

# National Institute UK Economic Outlook

## Powering Down, Not Levelling Up

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# Foreword: bridge to normality

Towards the end of 2021, the British economy finally returned to the level of activity it obtained just prior to the emergence of the Covid-19 crisis at the start of 2020. We have thus endured two years without any economic progress and considerable social strain while the new virus ripped through our modern way of life. While it is still “not over for any of us until it ends for all of us”, we can start to let our hopes of a return to some semblance of normality dominate those of the despair we have felt at times since early 2020. So, what are the priorities for that normality in a medium-sized advanced economy? They must involve addressing the shortfall in the provision of public goods such as digital infrastructure, vocational education, health and social care, as well as the trade deals we need in light of Brexit. Meaningful regional regeneration must be an objective to help focus the national attention. Ultimately, we think meeting those priorities will require a radical re-design of our political institutions and a re-consideration of regional power.

The main immediate problem we face is a dislocation between supply constraints in the economy, which are both short run because of supply chains but also long run as our productivity growth has continually stalled, and strong demand that has been pumped up by loose monetary policy. Fiscal policy should concentrate on building up net worth in the public sector and less on the budget balance per se. And monetary policy needs to regain its focus on price stability. Bringing these into line with prompt policy action will be the main task we face but a dense cloud of uncertainty hangs over the policy arena, which originally formed during our Brexit wrangling but seems to have grown even thicker over time.

We have previously underlined in triplicate that monetary and fiscal policy are in the wrong space. The escalation in public debt accompanied by a shortfall in public investment and a need to defer tax rises and give full rein to tax smoothing requires order in the organisation of our fiscal affairs. The framework needs to allow flexibility, but of the kind that responds to shocks and does not add to them. The question of whether to implement an ad hoc national insurance increase announced in September 2021, hypothecated to meet social care needs, has meshed in a tussle between the Prime Minister, the Chancellor, and newly elected MPs. We need flexibility to deal with economic not political shocks and what we have witnessed is no way to run fiscal policy. As I write in the second month of 2022, we still do not officially know the date of the Spring Budget, which hampers economic assessment of the Chancellor’s plans. And at the same time the Monetary Policy Committee of the Bank of England urgently needs to address the questions that are being asked about the credibility attached to its inflation target, with inflation set to accelerate to 7 per cent later this year and policy rates expected only to shuffle up to around 1.5 per cent towards the end of 2023. This anticipated response looks unlikely to prevent a stubborn overshoot in inflation. The monetary framework pushes us to focus on the next iteration in interest rates rather than the path of Bank Rate over time and the likely responses to risks as they unfold.

While aggregate policy is the focus of attention, its failures matter for our regions and devolved nations. The huge gaps in regional economic performance cannot be plugged with a one-off commitment of a tiny amount of recycled money as signalled by the White Paper on Levelling Up, which has been published much later than the original date prior to Christmas but still seems to have been pushed out to meet political expediency. Regions lacking robust centres of local demand or high levels of human capital are both more vulnerable to economic shocks and less resilient than in other advanced economies. This means that the inflation shock will be more likely to inflict enduring damage to household well-being in our poorer regions because of labour market mismatches and a lack of firm dynamism. The risk is that a further widening in economic prospects may not only support the further devolution and the development of more local government powers but threaten a break-up in the Union with Scotland first to leave. But will the people have sufficient patience to wait while these obvious reforms are introduced? We are used to the problems brought about by economic uncertainty, things get delayed, but what if that continues to interact with political uncertainty? Will things fall apart because normality delayed is normality denied?

**Jagjit S. Chadha, Director, NIESR**  
February 2022

# National Institute UK Economic Outlook – Winter 2022

- Our forecast for GDP growth in 2022 is largely unchanged from our Autumn Economic Outlook at 4.8 per cent, followed by a return to its pre-Covid annual growth rate of well below 2 per cent from 2023. This equates to output being around 4 per cent lower in 2025 than in our last pre-Covid forecast and £370 billion, or more than £5,500 per person, of activity having been lost over the past two years. We nonetheless expect less damage to the UK's future growth path than in the aftermath of the financial crisis.
- We forecast that the present path of the post-pandemic recovery will reinforce disparities between and within the UK's devolved nations and regions – not only between London/metropolitan South-East and the rest, but also within regional economies such as North-West and Scotland.
- We have raised our forecast for consumer price index inflation to a peak of 7 per cent in the second quarter of 2022, five percentage points above the Bank of England's target. We anticipate that the Monetary Policy Committee will respond to the inflationary threat, raising interest rates four times this year. We then expect inflation to fall below 5 per cent by the end of 2022 and return to its 2 per cent target in 2024.
- The government has chosen to tighten primarily through fiscal policy, leaving monetary policy lagging the inflation cycle. This policy sequencing is the wrong way around. Rising inflation will also squeeze government budgets set only four months ago and, in light of higher forecast inflation, there ought to be significant pressure on the Chancellor of the Exchequer both to delay the rise in National Insurance contributions scheduled in April and to increase spending plans.
- Cost-of-living pressures are hitting the lowest income households hardest, as they spend a greater proportion of their income on food and fuel, and those households are heavily concentrated in some of the most economically deprived areas of the country, including parts of the North-West, Wales and pockets in London/South-East.
- Earnings growth of 5 per cent is forecast for 2022, leaving wages lower in real terms. Despite continuing relatively low unemployment of 3.9 per cent across the year, with thousands expected to remain economically inactive, real wage declines and below-inflation increases in social security will adversely impact household sector finances.

**Table 1.1** Summary of the forecast (percentage change unless otherwise stated)

	2018	2019	2020	2021	2022	2023	2024	2025	2026
GDP	1.7	1.7	-9.4	7.3	4.8	1.3	0.9	1.1	1.1
Per capita GDP	1.1	1.1	-9.8	6.6	4.4	1.0	0.6	0.7	0.8
CPI Inflation	2.4	1.8	0.8	2.6	5.9	3.3	1.9	1.7	1.9
RPIX Inflation	3.3	2.5	1.7	4.1	6.9	3.9	2.5	2.4	2.6
RPDI	2.8	1.3	-0.5	1.8	1.1	2.5	1.6	1.5	1.3
Unemployment, %	4.1	3.8	4.6	4.5	3.9	4.2	4.2	4.2	4.2
Bank Rate, %	0.6	0.8	0.2	0.1	0.8	1.4	1.5	1.5	1.6
Long Rates, %	1.4	0.9	0.3	0.8	1.2	1.5	1.7	1.8	1.9
Effective exchange rate	1.9	-0.3	0.5	4.8	2.2	-0.4	-0.4	-0.2	-0.1
Current account as % of GDP	-3.9	-2.7	-2.6	-2.4	-3.3	-3.8	-3.8	-3.5	-3.1
Net borrowing as % of GDP	1.7	2.3	14.8	6.7	3.7	2.8	2.4	2.3	2.0
Net debt as % of GDP	79.3	83.7	94.6	93.2	93.0	93.7	92.0	89.2	87.6

Note: Numbers reported are yearly averages except for net borrowing, which is reported for the full fiscal year, and net debt, which is reported for the end of the fiscal year.

# 1. UK Economic Outlook: Covid-19 leaves inflation in its wake

By Cyrille Lenoël, Rory Macqueen, Paul Mortimer-Lee, Urvish Patel and Kemar Whyte<sup>1</sup>

## Economic background and overview of the forecast

### Economic background

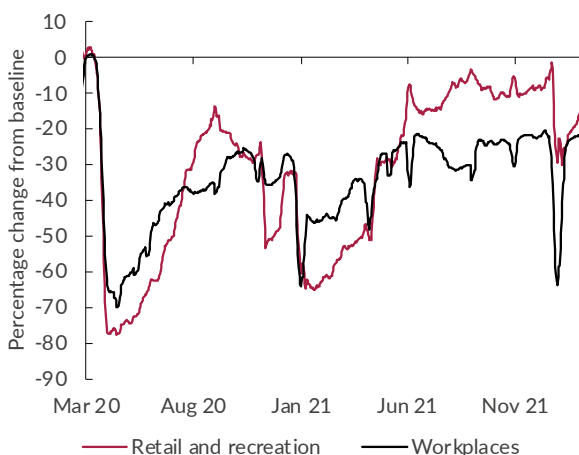
#### Emerging (again) from the shadow of Covid-19

The UK economy has recovered its pre-pandemic level, we appear to be at or close to full employment, and inflation is rising. But with a workforce several hundred thousand below trend, and with the effects of Brexit not yet fully behind us, the UK economy now faces the challenge of adjusting to and engaging with the post-Covid world.

#### Tighter monetary and looser fiscal policy required

The Bank of England's commencement of a tightening cycle is somewhat belated but welcome and should now be seen through and combined with a fiscal loosening at March's Budget. The latter could take the form of a delay to the rise in National Insurance contributions or a relaxing of spending plans in the light of higher inflation than forecast at the Spending Review. Greater welfare transfers may also be needed to cushion low-earning households' incomes.

Figure 1.1 Google Mobility data



Source: Google, NIESR calculations

Baseline is median value for the day of the week Jan 3 – Feb 6 – 2020. Seven-day rolling average.

#### Wages will determine whether inflation or incomes take the strain

The labour market response to higher inflation will define what kind of economic adjustment 2022 brings. A large wage response could have grim implications for underlying inflation in which case the Bank of England's Monetary Policy Committee (MPC) will be faced with the choice of hiking quickly and causing a recession or tolerating a prolonged inflation overshoot. But if wages fail to respond significantly, recession could result from lower real consumer outlays alongside fiscal tightening. These gross imbalances of policy make a negative shock a significant risk, with both considerably weaker demand and higher inflation distinct possibilities.

#### Omicron paused recovery in late 2021

Since our Autumn Outlook the spread of the Omicron variant of Covid-19 has tipped the UK economy from robust growth in November 2021 to likely negative month-on-month growth in December 2021 and potentially January 2022. NIESR's latest GDP tracker nowcast is for output growth in the final quarter of 2021 of 1.2 per cent, followed by 0.6 per cent in the first quarter of 2022.

Omicron's economic impact is not only likely to be smaller than that of the Delta variant a year earlier but also is manifesting in different ways. While earlier waves of Covid-19 principally acted to constrain demand through voluntary or mandated social distancing, the faster spread of Omicron has significantly affected labour supply due to illness and isolation, while the impact on demand has been smaller than previously. The Office for National Statistics' Opinions and Lifestyle Survey recorded around 60 per cent of working adults in Great Britain travelling to work in the second half of December and early January, compared with 70 per cent in November.

#### Retail and hospitality resilience

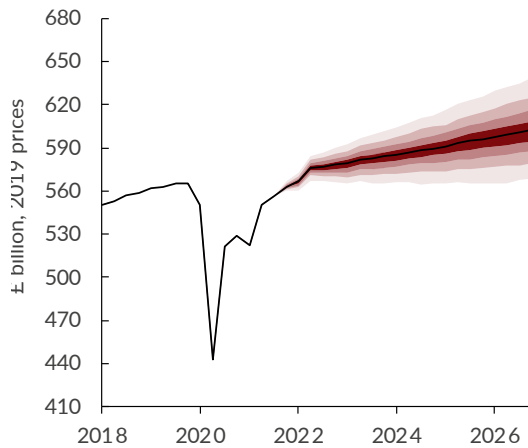
Google Mobility data on retail and recreation (see Figure 1.1) has returned progressively closer to its pre-Covid level, with each lockdown having a smaller effect than the previous. Late December and January saw a fall from 90 per cent of pre-Covid levels to 70 per cent: a smaller drop than during the first national lockdown (from 100 per cent to 20 per cent) or the second (from 70 per cent to 35 per cent).

Retail sales fell 3.5 per cent on a seasonally adjusted basis in December: partly due to Christmas shopping having been

<sup>1</sup> The authors are grateful to Jagjit Chadha and Barry Naisbitt for helpful comments and to Amber Rivett for preparing the charts and the database underlying the forecast. The forecast was completed on 24th January 2022; more recent data are incorporated in the text. Unless otherwise specified, the source of all data reported in tables and figures is the NiGEM database and NIESR forecast baseline. All questions and comments related to the forecast and its underlying assumptions should be addressed to Rory Macqueen (enquiries@niesr.ac.uk).

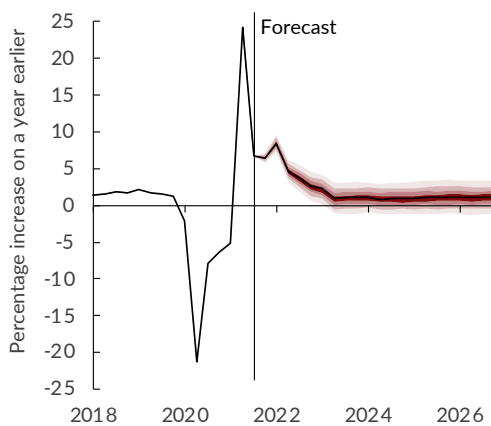
brought forward to November, partly due to Covid-19 cases and the imposition of Plan B restrictions. In mid-January, non-seasonally adjusted spending on credit and debit cards was down 26 per cent from the same point in December and 16 per cent from November. The GfK consumer confidence indicator took a turn for the worse in the last quarter of 2021 and fell further, to -19, in January, reflecting households' concerns about rising inflation and its effect on real incomes. In each case the economic effects of Omicron appear negative but smaller than those of Delta.

**Figure 1.2** Quarterly UK GDP



Source: NiGEM database, NiGEM forecast, NiGEM stochastic simulation.  
Notes: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. There is a 10 per cent chance that GDP in any particular year will lie within any given shaded area in the chart. There is a 20 per cent chance that GDP will lie outside the shaded area of the fan chart.

**Figure 1.3** Quarterly UK GDP (growth rate)



Source: NiGEM database, NiGEM forecast, NiGEM stochastic simulation.  
Notes: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. There is a 10 per cent chance that GDP growth in any particular year will lie within any given shaded area in the chart. There is a 20 per cent chance that GDP growth will lie outside the shaded area of the fan chart.

**Supply conditions may now be easing**

Supply chain disruptions dominated headwinds to growth and increased inflationary pressures in the autumn, but these disruptions may have eased. November's monthly GDP data recorded the fastest growth rates of output since March for manufacturing and construction. The Federal Reserve Bank of New York's Global Supply Chain Pressure index has eased, and the IHS Markit Manufacturing Suppliers' Delivery Times index reached its best level for a year in December 2021.

**NIESR nowcasting models suggest slow growth, high inflation and rising wages at the start of 2022**

NIESR's January CPI tracker found trimmed mean inflation – excluding 5 per cent of the highest and lowest price changes – rising to 4 per cent, suggesting that price rises are spreading, with rises highest in London and lowest in Northern Ireland. Twelve per cent of goods and services prices increased in November alone. Our January wage tracker forecast average earnings to rise from the 4.2 per cent recorded in the three months to November to 5.6 per cent in the first quarter of 2022, thanks to rises in pay settlements, starting salaries and bonuses. The combination of lower growth, lower real wages and higher inflation suggests the possibility of a terms of trade shock (see 'Trade', page 20, and Box A on page 7).

**Markets remain subdued, expecting higher interest rates**

UK stocks have regained pre-Covid levels and began 2022 relatively strongly but growth has slowed, as on other major international indices. The yield on 10-year gilts has continued its unsteady rise from around 0.1 per cent in the early months of the pandemic and is now around the level – slightly above 1.2 per cent – seen in early 2019.

**Overview of the forecast**

**Higher inflation dominating headlines in 2022**

We expect GDP to grow by 4.8 per cent in 2022 and 1.3 per cent in 2023, close to our Autumn Economic Outlook forecast (see Figures 1.2 and 1.3). We expect consumption and investment to grow at similar rates year-on-year, and the main change since the autumn is that inflation is expected to be even higher and the MPC is expected to react more strongly. Interest rates are now forecast to rise more quickly, with four rises expected in 2022 and Bank Rate reaching 1.5 per cent by the third quarter of 2023.

Despite rising interest rates, consumer price inflation is forecast to average 5.9 per cent in 2022, declining from a peak in the second quarter of 7.0 per cent to 4.7 per cent by the end of the year. If temporary, this inflation may facilitate some important relative price shifts.

**Despite a tight labour market, real wages to fall**

As a result, real wages are forecast to be lower in 2022 than in 2021. Despite unemployment falling further, to average 3.9 per cent in 2022, average earnings are forecast to increase by 4.8 per cent: 1.1 per cent below CPI inflation. Personal disposable incomes are forecast to

## Box A: Improved trade balance with the European Union raises challenging Brexit questions<sup>1</sup>

By Paul Mortimer-Lee

### Summary

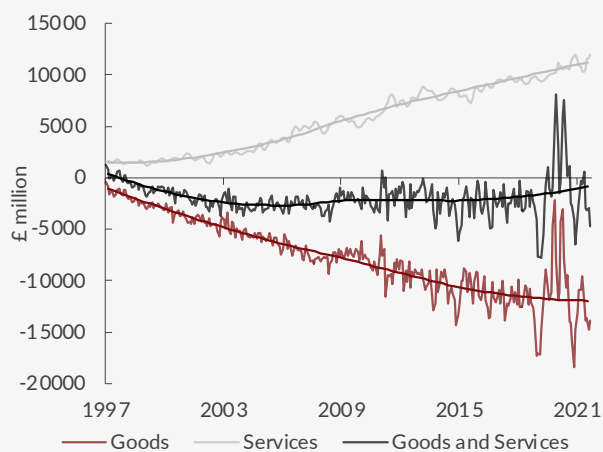
There has been a significant improvement in the UK's net trade performance with the European Union (EU) since the 2016 Brexit vote. The previous negative trend in the real net trade balance with EU has not only stopped but is improving. The gap between recent numbers and the previous trend in the trade balance with the EU is equivalent to just over 2 per cent of GDP. A plausible reason for these developments is that the Brexit vote led to a sharp sterling depreciation, making the UK significantly more competitive while crimping domestic demand. However, Covid-19 and a dramatic drop in the EU's overall trade balance are also likely important influences.

### Introduction

Most analysis ahead of Brexit predicted a substantial hit to the economy (Erken et al., 2018; Hantzsche et al., 2018). Much recent comment claims a negative effect (Giles, 2021) and the Office for Budget Responsibility (OBR) recently opined that it expected GDP to be 4 per cent lower than otherwise because of Brexit. The Centre for European Reform (CER) said that "isolating the Brexit effect suggests a drop of 11 to 16 per cent in the amount of UK trade" (Springford, 2021). Worse trade performance was at the heart of most of the pre-Brexit gloomy predictions about its economic impact.

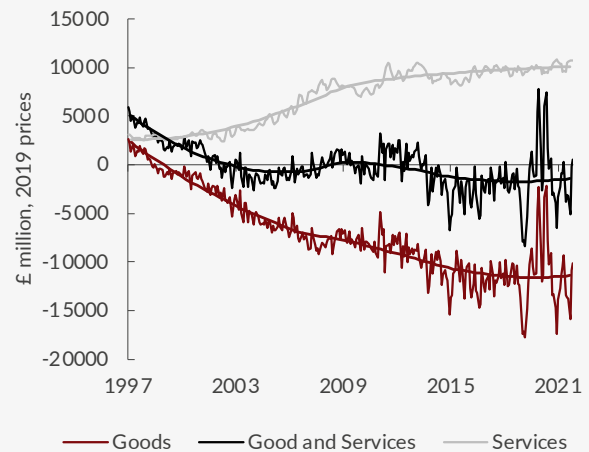
However, poorer trade numbers have failed to materialise. The trade position with the EU has improved substantially since 2016. This raises the question of whether analysts have been looking in the right place when searching for economic losses due to Brexit.

**Figure A1** UK Nominal Trade Balances: World



Source: ONS; NIESR

**Figure A2** UK Real Trade Balances: World



Source: ONS; NIESR

### Analysis

Figure A1 looks at the UK nominal trade balance, split between services and goods. The longer run trends are for an increasing surplus on services offset by a trend increase in the goods deficit, delivering a more or less consistently stable deficit. However, that balance has improved over recent years. In 2015 and 2016, the overall trade balance was in deficit by £30 billion and £33 billion, respectively. In 2017 and 2018, the deficit was slightly

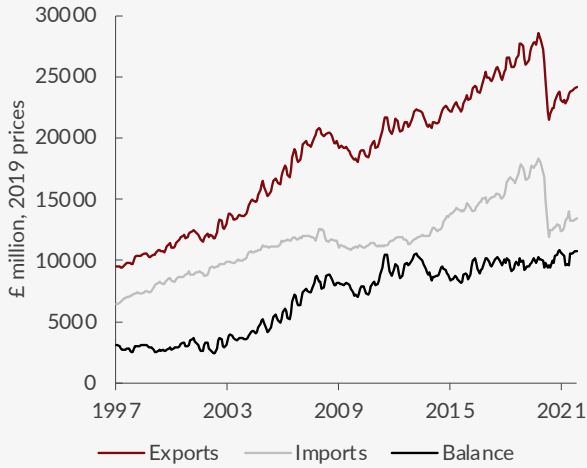
<sup>1</sup> I would like to thank Jagjit Chadha, Rory Macqueen, Issam Samiri and Manuel Tong for valuable comments and Amber Rivett and Patricia Sánchez Juanino for research assistance.



smaller, at £26 billion and £28 billion, with a fall to under £21 billion in 2019. In 2020, the year of Brexit and Covid-19, there was a surplus of £3 billion, and in the first eleven months of 2021 a deficit re-emerged, running at an annual rate of £21 billion. In 2020 and 2021 taken together, the trade balance looks likely to average a deficit of £10 billion a year, compared with a deficit three times as large before Brexit.

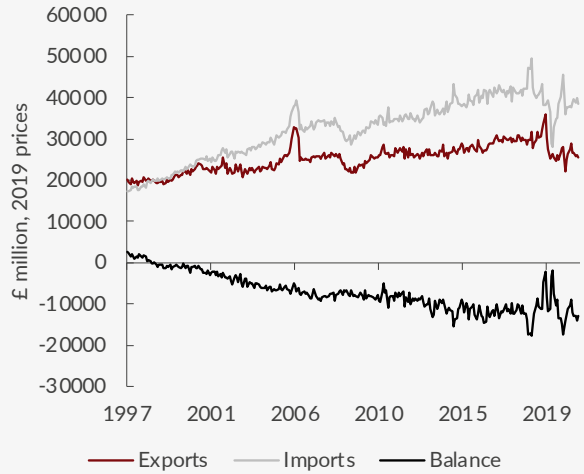
Figure A2 presents a very similar picture when the data are in real terms (2019 prices), except that all the trends look flatter – the services surplus is on a much flatter improving trend than in nominal terms. Since 2020, services volumes have stepped down on each side of the external accounts, leaving the balance unchanged (Figure A3).

**Figure A3 UK Real Services Trade: World**



Source: ONS; NIESR

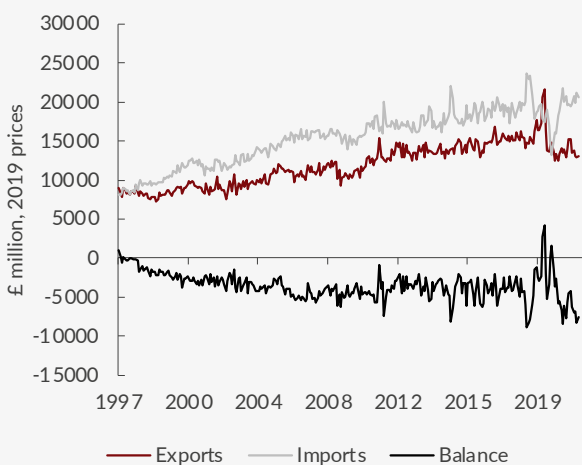
**Figure A4 UK Real Goods Trade: World**



Source: ONS; NIESR

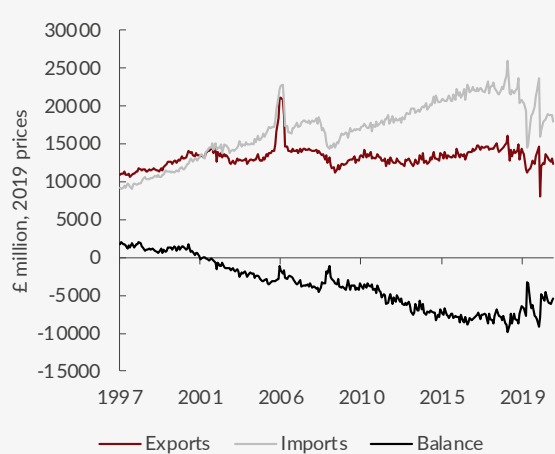
It is, of course, changes in net trade on the external accounts that affect growth, not the gross flows, which is why looking at the sum of imports and exports is grossly misleading as a guide to how Brexit may have affected the economy. This is especially the case as Covid-19 has impacted global value chains, notably transactions in the automotive sector, which is important on both sides of the UK's external accounts.

