weather payment†	£25 p.w.	November 1988	£58 p.w.
Christmas bonus†	£10 p.a.	December 1977	£56 p.a.

Note: Freezes not modelled in this chapter are marked with a †. Parameters frozen due to recent policy decisions are marked with a *; other parameters are frozen by default. p.a. = per annum; p.w. = per week; p.m. = per month.

The list of frozen parameters is long and wide ranging, affecting almost all areas of the tax and benefit system. They affect whether people are liable for taxes or eligible for benefits, and the amounts they pay and receive. For example, the freeze in asset test thresholds since 2006 means families could hold £6,880 more in assets in real terms than they can today, before becoming ineligible for benefits. The frozen child benefit taper thresholds mean families' highest earners now become ineligible for child benefit with a level of earnings £8,052 lower in real terms than when the policy was introduced in 2013. If the Sure Start maternity grant had been uprated, new low-income mothers would receive £758, over 50% more than the frozen amount. On the tax side, the freeze of inheritance tax thresholds means that (for non-homeowners) nearly £100,000 less than in 2009 can be bequeathed in real terms before estates become liable for inheritance tax. The pensions annual allowance freeze means £5,368 less can be saved in a pension tax-free than in 2014, while £2,235 less can be saved each year in an ISA than in 2017. And as Section 5.3 will show, freezes to income tax and National Insurance thresholds will by 2025 more than offset the headline planned tax cuts.

Different freezes affect very different parts of the income distribution and different family types, but, compared with maintaining the real values of parameters, almost all reduce household incomes and strengthen the public finances (by either reducing benefits or increasing tax revenue); and currently high inflation has made all of them more important. Put simply, the decision of whether or not to freeze a threshold in cash terms matters a lot more when inflation is running at around 10% (as it is currently) than when it is hovering around the Bank of England's 2% target. And higher inflation is typically associated with more uncertain inflation. By 2025, consumer prices are expected to have risen 24% on the current year (2022–23) – but frozen parameters will (on current policy) remain unchanged. Moreover, freezes can have knock-on effects for work incentives – both strengthening and weakening them – and sometimes can exacerbate bizarre aspects of the system (as Adam and Johnson (2019) show for the pensions allowances, and as we show later in this section for child benefit). Importantly, most of these parameters are indefinitely frozen, meaning that without explicit policy intervention the impact of the freezes will grow more and more each year.

It seems as if there is an increased tendency to introduce new parameters without an uprating rule. The additional-rate threshold, the point at which the personal allowance is withdrawn, pension contribution allowances, the personal savings allowance, the maximum income for eligibility to 'tax-free childcare' and an extra 15 hours per week of childcare, the child benefit taper, the benefit cap and the maximum earnings for free school meals eligibility in UC have all been introduced since 2010 and all are by default frozen. Over the same period, we have also seen some very important time-limited (but long) freezes, including the four-year freeze to income tax and NICs thresholds we are in the midst of, and a four-year freeze to most working-age benefits between 2015–16 and 2019–20. This is lazy policymaking.

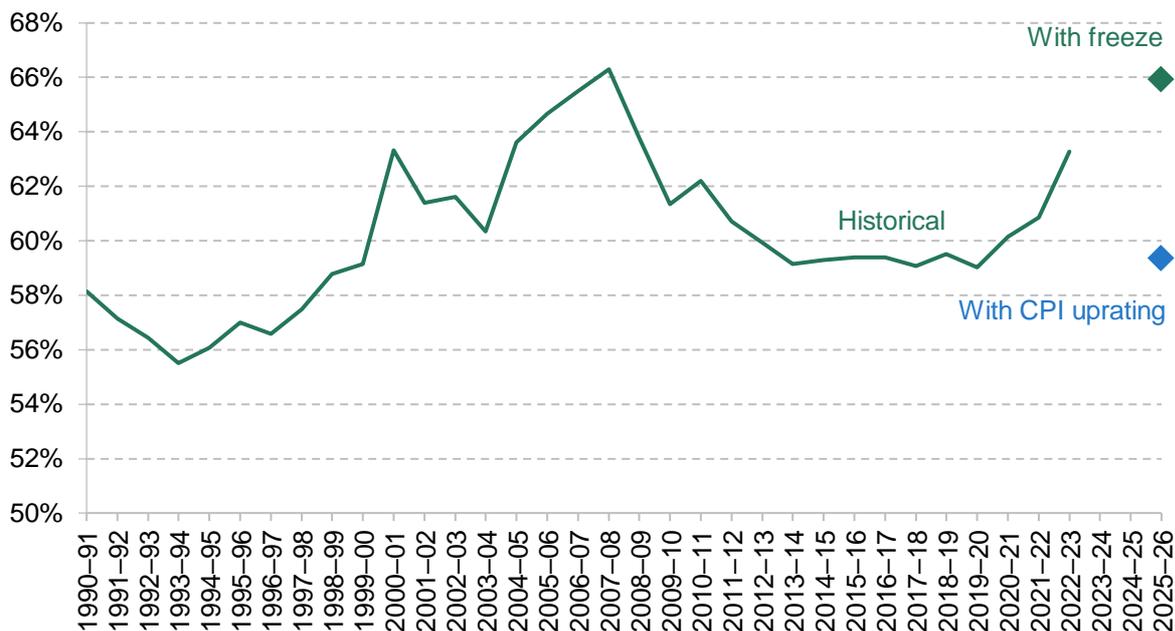
Income tax thresholds

In 2022–23, no income tax is paid on the first £12,570 of income (the personal allowance); a 20% rate is applied on the portion up to £50,270 (the higher-rate threshold); a 40% rate on the portion up to £150,000 (the additional-rate threshold); and a 45% rate above that. In addition, £1 of personal allowance is withdrawn for every £2 of income above £100,000 – with the effect that those with incomes between £100,000 and £125,140 face a marginal income tax rate of 60%.

The personal allowance and higher-rate thresholds usually go up annually with CPI, but are currently frozen at their 2021–22 level, where they are due to remain for three more years until March 2026. The additional-rate threshold and personal allowance withdrawal threshold have been frozen since their introduction in 2010–11, and both will, on current policy, be frozen indefinitely. On the August Bank of England forecasts, this means that in 2025–26 the value of the personal allowance, higher-rate threshold, personal allowance withdrawal threshold and additional-rate threshold will be 19% lower than today, and hence, in current prices, £10,168, £40,664, £80,889 and £121,333 respectively. In the decade prior to the freezing of the personal allowance and higher-rate threshold, we saw a number of discretionary changes to both parameters. The personal allowance had been significantly increased, and so even after the four-year freeze will still be higher in real terms than it was in 2010–11 (£10,168 versus £8,356). The higher-rate threshold, however, was subject to a number of nominal cuts in the first half of the 2010s, then above-inflation increases in the second half. The net effect is that by 2025–26 the higher-rate threshold will be considerably lower in real terms than it was in 2010–11 (£40,664 versus £56,619).

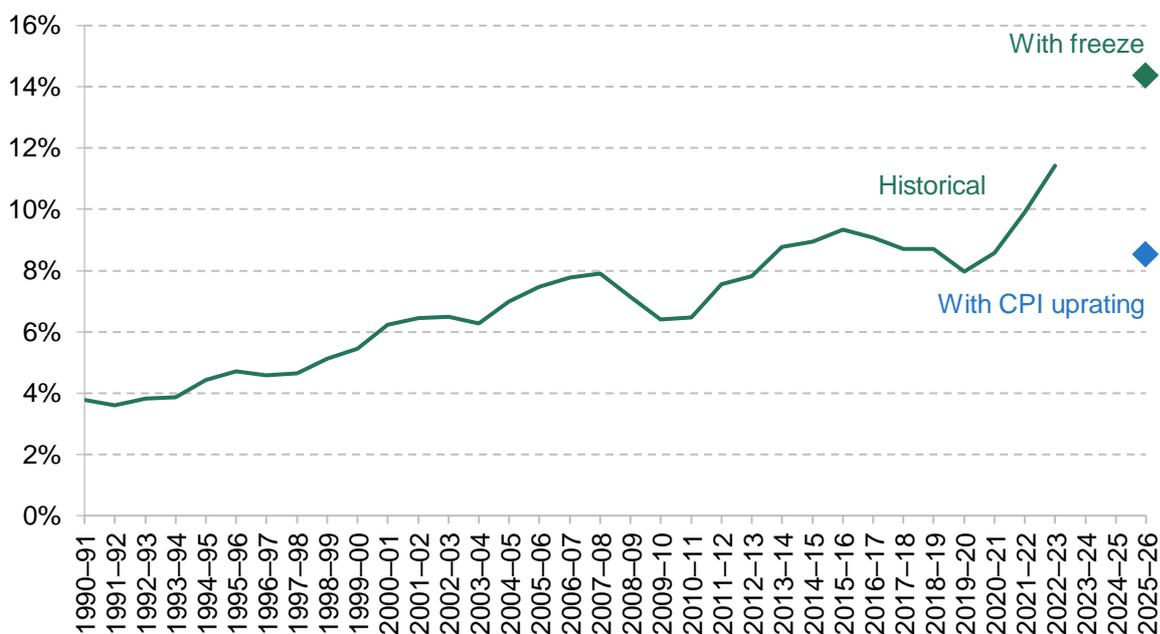
The impact of these freezes to income tax thresholds will be to increase steadily the number of income tax payers, as well as the number paying higher rates of income tax – an example of what is known as ‘fiscal drag’. This is illustrated in Figures 5.1 and 5.2, which show the share of adults paying any income tax, and paying higher-rate tax, over time respectively. The diamonds show how those shares are expected to change under current policy (freezing the thresholds) and how they would change if there had been no income tax freeze. By 2025–26, the share of adults paying any income tax is expected to be 66% (35 million), compared with 63% today (34 million), and around the highest level on record. If the personal allowance had gone up in line with inflation, only 59% (32 million) would be projected to pay income tax in 2025–26 – reflecting the fact that earnings are expected to grow more slowly than prices. The share of adults paying higher-rate tax is expected to increase to 14% (7.7 million), compared with 11% today (6.1 million). This is over double the proportion in 2009–10, and almost four times that in 1990. It is also above the 9% (4.6 million) that would be expected if the higher-rate threshold had gone up in line with inflation.

Figure 5.1. Number of income tax payers, as a share of adults



Source: HM Revenue and Customs, 2022. Authors' calculations using inflation and earnings forecasts from Bank of England (2022), Family Resources Survey 2019-20 and TAXBEN, the IFS tax and benefit microsimulation model.

Figure 5.2. Number of higher-rate taxpayers, as a share of adults



Source: HM Revenue and Customs, 2022. Authors' calculations using inflation and earnings forecasts from Bank of England (2022), Family Resources Survey 2019-20 and TAXBEN, the IFS tax and benefit microsimulation model.

Freezing these parameters also increases the tax liabilities of those who are already taxpayers. By 2025–26, the four-year freeze to the personal allowance will be costing the typical basic-rate taxpayer £500 per year in today’s prices, while the freezes to both the personal allowance and higher-rate threshold will cost typical higher-rate taxpayers around £3,000 per year.

These numbers all go up when inflation increases, so while the four-year freeze to the personal allowance and higher-rate threshold was expected to raise £8 billion per year when it was announced, it is now expected to raise £30 billion per year.⁵ Larger numbers of people will be paying higher rates of tax than the government expected when the policy was decided, purely because inflation has increased more than forecast.

The share of adults paying additional-rate tax has more than doubled from 0.5% (240,000) in 2010–11 (when the additional rate was introduced) to 1.2% (630,000) in 2022–23. Had the additional-rate threshold been indexed to CPI, we estimate that only 0.7% of adults (390,000) would be paying additional-rate tax today, meaning that 240,000 have been dragged into additional-rate tax because of the freeze. If it continues to be frozen (as is current policy) then by 2025–26, 1.4% of adults (760,000) will be additional-rate taxpayers.

The freezing of the threshold at which the personal allowance begins to be withdrawn (£100,000) has taken place over the same period. At its introduction in 2010–11, 1.0% of adults (530,000) had at least some of their personal allowance withdrawn because their income was over £100,000. That figure now stands at 2.4% (1.3 million), but we estimate it would have been just 1.3% (710,000) if the threshold had been indexed to CPI. If, as current policy implies, it continues to be frozen, by 2025–26 3.0% of adults (1.6 million) will have at least some of their personal allowance withdrawn.⁶ That is three times more families being affected than when it was implemented by the last Labour government in April 2010.

It would be sensible to index all tax thresholds to the same series (say, CPI or average earnings). The current practice of freezing some indefinitely and by default increasing others with prices means that, without any deliberate policy intention, the shape of the tax system changes over time. For example, the size of the 40p band of income tax (between the higher- and additional-rate thresholds) has slowly declined over time, as the higher rate usually goes up with prices, and the additional rate has never changed. Moreover, freezing thresholds changes the level of real income one needs to be subject to a certain rate of tax. For example, someone who in 2010–11

⁵ This estimate is of the annual amount raised after four years of freezes. It includes the freezing of the National Insurance upper earnings limit (UEL), which is usually aligned with the income tax higher-rate threshold, but does not include the National Insurance primary threshold freeze, which was announced later on. Elsewhere in the chapter, costings of the time-limited tax freezes include the National Insurance primary threshold freeze, but do not include the first year of the income tax and UEL freeze, which has already occurred.

⁶ The figures in this paragraph and the previous one are derived from HMRC, Survey of Personal Incomes, 2010–11 and 2018–19, and HMRC, ‘Income tax liabilities statistics’.

had an income of £100,000 was not deemed high-income enough to lose any of their personal allowance. But someone with the same real income today (£129,047 in today's prices) is deemed sufficiently high-income to lose their *entire* personal allowance. This change is not because of an explicit choice about redistribution, but just because the point at which the personal allowance is withdrawn has been frozen.

Child benefit taper thresholds

The high-income child benefit tax charge, introduced in January 2013, means that child benefit is tapered away for families whose highest-income partner has an annual income above £50,000. For every £100 of that individual's income above £50,000, child benefit entitlement falls by 1%. This means that if the higher-income partner's income is below £60,000, then the family is eligible for a partial payment, whereas if income is at or above this amount, the family is not eligible for child benefit.⁷ These thresholds are frozen in nominal terms, meaning that every year more families lose eligibility for some or all of their child benefit. At the time the policy was announced, 13% of families with children (1 million) lost some or all of their child benefit (Emmerson, Joyce and Waters, 2019). As a result of the freeze, we calculate the figure is now 26% (2 million families), and this is set to rise to 31% (2.5 million) in 2025–26 if the freeze continues. So by 2025–26, two-and-a-half times as many families will lose some or all of their child benefit as when the policy was first introduced.

Notably, when the policy was initially proposed, the point at which child benefit was due to be tapered was set to be linked to the higher-rate threshold – then £43,875.⁸ However, when it was actually introduced, the tapering threshold was raised to £50,000 – i.e. more generous than the originally mooted policy. But now the higher-rate threshold is above £50,000, this change has in fact served to reduce eligibility – i.e. there are now some families with children that do not contain a higher-rate taxpayer who are not entitled to full child benefit.

One effect of tapering away child benefit is an oddly shaped marginal tax rate schedule, which jumps up in the range where child benefit is withdrawn, then jumps back down again, illustrated by the solid lines in Figure 5.3. An employee with two children faces a marginal tax rate (including employee NICs) of 32% if they earn just under £50,000. This rises to 60.9% at a little over £50,000 when they begin to pay higher-rate tax and start to lose their child benefit, before falling to 42% when their earnings reach £60,000, by which time they have lost all child benefit

⁷ More precisely, all families are still eligible to receive the full amount, but some must pay some or all of it back in the form of an income tax charge, depending on their income.

⁸ <https://www.theguardian.com/politics/2010/oct/04/george-osborne-speech-conservative-conference>.

entitlement.⁹ For those with more children, the jump is even more stark, as they have more child benefit to lose.

Figure 5.3. Marginal tax rates by number of children



Note: Marginal tax rate for a single earner, or the higher earner in a couple, excluding all benefits other than child benefit. Employer NICs and the 2022 National Insurance rise (to be reversed) are also excluded.

Source: Authors' calculations.

Moreover, a consequence of freezing the taper thresholds is that the size of the jump in marginal tax rates increases over time, illustrated by the dashed lines in the figure. This is because while the range over which child benefit is withdrawn is frozen, the value of child benefit is not, so the amount of benefit withdrawn with each additional £1 of earnings increases. For example, currently child benefit for two children is £1,885, so an individual with two children on the taper who earns an extra £100 loses £18.85 (1% of the benefit). But in 2025–26 the child benefit rate for the first child is set to rise to £2,330, so earning an extra £100 results in a child benefit loss of £23.30. Because of this effect, by 2025–26 the worker with two children is due to see a marginal tax rate in the hump of the schedule of 65.37%. At the same time, as is also visible in the figure,

⁹ This hump only exists for workers who have no partner, or whose partner has an income below theirs. The numbers in this paragraph are for November 2022, when the recent NICs rise has ended.

freezing the thresholds means that the withdrawal of child benefit will affect people in a lower and narrower range of real earnings over time. It is difficult to think of a reason why the marginal tax rate schedule should be hump-shaped in this way, and even harder to imagine why the size of the hump should by default get higher and move down the real income distribution every year.

Benefit cap

The benefit cap limits the total amount of benefits a working-age family can claim, with some exceptions (principally those in work, those who have recently been in work and those with disabilities). It was introduced in 2013, cut in 2016, and has been frozen since. The current amounts are £20,000 per year for couples and lone parents, and £13,400 per year for single adults (higher amounts apply in London, which are also frozen; we focus here on the non-London caps).

At the time of the 2016 cut, the value of the benefit cap was, in today's prices, £22,435 for couples and lone parents, and £15,032 for single adults. By 2025–26, the values are set to have been eroded to just £16,178 and £10,839 (in today's prices) by inflation. This amounts to a 28% real cut since 2016.

When the cap was introduced in 2013, only about 25,000 families had their benefit capped. That increased to around 70,000 following the 2016 cut, and as of February 2022 stands at 120,000 (Department for Work and Pensions, 2022a). These families lose out on £3,150 per year on average due to the cap, or 14% of what their income would be if there were no cap, so the impact is significant for affected families. As inflation erodes the value of the cap further, while the basic benefit amounts are largely indexed to inflation, more and more families will be affected by the cap over time, reaching around a quarter of a million by 2025–26.¹⁰ This is ten times as many as when the benefit cap was introduced, and three-and-a-half times as many as when it was last actively reformed in 2016.

For families that are capped, the freeze means that the amount lost because of the cap increases in real terms over time. Whatever the merits of the cap in principle, it is difficult to see why it should be frozen – or indeed indexed to anything other than what the basic benefit amounts are indexed to. The current approach means that over time the cap has a bigger and bigger impact, and the amount of real support the benefit system offers to out-of-work families falls – with the size of these effects not determined by any deliberate policy choice, but just by the vagaries of inflation.

¹⁰ This projection is based on a simulation using TAXBEN, the IFS tax and benefit microsimulation model, combined with official statistics on the cap's impact at present. The sample of capped families in the Family Resources Survey, which TAXBEN uses, is small, increasing the uncertainty around this estimate.

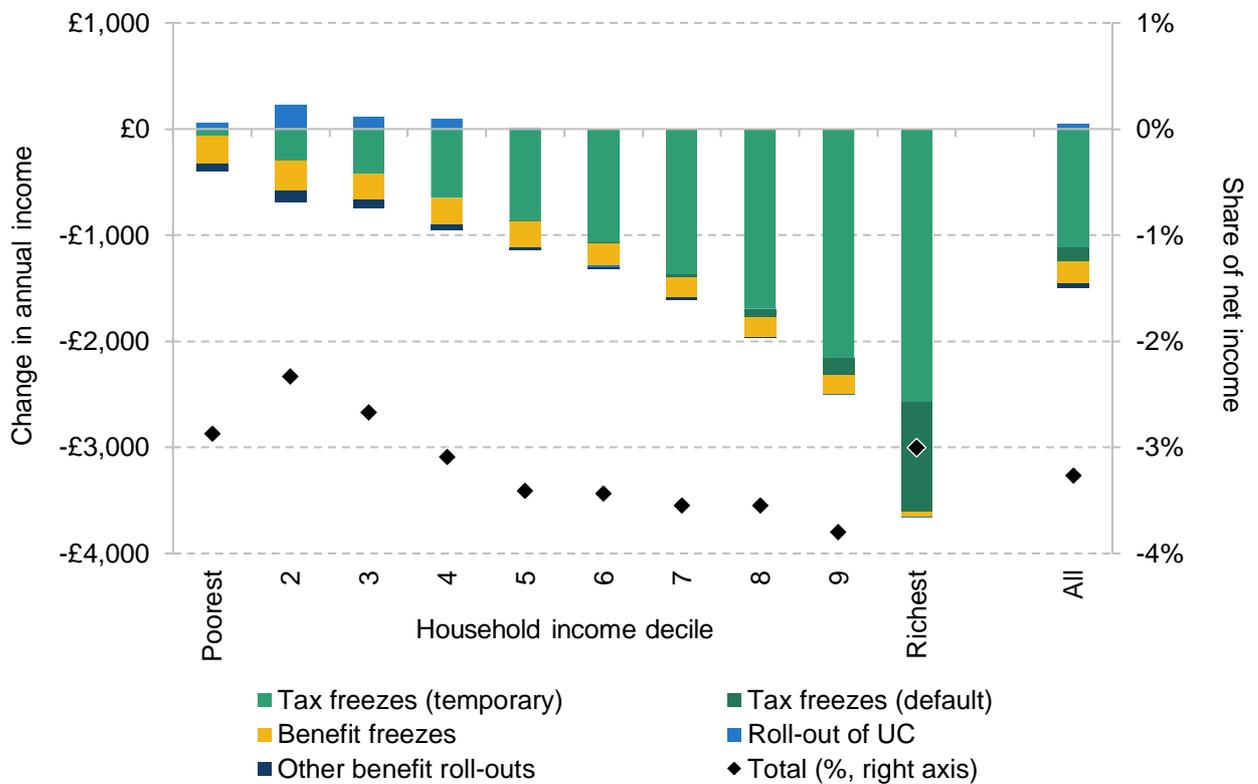
5.3 Distributional effects

We now turn to the full set of reforms detailed in Section 5.1. In this section, we model the impact of freezes of taxes and benefits (both those that are indefinitely frozen and those that are frozen for a set period), and the roll-outs of UC and other benefit policies. We simulate the effects in 2025–26 – the final year of the income tax and NICs threshold freezes – and 2030–31. We will then see how these compare against the planned big discretionary reforms to personal taxes – the reversal of the introduction of the health and social care levy, and the 1p reduction in the basic rate of income tax. Table 5A.1 in the appendix summarises the fiscal implications of these reforms.

Freezes and roll-outs to 2025–26

First, Figure 5.4 shows how freezes and policy roll-outs between now and 2025–26 would affect household incomes if no discretionary policy changes were made (i.e. if the two reforms to NICs and income tax listed above were not implemented). The combined impact is to reduce average incomes by 3.3% or £1,450, saving the exchequer £41 billion. The impact is broadly progressive, as poorer households see smaller proportional income falls than richer households.

Figure 5.4. Changes in income by decile: freezes and roll-outs to 2025–26



Source: Authors’ calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

The main driver of this reduction in incomes, overall and for all but the poorest 20% of households, is freezes to tax thresholds. These will cost the highest-income tenth of households £3,610 per year on average by 2025–26, compared with just £57 for the poorest tenth, who are much less likely to be in work and/or paying income tax. Of the average tax rise of £1,250 per household, the remaining three years of freezes to income tax and National Insurance thresholds account for £1,120. These are labelled ‘temporary’ in the figure because the freeze is time-limited, but of course their impact is permanent, since once the freezes expire the thresholds will only be uprated by annual inflation thereafter, meaning three years of growth will have been permanently lost. The indefinite freezes to other tax parameters fall disproportionately on the richest 10% of households.

Freezes to benefits have a much smaller effect than freezes to taxes, costing the average household £210 per year (and saving the exchequer £6 billion). This means that the indefinite tax and benefit freezes, which occur without any deliberate intervention, will reduce household incomes and strengthen the public finances by £10 billion per year by 2025–26. In a typical year of 2% CPI growth, this figure grows by around a further £1 billion, and will continue to do so beyond 2025–26 for as long as these freezes continue. The freeze in the child benefit taper threshold is particularly felt in the top half of the distribution, accounting for an average drop in income of £64 per year for this group. But the majority of benefit parameter freezes primarily affect lower-income households, with the poorest 10% losing out by £275 per year on average, or 2.3% of their income.

We turn now to gradual policy roll-outs. The assumptions we use about these roll-outs are discussed in Box 5.1.

The overall effect of these roll-outs is small compared with that of freezes, and on average they boost incomes for most of the bottom half of the distribution. This is entirely accounted for by the roll-out of universal credit. Following recent reductions in UC’s taper rate and increases in its work allowances, UC is now on average more generous than the legacy system. Moreover, some of those who are moved to UC receive transitional protection, meaning that if they would receive less under UC than under the legacy system, they continue to receive their legacy entitlement.¹¹ The roll-out of UC more than offsets the various other policy roll-outs detailed in Section 5.1, such as the ‘two-child limit’ and removal of the family premium, increasing incomes for the poorest half of households by an average of £98 per year. The top half of the distribution are barely affected at all by policy roll-outs.

¹¹ Transitional protection is withdrawn if the family has a change in circumstances. The legacy entitlement its UC entitlement is compared to is also frozen in nominal terms, meaning that as the value of UC rises with inflation, transitional protection is steadily eroded.

Box 5.1. Policy roll-out modelling assumptions

As discussed in Section 5.1, we model the roll-out of certain policies. This box briefly discusses the methodology we adopt for some of those roll-outs.

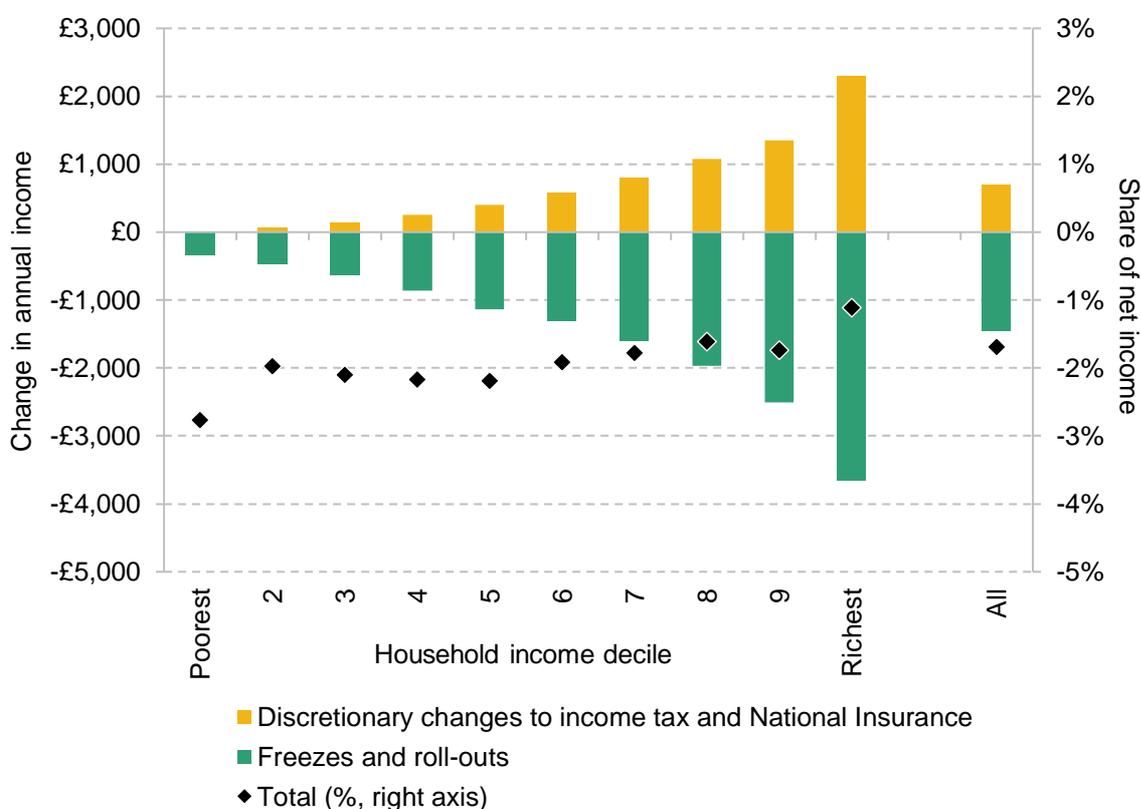
- **Replacement of the ‘legacy’ benefit system with universal credit.** In April 2022, there were 2.6 million claimants still on legacy benefits (Department for Work and Pensions, 2022b). To simulate the tax–benefit system under the scenario where the UC roll-out is halted, we take those who report receiving a legacy benefit in the 2019–20 FRS data, and randomly move some of them to UC in order to leave 2.6 million still on legacy benefits, with the composition (e.g. 1.2 million claimants of employment and support allowance) reported in Department for Work and Pensions (2022b). Current plans are for no families to be left on legacy benefits in 2025–26, but some will still be in receipt of transitional protection, which (in the short run) gives them what they would have received under the legacy system. Based on figures from Department for Work and Pensions (2022b) and Office for Budget Responsibility (2018b), we very roughly estimate that 270,000 will still have transitional protection in 2025–26. To simulate incomes in 2025–26, we approximate transitional protection by randomly awarding 270,000 legacy-benefits-receiving families, who would be worse off under UC, their legacy entitlement. This is an imperfect approximation as precisely when the family moves affects the transitional protection it receives; in particular, those who transition in April 2023 – immediately after benefits rates have significantly increased – will receive much more protection than those who transition in March 2023. When simulating 2030–31 incomes, we assume that transitional protection has expired for all families.
 - **Abolition of work-related activity premium in employment and support allowance and the equivalent in universal credit.** Around 160,000 claimants received the premium in November 2021 (DWP Stat-Xplore). The final policy costing (HM Treasury, 2017, table 2.2) suggests that by 2021–22 the number of claimants with the premium would fall by around 16,000 per year. We assume this rate of change continues to hold going forward, and in accordance randomly remove the premium from those observed receiving it when simulating incomes.
 - **Ending entitlement to pension-age benefits for ‘mixed-age couples’.** Department for Work and Pensions (2019) suggests that the number of mixed-age couples receiving pension-age benefits will fall by 10,000 per year. When simulating future years’ incomes, we randomly move such couples observed claiming these benefits onto UC in accordance with this rate of change.
-

The distribution of impacts across household types is shown in Figure 5A.1 in the appendix. On average, all household types experience income falls of between 3% and 4%. Families with children are particularly hit by benefits freezes, especially lone parents for whom benefits freezes reduce their income by £760 per year, or 2.8% of their income. Freezes in the child benefit taper rates cause couples with children to lose out on £210 per year, whilst lone parents lose on average £33 from this freeze. Income falls for those without children are more driven by tax freezes.

Discretionary tax changes to 2025–26

In addition to these roll-outs and freezes, two significant discretionary personal tax reforms have been announced. The new Chancellor has announced a plan to reduce the recent NICs rise and scrap the associated health and social care levy, and to cut the basic rate of income tax by 1p in April 2023 (bringing forward by one year a reform announced by the then Chancellor, Rishi Sunak, in March 2022). The proposal to abolish the additional rate of income tax, which would have been a large giveaway to the very richest households, is not included in our analysis given its abandonment on 3 October.

Figure 5.5. Changes in income by decile: freezes, roll-outs and planned discretionary tax changes to 2025–26



Source: Authors' calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

The impact of these changes is shown in Figure 5.5. We show them together as they affect households in roughly similar ways. Together these reforms increase income by £700 per year for an average household. Both changes are regressive, as higher-income households get more of their income from employment. As a consequence, while the richest 10% of households will benefit by £2,290 per year on average, the poorest will benefit by just £13.

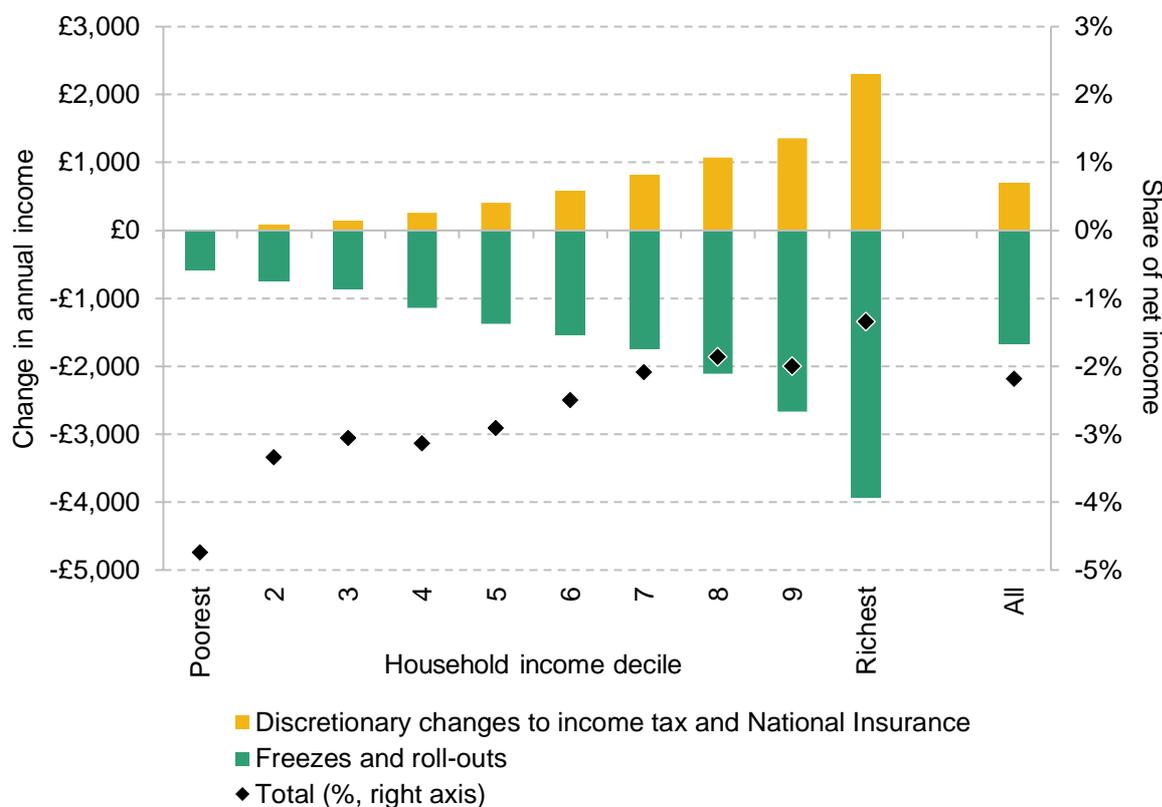
Combined with the freezes and policy roll-outs already discussed, the combined impact of all changes to the tax and benefit system by 2025–26 is broadly regressive. On average, the effect is a drop in income of £750 or 1.7%. It is worth noting that neither in the aggregate, nor for any income decile, do the explicit discretionary policy changes outweigh the impact of gradual roll-outs and freezes. In total, the roll-outs and freezes will reduce household incomes (and strengthen the public finances) by £41 billion in aggregate in 2025–26, only half of which is offset by the discretionary tax changes.

Changes to 2030–31

After 2025–26 the income tax and NICs freezes are due to end, but the indefinite freezes will of course continue to shape the tax and benefit system, steadily eroding the value of benefits and increasing taxes. The benefits policy roll-outs will also continue. This subsection illustrates how these effects will grow over time by evaluating the impact of adding an additional five years of freezes and roll-outs (which largely complete over this time), combined with the planned changes to the tax system.

Figure 5.6 repeats the analysis in Figure 5.5, but considers the impact in 2030–31 instead. The combined impact of the freezes, roll-outs and discretionary changes to the tax system is a 2.2% reduction in income for an average household, compared with a 1.7% reduction in 2025–26. The pattern across the distribution is more strongly regressive, with the poorest tenth of households losing 4.7% of their income and the richest tenth losing only 1.3%. The key reason for this is that the indefinite freezes to benefits are more significant than the indefinite freezes to taxes – the benefits takeaway rises from £6 billion to £9 billion from 2025–26 to 2030–31, whereas the tax takeaway rises from £4 billion to £5 billion – and so in total the indefinite freezes tend to affect poorer households more than richer ones. The removal of transitional protection in UC, and the roll-out of the other benefits policies, also reduce incomes for poorer households. In total, the freezes and policy roll-outs reduce incomes and strengthen the public finances by £47 billion by 2030–31, of which £20 billion is offset by the two discretionary tax policies.

Figure 5.6. Changes in income by decile, freezes, roll-outs and planned discretionary tax changes to 2030–31



Source: Authors' calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

5.4 Policy recommendations

We now briefly turn to some assessment and policy recommendations based upon the analysis thus far. Our focus here is on freezes and uprating rules.

Freezes and policy design

The large role of freezes in the tax and benefit system is concerning for several reasons. The first is that freezes are hidden and stealthy. They allow the size and shape of the system to change unnoticed, with the government taking more in taxes and giving less in benefits over time, despite the fact that the explicit policy changes planned are giveaways. For example, each year the benefit cap means that the real maximum value of benefits affected families can get declines, and more families are affected – but without any explicit intention to this effect. And the real level of earnings one needs to earn to lose the personal allowance declines – again, not because of a publicised and intended reform to this effect, but because prices rise while the threshold is frozen. This cannot do much good for transparency and the public debate.

The second reason is that the real impacts of freezes are uncertain. By relying on inflation to discreetly raise revenues and reduce expenditure rather than uprating all parameters by a sensible index, the size and shape of the tax and benefit system are subject to the vagaries of inflation, rather than deliberate choices by policymakers. This is illustrated by the rapid rise in inflation over recent months. Freezes are set to have a far larger effect than was expected a year or so ago. Millions are set to start paying taxes, or pay the higher rate, not by design, but because inflation has been so unexpectedly high. Higher inflation also means that the outlook for inflation is now more uncertain.

Third, freezing also tends to lead to *policy* uncertainty. Frozen parameters generally cannot realistically last forever. For example, the steady growth of nominal earnings means that more and more people will see their personal allowance tapered away, with no inbuilt limit to this process. It is unlikely that any government would accept such a consequence, and so one day the tapering of the personal allowance will have to be reformed. But when this happens is uncertain, as is the magnitude of any reform. Correcting for the unwelcome effects of freezes thus leads to unexpected lurches in policy.

Policy recommendations

In view of this, we offer three recommendations, some of which we have touched on above.