**Figure A5 UK Real Goods Trade: Non-EU**



Source: ONS; NIESR

**Figure A6 UK Real Goods Trade: EU**



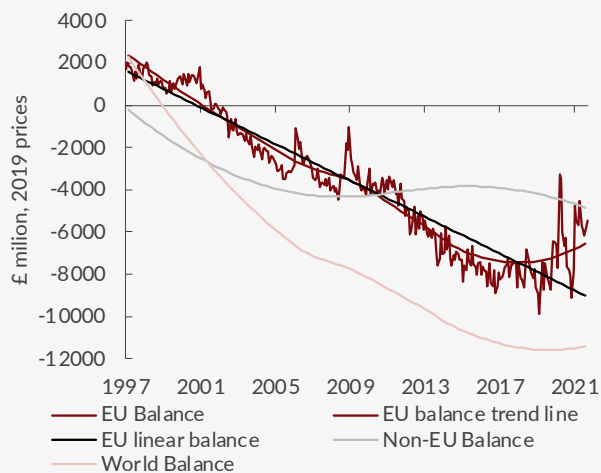
Source: ONS; NIESR

Figure A4 shows more volatility in goods, but again a broadly offsetting shrinkage since 2020 in both imports and exports.

All the flows have fallen since 2019, with imports from the non-EU recovering best (Figure A5) and imports from the EU suffering the most sustained fall (Figure A6).

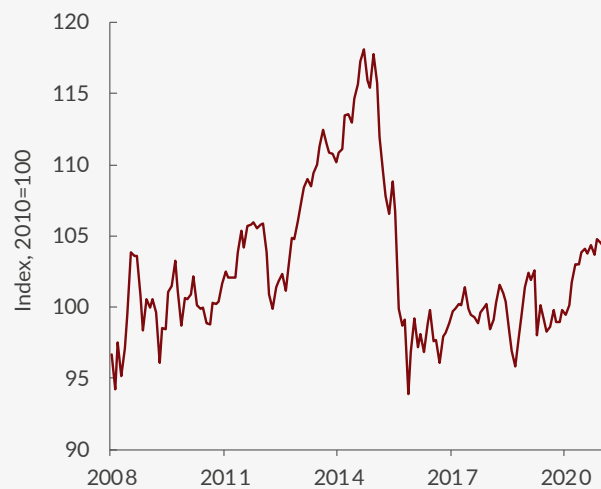
Figure A7 shows that the pre-2016 downward trend in the EU balance has turned. While the recent improvement may be due to Covid-19, the improvement started in 2016, and may well stem from the sharp improvement in UK competitiveness following sterling's fall on the Brexit vote (Figure A8).

**Figure A7** Trends in Real Goods Balance



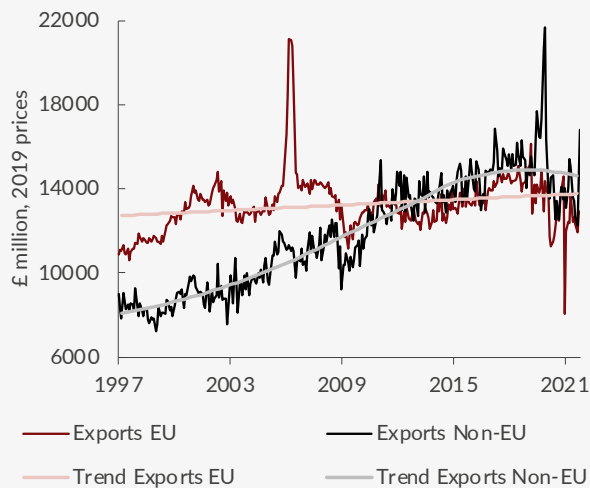
Source: ONS; NIESR

**Figure A8** UK Real Effective Exchange Rate (2010 = 100)



Source: Federal Reserve Bank of St. Louis; NIESR

**Figure A9** UK Real Exports



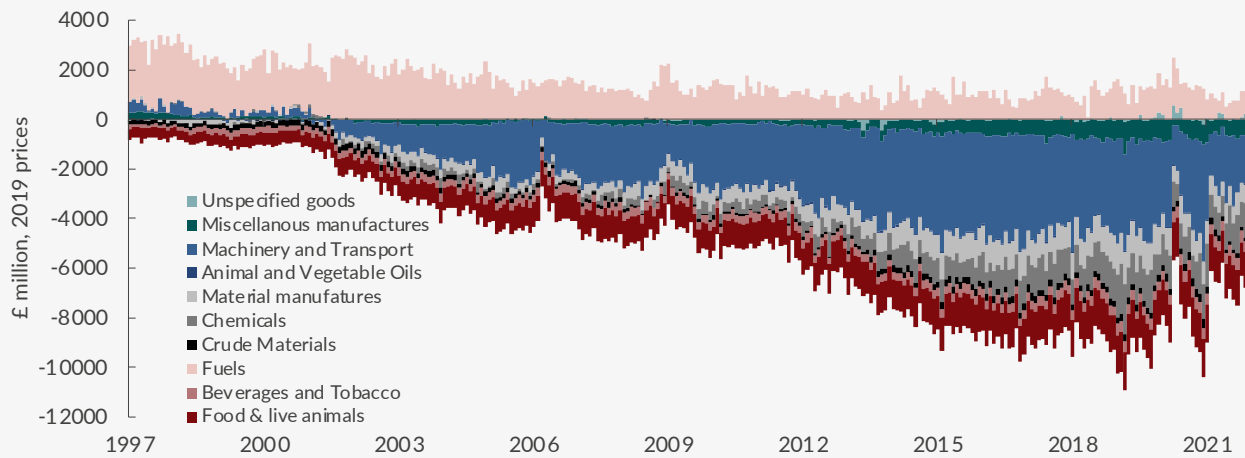
Source: ONS; NIESR

Figure A9 shows that Covid-19 flattened the previous upward trend in non-EU exports. However, the flat trend in exports to the EU has not turned down as the damage from Brexit argument would have suggested. Exports to the EU appear to have fared no worse than exports to the non-EU, contradicting hypotheses about a negative effect from Brexit so far. Having said that, the trade figures will have been affected by uncertainty over Brexit, including anticipatory inventory building around the end of the transition period.

## Conclusions

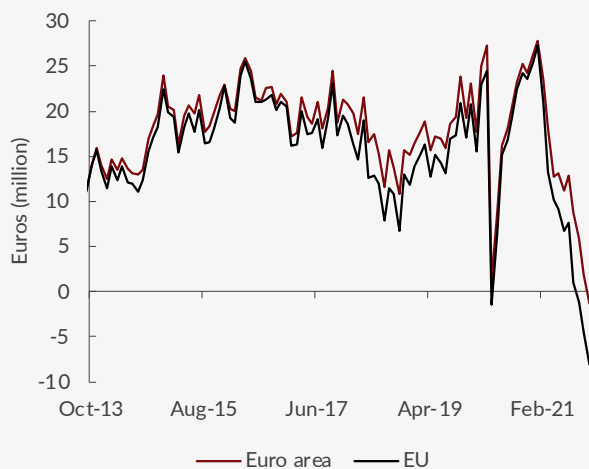
The evidence in actual UK trade data shows that the net goods trade position of the UK with the EU, which was deteriorating this century, flattened off following the Brexit vote in 2016 and began to improve even before Covid-19 reduced trade volumes and muddied the statistical waters. The facts challenge claims of an adverse net trade effect from Brexit so far.

However, Covid-19 has distorted trade flows severely, so any conclusions are necessarily tentative. For example, analysing UK net trade performance with the EU shows that a good part of the improvement since 2020 was in machinery and transport equipment (Figure A10). We know that motor vehicle manufacturing was adversely affected by chip shortages and, therefore, so was trade in motor vehicles. Thus, some of the improving trend in the net trade position with the EU since 2020 is probably attributable to Covid-19, making it tough to separate Brexit from Covid-19 effects. Having said that, the trade trend began to turn significantly prior to the pandemic.

**Figure A10** UK Real Balance of Goods Trade: EU

Source: ONS; NIESR

The analysis thus far has taken a UK perspective, but a trade balance is two-way. It is not solely with the UK that the EU's goods trade balance has been deteriorating, but with the world. Figure A11 shows that this fall in the balance has been dramatic, with the massive EU trade surplus evaporating since Covid-19 hit, which raises a further set of questions as to why this has happened, and making conclusions over the effects of Brexit more uncertain.

**Figure A11** UK Real Balance of Goods Trade: EU

Source: Eurostat; NIESR

Our analysis of the developments in UK/EU trade raises a slew of questions and challenges many previous assertions about the adverse effects of Brexit on UK trade. Definitive answers are not in the data because Covid-19 and the vanishing EU trade surplus with the world are major influences on the UK/EU trade balance in addition to Brexit.

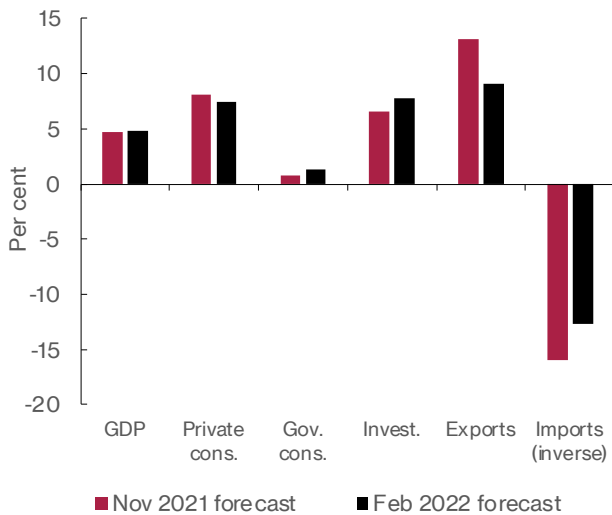
This analysis raises questions of whether trade is the right place to look to find Brexit effects. If the exchange rate moves to offset much of the ex ante Brexit effect on net trade, then the correct place to look ex post is elsewhere. Specifically, it is in the consumer sector where adverse effects of Brexit may be felt. The hypothesis is that a weaker exchange rate due to Brexit has pushed up import costs and raised consumer prices, thereby crimping real incomes. The resultant lower level of consumption reduced import volumes and, together with the improved competitiveness effect noted above, offset the initial adverse net trade effects. More light will be shed on the issue as Covid-19's impact on trade fades during this year, and we will be watching the data closely for clues.

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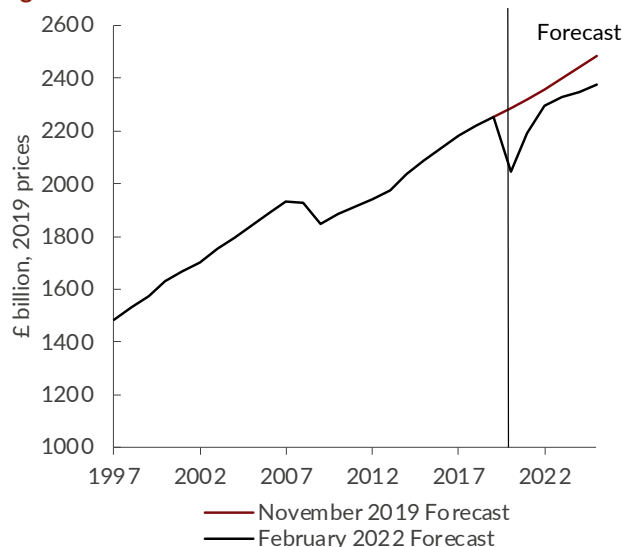
grow by only 1.1 per cent in real terms in 2022 – compared to the 2.3 per cent forecast in the Autumn Outlook – followed by 2.5 per cent in 2023. There exist upside risks to our central case forecast for nominal wage growth and, therefore, even higher inflation.

**Figure 1.4** Components of UK GDP growth in 2022



Source: NiGEM database, NIESR forecast

**Figure 1.5** NIESR forecasts for UK GDP



Source: NiGEM database, NIESR forecast

Note: see footnote 2 on page 12

### Investment expected to finally pick up

Business investment is forecast to increase by 11 per cent in 2022, after an 11 per cent fall in 2020 and near stagnation in 2021. Housing investment recovered more quickly and is forecast to grow just 3.5 per cent in 2022, with house prices rising at a similar rate before growth slows from 2023.

The current account deficit, which shrank when the pandemic hit, is expected to widen to above 3 per cent this year and close to 4 per cent from 2023.

### Inflation will put pressure on government spending

Inflation will also erode the value of the mild fiscal loosening announced at the Spending Review in October 2021, to the extent that an upward revision of department spending plans ahead of the general election is considered an upside risk to the central case scenario in our fiscal forecast. In our main case scenario of no increase to nominal department budgets, real government consumption will be squeezed, with an average real-terms increase over the coming years of 2.1 per cent per year, rather than the 3.3 per cent planned in October.

## Economic activity

### 2021 saw household spending recover

GDP is estimated to have been 7.3 per cent higher in 2021 than 2020, a slightly larger rise than in our Autumn Economic Outlook, partly thanks to data revisions by the Office for National Statistics (ONS). Household and government consumption both rose strongly while investment by the housing and government sectors grew by 14 and 11 per cent respectively, but business investment was close to stagnation at 0.5 per cent.

On the latest measures of monthly GDP, services and construction output exceeded their pre-Covid levels by November 2021, with the largest contribution from the health and social care sector, though production remained 2.6 per cent below its peak.

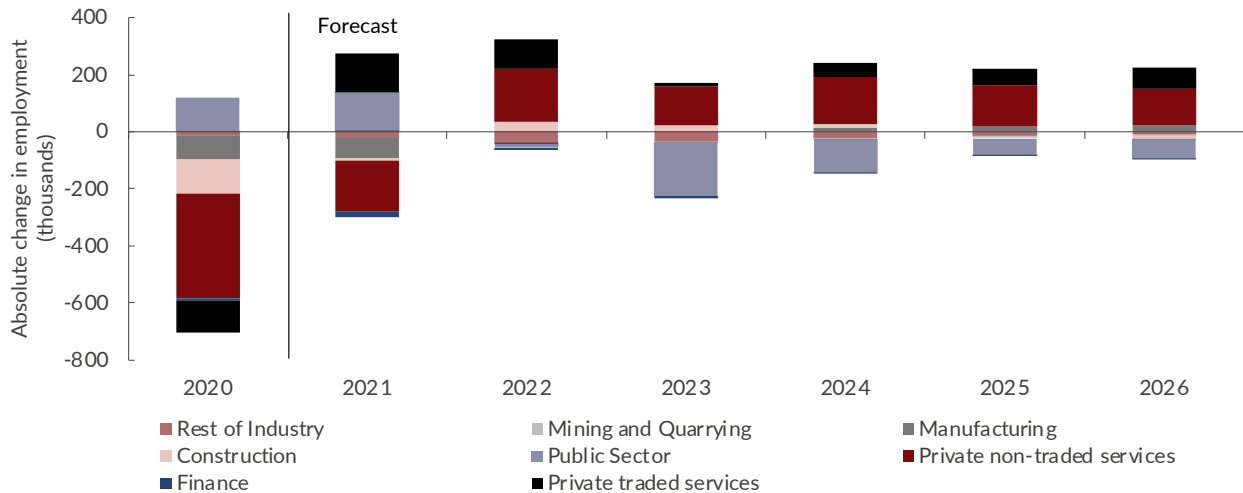
### Omicron unlikely to impair 2022 growth much

At the start of 2022 the most significant headwind to growth has been the Omicron variant of Covid-19, discussed above, but we assume that its effects will dissipate by the second quarter.

Our central case forecast for GDP growth of 4.8 per cent year-on-year in 2022 is 0.1 percentage points higher than the forecast in our Autumn Economic Outlook (see Figure 1.4 and Appendix Table A3). Our conditional forecast assumption is that Omicron is not followed by another Covid-19 wave of similar or greater severity: this possibility represents a downside risk to our central case forecast path for GDP.

### Long-term growth potential little changed

After 2022 activity is assumed to have exhausted the potential for 'catch-up' growth post-pandemic and thereafter to approach a growth path limited by our underlying assumptions about the UK economy. In the case of potential GDP, this is driven by an annual labour productivity growth rate expected to be around 0.5 per cent following the signing of the Trade and Co-operation Agreement with the European Union.

**Figure 1.6** Employment change by sector

Source: NISEM database, NIESR forecast

### Covid-19 and Brexit look set to leave the economy 4 per cent smaller than was forecast in 2019...

Quarterly GDP is expected to regain its pre-Covid peak in the first quarter of 2022, having done so on a monthly basis in November 2021. Our forecast medium-term trajectory for economic activity is around 4 per cent lower than that forecast in Autumn 2019 (see Figure 1.5): a degree of scarring which includes the negative impacts of both Covid-19 and, the Trade and Co-operation Agreement; these are slightly offset by a loosening of non-Covid fiscal policy.<sup>2</sup>

This equates to a loss of output over 2020 and 2021 approximately equal to £370 billion in 2019 prices: more than £5,500 per person.

### ...a much smaller scar than that left by the financial crisis

A 4 per cent impairment to UK GDP after five years would be far smaller than that which followed the Global Financial Crisis: in 2012, GDP was around 12 per cent below its 1997-2007 trend. Aside from the personal cost, Covid-19 will have left its mark on the economy in other ways: the unprecedented degree of policy support in the past two years is likely to have contributed to higher interest rates in future than the UK has seen for some time, in nominal terms at least.

The mining and quarrying sector is forecast to recover some of its 2020 and 2021 output losses (see Table A11), growing by 10 per cent in 2022. Strong growth is also anticipated in private non-traded services (7 per cent) and private traded services (5 per cent), both of which saw double-digit falls in 2020 but, unlike construction, which grew by 14 per cent, did not recover much of these losses in 2021.

### Brexit fall-out remains a key downside risk

There remain other downside risks to even this unpromising

outlook for aggregate growth: the reopening of the protocol governing the trade status of Northern Ireland carries the risk of both direct disruption and unfavourable revisions to other aspects of the Trade and Co-operation Agreement.

The inflationary environment presents dual risks. On the one hand, if the Bank of England attempts an excessively gradualist approach to interest rate rises then there is a risk inflation will remain stubbornly higher for longer than we forecast. On the other hand, a robust response to inflation might require significantly higher rates that could provoke a recession. Geopolitical risks have risen and could disrupt markets, confidence and the global economy.

## Households

### Hours are down, nominal wages are up

The Omicron wave is not forecast to have a negative impact on employment, but total hours worked, which before Omicron were already below trend, are likely to have been considerably affected at the end of 2021 and start of 2022 due to staff absences. Annual earnings growth is expected to accelerate this year because of higher pay settlements, particularly in the private sector, but with inflation and payroll taxes rising, there will be a painful squeeze on the incomes of those principally dependent on labour income and those in receipt of social security, which in turn will hold back consumption.

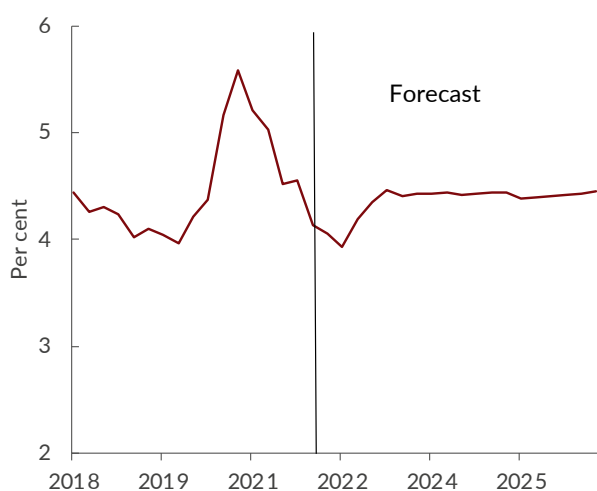
### Unemployment down despite the end of furlough

Unemployment continues to edge down towards pre-Covid lows, reaching 4.1 per cent in the three months to November. At the same time, the employment rate remains around 1 percentage point lower than before the pandemic, providing a partial explanation for the fact that hours are 3 per cent below their early-2020 peak. According to the Institute of Employment Studies (IES, 2022) 38 per cent of the change in

<sup>2</sup> This excludes the effect of data revisions since November 2019, which served to raise the level of annual GDP pre-pandemic by around 1.5 per cent.

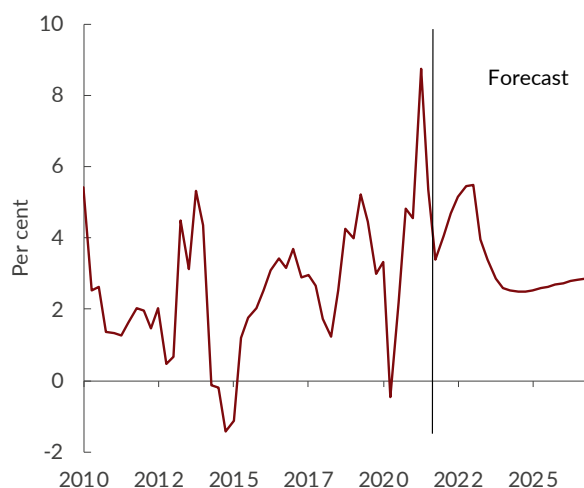
labour market activity can be attributed to a smaller population (lower net migration and demographic changes, potentially including excess deaths) but the majority is explained by greater inactivity, particularly among older workers.

**Figure 1.7** Unemployment rate



Source: NiGEM database, NIESR forecast

**Figure 1.8** Annual growth in annual earnings



Source: NiGEM database, NIESR forecast

#### Omicron likely to restrict supply in the short term...

We do not anticipate a short-term impact on employment figures from Omicron, but its effects are likely to appear in sickness records, adding to existing labour shortages. These are principally in transport, retail, hospitality, arts and recreational, and health and social care: at the beginning of January 46,000 NHS staff were off sick per day compared with 12,000 daily at the beginning of December. Some rail operators reported almost 10 per

cent staff absences, and some restaurants had only 50 per cent of their workforce. The ONS estimated that 3 per cent of the workforce were not working in late December due to Covid-19: the highest level since estimates began.

In our central case forecast scenario, total employment (including self-employment) grows by around half a million to 32.9 million in 2022, exceeding pre-pandemic levels, with employment in private non-traded services (+186,000) and private-traded services (+101,000) contributing most and continuing to add employment across the medium-term (see Figure 1.6).

#### ...but unemployment remains around pre-Covid levels afterwards

We forecast the unemployment rate to fall further in 2022, to 3.9 per cent, rising thereafter to settle around 4.2 per cent across the forecast horizon, as growth slows and interest rates rise (see Figure 1.7). This outlook reflects our assumption that the participation rate returns slowly to pre-pandemic levels in 2023. There remains a downside risk to forecast growth and employment that scarring instead proves more persistent.

#### Earnings growth to accelerate in the private sector

Growth in average weekly earnings including bonuses decelerated in the three months to November 2021 to 4.2 per cent compared to a year earlier, down from 8.8 per cent in the three months to June 2021, as base and compositional effects disappeared. Private sector earnings grew by 4.5 per cent in the three months to November 2021, and the NIESR monthly wage tracker in January forecasts this to increase to 5.6 per cent the first quarter of 2022 thanks to higher pay settlements.

#### Vacancies have reached record levels, especially for some low-paid occupations...

We forecast average earnings to grow by nearly 5 per cent in 2022 overall, slowing gradually towards 2.5-3 per cent as inflation comes down across the forecast horizon (Figure 1.8). One downside risk is that pay awards in 2022 are more seriously constrained by rising company overheads including higher employer National Insurance contributions.

#### Household incomes growth to slow this year

Real household income growth was flattered during 2021 by the return to work of many people previously on the Coronavirus Job Retention Scheme (discussed in Box B on page 14). We forecast growth in aggregate real personal disposable income to ease to 1.1 per cent this year, after 1.8 per cent growth in 2021 (see Appendix Table A5). Continued positive growth masks highly varied distributional impacts for different households (see Chapter 2). With inflation forecast to peak in the second quarter of 2022, and higher employee National Insurance contributions scheduled from April, there will be a significant squeeze on the real incomes of those who are principally dependent on labour income. The squeeze on household incomes will be slightly mitigated by the

## Box B: A Targeted Furlough Scheme to help the economy in downturns By Christoph Görtz, Danny McGowan and Paul Mortimer-Lee<sup>1,2</sup>

### Proposal

The Coronavirus Job Retention Scheme (CJRS) is an important success story of the Covid-19 pandemic in the UK. The policy supported household finances by guarding employees from redundancy while also relaxing businesses' financial constraints by lowering their wage bills. However, it is often overlooked that the CJRS was vital in making possible national lockdowns during 2020 and 2021, thereby curtailing the spread of the disease. For a future lockdown to be feasible would require the simultaneous reintroduction of a furlough scheme (Görtz et al., 2021) and there may be applications of a version of this scheme in any future economic downturn. In principle, this could be an automatic stabiliser that complements other fiscal policy responses to a downturn. Germany and Switzerland have long-standing furlough schemes that were successfully deployed during the great recession and have remained in place since. Evidence shows these schemes help firms reorganise their operations during episodes of severe financial distress and that they tend to recover without capital and jobs being destroyed through bankruptcy. These are targeted schemes such that only affected sectors would be eligible. Ultimately, this is a question for politicians who would need to decide whether public finances are able to bear the scheme's cost.

While further measures may not be required to contain Omicron, given its lower level of severity, new more virulent mutations may emerge, and the government should be ready with suitable measures if that occurs. Even in the absence of lockdown measures, firms and workers in certain industries are more severely affected by a high incidence of Covid-19 as people change their consumption habits and reorient their lifestyle choices towards those activities involving less contact with others to avoid infection. Government communications advising 'working from home' also contribute to these behavioural changes. The adjustment in household behaviour to different levels of infection risk has been widely observed during previous waves of the pandemic due to its importance for the aggregate economy, it is an integral part of the transmission mechanism in virtually any macroeconomic-epidemiological model (see e.g. Eichenbaum et al., 2021).

### Impact of CJRS

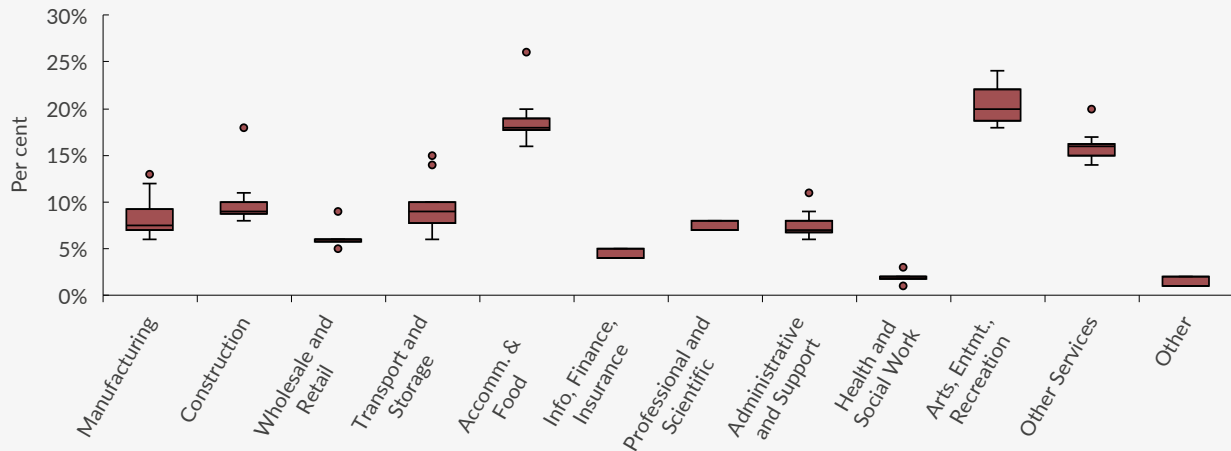
Employers in hospitality, tourism, and sectors where social distancing is difficult to implement are more adversely affected by high Covid-19 caseloads through falling custom and lost revenue. Ultimately, this puts pressure on jobs in these industries that is felt to a lesser extent elsewhere in the economy. Indeed, sectors that rely on online delivery and can remotely deliver services may benefit from a wave of infection as demand increases. The CJRS was used by 1.3 million employers and supported 11.7 million jobs. At the peak in May 2020, it applied to 8.9 million jobs. Implemented in a hurry, it was a hugely expensive blanket scheme, costing almost £70 billion (not including the cost of the Self Employment Income Support Scheme). ONS data show that 27 per cent of businesses experienced a decline in turnover compared to normal expectations during the pandemic. While not all of these firms experienced the 15 per cent turnover decline that we outline, this suggests that, conservatively, the targeted scheme would have saved a minimum of £51.1 billion compared to the universal CJRS.

Our assessment is that it did not need to be so all-encompassing since the take up rates were so variable. Figure B1 shows how much take-up rates varied by industry across regions. Some industries were far more affected than others, with Food and Accommodation, Arts and Entertainment and Other Services sectors having take-up rates in June last year of about 20 per cent, double that in other sectors. In some sectors, regional take-up rates showed considerable variation. Designing a furlough policy that supports firms and employees through the pandemic should therefore be targeted towards certain firms, as is the case in other countries, rather than broad based and free of eligibility criteria as the CJRS was during previous lockdowns.

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1 Christoph Görtz is Associate Professor in Macroeconomics at the University of Birmingham, Paul Mortimer-Lee is Interim Deputy Director at the National Institute of Economic and Social Research, Danny McGowan is Professor in Finance at the University of Birmingham.

2 The authors would like to thank Jagjit Chadha and Rory Macqueen for valuable comments and Amber Rivett for research assistance.

**Figure B1** Furlough Take-up Rates by Industry; Regional Spread, June 2021

Source: ONS

### Targeted Furlough Scheme

We suggest introducing a new policy tool, the Targeted Furlough Scheme, as a response to the challenges that lie ahead during the pandemic. This scheme incorporates the successful elements of the CJRS. Research shows the UK government's 80 per cent contribution to a furloughed worker's monthly wage up to a limit of £2,500 each month was effective in minimizing the incidence of household financial distress at low cost to taxpayers (Görtz et al., 2021). The CJRS avoided widespread household default due to mass unemployment and relaxed firms' financial constraints during lockdowns. It also helped to revive economic growth following the lifting of lockdown measures as retained employer-employee links allow firms to quickly reactivate their operations without having to incur time and monetary costs of hiring new workers.

However, the CJRS was effectively available to all firms as employers could self-assess whether their finances had been detrimentally affected by the pandemic. The lack of eligibility requirements and compliance monitoring exposes public finances, and taxpayers, to potentially high costs as firms that experience non-Covid-19 related financial difficulties may use the scheme. A further unintended consequence is that zombie firms remain active rather than closing down, thus preventing the reallocation of resources to more productive firms and reducing UK productivity growth (Gemmell et al., 2016). Media reports also highlight instances of workers being asked to commit furlough fraud by their employer demanding they continue working while furloughed (McCullough, 2020). This raises questions about working conditions.

While the scheme's detailed design had some flaws, the timing of the scheme could have been optimised. This is important as the CJRS is a heavy burden for public finances. When the CJRS ended on September 30 last year, there were 1.16 million people on the scheme, working for 410,000 employers. However, when the scheme ended, there was no noticeable increase in unemployment questioning whether the scheme could have been ended earlier than September without severely impacting unemployment. At the end of October, 16 per cent of businesses who were still trading reported that they had employees on furlough when CJRS ended. Two-thirds of those businesses' employees went back to work on full hours and only 3 per cent were made redundant. When the scheme ended, 28 per cent of the jobs on furlough, or 328,000 employments, had been continuously on furlough since March 2020. The lack of a noticeable unemployment response to furlough indicates that the scheme was prolonged unnecessarily, inflating its cost. What was needed was a targeted approach, giving businesses support when they needed it, but not providing artificial aid to businesses who would likely have failed in the absence of Covid-19.



The Targeted Furlough Scheme we propose contains eligibility and compliance monitoring measures. For example, as is the case in other countries, firms would have to be able to demonstrate, by reference to annual and management accounts and bank statements that an employee's work has been stopped by Covid-19, and that turnover had fallen by at least 15 per cent because of pandemic-related reasons, to access the scheme. With large numbers of firms applying, self-assessment with a risk-based ex post assessment of eligibility might be adopted. These features would ensure support is targeted towards businesses in hard-hit sectors, ensuring that taxpayers' money is used prudently while also limiting competitive distortions. This approach has been widely used abroad, e.g., in Ireland, France, Canada, Australia and Sweden. In Ireland firms were only eligible to place employees on furlough if they experienced a 25 per cent fall in turnover and were unable to pay normal wages and outgoings. Sweden explicitly made eligibility conditional on a company suffering from 'temporary and significant financial difficulties due to Covid-19. A combination of the Irish and Swedish criteria seems also suitable for a Targeted Furlough Scheme for the UK.

The CJRS was very successful in shielding most of the workforce from being in financial distress. The absence of the scheme would have resulted in a sharp rise in unemployment. GDP in April and May 2020 was almost 25 per cent lower than in the final two months of 2019, which could have translated into a rise in the unemployment rate of up to 8 percentage points on the basis of previous relationships (though without lockdown, the fall in GDP could have been smaller). Many firms would have ceased trading, leaving permanent labour-market scarring. In those circumstances, lockdowns would have been very difficult to introduce and enforce. When redesigning a furlough scheme for the UK, it must be noted though that particularly for those with below median incomes and without a university degree, being furloughed during 2020 and 2021 implied a substantially heightened risk of being in severe financial difficulties (Görtz et al., 2021). For those at the poverty line, even the smallest adverse income shocks mean struggling to pay bills. Over 80 per cent of furloughed individuals earning minimum wages were in severe financial difficulties during furlough resulting in late bill and housing payments. Household default is not costless for our society and implies severe hardship for the affected families. A Targeted Furlough Scheme for the UK should shield those at the poverty line from income shocks. This can for example be achieved by providing a 100 per cent government contribution to wages of furloughed individuals employed at minimum wage. This additional 20 per cent government contribution for those individuals would have cost the taxpayer less than 1 per cent of the total spending on the CJRS during 2020 and 2021. Alternatively, one could also introduce a mandatory 20 per cent employer contribution for furloughed individuals at minimum wage that complements the 80 per cent wage payments covered by the government.

The suggested Targeted Furlough Scheme reaches those firms and their employees in financial difficulties during a severe time of the pandemic. It builds on the success of the UK CJRS during previous lockdowns. Germany and Switzerland have shown that a well-targeted furlough scheme can be an effective policy tool also outside of lockdowns – these countries used it very effectively to dampen the economic effects of the 2007 Financial Crisis. Outside a national lockdown, the CJRS in its current form seems a less desirable policy instrument as it lacks elements such as eligibility restrictions and compliance monitoring. However, the Targeted Furlough Scheme may provide a complement to other automatic stabilizers.

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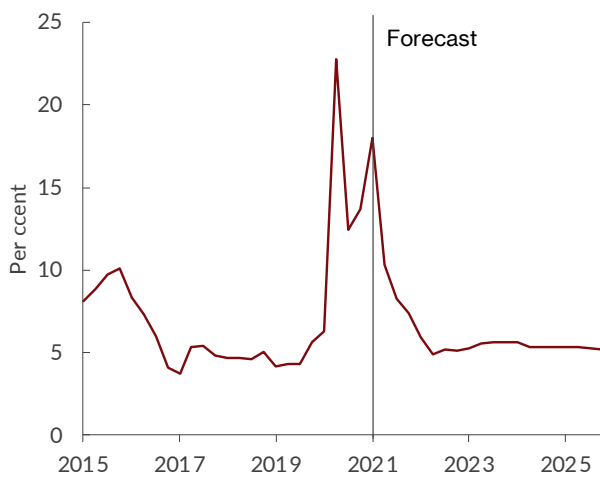
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government's 'Energy Bills Rebate', announced after our forecast was finalised, but any effect will be relatively small and comes largely at the expense of future years' incomes.

### Inflation set to eat into households' real consumption

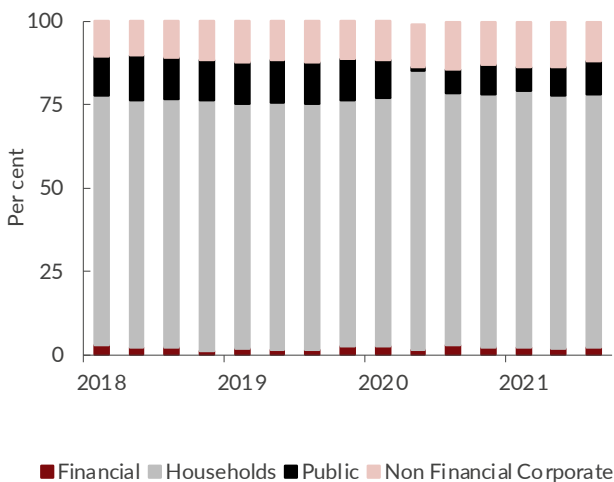
Omicron is forecast to have a temporary negative impact on consumer spending in the first quarter of 2022, but household consumption is expected to grow by 7.5 per cent in 2022 and around 2 per cent annually thereafter. Upside risks include greater consumer confidence and a quicker return to pre-pandemic normal activities, while higher inflation, a higher savings rate and renewed virus waves constitute major downside risks.

**Figure 1.9** Household savings rate



Source: NiGEM database, NIESR forecast

**Figure 1.10** Shares of national income



Source: ONS, NIESR calculations

### House prices forecast to slow considerably

Our expectations of further interest rate rises this year and next year will dramatically slow recent growth in house prices. We forecast annual house price growth to ease from 10 per cent in 2021 to around 3 per cent in 2022.

### Savings rate expected to normalise

After the assumed end of the Omicron wave, we forecast the savings rate to return to between 5 and 6 per cent (see Figure 1.9), close to its post-referendum level. Lower consumer confidence, more disruptive pandemic waves and higher inflation than expected constitute upside risks.

## Firms

### Balance sheets protected at the expense of investment

The pandemic has resulted in a significant improvement in the financial position of the UK corporate sector as a whole. Recessions generally see firms' finances worsen, but the Covid-19 recession was different, largely because of a huge expansion in the government's fiscal deficit and defensive behaviour: cutting investment and, in 2020, dividends.

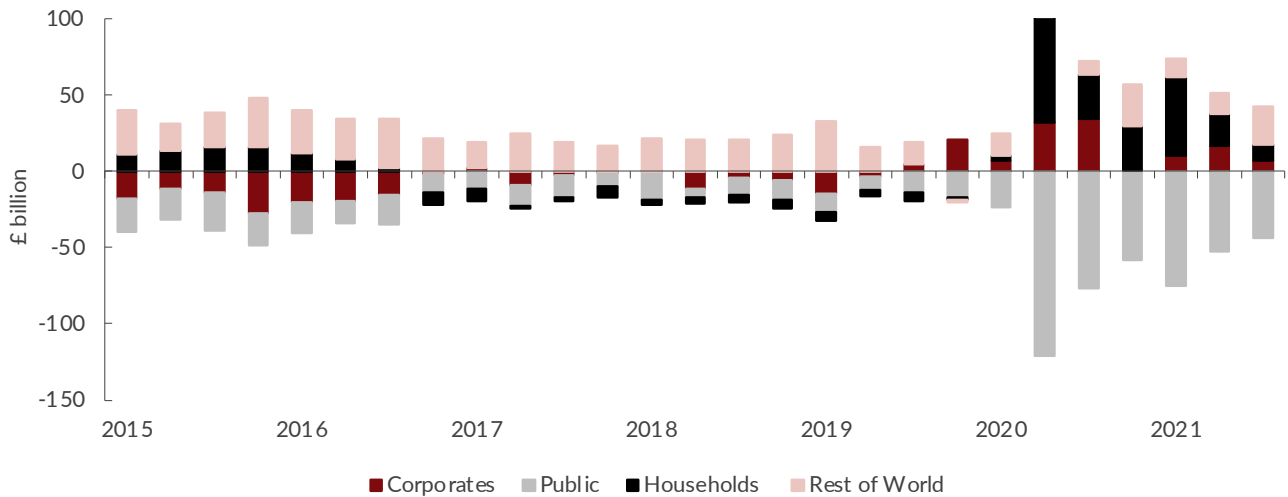
Figure 1.10 shows the distribution of Gross National Income (GNI). Pre-Covid, about three-quarters accrued to households, with the remainder evenly split between the corporate sector and government. When the pandemic arrived, the household share shot up to 83 per cent in the second quarter of 2020, the corporate share rose by a percentage point and the government share plunged close to zero. Since then, government has clawed some, but not all, of the way back to pre-Covid levels, but corporates and households are still claiming a larger share of GNI than before the pandemic.

### Firms and businesses moved strongly towards net saving as government did the reverse

The full financial position of the various sectors, their surpluses and deficits, depends on their expenditure as well as income. Financial surpluses and deficits registered dramatic shifts, shown in Figure 1.11. In the four years pre-Covid, the corporate and household sectors were in small deficit for most of the time, with, effectively, the overseas sector financing the UK government deficit. The response of both parts of the UK private sector to Covid-19 was to slash expenditure while government increased its outlays despite lower income.

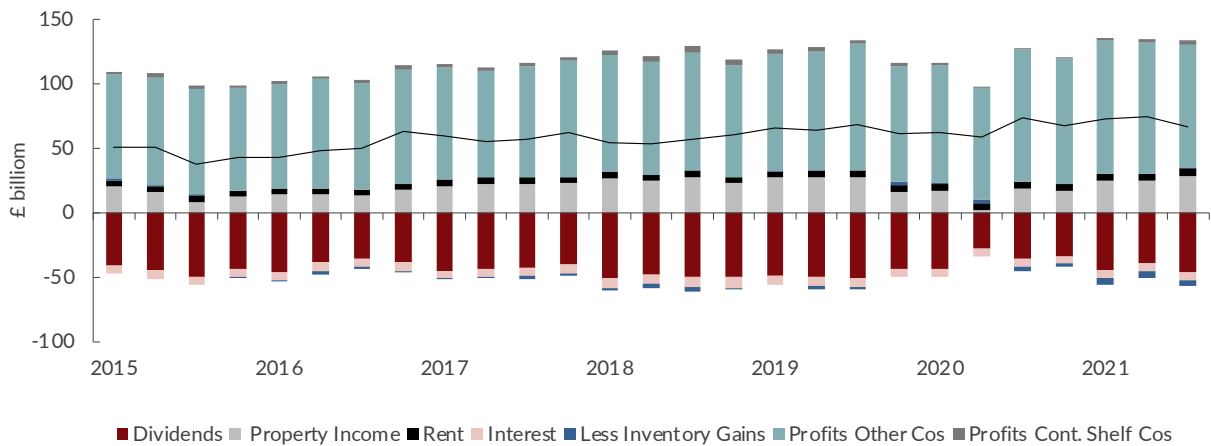
The corporate sector moved into surplus in the second quarter of 2020, as did the household sector on a dramatically larger scale. The central government's net borrowing increased almost twelve-fold from its 2019 quarterly average to £123 billion that quarter: a staggering 25 per cent of GDP – about equal to the previous eleven quarters put together, with a central government deficit exceeded in only two full years in Britain's prior history.

**Figure 1.11** Sectoral net lending (+)/borrowing(-)



Source: ONS, NIESR calculations

**Figure 1.12** Non-financial corporates: primary income account



Source: ONS, NIESR calculations

**Corporate profits have risen during the pandemic...**

It is not surprising that the household sector should benefit from a Bank of England-supported government deficit on such a huge scale, but the corporate sector also gained. Profits of non-oil corporates were virtually flat between 2019 and 2020 and have risen since to about 6 per cent above that level. Given the surge in prices in 2021, it is perhaps surprising that profits were not even higher, testifying to increased costs and lower output faced by many companies. In response to the pandemic, corporates slashed dividend payments and, while their property income fell, the balance of primary incomes improved (the line in Figure 1.12 and the light blue bars in Figure 1.13). While there was little change in 2020 compared with 2019, by early 2021, nonfinancial corporates’ balance of primary income was £7-10 billion better per quarter than in the first half of 2019.

**...thanks to cutting back on their capital investment**

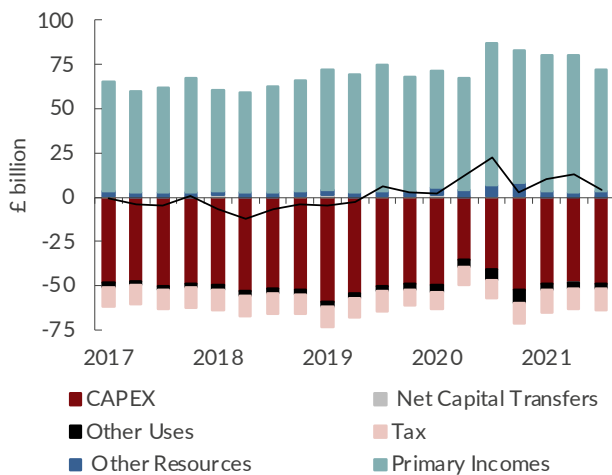
Figure 1.13 shows that the nonfinancial corporate balance, which registered a deficit of £29 billion in 2018 and virtual balance in 2019, moved into a surplus of £40 billion in 2020. The main driver for this was a sharp reduction in capital spending due to uncertainty and reduced final demand from consumers and exports, aided by the modest increase in primary incomes.

Since 2020, capital spending has started to recover, but by the third quarter of 2021 was still about 10 per cent below its pre-Covid level, so, together with a reduced balance of primary income, the corporate balance has deteriorated, with the surplus in the third quarter of 2021, around £4 billion, about the same as the average in the last two quarters of 2019.

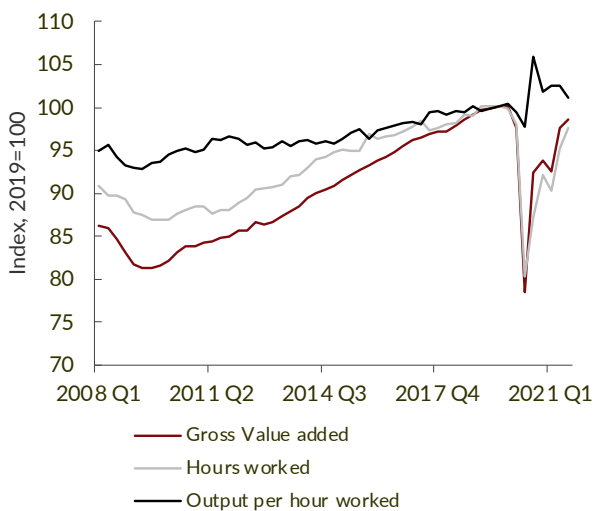
### Cost pressures lie ahead

With the best of the growth bounce from Covid-19 behind us, and inflation soaring, firms are expected to experience cost pressures in the form of higher wage demands. Payroll taxes will rise from April and, with likely consumer resistance to these costs being passed on, it seems likely that profit growth will be low, and probably negative.