First, the government should by default index all tax–benefit parameters to a well-chosen index. There is no good case for the nominal value of these parameters staying fixed for long periods of time. Moreover, even deliberately chosen time-limited freezes beyond a year or so are generally unwise: as seen in the case of income tax and NICs freezes, swings in inflation mean that the size of the takeaway can change vastly from what was intended. If the government wants to raise taxes or cut benefits, it should decide what real value it thinks the parameter in question should be, and not let it be unpredictably buffeted around by inflation.

Governments have of course turned to freezes for a reason – to raise tax revenue or reduce benefit expenditure. There is an understandable rationale here – freezes allow the maximum improvement in the government’s fiscal position without inducing a nominal cash loss for households, which households may strongly object to. But even for a government that does not want to induce nominal losses, there is a way forward: it can specify the change in a threshold or value *relative* to inflation (or some other index). For example, the government could state that the personal allowance should increase by CPI minus 2% for each of the next three years. It could add that if CPI is below 2% then the personal allowance will be frozen rather than

nominally cut, and the cut will be applied in a later year where CPI is above 2%.¹² This approach would allow the government to raise the tax burden (or reduce benefit spending) by as much as desired, with little uncertainty in the real impact of the policy on households, work incentives or the government's finances, and without inducing any nominal income losses.

Second, precisely which index is chosen people can reasonably disagree upon, but it seems that there are two logical extremes. On the one end, it is hard to think of a reason why a parameter should be uprated by less than inflation. A tax threshold that goes up by less than inflation means that higher tax rates will be applied to steadily poorer and poorer people. A benefit that goes up by less than inflation delivers a declining real purchasing power. On the other end, it is hard to think of a reason why a parameter should go up by more than average earnings¹³ (or perhaps GDP per capita¹⁴). A tax threshold that goes up by more than average earnings will tend to raise less and less revenue, eventually becoming irrelevant (at least so long as the base that it applies to goes up, in the long run, at approximately the same speed as average earnings). Spending on a benefit that goes up by more than average earnings will take up a steadily growing part of national income, eventually becoming unsustainable. This is in fact the case with the state pension, which grows at the fastest of earnings growth, inflation and 2.5% (the 'triple lock'). This uprating rule should be ended.

A relevant political economy consideration here is that it is generally easier for governments to (discretionarily) cut taxes and raise benefits than to do the reverse. This potentially creates a danger when combined with a default uprating rule of earnings. To a first approximation, earnings uprating means that tax revenue and benefit expenditure remain constant as a share of national income. If discretionary reforms on average cut taxes and raise benefits relative to default uprating rules, that means there will be a tendency for tax revenue to make up a steadily declining share of national income and benefits a steadily increasing share. Price uprating allows governments to announce giveaways more often than takeaways without putting fiscal sustainability in jeopardy.

More generally, whether a government chooses price uprating, earnings uprating, or something in between, depends upon its political priorities. For example, a government that is concerned about relative poverty, and so wants the living standards of benefit claimants to keep up with

¹² To be precise – suppose that inflation was 1% in the first year of this policy and 4% in the second year. The personal allowance would be frozen in the first year (as inflation is below 2%), and then go up by $4\% - 2\% - 1\% = 1\%$ in the second year.

¹³ There are some cases where it might make sense for a parameter to grow by prices when inflation outstrips earnings growth, but only temporarily, with the effect eventually undone – see the 'smoothed earnings link' discussed in Hood (2017).

¹⁴ Nominal GDP per capita is probably a better measure, as it incorporates unearned sources of income (which of course still form part of national income) and, unlike average earnings, is not affected by 'composition effects' of, for example, low-income workers becoming unemployed and thus raising average earnings among those still in work.

those of the rest of society, might uprate benefits by earnings; a government that is primarily concerned about absolute poverty might choose prices. One option the government should stay away from, however, is RPI uprating (the default uprating rules for duties). RPI is not a National Statistic, and CPI is a superior measure of inflation.

Third, there should be an internal coherence to uprating rules. Uprating, for example, the income tax higher-rate threshold by prices but freezing the point at which the personal allowance is withdrawn means that the former gets steadily closer to the latter, changing (without deliberate policymaker intervention) the shape of the marginal tax rate system. The same problem would occur if the higher-rate threshold went up with average earnings but the personal allowance withdrawal threshold went up with prices. Similarly, the benefit cap should be indexed to the same series as basic benefit entitlements. Uprating the latter by more than the former means that the cap bites more and more over time, as (pre-cap) benefit entitlements grow relative to the cap. The government does not have to choose the same uprating rule for all parameters, but within one part of the system (e.g. income tax) the strong presumption should be for the same index to be used across the board.

5.5 Conclusion

Planned discretionary reforms to taxes are returning money to households, with the richest gaining the most. But at the same time, freezes to tax and benefit parameters are significantly and stealthily changing the scope and size of taxes and benefits over time. As prices increase, they drag more people into the tax system and into higher rates of tax, increasing the tax burden, while eroding the value of benefits and reducing the number of people eligible.

The magnitude of these subtle changes should not be understated, as they more than cancel out the impact of the two high-profile explicit policy reforms – the planned cuts to the rates of National Insurance and income tax. For every £1 households on average will gain from these planned tax cuts in 2025–26, they will lose £2 as a result of policy roll-outs and freezes to tax and benefit parameters. Overall, the progressive effect of freezes and policy roll-outs is more than outweighed by the impact of the discretionary tax changes, making the combined impact of changes to the system broadly regressive.

The government should by default index all tax–benefit parameters to a well-chosen index, and it should avoid long freezes, ideally never announcing a freeze that runs for more than one year hence. That there appears to be an increasing trend of introducing new parameters to the system that are by default frozen, and a greater tendency to use time-limited (but quite long) freezes to existing parameters, smacks of lazy policymaking and is concerning. The government should

kick this habit. If it wants to raise taxes or cut benefits, it should tell us what real value it thinks the parameter in question should be, and not let it be unpredictably buffeted around by inflation.

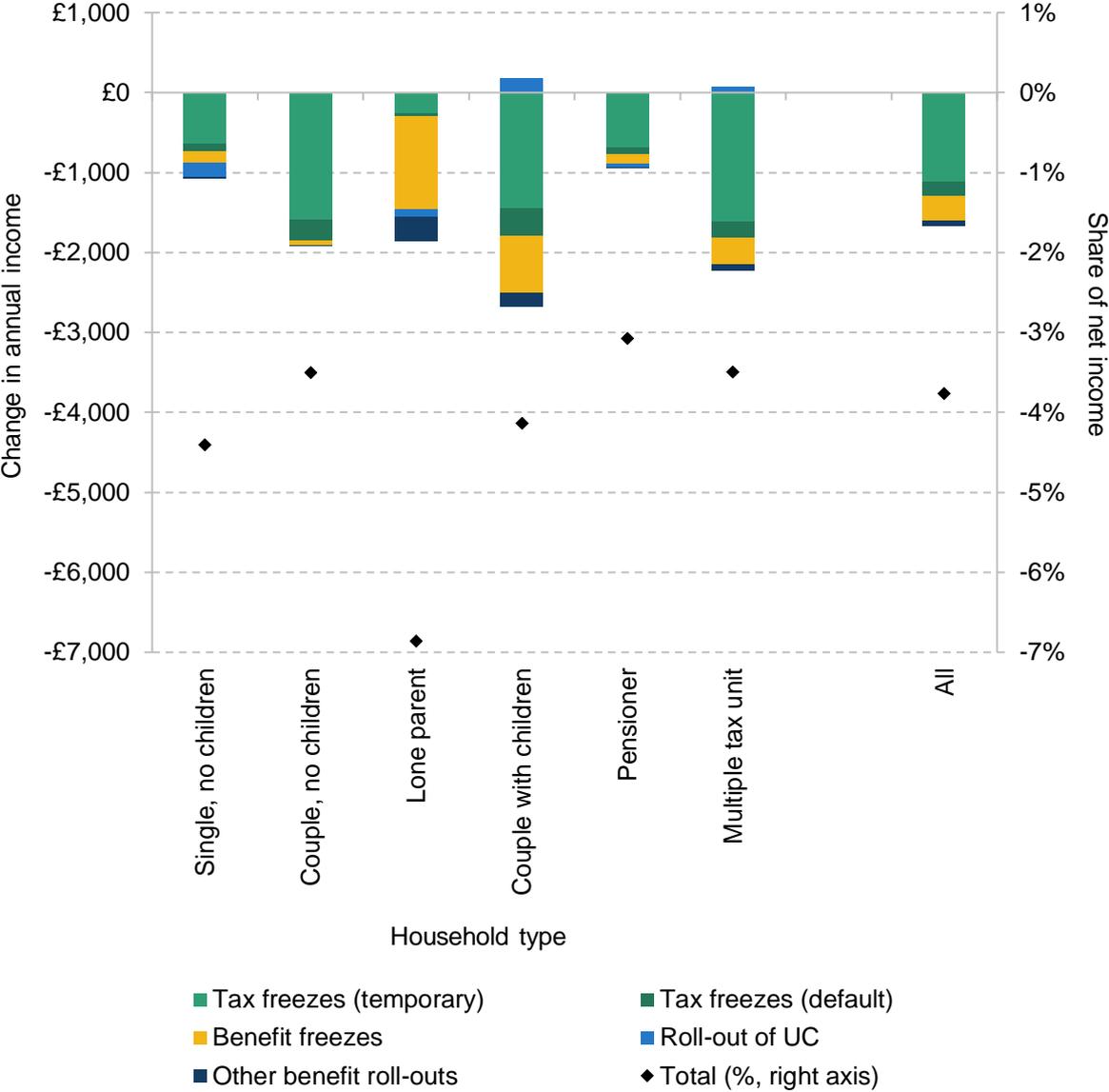
Appendix

Figure 5A.1. Changes in income by household type: freezes and roll-outs to 2025–26



Source: Authors' calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

Figure 5A.2. Changes in income by household type, freezes and roll-outs to 2030–31



Source: Authors' calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

Table 5A.1. Exchequer impact of policy measures

£ billion	2025–26	2030–31
Tax freezes (temporary)	31	31
Tax freezes (default)	4	5
Benefit freezes	6	9
Roll-out of universal credit	–1	0
Other benefit roll-outs	1	2
<i>Sub-total</i>	<i>41</i>	<i>47</i>
Discretionary changes to income tax and National Insurance	–20	–20
<i>Total</i>	<i>21</i>	<i>27</i>

Note: We have not included a reversal of the public sector offset in the calculation of the impact of the reversal of the health and social care levy.

Source: Authors' calculations using the FRS 2019–20 and TAXBEN, the IFS tax and benefit microsimulation model.

References

- Adam, S. and Johnson, P., 2019. Dragging people into higher rates of tax. Institute for Fiscal Studies (IFS), Report, <https://ifs.org.uk/publications/dragging-people-higher-rates-tax>.
- Bank of England, 2022. Monetary Policy Report – August 2022. <https://www.bankofengland.co.uk/monetary-policy-report/2022/august-2022>.
- Brewer, M., Joyce, R., Waters, T. and Woods, J., 2019. Universal credit and its impact on household incomes: the long and the short of it. Institute for Fiscal Studies (IFS), Report, <https://ifs.org.uk/publications/universal-credit-and-its-impact-household-incomes-long-and-short-it>.
- Cribb, J. and Waters, T., 2019. Changes to pension credit rules for ‘mixed age couples’ mean a large number have to wait many years before they can claim. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/changes-pension-credit-rules-mixed-age-couples-mean-large-number-have-wait-many-years-they>.
- Department for Work and Pensions, 2015. Welfare Reform and Work Bill: impact assessment to remove the ESA work-related activity component and the UC limited capability for work element for new claims. <https://www.parliament.uk/globalassets/documents/impact-assessments/IA15-006B.pdf>.
- Department for Work and Pensions, 2019. Mixed age couples: benefit impacts of ending access to pension credit and pension age housing benefit. <https://www.gov.uk/government/publications/mixed-age-couples->

[benefit-impacts-of-ending-access-to-pension-credit-and-pension-age-housing-benefit/mixed-age-couples-benefit-impacts-of-ending-access-to-pension-credit-and-pension-age-housing-benefit](#).

Department for Work and Pensions, 2022a. Benefit cap: number of households capped to February 2022.

<https://www.gov.uk/government/statistics/benefit-cap-number-of-households-capped-to-february-2022/benefit-cap-number-of-households-capped-to-february-2022>.

Department for Work and Pensions, 2022b. Completing the move to universal credit.

<https://www.gov.uk/government/publications/completing-the-move-to-universal-credit/completing-the-move-to-universal-credit--2>.

Department for Work and Pensions & HM Revenue and Customs, 2022. Universal credit and child tax credit claimants: statistics related to the policy to provide support for a maximum of 2 children, April 2022.

<https://www.gov.uk/government/statistics/universal-credit-and-child-tax-credit-claimants-statistics-related-to-the-policy-to-provide-support-for-a-maximum-of-2-children-april-2022/universal-credit-and-child-tax-credit-claimants-statistics-related-to-the-policy-to-provide-support-for-a-maximum-of-2-children-april-2022>.

Emmerson, C., Joyce, R. and Waters, T., 2019. Stealthy changes mean that soon one in five families with children will be losing some child benefit. Institute for Fiscal Studies (IFS), Comment,

<https://ifs.org.uk/articles/stealthy-changes-mean-soon-one-five-families-children-will-be-losing-some-child-benefit>.

HM Revenue and Customs, 2022. Income tax statistics and distributions.

<https://www.gov.uk/government/collections/income-tax-statistics-and-distributions>.

HM Treasury, 2017. Spring Budget 2017. <https://www.gov.uk/government/publications/spring-budget-2017-documents>.

HM Treasury, 2021. Autumn Budget and Spending Review 2021: policy costings.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/102998/0/Policy_Costings_Document_FINAL.pdf.

Hood, A., 2017. A 'double lock' on the state pension would still be a bad idea. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/double-lock-state-pension-would-still-be-bad-idea>.

Joyce, R. and Waters, T., 2019. Benefit changes set to take effect during the next parliament. Institute for Fiscal Studies (IFS), Report, <https://ifs.org.uk/publications/benefit-changes-set-to-take-effect-during-next-parliament>.

Office for Budget Responsibility, 2018a. Economic and fiscal outlook – October 2018.

<https://obr.uk/efo/economic-fiscal-outlook-october-2018/>.

Office for Budget Responsibility, 2018b. Welfare trends report – January 2018. <https://obr.uk/wtr/welfare-trends-report-january-2018/>.

Waters, T., 2017. TAXBEN: the IFS tax and benefit microsimulation model. Institute for Fiscal Studies (IFS), Resource, <https://ifs.org.uk/publications/taxben-ifs-tax-and-benefit-microsimulation-model>.

Waters, T. and Wernham, T., 2021. Budget measures bring number of families entitled to universal credit to 7 million'. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/budget-measures-bring-number-families-entitled-universal-credit-7-million>.

Data

Department for Work and Pensions, National Centre for Social Research, Office for National Statistics. Social and Vital Statistics Division. (2021). Family Resources Survey, 2019-2020. [data collection]. Retrieved from <https://discover.ukdataservice.ac.uk/series/?sn=200017>.

6. Corporation tax and investment

Stuart Adam, Isaac Delestre and Vedanth Nair (IFS)

Key findings

1. **UK rates of corporate investment are among the lowest in the developed world.** In 2019 the UK had the lowest level of business investment in the G7 and the third-lowest in the OECD: 10.5% of GDP compared with an OECD average of 13.6%.
2. The UK's approach to taxing corporate investment is one of extremes. **The UK's headline corporation tax rate (19%) is one of the lowest of any advanced economy.** At the same time, however, **UK investment allowances are some of the least generous in the OECD.** As a result, effective tax rates in the UK (a measure that accounts for both the tax rate *and* the generosity of allowances) are middling by international standards.
3. Just as importantly, effective tax rates vary drastically between investments. **Investing in some assets is penalised much more than investing in others.** Meanwhile, **investments financed by borrowing can receive substantial subsidies**, encouraging firms to take on more debt and to invest in low-return projects that would otherwise be unviable.
4. **As inflation rises, these distortions are exacerbated**, increasing the premium on achieving genuine structural reform that rationalises the system and reduces such distortions.
5. Kwasi Kwarteng's dramatic September 'mini-Budget' announced the cancellation of a previously planned increase in the rate of corporation tax from 19% to 25%, a decision HM Treasury said would cost a substantial **£15 billion a year in forgone revenue** (in 2022–23 terms). Alongside this came a (more fiscally modest) **increase in the permanent level of the annual investment allowance (AIA), from £200,000 to £1 million**, allowing firms to deduct more of their investment spending from taxable profits immediately.

6. **Cutting the rate of corporation tax will reduce all of the distortions associated with the tax.** However, the tax reduction would be largest for more profitable investments: it would be less effective at reducing the tax on the borderline investments that are most likely to be discouraged by tax. While reducing the rate reduces the distortions to the level, allocation and financing of investment, unless it is reduced to zero, it cannot fully eliminate those distortions.
7. **Increasing the AIA**, meanwhile, is **more cost-effective as a way to encourage investment domestically** – it eliminates the disincentive for equity-financed investment in qualifying assets – though **not necessarily as a way to increase the UK's international competitiveness**. It **also increases subsidies for low-return investments funded by debt** – investments that come at a cost to the exchequer but do little for growth.
8. There is strong evidence that, all else being equal, such cuts to corporation tax would be expected to increase investment in the UK. But they will do so **only if they are expected to last**. Investment decisions are long-term by their nature and the current political environment – and a long history of policy instability – **will probably make it harder for the Chancellor to increase investment through the tax system** (at least in the short term).
9. While tax matters for investment, it is not all that matters. If interest rates are pushed upwards, or if the UK is seen as providing an unstable environment in which to do business, that **could easily outweigh any beneficial effects of lower corporation tax**. In other words, corporation tax changes need to be situated within a sensible and credible fiscal framework and broader policy environment if they are to be effective in boosting investment.
10. **Only genuine structural reform** of how investment is treated by the tax system – as opposed to tweaking individual features – **can eliminate distortions to the level, allocation and financing of investment**. There is more than one way to achieve this, but it must involve reforming the treatment of debt and equity finance as well as headline tax rates and capital allowances.
11. **What is needed is a coherent plan** for the future of corporation tax as part of a wider fiscal strategy, clearly communicated, that companies and investors can use as **a credible guide to what to expect in the future**. There are certainly improvements that could be made. Short of that, **some stability would be nice**.

6.1 Introduction

In front of the steps of 10 Downing Street, in her first statement after taking office as Prime Minister, Liz Truss set out a clear ambition to make use of the tax system to encourage business investment:

As Prime Minister, I will pursue three early priorities. Firstly, I will get Britain working again. I have a bold plan to grow the economy through tax cuts and reform. **I will cut taxes to reward hard work and boost business-led growth and investment.**

Prime Minister's Office, 2022 (emphasis added)

We have not had to wait long to see the policy tools that her government intends to use in pursuing this ambition. One of the centrepieces of Kwasi Kwarteng's dramatic September fiscal statement was the cancellation of a previously planned increase in the rate of corporation tax from 19% to 25%, a decision HM Treasury said would cost a substantial £15 billion a year in forgone revenue (in 2022–23 terms). Alongside this came a more fiscally modest increase in the permanent level of the annual investment allowance (AIA), from £200,000 to £1 million.

In this chapter, we look in detail at the incentives (and disincentives) that the corporation tax system creates for firms to invest, placing these incentives in the wider context of a level of UK business investment that is amongst the lowest in the developed world. We consider what effect corporation tax changes are likely to have on business investment in practice.

In particular, we consider how the UK's 19% corporation tax rate (extremely low by international standards) interacts with a set of investment allowances that are unusually ungenerous by international standards. To do this, we calculate *effective* tax rates for a range of example investments, analysing the biases and distortions that the current tax system creates between them. We then look at the difference that Mr Kwarteng's announcements make to these effective tax rates, and at what further reforms we might expect in the future.

The rest of the chapter proceeds as follows. In Section 6.2, we place the UK's investment performance in international and historical context. In Section 6.3, we provide an overview of the UK's current system of corporation tax and investment allowances and summarise the academic evidence on the responsiveness of private sector investment to changes in the tax system. In Section 6.4, we situate the UK's tax regime in its international context, comparing headline and effective rates of tax with those of other developed economies. In Section 6.5, we take stock of the current investment incentives in place in the UK, showing how effective tax rates on investment vary across investment classes and evaluating the likely impact of Mr

Kwarteng's recent corporation tax changes. Finally, in Section 6.6, we look towards the future of tax policy in this area, considering the possible implications of higher interest rates and inflation for investment incentives, and making the case for the structural reforms that would be required to place the UK's corporation tax on a more coherent footing. Section 6.7 concludes.

This chapter was finalised in the wake of the 'mini-Budget' delivered to the House of Commons by Kwasi Kwarteng on 23 September 2022. Since then, the main corporation tax announcement in the mini-Budget has been reversed and both Chancellor Kwarteng and Prime Minister Truss have resigned. These developments came too late to be integrated into the chapter before publication. A brief postscript, Section 6.8, acknowledges their implications.

6.2 Business investment in the UK

Annual business investment in the UK was about 9% of GDP or around £200 billion in 2021.¹ It is important to understand that this represents a measure of the *flow* of new investment that is being added to the total *stock* of corporate capital. Ultimately, it is the stock of capital – which is built up from investments over many years – that is a determinant in the output of the economy. Given that the stock of UK corporate capital stood at just over £2 trillion in 2020 (Office for National Statistics, 2021, table 2.1.1), it should be kept in mind that even a large proportional increase in annual investment would take a considerable period of time to be reflected in a significant growth in total capital (and therefore economic output).²

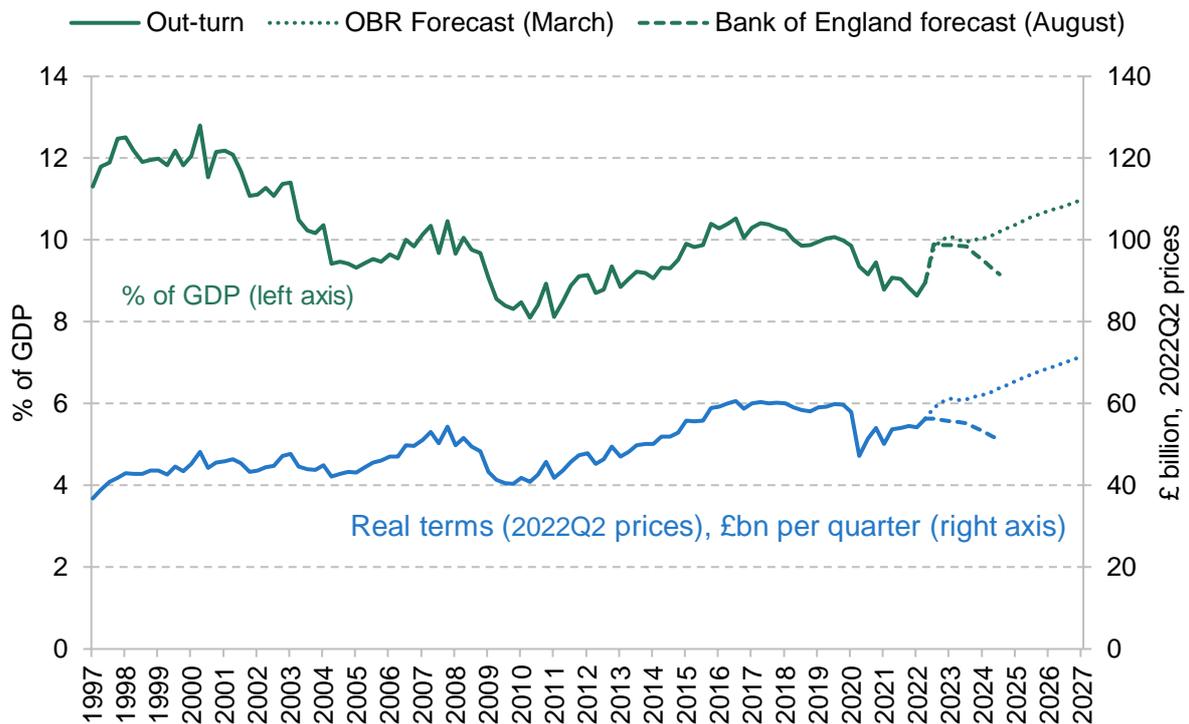
UK investment has followed a volatile path in recent decades, as Figure 6.1 illustrates. In the late 1990s corporate investment was consistently in the region of 12% of GDP, but by 2007 this had fallen to 10%. In the aftermath of the Financial Crisis, it fell yet further to around 8% of GDP in 2010, before gradually recovering to around 10% in 2016. After a few years of relative stability, the advent of the coronavirus pandemic marked a fresh decline in UK investment to around 9% of GDP, where it stands today.

Figure 6.1 also shows the latest published forecasts from the Office for Budget Responsibility (OBR) and the Bank of England. The Bank's forecasts are considerably lower than the OBR's, partly reflecting the fact that they are more recent – from August rather than March – and the economic outlook became less favourable for business investment in the intervening months.

¹ See Figure 6.1 for source.

² For further discussion of this point, see Wilkes (2022).

Figure 6.1. UK business investment

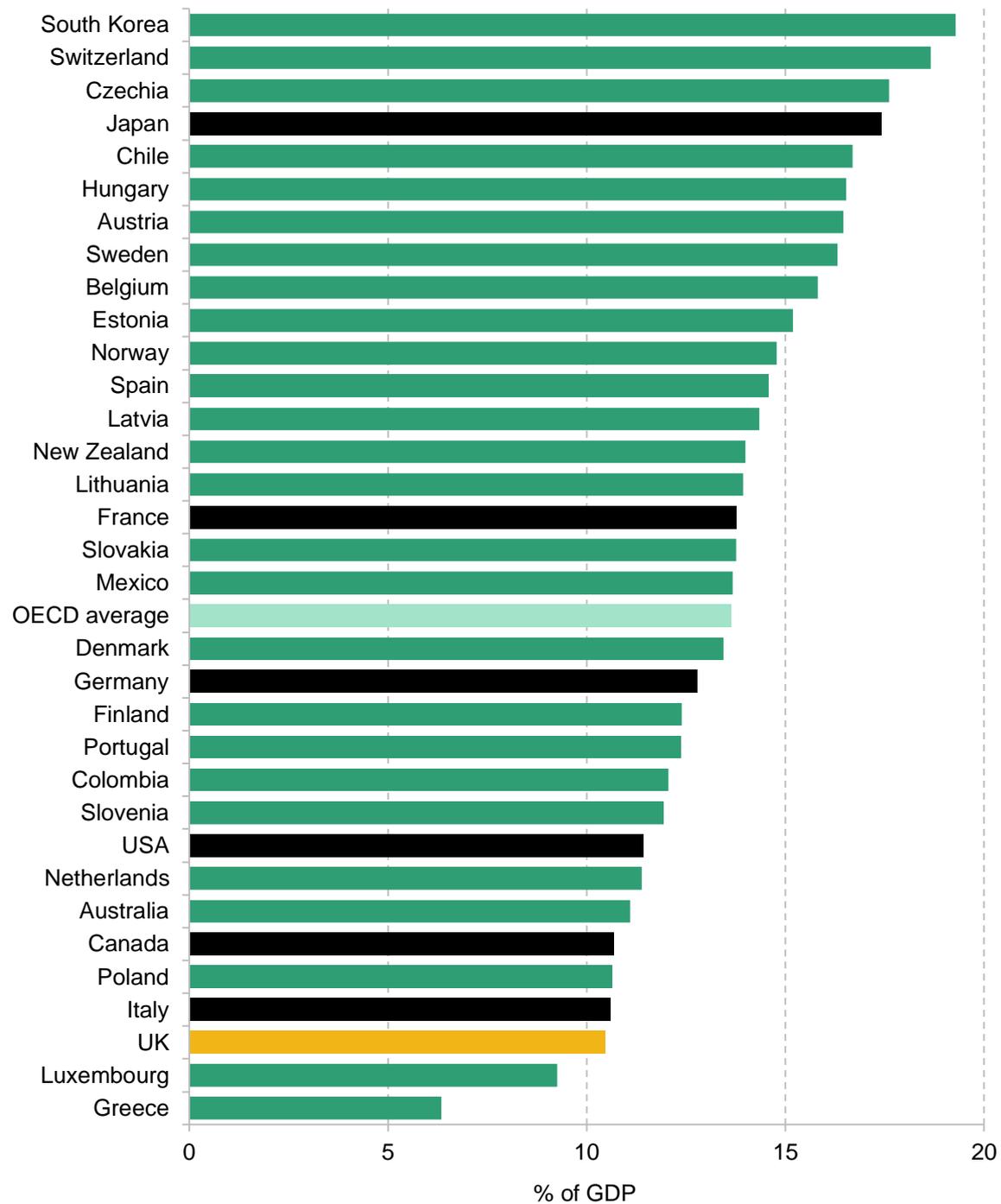


Note: Seasonally adjusted. Real-terms series use the chain-volume measure with base period 2022Q2. For percentages of GDP, out-turn is calculated as nominal business investment divided by nominal GDP and forecast as real (chain-volume measure) business investment divided by real (chain-volume measure) GDP. Value for 2005Q2 is interpolated due to an outlier caused by the reclassification of British Nuclear Fuels. OBR forecasts are quarterly from 2022Q3 to 2027Q1. Bank of England forecasts are annual from 2022 to 2024.

Source: Out-turn from ONS, 'Business investment by industry and asset', tables 1 and 4 (<https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/businessinvestmentbyindustryandasset>). OBR forecast from Office for Budget Responsibility, *Economic and Fiscal Outlook March 2022*, supplementary economic table 1.1 (<https://obr.uk/efo/economic-and-fiscal-outlook-march-2022/>). Bank of England forecast from Bank of England, *Monetary Policy Report August 2022*, table 1.E (<https://www.bankofengland.co.uk/monetary-policy-report/2022/august-2022>).

This level of investment is low by international standards. According to the OECD, in 2019 the UK had the lowest level of business investment in the G7 and the third-lowest in the OECD: 10.5% of GDP compared with an OECD average of 13.6% (Figure 6.2). The UK's low position can be partly explained by the greater importance of the service sector in the UK's economy: services are less capital intensive, and, amongst developed countries, countries with larger service sectors tend to have lower levels of investment (Office for National Statistics, 2018).

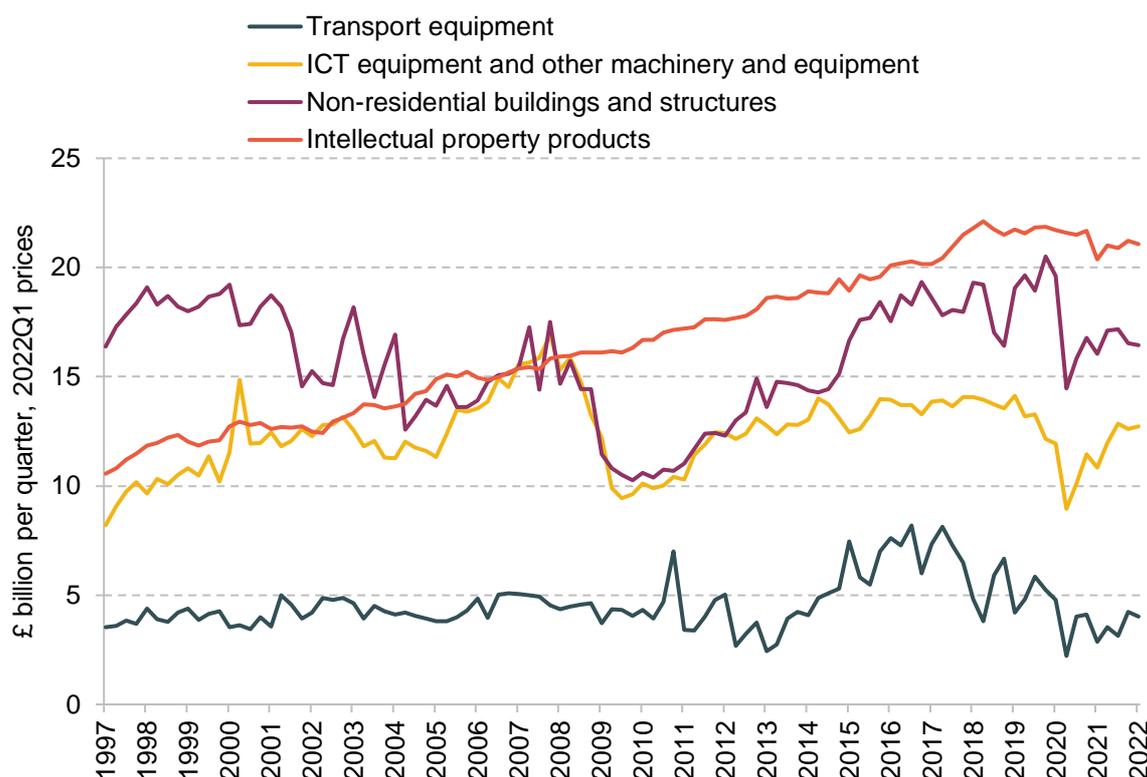
Figure 6.2. Corporate investment in OECD countries, 2019



Note: Ireland is excluded due to the large volatility of its investment statistics. OECD average is the unweighted average of OECD countries for which data are available (excluding Ireland). G7 countries, other than the UK, are shown in black.

Source: OECD, 'Investment by sector', <https://doi.org/10.1787/abd72f11-en>.

Figure 6.3. Composition of real business investment in the UK



Note: Seasonally adjusted and expressed in 2022Q1 prices using the chain-volume method. See Office for National Statistics (2017) for a description of what falls into each category.

Source: Office for National Statistics, 2022a, table 1.

While measured investment has historically been dominated by buildings and physical equipment, intangible assets have become increasingly important. Figure 6.3 shows the official statistics, with intellectual property products (such as purchases of software and investment in research and development) accounting for 40% of total business investment in 2022Q1. Defining and measuring investment in intangibles is difficult,³ and experimental statistics that attempt to include a broader measure of intangible assets (such as branding, design, organisational capital, financial product innovation and firm-specific training) give intangibles an even bigger share, though these wider forms of ‘uncapitalised’ intangible investment have not grown as quickly.⁴

³ One example that illustrates the difficulty of measuring intangibles is the case of research and development. R&D is a subcategory of the category ‘intellectual property products’ in Figure 6.3. The measure is derived from a business survey conducted by the ONS. This survey had historically under-sampled R&D done by small and medium-sized businesses, and by large businesses that do not engage in substantial R&D (Office for National Statistics, 2022b), partly because when the survey was developed in the 1980s, R&D was mostly conducted by large, R&D-intensive businesses. This is not a small issue: a recent change in the methodology led to R&D expenditure being revised upwards from £27 billion to £43 billion, or by 60%, in 2020. These numbers have not yet been incorporated into the business investment statistics used to calculate Figure 6.3.

⁴ <https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/datasets/experimentalestimatesofinvestmentinintangibleassetsintheuk>.

6.3 Corporation tax and investment

In this section, we turn to the tax treatment of corporate investment in the UK, which is one factor affecting the trends in investment described above, and offer an overview of the academic evidence for the responsiveness of these investments to the structure of the tax system.

How does corporation tax work? What are capital allowances?

Corporation tax is the fourth biggest source of revenue for the UK Treasury and in March 2022 was forecast to raise around £65 billion in 2022–23, 6.6% of total government revenue. It is levied on the profits of companies operating in the UK.

In broad terms, profit is revenue minus costs.

Deductible costs include day-to-day expenses (known as ‘current’ or ‘revenue’ expenditure), which include wages, raw materials and interest payments on borrowing.

Unlike current expenditure, investment (or capital) spending on things such as machinery and buildings is not automatically deductible when calculating taxable profits. Instead, capital allowances can be used by companies to deduct their capital expenditure from taxable profits over a number of years.

The capital allowances available for investment depend on the type of asset bought. Some capital allowances can be thought of as crudely allowing for depreciation, the decline in an asset’s value over time (e.g. as a result of wear and tear). Others are clearly more generous than that and can better be thought of as treating the asset purchase itself as a business expense, or as encouraging certain kinds of investment over others.

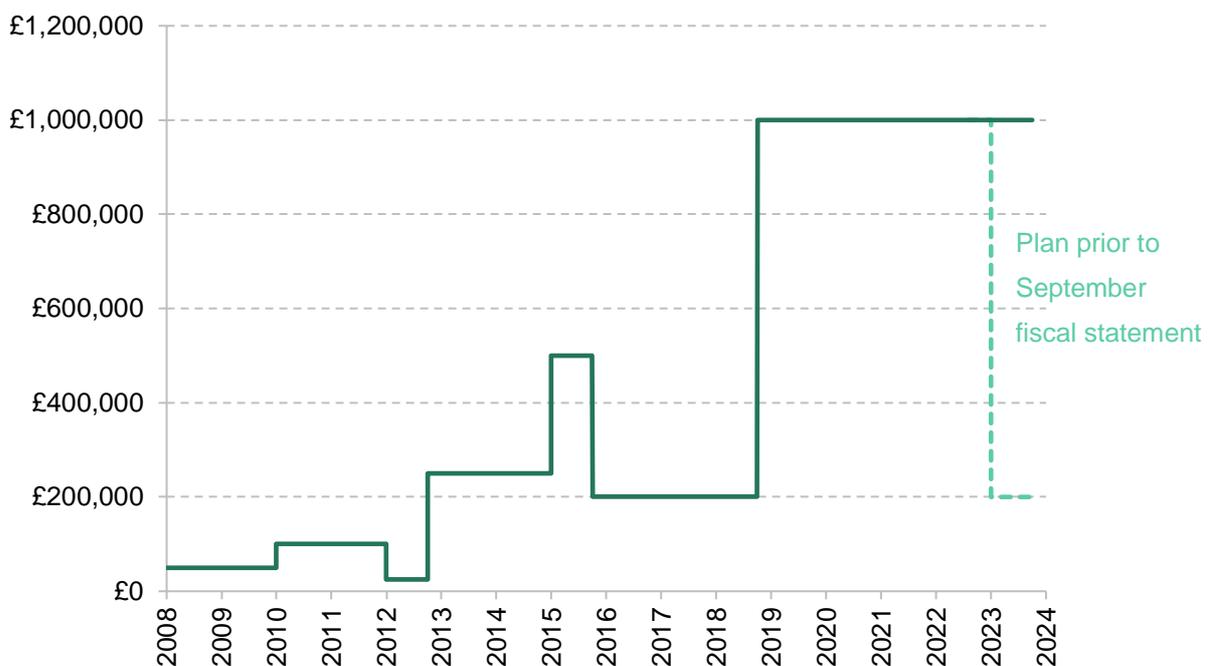
For ordinary plant and machinery – the biggest category of investment, covering everything from computers and desks to lorries, industrial equipment and other tools of the trade:

- The annual investment allowance (AIA) allows businesses to deduct investment immediately up to a certain limit each year. (This is known as ‘expensing’, since firms can deduct the outlays immediately in the same way as with current expenses.) The amount that can be deducted under the AIA has varied a lot over time (see Figure 6.4). It had been ‘temporarily’ increased from £200,000 to £1 million in 2019 and was due to fall back to £200,000 in April 2023, but in the fiscal statement of 23 September 2022 it was announced that this reduction would be cancelled and the AIA fixed at £1 million permanently. For most businesses, this is more than enough to cover all of their plant and machinery investment. But a small number of giant businesses account for most UK investment, and

this means that most plant and machinery investment will continue to fall outside the AIA. In 2019–20, just under £23 billion of investment was carried out under the AIA.⁵

- Investment in excess of the AIA is deducted on an 18% ‘declining-balance’ basis, meaning that for each £100 of investment, taxable profits are reduced by £18 in the first year (18% of £100), £14.76 in the second year (18% of the remaining balance of £82) and so on. All of the investment spending can be deducted eventually, but the delay makes the deduction less valuable. How much less valuable depends on the market interest rate, since that is the rate of return the firm could earn (or save in debt interest) in the meantime if it received the money earlier.
- For a two-year period – 1 April 2021 to 31 March 2023 – a temporary ‘super-deduction’ is in place which allows companies to deduct 130% of the cost of their total (uncapped) plant and machinery investment. In other words, for each £1 a company spends on an eligible investment, its taxable profits are reduced by £1.30.