**Figure 1.13** Non-financial corporates: secondary income distribution



**Figure 1.14** Output, hours and output per hours



Source: ONS, NIESR calculations

Corporates as a whole have benefited financially from the increased government deficit but that is now being cut (see 'Fiscal' on page 21), and, while most of the cost will fall on the household sector, corporate finances are also likely to deteriorate. Moreover, since the sectoral impact of Covid-19 has been very diverse, some corporates will still be suffering, e.g. in face-to-face services, while others

are doing better.

### Businesses expected to return to investment after little movement in 2021

Against this financial background, and with firms knowing that a corporate tax increase is due in 2023, it is not surprising that investment by the business sector has been lacklustre. While supply chain shortages look to be starting to ease (see 'Trade' on page 20), progress has not been rapid. With protected corporate balance sheets and generalised labour shortages, business investment is forecast to grow by 11 per cent in 2022 after almost no growth in 2021 (see Appendix Table A6). This bounce-back does not herald the start of a long boom, however, and the private capital stock returns to growth of around 1.5 per cent annually, compared with over 3 per cent in the public sector.

### Productivity

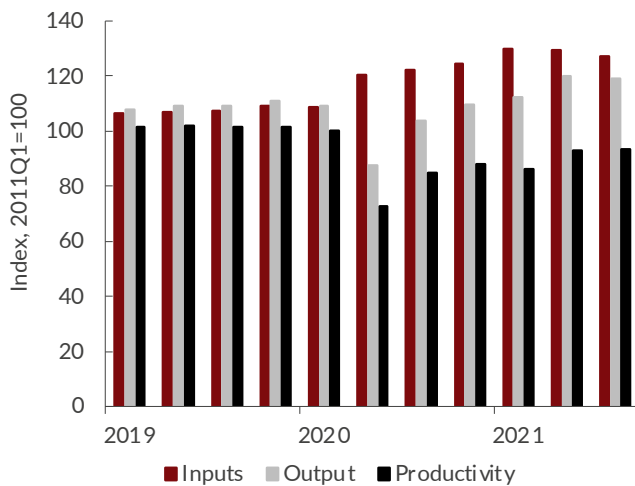
#### Data have been affected by composition effects

While productivity, defined as output per hour worked, was 1.1 per cent above its 2019 level in the third quarter of 2021, it fell 1.4 per cent compared with the second quarter of the year (Figure 1.14). The pattern over the last couple of years reflects the differential impacts Covid-19 has had on employment, average hours worked and therefore on productivity. Shifts in the composition of the workforce have emerged as lower-paid, lower productivity workers (often in face-to-face employment), in whom employers have invested less in firm-specific human capital, have been more likely to be laid off and then rehired as activity recovers; this is one reason why hourly productivity rose and then has fallen back as more people have returned to work. The same effect has taken place on a sectoral basis, with low-productivity sectors including hospitality among those worst affected by Covid-19.

#### Productivity gains from Covid-19 still elusive

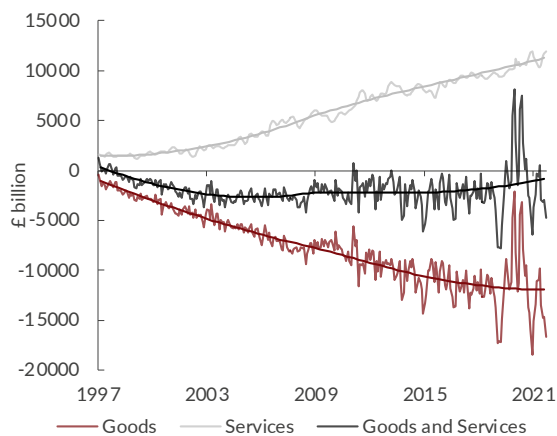
It is not clear how productivity trends will emerge from the pandemic; on the one hand, there is a greater incentive to reduce reliance on techniques that involve face-to-face contact, so investment in information technology may rise, as suggested by feedback at the NIESR Business Conditions Forum.<sup>3</sup> On the other hand, uncertainty about rates of return on investment have increased, concerns about future profits are likely to mount if inflation continues to rise, and with it wages. At the moment, there is little to suggest a substantial shift in the trend rate of growth of hourly productivity of about 0.5 per year (see Appendix Table A7). However, there are concerns about a step shift down in productivity in a large sector of UK employment.

3 See [www.niesr.ac.uk/publication-type/business-conditions-forums](http://www.niesr.ac.uk/publication-type/business-conditions-forums)

**Figure 1.15** Public sector productivity

Source: ONS, NIESR calculations

In the public sector, productivity has fallen dramatically, with inputs rising by 19 per cent since 2019 and output by only around half that (Figure 1.15). Some of this is likely to reflect measurement issues, with online teaching deemed significantly less productive than face-to-face, but in the long run steps need to be taken to at least recapture productivity losses if higher taxes are not to be required for the same level of public services.

**Figure 1.16** UK nominal trade balances: world

Source: ONS, NIESR calculations

## Trade

### Covid-19 appears to have caused little shift in long-term trends in external balances

The trade accounts have been heavily distorted by shocks to both volumes and prices arising from the Covid-19 pandemic, but the overall picture has been of little change in either the goods or services balances (Figure 1.16) trends. Both balance of payments registered small surpluses in October and November after a run of sizeable deficits, with the main contributor being a significant fall in imports of goods, which fell from an average

of over £15 billion a month in the third quarter of 2021 to only about £11½ billion in each of October and November. Most of the fall was in imports from outside the European Union (EU), though imports from the EU also fell.

In nominal terms the overall trade balance has been fairly flat, with a steadily increasing surplus in services outpacing a rising deficit in goods; the trend is flattening off, largely due to an improving trade balance with the EU, analysed more fully in Box A. The picture in real terms (Figure 1.17) is slightly different, with a flat trend in the surplus in services and a flat trend in the deficit on goods. The improvement in the nominal balance is therefore largely attributable to a continuation of the long-established upward trend in the terms of trade (the ratio of export prices to import prices).

### There has been significant short-term divergence in the terms of trade for goods and services...

Since the start of the pandemic, the trend in overall terms of trade has remained unchanged, but the terms of trade in services improved sharply and in goods deteriorated abruptly. These reflect changes in composition, which we would expect to unwind, perhaps unevenly, as the effects of the pandemic fade over the forecast period.

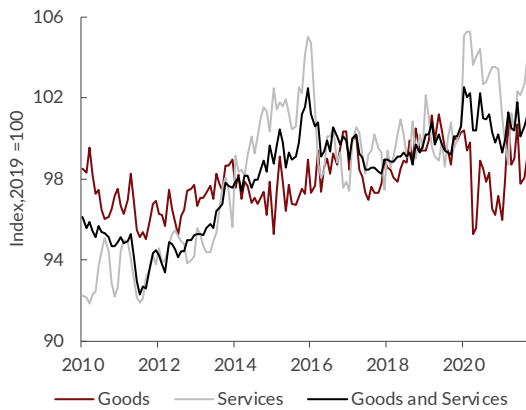
### ...as well as short-term disruption to trade flows

The largest single export commodity from the UK in 2020, accounting for 7 per cent of goods exports, was cars. The largest single import commodity, comprising 6 per cent of goods imports, was also cars. Supply shortages of components, including microchips, have been prominent in the car industry, sharply reducing the volumes of both imports and exports: in 2020, import and exports of machinery and transport equipment both fell by about 20 per cent year-on-year and have yet to recover. Given that the UK was running deficits on machinery and transport equipment of about £45 billion annually in the years prior to the pandemic, this reduction in volume by a similar percentage has improved the current account balance: in 2021, the deficit on machinery and transport equipment was about £29 billion a year, an improvement over two years of over three-quarters of a percentage point of GDP.

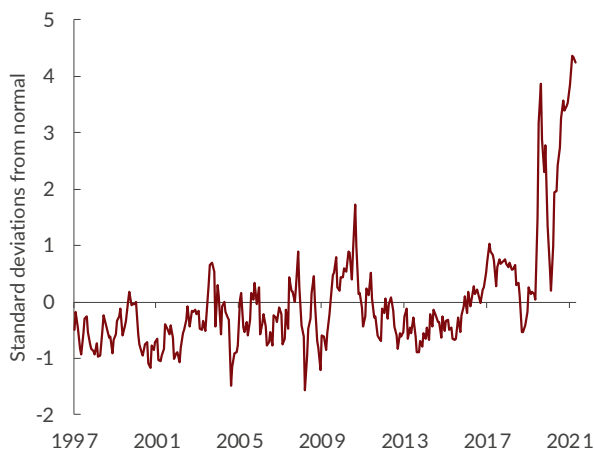
### Supply chain problems may be past their worst

The New York Fed's new Global Supply Chain Pressures Index shows tentative signs that supply chain pressures may be levelling off, though it remains more than four standard deviations above its past average (see Figure 1.18). We assume that supply chain pressures will ease progressively over 2022, with normal levels being reached by mid-2023.

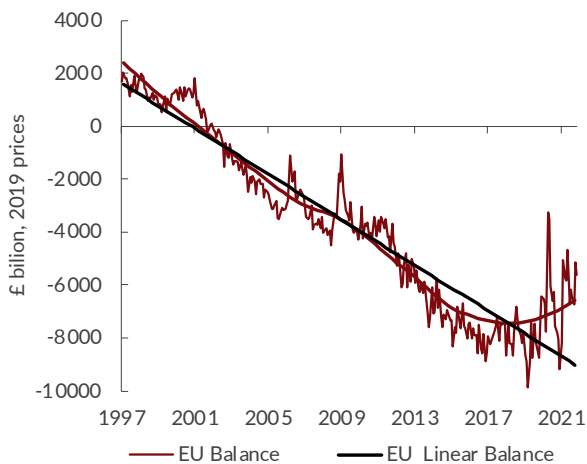
Given distortions to the trade figures that are evident globally as well as in the UK, it is not possible to isolate a separate Brexit effect on trade. Data show an improvement in the UK's real net trade balance with the EU since 2016 (Figure 1.19): this may be due in part to the sharp fall in the exchange rate of sterling after the Brexit vote, which improved competitiveness and, by raising import prices, reduced consumption. Compared with the previously deteriorating trend in the trade balance with the EU, the reduced real goods deficit is equivalent to almost 2 per cent of GDP.

**Figure 1.17** UK terms of trade

Source: ONS, NIESR calculations

**Figure 1.18** New York Fed global supply chain pressure index

Source: Federal Reserve Bank of New York

**Figure 1.19** Trend in UK real goods balance with the European Union

Source: ONS, NIESR calculations

**Trade is forecast to continue normalisation in 2022**

We forecast UK exports to grow in 2022 and 2023 by 9 per cent and 6 per cent respectively, after falling by 14 per cent in 2020 and 1 per cent in 2021 (see Appendix Table A4). Import growth is forecast at 13 per cent in 2022 and 7 per cent in 2023, after a fall of 16 per cent in 2020 and growth of 4 per cent in 2021.

We forecast that the trade deficit, 0.2 per cent of GDP in 2020 and 1.4 per cent in 2021, increases to 2.4 per cent of GDP in 2022 and 2.9 per cent in 2023, as a result of the unwinding of Covid-19 effects. These appear to have depressed imports more than exports, potentially because shipping capacity shortages affected the UK, as an island, more than countries which rely less on sea transport for trade. With UK interest rates forecast to rise in step with the US until mid-2023, and ahead of those in the Eurozone, we expect no difficulty in financing an increased yet modest deficit on the current account throughout the forecast period.

**Fiscal policy****Growth offsets higher interest rate costs**

Cumulative borrowing has continued to come in lower than anticipated by official projections in the current fiscal year, largely thanks to higher-than-expected tax receipts, which the Office for Budget Responsibility (OBR) attributes to a strong labour market. This has offset higher-than-forecast expenditure, including £5 billion more on debt interest payments in fiscal year 2021-22 up to December than forecast.

While changes in traded gilt rates affect only newly-issued debt, rising short-term interest rates also translate immediately into a deterioration in the fiscal forecast, thanks to the large share of government debt held by the Bank of England's Asset Purchase Facility (created through quantitative easing). As discussed in previous Outlooks (see Macqueen, 2021), this does not present a problem for the Government provided that higher interest rates are intended to offset faster growth which results in higher tax receipts: this has been the case so far in 2021-22, though may not be over the coming fiscal year.

**Difficult decisions ahead for the public finances**

Government debt took a rapid upward turn when the pandemic began and was reported to be 96 per cent of GDP at the end of December 2021. The Budget and Spending Review, which took place shortly before our Autumn Economic Outlook was published, incorporated improved fiscal forecasts and saw the Chancellor 'bank' around half of windfall.

With government department budgets set in cash terms now until 2025, the forecast for real growth in government consumption is made worse by our higher forecast path for inflation (see 'Inflation and monetary policy'). If the OBR follows NIESR in revising up price level forecasts for the coming years, their Economic and Fiscal Outlook

published in March may show much less generous real terms spending plans than announced at the Spending Review 2021 (see Figure 1.20). With monetary policy playing its role in tackling inflation, there is scope for looser fiscal policy to mitigate inflation’s effects: this could take the form of delaying the introduction of higher National Insurance contributions scheduled for April (see Mortimer-Lee, 2021) or by revising spending plans upwards. By planning too much fiscal consolidation the government has risked harming household finances but also delaying much needed normalisation of monetary policy.

**Fiscal risks skewed to upside**

With most government spending going on salaries, this will translate into several years of falling real wages for public sector employees. Maintaining this position by sticking to unrevised departmental expenditure limits may prove impossible, especially with a general election taking place in or before 2024, so it represents a significant upside risk to the fiscal forecast in the medium term.

With these relatively tight departmental spending plans assumed to hold in our main case forecast scenario, we forecast the deficit to fall to 7 per cent of GDP in fiscal year 2021-22, then 4 per cent in 2022-23 and 3 per cent in 2023-24 (Figure 1.21 and Appendix Table A8). While the current budget is in surplus from 2024-25, the overall deficit does not close in the forecast period, thanks to the step up in public investment since 2020-21. Debt is expected to have peaked as a share of GDP at 96 per cent of GDP in 2020-21, falling to 93 per cent in 2021-22 and 2022-23, then below 90 per cent from 2025-26 after the Term Funding Scheme is unwound (Figure 1.22). The

government’s ‘Energy Bills Rebate’ was announced after our forecast was finalised, and its fiscal consequences will be made clear at the Budget, but with most support in the form of loans we do not expect it to materially affect our medium-term forecast.

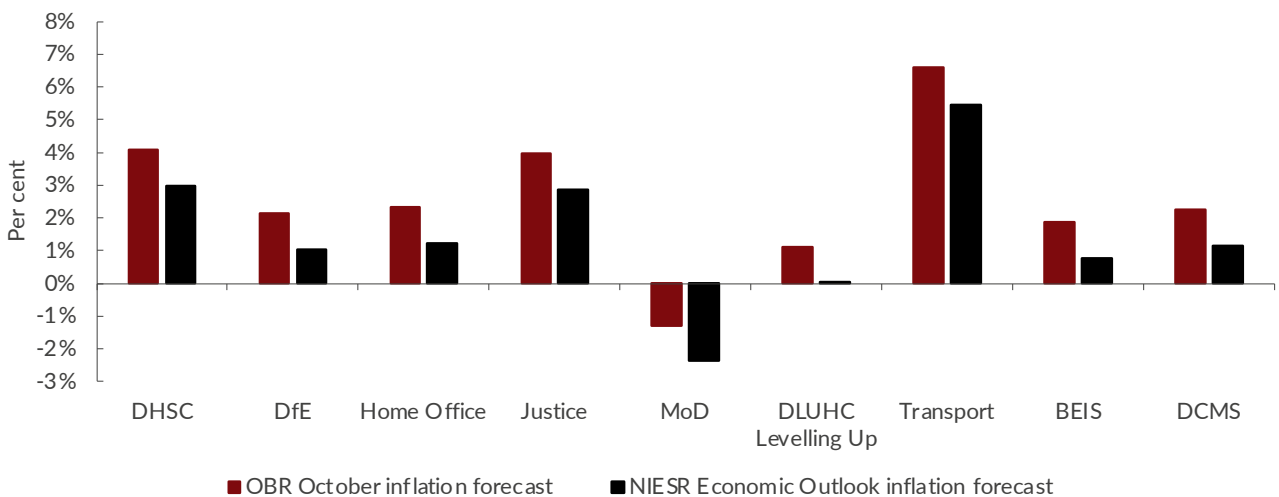
**Inflation and monetary policy**

**Inflation accelerated due to rebound in domestic demand and global supply bottlenecks**

Consumer price index inflation has rapidly increased from 0.4 per cent in February 2021 to 5.4 per cent in December 2021. Because this increase only began in March 2021, the annual inflation rate underestimates the scale of the recent acceleration in inflation. Figure 1.23 shows annualised CPI inflation over the last 3, 6, 9 and 12 months, reaching an annualised rate of 10 per cent in the last three months.

This acceleration in inflation comes from a rebound in domestic demand and global supply bottlenecks that have pushed up the prices of commodities, shipping, and some intermediary products. The largest contributors to the acceleration in annual inflation in December were transport (1.6 percentage points), housing, water, electricity, gas and other fuels (1 percentage point) and restaurants and hotels (0.5 percentage point). Surging gas prices, international shipping prices and other traded goods prices are all feeding into a rapid increase in the cost of living that reduces households’ purchasing power (Figure 1.24).

**Figure 1.20** Average annual increase in department resource budgets 2021-22 to 2024-25 adjusted for inflation

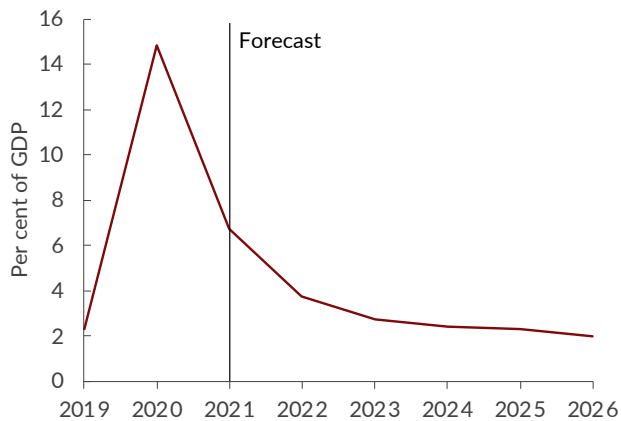


Source: HMT, OBR, NiGEM, NIESR calculations

### Goods inflation faster than services inflation

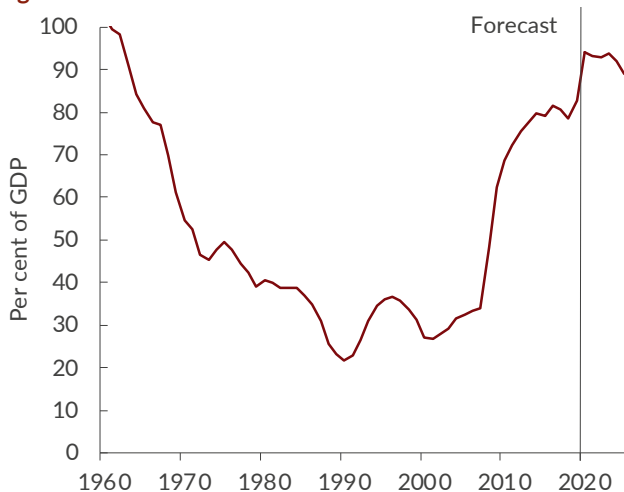
Splitting the consumption basket between goods and services shows that goods price inflation is faster than services price inflation, at 6.9 per cent compared to 3.4 per cent in December 2021. While goods inflation is generally more volatile, this also reflects a change in consumption behaviour during the pandemic where people have increased their spending on goods compared to services, both in the UK and elsewhere, leading to global goods demand outstripping supply.

**Figure 1.21** Public sector net borrowing



Source: NiGEM database, NIESR forecast

**Figure 1.22** Public sector net debt



Source: NiGEM database, NIESR forecast

### Inflation to peak at 7 per cent in the second quarter

We forecast consumer price index CPI inflation to reach 7 per cent in April 2022 after the Office of Gas and Electricity Markets (Ofgem) rise in price cap comes into effect and the temporary cut in VAT for restaurants and

hotels is reversed. Higher wholesale energy prices impact inflation with a lag because of price caps updated twice a year by Ofgem, whose new cap will increase the cost of electricity and gas for households (see Box C on page 24). The recent rise in inflation is increasingly broad-based and we expect inflation to stay above the Bank of England target of 2 per cent for another two years (see Appendix Table A2).

After the spring, inflation should decline for several reasons. Slower growth should allow supply bottlenecks to ease, as supply catches up with demand. Some temporary drivers of inflation like higher energy prices and transport costs are likely to reduce. But one lesson of the inflation overshoot in 2011 is that getting back to 2 per cent after a spike can take a long time, and it may be more difficult now than a decade ago, given that there is lower unemployment and more excess liquidity, growth in foreign markets (in particular the Eurozone) is faster, the banking system has not been damaged, and fiscal and monetary policy have thus far been more accommodative. Additionally, globalisation forces have waned, and Brexit means a more limited labour supply. Our central case scenario is for consumer price index inflation close to 6 per cent in 2022, decreasing to slightly above 3 per cent in 2023 and returning to 2 per cent in 2024 (see Figure 1.25). Inflation measured by the retail price index peaks at 9 per cent this year, falling to 6 per cent in 2023 and within half a point of 3 per cent thereafter.

### Inflation expectations risk de-anchoring

There is a danger that sustained, substantial price increases and higher pay settlements in response to the increase in inflation may raise inflation expectations and fuel further increases via nominal wage growth and input costs. The 5-year break-even rate of inflation on government bonds has risen by about half a percentage point since the pandemic started, to 3.7 per cent. The Citi/YouGov poll of household one-year inflation expectations was at 4 per cent in December, while 5-to-10-year expectations rose to 3.8 per cent, the second highest reading since 2013.

### A tightening of monetary policy is warranted by conditions

The MPC increased Bank Rate from 0.10 to 0.25 per cent in December 2021, as forecast in our Autumn Economic Outlook. In line with the market curve, we forecast four rate rises in 2022. While the Bank faces an uncomfortable economic background of slower growth and rising inflation, we judge that the risk of high inflation feeding into wage growth and inflation expectations is large enough that the Bank will embark on a tightening cycle until Bank Rate reaches 1.5 per cent in 2023 (see Figure 1.26 and Appendix Table A1). Delaying the rate hike cycle would only worsen the trade-off between lower growth and higher inflation because growth will inevitably decline to its potential growth rate, but the de-anchoring of inflation expectations can be avoided with tighter monetary policy.



## Box C: Gas prices and price controls

By Paul Mortimer-Lee and Urvish N Patel<sup>1</sup>

### Background

Inflation in the UK has surged to levels not seen since the 1980s and there is a danger of inflation expectations becoming unanchored. Higher interest rates are the conventional response to an upward shock to the price level if this is expected to have second-round effects. However, interest rates take twelve to eighteen months to influence inflation. So, are there other means to influence the outcome sooner? There have been suggestions of price controls in the US (Weber, 2021) and there is pressure in the UK to temper the effects of rises in the price of household gas, including perhaps staggering price increases (Morales and Morrison, 2022). We used our econometric model, NiGEM, to address the issue in the context of Ofgem's recent decision whether to raise the gas price cap by up to 50 per cent for households in April or to stagger it over the future.

Our main findings are:

- If gas prices increase by 50 per cent in one go under rational expectations<sup>2</sup>, inflation is expected to peak in the third period following the shock at just over 0.7 percentage points over the base.
- Staggering the price rise under rational expectations reduces this addition to inflation to just over 0.4 percentage point over the base. However, inflation and interest rates stay higher for longer than in the one-shot case.
- If economic agents have adaptive expectations<sup>3</sup> and think the gas price hike has been cancelled, staggering provides the lowest inflation peak at just below 0.3 percentage points over the base, compared with just below 0.6 under a one-shot.
- In the rational expectations case, the peak addition to interest rates, at just below 0.6 percentage points, is slightly higher and later under the two-year staggering than in the other two cases. With adaptive expectations, the peak addition to rates is 0.6 percentage points; in both staggered cases the addition to rates is 0.3 percentage points but is maintained for longer.
- Adaptive expectations result in a cycling of interest rates and inflation, which could be interpreted as a policy mistake, whereas under rational expectations interest rates and inflation move more smoothly.