Figure 6.4. The annual investment allowance over time



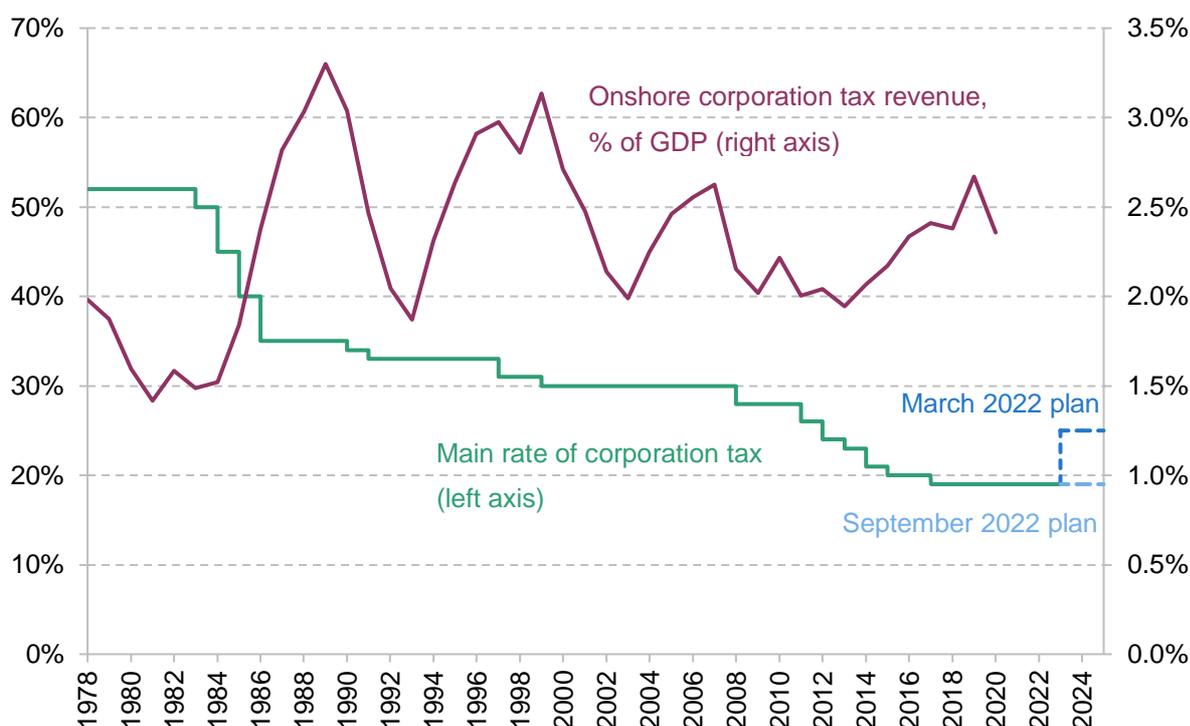
Note: The horizontal axis has April of each year marked; as shown in the chart, some changes took effect in January.

Source: <https://www.gov.uk/capital-allowances/annual-investment-allowance>.

⁵ <https://www.gov.uk/government/statistics/corporation-tax-statistics-2021>.

However, ordinary plant and machinery accounts for a minority of all investment. A range of different allowances is available for investment in other assets: long-life plant and machinery, cars, buildings, intangible assets, assets used for R&D, and certain environmentally friendly investments.⁶ The incentive to invest in different assets is affected by the capital allowances available as well as the underlying commercial attractiveness of the investment.

Figure 6.5. The main rate of, and revenue from, UK corporation tax



Note: The horizontal axis has April of each year marked.

Source: IFS Fiscal Facts, <https://ifs.org.uk/taxlab/data-item/ifs-fiscal-facts> and OBR Public Finances Databank August 2022, <https://obr.uk/data/>.

As noted above, the main rate of corporation tax levied on taxable profits is currently 19%. Former Chancellor Rishi Sunak put in place plans for this rate to increase to 25% in April 2023 for companies making large profits,⁷ but this increase was cancelled in the new Chancellor's fiscal statement of 23 September 2022. The proposed rise was a substantial one. It would have increased the main rate of corporation tax by 6 percentage points, from 19% to 25%. It would have been a different direction of travel from that taken by successive previous governments: the

⁶ The detailed rules on capital allowances are complicated. For a brief introduction, see <https://ifs.org.uk/taxlab/taxlab-taxes-explained/corporation-tax-explained>. There are no capital allowances for financial assets (such as shares in other companies) or other 'non-depreciable' assets.

⁷ The higher rate was to apply in full to companies with annual profits above £250,000 and in part to companies with profits between £50,000 and £250,000.

first rise in the main rate of corporation tax for half a century. At the same time, we should not exaggerate the size of the change: at 25%, the rate would still have been lower than it was in 2011, let alone the 52% peak it reached in the 1970s and early 1980s (see Figure 6.5).

However, the main rate does not apply to all taxable profits. Profits from North Sea oil and gas, banking and patents are subject to different tax regimes. And even where the main rate is payable, it must be understood in conjunction with the changing measure of profits to which it applies. That is one reason the revenue line in Figure 6.5 does not show the same downward trend as the main rate: while the main rate has been steadily reduced, the base has also been broadened, including by making capital allowances less generous. Other factors include changes in the level of corporate profits, whether due to wider economic developments or in response to tax reforms.

Does corporation tax matter for investment?

How does corporation tax affect investment incentives?

Corporation tax – including features such as capital allowances and the treatment of borrowing as well as headline rates – affects the financial incentives companies face to invest. Economic theory identifies two measures of effective tax rates that are relevant for different kinds of decision:⁸

- The **effective average tax rate** (EATR) is the proportion by which tax reduces the rate of return on an investment.
- The **effective marginal tax rate** (EMTR) is the proportion by which tax reduces the rate of return on a *marginal* investment: that is, one that is only just worthwhile. It measures how much lower the *cost of capital* (the rate of return investors require) would be in the absence of taxation.⁹ The higher the EMTR, the greater the required pre-tax rate of return, and hence the weaker is the incentive to invest.

The EMTR is therefore a special case of the EATR for a marginal investment. In fact, the EATR is a weighted average of the EMTR and the statutory tax rate, where the weights reflect the profitability of the investment. Put simply, for any given investment, the EATR will be equal to the EMTR if the investment only just breaks even (in present-value terms), and will get gradually closer to the statutory tax rate for more profitable investments.

⁸ These measures were developed by Hall and Jorgenson (1967), King and Fullerton (1984) and Devereux and Griffith (1998 and 2003). For a fuller description and discussion, see Devereux and Griffith (2003), Auerbach, Devereux and Simpson (2010) and the chapters by Sørensen and Devereux in Sørensen (2004).

⁹ The cost of capital, a standard measure across economics, finance and accounting, is the pre-tax rate of return an investment must generate in order to provide, after tax, the rate of return that investors require.

For investment that is confined to the UK, economic theory suggests that the EMTR is what should influence the scale of investment. Marginal investments – those that are only borderline worthwhile – are those whose viability might be affected by a tax reform. Investments that are highly profitable will still be worthwhile and go ahead even if slightly more of the return is taken in tax; the EATR determines how much tax is paid on the project, but not whether it goes ahead. In a domestic context, it would therefore be economically efficient to have a low EMTR but a high EATR in order to raise as much revenue as possible without discouraging investment.

However, in an international context, the EATR is relevant for determining where investment happens. A highly profitable project might be sure to go ahead, but a company may decide where to locate it based on (among other things) the tax treatment it would get in different countries: a country's EATR is the relevant measure for that. In an international context, therefore, there is a trade-off between wanting a low EATR to attract investment (and therefore tax revenue) to the UK and wanting a high EATR to maximise tax revenue from those investments that will happen in the UK anyway.

In short, the EMTR is relevant for the *scale* of investment and the EATR is relevant for the *location* of investment.¹⁰

EMTRs and EATRs can vary widely across investments, based not only on features of the tax system (such as statutory tax rates, capital allowances and the treatment of finance costs) but also on the nature of the particular investment (such as the rate at which the asset depreciates and how the investment is financed) and the economic environment (interest rates and inflation rates). But, other things equal, reducing corporation tax rates or increasing capital allowances reduces EMTRs and EATRs – albeit to varying degrees. In the rest of this chapter, we will show EMTRs and EATRs for a number of example investments and explain how they would be affected by various reforms. These function as summary statistics for how corporation tax, and reforms to it, influence incentives to invest.

Does investment respond to tax incentives?

It is sometimes claimed that taxes are not a significant consideration in companies' decisions, or that decision-makers in companies pay attention only to headline tax rates, not details such as capital allowances.

¹⁰ For location decisions that do not involve real activity / investment – shifting paper profits between jurisdictions, for example by manipulating the 'transfer prices' that different parts of a multinational company charge each other for inputs or the interest rate on intra-company loans – it is the statutory tax rate (rather than the EMTR or EATR) that matters, along with any legal restrictions designed to prevent such behaviour. This is a third kind of tax rate for a third kind of decision.

Empirical evidence does not support such claims. Of course, tax is rarely the driving factor: decisions about whether, where and how much to invest are taken for a wide variety of reasons, many more important than tax. But where a decision is a close call for other reasons, tax can be one factor tipping the balance of competing considerations, and across the economy as a whole that can add up to a significant effect. There is now a large academic literature estimating the effects of corporate taxes on investment and other business decisions. While results of individual studies vary and not all align perfectly with simple theory, overall, surveys and meta-analyses of that literature (Hassett and Hubbard, 2002; Devereux and Maffini, 2007; de Mooij and Ederveen, 2008) reveal overwhelming evidence that higher corporate taxes in general – and headline rates, EMTRs and EATRs specifically – have substantial effects in terms of reducing investment.¹¹ More recent individual studies, such as Bond and Xing (2015), reinforce that finding. One important example, Maffini, Xing and Devereux (2019), looked specifically at the effect of capital allowances in the UK, showing that more generous allowances for medium-sized firms from 2004 led to a large increase in the amount they invested, with qualifying companies increasing their investment rate by 2.1–2.5 percentage points relative to those that did not qualify.¹²

It is hard to distil simple, precise rules from a complex literature, but as a rough guide, one leading expert has suggested that ‘a consensus estimate from the academic literature is that a one percentage point rise in the EATR leads to a 2.5% reduction in inward flows of foreign direct investment’, while a 1 percentage point rise in the EMTR would tend to reduce investment by about 7% (Devereux, 2021).

There is also, however, some evidence – albeit less, and therefore more tentative – that the effects of corporate tax on investment are weaker when firms are facing economic downturns (Edgerton, 2010) and/or greater uncertainty (Guceri and Albinowski, 2021) – a good description of the current climate.

¹¹ Effects of corporation tax on economic growth are harder to detect directly. A number of studies have tried, and some claim to succeed – one from the OECD (Arnold et al., 2011) is perhaps the best known, finding that corporate profits taxes reduce economic growth more than personal income taxes, consumption taxes or (least damaging of all) property taxes. However, it is not clear how robust that evidence is, and findings elsewhere vary. One recent meta-analysis (Gechert and Heimberger, 2022) did not find clear evidence of an effect, though it depended exactly what was being estimated in the underlying studies. However, empirically disentangling the effects of corporation tax on growth is inherently difficult, and it might be more productive and convincing to break it down into steps: for example, we can be confident that corporation tax affects investment and therefore the capital stock, and that the capital stock affects productivity and therefore GDP.

¹² A swathe of studies similarly show substantial effects of more generous capital allowances in the US (House and Shapiro, 2008; Zwick and Mahon, 2017; Ohrn, 2018 and 2019). Other studies looking specifically at the UK include Bond, Denny and Devereux (1993), Ellis and Price (2014), Barnes, Price and Sebastián Barriol (2008), Brockmeyer (2014) and Wallis (2016). The details and quality of these studies vary, but all find a strong effect of tax rates or the cost of capital on investment.

Incentives to invest depend on expectations of future tax rates, not just on current ones. The effective tax rates we calculate in this chapter assume that whatever tax regime is chosen remains in place permanently. But that might not happen.

- First, a government might announce an explicitly temporary measure (such as the super-deduction in place from April 2021 to April 2023) or pre-announce a future reform (such as Rishi Sunak’s planned rise in the rate from 19% to 25%, which was announced in the March 2021 Budget to be implemented in April 2023). We examine some of the implications of temporary measures and pre-announcements for understanding the effects of the super-deduction in Box 6.1.
- Second, even when a policy is announced as permanent, people might think that the government – or a future one – is liable to change it. Experience with the repeated yo-yoing in the level of the AIA shown in Figure 6.4, and the announcement of a rate increase (after years of reductions) followed by its cancellation – and experience of instability elsewhere in the tax system – make it harder to be confident in the future stability of any system that is announced.

Companies will base their investment decisions on how they expect the resulting profits to be taxed in future. And risk-averse companies may be deterred from investing by the sheer uncertainty of future tax treatment: business groups consistently emphasise that certainty and stability in the tax system are as important as the competitiveness of the system itself.

Box 6.1. Has the super-deduction failed?

In April 2021 the then-Chancellor Rishi Sunak introduced a significant temporary increase to the generosity of the UK capital allowance regime. The so-called ‘super-deduction’ provides all firms with an uncapped 130% allowance for investment in ordinary plant and machinery between April 2021 and April 2023. In other words, for every £1 that a firm invests in plant and machinery, £1.30 can be deducted from its taxable profits. All else being equal, one would expect this to represent a substantial subsidy to investment, allowing firms to invest in projects whose returns would be too low to be viable in the absence of tax.

The lack of a significant spike in investment by the first part of 2022 has led some to argue that the super-deduction has disappointed (e.g. Romei, 2022). We should be cautious about what conclusions we draw, however, for a number of reasons:

- First, to assess the effect of the super-deduction, we would need to know what would have happened to investment in its absence. It is hard to know, for example, how much of a rebound from COVID-19 we would have expected during this period, or to disentangle the effects of Brexit. It is not clear how far investment has underperformed given what has been happening to GDP and the wider economic

environment. More narrowly, the introduction of the super-deduction cannot be divorced from the plans announced by Mr Sunak to increase the main rate of corporation tax from 19% to 25% in April 2023. In the absence of any mitigating policy, a pre-announced rate increase of this kind provides a major incentive for firms to delay investments until the new rate comes into force. That is because deducting investment spending (through capital allowances) from profits that will be taxed at 19% is less valuable than deducting it from profits that will be taxed at 25%. For investments that fall within the AIA, the 130% super-deduction is designed to offset this effect almost exactly.^a While it is true that for investments falling above the AIA the super-deduction represents an increase in the generosity of allowances (essentially equivalent to having an uncapped AIA), the fact that much of the increase in generosity is merely offsetting the effects of the pre-announced rate rise make the super-deduction considerably less generous than it appears. Put simply, in the absence of a super-deduction, it would have been reasonable to expect a fall in investment. The fact that this has not occurred could to a large extent be seen as the policy operating as intended: to bridge the period between the announcement of the rate rise and its implementation.

- Second, the period covered by the super-deduction has not yet come to an end. Investments take time to plan and implement; it would therefore not be surprising for investments taking advantage of the increased generosity of the super-deduction (at least above the AIA) to be more feasible towards the end of the super-deduction period than towards the start. Furthermore, in so far as the super-deduction acts as an incentive to bring investments planned for after April 2023 forwards (so as to benefit from the more generous allowance), it seems reasonable to expect these investments will be brought forward only as much as needed to qualify for the super-deduction: thus, again, taking place towards the end of the super-deduction period. With investment data for the final quarters of the policy's lifespan not yet available, it is therefore too soon to assess its impact properly.
- Third, as we discuss above, there is tentative evidence from the academic literature that investment incentives are less effective during periods of economic downturn and uncertainty. Even if the effect of the super-deduction is modest in the period that it is in place, that does not necessarily imply that tax incentives for investment are ineffective more generally.

In short, we might expect the super-deduction to have a more modest effect in the current environment; we would expect its effects to be biggest towards the end of the period, which we have not yet reached; and estimating its effects would require a careful assessment of what would have happened to investment in its absence, given not only the broader economic environment but also the fact that the pre-announcement of a tax rate rise would otherwise have been expected to depress investment over the same period.

^a A 130% capital allowance under a 19% rate is equivalent to a 100% allowance under a 24.7% rate ($19\% \times 1.3 = 24.7\%$). In other words, the super-deduction makes investing within the AIA while the 19% rate is in place roughly as attractive as investing within the AIA when the 25% rate comes into force.

The value of stability extends beyond tax. As noted above, tax is only one factor affecting investment decisions, and not necessarily the most important. Some of the other factors are things the government can do little about, such as the English language and time zone. Others can certainly be affected by government policy, such as infrastructure, skills, regulations and trade barriers, some of which the new government has proposed to address. But perceptions of stability in the political and macroeconomic environment are crucial, and have not been helped by recent international and domestic events. More narrowly, it is important to emphasise that, while tax can affect investment incentives, even a 1 percentage point rise in market interest rates would increase firms' cost of capital by more than a rise in the corporation tax rate from 19% to 25%.

Partly because of these other factors affecting investment and growth, the effects of corporation tax (or any other tax) rises depend on whether we just look at the direct effect of the tax change or also at the effect of whatever change in borrowing or in public spending it pays for (though of course not all public spending is growth-enhancing and it can be hard to link particular tax changes to particular spending changes). Our focus in this chapter is just on the direct effect of corporation tax changes themselves.

The effects of corporation tax on investment – and therefore economic output – imply that cutting corporation tax costs the government less than a simple mechanical calculation would imply: part of the up-front cost of the tax cut would be recouped in future through higher tax revenue from the additional output (as well as from more profit-shifting into, or less profit-shifting out of, the UK). However, while precise estimates vary, the strong consensus is that the magnitude of these effects would be nowhere near enough to recoup the full cost of cutting the main UK corporation tax rate (or of leaving it at 19% rather than 25%). The disincentive effects of taxation are much more than proportional to the tax rate, so the tax rate we are starting from is a crucial determinant of how far cutting the tax rate 'pays for itself': it would be much more plausible that a tax cut would be self-financing if we were starting from the 52% rate of the 1970s and early 1980s. In other words, it is much more plausible that the Laffer curve peaks somewhere below 52% than that it peaks somewhere below 25%.

This contrasts with the impression given by Liz Truss's repeated claim that 'last time we cut corporation tax, we saw the revenues increase'.¹³ It is true that Chancellor George Osborne announced a series of cuts in the main rate of corporation tax during the 2010s, and that (onshore) corporation tax revenue rose during that period (see Figure 6.5). But the rate

¹³ Interview on BBC1's 'Sunday with Laura Kuennsberg', 4 September 2022 (available at https://www.youtube.com/watch?v=8IWRvi2_nwQ). Ms Truss repeated the claim on 7 September, at her first Prime Minister's Questions: 'The last time we cut corporation tax we attracted more revenue into the exchequer because more companies wanted to base themselves in Britain, more companies wanted to invest in our country' (see <https://www.channel4.com/news/factcheck/factcheck-did-cutting-corporation-tax-raise-money>).

reductions did not *cause* the increase in revenue. There are at least two other factors to consider (Adam, 2019):

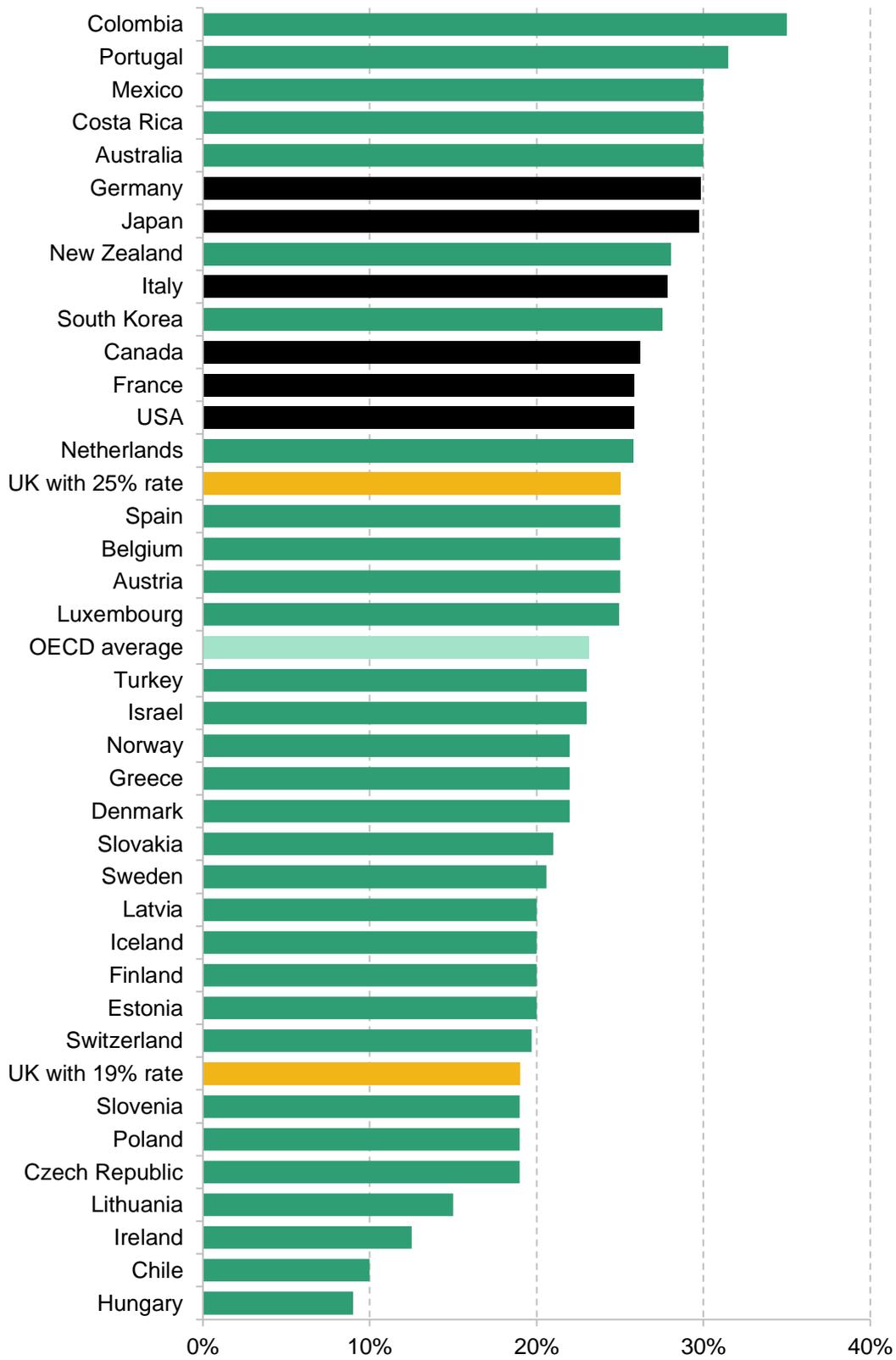
- First, corporation tax revenue at the start of the 2010s was depressed by the financial crisis and associated recession; we would have expected a recovery in profits, and therefore revenue, even if the tax rate had not been cut. Corporation tax revenue as a share of GDP did not return to levels seen in the years leading up to the financial crisis until 2021; starting the clock in 2010 just means we are making comparisons with a particular low point.
- Second, while the government reduced the headline rate of corporation tax, at the same time it increased corporation tax in other (less eye-catching) ways, including reducing capital allowances, introducing the bank surcharge, restricting companies' ability to offset past losses against future profits, capping deductible interest costs, and a raft of anti-avoidance measures. These measures recouped most of the cost of reducing the headline rate, and help to explain why revenue held up: the government simply did not cut corporation tax overall by as much as the headline rate might suggest. Analysis by Adam (2019) found that around 75% of the cost of cuts to the headline corporation tax rate since 2010 had been offset by these measures.

Factors such as these are among the reasons academic studies go to considerable lengths to disentangle the causal effects of policy changes. The results of those studies are clear: behavioural responses to corporation tax cuts do help to reduce their cost to the exchequer, but not so much that cutting tax rates increases revenue. Revenue would be higher, not lower, if the main rate of corporation tax had not been cut. The September 'mini-Budget' estimated that cancelling the rate rise would cost around £15 billion a year in today's terms. That allows for an effect of the rate rise on profit-shifting, but not for an effect on investment, so we would expect the long-run cost to be lower – though still positive.

6.4 The UK in international context

The UK's headline rate of corporation tax is among the lowest in the OECD (see Figure 6.6). Even at a rate of 25% the UK would be only slightly above the OECD average and would still be the lowest in the G7 (once subnational taxes are taken into account) – if other countries did not change their own tax rates.

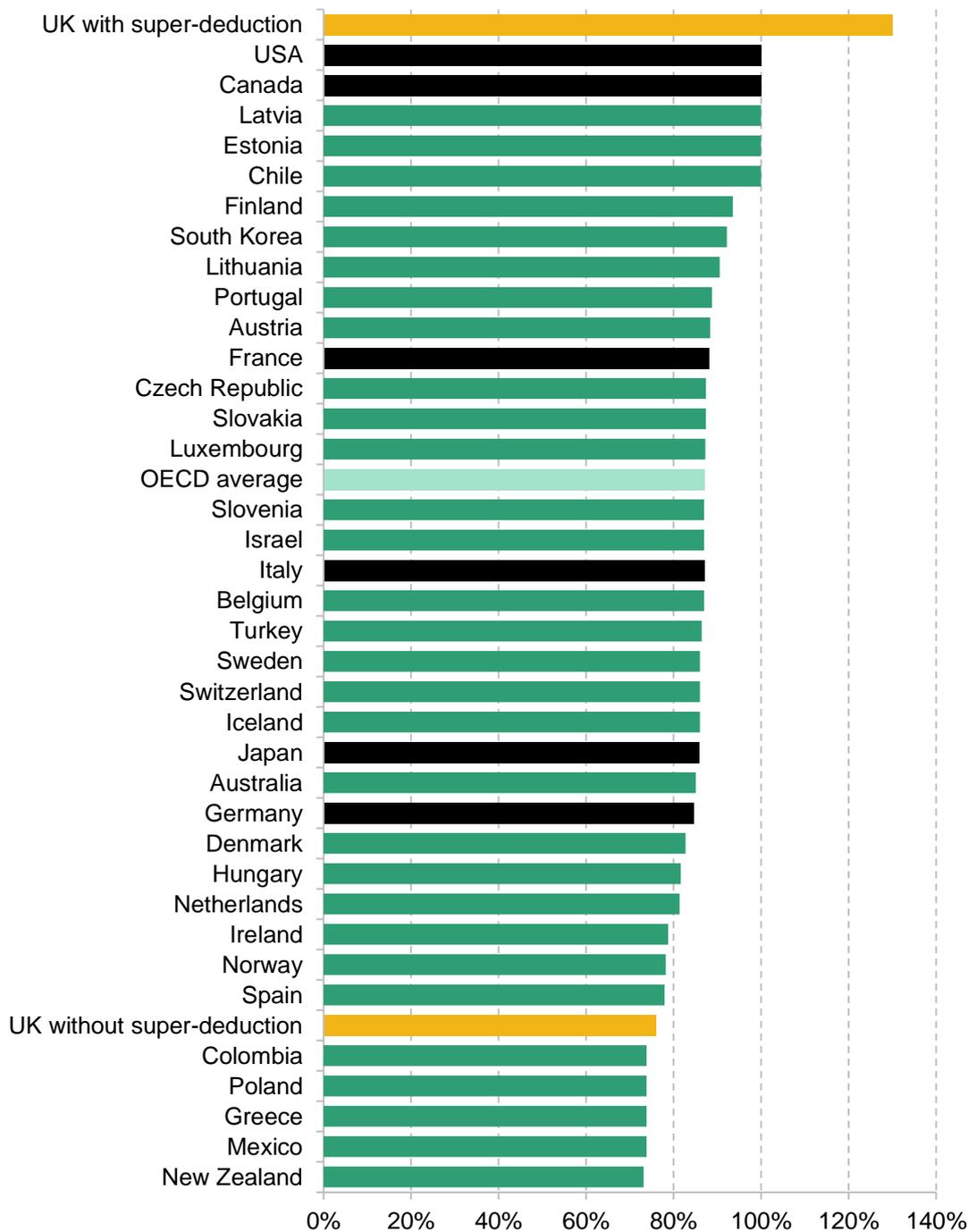
Figure 6.6. Headline corporate income tax rates, 2022



Note: Includes subnational taxes. G7 countries, other than the UK, are shown in black.

Source: OECD.

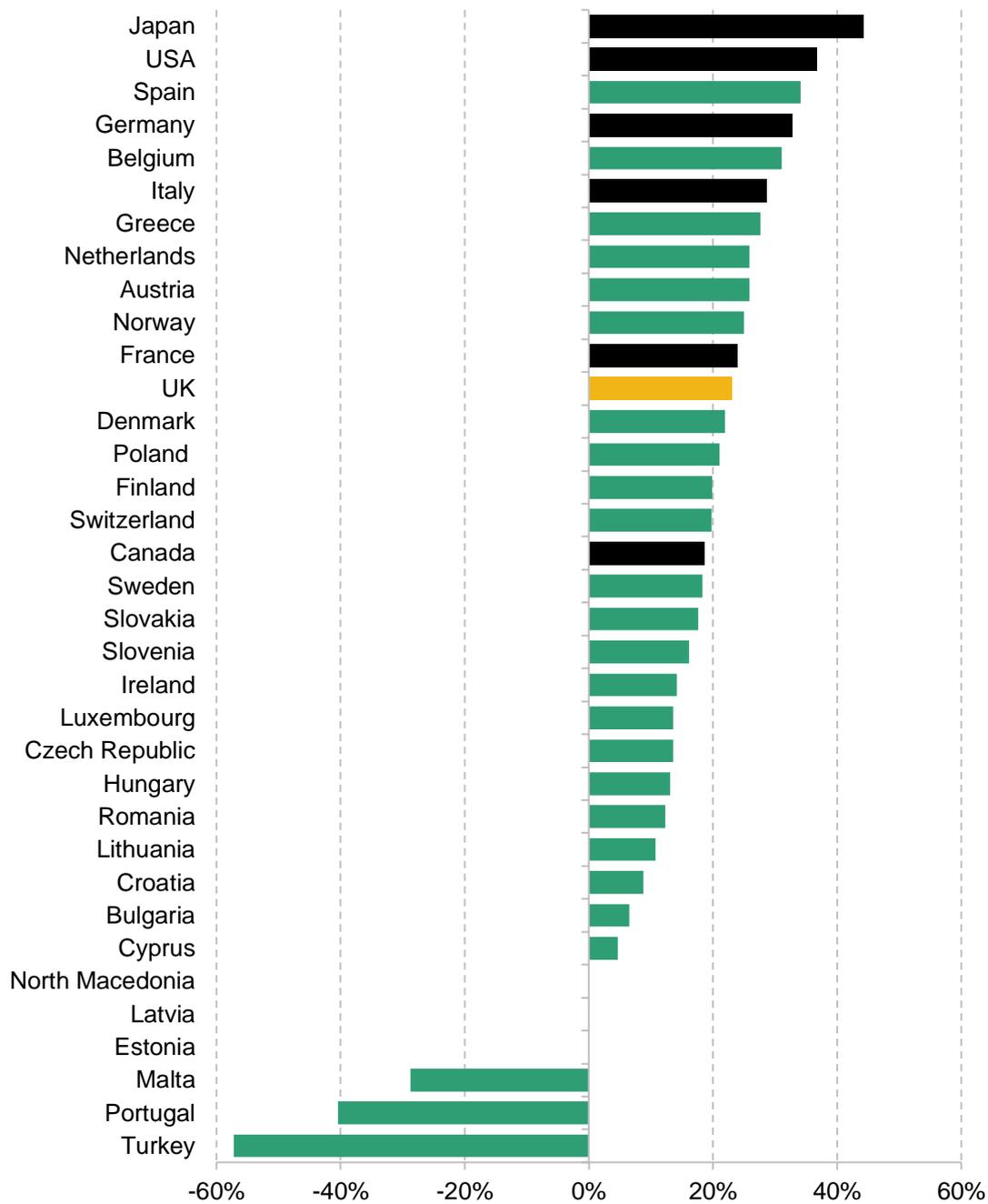
Figure 6.7. Net present value of capital allowances for plant and machinery investment, 2021 (100% = full expensing of investment)



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Includes the effect of, for example, the temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: Tax Foundation (<https://taxfoundation.org/capital-allowances-cost-recovery/>), except UK figure without super-deduction from <https://taxfoundation.org/capital-allowances-capital-cost-recovery-2021>.

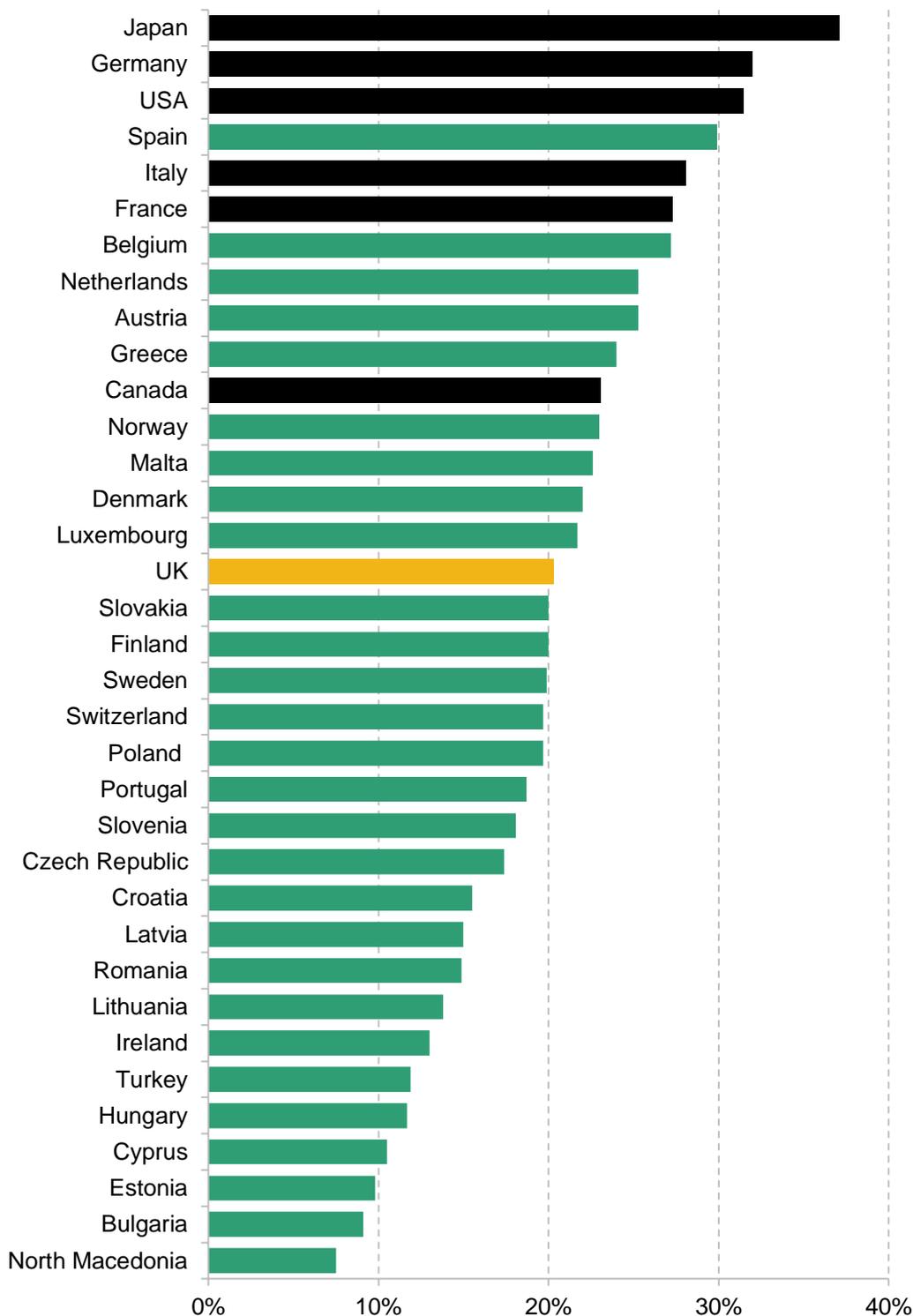
Figure 6.8. EMTRs on equity-financed investments in plant and machinery, 2021



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Excludes the effect of, for example, the temporary 'super-deduction' in the UK and temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: European Commission (https://taxation-customs.ec.europa.eu/system/files/2022-03/final_report_2021_effective_tax_levels_revised_en.pdf).

Figure 6.9. EATRs on equity-financed investments in plant and machinery, 2021



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Excludes the effect of, for example, the temporary 'super-deduction' in the UK and temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: European Commission (https://taxation-customs.ec.europa.eu/system/files/2022-03/final_report_2021_effective_tax_levels_revised_en.pdf).

However, the UK looks less internationally competitive once the whole of the corporation tax regime, rather than just the headline rate, is taken into account. The UK taxes an unusually broad measure of profits; in particular, capital allowances are ungenerous by international standards. For example, except while the temporary ‘super-deduction’ is in place – due to end in April (see Box 6.1 for details) – the UK’s allowances for plant and machinery investment beyond the annual investment allowance (AIA) are among the least generous in the OECD (see Figure 6.7). As a result, effective marginal and average tax rates on such investment – taking into account both the headline rate and capital allowances – are towards the middle of the pack internationally, though still low by G7 standards. Figures 6.8 and 6.9 illustrate this for an example investment in plant and machinery (outside the AIA and super-deduction), financed by equity (whether new equity, i.e. issuing new shares, or retained earnings, which is how most investment is financed) under certain conventional assumptions about expected inflation, interest rates, depreciation and, in the case of the EATR, profitability of investment (see figure notes for the specific assumptions).

6.5 Where do recent announcements leave the UK corporation tax?

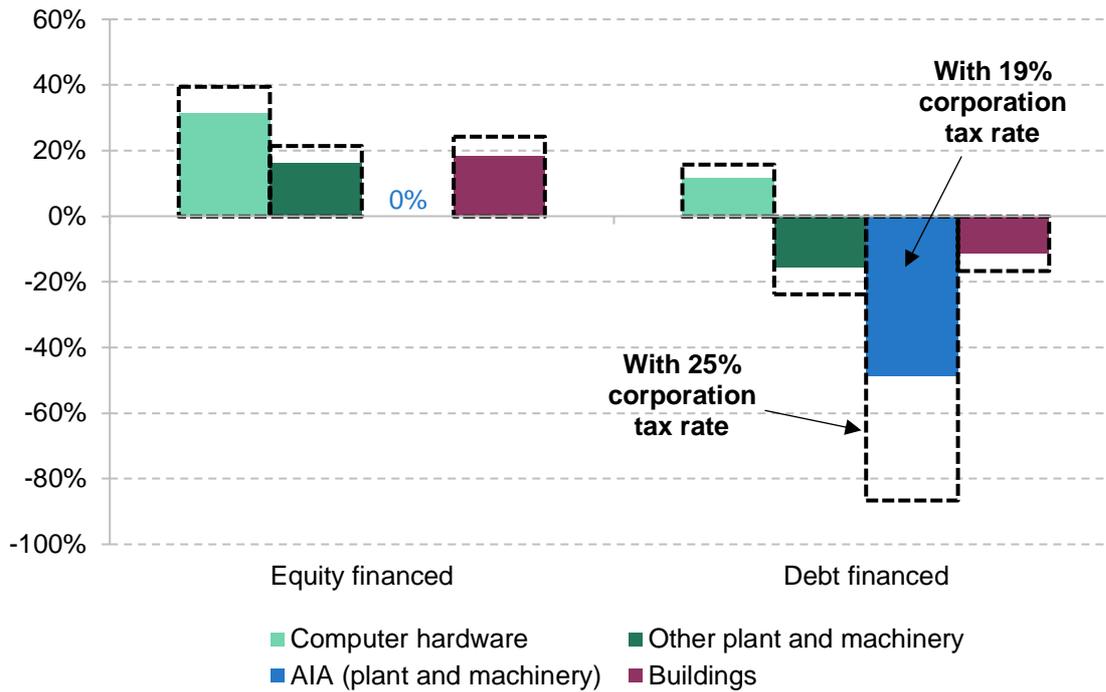
Figures 6.8 and 6.9 showed EMTRs and EATRs for one example investment under particular assumptions. But a central problem with UK corporation tax is that it treats different investments differently, distorting the choice of assets to invest in and the way that investments are financed. Figures 6.10 and 6.11 show EMTRs and EATRs in the UK for a range of different investments, still under particular assumptions (see figure notes). They also show how these effective tax rates would be different under a 25% tax rate. They illustrate a number of features of the system:

- **Effective tax rates vary between assets, depending how high capital allowances are relative to the rate at which the asset depreciates.** This means incentives to invest can be different not only for buildings versus plant and machinery, but also for different kinds of plant and machinery and even different individual items. For illustration, we assume that computer hardware depreciates at 37% per year, while other plant and machinery depreciates at 12.6% per year (following OECD (2020)). But both qualify for the same 18%-a-year capital allowances, so effective tax rates on computers are higher than those on other machinery (and would be higher on some computer hardware than others, and so on): the tax system creates a bias towards investing in assets that depreciate less quickly relative to the capital allowances available for them. Since modern technology tends to depreciate more quickly than traditional machinery, this typically implies an anti-tech bias within each capital allowance category.
- **For equity-financed investment that can be fully expensed (under the AIA), the EMTR is zero: the tax system neither encourages nor discourages investment in that asset.** In

fact, this is true regardless of the tax rate (provided it is expected to remain constant) and regardless of the rates of inflation, interest or depreciation. The intuition is that the company is taxed immediately on all receipts but can immediately deduct all outgoings at the same rate: with a 19% tax rate, the government covers 19% of the investment cost and takes 19% of the return, essentially becoming a compulsory silent partner in the project. If the revenue is worth more than the cost, 81% of the revenue will be worth more than 81% of the cost, so any project that is worthwhile before tax will be worthwhile after tax. Note that the EATR is still positive, however: while projects that were profitable before tax will be profitable after tax, if the investment is highly profitable (as in this example) then the company might prefer to do it in another country where it did not have to share as much of it with the government.

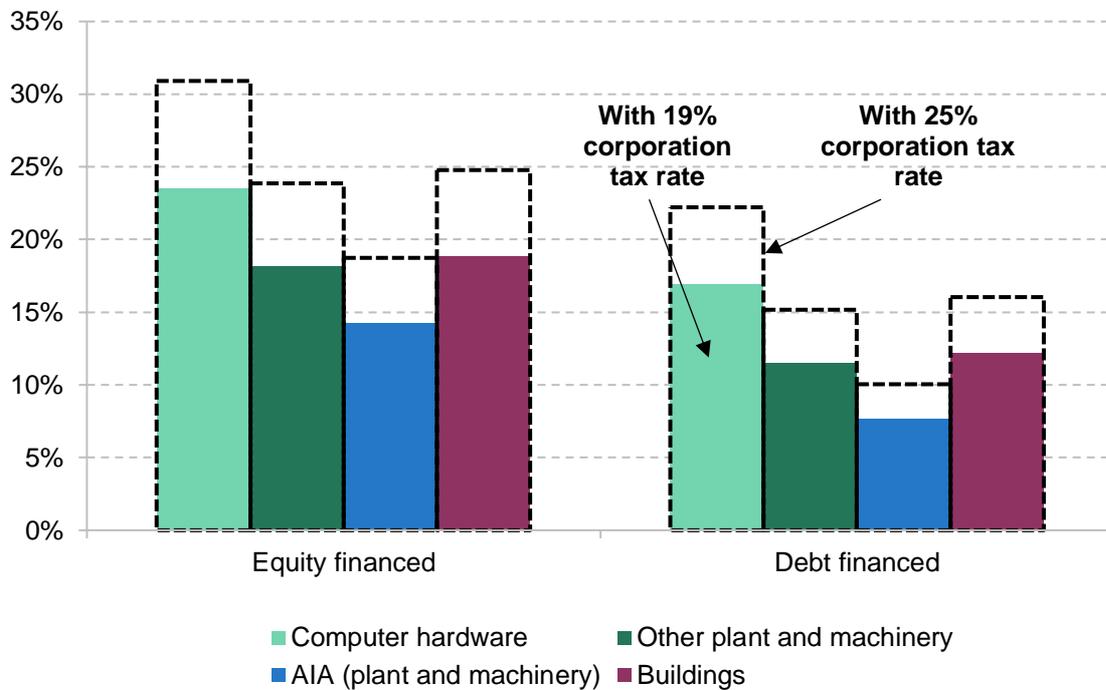
- **Effective tax rates are lower for debt-financed investment than for equity-financed investment, biasing the market towards debt finance.** This is because there is a deduction for the interest costs on debt, but no corresponding deduction for the implicit (opportunity) cost of equity finance: the returns that shareholders require given that they could put their money elsewhere. Indeed, EMTRs are negative – debt-financed investment is subsidised – where capital allowances exceed the asset’s depreciation rate as well as debt interest being deductible.
- **EATRs are generally higher than EMTRs.** More precisely, EATRs are closer to the 19% statutory tax rate than EMTRs are: as explained above, the EATR is a weighted average of the EMTR and the statutory tax rate. The more profit is made relative to the amount invested, the less capital allowances matter and the closer profits come to just being taxed at the headline rate. This means that the EATR will be higher than the EMTR unless the EMTR is higher than the statutory rate, as in our example of equity-financed investment in computer hardware, where a capital allowance less generous than depreciation drives the EMTR above 19%.
- **All of the distortions to investment incentives are worse when the headline tax rate is higher.** The penalties for equity-financed investment, the subsidy for (some) marginal debt-financed investment, and the differentials between different assets and different sources of finance are all bigger with a 25% tax rate than with a 19% tax rate. (Of course, if the statutory tax rate were zero, the EMTRs and EATRs on all these investments would be zero: there would be no distortions to the scale, allocation or financing of investment.) An advantage of keeping the tax rate low is that it makes the flaws in the structure of corporation tax less important – although conversely, as we discuss in Section 6.6, if the structure of corporation tax were less flawed the imperative to keep the rate low would be less pressing.

Figure 6.10. EMTRs on example investments, with a 19% rate or a 25% rate (2023–24)



Note: Calculations assume a 5% real interest rate, a 2% rate of inflation, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figure 6.11. EATRs on example investments, with a 19% rate or a 25% rate (2023–24)



Note: Calculations assume a pre-tax real return of 20%, a 5% real interest rate, a 2% rate of inflation, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figures 6.10 and 6.11 still show just a small range of examples, all subject to the main rate of corporation tax: they do not cover investments in intellectual property or North Sea infrastructure, for example, where different regimes apply. But they show that, even ignoring variation in headline tax rates, the structure of the current corporation tax distorts both the choice of asset to invest in and the source of finance.

Furthermore, the extent of disincentives (or subsidies) for investment and the distortions between asset types and sources of finance are highly sensitive to (expected) interest rates and inflation rates, a point we return to in detail in Section 6.6. This is particularly important in the current environment. In line with the methodology of the European Commission (2021), the examples in these figures assume (expected) inflation of 2% and a real interest rate of 5%.¹⁴ Inflation is currently much higher than 2%, of course, but the issue is what inflation is expected to be in future, over the lifetime of the investment. We assume that the Bank of England succeeds in returning inflation to its 2% target; in Section 6.6, we present results assuming annual inflation of 5% instead, which is (at the time of writing) roughly what financial markets expect over the next five years.¹⁵

Similarly, a real interest rate of 5%, while standard in the literature, is much higher than risk-free assets such as government bonds have offered in recent years. An unresolved question is what (if any) risk premium is appropriate to include in the interest rate used in these calculations – corporate investments typically offer a substantially higher expected return than government bonds – but in Section 6.6 we present results assuming a real interest rate of 1% instead.

The key point to take from this analysis is not which results are ‘right’, but that the results are sensitive to these factors: the disincentives (or subsidies) for investment created by corporation tax, and the distortions to asset allocations and financing methods, vary as interest rates and inflation rates change. The distortions are generally worse when interest rates and inflation rates are higher – an era we might be returning to, after 30 years when these once-widespread concerns could fade somewhat into the background.

A low rate and a high AIA

The government is aware that capital allowances matter as well as the headline rate of tax. In February 2022 Mr Sunak, the then Chancellor, argued that it was ‘unclear’ that recent cuts to the

¹⁴ More broadly, these assumptions – and those we make for depreciation rates and investment returns – are the same as, or similar to, those used in most past literature using this methodology, such as OECD (2020), Oxford University Centre for Business Taxation (2017), Devereux and Griffith (1998 and 2003) and Tax Foundation (<https://taxfoundation.org/capital-allowances-cost-recovery/>).

¹⁵ Source: Financial Times Global Inflation Tracker, <https://www.ft.com/content/088d3368-bb8b-4ff3-9df7-a7680d4d81b2>.

corporation tax rate had led ‘to a step change in business investment’¹⁶ and that increasing capital allowances would be better targeted at promoting investment – a clear change in direction from previous Chancellors over several decades, who had tended to reduce the headline rate while also reducing the generosity of capital allowances. The Spring Statement in March suggested various specific options for increasing capital allowances for plant and machinery investment, and a policy paper in May sought views on them (HM Treasury, 2022). The options were presented as being under consideration for an Autumn 2022 Budget, to take effect in April 2023 when the temporary super-deduction (and the, then temporary, increase in the AIA) were due to expire and the increase in the tax rate to 25% was due to take effect.

When Chancellor Kwasi Kwarteng cancelled the increase in the headline rate rise, he nonetheless chose to increase the generosity of the capital allowance regime in one of the ways suggested in the Spring Statement, setting the AIA at £1 million on a permanent basis rather than allowing it to fall back to £200,000. This allows firms to deduct more of their plant and machinery investment immediately.

The long-run cost of increasing the AIA will be much lower than the £1.3 billion a year shown in the government’s costings, because deducting the cost of investment immediately rather than gradually means that businesses will pay less tax in the year they invest but correspondingly more tax in later years. Most of the cost is thus delaying revenue rather than reducing the cash amount, though there will still be some long-run cost to the exchequer. For comparison, the government estimated that cancelling the rate increase will reduce revenue by £15 billion a year in 2022–23 terms (albeit before allowing for any effect on investment, as discussed in Section 6.3). In revenue terms, increasing the AIA is a much smaller change than cancelling the rate increase.

The effect of increasing the AIA is essentially to move some investment from the (light and dark) green bars to the blue bars in Figures 6.10 and 6.11: more plant and machinery investment will qualify for the AIA.

For affected investment, this has a much more dramatic effect on EMTRs than changing the headline tax rate. For equity-financed investment, it reduces the EMTR to zero – and, as noted above, it has this attractive feature regardless of the rates of tax, inflation, interest or depreciation. For debt-financed investment, it creates a large negative EMTR: a significant subsidy for investments that would not be viable in the absence of tax.

For EATRs, on the other hand, the impact of changing capital allowances (in this case to 100% up front) and that of changing the tax rate are closer; which will have the bigger impact (per £1

¹⁶ <https://www.gov.uk/government/speeches/chancellor-rishi-sunaks-mais-lecture-2022>.

of exchequer cost) depends on a number of factors, notably including the profitability of the investment: the more profitable the investment, the more important the headline rate relative to capital allowances (remember that the EATRs shown in Figure 6.11 are for investments earning 20% pure profit; for marginal investments, the EATR equals the EMTR shown in Figure 6.10).

This mirrors our discussion of EMTRs and EATRs in Section 6.3. In a domestic context, increasing capital allowances is, as Mr Sunak suggested, better targeted than reducing tax rates at reducing EMTRs and ensuring that investment is not discouraged by tax. Most of the cost of a lower headline rate goes on projects that are highly profitable and would go ahead in any case; more generous capital allowances directly reward and encourage investment, irrespective of the profit made. But in an international context, the headline rate and EATR matter relatively more, because the government wants to attract those highly profitable projects to the UK.

The relative importance of having low tax rates and having high capital allowances is thus finely balanced. But in practice the lower rate and higher allowances announced by Mr Kwarteng would not affect incentives for all the same investments. As noted above, a rise in the headline rate would not have affected profits subject to special regimes such as the patent box, and it would only have applied to companies, whereas the AIA is available to unincorporated businesses as well (self-employed sole traders and partnerships, which we do not discuss further in this chapter). On the other hand, the increase in the AIA applies only to ordinary plant and machinery, and only to investment between £200,000 and £1 million: allowances for investment above £1 million are not changing. For companies that would have invested more than £1 million in plant and machinery anyway, the increased AIA is a giveaway but not an incentive for additional investment. As we noted earlier, most investment in plant and machinery falls outside the AIA as it is done by a relatively small number of firms investing very large amounts. A low headline rate of tax is more relevant for these firms' decisions than a higher AIA. There is thus a certain logic to the combination of changes announced by Mr Kwarteng. International location decisions, and therefore keeping the statutory tax rate and EATRs low, are more relevant for multinational giants; mid-sized businesses are more likely to be domestic and therefore the AIA and keeping EMTRs low are more important for them. (The smallest firms are not affected by either of these announcements: the tax rate was not due to increase for companies with profits below £50,000 anyway, and firms that are never going to invest more than £200,000 in a year are not affected by a rise in the AIA beyond that level.)

As noted above, a further advantage of reducing the headline rate is that it reduces the distortions to choices between different assets and between different sources of finance. This is not true of increasing the AIA, which reduces EMTRs for equity-financed and debt-financed investments similarly (reducing the penalty for equity-financed investment but increasing the subsidy for debt-financed investment). Since the AIA applies only to ordinary plant and machinery, increasing it brings the treatment of qualifying investment more into line with investment that

can already be fully expensed (such as R&D) but increases a distortion relative to assets ‘left behind’ (such as buildings and long-life plant and machinery).

Both of the changes announced by Mr Kwarteng involve welcome simplifications:

- It is simpler for companies to be able to deduct their investment spending immediately under the AIA than to claim capital allowances over several years. By treating qualifying investment spending like current expenses, it also takes pressure off the appropriate categorisation of particular items of spending.
- Cancelling the tax rate increase for companies with large profits would mean the government continuing to apply the same rate of corporation tax to all levels of profit. The March 2022 plan would have entailed not only the reintroduction of a ‘small profits rate’ (of 19% when the main rate was 25%) on profits below £50,000, but also a system of ‘marginal relief’ on profits between £50,000 and £250,000, in effect a *marginal* tax rate of 26.5% on profits in that range, which increases the *average* tax rate gradually from 19% at £50,000 until it reaches 25% at £250,000. Operating a small profits rate and a marginal relief system adds unnecessary complexity and creates unnecessary economic distortions: why have a stronger disincentive to increase profits between £50,000 and £250,000 than above or below that range? Nor can it be justified on distributional grounds. Companies are not real people: the burden of corporation tax is ultimately felt by a combination of companies’ shareholders, customers and employees (depending on how profits, prices and wages change in response to the tax), and the people associated with big companies are not necessarily richer than those associated with smaller companies. Applying the same tax rate – however high or low – to all levels of profit is preferable.

Finally, we should emphasise again that the effects of these reforms will depend on whether companies and investors expect them to last. Mr Kwarteng’s announcement was the ninth change to planned rates of the AIA since it was first introduced in the 2007 Budget, which does not inspire confidence that the £1 million level at which it has been set will really be ‘permanent’. Major investments have long time horizons. If companies and investors expect the tax system to change, they will behave accordingly. And instability and uncertainty themselves will have an off-putting effect.

6.6 Looking forward

A period of stability would be welcome. Or, if reform is planned, a sense of direction and end goal that provide a basis on which companies can plan. There is precedent for that: the 2010 Corporate Tax Road Map was widely and rightly praised, though the 2016 Business Tax Road Map was less good.

Improvements are certainly available.

Both Mr Sunak and Mr Kwarteng focused on using tax policy to increase business investment. But it is also important that investment is directed as efficiently as possible. Except where there are specific reasons to do so, it would be better if investments in different assets were not discouraged to different extents by the tax system – as they are currently, distorting the mix of assets in the economy. Indeed, not all investment is good: where debt-financed investment is currently subsidised – encouraging investment that would be economically unviable in the absence of tax – further increasing that subsidy, encouraging even more unproductive investment, would not be desirable. And artificially encouraging greater reliance on debt is not desirable, as we have been warned by the financial crisis of the late 2000s and by worries about the consequences of recent rises in interest rates.

It would not be a surprise to see further changes to tax rates or capital allowances. As set out in Chapter 3, the UK's public finances look increasingly unsustainable, particularly in the wake of the Chancellor's September fiscal statement. On the other hand, given Ms Truss's stated focus on low taxes to boost investment, the supply side and growth, the government may choose to cut corporation tax. In his 2016 Budget, then Chancellor George Osborne announced that the rate of corporation tax would be reduced to 17% in April 2020. While that reduction was cancelled by Boris Johnson during the 2019 general election campaign, the new government may yet choose to take up Mr Osborne's mantle. Similarly, the 2022 Spring Statement included a number of more generous options for capital allowances than the increase in the AIA recently adopted by Mr Kwarteng. The most generous of these was full expensing for plant and machinery, the cost of which (according to tentative Treasury estimates) would peak at £11 billion a year, compared with £1.3 billion for the recent AIA change – although (as discussed above) both would be much less expensive in the long term.

It is notable that all options set out in the Spring Statement and the May policy paper apply only to investments in plant and machinery. Were the Chancellor minded to seek out more generous options for capital allowance reductions, a further option would be to extend the scope of reform to other asset classes – for example, by broadening the scope of the AIA to include a broader range of investments.

The relative merits of increasing the generosity of allowances versus reducing the corporation tax rates have already been well rehearsed in this chapter. To recap:

- Cutting the rate of corporation tax would reduce the tax on equity-financed investment and lessen the distortions between debt and equity finance and between different assets. However, the tax reduction would be largest for more profitable investments and would be less effective at reducing the tax on marginal investments. While reducing the rate reduces

the distortions to the level, allocation and financing of investment, unless it is reduced to zero, it cannot fully eliminate those distortions.

- Increasing capital allowances would reduce the tax on marginal equity-financed investment, but would increase the subsidy to marginal debt-financed investment – alleviating one distortion at the cost of exacerbating another. It is more cost-effective than reducing the rate as a way to encourage investment domestically, though not necessarily as a way to increase the UK's international competitiveness.

Reducing the tax rate and increasing capital allowances for plant and machinery can both help to increase investment in the UK. But on their own, neither can eliminate the distortions to the level, allocation or financing of investment. That would require more fundamental structural reform. There are several possible models for this, which achieve somewhat different outcomes, but they all involve taking a view on what the corporation tax should look like from first principles. This could have a number of aspects:

- a consistent view of how capital allowances for different assets should be set: for example, to aim to set capital allowances for different assets equal to the rate at which the asset depreciates, or to have full expensing of all investment;
- directly addressing the treatment of debt and equity finance: this might mean radical reform of the treatment of interest costs (and interest income), or introducing an equivalent allowance for the imputed (opportunity) cost of equity finance;
- to achieve consistent investment incentives, some approaches would also require complicated features such as indexing the corporation tax system for inflation and recognising capital gains on assets when they accrue (rather than when the assets are sold) – although other (better) approaches do not require these;
- a clear approach to how the personal and corporate tax systems interact with each other, and how UK and foreign tax systems interact with each other.

We do not discuss the details, properties and merits of different models here.¹⁷ We would favour one of two options – a cash-flow corporation tax or an allowance for corporate equity (ACE) – which can remove distortions to the level, allocation and financing of domestic investment without the need to account accurately for inflation, depreciation or accrued capital gains. Others could reasonably take a different view. But it is clear that recent discussions of corporation tax policy – in policy papers and political debates – have not involved such first-principles thinking about what kind of corporation tax we want: they have been limited to tweaking isolated features

¹⁷ For discussions, see IFS Capital Taxes Group (1991), Auerbach, Devereux and Simpson (2010), Mirrlees et al. (2011) and Adam and Miller (2021).

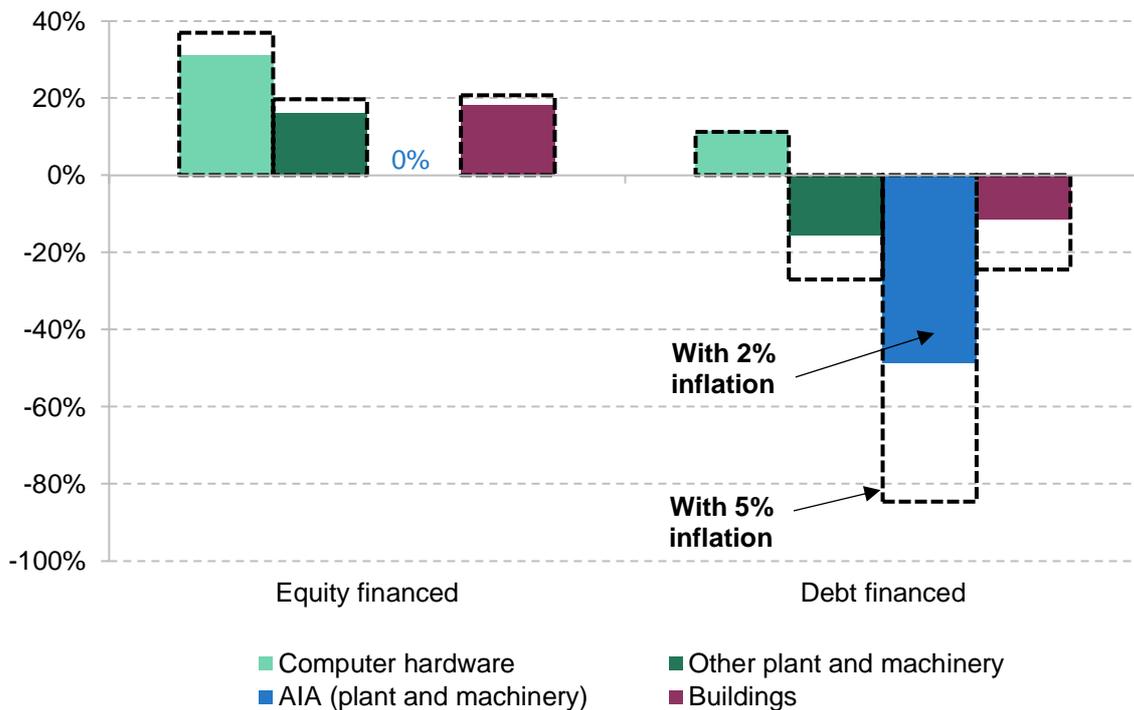
of the system with no clear end goal beyond a general desire to increase business investment. A strategic approach is needed.

Corporation tax policy at a time of higher inflation and interest rates

Inflation is now running at a higher rate than for many years. Higher inflation exacerbates all of the distortions associated with corporation tax. Figures 6.12 and 6.13 show how the effective tax rates on the example investments we looked at in Figures 6.10 and 6.11 change if inflation is expected to be 5% rather than 2%. The penalty for equity-financed investment, subsidy for marginal debt-financed investment, differential between debt and equity finance, and differentials between different assets are all bigger when inflation is higher.

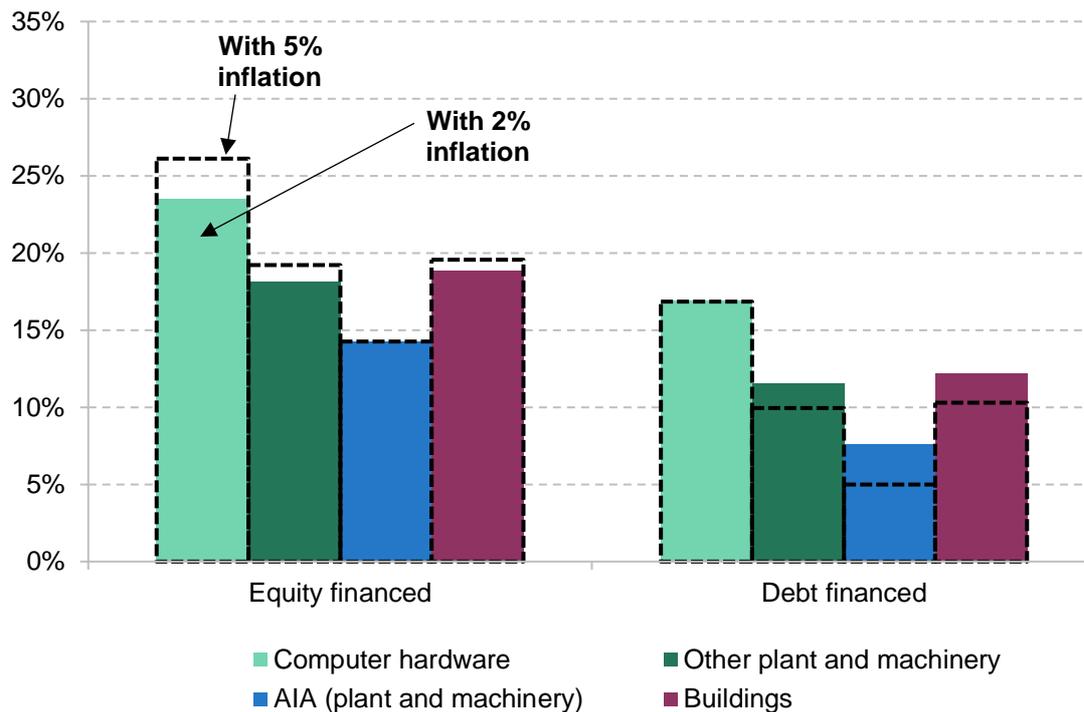
This has two implications for tax policy. First, it puts an added premium on pursuing fundamental structural reforms of the kind mentioned above which can alleviate these distortions: options such as a cash-flow corporation tax or an allowance for corporate equity can remove (or almost remove) the distortions to investment incentives regardless of what happens to inflation.

Figure 6.12. EMTRs on example investments, at different rates of inflation



Note: Calculations assume a 5% real interest rate, a 19% corporation tax rate, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figure 6.13. EATRs on example investments, at different rates of inflation



Note: Calculations are for an investment with a pre-tax real return of 20%. We assume a 5% real interest rate, a corporation tax rate of 19%, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Second, in the absence of such structural reforms, it changes the balance of considerations associated with different incremental reforms. As noted above, reducing the headline tax rate mitigates (without eliminating) all the distortions associated with corporation tax. The benefits of that are greater when inflation is making those distortions worse. Increasing capital allowances does not do that. On the other hand, it is more efficient at mitigating one particular distortion: high EMTRs for equity-financed investment (the majority), which inflation makes more of a problem. So if our primary concern is minimising discouragement for marginal investments, higher inflation makes the case for increasing capital allowances stronger; if we are more concerned about the broader set of distortions to investment decisions, inflation strengthens the case for a low headline rate.

Interest rates

In addition to high levels of inflation, recent months (and indeed weeks) have witnessed substantial increases in market expectations of the path (including the long-term path) of future interest rates.¹⁸ This has potentially substantial implications for investment incentives.¹⁹

The future path of real interest rates (that is, interest rates after accounting for inflation) represents the minimum return (after tax) that an investment must make to be viable. When real interest rates rise, the result is that investments that were previously worthwhile become unviable.²⁰ This can be seen explicitly in Figure 6.14, where we show the real interest rate at two different levels (represented by the dashed horizontal lines): 1% and 5%. As a result of being taxed (or subsidised), the minimum pre-tax rate of return – known as the cost of capital – that an investment must yield may be higher (or lower) than the prevailing real interest rate.²¹ The cost of capital for various investments is shown for both a 1% real interest rate (the coloured bars) and a 5% real interest rate (the hollow bars).

As one would expect, Figure 6.14 shows that when the real interest rate increases, the cost of capital for each investment shifts upwards too. It is worth emphasising, however, just how big this effect can be. Take, for example, an equity-financed investment in computer hardware (the left-most bar of Figure 6.14). With a 1% real interest rate, the minimum return required (the cost of capital) is 2.0%, while with a 5% real interest rate this rises to 7.3%. To put these numbers into perspective, the impact of increasing the headline rate of corporation tax from 19% to 25% would be to increase the cost of capital for computer hardware investments from 2.0% to 2.5%. In other words, movements in real interest rates have the potential to alter investment incentives far more drastically than changes to the tax system.

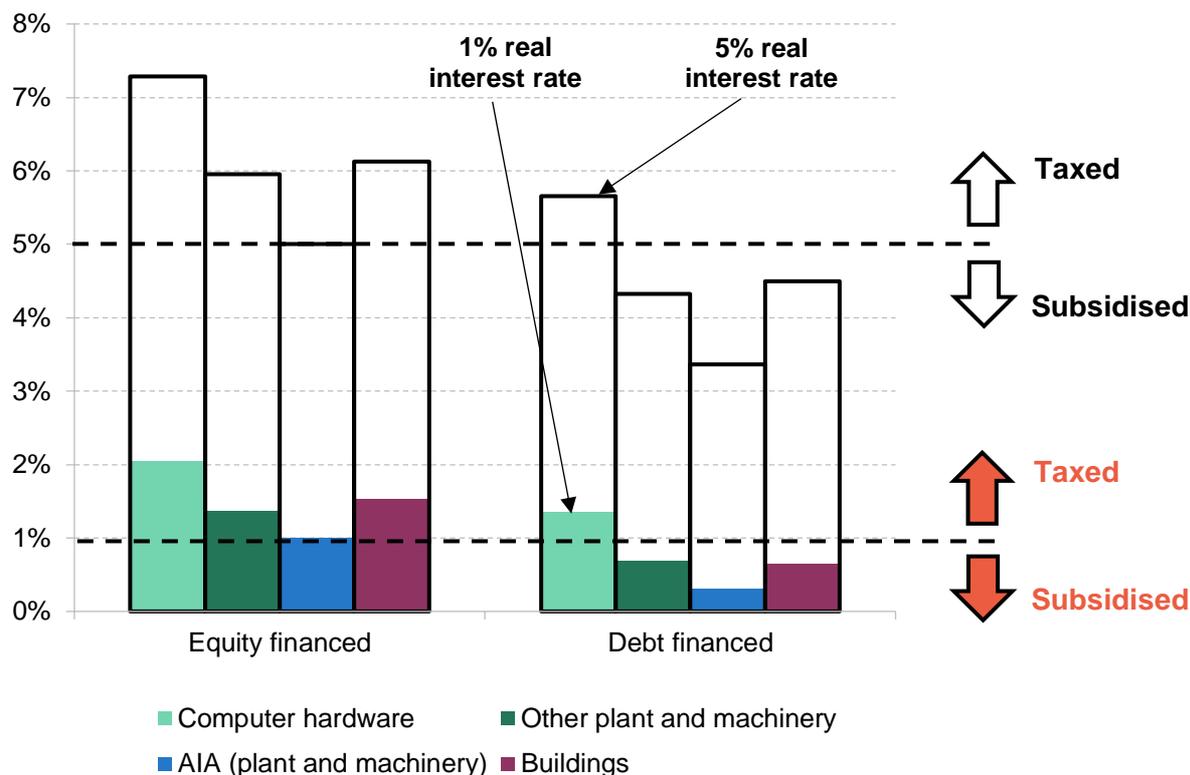
¹⁸ According to the Bank of England ('UK instantaneous OIS forward curve', <https://www.bankofengland.co.uk/statistics/yield-curves>), the expected risk-free nominal interest rate over a 20-year horizon has increased from 2% in mid August to over 3% at the time of writing. In the short run, upward revision of expected rates has been even more substantial.

¹⁹ It should be kept in mind throughout this section that the effects discussed here relate to the *real* rate of interest – that is to say, the rate of interest after accounting for inflation. If increases in market interest rates are accompanied by increases in inflation, this could lead real interest rates to remain the same or even fall.

²⁰ Investors, of course, cannot know for certain what the real interest rate will be in the future. Investment decisions will therefore be determined on the basis of what investors expect the future path of real interest rates to be.

²¹ As noted in Section 6.3, the effect of tax on the cost of capital is summarised by the EMTR. To be precise, the EMTR measures how much lower the cost of capital would be in the absence of taxation: the gap between the bar and the corresponding dashed line in Figure 6.14, as a percentage of the height of the bar.

Figure 6.14. Cost of capital for example investments under current policy, real interest rates of 1% and 5% (2023–24)



Note: Calculations assume either a 5% real interest rate (hollow bars) or a 1% real interest rate (solid bars), a 2% rate of inflation, a 19% corporation tax rate, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

6.7 Conclusion

The cancellation of the planned rise in corporation tax from 19% to 25% was the single biggest tax cut in Mr Kwarteng's September 2022 'mini-Budget' – accounting for around 40% of what was, by historical standards, an extremely large package of tax reductions. Taken together with the more fiscally modest, but welcome, decision to fix the Annual Investment Allowance permanently at £1 million, this suggests that the new government sees corporation tax policy as a central tool in its ambition to boost economic growth.

Cuts to corporation tax can help to increase investment, productivity and economic output. However, caution is needed before expecting too much of these policies, for several reasons.

First, even in the best of circumstances, the beneficial effects of these corporation tax reductions would not be enough for the policy to pay for itself. And their effects are likely to be smaller in the current context of expected economic downturn and heightened uncertainty.

Second, for a lower corporation tax rate to boost investment, people must expect it to last. Since investment decisions are long-term by their nature, it matters whether people believe that the changes will be reversed by this or a future government. The current political environment – and a history of policy instability – must cast some doubt on this in investors’ minds.

Third, while corporation tax can affect investment decisions, other factors matter too, and sometimes more. If interest rates rise, or if the UK is seen as providing an unstable environment, that could outweigh any beneficial effects of lower corporation tax on investment. This highlights the importance of situating corporation tax changes within a sensible and credible fiscal framework and broader policy environment.

Finally, the current corporation tax creates damaging distortions to the form and financing of investment, as well as its level, which cannot be solved by simply adjusting the headline rate of tax or increasing capital allowances in one area. More fundamental changes are needed.

What is needed is a coherent plan for the future of corporation tax as part of a wider fiscal strategy, clearly communicated, that companies and investors can use as a credible guide to what to expect in the future. There are certainly improvements that could be made. Short of that, some stability would be nice.

6.8 Postscript: latest developments

This chapter was finalised in the wake of the ‘mini-Budget’ delivered to the House of Commons by Kwasi Kwarteng on 23 September 2022. Since the then Chancellor delivered his speech, things have moved fast. Both Mr Kwarteng and Liz Truss have been forced to resign and the mini-Budget has largely been reversed. The rise in corporation tax that Mr Kwarteng had planned to cancel is now once more scheduled to go ahead in April 2023 – although the plan for a permanent £1 million annual investment allowance remains in place (at least at the time of writing). These changes happened too late to be reflected in the chapter before publication.

Despite these developments, we hope that this chapter remains relevant and of interest. The implications of a 19% versus a 25% tax rate remain important to examine, albeit for slightly different reasons from when we wrote this chapter. The patterns of distortions to investment incentives that we illustrate in the chapter remain just as present (indeed more so) with a corporation tax rate of 25% as with one of 19% – a fact that we make explicit in Figures 6.10 and 6.11.

The stress that our chapter places on the importance of stability, meanwhile, seems if anything more relevant now than when we wrote it. Cuts to corporation tax will increase investment only in so far as businesses expect them to last. As recent weeks have shown, businesses have every

reason to doubt that tax reductions built on unsound fiscal foundations will offer the permanence that long-term investment decisions demand.

But while we believe that the broad analysis and conclusions of this chapter remain as true today as they were when it was first conceived, we must beg readers' indulgence for its many now-outdated references to Chancellor Kwarteng and Prime Minister Truss. If there is any defence to be offered it is that, in the past few weeks, who occupies which great office of state has not always been an easy thing to keep track of.