We have looked at an increase in the gas price cap by Ofgem only from the perspective of inflation. As Chapter 2 details, there are important effects on the income distribution that policy makers must take into account when deciding on the optimum price strategy. Moreover, our simulations consider a permanent price increase. If the price of gas were to fall back at some future date, that is if the increase in the world price of gas were only temporary, the arguments for damping the contemplated price increases near term would be strengthened because it would avoid a cycling in inflation. Note that UK natural gas future prices are higher for delivery in the fourth quarter of 2022 than for April 2022 delivery, though the market prices in significantly lower levels by summer 2023.

### Gas and the CPI

Gas currently has a weight of 1.2 per cent in the consumer price index. This is very near the bottom of the range we have seen for gas prices over the last three or four decades, with the highest weight being 3.2 per cent in 2012, and the lowest 1.1 per cent in 2001 and 2004 (see Figure C1).

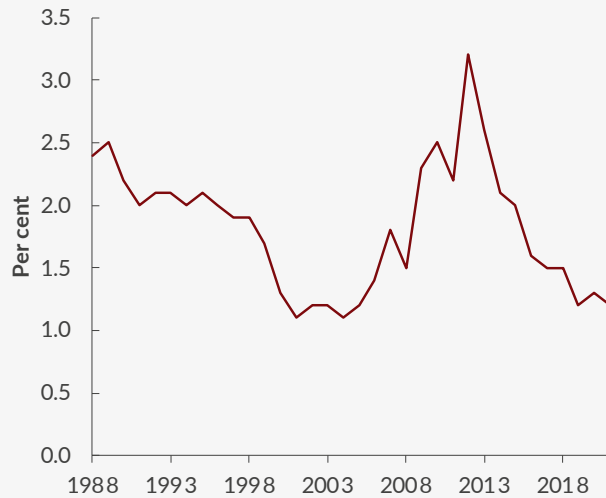
The wide range for the weights of gas in the CPI reflects it having a very volatile price (Figure C2). In late 2006, prices were about 40 per cent higher than a year earlier, with a 50 per cent annual rise recorded in 2008 Q4.

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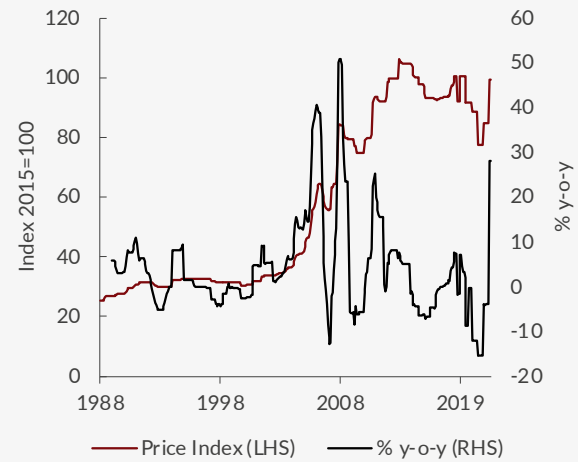
1 The authors would like to thank Jagjit Chadha and Rory Macqueen for valuable comments and Amber Rivett for research assistance.

2 When economic agents use the best available information in a way that is consistent with our model.

3 When economic agents use past data to predict future outcomes.

**Figure C1** Weight of Gas Prices in CPI (per cent)

Source: ONS

**Figure C2** Gas Price (Index, 2015 =100) and Price Change (per cent y-o-y)

Source: ONS

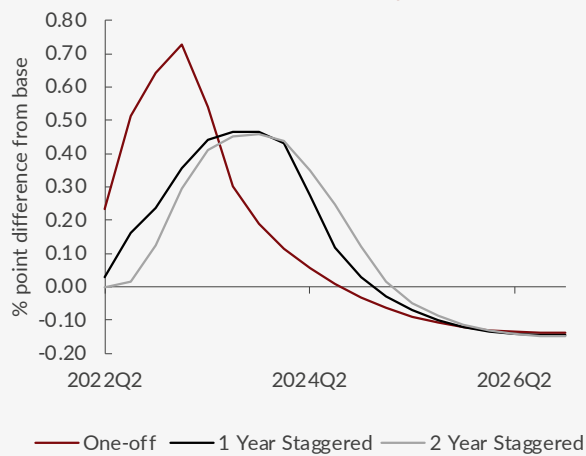
Based on 2015=100, the gas price was 99.4 in December 2021, close to the top of the range, but only 4.6 per cent above the average price of the last ten years. The price in December was marginally below the level in September 2019, prior to the pandemic. With the global demand for energy dropping as Covid-19 hit global GDP, the gas price fell in 2020. As recovery set in, the price of gas to UK households rose by 9.4 per cent in April 2021, though remaining below the level a year earlier. A 17.1 per cent rise in October 2021 took the price back to where it had been before the pandemic. In December, the price of gas in real terms – that is, deflated by all items in the CPI – was 14 per cent below the 2015 base year and about 20 per cent below the peak of the real gas price in 2014. Thus, a 50 per cent rise in gas prices would take them into uncharted territory in real as well as nominal terms.

## Analysis

In NIESR's macroeconomic model, the price of gas is permanently increased by 50 per cent under three different scenarios, with each one simulated using rational and then adaptive expectations. In each case, monetary policy is endogenous. The first scenario is of a one-off 50 per cent increase in the price of gas in 2022 Q2. The second and third simulations represent staggering the rise in the price of gas. The former involves two 25 per cent price hikes twelve months apart, and the latter includes four price increases of 12.5 per cent every six months, cumulating to a 50 per cent rise in both cases.

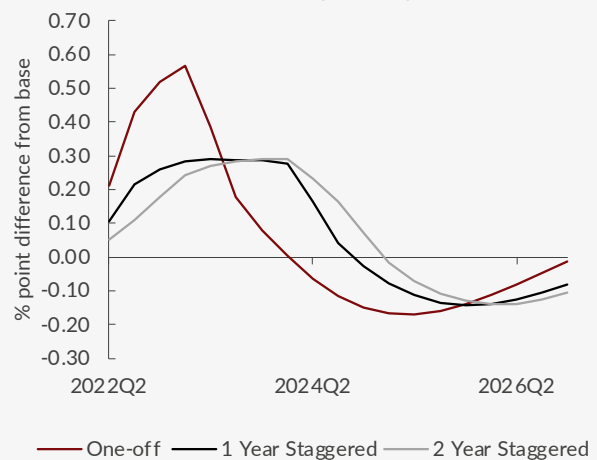
There are three main channels through which higher gas prices may impact the UK economy. First, the direct impact on consumer prices, which reduces real personal disposable incomes. Second, higher consumer prices encourage firms and workers to agree to higher nominal wages, further increasing pressure on firms' production costs and raising inflation as a second-round effect. Third, tighter monetary policy to contain higher domestic inflation reduces domestic demand and leads to an appreciation in the exchange rate, making UK goods less internationally competitive, reducing export demand, and worsening the trade balance while also reducing import prices.

A one-off increase in the price of gas leads to an immediate rise in inflation and triggers a monetary policy tightening; the monetary response is initially stronger under rational expectations than adaptive expectations and returns to base nine periods after the shock. Inflation peaks in the third period following the shock in both cases but under rational expectations the inflation peak is higher at just over 0.7 percentage points above base, compared with under 0.6 percentage points under adaptive expectations (see Figures C3 and C4). This higher addition to inflation under rational expectations is because forward-looking economic agents realise the implications of the shock for future inflation and so start reacting straight away, including in wages. Under adaptive expectations, the inflation response is relatively slower.

**Figure C3** The Impact on Inflation\* from Higher Gas Prices Under Rational Expectations

Source: NiGEM simulations

\*Note: Based on the growth in the consumer expenditure deflator.

**Figure C4** The Impact on Inflation\* from Higher Gas Prices Under Adaptive Expectations

Source: NiGEM simulations

\*Note: Based on the growth in the consumer expenditure deflator.

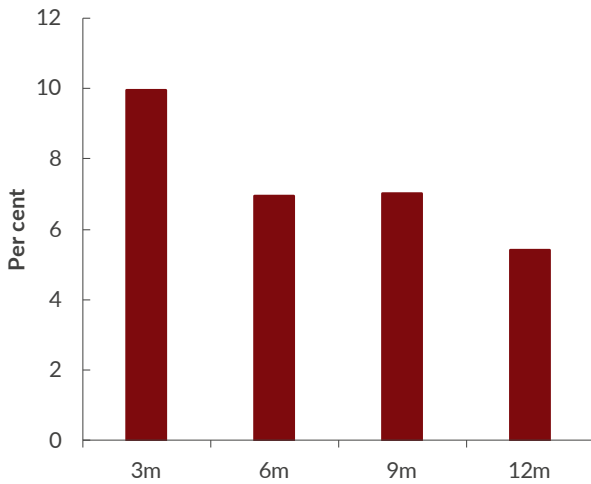
While staggering the gas price rise may sound as though it could significantly reduce the inflationary impact of the gas price rise, it lowers the addition to inflation slightly but prolongs the inflationary cycle (see Figures C3 and C4). Inflation returns to base later than in the one-shot price rise: after 10-11 periods. If people know the price increases are delayed and not cancelled, they still behave in an inflationary way – their inflation expectations alter behaviour, including price and wage setting, prior to the delayed price rises. Moreover, interest rates must stay higher for longer to fight the prolonged inflationary cycle, particularly in the case of adaptive expectations, reflecting the more extended inflation cycle. The gains in staggering the price rise accrue only when people are not aware of them coming, which seems unlikely since Ofgem's decision was high-profile.

## Conclusion

Price controls in the 1970s were not an effective solution to inflation. Only when monetary policy changed, for example, with Paul Volcker in the US in the 1980s, did inflation come down and stay down. Our simulations suggest another reason – people knew the price increases were delayed, not cancelled, and so behaved in a still inflationary way. In terms of UK household gas prices today, it does make a difference to peak inflation in our simulations whether the price hikes happen straight away or are staggered by Ofgem. The inflation benefits of staggering are greatest if expectations are adaptive, though it is difficult to see that people would fail to see the further price increases coming if Ofgem were to make that announcement. Two other sets of considerations affect the policy decision: the impact on the income distribution and on the environment.

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**Figure 1.23** Annualised consumer price index inflation over past year

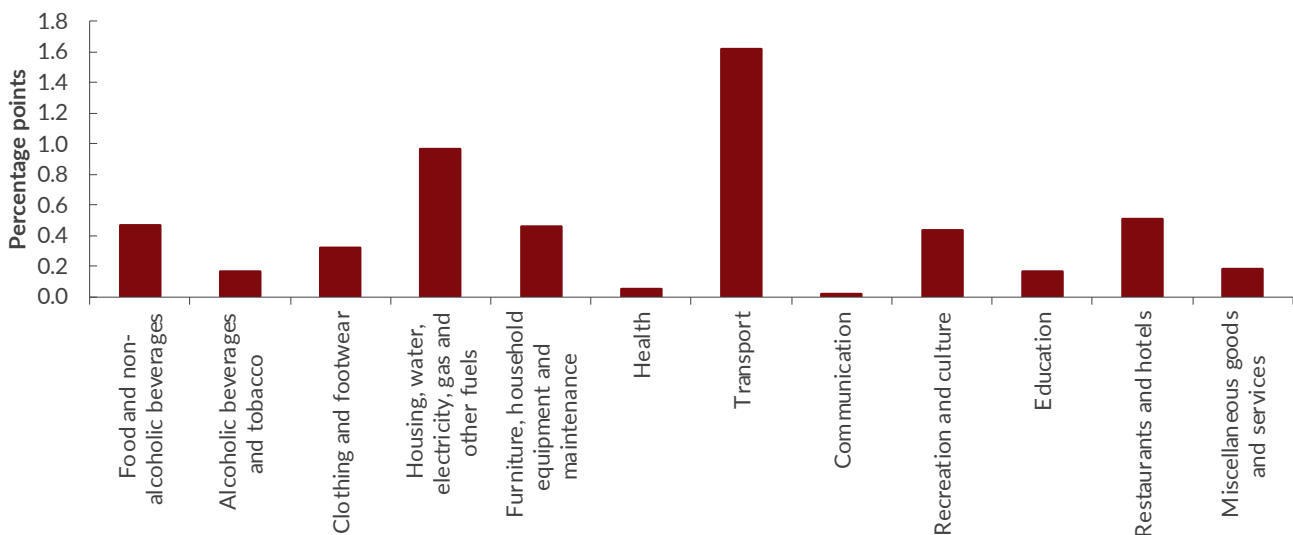
Source: ONS, NIESR calculations

**Even with an early tightening of policy, inflation only returns to 2 per cent in 2024**

Upside risks to our inflation forecast include more supply-driven increases in prices, wages rising more quickly for longer, and firms seeking to pass on in prices the increases in corporate taxes. Downside risks emanate from shortages easing sooner, lower energy prices, slower wage growth, and weaker demand, possibly due to a more aggressive series of rate hikes. We judge these risks to be broadly balanced.

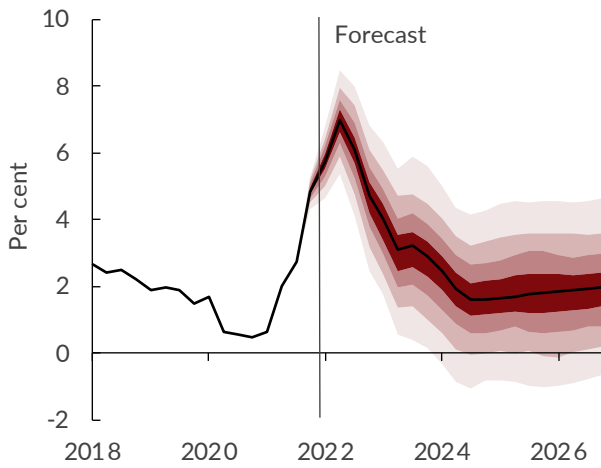
**Reducing the Bank of England balance sheet will be initially achieved passively**

In December, the MPC decided to maintain the stock of UK government bond purchases and sterling non-financial investment-grade corporate bond purchases at £875 billion and £20 billion respectively. The MPC announced in August 2021 that it would cease reinvesting the proceeds from its maturing bonds at some stage after rates reach 0.5 per cent. Reducing the balance sheet in this way is a much milder form of tightening monetary conditions than raising rates; it may be an effective signalling mechanism but the quantitative effects are uncertain and it will be a long and possibly not straightforward process (see Lenoël, 2021). If holdings immediately were reduced only through maturing rather than selling assets (and quantitative easing does not re-start), face value gilt holdings would fall from £760 billion today to around £500 billion in 2026-2027 (Figure 1.27).

**Figure 1.24** Contributions to CPI inflation (December)

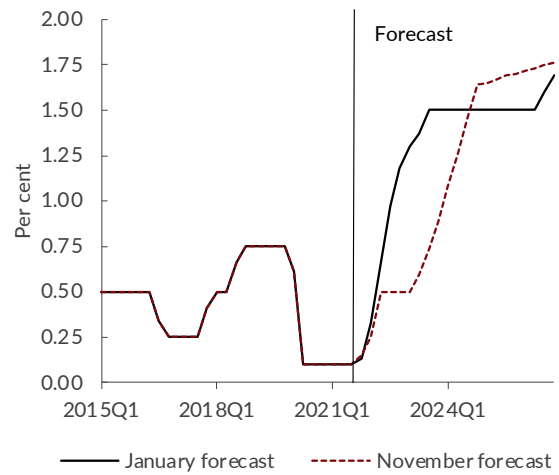
Source: ONS, NIESR calculations

**Figure 1.25** Inflation fan chart



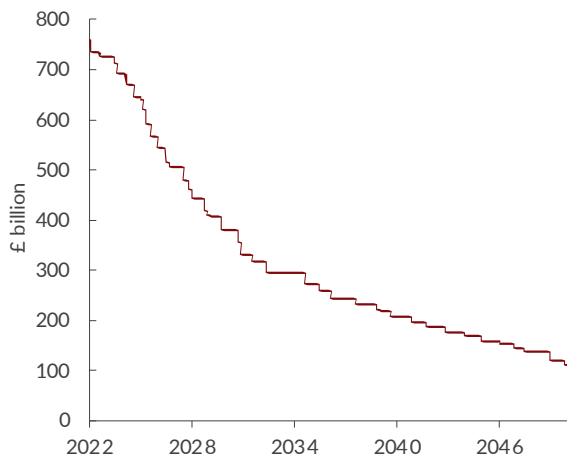
Sources: NiGEM database, NIESR forecast

**Figure 1.26** Bank rate



Source: NiGEM database, NIESR forecast

**Figure 1.27** Asset Purchase Facility holding of gilts if no further active acquisitions or sales



Source: Bank of England, NIESR calculation

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## 2 UK Regional Outlook: Winter 2022 – Persistent gaps

By Arnab Bhattacharjee, Max Mosley, Adrian Pabst and Tibor Szendrei

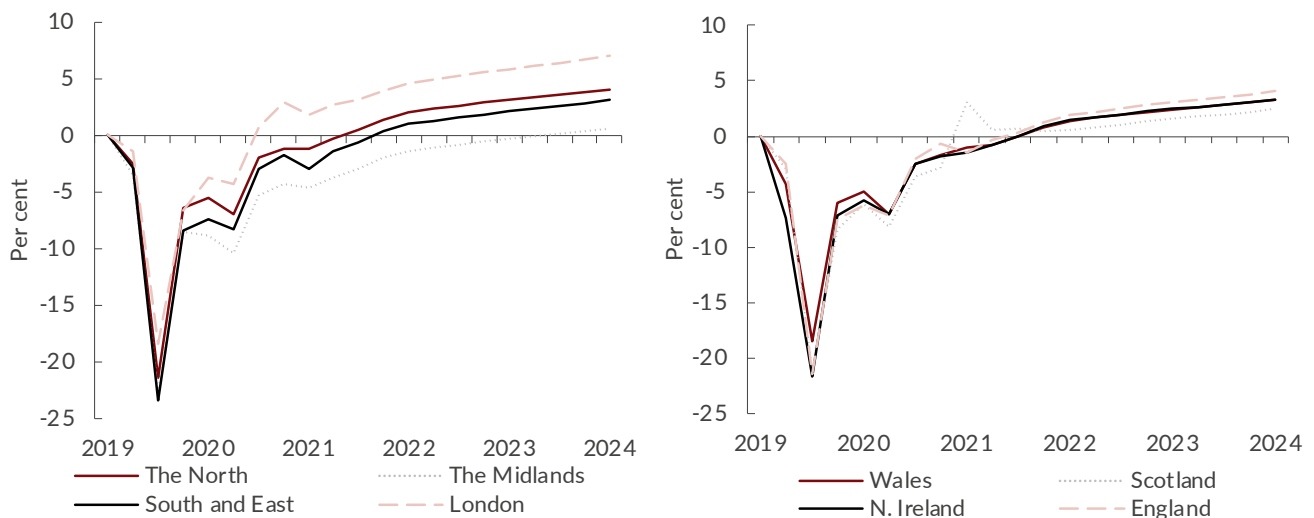
- We forecast that stuttering growth will reinforce disparities between and within the UK's devolved nations and regions: not only between London/metropolitan South East and the rest (e.g., the Midlands where pre-pandemic levels of output will not be reached before 2024), but also within regional economies such as the North West and Scotland.
- Rising inflation due to higher energy and food prices will exacerbate inequality, hitting hard the poorest in society who are heavily concentrated in the country's most economically deprived areas, including parts of Wales and of the South.
- To mitigate the cost-of-living pressures linked to higher energy prices, we propose an expanded Winter Grant scheme administered by local authorities to help households who require it to pay for energy or food; with an extra £3bn from central government, this scheme would draw on local knowledge of local needs and empower local government to deliver targeted assistance to people who need it most.
- The combined effect of higher prices and higher taxes in the form of National Insurance contributions (NICs) will push many households into destitution; our headline projection is a 30 per cent rise in destitution because of the differential impact of inflation upon the poor; however, there are large regional variations, with Northern Ireland projected to have more than twice the average increase.
- The Levelling Up White Paper includes ambitious plans for greater innovation, private investment and a radical shake-up of local government, especially in England; but no substantial new spending commitments have been made nor policies aimed at improving access to finance for businesses in deprived areas; this, combined with continuous central control, will severely limit the prospect for sustained regional regeneration.

## Regional Outlook

As the shadow of Covid-19 is beginning to fade, the deep disparities between the UK's devolved nations and regions are holding back the recovery. London and the metropolitan parts of the South East are powering ahead while other regional economies grow more slowly, in particular the Midlands and Scotland (Figure 2.1). The latter may be explained by stricter lockdown measures enacted by the Scottish government but this will have to be examined further as the country moves out of the pandemic.

With Gross Value Added (GVA) projected to be about 6 per cent above pre-pandemic levels by the end of 2023, London is ahead of the national curve (UK GVA will be about 3 per cent above pre-pandemic levels by 2023Q4). On current trends, **we forecast that on measures of economic output, employment and labour productivity, the UK's inter-regional gaps will persist.**

**Figure 2.1** Regional GVA (percentage difference from 2019Q4 GVA)



Source: NiREMS

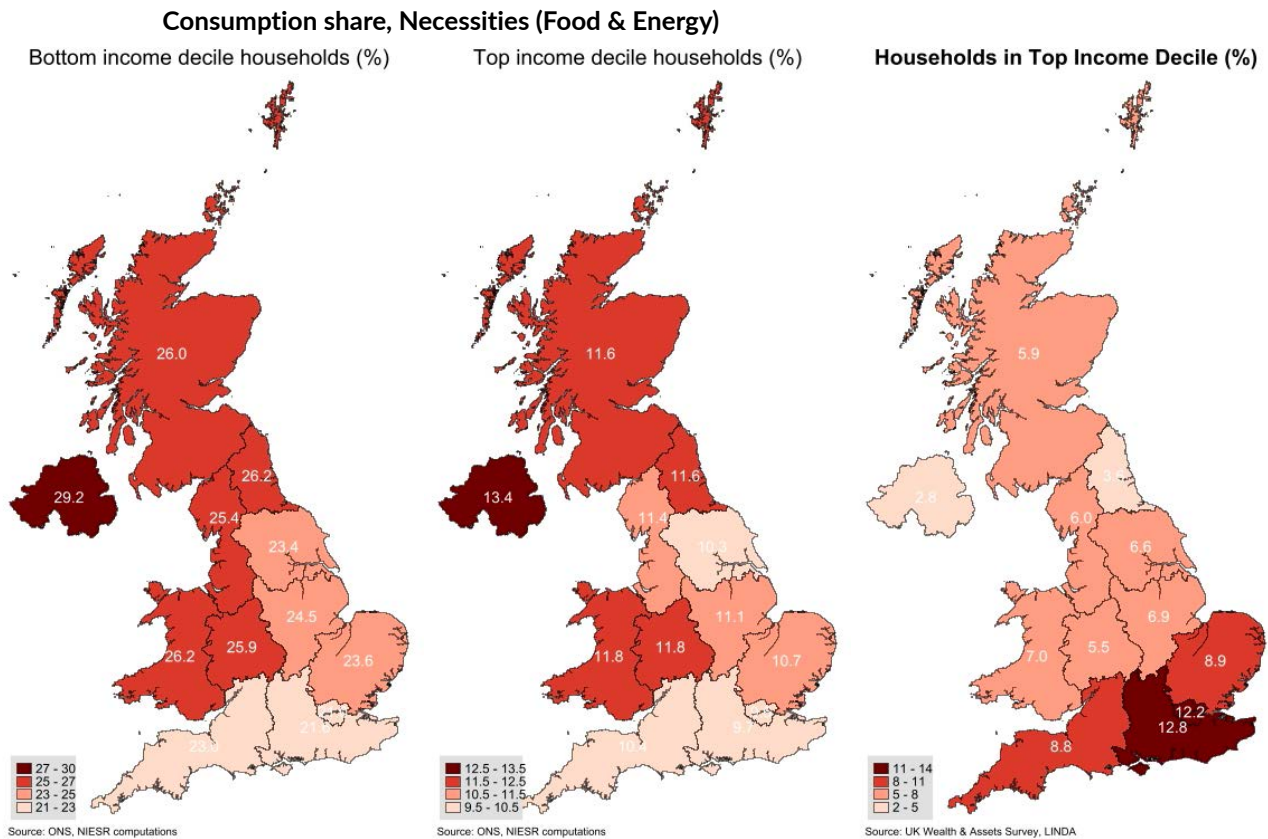
This also applies to income and consumption inequalities within regions. The devolved nations (Wales, Scotland and Northern Ireland) as well as the Midlands and the North of England have a much lower concentration of households in the top income decile (Figure 2.2). Correspondingly, the poorest households (in the bottom decile) living in those regions have a comparatively higher consumption share in food and energy, which are subject to particular high inflation. **The costs-of-living crisis is hitting the lowest income households hardest, as they spend a greater proportion of their income on fuel and food, while neither wage growth nor welfare benefits compensate for fast-rising inflation.**

Households in the bottom decile spend 23 per cent of their total expenditure on food and energy as compared with 16 per cent for the median household. Energy price increases will have a significant impact on household income, as will rising food prices: higher costs in the two groups together account for 4 per cent of household expenditure for these poorest households and 8 per cent of their budget for essential goods. The households in question are heavily concentrated in some of the most economically deprived areas of the country, including

parts of the North West, Wales and Northern Ireland, and pockets in London and the South East.