References

- Adam, S., 2019. Cancelling further cut to corporation tax rate leaves revenue the same as before the 2008 crisis. Institute for Fiscal Studies (IFS), Comment, <https://ifs.org.uk/articles/cancelling-further-cut-corporation-tax-rate-leaves-revenue-same-2008-crisis>.
- Adam, S. and Miller, H., 2021. Taxing work and investment across legal forms: pathways to well-designed taxes. Institute for Fiscal Studies (IFS), Report, <https://ifs.org.uk/publications/taxing-work-and-investment-across-legal-forms-pathways-well-designed-taxes>.
- Arnold, J. M., Brys, B., Heady, C., Johansson, Å., Schwellnus, C. and Vartia, L., 2011. Tax policy for economic recovery and growth. *Economic Journal*, 121(550), F59–80, <https://academic.oup.com/ej/article-abstract/121/550/F59/5079707>.
- Auerbach, A., Devereux, M. and Simpson, H., 2010. Taxing corporate income. In J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Dimensions of Tax Design: The Mirrlees Review*, Oxford University Press.
- Barnes, S., Price, S. and Sebastián Barriol, M., 2008. The elasticity of substitution: evidence from a UK firm-level data set. Bank of England, Working Paper 348, <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2008/the-elasticity-of-substitution-evidence-from-a-uk-firm-level-data-set.pdf>.
- Bond, S., Denny, K. and Devereux, M., 1993. Capital allowances and the impact of corporation tax on investment in the UK. *Fiscal Studies*, 14(2), 1–14, <https://onlinelibrary.wiley.com/doi/10.1111/j.1475-5890.1993.tb00476.x>.
- Bond, S. and Xing, J., 2015. Corporate taxation and capital accumulation: evidence from sectoral panel data for 14 OECD countries. *Journal of Public Economics*, 130, 15–31, <https://www.sciencedirect.com/science/article/abs/pii/S004727271500136X>.
- Brockmeyer, A., 2014. The investment effect of taxation: evidence from a corporate tax kink. *Fiscal Studies*, 35(4), 477–509, <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1475-5890.2014.12039.x>.

- de Mooij, R., and Ederveen, S., 2008. Corporate tax elasticities: a reader's guide to empirical findings. *Oxford Review of Economic Policy*, 24(4), 680–97, <https://academic.oup.com/oxrep/article-abstract/24/4/680/547862>.
- Devereux, M., 2021. What will the Budget do for corporation investment? Oxford University Centre for Business Taxation, <https://oxfordtax.sbs.ox.ac.uk/article/what-will-the-budget-do-for-corporate-investment>.
- Devereux, M. and Griffith, R., 1998. Taxes and the location of production: evidence from a panel of US multinationals. *Journal of Public Economics*, 68(3), 335–67, <https://www.sciencedirect.com/science/article/abs/pii/S0047272798000140>.
- Devereux, M. and Griffith, R., 2003. Evaluating tax policy for location decisions. *International Tax and Public Finance*, 10, 107–26, <https://link.springer.com/article/10.1023/A:1023364421914>.
- Devereux, M. and Maffini, G., 2007. The impact of taxation on the location of capital, firms and profit: a survey of empirical evidence. Oxford University Centre for Business Taxation, Working Paper 07/02, <https://core.ac.uk/download/pdf/288286396.pdf>.
- Edgerton, J., 2010. Investment incentives and corporate tax asymmetries. *Journal of Public Economics*, 94(11–12), 936–52, <https://www.sciencedirect.com/science/article/abs/pii/S0047272710001167>.
- Ellis, C. and Price, S., 2014. UK business investment and the user cost of capital. *Manchester School*, 72(S1), 72–93, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=573033.
- European Commission, 2021. Effective tax levels using Devereux/Griffith methodology. https://taxation-customs.ec.europa.eu/system/files/2022-03/final_report_2021_effective_tax_levels_revised_en.pdf.
- Gechert, S. and Heimberger, P., 2022. Do corporate tax cuts boost economic growth? *European Economic Review*, 147, 104157, <https://www.sciencedirect.com/science/article/pii/S0014292122000885>.
- Guceri, I. and Albinowski, M., 2021. Investment responses to tax policy under uncertainty. *Journal of Financial Economics*, 141(3), 1147–70, <https://www.sciencedirect.com/science/article/abs/pii/S0304405X21001628>.
- Hall, R. E. and Jorgenson, D. W., 1967. Tax policy and investment behaviour. *American Economic Review*, 57(3), 391–414, <https://www.jstor.org/stable/1812110>.
- Hassett, K. and Hubbard, R., 2002. Tax policy and business investment. In A. Auerbach and M. Feldstein (eds), *Handbook of Public Economics*, Volume 3, Elsevier.

- HM Treasury, 2022. Potential reforms to UK's capital allowance regime – inviting views. Policy Paper, <https://www.gov.uk/government/publications/potential-reforms-to-uks-capital-allowance-regime-inviting-views/potential-reforms-to-uks-capital-allowance-regime-inviting-views>.
- House, C. and Shapiro, M., 2008. Temporary investment tax incentives: theory with evidence from bonus depreciation. *American Economic Review*, 98(3), 737–68, <https://www.aeaweb.org/articles?id=10.1257/aer.98.3.737>.
- IFS Capital Taxes Group, 1991. Equity for companies: a corporation tax for the 1990s. Institute for Fiscal Studies (IFS), Report, <https://ifs.org.uk/publications/equity-companies-corporation-tax-1990s>.
- King, M. and Fullerton, D., 1984. The theoretical framework. In M. King and D. Fullerton (eds), *The Taxation of Income from Capital: A Comparative Study of the United States, the United Kingdom, Sweden, and Germany*, University of Chicago Press, <https://www.nber.org/system/files/chapters/c11495/c11495.pdf>.
- Maffini, G., Xing, J. and Devereux, M., 2019. The impact of investment incentives: evidence from UK corporation tax returns. *American Economic Journal: Economic Policy*, 11(3), 361–89, <https://www.aeaweb.org/articles?id=10.1257/pol.20170254>.
- Mirrlees, J., Adam, S., Besley, T., Blundell, R., Bond, S., Chote, R., Gammie, M., Johnson, P., Myles, G. and Poterba, J., 2011. *Tax by Design: The Mirrlees Review*, Oxford University Press, <https://ifs.org.uk/mirrlees-review>.
- OECD, 2020. Corporate tax statistics, corporate effective tax rates: explanatory annex. <https://www.oecd.org/tax/tax-policy/explanatory-annex-corporate-effective-tax-rates.pdf>.
- Office for National Statistics, 2017. A short guide to gross fixed capital formation and business investment. <https://www.ons.gov.uk/economy/grossdomesticproductgdp/articles/ashortguidetogrossfixedcapitalformationandbusinessinvestment/2017-05-25>.
- Office for National Statistics, 2018. An analysis of investment expenditure in the UK and other Organisation for Economic Co-operation and Development nations. <https://www.ons.gov.uk/economy/grossdomesticproductgdp/articles/ananalysisofinvestmentexpenditureintheukandotherorganisationforeconomiccooperationanddevelopmentnations/2018-05-03>.
- Office for National Statistics, 2021. Capital stocks and fixed capital consumption. <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/datasets/capitalstocksconsumptiononffixedcapital>.
- Office for National Statistics, 2022a. Business investment by asset. <https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/businessinvestmentbyasset>.

- Office for National Statistics, 2022b. Comparison of ONS business enterprise research and development statistics with HMRC research and development tax credit statistics.
<https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/articles/comparisonofonsbusinessenterpriseresearchanddevelopmentstatisticswithhmrcresearchanddevelopmenttaxcreditstatistics/2022-09-29>.
- Ohrn, E., 2018. The effect of corporate taxation on investment and financial policy: evidence from the DPAD. *American Economic Journal: Economic Policy*, 10(2), 272–301,
<https://www.aeaweb.org/articles?id=10.1257/pol.20150378>.
- Ohrn, E., 2019. The effect of tax incentives on U.S. manufacturing: evidence from state accelerated depreciation policies. *Journal of Public Economics*, 180, 104084,
<https://www.sciencedirect.com/science/article/abs/pii/S0047272719301458>.
- Oxford University Centre for Business Taxation, 2017. CBT tax database. <https://oxfordtax.sbs.ox.ac.uk/cbt-tax-database>.
- Prime Minister's Office, 2022. Prime Minister Liz Truss's statement: 6 September 2022.
<https://www.gov.uk/government/speeches/prime-minister-liz-truss-statement-6-september-2022>.
- Romei, V., 'Super deductor' tax break fails to boost UK business investment. *Financial Times*, 10 June,
<https://www.ft.com/content/74eafecd-5f73-4e9e-a546-26b5c1032780>.
- Sørensen, P. B. (ed.), 2004. *Measuring the Tax Burden on Capital and Labor*, MIT Press.
- Wallis, G., 2016. Tax incentives and investment in the UK. *Oxford Economic Papers*, 68(2), 465–83,
<https://academic.oup.com/oep/article-abstract/68/2/465/2364601>.
- Wilkes, G., 2022. Business investment: not just one big problem. Institute for Government,
<https://www.instituteforgovernment.org.uk/sites/default/files/publications/business-investment.pdf>.
- Zwick, E. and Mahon, J., 2017. Tax policy and heterogeneous investment behavior. *American Economic Review*, 107(1), 217–48, <https://www.aeaweb.org/articles?id=10.1257/aer.20140855>.

7. Quantitative easing, monetary policy implementation and the public finances

Paul Tucker (Harvard Kennedy School)^{1,2}

Key findings

1. **Now that interest rates are rising, the interaction of quantitative easing (QE) with the Bank of England's current methods for implementing monetary policy will add to strains on the public finances.** These could, and arguably should, have been avoided by prompt, forward-looking action from around 2019 when the materiality of the risk became apparent (Section 7.2 of main text). As of now, however, there are no easy options.
2. The crux is that QE creates money that goes onto banks' balances (reserves) at the Bank of England, and those reserves are being fully remunerated at the central bank's policy rate (Bank Rate). Given the outstanding stock of QE (£838 billion), **that has effectively shifted a large fraction of UK government debt from fixed-rate borrowing (where debt-servicing costs are 'locked in') to floating-rate borrowing**

¹ Sir Paul Tucker is a research fellow at the Harvard Kennedy School's Mossavar-Rahmani Center for Business and Government; is author of *Global Discord* (Princeton University Press, November 2022) and *Unelected Power* (Princeton University Press, 2018); is President of the National Institute of Economic and Social Research; and is a former central banker who, among other things, worked at various times on monetary policy, monetary operations, government debt management and prudential policy.

² With special thanks to Ben Zaranko (IFS) for active assistance and comments. Thanks also to Carl Emmerson and Paul Johnson (both IFS), who usefully pressed the importance of clarifying various things for readers outside the monetary policy community; to Steve Cecchetti for comments on an early draft; to my former central banking colleagues Peter Andrews and Roger Clews, with whom I worked on debt management strategy and reforming debt-management operations during the mid 1990s, and on overhauling the Bank of England's monetary operations then and, again, in the mid 2000s; to David Aikman, Paul Mizen and John Vickers for exchanges on the section on banks; to Stefanie Stantcheva, Jeremy Stein and Larry Summers for exchanges on public-finance economics; and to Charlie Bean and Mervyn King for going through a near-final draft.

(where debt-servicing costs rise and fall with Bank Rate). Increases in Bank Rate therefore lead immediately to higher debt-servicing costs for the government, leaving the British state with a large risk exposure to rising interest rates. That exposure is not technically necessary to operate monetary policy effectively, so the predicament was not unavoidable.

3. Stepping back, it is a long-standing principle of the UK's macro-finance framework that government debt management should not impair the effectiveness of the Bank of England's monetary policy. It would be sensible to add a new precept: that when, in terms of the objectives for monetary-system stability, the Bank of England is indifferent between options for how to implement its monetary policy decisions, **it should opt for methods that interfere least with government choices about the structure of the public debt.**
4. **That high-level principle points towards the Bank reforming the way it operates its system of reserves.** In particular, change would be warranted for how the regime operates in circumstances where, because the Bank is conducting QE, the banks cannot choose the level of reserves each wants to hold, but the extra reserves do not squeeze out their investing in other assets. Under those conditions, the principle implies that the Bank should not remunerate the *totality* of reserves at Bank Rate but only an amount necessary to establish its policy rate in the money markets. In other words, **taken on its own, the principle supports the Bank moving to a system of tiered remuneration for reserves balances,** combining no (or low) remuneration for some large portion of reserves with a so-called corridor system acting on marginal reserves to establish the Bank's policy rate in the money markets (explained in Sections 7.4 and 7.5).
5. Such a change would have considerable benefits for the public purse. Given the Bank currently holds around £800 billion of gilts, Britain's debt-servicing costs are highly sensitive to even small changes in the path of Bank Rate (Section 7.3). **Taking current (6 October) market expectations for a substantial rise in Bank Rate together with the Bank's current published plans for unwinding QE, the implied savings would be between around £30 billion and £45 billion over each of the next two financial years.** These are big numbers, and would of course be even bigger if the Bank does not actively unwind QE via asset sales but lets it roll off as bonds mature.
6. **Assuming the Bank does go ahead with asset sales, the projected savings from moving to a tiered-reserves regime amount to approximately 1.6% of GDP in 2023–24 and 1.2% in 2024–25** (using Chapter 2's Citi forecasts). They would,

therefore, reduce prospective annual debt-servicing costs from around 3.9% to around 2.3% of forecast GDP in the first year, and from around 2.7% to 1.5% in the second (using Chapter 3's IFS forecasts). Put another way, if not implemented, the forgone annual saving of (on average) £37 billion over the next few years would be equivalent to around 9% of recent annual spending on health, education and defence.

7. **What might seem at first sight like an obvious easy-win reform needs, however, to be balanced against a number of other important considerations.** They concern the effects of bank taxes on allocative efficiency, and on credit conditions (Section 7.6); and, separately, central bank credibility (Section 7.7).
8. The first and second of those arise because **the counterpart to the state's debt-interest savings would be lower interest payments from the Bank to the banking industry on its reserves balances.** This could be regarded as a tax on banking and one, moreover, that might depart from standard public-finance-economics prescriptions on the tax system not distorting incentives and being stable over time. The broad point – and the key high-level trade-off – is that in deciding whether to ask the Bank to consider moving to a tiered-reserves system, the government would have to balance, on the one hand, suboptimal taxes being imposed today (to avoid the higher borrowing brought about by a suboptimal debt structure) and, on the other hand, accepting higher borrowing today (to avoid imposing inefficient taxes) and accepting the prospect of having in the future to impose higher taxes (on incomes and consumption) and/or cut the provision of public services. Broadly, this pitches microeconomic considerations against macroeconomic ones.
9. The standard prescription would be to accept the latter course: do not introduce inefficient taxes when better solutions can be applied over time to the macro problem. The better choice might, however, be affected by whether, in current and prospective circumstances, government might have to pay a default-risk premium on bond-market borrowing unless it cuts the near-term deficit; and by whether more broad-based tax increases and/or cuts in public services are politically infeasible or socially undesirable.
10. **There is also a question of whether a tiered-reserves scheme is best regarded as introducing a tax on banking intermediation or, alternatively, as withdrawing a transfer to banks' equity holders and managers; crudely, a distinction between banking and bankers.** If competitive conditions in banking are such that, as Bank Rate rises, the benefits of fully remunerated reserves would be passed on to neither depositors nor borrowers, but instead would go straight into banks' profits, then perhaps full remuneration of reserves is better regarded as a transfer. But even if UK banking were uncompetitive (on which we do not take a view), it does not follow that

there would be no (or only small) pass-through of higher Bank Rate to banks' customers.

11. Quite apart from government needing to weigh allocative efficiency in the economy against its debt burden, **the Bank of England would separately need to form its own view on whether withdrawing a flow of income from reserves would hurt the resilience of the banking system; and also whether the macroeconomic effects of any tightening in loan conditions could be offset by monetary policy.**
12. In addition, **the authorities would need to weigh some political economy risks.** One is the possibility that **unremunerated reserves would make QE an attractive source of funding for government, which might warrant higher hurdles in the way of routine monetary financing.** Another is that changes in the reserves regime might dent perceptions that the Bank's operating framework will be stable over time, so any new regime needs to be designed to work well in many different states of the world.
13. Given the need to balance many different considerations, and given the Bank has private information on the state and choices of the banks, this chapter falls short of recommending that the reserves regime be changed right now. But nor does it rule out early reforms. **It is clear, moreover, that, unless the Treasury objects on tax-efficiency grounds, the Bank should set out how it will operate a reformed system in future.** The prospect of the current predicament recurring is not hypothetical. Given many current estimates of the equilibrium global real rate of interest are close to zero, the lower bound for the UK's Bank Rate is likely to bite, and so QE be deployed, much more frequently than when the UK's current monetary policy regime was established.
14. Finally, the broad principle discussed above – that the Bank should, where consistent with its mandate, adopt methods of monetary policy implementation that interfere least with public debt management – **might be thought also to have some bearing on how the Monetary Policy Committee (MPC) chooses to tighten monetary conditions to get control of inflation.** Specifically, if the authorities believe gilt yields currently incorporate a default-risk premium but that it will unwind, it might be argued that, on debt-management grounds, the MPC should defer selling gilts (quantitative tightening, or QT) in order to avoid the state paying the risk premium for the residual term of the sold bonds, instead relying entirely on raising Bank Rate to deliver its price stability objective. **We believe, however, that the better conclusion is that if the authorities did want to avoid locking in such costs, any adjustment in the pattern**

of government funding should come in the maturity structure of new issuance by the UK's Debt Management Office.

15. That being so, it is important that the significance of this chapter's central dilemma – between the debt burden and allocative efficiency – would be reduced by early QT sales, since they would shrink the quantum of reserves held by banks with the Bank (whether or not the reserves scheme is reformed).
16. In conclusion, if, as argued here, the Bank's monetary techniques have distorted the British state's debt structure in unfortunate ways, it matters that the simplest remedy might introduce tax-induced distortions to the allocation of resources. **Balancing those conflicting considerations in current circumstances is a weighty matter for government.** This chapter aims to frame the debate. If, having balanced the different considerations, the government were to ask the Bank to consider whether reforms could be introduced without compromising monetary policy, we believe the Bank would need carefully to analyse, and consult on, the implications for price and financial stability. But subject to the government exercising a veto on inefficient-tax grounds, we are not ruling out reforms to the reserves regime for periods when QE is being deployed.

7.1 Introduction

There has been growing concern about the effect on the public finances of the government having effectively borrowed at a floating rate of interest, which will increase, possibly sharply, as the Bank of England tries to bring inflation under control. Higher debt-servicing costs would increase government borrowing, and would imply, eventually, some combination of higher taxes and lower spending on public services and other things. This predicament is a complicated product of low equilibrium market interest rates, the authorities' resorting to quantitative easing (QE) as a substitute for interest rate cuts at the zero lower bound, and central banks paying interest on banks' reserves. That cocktail of technicalities needs some slow-motion unpacking in order to expose the nature of the problem and the pros and cons of various possible solutions. This chapter aims to do that.

To begin with a sweeping summary, we can say the following. When a central bank purchases government bonds, it leaves the size of the state's consolidated balance sheet (see annex for definitions) unchanged, but alters the composition of its liabilities. When the central bank pays interest on the money it created to buy those bonds, it changes the profile of interest payments on the state's consolidated debt, which might turn out to be costly, cheap or neither. There are

good reasons to think that UK government debt-servicing costs will be much higher than they otherwise could have been, plausibly running into many tens of billions of pounds.³ While this has become more obvious since the Bank of England's policy rate started rising, the risk existed even during the period when QE was running a profit (because the policy rate was very close to zero). Proposals for reform have included the Bank of England stopping paying interest on banks' reserves, and government partially hedging the exposure. In order to explain what is going on, it is necessary to look at the mechanics and economics of how QE interacts with public debt management, the economics of various options for attenuating the link, and some of the background political economy dilemmas.

From a macroeconomic-policy perspective, a lesson that emerges for the future is that when a central bank's monetary policy significantly employs QE, it should not remunerate all the reserves held by the private sector but only whatever fraction of reserves needs to be remunerated to establish its policy rate in the short-term money markets. Even if there were reasons to hold back from immediate reform, this implies reforming the Bank's operating regime after the current stock of QE has unwound but before QE is employed again. But a series of microeconomic policy considerations, belonging more to the Treasury than the Bank, also need to be weighed. So the issue is not straightforward, but it is big – because the implications for government borrowing are big.

The chapter begins with how the risk exposure in the public finances has arisen and in what circumstances it matters (Section 7.2), followed by a range of estimates of the exposure's quantitative significance (Section 7.3). It goes on to explain why central banks moved to paying interest on reserves (Section 7.4), and whether the current set-up is the only one that can reconcile quantitative easing with control over short-term interest rates (to jump ahead: no). It then outlines, for purposes of exposition rather than recommendation, how monetary policy might operate if interest were not paid on the bulk of reserves (Section 7.5). Having explained the obvious attractions of reforming the Bank's reserves regime, the chapter turns to microeconomic considerations, setting out some that would need to be carefully weighed against any more macro benefits to the public purse. These concern the effect of taxing banking on the efficient allocation of resources, and on pass-through to customer loan and deposit rates (Section 7.6); and, separately, central bank credibility (Section 7.7). Before concluding, two alternative strategies are briefly noted: hedging part of the exposure, and the Bank relying on selling off its gilt portfolio, rather than increasing its policy rate, when it wishes to tighten monetary

³ This risk exposure was highlighted in evidence to the House of Lords Economic Affairs Committee hearings on QE by Philip Aldrick and by Paul Tucker on 2 February 2021, and was picked up in the evidence of Charles Goodhart and Adair Turner on 16 March 2021 (<https://committees.parliament.uk/work/993/quantitative-easing/publications/oral-evidence/>). It is discussed in paragraph 141 of the committee's report (<https://committees.parliament.uk/publications/6725/documents/71894/default/>) and, later, in the July 2021 fiscal risks report of the Office for Budget Responsibility (2021b).

conditions (Section 7.8). After recapping how its main findings relate to public risk management and accountability, the chapter draws to a close by suggesting a new principle to help guide the interaction of monetary policy and public debt management.

7.2 Central banking and the public finances: qualitative analysis

Central banks' financial operations affect their countries' public finances in a very direct way. A central bank is a machine for issuing the money that is the final settlement asset in a monetary economy – known to economists as base money (see annex). It alters the amount of this money circulating in the economy via financial operations of various kinds. Those operations change the structure and/or size of the state's consolidated balance sheet.

If a central bank buys only government paper, the *structure* of the state's consolidated liabilities is altered, but its size is left unchanged because one organ of the state (the central bank) has bought the liabilities of another (central government). Monetary liabilities are substituted for government's longer-term debt obligations. If, by contrast, the central bank purchases private sector paper or lends secured or unsecured to the private sector, the *size* of the state's consolidated balance sheet increases, with monetary liabilities being added to the government's outstanding debt, and in addition the risk structure of the state's consolidated asset portfolio shifts.⁴

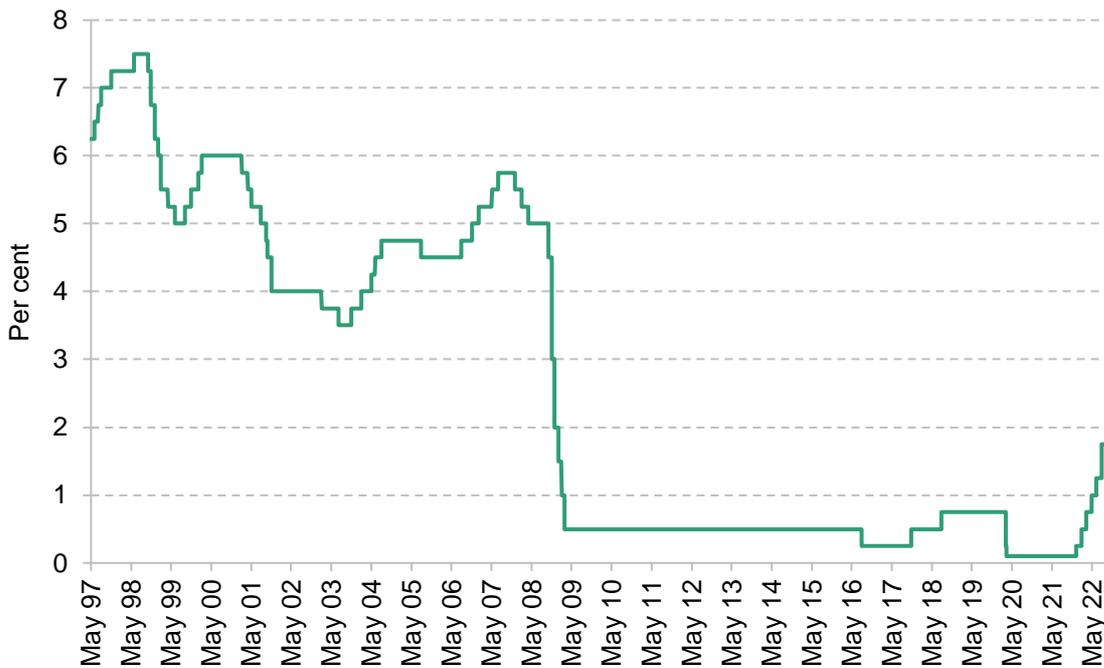
In each case, it matters whether the central bank pays any interest on its monetary liabilities, and at what rate of interest. For around 20 years (as explained in Section 7.4), the main central banks have paid interest at or close to their policy rate on reserves balances held by banks; the Bank of England pays its policy rate, known as Bank Rate (defined in the annex, and shown for the period since Bank of England independence in Figure 7.1). In consequence, when the central bank purchases government bonds – via what is known as quantitative easing or QE – there is an effect on the public finances. Whatever its utility for monetary policy (not discussed here), the combination of QE and interest-on-reserves is roughly equivalent, for the public finances, to the Treasury department entering into a debt swap with the private sector via which fixed-rate government debt is swapped for floating-rate obligations. This means that rather than locking in the rate of interest it pays to borrow, the state pays a rate of interest that is reset each time –

⁴ Some of the Bank of England's recent facilities have done this; notably, the Term Funding Scheme (TFS), under which there is currently nearly £200 billion of loans (with an original term of four years) outstanding. The TFS does inject additional reserves. But because TFS loans are charged Bank Rate (plus a premium), the interest-rate structure of the state's consolidated debt is *not* affected. (The state does take credit risk under this and various other schemes and facilities introduced during COVID and in response to the energy price shock.)

roughly every six weeks – the Bank of England decides its policy rate, and so goes up or down when Bank Rate goes up or down.

For the UK, so long as the state’s sovereign creditworthiness is not in question, the implications for the public finances of *long-lived* QE are most easily examined in terms of the state’s expected and realised debt-servicing costs (i.e. *ex ante* and *ex post*) rather than any volatility in the mark-to-market value of the QE gilt portfolio.⁵ The state is not liquidity constrained – not least because the Bank can create money provided it maintains credibility for low and stable inflation – so the state can finance itself through any nasty volatility in the value of its asset portfolio.⁶ Until and unless QE is unwound by selling bonds (Section 7.8), the state’s notional mark-to-market gains and losses are typically not realised because, ordinarily, government does not trade in its own debt or buy back bonds before maturity.

Figure 7.1. Bank Rate since Bank of England independence



Source: Bank of England.

⁵ Had QE been short-lived, with all bonds sold before they matured, that would not be so. Instead, any capital losses on its succeeding in helping to revive the economy would, in those circumstances, have had to be weighed in the balance against the broader welfare benefits (including via higher taxes and lower welfare spending) of the economic recovery that was driving up yields. It remains the case that the Bank enjoying a cash-flow profit (loss) in the first years of a gilt holding is something neither to celebrate nor bemoan as it might be offset over the remaining period of the holding. It is the profit/loss up to the point of maturity or sale that matters to evaluating the effects on the public finances (see Section 7.3).

⁶ The conditions under which this can be consistent with maintaining central bank independence, and so anchored inflation expectations, lie beyond the scope of this chapter.

While this can be obscured by the complex arrangements between the Bank and HM Government (HMG) for conducting QE – involving an Asset Purchase Facility (APF) booked to a special purpose vehicle, an indemnity and other things (Box 7.1) – what matters to taxpayers is the position where Bank–HMG transfers are netted out, leaving only the state’s net transactions with the market. By introducing a couple of simplifications, this becomes clear. If we assume that the Bank holds the gilts it buys until maturity and that it buys new gilts at the yield at which they were issued into the market (a reasonable approximation for 2020–21),⁷ the financial effect of QE on the state’s *ex post* debt-servicing costs – positive or negative – is simply equal to the Bank’s cumulative profit or loss from buying and holding a long-term bond and financing it by borrowing at Bank Rate. If, therefore, over the life of the bond, Bank Rate averages the yield at which the bond was issued (and purchased), QE does not materially affect the public finances. If Bank Rate is on average higher than that yield, the Bank makes a loss, which it passes on to the Treasury, and so the state would have financed itself more cheaply if the Bank had not bought the bond. Conversely, the state saves money if Bank Rate averages below the yield on the bond.⁸

Box 7.1. The Asset Purchase Facility vehicle

The Bank of England implements QE via a special purpose vehicle called the Bank of England Asset Purchase Facility Fund Limited (APFF Ltd). The company is a fully-owned subsidiary of the Bank.

When the vehicle purchases gilts, it finances the purchases by borrowing from the Bank’s Banking Department, which charges a rate of interest set at Bank Rate. The reserves created are liabilities of Banking Department. So in double-entry bookkeeping terms, Banking Department’s liabilities increase by the amount of reserves created and held by banks, and its assets increase by a loan to APFF Ltd of exactly that amount. Both liabilities and assets pay Bank Rate, so Banking Department has no interest-rate exposure.

Meanwhile, APFF Ltd has a debt liability to Banking Department costing Bank Rate, and assets comprising the gilts bought as part of the QE operations. The APFF Ltd therefore has an exposure to interest rate risk: it has borrowed at a floating rate, and invested in a portfolio of fixed-rate securities. The Treasury indemnifies APFF Ltd against any losses incurred via that exposure, and it receives any running profits (when Bank Rate is lower than the average yield on the APF portfolio).^a It was initially envisaged that there would be a settlement of any profits or losses at the end of the QE scheme. But in

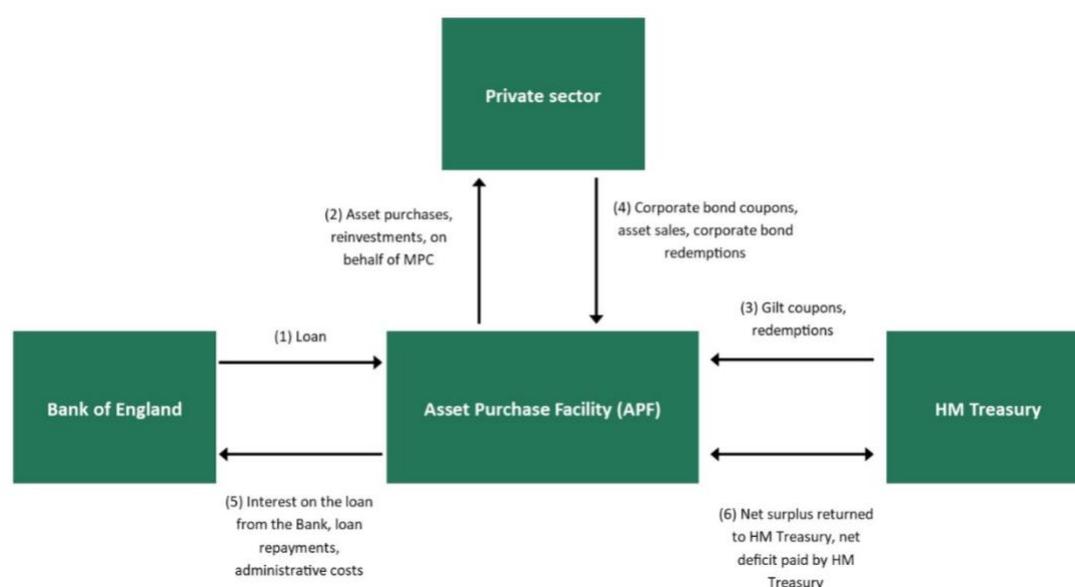
⁷ This effectively assumes (a) that there are no transaction costs in HM Treasury issuing into the primary market and the Bank buying shortly afterwards in the secondary market and (b) that the price has not moved in the time between the two transactions. During QE’s initial phase, during 2009–10, the Bank was not especially buying new gilts, so any capital gain or loss on holding to maturity matters too.

⁸ That does not imply, however, that in such circumstances all issuance should be at short maturities in order to save the term premium. See main text below.

late 2012 it was announced that quarterly *cash* settlements would be introduced as QE was not winding up on anything like the timescale envisaged.^b

Securities bought and held by the vehicle are, for accounting purposes, marked to market (MTM). Any MTM gains or losses are offset by changes in the accounting value of amounts due to or from the Treasury under the HMT Indemnity since that too is valued on an MTM basis (note 8 to BEAPFF 2020–21 accounts).

Figure 7.2. Cash flows to and from the Asset Purchase Facility



Source: Adapted from Bank of England, Cash transfers between BEAPFF and HMT, <https://www.bankofengland.co.uk/-/media/boe/files/markets/asset-purchase-facility/cash-transfers.pdf>.

^a The indemnity is best thought of as an instrument of political economy designed to make clear up front to everyone, including parliament and the public, that any Bank losses would fall on the Treasury. In fact, under the UK system, that would have been so anyway, but might not have been widely understood.

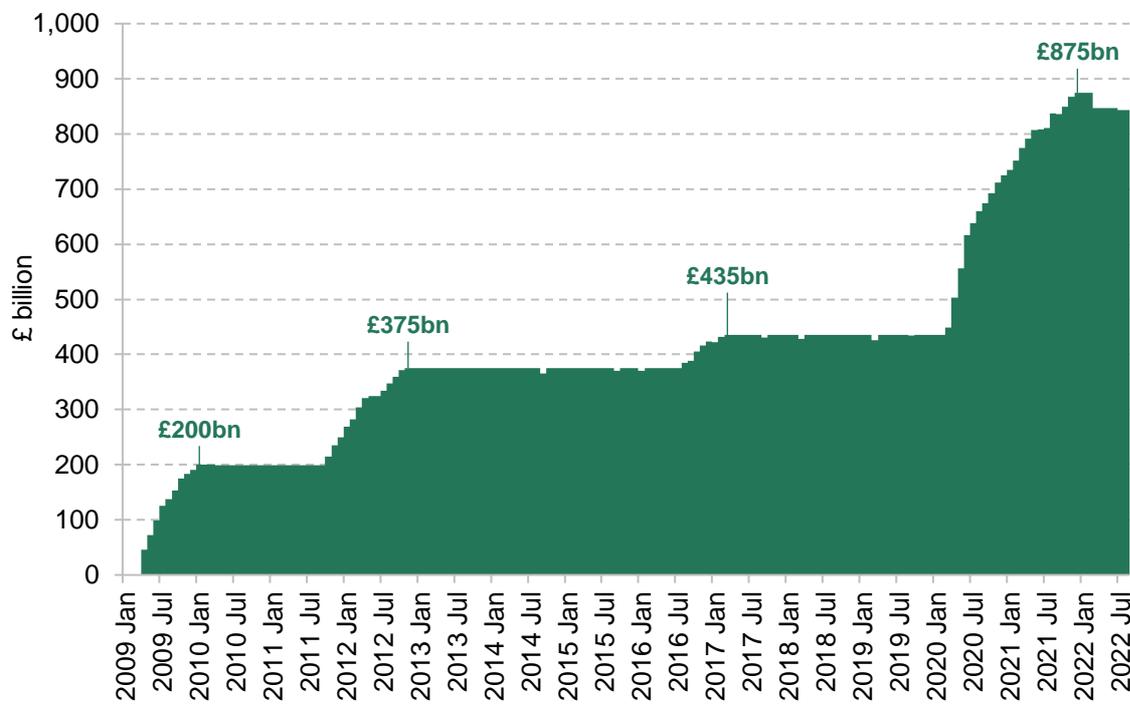
^b Confirmed on page 4 of the BEAPFF Annual Report and Accounts for 2020–21. Quarterly cash settlement mirrors long-standing arrangements for the Bank's Issue Department (to which pound-note liabilities are booked). The Bank was split into Issue Department and Banking Department in 1844 by legislation introduced by Prime Minister Peel.

The risk exposure

As the above makes clear, since QE combined with remunerated reserves shifts the state's consolidated liability structure, it obviously alters its exposure to risk, where risk is conceived of as uncertainty about the path and the net present value of the state's debt-servicing costs. The incremental risk exposure is greater the larger the stock of QE, and risks are more likely to crystallise the longer the exposure lasts. In fact, of course, QE has ended up being very much

larger and much longer-lasting than envisaged back in 2009–10. The stock of QE rose from £200 billion at end-2010 to £435 billion at end-2019 and £875 billion at end-2021 (Figure 7.3).⁹

Figure 7.3. Cumulative gilt purchases via the Bank of England Asset Purchase Facility



Note: Figures show purchases of gilts only and exclude approximately £20 billion of corporate bonds purchased by the APF.

Source: Office for National Statistics series FZIU (BoE: Asset Purchase Facility: total gilt purchases: £m CPNSA).

It is natural to think of the risk exposure in terms of the uncertainty that arises from the structure of the state's debt stock veering away from what analysis had suggested would be sensible absent QE. Had fiscal stimulus, not monetary stimulus, been the favoured instrument for promoting economic recovery from the middle of the 2010s, the annual deficits would have been larger but the structure of the state's debt would presumably have been broadly unchanged (given a stable debt-management strategy for many years).

Government's choice of debt structure in normal conditions should be based on analyses of the pattern of shocks – their type and possible scale – that might plausibly hit the economy. That entails assessing the prospective effects on tax revenues and spending of a wide range of shocks, taking account of whether different types of gilt issuance provide insurance to the private sector

⁹ These numbers are for QE via the purchase of gilts. The Bank's operations to buy corporate securities raise different issues, and are not considered here.

and so dampen or amplify the transmission of shocks. Given the shocks might be nominal (e.g. to the credibility of the monetary regime) or real, and that those real shocks might be to demand (e.g. to consumer tastes) or supply (e.g. to technology), and sourced either domestically or externally (notably, an energy price shock), the standard choice – certainly in the UK – is to issue both nominal bonds and inflation-indexed bonds spread across the maturity spectrum.¹⁰ More plainly, it makes sense to avoid effectively betting, via a lopsided debt structure, on certain types of shock never occurring.

That, in its direct effects, is what swapping the debt into floating-rate nominal liabilities amounts to for the public finances. The Bank of England’s QE operations purchased only nominal bonds, not inflation-indexed bonds.¹¹ From the perspective of debt management, those purchases accordingly undid HMG’s favoured duration choices for nominal issuance, while leaving the nominal/indexed split of the public debt unchanged. This meant, among other things, that in the face of a positive shock to domestically generated inflation that monetary policy did not preemptively offset, debt-servicing costs would be hit by both a *permanent* increase in the cost of servicing inflation-indexed bonds, and a *temporary* increase in the Bank Rate paid on reserves when monetary policymakers caught up (a risk that is crystallising currently). We assume here that the authorities were right to exclude inflation-indexed bonds from QE as that left the British state with its (deliberate) exposure to rises in inflation, and so left intact the incentives for the Treasury to favour low and stable inflation, and thus to maintain a strong, independent central

¹⁰ Even with a positive term premium (see annex), it is prudent to spread issuance across the maturity spectrum, as bunched short-term issuance exposes the state to rollover risk (adverse price terms, or even quantity rationing) if circumstances deteriorate; the UK has typically chosen to issue a higher proportion of its debt at long maturities than its peers. The richest versions of such ‘optimal’ debt-portfolio studies seek to take into account the effect of different types of shock not only on debt-servicing costs but also on government tax receipts and spending, so it is correlations and covariances that matter. That is because the social policy objective (for a credibly solvent state) is typically taken to be tax smoothing, on the grounds that *ex ante* uncertainty about future taxes (and so *ex post* volatility in actual taxes) will impede economic actors’ planning and, thus, social welfare, other things being equal. Analytically, this would suggest various types of *state-contingent* debt, including GDP-linked bonds (as proposed by Robert Shiller (e.g. Shiller, 2018)). Absent that, and given that unconditional forecasts of the incidence of different types of shock are highly uncertain, the robust conclusion is often taken to be a debt structure that mixes nominal and inflation-indexed bonds issued at a wide range of maturities (see, for example, Barro (1997) and Chrystal, Haldane and Proudman (1999)).

¹¹ By contrast, the US Federal Reserve did buy inflation-indexed bonds in its QE operations. The effect, *ex post*, has been to spare the US the cost of compensating holders for the recent much-higher-than-expected inflation out-turns (assuming the Fed holds the indexed bonds until maturity), but with elected politicians left with blunted incentives to press the Fed to stick to a policy of low inflation (in particular, low domestically generated inflation).

bank that can control domestically generated inflation (see Section 7.7).¹² The QE-induced risk exposure that matters, therefore, concerns only the state's consolidated nominal debt.

When does the risk exposure matter?

Whether the risk exposure matters, however, turns on more than probabilities, as a risk could crystallise but be immaterial in its effects. Here things are a bit more subtle. Qualitatively, the exposure does not greatly matter *ex ante* if the plausible possible paths for Bank Rate all average around the plausible range for yields on medium-to-longer-term gilts, or *ex post* if Bank Rate is not on average materially higher than the yields at which gilts were issued before being bought by the Bank. As explained above, if those conditions are met then temporary divergences of Bank Rate away from its expected path are not going to make much difference to the state's funding costs relative to the counterfactual of government financing itself in the market (provided, as already stated, that fiscal credibility is solid).

In the ordinary course of things (assuming fiscal credibility), long-term bond yields would reflect the expected path of the short rate, plus a so-called term premium to compensate investors for locking up their funds (and assuming market-risk exposure if they might sell before maturity).¹³ When the expected path of policy rates is low (and the supply of long-maturity gilts does not stretch demand), that term premium might be compressed because more asset managers will try to enhance the returns on their investment portfolio by earning the illiquidity premium (one of many manifestations of the proverbial search for yield).

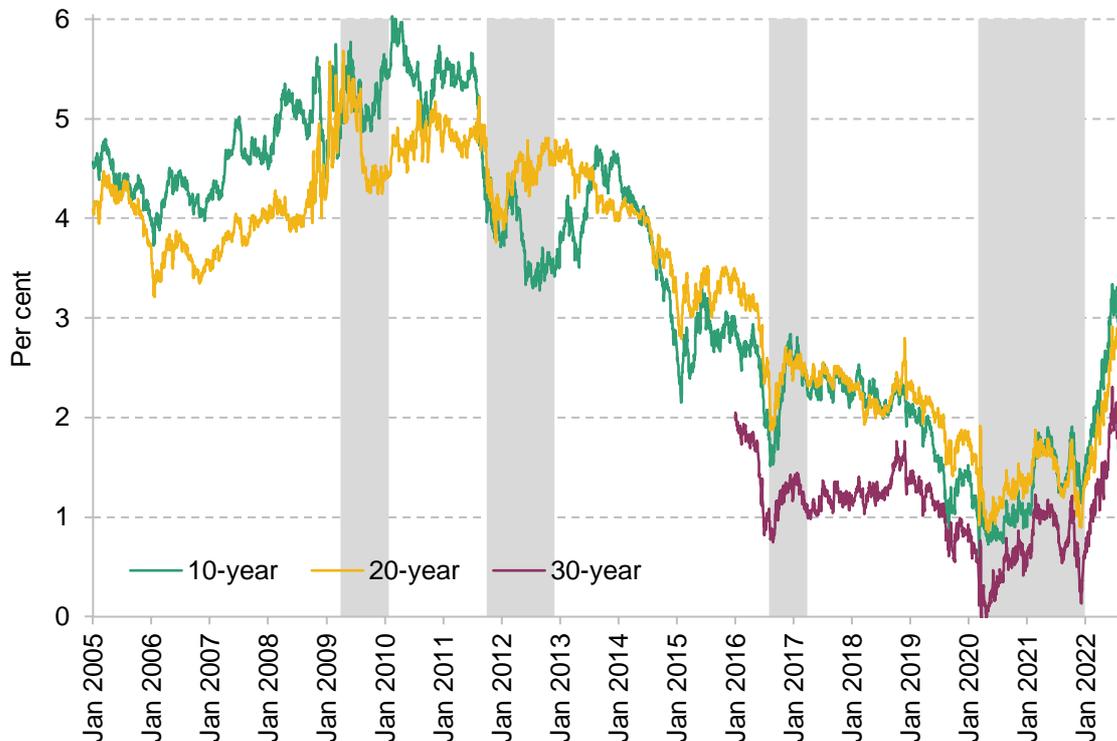
That means that one reasonable indicator of the materiality of the risk exposure, *ex ante*, is whether or not the long-term forward rate of interest (see annex) is roughly – in a plausible range for – what people think will be the steady-state nominal rate of interest (roughly, Bank Rate). Figure 7.4 shows the evolution over time of the 10-, 20- and 30-year forward rates for the 12-month nominal rate of interest. It shows that in 2009 and 2010 when QE began, the long-run forward rate was still around 5%, which is broadly consistent with inflation averaging 2% and the real return on (roughly) risk-free assets averaging 2–3% over the long run. As such, the risk

¹² The effect on the cost of servicing indexed bonds is permanent, because payments are indexed to changes in the price level. That aside, the analysis differs where headline inflation rises due to an adverse shock to the terms of trade (import prices rising relative to export prices), such as a sharp rise in world energy prices for countries that import all or most of their energy. In those circumstances, one would not expect the monetary policy of a credible central bank to have to become tight so as to restrain aggregate demand, and so the double whammy of higher floating-rate interest payments and higher inflation-indexed payments is avoided. There is a double whammy, however, if the cost shock (pushing up the price level) feeds through to expectations of future inflation, but that should incentivise politicians to maintain a central bank resolutely focused, at all times, on maintaining anchored medium-to-long-term inflation expectations. Talk a few years ago, in various industrialised countries, of running the economy 'hot' might have obscured that vital incentive and interest.

¹³ Where fiscal credibility is absent or impaired, a further risk premium will be charged for the possibility either of legal default or, for a country with its own currency, of government overriding central bank independence so as to monetise its debts. That is mainly ignored here, but is touched upon in Section 7.8 (on quantitative tightening).

exposure initially opened up by QE was not obviously material on this count, since borrowing at a fixed long-term rate could be expected to be around the average of Bank Rate over the life of a long-term bond.¹⁴

Figure 7.4. Nominal 10-, 20- and 30-year forward rates, January 2005 to present



Note: Data run to 6 October 2022. Shaded areas indicate periods when the Bank of England was undertaking quantitative easing and purchasing gilts via the Asset Purchase Facility. Data for 30-year forward rates unavailable prior to 2016.

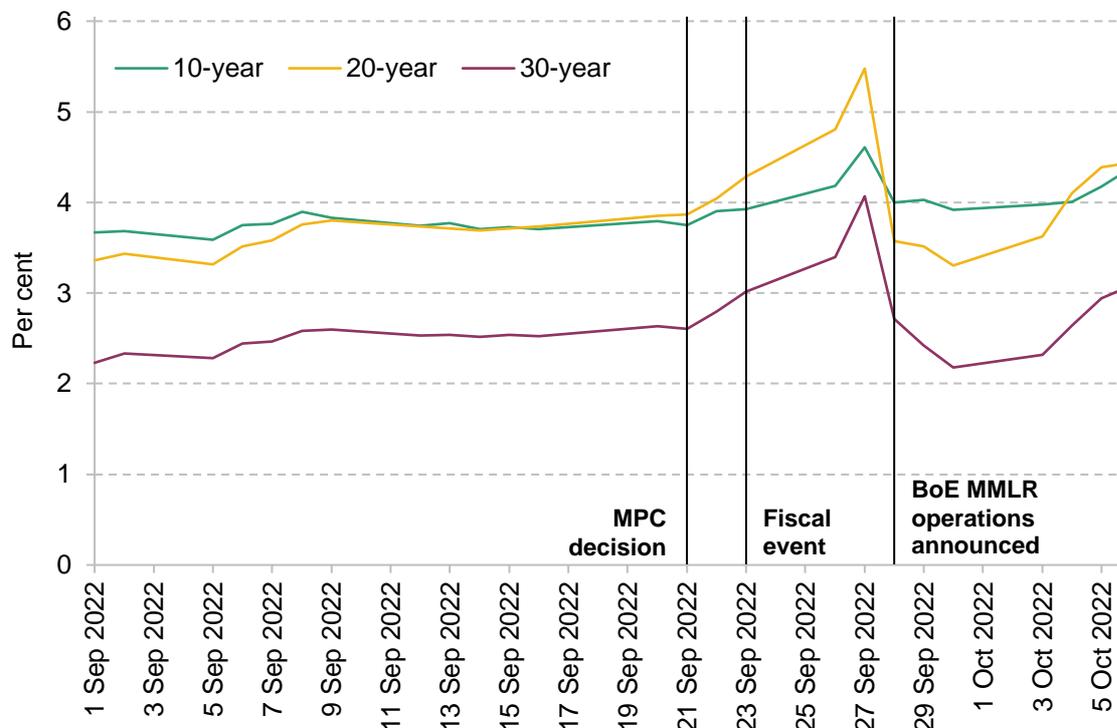
Source: Bank of England.

By mid-to-late 2019 – notably, before the 2020 COVID-19 pandemic began – long forward rates were unusually low: the 20-year forward rate was between 1% and 2%, and the 30-year between 0% and 1%. Subject to one caveat, this implies that, *ex ante*, it would have been much cheaper to fund the government by issuing long-term bonds to the market, thereby locking in the unusually low long forward rates, than by borrowing at a floating rate from the Bank of England. That is because Bank Rate would have been expected to be higher over the life of the bond than the long forward rate. The caveat is that that inference would not hold for anyone who, at the time, had an extraordinarily pessimistic view of the outlook for growth (and, therefore, the return on capital),

¹⁴ This reflects what is known as the Fisher equation (after Irving Fisher) that the nominal interest rate is equal to the sum of the real interest rate plus (expected) inflation. The real interest rate is itself the sum of the risk-free real rate plus various risk premia.

and/or thought inflation would systematically undershoot the prevailing 2% target. There is no evidence (we know of) that the authorities held either view, let alone both.¹⁵

Figure 7.5. Nominal 10-, 20- and 30-year forward rates, 1 September 2022 to present



Note: Data run to 6 October 2022. Vertical lines indicate the MPC's 21 September announcement, the Chancellor's 23 September fiscal event, and the start, on 28 September, of the Bank of England's market-maker-of-last-resort (MMLR) temporary gilt purchases.

Source: Bank of England.

There is also another contrast between the 2009–10 and 2020–21 episodes of QE. During the former, in the aftermath of the financial crisis, there was slack in the economy, and thus no meaningful prospect of domestically generated inflation requiring a period of tight monetary policy. In consequence, the Monetary Policy Committee (MPC) was in a position to accommodate various cost shocks that hit the UK during 2010–11. In the later period, by contrast, it was harder to be so confident about domestically generated inflation pressures remaining muted given persistent additions to monetary stimulus and, following COVID, a large number of people withdrawing from the workforce (reducing the economy's productive capacity) – even before Russia's war on Ukraine and the various resulting cost shocks. As it

¹⁵ Recently, the Bank of England has estimated that the equilibrium world real rate of interest is around zero (Bailey, 2022; Cesa-Bianchi, Harrison and Sajedi, 2022). If that is correct, with an inflation target of 2%, a long nominal forward rate significantly below 2% points towards the cheapest expected funding coming via long-term fixed-rate bonds, other things being equal. Research papers estimating a low R^* include Rachel and Summers (2019).

turned out, that risk seems to have crystallised, implying a period of tight monetary policy during which Bank Rate will be above its expected long-run average. In other words, the public-finance risk exposure created by floating-rate funding through 2020 and 2021 was exacerbated by a non-negligible chance of an inflationary shock. The point is not that this should certainly have been the expected outcome, but that it was a meaningful possibility – the risks to inflation were regarded by some as plainly to the upside – raising the stakes of adding to QE.

Summing up, it is reasonable to conclude that by the autumn of 2019 it was clear there was meaningful risk to the public finances from the combination of QE and paying interest on banks' reserves.

7.3 Quantifying the opportunity costs and risk exposure

Materiality in the probability of a risk crystallising and materiality in the costs of its crystallising are obviously not the same thing. This section aims to put some numbers around the opportunity costs and continuing risk exposure by looking at, in turn, the what-if of QE having stopped before 2020, the sensitivity of funding costs to the path of Bank Rate, and the savings available if interest was no longer paid on banks' reserves.

Opportunity costs from funding via QE over 2020–21

An obvious place to begin, given the previous subsection, is to put some numbers on the savings that might have been secured had the Bank not added to its QE after 2019, when it became clear long-run forward rates of interest were unusually low. This involves assuming, counterfactually, that throughout 2020 and 2021 the government borrowed in fixed-income markets (without any fixed-to-floating debt swap) to fund the fiscal assistance provided to the country during the pandemic, and that the Bank chose not to buy-and-hold more gilts.

The Bank of England bought £440 billion of gilts during that period.¹⁶ To simplify things, one plausible benchmark is to assume that, instead of QE, the government funded in the market at the average yield over that period at the average duration of the conventional part of debt portfolio (ignoring QE), which was approximately 12 years.¹⁷ Assuming no effect on borrowing

¹⁶ Purchases of fixed-rate corporate bonds are ignored here because BEAPFF's holdings are only around £20 billion (a large number in normal circumstances but small in the current context).

¹⁷ This is the average modified duration (see annex) on the government's (net) outstanding conventional gilts over 2020 and 2021. The average maturity of the government's (net) outstanding conventional gilts over the same period was around 14 years. Source: Debt Management Office Quarterly Bulletins (various).

costs (see below), the interest rate incurred would have been approximately 0.7%.¹⁸ In fact, a respectable case could have been made for the government *lengthening* the duration of issuance during this period to take advantage of the unusually low long-maturity forward rates, but that is ignored here.¹⁹

In the short run, funding via gilt issuance would have been more expensive than funding via QE at Bank Rate, which averaged 0.17% over the period from 1 January 2020 to 31 December 2021. But things were set to turn round once Bank Rate was returning back to something like neutral. Taking the Bank's recent estimate of the steady-state equilibrium nominal rate of interest of 2% (and assuming no change in the outstanding amount of QE),²⁰ the annual savings would in steady state have been roughly 1.3% (on the £440 billion of gilts), or £6 billion per year.²¹ If, instead, the equilibrium nominal rate were, say, 3% (roughly the 20-year nominal forward rate in late August 2022, so before the recent fiscal-event shock), the steady-state savings would have been nearly double: roughly 2.3%, or £10 billion per year. Using 2021–22 numbers for national income, those steady-state savings would be around 0.2–0.4% of GDP per year, or 0.5–1.0% of total government spending. If instead the equilibrium were 4.4% (the 20-year nominal forward rate at the time of writing, 6 October – see Figure 7.5), the steady-state savings would rise to 3.7%, £16 billion per year, equivalent to 0.7% and 1.5% of 2021–22 GDP and total government spending, respectively.

Those numbers assumed that if HMG had funded itself in the markets during 2020 and 2021, that would not have affected yields. But long-maturity nominal forward rates were so low then that the supply effect on yields would have had to have been in the order of 1–2 percentage points for the implied steady-state saving to be wiped out. At the least, it can be argued that, monetary policy considerations aside (see *Assessment* subsection below), government could usefully have tested the waters rather than relying on Bank purchases.²²

¹⁸ This is the average (implied) yield on a 12-year zero coupon bond over 2020 and 2021, where 12 years is the average duration of the nominal gilt portfolio over that period. The equivalent figure for a 14-year zero coupon bond over the same period (14 years being the average maturity) is 0.8%.

¹⁹ A similar point was made in the 2020 IFS Green Budget (Emmerson, Miles and Stockton, 2020).

²⁰ Bailey (2022) and Cesa-Bianchi, Harrison and Sajedi (2022) estimate the equilibrium world real interest rate at 0%, so a local inflation target of 2% implies an equilibrium nominal rate of 2%.

²¹ That calculation is for the longer-run annual savings from locking in very low long-maturity yields during 2020 and 2021. Of course, the shorter-run annual savings would have been even greater, being the difference between paying approximately 0.7% on £440 billion of borrowing and paying a Bank Rate expected by markets (on 6 October) to average 5.6% over 2023–24 and 2024–25. The counterfactual below (not remunerating reserves) is similar, but moves to paying zero on *almost the totality* of reserves (rather than just £440 billion).

²² Once monetary policy considerations are admitted, either the MPC would have had to have a change of heart about QE or HMT exercised its right to veto further QE (unless, say, the reserves regime were reformed), putting perceptions of independence in jeopardy. But that does not invalidate the utility of the thought experiment.

Forward-looking risk analysis: the Office for Budget Responsibility's reports

That was backward-looking: assuming different policy choices on QE had been made over recent years. Taking recent policy towards QE and reserves as given, the Office for Budget Responsibility (OBR) has published two reports containing *forward-looking* analyses of the risk to the public finances from the UK state's de facto fixed-to-floating debt swap.²³ They approach this by observing that the Bank's operations have considerably shortened the average duration of the debt stock. They calculate the reduction in the mean duration; and also, given that the mean is lengthened by a few very-long-maturity bonds, in the median duration, which serves, OBR points out, as 'a direct measure of the time it takes for half of the full effect of a rise in rates to feed through to interest payments'. In March 2021, the OBR reported that whereas the median maturity of the government's total gilt liabilities *excluding* the Bank's APF was around 11 years, it fell to 4 years if the APF was included. This meant that (as of March 2021) 59% of the government's debt liabilities would respond to changes in interest rates over the (five-year) forecast period, compared with 44% in early 2009 (prior to QE). Relatedly, a 1 percentage point increase in short rates was estimated to increase debt interest spending in the final year of the forecast by three times as much as in December 2012: some 0.45% of national income (equivalent to more than £11 billion in today's terms), versus 0.16%.²⁴

The OBR has also explored the effect on debt-servicing costs of scenarios where the long-run equilibrium real rate of interest (known as R^*) rises with and without an equivalent increase in the underlying rate of economic growth. Inflation is assumed to be at target, because the Bank is assumed to anticipate the shocks. Obviously, the debt-to-GDP ratio rises when the equilibrium real interest rate rises without a corresponding increase in growth. In its July 2022 analysis, the OBR found that a permanent 1 percentage point increase in gilt yields without any change in economic growth would, over a 50-year horizon, increase the ratio of debt to GDP by around 60 percentage points (from around 265% to around 325% of GDP).²⁵

These are important, useful thought experiments, but they do not exhaust the range of scenarios where a reduction in the effective duration of the state's consolidated debt proves costly. In part, this is because the reduction in the debt stock's median duration is not an adequate summary statistic for the changes brought about by QE to the state's debt structure. In principle, a borrower could have a median debt duration of three years without having any debt that repriced

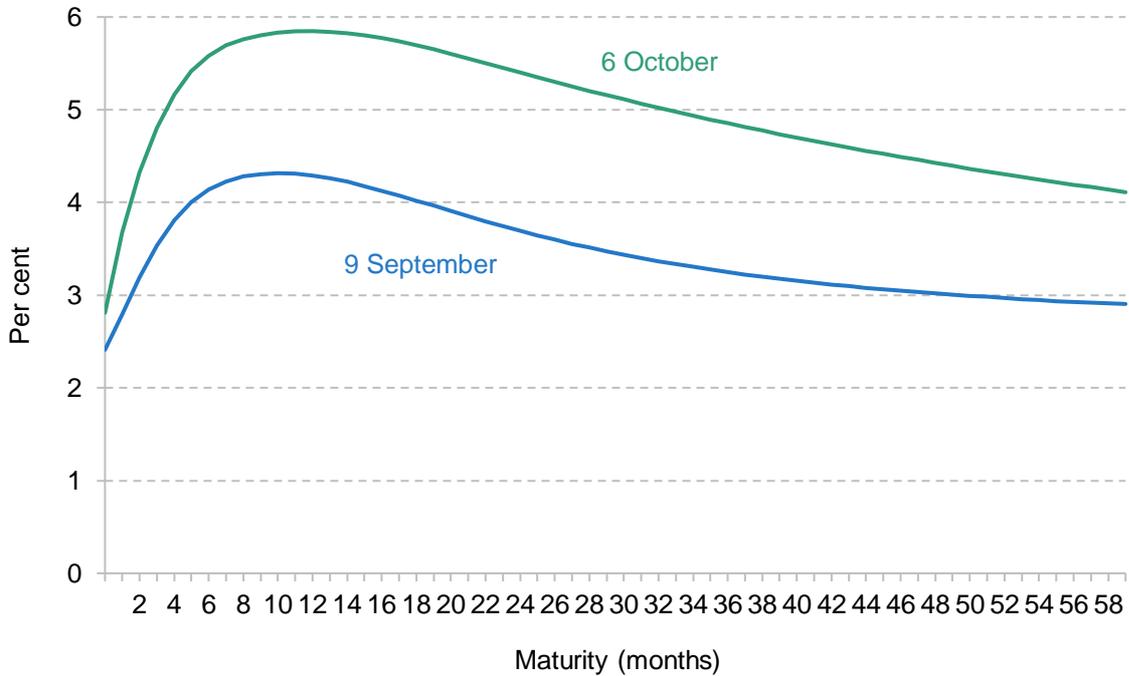
²³ See box 4.1 of Office for Budget Responsibility (2021a) and paragraph 4.59 of Office for Budget Responsibility (2022b).

²⁴ See box 4.1 and supplementary expenditure table 3.21 of Office for Budget Responsibility (2021a) and box 3.3 of Office for Budget Responsibility (2020).

²⁵ See chart 4.17 and paragraph 4.59 of Office for Budget Responsibility (2022b).

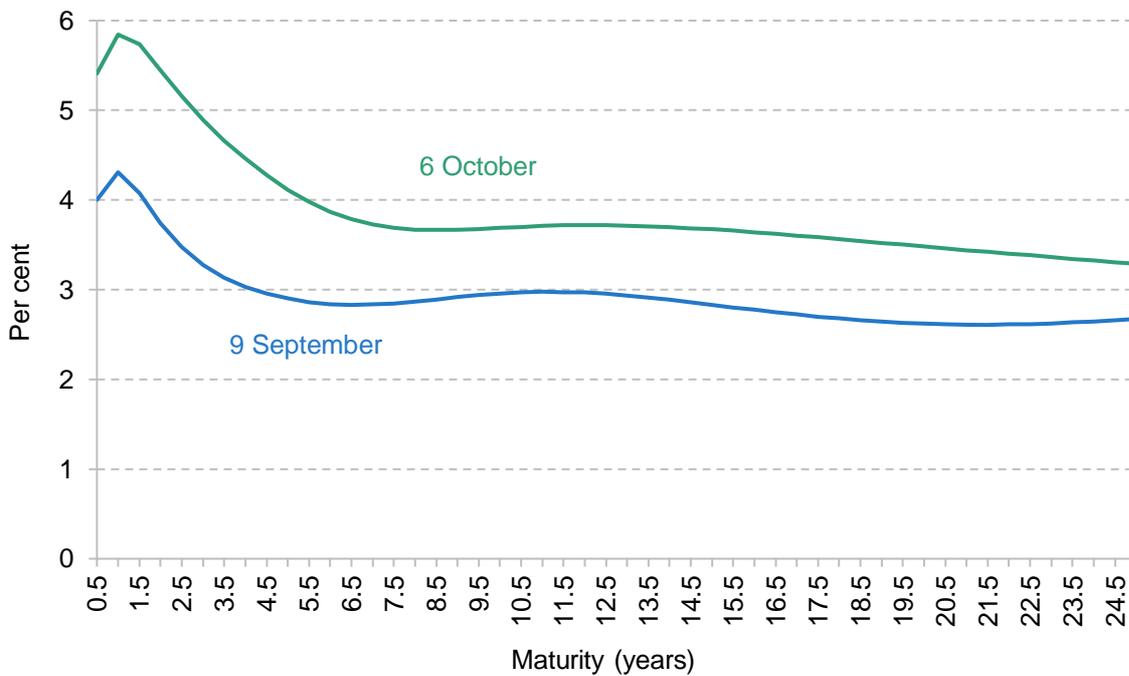
every month, and so without being sensitive to sharp but temporary shifts in the monetary policy rate.

Figure 7.6. Overnight Index Swaps forward curve (short end)



Source: Bank of England.

Figure 7.7. Overnight Index Swaps forward curve



Source: Bank of England.

In terms of illustrating the state's risk exposure via scenario analysis, the point is that a permanent shift in the long-run equilibrium real rate of interest without higher growth does not exhaust the set of unpleasant scenarios. Another important scenario, as suggested in the previous section, was, hypothetically, of a temporary sharp increase in Bank Rate in order to bring domestically generated inflation back under control or to re-anchor medium-term inflation expectations. Given the British state's floating-rate debt, a temporary monetary policy shock of that kind would, while it lasted, increase debt-servicing costs while temporarily pushing GDP below the path that would have been sustainable in the absence of the inflationary shock. A variant of that shock has, of course, occurred – initially as underlying inflationary pressures became apparent to financial-market participants, and intensifying after the fiscal event of 23 September. Taking the current (6 October) market-implied path for Bank Rate (shown in Figures 7.6 and 7.7) and the Bank's announced plans for unwinding QE,²⁶ the cost of servicing the QE-related debt (at Bank Rate) would be £90 billion between now (October 2022) and March 2025 (£42 billion and £33 billion in each of the next two financial years).^{27,28} We return to this below.

These figures are sensitive to the future path of Bank Rate. To underline the sensitivities: given the Bank's announced plans for selling off part of its £800 billion plus QE gilt portfolio, every 1 basis point increase (decrease) in Bank Rate would increase (decrease) cumulative debt-servicing costs over the coming two financial years by around £130 million. Put more dramatically, that means an increase of more than £13 billion over 2023–24 and 2024–25 if the path of Bank Rate were 1 percentage point higher than currently expected over that period; £6.5 billion (the average over the two years) is around 0.2% of GDP.

The broad point here is the need to find a way of analysing risks without the Bank assuming the state's fiscal position is definitely sound, and likewise without the OBR assuming the Bank's credibility suffers no hits. Navigating this is obviously not easy, but the prevalence of floating-rate debt increases its importance.

²⁶ Again, the reserves counterpart to the TFS assets are ignored here because both the reserves and the TFS loans are priced to Bank Rate.

²⁷ On 9 September, two weeks before the fiscal event, that number would have been £67 billion, comprising £31 billion and £22 billion for, respectively, the next two financial years. Some City and think-tank economists forecast a lower path for Bank Rate (under the Citi forecasts used elsewhere in this IFS Green Budget, for instance, the figure would be £65 billion, with £32 billion and £18 billion in the next two financial years), but it is standard to use the market curve, since that reflects a pooling of diverse views.

²⁸ If, instead of assuming that the stock of reserves falls in line with the Bank's published plans for unwinding QE, we assume that the stock of reserves remains as it is now, this figure would rise to £111 billion (with £49 billion and £46 billion in the next two financial years). If we assume that maturing bonds held in the APF are not reinvested, but that the Bank does not undertake any active asset sales, it would be £105 billion (£47 billion and £42 billion).

Counterfactual-regime analysis: not remunerating (most) reserves

An alternative forward-looking approach is to calculate what might be saved if the Bank's regime for implementing monetary policy were configured differently. Two London-based think tanks – the National Institute of Economic and Social Research (NIESR) and the New Economic Foundation (NEF) – have done this, with somewhat different counterfactuals. They each quantify fiscal savings from the state adopting their respectively favoured reform proposals, and thus provide illustrations of some crystallisations of the state's risk exposure by estimating losses in the absence of those reforms. In other respects the two studies differ. The NIESR proposal is discussed below (Section 7.8). Here we discuss the simplest counterfactual, which is to assume that interest is *not* paid on banks' reserves (and for the moment abstract from behavioural effects).²⁹

Of course, so long as Bank Rate was held at 0.1%, the quantitative effect would have been small: on average under £2 billion per year (less than 0.1% of GDP) between 2009 when QE began and 2 August 2018 when Bank Rate was raised to 0.75%.³⁰ It remained low – slightly over £2 billion, again just under 0.1% of GDP per annum – from then until May 2022 when Bank Rate was raised to 1%. The numbers were, however, set to become meaningful as Bank Rate returned to something like normal.

That point was raised by various commentators and former policymakers in evidence to the House of Lords Economic Affairs Committee during 2021. It gained wider publicity only when, in mid 2022, the think tank New Economics Foundation (NEF) proposed dropping interest on reserves (Van Lerven and Caddick, 2022). Taking account of Bank of England statements about the prospective unwinding of QE and without taking into account any fiscal costs elsewhere (say, lower corporation tax revenues) due to the *de facto* tax on banking intermediation (Section 7.6), they calculated a gross saving of roughly £57 billion over the three years to March 2025: roughly £19 billion per annum, or around 0.8% of national income and 1.8% of total government spending (for 2021–22).³¹ Without implying any endorsement, the arithmetic was correct: there would be a very large gross saving from borrowing at a rate of 0% rather than at the path of Bank Rate, unless it were negative for a long period.

²⁹ As connoisseurs will recognise, strictly it is the total stock of reserves that matters here, not merely the part corresponding to the QE gilt purchases (£838 billion as at 5 October 2022). The total stock of reserves as at 5 October was around £947 billion. Not using this bigger number (generating still bigger savings) is equivalent to assuming that roughly £100 billion of reserves go into the corridor regime for 'marginal' reserves described in Section 7.4. There is no suggestion that, if it were to adopt tiered-reserves, the Bank should leave exactly £100 billion in the corridor. The calculation in the main text serves merely to illustrate the (large) sums involved.

³⁰ Source: IFS calculations using ONS series FZIQ (BoE: Asset Purchase Facility: total asset purchases) and historical Bank Rate.

³¹ In a variant, NEF assume £337 billion – approximately 40% of the stock of reserves – continued to be remunerated at the policy rate, in which case the estimated saving is around £22 billion cumulatively over three years.

Given that, even before the recent fiscal event, the (market-implied) expected path of Bank Rate was steeper than when the NEF published in mid June, the expected savings today would be greater. After the fiscal event, the NEF proposal would now save (almost all of) the £90 billion of interest payments on reserves implied by the market curve for the coming two-and-a-half years (see above).³²

Of course, there are questions about how a measure along the lines proposed by NEF would affect aggregate welfare given the possible effects on banking, but that (discussed in Section 7.6) is separable from the narrow funding arithmetic.

Assessment of the significance of the public-finance risk exposure

The purpose of this section, and the previous one, has been to assess whether the risk to the public finances from de facto floating-rate funding is sufficiently significant to make debate about regime reform worthwhile. That depends on the probability of the risk exposure crystallising in an adverse way, and also on the scale of the hit to the public finances if it does crystallise. Both legs of the question can now be answered in the affirmative: the exposure does matter.

While, as reflected in the OBR's scenario analysis, permanent adverse shocks to the government's financing costs matter most, temporary sharp adverse shocks can be meaningful too. The various benchmarks and counterfactuals explored in this section all generate large numbers. Funding in the market rather than via QE during 2020–21 might eventually have saved around £6 billion per year for a few decades (even before September 2022's fiscal-event shock). Funding via QE but not paying interest on any reserves would, if feasible, have saved around £2 billion per year to date, but the implied saving is about to become much larger: potentially more than £30 billion in each of the next two financial years. The underlying point of the OBR risk analysis was that Bank Rate might rise more than expected: that risk has crystallised through a combination of external and internal shocks to headline inflation and to inflationary pressures.

To put those numbers in context, in the decade or so since the 2007–09 financial crisis, debt-servicing costs have averaged 1.9% of GDP, equivalent to £45 billion in 2021–22 terms. Looking backwards, the potentially available (but forgone) savings from not remunerating reserves since QE began would have been small: less than 0.1% of GDP, or less than 5% of average debt-servicing costs since the financial crisis. Even with remunerated reserves, funding via gilt issuance would have in fact been more expensive than funding via QE at Bank Rate over

³² As per footnote 28, this figure would be greater if the stock of reserves remains as it is now, or if the Bank of England does not undertake any active asset sales.

2020 and 2021. But looking ahead, the potential savings under both counterfactuals are much bigger because Bank Rate is expected to rise.

Depending on what one assumes about the equilibrium nominal rate of interest, the plausible forgone annual savings in steady state, relative to QE-with-remunerated-reserves, from locking in £440 billion of fixed-rate borrowing in the market during 2020 and 2021 range between 0.2% and 0.7% of GDP per year. That is between 13% and 36% of average debt-servicing costs, or between 1.6% and 4.5% of annual spending on defence, the health service and education combined.³³

The potentially available short-run savings if (the bulk of) reserves were no longer remunerated are greater still: perhaps between 1.2% and 1.6% of GDP over the coming two financial years (based, again, on 6 October market expectations). That is equivalent to 63–84% of average debt-servicing costs (obviously big); or 7.6–10.5% of annual spending on defence, health and education. This would reduce prospective annual debt-servicing costs (as per the forecast in Chapter 3 of this IFS Green Budget) from around 3.9% to around 2.3% of GDP in 2023–24, and from around 2.7% to 1.5% of GDP in 2024–25.

In reality, then, these numbers are big enough to affect political choices on spending and taxation. That might work through the government's fiscal objectives (or 'rules'). While the new government's fiscal framework is not yet wholly clear, the previous framework included a provision that non-investment spending (including interest on debt) minus taxes and other current receipts should be in balance (or surplus) by year three, so that central government is borrowing only for investment by then.³⁴ A sharp hit to debt-servicing costs for a number of years could make that objective (or anything like it) harder to achieve without unpalatable choices.

Summing up, one question posed by this analysis is whether the QE undertaken during 2020 and 2021 was the only reasonable course for the Bank. Some analysts (including this author) have argued that the interventions in the gilt market in the spring of 2020 would better have been cast as emergency and so temporary MMLR operations to bring order to a destabilised market and provide emergency funding for government. Had that course been taken, the purchases would have been unwound later in the year, once markets had stabilised, leaving HMG able to fund itself in the market. The broader economic rescue would have been entirely fiscal not monetary,

³³ In 2021–22, total government spending amounted to £1,058 billion or 44.5% of GDP. Combined spending on health, defence and education amounted to £366 billion, or 15.4% of GDP. Between 2008–09 and 2021–22, spending on these items averaged 14.2% of GDP; between 1997–98 and 2007–08, 12.3%. Source: IFS TaxLab.

³⁴ Under the fiscal regime prevailing until recently, the other rule was: for public sector net debt to be falling as a percentage of GDP by the third year of the forecast. (See, for example, paragraph 4.3 of Office for Budget Responsibility (2022a).) The new government has reiterated this but for the 'medium term' (perhaps implying the horizon might be extended to, say, five years).

with the Bank playing its part by continuing to keep its policy rate low. In other words, if one thinks the 2020–21 QE was unnecessary to achieve the inflation target, there was a very large opportunity cost to the public finances that cannot easily be explained away.

Those are bygones. QE having in fact continued up to and into 2022,³⁵ the current question is whether anything can be done now to reduce the public finances' continuing risk exposure. Since the only way to have wholly eliminated the exposure was (and is) not to pay interest on reserves, it matters why central banks moved to paying interest on reserves, whether those reasons apply during prolonged QE, and what the effects might be of suspending interest on reserves. The next sections address those questions.

7.4 Central banking reserves policy

Central bank money takes two forms: paper notes, and banks' deposit balances with the central bank. Historically, interest was paid on neither. It cannot feasibly be paid on physical notes.³⁶ For nearly two decades, the main central banks have paid interest on banks' balances (reserves). Two questions arise: what are banks' reserves, and why did central banks shift to paying interest on them?

Since the 18th century, the monetary systems of the advanced economies (and later others) have had a stable structure. Households, businesses, charities and others all bank with small or large banks. Small banks have often banked with large banks. Large banks bank with the central bank. When the central bank buys government bonds from, say, a pension fund, the pension fund's deposit balance with its bank increases, and if that bank banks directly with the central bank, then its balance with the central bank increases. Subsequently, if the pension fund buys assets from, say, an insurance company, and that insurance company banks with a different bank, the reserves balance at the central bank is transferred from the pension fund's bank to the insurance company's bank. While the reserves balance of each bank changes (one goes down, the other up), the aggregate quantity of reserves (central bank money) does not change.

The last point is very important. While individual banks can seek to shed or accumulate reserves, by buying or selling assets, the banking system as a whole cannot affect the quantity of

³⁵ The reinvestment of maturing proceeds ceased in March 2022. Incremental net purchases ceased in December 2021.

³⁶ Some academics, including Willem Buiter and Charles Goodhart, have articulated schemes for doing so.

aggregate reserves. Only transactions with the central bank can affect the aggregate quantity of reserves (plus pound notes).³⁷

Why pay interest on reserves?

Historically, central banks did not pay interest on reserves, the Bank of England being no exception. This meant that individual banks wanted to minimise their reserves balances, so that they could instead hold an asset that provided them with a return. When the central bank injected more money into the economy, banks' (and others') demand for government bonds would rise, pushing up the price of those bonds and so reducing the yield on them. In other words, so long as demand for reserves had not changed, injecting more money led to lower market interest rates, i.e. easier monetary policy.