The UK's regional economic performance is also affected by the ongoing Brexit uncertainty surrounding the Northern Ireland Protocol and specific arrangements for trading and logistics sectors. At the same time, the Northern Irish economy benefits from being part of the EU's Single Market and Customs Union in terms of trade with the Republic of Ireland and with the rest of the EU. This raises questions about whether the underlying economic structure will change in terms of traded sectors versus non-traded sectors and public services.

The Brexit uncertainty, combined with structural problems that encompass significant gaps in regional capital markets and in regional labour markets, shines a light on the deep disparities between and within regions (Carrascal-Incera et al., 2020; McCann, 2022). Reducing regional inequalities will require not only investment at scale and at the appropriate level, but also targeted policy interventions in economically disadvantaged areas to tackle problems such as skills shortages, unevenly distributed firm births, and a lack of high-skill, high-wage jobs.

**Figure 2.2** Income and consumption inequalities across regions

Local design and delivery of policies will be key, which necessitates institutional reform (Pabst and Westwood, 2021). The Levelling Up White Paper (DLUHC, 2022) includes plans for a radical shake-up of local government, especially in England, but no new spending commitments have been made, which severely limits the prospect for regional regeneration.

Against this backdrop, we provide an overview of socio-economic profiles of the short to medium-run future projections, both for regions of the UK and categories by household demographics. We base these projections on our regional model NiReMS (National Institute Regional Modelling System) launched in February 2021 (see Box D). Using this model, we provide in this chapter forward-looking economic outlooks for the devolved nations of the UK and the regions of England (NUTS2 level). In addition to GVA, regional employment and productivity, we focus on energy and food price increases and how they are (and will be) affecting low-income households in different parts of the country.

**Our main finding is that slower than expected economic growth (prior to Omicron) and persistently low productivity is holding back the recovery and opportunities for convergence.** On current trends, by the end of 2024, poorer regions in the North of England and the devolved nations will on average be some £7,500

worse off in terms of disposable income per person than in London and the South East. Deep disparities between and within regions will only be tackled by a Regional Regeneration strategy that combines institution-building with sufficient levels of public and private investment (Pabst, 2021; Westwood et al., 2021).

## GVA, (un)employment and labour productivity

Since the publication of the 2021 Autumn Outlook, the Office for National Statistics (ONS) has published experimental (model-based) estimates of regional GVA. Incorporating these numbers has led to some revised regional GVA projections, particularly for Northern Ireland. This revision highlights that the structure of the Northern Irish economy is undergoing change, with its traded sector becoming comparatively more prominent.

While there is substantial uncertainty surrounding these early estimates, they indicate a stronger recovery from the pandemic in London and parts of Wales, and particularly in Northern Ireland. Notwithstanding persistent regional inequalities, our projections suggest some convergence in regional trends of recovery from Covid-19, reflecting the gains from the rapid roll-out of vaccination.



However, large divergences across the regions persist and largely fall along familiar lines. Relatively shallow downturns during the second and third lockdowns and stronger growth thereafter indicate resilience and set London apart from other regions. The changing patterns of supply chain linkages and continued uncertainty over Brexit, particularly in the English regions (except London), as well as in Wales and Scotland, reduce economic growth (Table 2.1).

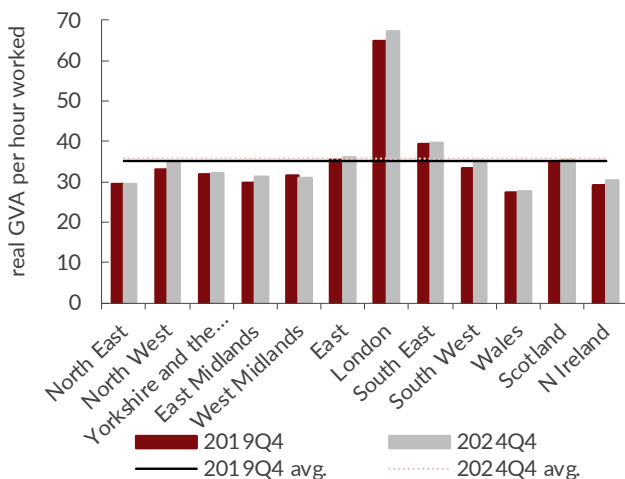
The recovery is stuttering, particularly in the Midlands (where manufacturing is hammered by Brexit- and Covid-related disruptions) and in Scotland after the temporary COP26-induced bounce (see, for example, Scottish Fiscal Commission, 2021). Meanwhile, robust growth is expected to continue in London, and the impact of disruptions on Northern Ireland is mitigated by trade as part of membership in the EU's single market and customs union.

**Table 2.1** GVA relative to fourth quarter of 2019 (percentage difference from 2019Q4 GVA)

	UK	The North	The Midlands	South & East	London	Wales	Scotland	N Ireland
2020q4	-6.1%	-5.5%	-8.9%	-7.4%	-3.8%	-5.0%	-6.1%	-5.7%
2021q4	-1.1%	-1.2%	-4.7%	-2.9%	1.8%	-1.1%	3.1%	-1.4%
2022q4	1.8%	2.0%	-1.4%	1.0%	4.6%	1.4%	0.5%	1.5%
2023q4	2.9%	3.2%	-0.3%	2.1%	5.9%	2.4%	1.6%	2.5%
2024q4	3.9%	4.1%	0.6%	3.1%	7.0%	3.3%	2.4%	3.3%

Source: NiREMS

**Figure 2.3** Regional productivity



Source: NiREMS

Reflecting the patterns in output and employment, **regional productivity shows large variation (Figure 2.3)**. Among the devolved nations of the UK and English regions, London outperforms the rest, with labour productivity (in output per hour worked) twice as high as anywhere else. However, it is also striking that only London has productivity levels comparable to the performances of the most productive regions in other G7 countries and the 38 OECD economies (OECD, 2018; ONS, 2022; Harari, 2022). Our findings add to the evidence of deep disparities at the regional level, which the submissions to the Productivity Commission also show (PC, 2021).

Compared with economic output, greater regional variation is evident in employment patterns (Figure 2.4). Here, too, London is clearly ahead of the rest, with robust growth in

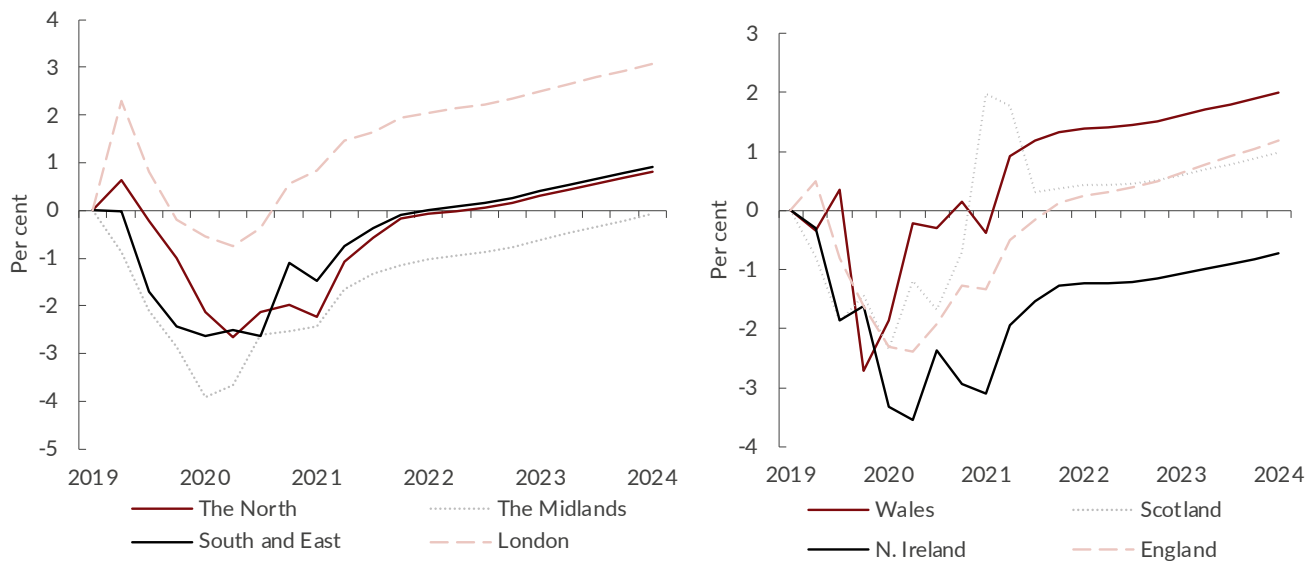
employment following the Covid-19 shock in 2020 and 2021. But even in London employment will be struggling to surpass peak levels in 2019Q2. This reflects the long-term scarring effects of the pandemic. However, **our forecast for the Midlands is still worse, with employment struggling to reach pre-pandemic levels by the end of 2024.**

In Scotland, the temporary boost from COP26 wanes off fast, leading to stagnant employment in 2022 and beyond. But Northern Ireland is projected to fare the worst, with projected employment well below pre-pandemic 2019Q4 levels even by the end of 2024. Rising unemployment mirrors sluggish employment growth across all regions and devolved nations, but particularly in London and Northern Ireland.

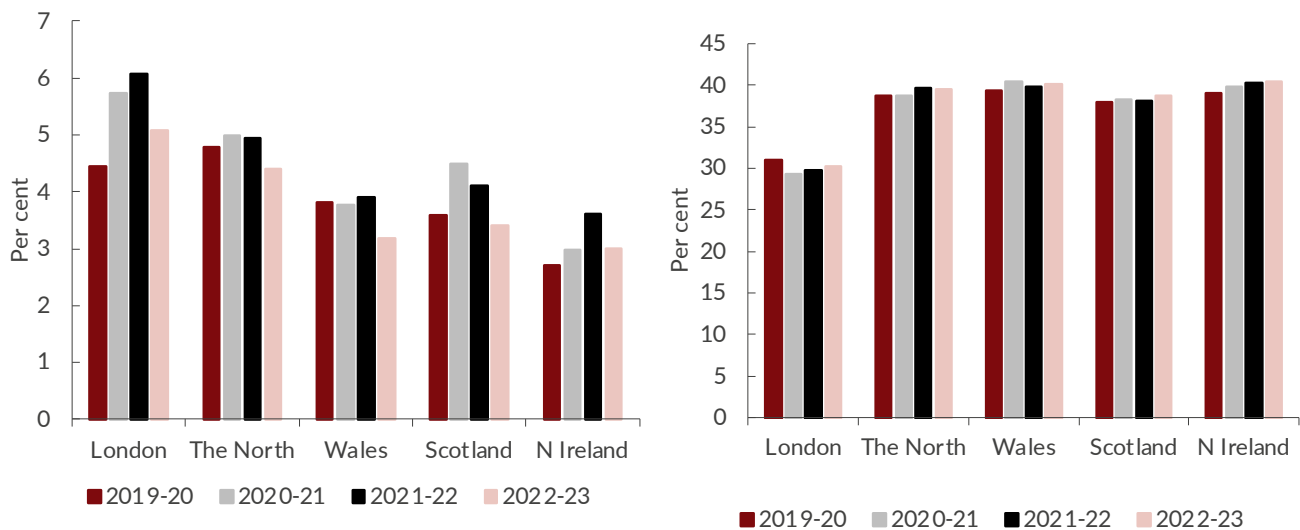
The employment projections of Northern Ireland, coupled with the GVA numbers, might seem puzzling, but the productivity numbers in Figure 2.3 show a steady increase for the economy. As the economy is reorganised due to the NI protocol, it is likely that less productive industries start to let workers go and that this labour is only partially taken up by the more productive industries.

**But the more worrying feature is persistently low participation rates across all nations and English regions, except for London (Figure 2.5).** London is also experiencing the highest unemployment rate, exceeding 6 per cent in 2021-22, but this may be viewed against the low rates of economic inactivity.

Elsewhere in the country, parts of the workforce, especially older workers, are struggling to find jobs and end up dropping out of the labour market altogether, which makes a targeted intervention an urgent priority for policymakers. Levelling Up will have to address the deep skills gap in the labour market, especially a lack of STEM graduates and those with vocational training and technical skills.

**Figure 2.4** Regional employment (percentage difference from 2019Q4 Employment)

Source: NiReMS

**Figure 2.5** Regional labour markets (unemployment rates – left panel; inactivity rates – right panel)

Source: NiREMS

## Costs-of-living pressures: energy and food prices

The large and growing regional variation in economic performance has important implications for the distribution of incomes across households. Variation across income groups is both reflected in, and exacerbated by, a very large distributional variation in the effects of the Covid-19 and Brexit shocks. Indeed, the poor and extremely poor individuals and households of the country are left much

worse off than people on higher incomes, which confirms NIESR's point that "Covid was never the great leveller" (Pabst, 2020), and the same applies to Brexit.

In particular, trends in the economy and public policy present a clear and present danger to the finances and living standards of low-income households who face a double shock: first, rising prices in the areas they are dependent on the most; second, insufficient financial resources to absorb these rises.

## Rising prices

One of the shocks leading to inflationary pressures is the difficulties experienced in energy and food sectors following continuing supply chain disruptions and labour shortages, both of which are to a significant extent the outcomes of Covid-19 and Brexit (UK in a Changing Europe, 2021; Wilkes, 2021). Because these expenditures are essential, they dominate a greater proportion of the budgets of low-income households.

**Those households in the bottom income decile spend 23 per cent of their total expenditure on food products and energy bills, which is equivalent to £55 per week** – these are necessities as opposed to so-called discretionary expenditure. An average household, by contrast, spends just 16 per cent (£90 per week) on these same products. It is for this reason that the rise in energy prices in particular has had such a significant effect on the budgets of the poorest households in society. Just the price rises of food and energy alone account for 4 per cent of the total expenditure of households in the bottom income decile, or about £525 per year.

It is also the case that demand for energy in particular is also higher for these households, as they tend to live in older, less energy efficient houses (Tunstall et al., 2013), further driving up their need for energy. Moreover, not only are the poor households distributed unevenly across the country, but their energy needs are also higher in colder regions that are poorer and more structurally disadvantaged. Therefore lower-income households both have higher demand for energy while essential bills such as these take up a greater proportion of their household expenditure.

Different households consume different amounts of energy but also different types. Although electricity supply is relatively uniform across the country, about four million households are not on the national gas grid. These tend to be both in rural areas and in inner-city areas where there is a greater proportion of high-density housing, whereas gas supply is mostly found in suburban low-density urban areas (see [nongasmap.org.uk](http://nongasmap.org.uk) to see a visualisation of this trend). Gas supply tends to be significantly cheaper than heating with electricity (The Energy Desk, n.d.), so we can expect rising energy prices to affect those households in those regions. This presents another challenge to lower-income households who tend to live in these high-density inner-city areas.

Policies designed to promote insulation are urgently needed, not only for the ability to minimise energy demand – and subsequently heating bills – for the poorest households, but also to contribute to net-zero climate goals. These policies will be essential for medium- and long-term ambitions, but the short-term priority is to intervene and help households most affected by price rises. It is imperative that immediate interventions to tackle the issue do not come at the cost of achieving long-

term goals.

Similarly, the average price of food is rising rapidly, and it is projected to increase by an average of 6 per cent over the year 2022-23 (NIESR projections; Goudie and Tobi, 2022). However, this figure masks the true scale of cost-of-living pressures for lower-income households. There is growing evidence that the prices of traditionally low-price ‘value’ food items are rising even faster than the average growth in food prices. Headline inflation figures are calculated by assuming a representative household’s basket of goods, but this is too aggregate to capture the effect at the tails of the income distribution. The rate of inflation is higher for goods that are purchased frequently by lower-income households. Since we currently lack a better picture of the inflationary impact on more granular levels such as households in particular places, the announcement that the ONS will do more in the future to capture these individual experiences of inflation rates is welcome.

**The double jeopardy here is that prices are not only rising mostly in areas where low-income households spend a disproportionately high amount of their income (fuel and food), but that these are also essential items.** As a result, such households cannot absorb these rising prices by spending less on them without suffering significant social and or health-related consequences. Some households may be able to use higher savings accumulated during the pandemic lockdowns to offset part of the squeeze. But while the cost-of-living crisis largely affects low-income households (the bottom 5 per cent facing destitution), households with higher savings lie largely in the third quartile of consumption distribution (Bhattacharjee et al., 2021b).

## Absorbing shocks

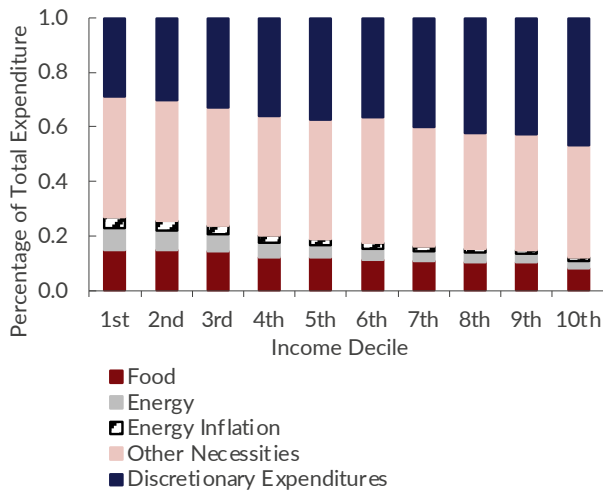
The second shock originates from the factors that limit the ability for low-income households to adapt to these price rises. In addition to energy and food expenditures, such households spend a disproportionately large amount of income on essential goods and services that cannot be reduced, especially food, energy, transport and clothing. Figure 2.6 shows household expenditure shares by commodity groups (food, energy, other necessities, and discretionary expenditures) across deciles of household income. Lower-income households spend proportionately more on essential items, like food and energy, and therefore have fewer means to reduce expenditure in other areas to support rising energy prices.

This implies that the impact of high inflation will be differential across different households who live in different parts of the country and have different demographic and economic profiles (see Figure 2.2). The more than 50 per cent rise in energy bills due to the lifting of the price cap announced on 3 February needs to be viewed against this context. While food price inflation is less acute on average than rising energy prices, it also places a similar squeeze on the budget of poor households, especially if these households purchase particular food

products experiencing higher than average price rises such as value products mentioned above.

Low-income households will have to look to alternative money sources if they cannot easily adapt their expenditure. However, these households already have low levels of savings, limited (and expensive) access to credit, and fewer alternative incomes (such as investments) or home equity that could back up cash sources. Since the onset of the pandemic, the poorest individuals and households were supported by the Universal Credit uplift of £20 per week. While this was never a long-term solution, its withdrawal in September 2021 without putting alternate benefit measures in place has left many households in, or on the verge of, destitution.

**Figure 2.6** Squeeze on household budgets across the distribution



Source: ONS Family Spending Survey 2019 and NiREMS

We have previously argued that this withdrawal was an unwelcome and poorly conceived step (Bhattacharjee et al., 2021b). The Chancellor chose to replace the UC uplift with a reduced taper rate and a higher minimum wage. While both measures are welcome, they benefit a slightly different segment of the population – not the poorest who are without stable jobs and falling through the cracks of the welfare system, but the poor yet slightly better off households who are lucky to retain their jobs.

However, even this small gain for this segment will soon be wiped out by increases in National Insurance contributions (see our policy paper for more detail on the effect of this policy change, Mortimer-Lee, 2021). Together, high inflation will outstrip any wage growth, which in any case was concentrated largely in higher paid, high-skill white collar jobs. All of this would act to shrink disposable income at the bottom end of the income distribution.

## Destitution

Rising inflation will push more households towards destitution – extreme poverty levels where they lack resources to purchase basic necessities. Specifically, we use NIESR's dynamic microsimulation model LINDA (NIESR, 2016) to obtain projections of destitute households across different parts of the country, as well as their distribution by ethnicity (see Box D for technical details).

For this exercise, we consider three scenarios. **Our baseline scenario** is one where households are already subject to the impact of the Covid-19 and Brexit shocks, and to the high headline inflation predicted in 2022-23, but not to additional higher inflation in basic goods – particularly energy and food. The left panel of Figure 2.7 shows the percentage increase in the number of households in destitution as their budgets get squeezed by inflation, which is **our first counterfactual scenario**. The aggregate impact of this inflation in energy and food prices is a 31 per cent rise in destitution, bringing the total number of destitute households to about 1 million.

Together, the impact also varies across the nations and English regions. Every region is projected to suffer upwards of a 10 per cent increase in destitution, but the largest increase is projected for Northern Ireland (67 per cent, bringing the total number of destitute households to about 25,000 households). This may be viewed against the context of low and falling participation rates in this part of the UK. This is alarming, particularly against lower presence of foodbanks and a lack of data on support for struggling households in NI (Fitzpatrick et al., 2020; Tyler, 2021).

Together, the northern regions of the country as well as the West Midlands are projected to have substantial increases in destitution – in excess of 35 per cent – while the North West, South West and South East have projections around 30 per cent.

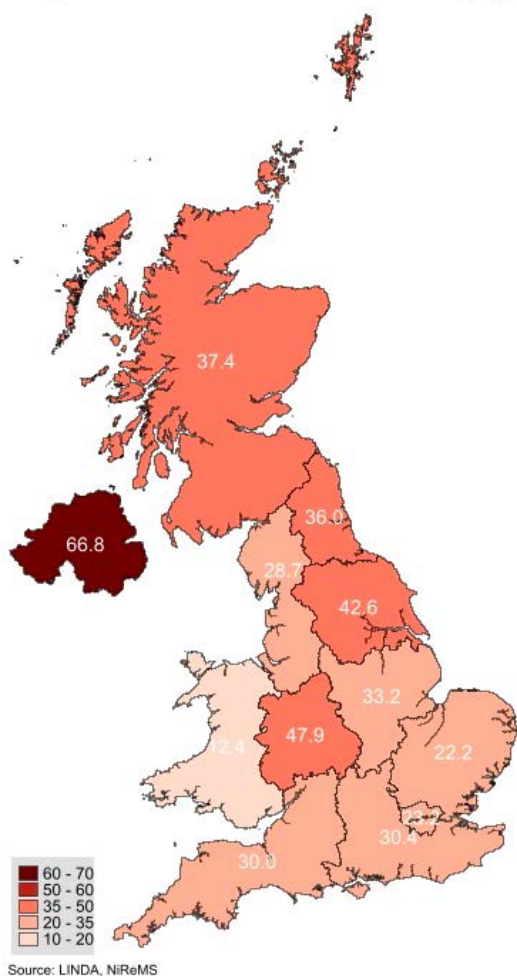
This may be viewed against the context of higher destitution that the country has been experiencing since the onset of Covid-19 (Bhattacharjee and Lisauskaite, 2020a and 2020b). Then, the right panel of Figure 2.7 plots rise in destitution in our benchmark scenario relative to **our second counterfactual** where the economy was not hit by the pandemic. This shows that destitution would have been 4 times higher in 2022-23 in any case even if food and energy prices had kept pace with the headline inflation. It is worth noting, however, that the three scenarios are not mutually exclusive: expansionary monetary and fiscal policies in response to the Covid-19 shock are indeed important triggers underlying the surge in inflation.

The spatial profile reflects very large increases of 3-5 times across all regions, but particularly in Northern Ireland, London and Wales, but also the North of England. This situation is exacerbated by the withdrawal of part of welfare support for the extremely poor households, in the

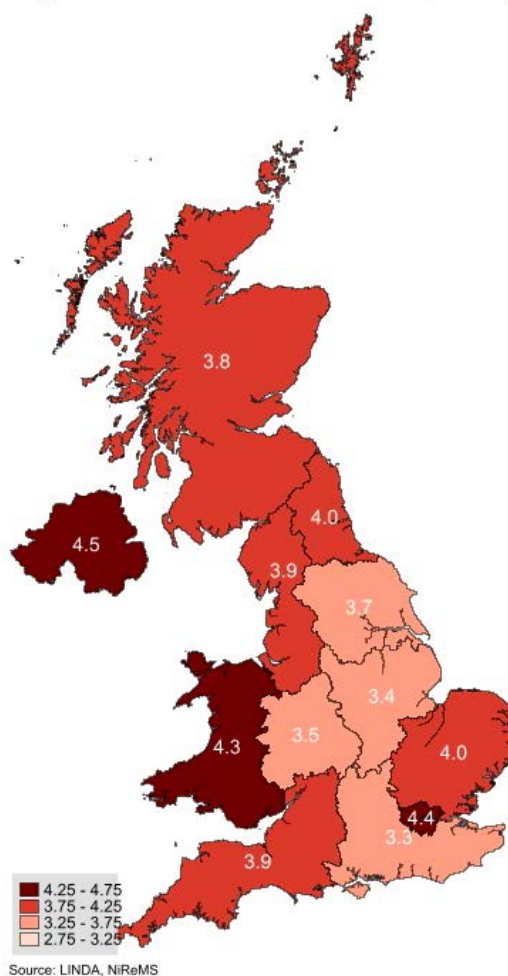
form of the Universal Credit uplift (Bhattacharjee et al., 2021b).

**Figure 2.7** Destitution across regions, 2022-23

**Higher destitution due to inflation (%)**



**Higher destitution due to Covid (times)**



Source: NiREMS

In Table 2.2, we report projections of destitution by ethnicity of the household head (for details of our ethnicity data and interpretation, see Bhattacharjee et al., 2021a). There is wide disparity across ethnic groups in the impacts, and these fall along previously highlighted and familiar lines (Blundell et al., 2020; Platt and Warwick, 2020; Crossley et al., 2021). While poor White households suffer a 30 per cent increase in destitution directly as a result of higher inflation in essential items, the impact is a staggering 50 per cent for Black African and Indian ethnicity households.

However, **the largest incidence of destitution falls upon households of South Asian (other than Indian), Caribbean and Black African heritage.** This is on top of a 5-7 fold increase in destitution experienced by other South Asian and Caribbean ethnic groups as a result of the pandemic. It has also been reported that migrants without recourse to public funds have suffered enormous hardship due to the Covid-19 shock, not least the children and vulnerable adults in these populations (Fitzpatrick et al., 2020;

Platt, 2021). Whichever way one looks at it, the endemic inequalities in the UK show no signs of abetting.

## Policy options

### Easing the costs-of-living pressures

To mitigate the cost-of-living pressures linked to higher energy prices, the government’s existing policy support through the Warm Home Discount scheme provides eligible households with a one-off payment of up to £140 for the six winter months (October 2020 to March 2021). In light of the lifting of the energy bill cap announced on 3 February, **our analysis projects a rise in weekly energy bills equivalent to about £10 on average for households in the lowest-income decile in 2022-23.** This represents about 10 per cent of weekly disposable income necessary to meet cost of basic necessities for an average household, and the Joseph Rowntree Foundation’s income benchmark for destitution (Bhattacharjee and Lisauskaite, 2020a,b).

**Table 2.2** Destitute households by ethnicity of household head, 2022-23 (per cent)

	Post-Covid with high inflation	Counterfactual (no excess inflation)	Counterfactual (no Covid)
White	3.5%	2.7%	0.7%
Indian	3.6%	2.4%	0.8%
Other South Asian	5.8%	4.8%	0.8%
Black African	5.2%	3.5%	1.7%
Caribbean	5.5%	4.6%	0.9%
UK (aggregate)	3.51%	2.68%	0.67%

Source: LINDA and NiREMS

As prices soar, an average household in the bottom income decile will face having to pay over £900 for energy during the winter months. A maximum one-off £140 payment will only cover 15 per cent of the total energy bills, and just 46 per cent of the total rise in energy bills. This is even lower for households at the top of the bottom income decile, whose energy bills for the six winter months would be higher by an estimated £335.

On the same day as the energy regulator Ofgem lifted the energy bill cap, the Chancellor of the Exchequer Rishi Sunak announced a package of support aimed at easing the cost-of-living pressures: council tax bills cut by £150 for people who live in houses that are in categories A-D (approximately 80 per cent of all households in England) and £200 off energy bills via a discount applied by energy suppliers and paid for government, which will recover the costs by adding equal £40 instalments over the years 2022-27.

However, the council tax rebate would not even affect extremely poor households facing destitution. Together, this double rebate worth £350 falls short of the rise in the costs of living for most households. **The rise in NICs and the freezing of income tax thresholds will cost £600 and higher energy bills will amount of £700, leaving them about £1,000 per annum worse off.**

To offset some of this impact, **we propose a modified and expanded Winter Grant scheme administered by local authorities to help people who require it to pay for energy or food.** First, this scheme should be backdated to October 2021 and run for this winter and next. Second, government should commit about £3bn to help households in the lowest income deciles. This may be viewed against a real term decrease in DWP budget of about 50 per cent since 2010-11 (Institute for Government, 2021). Third, this scheme would draw on local knowledge of local needs and empower local government to deliver targeted assistance to people who need it most – rather than being run by the centre in Westminster and Whitehall.

Over time, competition in the energy market needs to be improved and Britain's storage capacity boosted, so that the country is less exposed to the volatility in world energy

markets – in particular against the backdrop of growing geopolitical tensions involving Russia and Ukraine.

### Boosting wages and labour market participation

For the working poor who struggle to make ends meet, policy interventions should focus on raising the level of the living wage or reducing the cost of housing. **For very poor out-of-work households who have not benefited from the lower Universal Credit taper rate and the council tax rebate, a temporary reinstatement of the £20 uplift should be considered.** Poor families whose children are eligible for free school meals need more funding via the pupil premium to compensate for inflation, which has eroded the value of the premium per pupil and for better quality food. Government support for food banks must be continued and intensified to supplement charitable sources of funding.

In the medium term, the priority is to help parts of the workforce, especially older workers who are struggling to find jobs, back into work. For example, **more funding for mixed HE/FE colleges would help retraining and reskilling people and address the skills gaps in the labour market.** Urgent action is also required to increase the number of STEM graduates. Supporting the younger population into finding good, green and future-proof jobs is key to reduce persistent youth unemployment.

### Concluding reflections on “Levelling Up”

Our forecast highlights an uneven pace of growth and divergence in economic opportunity across regions and households. The stuttering recovery will deepen disparities between and within the devolved nations and regions of the UK, with parts of Scotland, the Midlands and the North West falling further behind London and the metropolitan areas of the South East. With higher prices and higher taxes outstripping wage growth, the cost-of-living pressures will push many households into poverty and even destitution, especially in structurally disadvantaged regions.

The Levelling Up White Paper (DLUHC, 2022) sets out an ambitious agenda focused on spreading opportunity. This is aimed at reducing economic inequality but also at devolving power closer to local people in order to increase their life chances in terms of health, housing, home ownership and innovation. This strategy is a good start to tackle some of these inequalities by setting ambitious goals by 2030, but government has to implement three fundamental reforms that are vital for sustained regional regeneration.

**First, a long-term strategy that combines a holistic approach with the right scale of investment – instead of a patchwork of policies and endless churn, as we have seen for too long.** This means No 10 will have to overrule the Treasury's refusal to commit new spending. For instance, £3 billion pledged on skills over the next three years is not much of a 'skills revolution' as it barely returns expenditure to 2010 levels. A quick win would be to triple the funding for mixed HE/FE colleges in deprived towns such as Grimsby, Southend, or Blackpool – places that voted not just for Brexit but for an economy that benefits everyone.

Another example is bringing together business, trade unions and local government to provide significantly more apprenticeships and more vocational entry opportunities to the labour market, especially in area of skills shortages such as health and social care but equally technical skills. Adults need portable lifelong learning grants as part of a system that goes well beyond the sticking plaster of 'skills bootcamps'. A devolved policy would align skills (re-) training to better jobs so that many more unemployed and economically inactive persons can be moved into good, green and future-proof jobs.

**Second, the UK is in dire need of some institutions with a long-term outlook that can boost greater investment, especially capital investment in productive activities** such as high-tech manufacturing jobs and high-quality service jobs. The National Infrastructure Bank located in Leeds is a beginning, but more than infrastructure projects are needed to regenerate our regions: financing energy-efficient, socially affordable housing, providing assistance to SMEs and helping with export finance are just some of the examples of how a National Development Bank

has supported thriving economies such as Germany and South Korea. The point is not to pick 'winners' but rather to help unlock greater private investment.

**Third, regional regeneration has to involve local design and delivery.** Knowledge about local needs and local comparative advantage is key, as is accountability to local citizens. The greater powers to metro-mayors and new mayors announced in the "Levelling Up" White Paper are necessary but not sufficient. Local councils need more decision-making powers and resources that are independent of HM Treasury. Business rate retention is too limited and benefits already affluent parts of the country. While the government's pledge in the October 2021 budget to increase local government expenditure by 3 per cent is welcome, it does not begin to compensate for the cuts since 2010 and the rising costs associated with social care.

Local government is emasculated and emaciated, lacking the power and resources to address the deep gaps in local and regional capital markets and labour markets. The UK Shared Prosperity Fund is seen as the 'centrepiece' of the Government's Levelling Up strategy, but it will be less than the EU funds prior to Brexit. Moreover, the process of allocating funds and devolving power is driven by Westminster and Whitehall, with the Treasury able to either approve or block key decisions. While the White Paper does include more powers for metro mayors and more new mayors, the question is whether this will be sufficient to rebalance the overcentralisation of the British state both in terms of decision-making and local control over resources.

**Fundamentally, the task is to transform the centralised, extractive economic model that locks many northern, rural and coastal areas into permanent deprivation.** The UK has one of the poorest productivity performances and highest inequalities among the OECD's 38 advanced economies. Regenerating our regions requires a decentralised economy and governance system. If policymakers return to the same economic structures post-pandemic that failed to resolve the productivity problem pre-pandemic, then the UK is set for another decade of low skill, low wage, low productivity and low growth. We must and can do better.

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## Box D: National Institute Regional Modelling System (NiReMS): Methodology and Updates

(based on Bhattacharjee and Lisauskaite, 2021; Bhattacharjee and Szendrei, 2021)

The UK has lacked an extensive information system to provide timely data and projections to support regional policy and governance. Nowcasting methods have been recently developed (Koop et al., 2020a and b) and implemented in ESCoE (2021). However, methods and models capable of producing projections of socio-economic performance for the country and its regions into the medium run future were needed to understand regional and sectoral impacts of the Covid-19 and Brexit shocks and evaluate policy for regional regeneration. This was particularly critical with recent supply chain disruptions and reduced mobility that transformed both the relevance of global shocks and the nature of inter-regional spill-overs.

Spurred by this urgent need, the National Institute of Economic and Social Research has developed an ambitious and innovative regional model – NiReMS (National Institute Regional Modelling System). We reported on the methodology in Box E of our Spring 2021 UK Economic Outlook (Bhattacharjee and Lisauskaite, 2021) and further developments on microsimulation based counterfactual scenarios in Box E of the Autumn 2021 UK Economic Outlook (Bhattacharjee and Szendrei, 2021). The development of NiReMS is a continuous process. Here we summarise the methodological developments and updates as a guide towards understanding our projections of regional and distributional features.

NiReMS currently produces projections of regional economic aggregates for the 12 NUTS1 Government Office Regions in the UK, including English regions (9) and the devolved nations (3). For ease of presentation and interpretation, much of our discussion in Chapter 2 (UK Regional Outlook) is organised by four major region-blocks of England: the North (North East, North West and Yorkshire and Humberside), the Midlands (East Midlands and West Midlands), the South and East (East, South East and South West) and London, together with the devolved nations (Wales, Scotland and Northern Ireland).

The UK has well documented and entrenched inequalities across its society, sectors and regions (Carrascal-Incera et al., 2020). In order to provide a context to these regional variations, a brief economic snapshot of the 12 Government Office Regions for 2015 is provided in Table D1 together with a map showing the locations, boundaries and populations (Figure D1). On most economic indicators, London and “South and East” dominate, and there is large regional variation.

NiReMS combines three methodological approaches – (a) Model-based projections, (b) Growth accounting, and (c) Microsimulation and Counterfactual Scenarios. These approaches are briefly described below.

### Model-based projections

The key workhorse is an econometric spatial panel data model accommodating spatial (regional) heterogeneity together with the effects of UK wide global shocks (factor structure) and local inter-regional spill-overs. The interplay between global shocks and local spill-overs is an important feature of the model.

Global shocks, like Covid-19 and Brexit, affect all or most of the regions of the UK, but with differential impacts, which then leads to regional variation. These global effects, together with local shocks, then permeate to other regions producing spill-overs, sometimes reinforcing the effects and in other cases mitigating against the impacts. From the onset of the pandemic, our model included one dominant global shock – growth for the aggregate UK economy. In order to project the regional trends into the future, we utilise NiGEM (NIESR, 2018) as a good proxy for the global factor. To account for the impact of Brexit, such as supply chain constraints or impediments to trade, an additional global shock – output growth in the EU – became correspondingly important in driving economic performance across the regions of the UK.

The impact of local shocks, or inter-regional spill-overs, is modelled using a combination of approaches from Bhattacharjee and Holly (2013), Chung and Hewings (2015), and Bailey et al. (2016). In essence, these spill-overs are driven by an inter-regional network, which we estimate from the data using recent methods on latent network architectures. The resulting network connections map (Figure D2) motivate the aggregation of the

Government Office Regions in England into the 4 region-blocks: London; the South and East; the Midlands; and the North. Statistically significant interactions between the region-blocks are shown with arrows, directed in some cases and bi-directional interactions in others.

The regional structure of the UK has been described as “hub no spokes”, particularly in relation to productivity and innovation (Haldane, 2018; Carrascal-Incera et al., 2020). Because of this sparse network structure, productivity increases in London, for example, may not necessarily generate positive externalities on regions in the periphery, particularly the devolved nations. The estimated network structure shows that London is well-connected, influencing the “South and East”, the Midlands and the North. It is also impacted by local shocks from the former two, but not the Midlands. Links between London and the devolved nations are indirect; Wales is connected to the “South and East”, Northern Ireland to the Midlands and Scotland to the North.

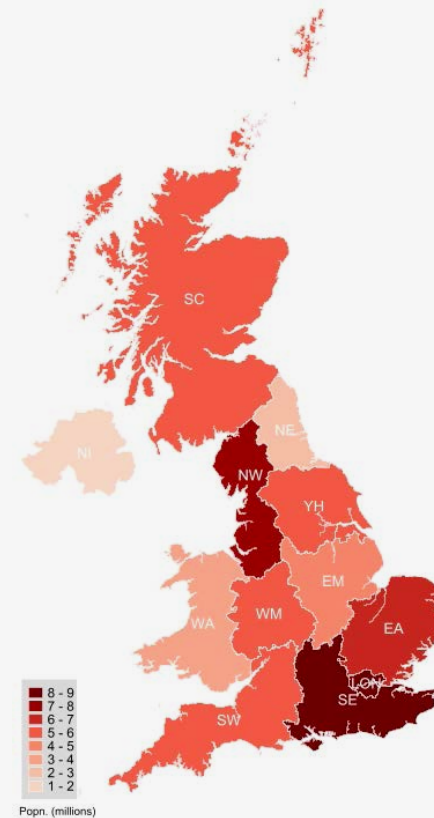
The network connections reflect the economic geography, socio-economic-political structure and historical development of the UK, its nations and its regions. This network structure allows modelling of spatial direct and indirect effects of local shocks and place-based policies, such as location of major infrastructure projects or allocation of “levelling up” funds.

**Table D1** Regional Economies in 2015 (ONS 2015)

Region	Employment Share (%)	Weekly Earnings, relative to UK	Annual GVA Share (%)
NE	3.8	85	3.0
NW	10.7	89	9.6
YH	8.0	90	6.6
EM	7.2	91	5.8
WM	8.4	91	7.3
EA	9.6	104	8.4
LON	14.0	124	23.4
SE	14.2	113	15.1
SW	8.6	94	7.4
WA	4.5	89	3.5
SC	8.4	95	7.7
NI	2.6	83	2.2
UK	3.51%	2.68%	0.67%

Regions: NE = North East, NW = North West, YH = Yorkshire & The Humber, EM = East Midlands, WM = West Midlands, EA = East of England, LON = London, SE = South East, SW = South West, WA = Wales, SC = Scotland, NI = Northern Ireland, UK = United Kingdom.

**Figure D1** Regional Population in 2015



## Growth Accounting

The results of the above econometric model are combined with a growth accounting approach, exploiting regional variations in sectoral composition as reflected regional ONS data and the latest Round 6 of the UK Wealth and Assets Survey (WAS6, 2019). This approach builds upon NIESR’s current projections of sectoral trends the using NiSEM – National Institute Sectoral Economic Model (Lenoël and Young, 2020, 2021; Küçük et al., 2021). We take projections from the sectoral decomposition of aggregate UK GVA and employment from

NiSEM together with data on differences in sectoral profiles across regions to obtain a second set of estimates for regional GVA and employment. These estimates of regional output, employment and productivity are then used to obtain projections of wages and unemployment at the regional level.

## Microsimulation and Counterfactual Scenarios

The final ingredient for the regional model is a dynamic microsimulation model based on NIESR's microsimulation model LINDA (Lifetime Income Distributional Analysis) (NIESR, 2016; van de Ven, 2017). This approach is closely related to ONS (2020), which provide nowcasts of income inequality using a microsimulation model based on Living Costs and Food Survey data, together with information on tax and benefit policy. We take regional wages and unemployment rates into LINDA to estimate regional profiles of distributional structures.

A key feature of microsimulation is that it explicitly accounts for the fact that different households have different endowments and opportunities and therefore widely different life consequences. Following the Global Financial Crisis of 2008-09, conventional economic models and analyses have been criticised for their strong focus on a representative agent framework (Kaplan et al., 2018; Bunn et al., 2021; Moll et al., 2021). This is partly mitigated by microsimulation, where behaviours and life outcomes for a representative sample of households and constituent individuals are simulated over a period of time moving into the future (Bourguignon and Spadaro, 2006; van de Ven, 2011; Figari et al., 2015).

Our microsimulation model is dynamic in the sense that some aspects of household decisions are based on utility-maximising behaviour using dynamic optimisation over a long-time horizon – specifically, consumption-savings and leisure-labour choices. Using the life-cycle model, we generate a consumption function for each age group, differentiated by retirement age, disposable income (including liquid assets) and household demographics, providing heterogeneous optimal consumption trajectories for households.

Uniquely, and to ensure that the microsimulation results are in line with the aggregate macroeconomic projections in the short- to medium-run, they are aligned with NiGEM and NiSEM. Thus, we link our microsimulation model and its outcomes explicitly to short and medium-run macroeconomic dynamics by using the economy (and sectoral) growth rates which NiGEM and NiSEM forecast. This way our dynamic microsimulation model yields aggregate dynamics identical to NiGEM, while allowing a granular description of how this growth rate translates into heterogeneous life consequences across the households.

Using a microsimulation approach also allows us to construct counterfactual scenarios, where aggregate projections under alternate policy and shock processes take the place of macroeconomic aggregates that, in the factual scenario, are represented by NiGEM projections. To help us better understand which variables lead to the different consumption distributions, we employ a high dimensional quantile regression model of Belloni and Chernozhukov (2011). Identifying which variables impact the different parts of the distribution allows us to highlight not just how the different counterfactuals affect the distribution, but also reveal the channels through which this change happens.

Finally, projections from the three approaches are combined and calibrated against aggregate projections from the latest NiGEM (NIESR, 2018) data projections.

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# Appendix:

**Table A1** Exchange rates and interest rates

	UK exchange rates			FTSE All-share index	10-year gilts	World <sup>a</sup>	Bank Rate <sup>b</sup>
	Effective 2017=100	Dollar	Euro				
2016	105.9	1.35	1.22	2565	1.30	0.90	0.25
2017	100.0	1.29	1.14	2930	1.20	1.20	0.41
2018	101.9	1.34	1.13	2937	1.40	1.90	0.75
2019	101.6	1.28	1.14	2898	0.90	2.10	0.75
2020	102.1	1.28	1.13	2537	0.30	0.90	0.10
2021	107.0	1.38	1.16	2900	0.80	1.10	0.13
2022	109.3	1.37	1.20	3092	1.20	1.30	1.18
2023	108.8	1.37	1.18	3114	1.50	1.70	1.50
2024	108.4	1.38	1.17	3239	1.70	1.90	1.50
2025	108.2	1.39	1.16	3422	1.80	1.90	1.50
2026	108.1	1.40	1.15	3558	1.90	1.90	1.69
2021Q1	105.6	1.38	1.14	2749	0.60	1.10	0.10
2021Q2	107.3	1.40	1.16	2903	0.80	1.10	0.10
2021Q3	107.4	1.38	1.17	2952	0.70	1.10	0.10
2021Q4	107.4	1.35	1.18	2995	0.90	1.10	0.13
2022Q1	109.3	1.37	1.20	3084	1.10	1.10	0.33
2022Q2	109.3	1.37	1.20	3090	1.20	1.30	0.67
2022Q3	109.3	1.37	1.20	3100	1.30	1.40	0.97
2022Q4	109.2	1.37	1.19	3092	1.40	1.50	1.18
2023Q1	109.1	1.37	1.19	3099	1.40	1.50	1.30
2023Q2	108.9	1.37	1.19	3106	1.50	1.60	1.37
2023Q3	108.8	1.37	1.18	3118	1.50	1.70	1.50
2023Q4	108.6	1.37	1.18	3130	1.60	1.80	1.50
Percentage changes							
2016/2015	-9.8	-11.4	-11.2	-1.5			
2017/2016	-5.6	-4.9	-6.7	14.2			
2018/2017	1.9	3.6	-1.0	0.3			
2019/2018	-0.3	-4.4	0.9	-1.3			
2020/2019	0.5	0.5	-1.3	-12.5			
2021/2020	4.8	7.2	3.3	14.3			
2022/2021	2.2	-0.4	2.9	6.6			
2023/2022	-0.4	0.0	-1.0	0.7			
2024/2023	-0.4	0.5	-1.3	4.0			
2025/2024	-0.2	0.8	-1.0	5.7			
2026/2025	-0.1	0.8	-0.9	3.9			
2021Q4/2020Q4	5.0	2.1	6.5	18.0			
2022Q4/2021Q4	1.7	1.6	1.3	3.2			
2023Q4/2022Q4	-0.5	0.1	-1.3	1.2			

Notes: <sup>a</sup> Weighted average of central bank intervention rates in OECD economies. <sup>b</sup> End of period.