Some central banks set minimum reserve requirements, often determined by the size or growth in a bank's own monetary liabilities (most obviously, current-account balances held by households and firms). From the early 1980s, the Bank of England did not set reserve requirements. Instead, the main clearing banks chose what (non-zero) balance they aimed to hold each day at the Bank. Those target balances were very low. This meant that, in order to avoid banks continually going into overdraft, the Bank had to ensure each day that its aggregate supply of reserves met demand, but no more. One result was hyperactivity in the Bank's monetary operations (open-market operations), and another was persistent volatility in the overnight rate of interest in the money markets. Since the former was avoidable and the latter undesirable, the Bank implemented a major overhaul of its money market operational framework in 2005–06, before the global financial crisis (Tucker, 2004; Clews, 2005).

The new system – known as 'voluntary reserves averaging' – allowed almost any bank to bank with the Bank, and had each bank set itself a target level of reserves to hold on average over the month between one Monetary Policy Committee meeting and the next (the 'monetary maintenance period'). Since the Bank wanted the reserves banks each to hold a healthy balance that minimised the prospect of overdrafts, it offered to pay the MPC's policy rate (Bank Rate) on balances close to each bank's target, with standing deposit and lending facilities paying and charging rates of interest close to Bank Rate.³⁸ Since this entailed remunerating reserves, the

³⁷ It is, therefore, a mistake to suggest that central banks paying interest is as natural as commercial banks doing so; for example, the BBC's More or Less radio programme saying that 'the Bank of England was paying a little bit of interest on [reserves], because, well, that's how bank accounts work, even when they're bank accounts at the Bank of England.' (26 June 2022, <https://www.bbc.co.uk/programmes/m0018gql>). It is a mistake because whereas numerous private banks compete to attract customer deposits, there is only one central bank and the reserve banks (in aggregate) have no choice over whether to hold the reserves it creates. They can seek only to pass the parcel.

³⁸ Each bank then chose a target level for average reserves taking account of the need to cope with payments shocks and the expected policy rate.

Treasury was consulted on whether it objected to the proposed reforms, and did not do so (see Section 7.7 on how this fits with Bank of England independence).

In other words, the Bank of England's decision to pay interest on reserves was taken in the context of reforms to its operating system in normal circumstances, and was nothing to do with the introduction of QE. By contrast, the US Federal Reserve (the Fed) did move to paying interest on reserves in the context of its QE purchases after the 2008–09 financial system collapse. In both cases (and elsewhere), since QE was not expected to persist for many years and because long-maturity forward rates remained quite high, the possibility of the serious public finance implications explored here was remote.

Setting interest rates under QE

The Fed moved to remunerating reserves because it faced a problem of how to establish its policy rate of interest in the market once it was conducting QE on a significant scale. The challenge arises because QE injects a quantity of reserves into the market far beyond the banking system's aggregate demand for reserves. In consequence, absent other measures, the market rate of interest would fall to zero (assuming banks and others do not set themselves up for negative interest rates).

But some central banks did not want nominal interest rates to fall all the way to zero because they were concerned that this would damage the viability or even the solvency of some banking institutions. Since the QE was being undertaken to help the economy recover after a banking collapse, that would have been perverse because it would have exacerbated problems with the supply of credit. In consequence, in many jurisdictions monetary policymakers wanted to put a non-zero floor on money market rates of interest. In the UK, the MPC was explicit about this.

Later, when the economy recovered and inflationary risks appeared, central banks responded by raising the floor on market interest rates. That is to say, they wanted to raise the path of the policy rate of interest even while there remained an outstanding quantity of reserves hugely exceeding demand.

Central banks were able to put a floor under market rates by remunerating reserves at (or around) their chosen interest rate. This regime, known as a 'floor system', meant they could raise their policy rate without reducing the stock of outstanding QE (and, hence, their supply of reserves). When the supply of reserves exceeds demand, the central bank controls the rate of interest in the overnight money markets by being the marginal taker of funds. The central bank is the marginal taker of funds if the rate it pays on deposits exceeds the rate that would clear the market spontaneously.

One big policy question, therefore, is whether a central bank has to remunerate the whole stock of reserves at the policy rate in order to implement its monetary policy. The answer is, no.

This breaks down into two issues, corresponding to the two instruments of monetary policy: QE, and setting a policy rate. First, do the details of the reserves regime affect the way QE itself is transmitted into the economy in ways that help a central bank achieve its inflation target? And, second, does a central bank conducting QE have to remunerate all reserves at (or close to) its policy rate in order to be able to achieve its chosen policy rate in the money markets?

The reserves regime and the transmission of QE

On the first, there are two (perhaps three) broad accounts of how QE stimulates spending (if in fact it does when financial markets are stable): by compressing term premia through a portfolio-rebalancing channel; and, quite differently, by reinforcing any signal-cum-promise, via ‘forward guidance’, that the policy rate will remain low for a long time.³⁹ Trivially, the design of the reserves regime does not affect QE’s effects on term premia, since that depends on the central bank withdrawing longer-term bonds from the market.⁴⁰

By contrast, the reserves regime might conceivably have a bearing on the signalling account of QE.⁴¹ That is because reneging on a promise to keep rates low (at zero, say) will be more costly to the state if the entirety of reserves are remunerated at the policy rate. But a challenge to the signalling theory is that it is unclear how it can explain central bank choices on the quantity of QE. Once the stock of QE is large enough to be financially painful if sold off into a falling market (rising yields), why would the central bank need to do more to underline the credibility of its commitment to low policy rates?

Separately, if the economy suffers an inflationary shock of some kind – especially one to domestically generated inflation – why would the economic costs of letting inflation and inflation expectations rise above target not be weighed against the financial costs of departing from ‘low for long’ commitments? The financial costs of breaking the promise are just what come with faithfully sticking to the mandate of maintaining low and stable inflation. If, despite that, full remuneration of reserves were to cause central banks to shy away from a pre-emptive

³⁹ The third view – the bank-lending channel – cannot realistically be affected by reserves regimes that either fully remunerate, or freeze a quantum of unremunerated reserves.

⁴⁰ This mechanism nests those associated with rebalancing investor asset portfolios. The effects running through first-round changes to broad money are not addressed here.

⁴¹ The signalling account itself comes in two variants. One bases the credibility enhancement on the exposure to losses: the central bank / monetary authorities putting their money where their mouth is. The other holds, more simply, that doing something is more compelling than the pure talk of forward guidance. The latter is not addressed in the main text because its merits, if any, are not affected by whether reserves are remunerated or unremunerated.

response to an inflationary shock, then full remuneration of reserves during periods of QE is not a good thing.

For the purposes of this chapter, therefore, we conclude that however QE works to stimulate aggregate demand, either its effectiveness does not depend on the design of the reserves regime (the portfolio rebalancing / term premium view), or full remuneration might be counterproductive taking account of the full range of plausible shocks (the signalling view).

Setting interest rates in the face of massive excess-reserves supply

The bigger question is whether central banks need to remunerate the whole stock of reserves in order to steer overnight money market rates in line with their chosen policy rate. It is central to this chapter that that is not, in fact, the only technically feasible option.

In order to deliver an overnight money market rate of interest in line with its policy rate, the central bank needs to be ready to act as either the marginal taker of funds, the marginal provider of funds, or both. When the quantity of reserves supplied systematically exceeds demand, it must be the marginal taker of funds: a floor system (see above). When reserves supplied fall short of demand, it must be the marginal supplier of funds: a ceiling system. The latter is how the Bank of England implemented monetary policy before the Second World War: when the market rate fell below its desired rate, the Bank would undersupply reserves via its open-market operations, forcing the banking system to borrow at the discount window at the Bank's preferred rate (Tucker, 2004, pages 21–25 and annex 3).

Where there is neither a systematic oversupply of reserves nor a systematic undersupply, the central bank must be the marginal actor on both sides of the market, taking and lending money at a rate close to its policy rate. The wedge between its deposit rate and its lending rate implicitly indicates its tolerance for money market rates to diverge from its policy rate. This is known as a corridor system. The narrower the corridor, the more overnight inter-bank activity will be conducted across the central bank's balance sheet.

All operating systems for monetary policy framed in terms of the price of money (the policy rate) rather than the quantity of money are explicitly or implicitly corridor systems. A floor system, as employed in recent years, needs only one side of the corridor.

The key word in that description of monetary operating systems is 'marginal'. The central bank does not need to pay or charge its policy rate (or something close to it) on infra-marginal reserves in order to establish its rate in the money markets. That being so, the operational-policy question is how to separate infra-marginal reserves from marginal reserves.

7.5 Reserve requirements with tiered rates

The issue that sets up is how to reduce the cost to the taxpayer of paying the policy rate on the bulk of the reserves created by QE without losing control of overnight market rates. The technical solution is to introduce a system of tiered interest rates on a bank's reserves balance. This section looks at how that would work for monetary policy, and the next at the likely incidence of a possible de facto tax on banking from no longer remunerating the totality of reserves held by banks at the Bank.

A tiered rate would involve setting a reserve requirement for the bulk of reserves (say, for illustration, 95% of the current stock) earning a rate of interest below Bank Rate (possibly zero), together with a 'corridor system' for the remaining reserves circulating in the market. Whenever a bank's reserves dipped below or were above its required level, the corridor system for steering the market rate would bite.

For the system as a whole, if the total reserves supplied exceeded demand, the overnight market rates would settle around the deposit-facility rate. If demand exceeded supply, it would settle at the lending-facility rate. A policymaker would probably want a narrow corridor to reduce the prospect of frictions in the inter-bank money markets causing the overnight rate to bounce around between floor and ceiling. There need not be any routine open-market operations to steer quantities.

The determination of each bank's reserves requirement

Such a scheme has a number of design parameters. Some technical ones are briefly discussed in Box 7.2, including adjusting the requirement for future central bank transactions (whether unwinding QE, adding to it, or other transactions). Here the focus is on two big ones: how the amount of reserves earning the sub-market rate (the reserve requirement) is determined for each individual bank, and the rate of interest paid on those 'required' reserves. Those choices would drive the extent of any saving for the public finances.

On the design of the reserves requirement, the choice is essentially between a wholly history-based requirement or, alternatively, a requirement set in terms of some current or lagging balance-sheet quantity (for example, as a percentage of on-demand deposits).⁴² A feature of the second approach is that it would affect banks' behaviour, since whatever base the reserves requirement was set off, banks would have incentives to minimise that base in order to minimise the costs to them of holding unremunerated balances at the Bank (see Section 7.6). In other

⁴² The reserves requirement might well need to be set via regulation or some other legally binding instrument so that individual banks did not seek to escape the requirement by simply giving up their reserves account. The mechanics of that are not pursued here.

words, a reserves requirement of that kind would be an instrument of monetary policy and not just a means of addressing the public-finance risk exposure. For that reason, it is set aside here, but a central bank would want to think through those issues.

Wholly history-based formulae do not have that effect, since banks cannot rewrite the past. One possibility would be to determine each bank's reserves requirement (in pounds) in terms of a fraction of aggregate required reserves, with that fraction set equal to the fraction of aggregate reserves the bank had actually held over a specified number of years before tiered remuneration began. That history-based average could be calculated for a period starting from the date QE began in 2009, or later (say, 2016 given the injection of reserves by QE that year, or 2020).

The requirement might need period-by-period adjustment for the central bank's ongoing operations that inject or withdraw reserves, but that is a detail of operational policy (Box 7.2). More important, one lesson since QE commenced in 2009 is that special monetary operations can sometimes last a lot longer than policymakers expect; the implicit assumption in 2009 was that QE would be unwound as the economy recovered. If the new system lasted a very long time, there might be some injustice if the relative size of banks changed materially over a number of years; that might occur organically, through changes in business strategy, or through mergers and new entrants, etc. For that reason, the new system would need to include a provision to the effect that the central bank reserved the right to change the history-based reserves-requirement rule. But it would be important to give no indication of how or when it might do so, since that would reintroduce the strategic behaviour that a history-based requirement is intended to avoid.

Box 7.2. More technical matters for a tiered-reserves regime

Just as any policy should be underpinned by clear and analytically coherent principles, so any policy must be capable of being operationalised; otherwise, it is just so much idle thinking. Operationalising a system of tiered reserves remuneration would raise a host of technical questions for operational policy. Four obvious and important ones are discussed here, in the spirit of testing whether implementing a system of tiered reserves would hit insuperable obstacles.

Determining the amount of reserves that is marginal

For the purpose of establishing its policy rate in the money markets, a tiered system might seem to require the central bank to know the amount of reserves needed in the monetary system over and above required reserves. That is not so. Provided the corridor (see main text) is sufficiently narrow that policymakers are indifferent to whether the market rate sits at the top or bottom of the corridor, it does not need to form a view. If policymakers wish to operate with a wider corridor – say, because they wish to enable a private market in overnight money – they can adjust the level of required reserves (and/or the quantity of reserves supplied by open-market operations) from maintenance period to

maintenance period until the overnight market rate settles somewhere around the middle of the corridor.

Unwinding QE within a reserves-requirement regime

At the time of writing, the MPC is planning to unwind QE, through a combination of not reinvesting the proceeds of maturing gilts and selling outstanding gilts (quantitative tightening, QT). Both withdraw reserves from the system. For the possible tiered-remuneration regime aired in the main text, there is a choice as to whether the drained reserves should come out of required reserves (earning zero) or the residual (marginal) quantity of reserves through which the policy rate is set. The obvious route is to reduce the aggregate stock of *required* reserves, with *pari passu* reductions for each individual bank.^a

As gilts are sold, the structure of the state's consolidated debt will change again, with fewer floating-rate liabilities and more fixed-rate debt. There will, though, still have been an opportunity cost. As at the time of writing (end-September), both 10- and 20-year gilt yields are around 4.1%, compared with 3.1% (10-year) and 3.5% (20-year) on 9 September (two weeks prior to the fiscal event), and 0.2% and 0.7% at the end of 2020. The Bank has said that, after consultation with the debt office, it aims to sell £80 billion of gilts over the next 12 months. The opportunity cost accordingly ranges between approximately £2.7 billion and £3.1 billion per annum (based on post-fiscal-event gilt yields).^b That is equivalent to the entire budget of the UK security services (the Single Intelligence Account, £3.1 billion in 2021–22).

Treatment of unremunerated required reserves under the regulatory Liquidity Coverage Ratio

Another technical question that might arise is how apparently semi-frozen required reserves might be treated under the prudential Liquidity Coverage Ratio (LCR). An argument for reduction might be advanced: if such reserves cannot be used then how can they possibly count as liquid assets for prudential purposes, but if they can be used then how can they be regarded as frozen since banks would seek to get rid of them to escape the lack of remuneration.

The first thing to say is that the required reserves are not frozen. Any balance with the central bank is plainly an ultimate source of liquidity, and so should count towards meeting the LCR. Instead, it is a matter of what price should attach to falling below the required level. As discussed in the main text, the answer is the spread above the policy rate charged on the corridor system's marginal lending facility. Remaining zero-remunerated reserves could be used as collateral for such borrowing: if a borrowing bank defaulted on its loan, the Bank would realise collateral held in the form of reserves by cancelling its liability.

Incentivising use of the marginal lending facility

Finally, there is an esoteric question about what rate should be charged if a bank's reserves balance goes below the required level but it chooses not to borrow from the corridor facility in order to get back to target. There are two approaches. One would have the Bank effect a loan from that facility, i.e. *involuntary* borrowing at the lending-facility rate. The other would be to charge a higher penalty rate for such passive 'overdrafts' in order to incentivise use of the corridor facility. Determining which is better depends partly on the times of day when the facilities and payments systems close and is beyond the scope of this chapter.

^a As has become apparent over the past year or so, perhaps especially in the US, the word 'tightening' can be misleading as it elides an important distinction between, on the one hand, whether policy is stimulating or restraining aggregate demand (determined by the *level* of interest rates) and, on the other hand, whether policy settings are reducing the degree of stimulus (a point about *changes*). Briefly, tightening policy does not mean it is tight.

^b Based on gilt yields two weeks prior to the fiscal event, the approximate opportunity cost would be £2.2 billion to £2.3 billion.

The sub-market rate paid on required reserves

One other question of principle stands out: the rate paid on required reserves. The central bank could choose.

Choosing a non-zero (but positive) rate below the policy rate would cut but not wholly eliminate the public-finance risk exposure. Any such non-zero rate could be set as an absolute amount or as a spread under Bank Rate. Other things being equal, the latter would leave the public finances more exposed to rising debt-servicing costs if Bank Rate were to rise very sharply in the period ahead.

Alternatively, the rate could be zero. Choosing zero would eliminate the public-finance risk exposure on that quantity of government financing, as the cost to the consolidated state would be zero. For a central bank, that might be thought the easiest choice to defend in terms of a principle: money provides a service but not a financial return (but see Section 7.6). Without specifically recommending zero, the rest of the chapter assumes that is the choice (unless the context makes clear).⁴³

⁴³ The possibility of paying a negative rate of interest on required reserves is ignored here as the Bank of England has not articulated whether it would ever set a negative policy rate (paid and charged on marginal reserves). Were that ever to happen, the spirit of the argument here might imply setting a still lower rate of remuneration for required reserves. But that would need to be thought through as part of examining the wider effects of substantially negative market interest rates, and is not addressed here.

Existing tiered-remuneration reserves systems

Systems of tiered rates are not a novelty in themselves. When it moved to paying a negative interest rate on marginal reserves, the European Central Bank continued to pay a higher rate on the bulk of the stock of outstanding reserves (effectively subsidising the banks). The Bank of Japan has operated a similar regime for essentially the same reasons: to avoid a hit to bank profitability that could adversely affect the supply of loan finance.⁴⁴

The difference here is that the rate paid on the bulk of the stock of reserves would be lower than the central bank's policy rate. On the face of things, it would be like a tax rather than a subsidy. This poses the vital question of where the incidence of the tax would fall, and how this would bear on the country's economic welfare and prospects.

7.6 A de facto tax on banking, or a transfer to bankers? Efficient allocation of resources, pass-through to customers and implications for credit conditions

Any saving for the public finances from altering the Bank's reserves regime is obviously lost income for the banks. This raises the question of whether what the state gained directly, it would lose indirectly. The issues are taken under three headings: the effect on allocative efficiency of any tax on banking intermediation; whether the banks themselves would be harmed, jeopardising stability; and implications, short of instability, for macro-financial conditions.

Public-finance efficiency

One point of departure is Milton Friedman's dictum that, for an efficient allocation of resources, money should earn the risk-free rate of interest minus any convenience yield from the payments service it provides as a medium of exchange. From that vantage point, paying the full policy rate is too much given money's convenience yield, but moving to unremunerated reserves would

⁴⁴ For a summary of such tiered-reserves systems, see Deutsche Bundesbank (2021, box on pages 64–66).

impose a tax.⁴⁵ Moreover, by the lights of orthodox public-finance economics, it would be an inefficient tax for a number of reasons.⁴⁶ It would distort behaviour, contributing to an inefficient allocation of resources, because banks would seek to pass it on (non-neutrality; see below). It would (arguably) tax an intermediate good, i.e. a good or service (banking intermediation) that is an intermediate input to the production of final goods and services.⁴⁷ And it would be highly variable, because the wedge between the return on unremunerated reserves and the market rate would change (more or less) every time Bank Rate changed.

Of course, for good or ill, modern economies rarely employ non-distortionary taxes. And a history-based requirement for unremunerated reserves could not be avoided, and so, at least over the short-to-medium run, would not directly distort current choices on the provision of banking (deposit and lending) services.⁴⁸ Further, arguably banking intermediation is not a *pure* intermediate good, so the strictures against inefficient taxation of inputs to production might not apply with their usual force.

Nevertheless, at a high level, there would be a tension in introducing a suboptimal tax to cure a costly suboptimal debt structure. They would standardly be regarded as independent issues. As such, if brought together, there is a choice between, on the one hand, imposing suboptimal taxes today (to avoid higher borrowing brought about by a suboptimal debt structure) and, on the other hand, accepting higher borrowing today (to avoid imposing inefficient taxes) and accepting the prospect of having in the future to impose higher taxes (on incomes and consumption) and/or to cut the provision of public services. Where the state concerned faces no risk of being credit constrained in the future, efficiency considerations point towards choosing the latter course: solving the debt-burden problem over time by taxing final goods.

Where, however, a state might face a default-risk premium in the terms on which it can borrow, the choice is not so straightforward. In those circumstances, public-finance orthodoxy currently

⁴⁵ See Friedman (1959, chapter 3). Remunerating reserves is not wholly faithful to the spirit of the Friedman doctrine as cash is not remunerated; so remunerating banks' reserves treats banks differently from members of the public. Also, Friedman's doctrine was framed in the context of narrow banking (where banks cover all demand-deposit liabilities with reserves). Separately, not paying the policy rate on reserves is here described as a tax for the following reasons. Absent compulsion, the quantity of unremunerated reserves that any individual bank would choose to hold would reflect the fact that they are completely safe (default risk free and the ultimate source of liquidity) and also provide a convenience yield (given a bank's intraday and day-to-day need for immediate liquidity to meet payment obligations). But if, whether de facto via QE or de jure via a reserves requirement, banks have to hold more unremunerated reserves than any would freely choose, then they are effectively being taxed (presumptively: see main text).

⁴⁶ Pigouvian taxes designed to get banks/bankers to internalise the stability-threatening externalities generated by leverage and liquidity mismatches are a separate matter.

⁴⁷ Even where all taxes are distortionary, taxing pure intermediate goods is, in principle, inefficient as it distorts the allocation of factors of production between intermediate and final goods. See Diamond and Mirrlees (1971 and 1976). This assumes, however, that other tools are available to government. In their absence, distorting intermediate goods might be a second-best option.

⁴⁸ Although, as noted earlier in the main text, the monetary authority might eventually, as the market share of banks changed, need to recalibrate the unremunerated reserves regime.

still says it would be more efficient to impose a broad-based tax on incomes (and/or consumption) than to introduce a specific tax on one sector (here banking). If, however, there are severe political constraints on doing that, the calculus is not so straightforward: there are difficult choices to be made.

But is there a tax at all? Arguably the banking market is itself not competitively efficient, so that full remuneration of reserves might not be passed through, as Bank Rate rises, to customers (in higher deposit rates and/or lower loan rates) but go, instead, to equity holders (and managers). In that case, introducing a tiered-reserves scheme would undo a transfer to bankers and shareholders rather than impose a tax on banking *intermediation*. This bears on suggestions that a reformed reserves regime would be unfair.⁴⁹ In the circumstances hypothesised, it is not obvious why it would be fair for bankers and shareholders to enjoy windfall *transfers* from the state for a few years, especially as those transfers would be made while the country was suffering inflationary shocks that might require Bank Rate to be set at levels designed to bring economic growth below trend for a while.

Is there evidence to support that hypothesis? Perhaps. Although most of the Bank's QE purchases will have been from long-term investment institutions, the counterpart to the banks' massive increase in reserves balances with the Bank has *not* been an equivalent increase in the non-bank financial sector's deposit balances with commercial banks. Instead, with QE's effects transmitted into the wider economy, there has been a big increase in the bank deposits of households and non-financial businesses.⁵⁰ To the extent that those deposits are held in non-interest-bearing current accounts, and are sticky, when Bank Rate rises the banking industry earns more (prospectively a lot more) on its reserves without paying out any more on its customer deposits.⁵¹

Nor can it be argued that, given the prudential regulatory regime, QE fills up banks' balance sheets with low-return reserves, depriving them of the capacity to put on higher-return assets.

⁴⁹ See the quotes from market participants in <https://www.bloomberg.com/news/articles/2022-09-21/uk-looks-at-qe-change-to-avert-10-billion-payout-to-banks>.

⁵⁰ Since QE began in 2009, household deposits have grown by 79% (from £901 billion to £1,616 billion); non-financial business deposits have grown by 119% (from £365 billion to £797 billion); non-bank financial institution deposits have fallen by 31% (from £650 billion to £450 billion); and within the financial sector, pension fund and life-insurance company deposits have grown by 19% (from £52 billion to £62 billion). Since the pandemic-induced £440 billion increase in QE during 2020-21, the equivalent figures are 19% (households, from £1,362 billion to £1,615 billion), 23% (non-finance business, £646 billion to £797 billion), minus 4% (non-bank finance, £468 billion to £450 billion) and minus 4% (pension funds and insurance, £64 billion to £62 billion). Source: Bank of England data series TDDU, TDDG, TDDR, TDDT, Z945 and TDCA.

⁵¹ This endowment effect might reflect competitive conditions in retail banking, but that lies beyond the scope of this chapter.

That is because the Bank has excluded reserves from the definition of ‘total assets’ in the regulatory leverage ratio (which caps assets relative to equity).⁵²

Assessing whether, and how far, there is currently a transfer or, if remuneration were curtailed, prospectively a tax requires a deeper analysis that the authorities would usefully conduct if they were to contemplate reform. Indeed, the aim here has been to articulate how the considerations of public-finance efficiency interact with government’s other concerns and constraints. In the remainder of the section, we sketch whether the possible reform would harm the banks (quite a different matter from the efficiency of banking intermediation), and the implications for macro-financial conditions.

Impact on the banks and financial stability

During the decade Bank Rate was very low, the income to the banks from remunerated reserves was obviously also low. Assuming all reserves had been held by the main UK banks, interest on reserves accounted for just 0.7% of their total revenues, and 2.7% of aggregate net profits, during 2021.⁵³

Those numbers would become much larger if reserves continue to be remunerated while Bank Rate rises – certainly to well above zero and probably, given the various inflationary shocks, to materially above its neutral level.

Quite apart from how any tax affects allocative efficiency (see above), which is for the Treasury to consider, the Bank would need to evaluate whether introducing unremunerated reserves – even if thought of as removing a transfer – would damage the banks’ underlying earnings, their market worth, or worse.⁵⁴ Could it undermine their capital adequacy, or even their stability? This is an immensely difficult judgement to reach from outside. While the Bank has in recent years been consistently reassuring about the resilience of the UK banking system, some expert commentators have argued that capital requirements were, in fact, relaxed a few years ago;

⁵² And reserves are given a zero weighting in the risk-weighted capital ratio.

⁵³ For 2020, because Bank Rate was temporarily increased to 0.75%, and bank profits were lower, the equivalent figures are 1.3% and 12.6% respectively. This is based on data for the Bank of England’s definition of monetary financial institutions (roughly speaking, banks and building societies with permission to accept deposits in the UK). The calculation is based on an estimate of the interest paid (at Bank Rate) on the stock of QE over 2020 and 2021, and reported total income and pre-tax profits for each of those years, using table B3.2 of Bank of England ‘Bankstats’ (<https://www.bankofengland.co.uk/statistics/tables>). An alternative calculation, using the reported return on assets for UK banks (source: Bank of England countercyclical capital buffer core indicators), and the reported total sterling assets for those banks (‘Bankstats’ table B1.4), implies that interest on reserves accounted for around 3.0% of aggregate profits in 2021.

⁵⁴ That seems to be the spirit of some sell-side equity analysts predicting lower earnings than otherwise if the reserves regime were reformed. See, for example, Jonathan Pierce of Numis Securities, note to clients on 28 September 2021 and 14 September 2022, and associated media coverage (e.g. <https://www.bloomberg.com/news/articles/2022-06-20/boe-may-look-to-recover-qe-losses-from-banks-uk-analyst-says>).

others that they were never high enough; and others still (including this author) that we just do not know the de facto requirements (because data are not published, even on an anonymised basis), since they are determined by a combination of regulatory changes and discretionary micro-supervisory adjustments.⁵⁵

The Common Equity Tier 1 (CET1) capital of large UK banks was £447 billion, as at 2022Q1.⁵⁶ Plainly forgone income of around £40 billion per year (see Section 7.3) would be large relative to the banking industry's capital base. Forgone income is, however, not the same as a loss. So the argument here against reform would have to be along the lines that the banks needed the income on reserves to sustain them through stagflationary shocks or other severely adverse scenarios (perhaps related to the apparent build-up of leverage outside banking). Given the Bank, as prudential authority, has private information about the state and prospects of the banks, we have to leave this as a matter for it to weigh when deliberating whether and how to introduce a tiered-reserves regime.

Passing on the effects and its monetary implications

The big question for macroeconomic policy lurking here is how the banks would pass on the effects of lower incomes. If any reserves requirements were determined by banks' pre-announcement history, there is a question of whether the cost to banks would be sunk, not affecting their ongoing behaviour at all. Quite apart from the reluctance of business people to recognise sunk costs, there are reasons for thinking that banks' behaviour would be affected by switching off the interest currently paid on reserves. That is because the measure would affect banks' realised net interest margin – broadly, the difference between the rate earned on assets minus the rate paid out on liabilities – for a few years (broadly, until QE runs off). That margin would narrow, as the average rate earned on assets would fall.

Technically, how the banks sought to pass that on would depend on the relative elasticities (sensitivities) of banking's supply of loans and deposits and of customer demand for loans and for deposits. It seems likely the supply of banking services is more elastic than demand, since banks' behaviour is motivated by a drive for profits not by need. If so, banks could seek to mitigate the hit to currently expected revenues in essentially two ways: by passing on the cost to borrowers, or to depositors.

⁵⁵ For the first and second, see Vickers (2016). For the second and third, see Tucker (2019).

⁵⁶ Source: Bank of England, [banking sector regulatory capital 2022Q1](#). It is vital to focus on tangible common equity, because only that can absorb losses in a going concern. Intangibles such as goodwill and deferred tax assets are only worth anything if a bank survives into the future. And subordinated bonds, which can be bailed in during a resolution, might offer reassurance to uninsured senior creditors but not to equity holders (and one hopes not to the bankers themselves). Separately: for some banks, market-based measures of capital are lower than book values.

Either way, the spread between lending and deposit rates would widen: the cost of banking intermediation would rise. For those monetary economists who believe that the supply of broad money matters to the outlook for nominal growth and inflation, this would be equivalent to a contractionary shock to the supply (by commercial banks) of broad money.

At a more granular level, the MPC would need to make judgements about where the adjustment would fall, how the saving/spending of those on whom it fell would be affected, and whether the higher cost of banking intermediation would create incentives for disintermediation into the non-bank financial sector (with possible attendant stability risks).⁵⁷ On the first, by way of illustration, if, say, depositors are least likely to move outside the system, then the burden would be more likely to fall on them. But if they are already receiving the minimum possible (zero) and, in UK conditions, cannot easily be charged fees, then borrowers would pick up the burden. Whether falling on depositors or borrowers, however, there would be both income effects and substitution effects (incentives to change the time profile of saving/spending choices).⁵⁸ The net effect would need to feed into MPC members' choices on the path of Bank Rate.

While the Bank of England's policy committees would have to form views on all these things, it could not be sure in advance that they were right. It would be able to monitor developments via its quarterly surveys of credit conditions and banks' liability conditions, with the committee updating their views and policy settings accordingly.⁵⁹

7.7 Zero remuneration and the political economy of central bank independence

There is another, quite different kind of consideration: whether changing the reserves regime would interfere with Bank of England independence.

Various arguments have circulated bearing on this. It is sometimes suggested, for example, that the decision over remunerating reserves is 'fiscal' and so for HMT not the Bank. That is too

⁵⁷ That would matter for financial stability policymakers – in the UK, the Bank's Financial Policy Committee – if the slack were picked up by shadow banks (but those issues are not pursued here, since they are merely a subset of the risks created by the lack of a general policy regime for shadow banking).

⁵⁸ Whether the pass-through is to depositors or borrowers, the income effects work in the same direction: lower incomes. But if income effects are dominated by substitution effects, it matters greatly whether banks passed the tax through to depositors or borrowers. If the whole cost were passed on to borrowers in higher loan rates, credit conditions would tighten, and the monetary authority could offset the effect of that on the economy by setting a lower policy rate than otherwise. If, by contrast, the whole cost were passed on to depositors via lower deposit rates, that would give them incentives to save less and spend more (or to invest in other investments, pulling down the market rate of interest). The monetary authority might then need to set a higher path for the policy rate than otherwise.

⁵⁹ See Bank of England, [Credit Conditions Survey 2022 Q1](#) and [Bank Liabilities Survey 2022 Q1](#) for recent examples.

strong to the point of being incorrect. The fiscal authority cannot determine the monetary operating regime without overriding monetary independence. As already noted, when interest-on-reserves was introduced, that was a Bank initiative. But, reflecting the kind of tax considerations aired in the previous section, HMT was consulted and given an opportunity to object.⁶⁰

Conversely, it is also sometimes suggested that independence would be violated if HMG were even to ask the Bank to consider a change. That too is not so. This is partly because, as outlined in Sections 7.4 and 7.5, other operating systems could be viable. More generally, it is reasonable for Bank and Treasury to coordinate on the design of monetary and debt-management regimes so long as an independent MPC is still free to decide the stance of monetary policy (in the light of its statutory mandate), and provided debt management does not interfere with that. Such a norm was included in the government's objectives for debt management when monetary independence was introduced.⁶¹ It found expression in the early-2009 public exchange of letters between then Governor Mervyn King and then Chancellor Alistair Darling to the effect that, among other things, HMT would not change its debt-management strategy to exploit the effects of QE on long-term gilt yields, thereby undoing some of its effects. (Not all advanced economies achieved the same concord.)⁶²

Notwithstanding the importance of correcting those misperceptions, there does remain a risk to independence from moving to interest-free reserves. This arises because if the bulk of reserves received no remuneration, the government would have incentives to push for more QE (fleshed out below). Although, as discussed in Section 7.3, there was a sizeable opportunity cost in HMG not being financed via long-term fixed-rate bonds when long-maturity forward rates were unusually low, it needs to be underlined that such funding would still have been more expensive than completely free financing from the Bank.

What pressure government could bring to bear on the Bank is unknowable. But, with unremunerated reserves, where monetary policy needed to be loosened HMG would presumptively prefer the Bank doing so via QE rather than cuts in the policy rate; and

⁶⁰ Disclosure: I was the Bank of England official who handled that when remunerated reserves were introduced in the early-to-mid 2000s.

⁶¹ The government's objective for debt management, which has not substantively changed since the 1997–98 monetary reforms, is (with my emphasis): 'to minimise, over the long term, the costs of meeting the government's financing needs, taking into account risk, *while ensuring that debt management policy is consistent with the aims of monetary policy*' (HM Treasury, 2021, paragraph 3.20).

⁶² Chancellor of the Exchequer Alistair Darling's letter of 3 March 2009 to Governor Mervyn King stated that: 'the Government will not alter its issuance strategy as a result of the asset transactions undertaken by the Bank of England for monetary policy purposes'. On the US, see Greenwood et al. (2014).

conversely, it would prefer monetary tightening to come via increases in the policy rate rather than sales of gilts.

QE, the zero lower bound, and the political economy of inflation targeting

In assessing the various macro-finance risks attendant upon QE discussed in this chapter – the public-finance risk exposure arising from paying Bank Rate on reserves, and the risk of governments pressing the Bank to prioritise QE if reserves were not remunerated – it matters how frequently the Bank is likely to find itself in a position of wanting or needing to stimulate the economy via QE. This is related to two things: the likely average nominal rate of interest, which affects the likelihood of the central bank’s policy rate reaching whatever is judged to be the effective lower bound; and the central bank’s preferred response if it does approach that point. If, as Bank of England work implies, the British nominal rate of interest will average 2% or so over the medium-to-long run (so long as the inflation target remains at 2%; see Section 7.2), then it is likely the effective lower bound will be hit much more frequently than when the inflation-targeting regime was introduced in the 1990s.

Big picture, there are then three options for providing extra stimulus to aggregate demand: greater reliance on fiscal stimulus, the Bank setting negative interest rates (i.e. relocating the effective lower bound), and QE. Since no central bank has contemplated setting negative rates much beyond minus 50 basis points, there is a *zero/effective lower bound (ZLB) problem* for macroeconomic policy. Revealed preference accordingly leaves fiscal stimulus and QE as the realistic choices. Here, however, we encounter an important strategic interaction between elected fiscal policymakers and unelected monetary policymakers. Since the fiscal authority is not under a legal obligation to act, elected policymakers can afford to sit on their hands knowing that the central bank will strive to do more to meet its inflation target.⁶³

Quite apart from the various political costs – from donors or other core backers – that an elected politician potentially pays in undertaking almost any discretionary fiscal action, politicians would have even more reason to do nothing if infra-marginal reserves were not remunerated, because the central bank resorting to QE would deliver free funding. In other words, the combination of a low equilibrium real interest rate and zero interest on the bulk of reserves makes it more likely that QE ends up being the instrument of choice whenever the standard way of providing monetary stimulus is constrained by the zero (or effective) lower bound.

⁶³ In game-theoretic terms, this has the characteristics of a Stackelberg game, in which moves are sequential and that matters. Here, because the monetary policymaker has legal objectives to meet, the first mover is the less constrained fiscal authority. See Tucker (2018, pages 535–536).

By contrast, whenever the long-maturity forward rate is meaningfully below most views of the equilibrium nominal rate of interest, paying the policy rate on reserves would rationally shift a long-sighted fiscal policymaker's incentives towards favouring *debt-financed* fiscal action, rather than QE, at the zero lower bound. That things did not play out that way in 2020 and 2021 is therefore a significant puzzle. Did government effectively make a mistake, not understanding its own longer-term interests, with the implication that, having learned lessons, in future the Bank paying interest on reserves would tilt government towards favouring *debt-financed* expenditure in otherwise-similar circumstances? Or does an elected government have only weak incentives to weigh the costs of interest-on-reserves, because ministers might not expect to be serving if and when the risks of floating-rate funding crystallise? Or are the political attractions of not being exposed to the vicissitudes of market finance so powerful that, somehow, the central bank is induced into conducting QE even when fiscal measures would better be funded in the market (as in 2020–21)?

The answers are unclear, pressing the issue of whether there are ways of materially reducing the incidence of the ZLB problem, and so reducing the likely incidence of QE. One such option would be to raise the inflation target, and thus the equilibrium *nominal* rate of interest. The arguments for and against this lie beyond the scope of this chapter, except to note that it would be easier to make any such change from a position of strength (inflation in line with the existing target).

Another option for mitigating the ZLB problem would be for parliament to strengthen the existing automatic fiscal stabilisers, so that they kick in more powerfully in the face of big adverse shocks to aggregate demand. Putting a turbocharged fiscal policy for severely adverse conditions on something more like autopilot might mitigate the strategic hazards (above) of not remunerating the bulk of reserves balances with the central bank, but would introduce other issues. One concerns the prudent level of debt-to-GDP if the fiscal authority is even more certainly the insurer of last resort against economic slumps. Another is the fraught partisan political question of what distributional choices to encode into such turbocharged automatic fiscal stabilisers.