**Table A2** Price indices (2019=100)

	Unit labour costs	Imports deflator	Exports deflator	World Oil Price (\$) <sup>a</sup>	Consumption deflator	GDP deflator (market prices)	Consumer prices		
							RPI <sup>b</sup>	CPI <sup>c</sup>	CPIH <sup>d</sup>
2016	92.9	91.3	91.3	42.9	95.1	94.4	91.1	93.3	93.7
2017	94.8	96.7	95.7	54.0	96.8	96.1	94.3	95.9	96.1
2018	97.1	98.8	98.0	70.4	98.7	98.0	97.5	98.2	98.3
2019	100.0	100.0	100.0	63.7	100.0	100.0	100.0	100.0	100.0
2020	114.2	98.5	99.8	43.0	101.2	105.6	101.5	100.8	101.0
2021	112.6	99.3	102.2	69.9	103.6	106.2	105.6	103.4	103.5
2022	114.6	101.7	105.2	76.2	109.0	111.2	115.4	109.5	109.7
2023	117.8	100.9	106.0	69.5	112.0	114.9	122.4	113.1	112.8
2024	120.3	100.8	106.7	67.2	114.1	117.3	126.4	115.3	114.9
2025	122.8	101.9	108.1	68.0	116.3	119.7	129.7	117.3	117.1
2026	125.4	103.6	110.0	69.1	118.8	122.3	133.4	119.5	119.6
Percentage changes									
2016/2015	1.8	4.5	4.6	-17.7	1.1	1.9	1.7	0.7	1.0
2017/2016	2.0	6.0	4.8	25.8	1.8	1.8	3.6	2.7	2.6
2018/2017	2.4	2.2	2.4	30.5	2.0	2.0	3.3	2.4	2.3
2019/2018	3.0	1.2	2.0	-9.6	1.3	2.0	2.6	1.8	1.7
2020/2019	14.2	-1.5	-0.2	-32.5	1.2	5.6	1.5	0.8	1.0
2021/2020	-1.4	0.8	2.4	62.6	2.3	0.6	4.0	2.6	2.5
2022/2021	1.8	2.4	2.9	9.0	5.3	4.7	9.3	5.9	6.0
2023/2022	2.8	-0.7	0.8	-8.8	2.7	3.3	6.1	3.3	2.8
2024/2023	2.1	-0.1	0.7	-3.4	1.9	2.2	3.2	1.9	1.8
2025/2024	2.0	1.1	1.3	1.3	2.0	2.0	2.6	1.7	1.9
2026/2025	2.1	1.6	1.7	1.6	2.1	2.2	2.8	1.9	2.1
2021Q4/2020Q4	-1.1	1.0	4.1	74.8	4.4	2.3	6.9	4.9	4.4
2022Q4/2021Q4	3.9	0.9	1.4	-8.6	4.9	5.2	8.8	4.7	5.2
2023Q4/2022Q4	2.1	-0.9	0.5	-5.4	2.1	2.6	4.9	2.9	2.1

Notes: <sup>a</sup> Per barrel, average of Dubai and Brent spot prices. <sup>b</sup> Retail price index. <sup>c</sup> Consumer price index. <sup>d</sup> Consumer prices index, including owner occupiers' housing costs.

**Table A3** Gross domestic product and components of expenditure (£ billion, 2019 prices)

	Final consumption expenditure		Gross capital formation		Domestic demand	Total exports <sup>c</sup>	Total final expenditure	Total imports <sup>c</sup>	Net trade	GDP at market prices <sup>d</sup>
	H-Holds & NPISH <sup>a</sup>	General govt.	Gross fixed investment	Changes in inventories <sup>b</sup>						
2016	1376	403	385	10	2172	623	2796	659	-36	2137
2017	1398	405	398	13	2202	658	2861	679	-20	2182
2018	1431	407	397	5	2241	677	2918	700	-23	2218
2019	1449	424	400	3	2276	699	2975	720	-21	2255
2020	1297	401	362	-10	2050	602	2652	605	-4	2043
2021	1373	457	384	8	2221	597	2818	627	-30	2192
2022	1475	463	413	0	2352	651	3002	706	-56	2298
2023	1507	463	425	0	2395	689	3084	757	-68	2329
2024	1532	462	427	0	2421	727	3148	800	-73	2350
2025	1555	465	428	0	2448	763	3211	838	-75	2375
2026	1578	464	430	0	2472	793	3266	867	-73	2401
Percentage changes										
2016/2015	3.7	0.5	4.7		2.3	3.3	2.5	3.5		2.3
2017/2016	1.6	0.6	3.3		1.4	5.7	2.3	2.9		2.1
2018/2017	2.4	0.4	-0.1		1.8	2.8	2.0	3.1		1.7
2019/2018	1.3	4.2	0.5		1.6	3.4	2.0	2.9		1.7
2020/2019	-10.5	-5.4	-9.4		-9.9	-13.9	-10.9	-15.9		-9.4
2021/2020	5.8	13.9	6.0		8.3	-0.9	6.3	3.6		7.3
2022/2021	7.5	1.4	7.8		5.9	9.1	6.5	12.6		4.8
2023/2022	2.2	-0.1	2.8		1.8	5.9	2.7	7.2		1.3
2024/2023	1.7	-0.1	0.4		1.1	5.5	2.1	5.6		0.9
2025/2024	1.6	0.5	0.3		1.1	4.9	2.0	4.8		1.1
2026/2025	1.4	-0.1	0.5		1.0	4.0	1.7	3.4		1.1
Decomposition of growth in GDP (percentage points)										
2016	2.3	0.1	0.8	-0.1	2.4	1.0	3.3	-1.1	-0.1	2.3
2017	1.0	0.1	0.6	0.2	1.4	1.6	3.0	-0.9	0.7	2.1
2018	1.5	0.1	0.0	-0.4	1.8	0.8	2.6	-1.0	-0.1	1.7
2019	0.8	0.8	0.1	-0.1	1.6	1.0	2.6	-0.9	0.1	1.7
2020	-6.7	-1.0	-1.7	-0.6	-10.0	-4.4	-14.3	5.1	0.8	-9.4
2021	3.7	2.7	1.1	0.9	8.4	-0.3	8.1	-1.0	-1.3	7.3
2022	4.7	0.3	1.4	-0.4	6.0	2.5	8.4	-3.7	-1.1	4.8
2023	1.4	0.0	0.5	0.0	1.9	1.7	3.5	-2.2	-0.5	1.3
2024	1.1	0.0	0.1	0.0	1.1	1.6	2.7	-1.8	-0.2	0.9
2025	1.0	0.1	0.1	0.0	1.2	1.5	2.7	-1.6	-0.1	1.1
2026	0.9	0.0	0.1	0.0	1.0	1.3	2.3	-1.2	0.1	1.1

Notes: <sup>a</sup> Non-profit institutions serving households. <sup>b</sup> Including acquisitions less disposals of valuables and quarterly alignment adjustment. <sup>c</sup> Includes Missing Trader Intra-Community Fraud. <sup>d</sup> Components may not add up to total GDP growth due to rounding and the statistical discrepancy included in GDP.



**Table A4** External sector

	Exports of goods <sup>a</sup>	Imports of goods <sup>a</sup>	Net trade in goods <sup>a</sup>	Exports of services	Imports of services	Net trade in services	Export price competitiveness <sup>c</sup>	World trade <sup>d</sup>	Terms of trade <sup>e</sup>	Current balance
	£ billion, 2019 prices <sup>b</sup>						2019=100			% of GDP
2016	334	485	-150	289	175	114	100.0	87.5	100.1	-5.3
2017	357	497	-139	301	182	119	97.7	91.9	99.0	-3.6
2018	358	498	-140	319	202	117	101.4	95.2	99.2	-3.9
2019	372	510	-138	327	210	118	100.0	100.0	100.0	-2.7
2020	319	443	-123	283	163	120	98.2	91.5	101.4	-2.6
2021	312	468	-156	285	159	126	103.5	97.5	102.9	-2.4
2022	343	533	-190	308	173	134	104.4	103.8	103.5	-3.3
2023	367	572	-205	322	185	138	103.8	110.0	105.1	-3.8
2024	390	605	-216	338	194	143	103.3	116.5	105.9	-3.8
2025	410	635	-225	353	203	150	103.4	122.6	106.1	-3.5
2026	427	656	-230	367	210	156	103.5	128.0	106.1	-3.1
Percentage changes										
2016/2015	0.7	3.6		6.3	3.3		-5.2	3.5	0.1	
2017/2016	6.8	2.4		4.4	4.2		-2.4	5.0	-1.1	
2018/2017	0.2	0.2		5.8	10.7		3.8	3.6	0.2	
2019/2018	3.9	2.5		2.7	4.0		-1.4	5.1	0.8	
2020/2019	-14.2	-13.3		-13.7	-22.4		-1.8	-8.5	1.4	
2021/2020	-2.3	5.8		0.7	-2.5		5.4	6.5	1.5	
2022/2021	9.9	13.8		8.1	9.2		0.9	6.4	0.5	
2023/2022	7.0	7.4		4.7	6.5		-0.6	6.1	1.5	
2024/2023	6.1	5.8		4.8	5.3		-0.4	5.9	0.8	
2025/2024	5.2	4.8		4.5	4.5		0.0	5.3	0.2	
2026/2025	4.1	3.4		4.0	3.5		0.1	4.4	0.0	

Notes: <sup>a</sup> Includes Missing Trader Intra-Community Fraud. <sup>b</sup> Balance of payments basis. <sup>c</sup> A rise denotes a loss in UK competitiveness.

<sup>d</sup> Weighted by import shares in UK export markets. <sup>e</sup> Ratio of average value of exports to imports.

**Table A5** Household sector

	Average <sup>a</sup> earnings	Employee compensation	Total personal income	Gross disposable income	Real disposable income <sup>b</sup>	Final consumption expenditure	Saving ratio <sup>c</sup>	Net worth to income ratio <sup>e</sup>	House prices <sup>d</sup>
	£ billion, current prices				£ billion, 2019 prices		% of GDP		2019=100
2016	90.9	966	1715	1345	1415	1376	6.4	7.0	91.8
2017	93.7	1007	1771	1381	1427	1398	4.8	7.0	95.9
2018	96.0	1048	1853	1448	1467	1431	4.8	6.6	99.0
2019	100.0	1097	1916	1487	1487	1449	4.6	6.8	100.0
2020	102.5	1129	1932	1498	1480	1297	13.8	7.3	102.8
2021	108.1	1201	2042	1561	1507	1373	11.0	7.3	112.9
2022	113.3	1281	2164	1662	1524	1475	5.3	6.9	116.8
2023	117.7	1335	2269	1749	1562	1507	5.5	6.7	117.2
2024	120.7	1376	2355	1810	1587	1532	5.4	6.6	116.8
2025	123.9	1419	2439	1873	1610	1555	5.3	6.5	117.1
2026	127.3	1465	2528	1938	1632	1578	5.2	6.4	118.0
Percentage changes									
2016/2015	3.1	4.1	2.3	1.6	0.5	3.7			7.0
2017/2016	3.1	4.2	3.3	2.7	0.9	1.6			4.5
2018/2017	2.4	4.1	4.7	4.9	2.8	2.4			3.3
2019/2018	4.2	4.8	3.4	2.7	1.3	1.3			0.9
2020/2019	2.5	2.9	0.8	0.7	-0.5	-10.5			2.8
2021/2020	5.5	6.3	5.7	4.2	1.8	5.8			9.9
2022/2021	4.8	6.7	5.9	6.5	1.1	7.5			3.4
2023/2022	3.9	4.2	4.9	5.2	2.5	2.2			0.3
2024/2023	2.5	3.1	3.8	3.5	1.6	1.7			-0.3
2025/2024	2.6	3.1	3.6	3.4	1.5	1.6			0.2
2026/2025	2.8	3.2	3.6	3.5	1.3	1.4			0.8

Notes: <sup>a</sup> Average earnings equals total labour compensation divided by the number of employees. <sup>b</sup> Deflated by consumers' expenditure deflator. <sup>c</sup> Includes adjustment for change in net equity of households in pension funds. <sup>d</sup> Office for National Statistics, mix-adjusted. <sup>e</sup> Net worth is defined as housing wealth plus net financial assets.

**Table A6** Fixed investment and capital (£ billion, 2019 prices)

	Gross fixed investment				User cost of capital (%)	Corporate profit share of GDP (%)	Capital stock	
	Business investment	Private housing <sup>a</sup>	General government	Total			Private	Public <sup>b</sup>
2016	227	93	66	385	13.1	25.4	3537	789
2017	228	102	68	398	12.9	25.3	3664	740
2018	224	109	65	397	12.7	25.0	3721	756
2019	226	106	67	400	12.9	24.8	3772	774
2020	200	93	69	362	12.9	24.2	3780	795
2021	201	106	76	384	10.1	23.9	3808	820
2022	223	110	81	413	9.6	23.0	3864	847
2023	228	110	88	425	10.6	23.5	3922	880
2024	229	109	90	427	11.0	23.8	3976	912
2025	230	108	91	428	11.1	24.1	4027	944
2026	232	107	92	430	11.2	24.4	4077	974
Percentage changes								
2016/2015	5.5	6.0	0.6	4.7			1.6	2.1
2017/2016	0.8	9.6	3.0	3.3			3.6	-6.2
2018/2017	-2.0	7.6	-5.0	-0.1			1.6	2.2
2019/2018	0.9	-2.6	4.5	0.5			1.4	2.4
2020/2019	-11.4	-12.4	1.7	-9.4			0.2	2.7
2021/2020	0.5	13.8	11.2	6.0			0.7	3.1
2022/2021	10.6	3.5	6.5	7.8			1.5	3.4
2023/2022	2.3	-0.1	8.1	2.8			1.5	3.8
2024/2023	0.4	-1.1	2.5	0.4			1.4	3.7
2025/2024	0.7	-0.9	0.8	0.3			1.3	3.4
2026/2025	0.9	-0.7	1.0	0.5			1.2	3.2

Notes: <sup>a</sup> Includes private sector transfer costs of non-produced assets. <sup>b</sup> Including public sector non-financial corporations.

**Table A7** Productivity and the labour market (thousands unless otherwise stated)

	Employment		ILO unemployment	Labour force <sup>b</sup>	Population of working age <sup>c</sup>	Productivity (2019=100) per hour	ILO unemployment rate
	Employees	Total <sup>a</sup>					
2016	26771	31744	1633	33377	41062	97.8	4.9
2017	27065	32057	1476	33533	41169	98.9	4.4
2018	27494	32439	1380	33819	41260	99.6	4.1
2019	27652	32799	1306	34105	41344	100.0	3.8
2020	27770	32529	1550	34079	41351	101.2	4.6
2021	27996	32406	1542	33948	41303	102.0	4.5
2022	28492	32941	1326	34267	41398	101.8	3.9
2023	28574	33051	1438	34490	41506	102.1	4.2
2024	28719	33220	1452	34672	41619	102.4	4.2
2025	28864	33387	1454	34840	41722	102.8	4.2
2026	28988	33531	1463	34994	41803	103.5	4.2
Percentage changes							
2016/2015	1.0	1.5	-8.3	0.9	0.4	1.0	
2017/2016	1.1	1.0	-9.6	0.5	0.3	1.1	
2018/2017	1.6	1.2	-6.5	0.9	0.2	0.7	
2019/2018	0.6	1.1	-5.4	0.8	0.2	0.4	
2020/2019	0.4	-0.8	18.7	-0.1	0.0	1.2	
2021/2020	0.8	-0.4	-0.5	-0.4	-0.1	0.7	
2022/2021	1.8	1.7	-14.0	0.9	0.2	-0.2	
2023/2022	0.3	0.3	8.5	0.7	0.3	0.3	
2024/2023	0.5	0.5	0.9	0.5	0.3	0.3	
2025/2024	0.5	0.5	0.1	0.5	0.2	0.5	
2026/2025	0.4	0.4	0.7	0.4	0.2	0.6	

Notes: <sup>a</sup> Includes self-employed, government-supported trainees and unpaid family members. <sup>b</sup> Employment plus ILO unemployment.

<sup>c</sup> Population projections are based on annual rates of growth from 2018-based population projections by the ONS.

**Table A8** Public sector financial balance and borrowing requirement (£ billion, fiscal years)

		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Current receipts:	Taxes on income	484.2	494.7	551.6	565.0	623.5	656.0	682.0	709.4
	Taxes on expenditure	277.8	146.4	252.9	322.1	334.9	346.5	358.9	371.8
	Other current receipts	67.4	151.2	90.1	93.0	96.5	99.4	102.6	106.0
	Total	829.4	792.4	894.7	980.1	1054.9	1101.8	1143.4	1187.2
	(as a % of GDP)	36.7	36.9	37.5	37.7	39.1	39.7	39.9	40.1
Current expenditure:	Goods and services	429.3	503.9	524.4	558.4	573.6	588.4	609.3	626.1
	Net social benefits paid	241.9	262.9	259.3	258.6	282.0	298.9	311.4	323.7
	Debt interest	52.8	41.6	63.0	63.6	63.9	64.4	64.9	65.5
	Other current expenditure	66.2	182.2	98.5	75.9	78.4	80.6	82.9	85.3
	Total	790.3	990.7	945.2	956.6	998.0	1032.3	1068.5	1100.7
	(as a % of GDP)	35.0	46.1	39.6	36.8	37.0	37.2	37.3	37.2
Depreciation		52.4	53.4	55.1	59.9	62.1	64.0	66.1	68.2
Surplus on public sector current budget <sup>a</sup>		-13.3	-251.8	-105.7	-36.4	-5.3	5.5	8.8	18.2
(as a % of GDP)		-0.6	-12.0	-4.5	-1.4	-0.2	0.2	0.3	0.6
Gross investment		91.2	120.5	110.5	120.5	131.2	136.2	141.2	146.3
Net investment		38.8	67.1	55.3	60.6	69.0	72.2	75.1	78.1
(as a % of GDP)		1.7	3.1	2.3	2.3	2.6	2.6	2.6	2.6
Total managed expenditure		881.5	1111.3	1055.7	1077.1	1129.2	1168.5	1209.7	1247.0
(as a % of GDP)		39.0	51.7	44.2	41.5	41.9	42.1	42.2	42.1
Public sector net borrowing		52.0	318.9	161.0	97.0	74.3	66.7	66.3	59.8
(as a % of GDP)		2.3	14.8	6.7	3.7	2.8	2.4	2.3	2.0
Public sector net debt (% of GDP)		83.7	94.6	93.2	93.0	93.7	92.0	89.2	87.6
GDP deflator at market prices (2019=100)		100.8	106.8	106.7	112.4	115.5	117.9	120.4	123.0
Money GDP (£ billion)		2260	2149	2387	2598	2697	2777	2867	2962

Notes: These data are constructed from seasonally adjusted national accounts data. This results in differences between the figures here and unadjusted fiscal year data. Data exclude the impact of financial sector interventions, but include flows from the Asset Purchase Facility of the Bank of England. <sup>a</sup> Public sector current budget surplus is total current receipts less total current expenditure and depreciation.

**Table A9** Accumulation (percentage of GDP)

	Households		Companies		General government		Whole economy		Finance from abroad <sup>a</sup>		Net national saving
	Saving	Investment	Saving	Investment	Saving	Investment	Saving	Investment	Total	Net factor income	
2016	4.5	4.3	8.1	11.1	-0.1	2.4	12.5	17.8	5.3	2.5	-2.1
2017	3.3	4.7	10.3	11.0	1.0	2.5	14.6	18.2	3.6	1.2	-0.2
2018	3.2	4.6	9.6	10.9	1.2	2.5	14.1	18.0	3.9	1.3	-0.8
2019	3.1	4.5	10.9	10.7	1.2	2.7	15.2	17.9	2.7	0.5	0.3
2020	10.0	4.2	12.5	9.4	-8.5	3.0	14.0	16.6	2.6	1.4	-2.1
2021	7.6	4.6	12.5	10.1	-4.9	3.1	15.2	17.7	2.4	0.5	0.0
2022	3.5	4.5	10.8	10.0	-0.1	3.0	14.3	17.6	3.3	0.8	-0.7
2023	3.7	4.5	9.1	10.1	1.2	3.2	14.0	17.8	3.8	1.5	-1.0
2024	3.6	4.4	8.6	10.1	1.8	3.3	14.1	17.9	3.8	1.6	-1.0
2025	3.6	4.4	8.8	10.2	2.0	3.3	14.3	17.9	3.5	1.4	-0.7
2026	3.5	4.3	8.9	10.2	2.3	3.3	14.7	17.8	3.1	1.1	-0.4

Notes: Saving and investment data are gross of depreciation unless otherwise stated. <sup>a</sup> Negative sign indicates a surplus for the UK.

**Table A10** Medium- and long-term projections (percentage change unless otherwise stated)

	2020	2021	2022	2023	2024	2025	2026	2027-31
GDP (market prices)	-9.4	7.3	4.8	1.3	0.9	1.1	1.1	1.1
Average earnings	2.5	5.5	4.8	3.9	2.5	2.6	2.8	2.8
GDP deflator (market prices)	5.6	0.6	4.7	3.3	2.2	2.0	2.2	2.1
Consumer Prices Index	0.8	2.6	5.9	3.3	1.9	1.7	1.9	1.9
Per capita GDP	-9.8	6.6	4.4	1.0	0.6	0.7	0.8	0.9
Whole economy productivity <sup>a</sup>	1.2	0.7	-0.2	0.3	0.3	0.5	0.6	1.0
Labour input <sup>b</sup>	-10.6	6.5	4.8	0.9	0.5	0.5	0.4	0.2
ILO Unemployment rate (%)	4.6	4.5	3.9	4.2	4.2	4.2	4.2	4.7
Current account (% of GDP)	-2.6	-2.4	-3.3	-3.8	-3.8	-3.5	-3.1	-2.4
Total managed expenditure (% of GDP)	51.7	44.2	41.5	41.9	42.1	42.2	42.1	42.6
Public sector net borrowing (% of GDP)	14.8	6.7	3.7	2.8	2.4	2.3	2.0	2.0
Public sector net debt (% GDP)	94.6	93.2	93.0	93.7	92.0	89.2	87.6	83.3
Effective exchange rate (2017=100)	102.1	106.9	109.3	108.8	108.4	108.2	108.1	107.8
Bank Rate (%)	0.2	0.1	0.8	1.4	1.5	1.5	1.6	1.9
10 year interest rates (%)	0.3	0.8	1.2	1.5	1.7	1.8	1.9	2.2

Notes: <sup>a</sup> Per hour. <sup>b</sup> Total hours worked.

**Table A11** Gross Value Added by sector percentage change

	2018	2019	2020	2021	2022	2023	2024	2025	2026
Utilities and agriculture	-0.8	-1.3	8.3	-3.5	2.0	0.9	2.7	1.8	1.7
Mining and quarrying	-8.8	5.0	1.3	-19.0	-7.7	9.5	-7.8	-7.8	-7.8
Manufacturing	1.4	3.9	3.1	-9.0	6.8	3.8	2.4	1.1	1.0
Construction	3.8	-2.0	-0.1	-16.1	13.7	5.4	2.2	0.4	0.3
Public sector	2.2	1.3	2.9	-7.9	11.2	1.3	0.4	0.2	0.7
Private non-traded services	3.0	0.4	1.3	-14.3	8.8	6.8	2.9	1.1	1.1
Financial services	3.4	-0.5	-1.6	-3.5	2.3	0.9	1.2	0.9	0.9
Imputed rent	-0.5	2.3	0.3	0.4	1.1	1.4	0.7	0.8	1.1
Private traded services	3.1	3.8	2.4	-10.2	6.1	5.4	2.5	1.9	1.9

Notes: NiSEM database and forecast. Public sector is composed of Public administration and defence, compulsory social security (O), Education (P) and Human Health and Social Work activities (Q). Private non-traded services sector is composed of Wholesale and Retail Trade, Repair of Motor vehicles and Motorcycles (G), Accommodation and Food services (I), Arts, Entertainment and Recreation (S), Real Estate Activities excluding imputed rent (L-68.2IMP) and Activities of Households as Employers (T). Private traded sector is composed of Professional, Scientific and Technical Activities (M), Transport and Storage (H), Information and Communication (J) and Administrative and Support Services Activities (N).



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