Summing up, moving to a reserves regime incorporating unremunerated reserves would add to fiscal policymakers' incentives to press for QE, rather than act themselves, when the central bank policy rate is at its effective lower bound. Assuming that the UK wishes to buttress central bank independence, this points to introducing some codified constraints on de facto monetary

financing of government, except in emergencies, if the Bank moves to an operating regime that includes unremunerated reserves.⁶⁴

Reserves-regime stability and central bank credibility

A quite different kind of political economy consideration is whether changing the reserves regime would lead bankers and others to conclude that any new regime might itself be subject to future changes. In other words, would people expect instability in the Bank's sterling monetary framework?

At the least, if the Bank were to change the current system before the current QE-created reserves had run off, it would need also to announce how the system would operate in future. For example, it could say that when there was no QE, it would employ voluntary reserves averaging (see Section 7.4) with full remuneration of reserves, but that it would flip to a tiered system, with zero interest paid on the bulk of the stock of reserves, whenever it employed QE.

That uncertainty counts as a reason – not in our view decisive but certainly to be weighed – for not making a midstream correction to the reserves-remuneration regime, leaving the current public-finance risk exposure intact. But even then, subject to HMT's position on the important tax-regime points summarised in the previous section, the authorities ought to avoid a similar risk exposure arising in the future. So, part of a contingency plan for whenever QE is employed in future would include moving to tiered reserves along the lines described, or alternatively to some other scheme that would avoid unnecessarily transforming the state's risk exposure.

7.8 Other possible remedies

Accordingly, this section briefly looks at two other options.

The NIESR swap proposal

As noted earlier, one suggested remedy was advanced during 2021 by the National Institute of Economic and Social Research. Broadly, it proposed the bulk of the banks' reserves be replaced with a portfolio of short-term gilts. From the perspective of the banks, this would continue to provide liquid assets (like reserves), and would continue to provide a return (like *remunerated* reserves), and it would do so without exposing the banks to the price risks of holding longer-term gilts. From the perspective of the state, meanwhile, the public finances would be less

⁶⁴ This would obviously need to be drafted with great care. Following the UK's exit from the EU, it is no longer subject to the Maastricht Treaty bar on monetary financing. While the Maastricht Treaty exempted the UK from having to join the European Monetary Union, the UK signed up to an obligation in international law not to permit monetary financing.

exposed to unexpected short-run movements in Bank Rate since two-year fixed-rate funding terms would be locked in.

More precisely, NIESR proposed that the state hedge its exposure to unexpected rises in Bank Rate by substituting two-year gilts for around two-thirds of banks' reserves. The banks pay for the short-maturity gilts by running down their reserves (their bank balance) at the Bank. At a consolidated level, the state replaces floating-rate borrowing with funding at a rate fixed for two years.⁶⁵ NIESR has the Treasury and Bank negotiating with the population of reserves banks the prices at which they would exchange reserves for gilts. But that is not essential to the core of the proposal, as an auction could be used rather than a person-to-person negotiation.

More important is whether, to date, it would have saved or cost money. The two-year gilt yield at the time NIESR published its proposal was roughly 0.1%. In mid 2022, by which time there had been increases in both Bank Rate and market expectations of its future path, NIESR issued a statement on how much it had cost the government not to substitute two-year gilts for reserves when recommended.⁶⁶ Assuming the two-year gilts could have been issued at the then prevailing yield (0.1%), the cost was around £11 billion over the two years.⁶⁷ (Today, the number would be much larger, but see below.)

HMT responded by pointing out that the two-year gilt yield would have risen, perhaps sharply, had so much stock been issued at once.⁶⁸ Although qualitatively fair, this risked obscuring the

⁶⁵ Mechanically, the following happens: the Bank's APFF and the UK Treasury's Debt Management Office (DMO) enter into a transaction under which the APFF vehicle exchanges some of the gilts it holds for the gilts that will be sold to the banks; when the banks buy the gilts, they run down their reserves balances at the Bank's Banking Department to do so; and the APFF uses the proceeds to repay its loan to Banking Department. The balance sheets of Banking Department and the APFF both shrink by the same amount. HMG has more short-term gilts in issue to the market, while the gilts acquired in exchange from the APFF can either be cancelled or be held by the DMO for subsequent sale. Substantively – and this matters to some of the points made in the main text – this is equivalent economically to the following: the DMO auctions two-year gilts to the banks; the banks pay by running down their reserves accounts with the Bank's Banking Department; the DMO uses the proceeds of the auction to purchase the APFF's gilt portfolio (which the DMO can then cancel or hold for resale); and the APFF uses the proceeds of its sale to the DMO to repay its loan from Banking Department. My alternative mechanics highlight (a) the possibility of the negotiation with the banks being conducted via an auction and (b) the possibility, if new gilts are to be auctioned, of auctioning a full range of gilts to the market as a whole (discussed in main text below).

⁶⁶ See Allen, Chadha and Turner (2021) for original research paper, and NIESR (2022) for subsequent commentary. Disclosure: I am the president of NIESR and so a trustee, but I was not involved in this paper.

⁶⁷ Two years had not passed so the estimated opportunity cost from not hedging in the proposed way was the sum of funding at (the evolved path for) Bank Rate until mid 2022 and via a one-year gilt issued in mid 2022. The differences in media headline on the savings from NIESR (£11 billion) and NEF (£57 billion) are explained by three things: NIESR flips only £600 billion not, like NEF, the full stock of reserves into a lower-yield asset; NIESR assumes a two-year gilt paying 0.1% whereas NEF assumes unremunerated reserves; and NIESR calculates savings over two years whereas NEF does so, looking forward, for three years. The last, which accounts for the lion's share of the difference, matters only to the extent that the NIESR hedge has to be rolled over and so is exposed to uncertainty (see main text).

⁶⁸ 'The proposals are complicated and involve forcing banks to swap reserves for longer-dated securities, but the £11 billion figure itself is based on almost impossible scenarios and implementing the proposals would have a significant impact on market prices and credibility' (John Glen MP (then Economic Secretary to the Treasury), Twitter, 10 June 2022, <https://twitter.com/JohnGlenUK/status/1535203397028265984>).

underlying point. First, just on the arithmetic, the yield-at-issue on the proposed two-year gilts would have needed to rise by somewhere between 90 and 100 basis points for there to be no ex post cost saving for HMT. That is a lot for a frictional and so temporary supply effect. Second, in operationalising the NIESR proposal, it would *not* have been necessary to auction the whole amount on one day. Auctions could have been spread over a period, with forward settlement dates, so as to cater for the possibility of market indigestion. Indeed, one would want to consult auction-theory experts on how best to do this, including whether to conduct single-price auctions (so as to avoid issuing at a discount to fair value by imposing the winner's curse on the highest bidder). In other words, without endorsing the NIESR proposal, it seems difficult to dodge the conclusion that, as things happened to turn out, HMG would have made a significant saving had it hedged some of its interest-rate exposure in the way NIESR proposed when it proposed it.

To be clear, a saving was not absolutely certain: conceivably, if the economy had been hit by further adverse shocks to aggregate demand, Bank Rate might have been set at a negative rate. But we judge that a saving to date was highly likely given the balance of risks to inflation emerging during 2021 (when NIESR published its proposals).

In any case, NIESR's specific proposal was (and is) not remotely the only way of effecting its broader proposal that HMG hedge the state's exposure to the short-term path of Bank Rate. Among many other possibilities, HMG would probably have done well *ex post* if it had bought options to sell gilts at the yields prevailing in mid 2021 (when the Bank of England still seemed to signal that the rise in headline inflation would be ephemeral and so Bank Rate would hardly need to be raised). That is because both the realised and option-implied volatility were low then (arguably another effect of sustained QE purchases). While all these options – NIESR's, and others – would look like government trading its own debt (generally unwise), they would amount to responses to the Bank's interventions in the gilt market having changed the state's debt structure. So one question is whether, given QE's goals and its transmission into the economy, MPC members would feel that any HMG hedging would risk undermining their monetary policy interventions or, more seriously, the chances of delivering inflation in line with the 2% target.

Arguably a more serious point on NIESR's specific idea is that if the gilts substituted for remunerated reserves (or any bought option) had an average maturity of around two years, the hedge would not cover the risk of an extended series of upward shocks to the expected path of Bank Rate, which could adversely affect government refinancing costs when the new two-year gilts matured. Plainly, as already discussed, recent events have underlined the materiality of that risk exposure.

The Bank simply selling its gilts: the significance of risk premia to QT and government debt management

Both that last consideration and the intricate mechanics of the NIESR proposal (see footnote 65) point to another option. In essence, NIESR's proposal has the government draining reserves by issuing extra short-term gilts to the banks. But, at least in normal circumstances, perhaps better prices and a more balanced liability portfolio could be achieved by draining reserves via issuing extra gilts with the full range of types and maturities to the market as a whole. Once that thought is admitted, another comes into view: that the Bank simply sell its gilt portfolio to the market. In other words, there is an option of adjusting monetary policy primarily by unwinding QE rather than leading with increases in Bank Rate.

That is not to argue whether QT or Bank Rate should be the primary instrument for tightening monetary conditions – a choice for the independent MPC – but, rather, to highlight that this possible course exposes other issues, one running deeper than can be addressed here.

Selling off the APFF gilt portfolio would likely crystallise losses (as nominal yields would have risen if either the economy was recovering or it had been hit by inflationary shocks). If the Bank called upon the Treasury Indemnity to cover those losses (Box 7.1), monetary tightening via QT rather than by raising Bank Rate would simply hit the public finances via a different route. Put another way, the yield at which gilts are sold or resold to the market reveals and crystallises the opportunity cost of the government having effectively funded itself via QE; and that opportunity cost – reflected in a capital loss at the Bank – becomes a realised loss for central government when the Treasury Indemnity is called upon.

This raises the question of whether, instead, the Bank could refrain from calling the Indemnity, carrying the realised loss on its own balance sheet. For some, it is a deep question in monetary economics (beyond the scope of this chapter) whether, in general, it is economically feasible for a central bank to operate with negative equity in accounting terms where it has prospective offsetting future profits not reflected in its accounts.⁶⁹ For others, the pressing practical question is one of political economy: whether a loss-making central bank would be more vulnerable to political influence through the process to effect, and through the public debate prompted by, recapitalisation.

Putting the indemnity question aside, a more practical risk-management issue remains. If the Bank sold into a market that was charging a risk premium on gilts (over and above the expected path of Bank Rate over any gilt's remaining term to maturity), it would be cheaper for the state

⁶⁹ There is also the question of whether, in particular, the Bank of England could do so given the laws to which it is subject.

to fund from the Bank at Bank Rate.⁷⁰ Whereas it can be worth paying a term premium in order to spread the maturity profile of the public debt (and so avoid rollover risk not only in the near term but in the more distant future), paying (or, via QT, crystallising) any default-risk premium is a different matter if the authorities have good reason to believe that it will almost certainly go away.

At the time of writing, that problem might seem pertinent, perhaps suggesting that, whatever the monetary policy arguments for QT, the public finances might be better off if any monetary tightening is delivered by increases in Bank Rate rather than by QT. We reject that reasoning for two reasons. First, to date, it is not clear that a default-risk premium has, in fact, entered into gilt yields. The startling rise in *long-maturity* forward rates was amplified by forced selling of long-maturity gilts (especially inflation-indexed gilts) by overleveraged and illiquid pension-scheme vehicles. Yields were brought down – at least initially – by Bank of England market-maker-of-last-resort operations.⁷¹ More important here, even at the early extremity of the rise in long forward rates, there was little to no sign of higher medium-term inflation expectations and an inflation risk premium widening the wedge between nominal and real forward rates (Figure 7.8), even though that is exactly what one would expect to see if the market attributed a tangible probability to default risk, since monetisation to relieve the real burden of the debt would surely be much more likely than legal default.⁷² (Of course, that could change.)

Second, on the possible inference for policy, even were a default-risk premium to appear in gilt yields, it would surely be more appropriate for the DMO to adjust the profile of its gilt issuance – in the light of, among other things, the term structure of the default premium – than for the

⁷⁰ This is because QE purchases followed by QT sales amounts, in public-finance terms, to the government borrowing at a floating Bank Rate until the sale, but at the yield-at-sale for the bond's remaining term. If that yield-at-sale includes a material risk premium (for the risk of sovereign default or of avoiding default by monetisation), continuing to fund at Bank Rate should be cheaper so long as the risk premium is unwarranted.

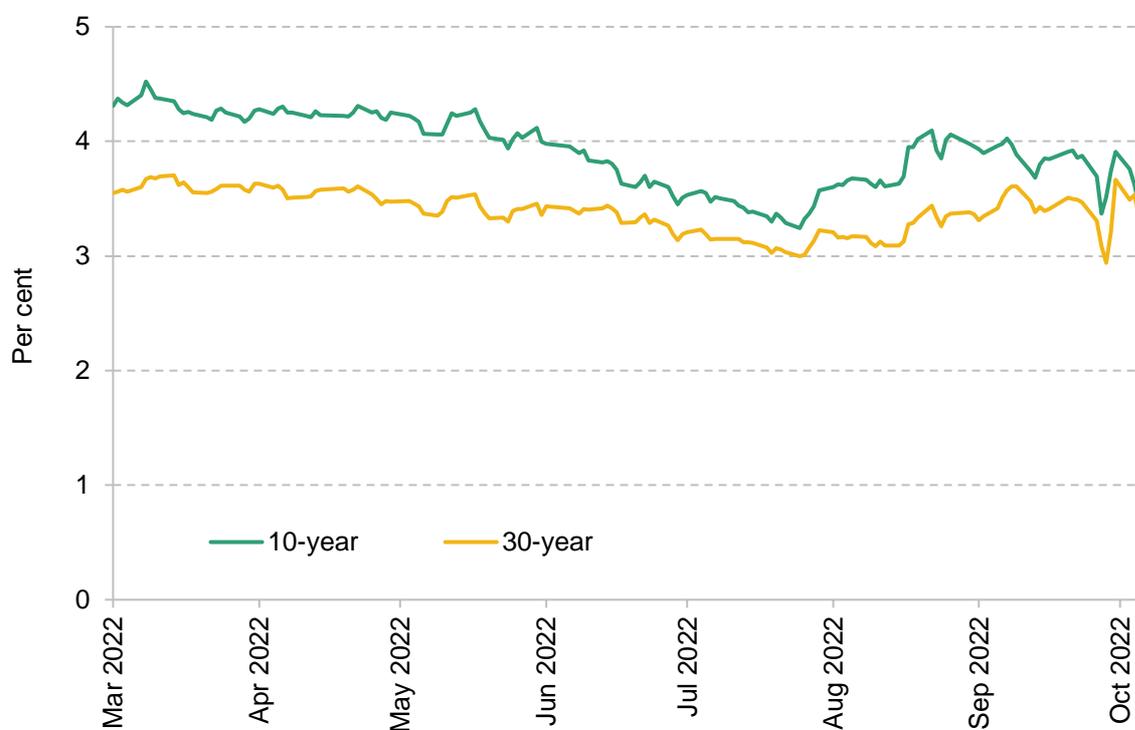
⁷¹ Following the government's budget statement on Friday 23 September, announcing various tax cuts and other fiscal measures but not articulating a medium-term fiscal framework, the yield on UK gilts rose sharply and sterling's exchange rate against a basket of currencies fell sharply. The combination is unusual. Typically, whatever its effects on the economy's productive capacity over the medium term, fiscal stimulus propels aggregate demand, requiring a higher path for the monetary policy rate to achieve the inflation target, leading to an appreciation in the exchange rate. That will not be so, however, if, for whatever reason, the market concludes that the public-debt burden might not be sustainable over the longer run, creating a tangible (if still small) probability of default. On the Bank's MMLR operation and frictions in the gilt market, see Deputy Governor Cunliffe's letter to the chairman of the House of Commons Treasury Select Committee (Mel Stride MP), 5 October 2022, <https://committees.parliament.uk/publications/30136/documents/174584/default/>. Unfortunately, the Bank did not sterilise the consequent injection of reserves, making it seem to some commentators like the resumption of QE, despite the Bank's assurances.

⁷² For a further discussion, see Tucker (2022). Whether long yields rise sharply again when the Bank steps back will reveal, among other things, whether effective measures have been taken to ameliorate the strains in this part of leverage finance; like the perhaps more familiar lender-of-last-resort (LOLR) operations, market-maker-of-last-resort operations sometimes simply buy time to fix the underlying problems. On 10 October, the bailout became more targeted when the Bank announced expanded LOLR facilities for the banking industry to backstop banks providing liquidity to the liability-driven investment (LDI) industry. That too buys time for repair and adjustment in the funds.

MPC to substitute its own view by postponing QT and raising Bank Rate more sharply than otherwise.

In principle, those arguments leave intact the option of the MPC accelerating the pace of QT, and correspondingly slowing the rise of Bank Rate, in order to bring about whatever degree of monetary tightening it desires while reducing the stock of reserves and so the part of public debt that is effectively floating rate. Actually choosing that course would depend upon whether MPC members were broadly indifferent between the balance of QT and rate rises in terms of their own objective, and any feedback from HMT on public-debt-structure considerations and possible supply effects on yields.

Figure 7.8. Ten-year and thirty-year inflation spot rates (break-evens)



Note: Data run to 6 October 2022.

Source: Bank of England.

7.9 Conclusion

This chapter has attempted to unravel the mechanics and economics lying behind recent public debate about the costs and risks to the public purse from government having borrowed vast amounts at a floating rate of interest through a combination of the Bank of England's quantitative easing purchases of gilts and its paying the short-term policy rate of interest on banks' reserves balances.

Even if all the Bank's gilt holdings were to be sold off quickly in the coming period, so that the British state's risk exposure to short-term interest rates goes away for the time being, the issues covered in the chapter demand serious discussion so that similar risk exposures and opportunity costs do not again inadvertently arise whenever QE is conducted in the future. That is not hypothetical. First, given the proximity of most current estimates of the equilibrium nominal rate of interest to zero, the lower bound is likely to bite, and QE to be deployed, much more frequently than when the UK's current monetary regime was established. Second, even without any ZLB constraint, if the Bank resorts to purchasing gilts for other reasons but does not sterilise the injection of base money, the problem of fully remunerated reserves for the public finances will recur. Since a central bank *should* routinely sterilise such operations, we do not pursue that here.⁷³

Going more slowly, we can now unravel the tangle of issues flagged in the introduction. Because the world equilibrium real rate of interest has been so low, it has become likely that the central bank policy rate will reach zero much more frequently than anyone contemplated 20 years ago. Because central banks are reluctant to embark on the even greater leap into setting large negative interest rates, whenever their rate is stuck at (or near) the zero lower bound, they are likely to want to turn to QE, injecting more reserves into the monetary system. Because central banks have remunerated the totality of reserves at (or close to) their policy rate, the structure of the state's debt is thereby swapped from being fixed rate to being floating rate. Because the economy has been hit by various inflationary shocks, having floating-rate obligations looks set to impose a nasty hit to the public finances.

That risk exposure will persist if things remain as they are. Any solution would have to break one or more of the links in the explanatory chain. The first and fourth – low global real rates, and inflationary shocks – are open to action (and therefore hope), but cannot just be swept away, as they reflect matters largely beyond the control of UK governments. If low equilibrium real rates owe something to low underlying growth and to an *ex ante* excess of global savings over investment, and if nasty inflation shocks are down to wars, pandemics and monetary policy hesitation, policymakers can pursue remedies but they cannot be sure of succeeding. Finding a domestic way of breaking the chain's second step would, instead, entail either raising the inflation target (perhaps not the easiest moment for that in terms of the monetary regime's credibility), or codifying stronger automatic fiscal stabilisers into law (which could, however, be changed down the road – if ever they were agreed). This leaves the third link in the explanatory chain – the restructuring of the state's debt by remunerating the totality of banks' reserves at

⁷³ This goes for lender-of-last-resort and market-maker-of-last-resort interventions. In normal circumstances, voluntary reserves averaging would necessitate sterilisation. If the special operations were conducted while QE was outstanding and so the standard operating system had been suspended (as now), there should still be sterilisation unless the MPC expressly approved the injection of more base money. See, for various different purposes of buying government bonds and their implications for governance, Cecchetti and Tucker (2021).

Bank Rate – which, if broken, would be distinct in so far as it should be robust (invariant to future bad states of the world).

The headline message of the chapter is, therefore, that the current predicament is not unavoidable. It would be possible for the Bank to operate monetary policy with a system of tiered remuneration for reserves balances; and reasons exist for doing so when the Bank is imposing the quantity of aggregate reserves it supplies rather than, as under voluntary reserves averaging during normal times, letting each individual bank choose its desired reserves holdings.

The chapter has not recommended that the Bank and Treasury should definitely pursue that course *immediately*, because there are weighty considerations weighing on the other side (Sections 7.6 and 7.7). They concern the effect of taxes on the efficient allocation of resources, credit conditions, and the political economy of central bank independence. It matters, for example, whether ceasing to remunerate the bulk of banks' reserves would amount to a tax on *banking intermediation*, or to the withdrawal of transfers to bank *bosses and shareholders*. It also matters whether UK public finances are under so much pressure that orthodox stipulations against a tax on banking carry less force than usual.

There are questions there for both the Treasury and the Bank. It is for the Treasury to weigh the microeconomic costs of tax and allocative efficiency against the more macro costs and risks to the public purse from so much of the British state's debt being floating rate. That effectively gives it a veto over reserves-regime reform. *If*, having weighed everything, the government were to ask the Bank to consider reform, it is for the Bank to decide whether it could do so without compromising its statutory objectives for price stability and financial-system stability (more broadly, for monetary-system stability).

If the Bank were faced with that request but did not want to introduce reforms while the current stock of QE is outstanding, we recommend that a clear contingency plan be articulated for when these circumstances recur. It seems to this author that, subject to any Treasury concerns about ill-directed taxes impairing efficiency, the authorities would need good reasons not to plan on operating tiered reserves (or some better scheme) next time Bank Rate is stuck at zero and the MPC employs QE as a substitute for further rate cuts.

That reflects a more general observation. Discussions of risk are fraught with difficulty. Scenario and counterfactual analysis of the kind drawn upon here (Section 7.3) is useful partly because it helps us get a grip on the question as to whether, if costly thing x happens but could have been avoided, it is reasonable to feel that it should have been avoided (or at least mitigated); that, in other words, it is reasonable to criticise government for not avoiding the avoidable. It matters, therefore, whether a risk scenario is reasonably regarded as far-fetched, or whether a risk is so imperfectly understood that it is unreasonable to say that it should have been avoided. For the

QE-related risk to the public finances, the adverse scenario of the monetary regime adding materially to the public debt burden has not been far-fetched since at least 2019, and it is not incapable of being understood (even though, no doubt, this analysis could be improved upon).

Finally, therefore, an important high-level conclusion follows from this chapter's analysis. Just as the country's current macroeconomic regime rightly stipulates that government debt management (strategy and tactics) should not interfere with the independent MPC's monetary policy, so too should central bankers aim to implement monetary policy in ways that least adversely affect the public finances. That simple statement leaves hanging the awkward matter of who, given the political incentives of finance-ministry debt managers, gets to judge what monetary policy techniques interfere too much with the public finances. The best course, we suggest, would be to put the Bank under that obligation when making choices among options to which the MPC is otherwise indifferent (i.e. in terms of the implications for monetary conditions and, hence, the outlook for inflation relative to the MPC's target). Had an obligation of that kind existed, public resources could have been saved without impairing monetary-system stability. A carefully drafted version might usefully be added, together with codified hurdles for monetary financing, when the MPC Remit is updated.⁷⁴

References

Allen, W., Chadha, J. S. and Turner, P., 2021. Commentary: quantitative tightening: protecting monetary policy from fiscal encroachment. *National Institute Economic Review*, 257, 1–8.

<https://www.niesr.ac.uk/publications/commentary-quantitative-tightening-protecting-monetary-policy-fiscal-encroachment?type=national-institute-economic-review>.

Bailey, A., 2022. The economic landscape: structural change, global R * and the missing-investment puzzle.

Bank of England speech. <https://www.bankofengland.co.uk/speech/2022/july/andrew-bailey-speech-at-omfif-the-economic-landscape>.

Barro, R. J., 1997. Optimal management of indexed and nominal debt. NBER, Working Paper 6197.

<https://www.nber.org/papers/w6197>.

Cecchetti, S. and Tucker, P., 2021. Understanding how central banks use their balance sheets: a critical categorisation. <https://cepr.org/voxeu/columns/understanding-how-central-banks-use-their-balance-sheets-critical-categorisation>.

⁷⁴ Various other proposals for strengthening the Bank's monetary and financial stability Remits (including cutting recent additions), and for improvements in the Bank's practices (such as reverting to calling the Bank's quarterly report the Inflation Report, in recognition of its primary legal responsibility) were aired by Mervyn King, NIESR Director Jagjit Chadha and the author at the UK Money, Macro & Finance Society conference, 'Twenty-Five Years of the MPC', on 5 September 2022; a video is at <https://youtu.be/qmV7LCq223Y>.

- Cesa-Bianchi, A., Harrison, R. and Sajedi, R., 2022. Decomposing the drivers of Global R*. Staff Working Paper No. 990 <https://www.bankofengland.co.uk/working-paper/2022/decomposing-the-drivers-of-global-r-star>.
- Chrystal, A., Haldane, A. and Proudman, J., 1999. Government debt structure and monetary conditions. *Bank of England Quarterly Bulletin: 1999 Q4*, 393–6. <https://www.bankofengland.co.uk/quarterly-bulletin/1999/q4/government-debt-structure-and-monetary-conditions>.
- Clews, R., 2005. Implementing monetary policy: reforms to the Bank of England's operations in the money market. *Bank of England Quarterly Bulletin: 2005 Q2*, 211–20. <https://www.bankofengland.co.uk/quarterly-bulletin/2005/q2/implementing-monetary-policy-reforms-to-the-bank-of-englands-operations-in-the-money-market>.
- Deutsche Bundesbank, 2021. The two-tier system for reserve remuneration and its impact on banks and financial markets. <https://www.bundesbank.de/resource/blob/858450/20a2ada102d09d511d123bb6411ffeea/mL/2021-01-tiering-data.pdf>.
- Diamond, P. and Mirrlees, J., 1971. Optimal taxation and public production I: production efficiency. *American Economic Review*, 61(1), 8–27. <https://www.jstor.org/stable/1910538>.
- Diamond, P. and Mirrlees, J., 1976. Private constant returns and public shadow prices. *Review of Economic Studies*, 43(1), 41–7. <https://www.jstor.org/stable/2296598>.
- Emmerson, C., Miles, D. and Stockton, I., 2020. Managing much-elevated public debt. *IFS Green Budget 2020*. <https://ifs.org.uk/books/managing-much-elevated-public-debt>.
- Friedman, M., 1959. *A Program for Monetary Stability*. New York: Fordham University Press.
- Greenwood, R., Hanson, S. G., Rudolph, J. S. and Summers, L. H., 2014. Government debt management at the zero lower bound. Hutchins Center, Working Paper 5. <https://www.brookings.edu/research/government-debt-management-at-the-zero-lower-bound/>.
- HM Treasury, 2021. Charter for Budget Responsibility: Autumn 2021 update. <https://www.gov.uk/government/publications/charter-for-budget-responsibility-autumn-2021-update>.
- NIESR, 2022. Quantitative tightening: protecting monetary policy from fiscal encroachment – one year on. <https://www.niesr.ac.uk/news/quantitative-tightening-protecting-monetary-policy-fiscal-encroachment-one-year>.
- Office for Budget Responsibility, 2020. Economic and fiscal outlook – November 2020. <https://obr.uk/efo/economic-and-fiscal-outlook-november-2020/>.

Office for Budget Responsibility, 2021a. Economic and fiscal outlook – March 2021.

<https://obr.uk/efo/economic-and-fiscal-outlook-march-2021/>.

Office for Budget Responsibility, 2021b. Fiscal risks report – July 2021. <https://obr.uk/frs/fiscal-risks-report-july-2021/>.

Office for Budget Responsibility, 2022a. Economic and fiscal outlook – March 2022.

<https://obr.uk/efo/economic-and-fiscal-outlook-march-2022/>.

Office for Budget Responsibility, 2022b. Fiscal risks and sustainability – July 2022. <https://obr.uk/frs/fiscal-risks-and-sustainability-july-2022/>.

Rachel, L. and Summers, L. H., 2019. On secular stagnation in the industrialized world. *Brookings Papers on Economic Activity*, Spring, 1–76. <https://www.brookings.edu/bpea-articles/on-falling-neutral-real-rates-fiscal-policy-and-the-risk-of-secular-stagnation/>.

Shiller, R., 2018. Making the case for sovereign GDP-linked bonds. Project Syndicate, 19 March.

<https://www.project-syndicate.org/commentary/the-case-for-gdp-linked-sovereign-debt-by-robert-j--shiller-2018-03>.

Tucker, P., 2004. Managing the central bank's balance sheet: where monetary policy meets financial stability.

Bank of England, speech. <https://www.bankofengland.co.uk/speech/2004/managing-the-central-banks-balance-sheet>.

Tucker, P., 2018. *Unelected Power*. Princeton University Press.

Tucker, P., 2019. Is the financial system sufficiently resilient: a research programme and policy agenda. Bank for International Settlements, Working Paper 792. <https://www.bis.org/publ/work792.pdf>.

Tucker, P., 2022. Is the UK suffering a sovereign debt crisis? Markus' Academy, 6 October. Available at <https://www.youtube.com/watch?v=9RiAOHFjRg>.

Van Lerven, F. and Caddick, D., 2022. Between a rock and a hard place: the case for a tiered reserve monetary policy framework. https://neweconomics.org/uploads/files/nef_rockhard_place_20jun22.pdf.

Vickers, J. 2016. The systemic risk buffer for UK banks: a response to the Bank of England's consultation paper. *Journal of Financial Regulation*, 2(2), 264–82. <https://doi.org/10.1093/jfr/fjw011>.

Annex. Definitions

To help the reader, some definitions are introduced and briefly explained here. Some are elaborated in the main text.

Bank rate: *see central bank's policy rate*

Base money: central bank liabilities that function as an economy's most basic money. Under modernity it has taken two forms: physical notes, and banks' balances with the central bank (known as reserves; see below).

Broad money: base money (see above) plus the deposit liabilities of banks (and others) used as a medium of exchange and store of value by households, businesses and others. There can be various measures of broad money.

Central bank's policy rate: the rate of interest that the central bank wishes to prevail in the market for overnight money. In the UK, this is known as Bank Rate, which is the rate of interest currently paid on the totality of banks' reserves balances with the central bank.

Duration of gilt portfolio: the weighted-average term to maturity of the cash flows (coupons and principal) on the portfolio of gilts outstanding. This affects the sensitivity of the portfolio's market value to shifts in market interest rates.

Fixed-rate debt: borrowing at a known, fixed interest rate for the maturity of the loan.

Floating-rate debt: borrowing under terms where the rate of interest charged is periodically reset according to some pre-agreed process or index.

Forward rate: the interest rate for a future period, implicitly incorporated within spot interest rates for loans of different maturities. If the yield on an $n-1$ -year maturity gilt is $x\%$ and that on an n -year gilt is $y\%$, the implied one-year forward rate in $n-1$ years' time is the rate needed to deliver the $y\%$ n -year yield given the $x\%$ $n-1$ -year yield. The instantaneous forward rate at year n is the implied instantaneous (crudely, one-day) rate of interest in n years' time.

Gilt: long-standing shorthand for 'gilt-edged' (originating in the old paper certificates having gilt edges) for a bond issued by the UK's central government. Conveys very low default risk (which has mainly, but not always, been true).

Gilt yield: the rate of interest rate paid/earned on a government bond. The yield at the point of issuance is what matters to government, so long as it does not buy back the bond before maturity. QE entails exactly such a buy-back at the level of the consolidated state.

Modified duration: a mechanical adjustment to the duration measure, capturing the sensitivity of a bond's price to a small change in its yield.

Quantitative easing (QE): the purchase of government bonds (and sometimes other bonds with very low default risk) in order to stimulate aggregate demand in the economy. QE creates reserves: the central bank pays with reserves, i.e. by crediting banks' current accounts. It is not the case, as sometimes implied by commentators, that banks choose to place the proceeds of their gilt sales into reserves. In aggregate, the banking system cannot avoid holding the extra reserves, or dispose of them. Individual banks can attempt to do so, but that merely reshuffles each bank's share of the total, with some holding more. QE is part of monetary policy. Not all central bank purchases of government bonds are QE; they are not QE when undertaken for a purpose other than stimulating demand by easing monetary conditions (Cecchetti and Tucker, 2021). In those circumstances, the central bank might want to use other transactions to offset the creation of reserves (often known as sterilisation or draining).

Reserves: liquid deposit balances held by banks (and in principle others) with the central bank of issue. Reserves are created whenever a central bank pays for an asset or makes a loan in its own currency. Where only banks have accounts with the central bank, the newly created money ends up in banks' reserves accounts, whoever was the central bank's counterparty for the underlying transaction.

State's consolidated balance sheet: the balance sheet (liabilities and assets, actual and legally contingent) of the sum of all organs of the state, netting out intra-state transactions. For the purposes of this chapter, what matters is that the consolidated balance sheet nets out obligations between the treasury and the central bank, leaving only their obligations to and claims on the domestic private sector and overseas.

Term premium: the extra rate of interest paid on a long-maturity bond to compensate investors for locking up their funds, or having to accept a discount if they sell their asset in the market prior to its maturity.

Zero lower bound: the lowest practically feasible level for the central bank's policy rate of interest (Bank Rate in the UK). Often this is zero because the central bank does not wish to (or cannot) set a negative policy rate. Where, for example because of possible adverse effects on bank lending, the central bank does not wish to go below some positive level for interest rates, economists refer to the 'effective lower bound'.

Abbreviations

ACE	allowance for corporate equity
AFPRB	Armed Forces' Pay Review Body
AIA	annual investment allowance
APF	Asset Purchase Facility
APFF	Asset Purchase Facility Fund
ASHE	Annual Survey of Hours and Earnings
AWE	average weekly earnings
BBC	British Broadcasting Corporation
BCC	British Chambers of Commerce
BEA	Bureau of Economic Analysis
BEAPFF	Bank of England Asset Purchase Facility Fund
BEIS	Department for Business, Energy and Industrial Strategy
BICS	Business Impact of COVID-19 Survey
BIS	Bank for International Settlements
bn	billion
BoE	Bank of England
bp	basis point(s)
BRC	British Retail Consortium
BVAR	Bayesian vector autoregressive
c	cent
CAI	Comprehensive Agreement on Investment
CBI	Confederation of British Industry
CEPR	Centre for Economic Policy Research
CET1	Common Equity Tier 1
CFO	Chief Financial Officer
CHAPS	Clearing House Automated Payments System
CO ₂	carbon dioxide

CPI	Consumer Prices Index
CPIH	Consumer Prices Index including owner-occupiers' housing costs
CPIs	consumer price indices
CPNSA	current prices not seasonally adjusted
CV	curriculum vitae
DB	defined benefit
DC	defined contribution
DDRB	Review Body on Doctors' and Dentists' Remuneration
DMO	Debt Management Office
DMP	Decision Maker Panel
DWP	Department for Work and Pensions
EATR	effective average tax rate
ECB	European Central Bank
EMTR	effective marginal tax rate
ERI	sterling effective exchange rate index
ESA	employment and support allowance
ESRC	Economic and Social Research Council
EU	European Union
F	forecast
FDI	foreign direct investment
Fed	Federal Reserve
FRS	Family Resources Survey
FTE	full-time-equivalent
G7	Group of Seven countries: Canada, France, Germany, Italy, Japan, UK, US
GB	Green Budget
GDP	gross domestic product
GFC	Great Financial Crisis
GfK	Growth from Knowledge
GNP	gross national product
GRIM	Growth Retrenching, Inflation Mitigation

GVA	gross value added
H	half
HGV	heavy goods vehicle
HICP	Harmonised Index of Consumer Prices
HM	Her/His Majesty's
HMG	Her/His Majesty's Government
HMRC	Her/His Majesty's Revenue and Customs
HMT	Her/His Majesty's Treasury
ICE	Intercontinental Exchange
IFS	Institute for Fiscal Studies
IMF	International Monetary Fund
ISA	Individual Savings Account
ISM	Institute for Supply Management
k	thousand
kWh	kilowatt-hour
l	litre
LCR	Liquidity Coverage Ratio
LDI	liability-driven investment
LFS	Labour Force Survey
LH	left-hand
LHS	left-hand side
LME	London Metal Exchange
LNG	liquefied natural gas
LOLR	lender of last resort
m	million
M	month
MM	month on month
MMLR	market maker of last resort
MP	Member of Parliament
MPC	Monetary Policy Committee
MTM	marked to market

MWh	megawatt-hour
NATO	North Atlantic Treaty Organisation
NBER	National Bureau of Economic Research
NCARRB	National Crime Agency Remuneration Review Body
NEF	New Economics Foundation
NEIG	non-energy industrial goods
NHS	National Health Service
NHSPRB	NHS Pay Review Body
NICs	National Insurance contributions
NIESR	National Institute of Economic and Social Research
NY	New York
NYMEX	New York Mercantile Exchange
OBR	Office for Budget Responsibility
OECD	Organisation for Economic Cooperation and Development
OME	Office of Manpower Economics
ONS	Office for National Statistics
p	pence
p.a.	per annum
PAYE	Pay-As-You-Earn
PESA	Public Expenditure Statistical Analyses
p.m.	per month
PMI	Purchasing Managers' Index
PNFC	private non-financial corporation
PPI	producer price index
ppt	percentage point(s)
PRRB	Police Remuneration Review Body
PSPRB	Prison Service Pay Review Body
p.w.	per week
Q	quarter
QE	quantitative easing
QQ	quarter on quarter

QT	quantitative tightening
R&D	research and development
RH	right-hand
RHDI	real household disposable income
RHS	right-hand side
RPI	Retail Prices Index
SCAPE	Superannuation Contributions Adjusted for Past Experience
SIC	Standard Industrial Classification
SMEs	small and medium enterprises
SR	Spending Review
SSRB	Review Body on Senior Salaries
STRB	School Teachers' Review Body
TAXBEN	the IFS tax–benefit microsimulation model
TDEL	total departmental expenditure limit
TFS	Term Funding Scheme
TTF	Title Transfer Facility
UC	universal credit
UEL	upper earnings limit
UK	United Kingdom
ULC	unit labour costs
US	United States
VAR	vector autoregressive
VAT	value added tax
VIABLE	Variable Inflation, Adjustment Boosting, Limited Expansion
vs	versus
WTI	West Texas Intermediate
YY	year on year
ZLB	zero/effective lower bound