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National Institute UK Economic Outlook

Brisk but not better growth

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National Institute UK Economic Outlook – Spring 2021

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Foreword

Having suffered the largest economic contraction in modern times, the UK now looks set to grow in a manner this year that will also break records. But as is so often the case, concentrating on growth rates masks the underlying level. And it is the level of income and the associated quality of life that matters in a country. In our recent Occasional Paper on fiscal frameworks, we argued for policy to be assessed against the metric of robust and inclusive economic growth as a way of re-focussing the debate away from the most recent numbers or political milestone. To be clear we do not want income to be targeted, like inflation, as it is largely the product of firm level innovation which cannot be well predicted. But we do know that institutional and government capabilities matter and so we want to focus more attention on the progress of households, regions and sectors. Indeed, policy needs to be systematically concerned with the progress of the nations and regions that comprise the UK.

This Spring we have revised up our central forecast for economic growth in 2021 to 5.7 per cent, compared to 3.4 per cent in February. The immediate economic effects of the virus, which have been concentrated in the low-waged service sector, are expected to wane, while the negative consequences of Brexit will make themselves felt over the longer run and largely in sectors less affected by Covid-19. The good news is that the third national lockdown has seen the adaptation of much of the economy to pandemic conditions, meaning that a smaller fall in first-quarter GDP than previously forecast provides a strong basis for the rest of the year. This is followed by the projected re-opening of the remaining affected sectors, thanks to the success of the vaccination programme. The principal downside risk remains a resurgence of the Covid-19 virus, through adaptation or the failure of vaccines, and as an open economy the UK will not be physically or economically protected from a failure to control the virus globally.

The immediate issues facing policymakers are how to redesign the furlough and other support measures to encourage workers who have lost their jobs to retrain or locate new careers. We note that firm birth has been strong but perhaps not in the sectors that have in the past shown high levels of productivity. And this may act to limit the development of strong regional pockets of demand, which underpin the creation of good jobs. Many existing firms may be saddled with high levels of debt that will tend to crimp investment and hence productivity in the recovery. The impetus for much of the recovery will come from a household sector that has undergone a period of "forced savings" and there will be positive spill-overs to the manufacturing, private traded services and construction sectors. But the tourism and hospitality sectors may continue to suffer for as long as international travel remains subdued.

As ever the aggregate can mislead on the granular. The overall improvement in the household sector net worth from higher house prices and some escalation in asset prices masks considerable levels of spatial and income inequality. Our work shows a prospective increase in household level destitution with many of the attendant social problems closely aligned. But one further implication may also follow should government policy not succeed in levelling up. We also project more jobs and higher incomes in London and the South East than in the rest of the country. If not carefully managed with a careful re-examination of our political institutions, this crisis has the propensity to further the centralisation of activity in the United Kingdom, which may ultimately question its very existence.

Jagjit S. Chadha

Director, NIESR
10th May 2021

National Institute UK Economic Outlook – Spring 2021

- Our central forecast for economic growth in 2021 has been revised up to 5.7 per cent from 3.4 per cent in February. The immediate economic effects of the virus, which have been concentrated in the low-waged service sector, are expected to wane, while remaining negative consequences of Brexit will make themselves felt over the long-run and largely in sectors less affected by Covid-19.
- The third national lockdown has seen the adaptation of much of the economy to pandemic conditions, meaning that a smaller fall in first-quarter GDP than previously forecast provides a strong basis for the rest of the year. This is followed by the projected re-opening of the remaining affected sectors, thanks to the successful vaccination programme. The principal downside risk remains a resurgence of the Covid-19 virus, through new variants or the failure of vaccines, and the UK will not be physically or economically protected from a failure to control the virus globally.
- Thanks to the extension of furlough and other support measures to the autumn, we now forecast unemployment to peak at 6.5 per cent in the final quarter of this year. Even after allowing for compositional effects wage growth seems robust. As a result, disposable incomes, which fell by 0.6 per cent in 2020 in real terms, are forecast to rise by 3.1 per cent this year and 2.7 per cent in 2022.
- Income growth and a degree of forced savings under lockdown provide a strong basis for forecast consumption growth of 5.9 per cent in 2021. We forecast household saving to fall to a level higher than that seen before the pandemic but close to historical averages: a faster or further fall constitutes the principal upside risk to our consumption and GDP forecasts in 2021.
- We forecast CPI inflation to rise over the coming months, reaching 1.8 per cent in the final quarter of 2021, before falling to 1.5 per cent at the end of 2022 and settling just below its 2 per cent target between 2023 and 2025. Bank Rate is not forecast to rise until 2023.
- Government debt, which rose in response to the pandemic, peaks at 104 per cent of GDP in 2022-23, with interest payments forecast to remain low and decline further as a share of GDP. Given the increased intertwining of monetary and fiscal policy as a result of quantitative easing, greater clarity is urgently needed about the way that tightening will be conducted when required and how HM Treasury will deal with any potential interest rate volatility.
- The general conduct of fiscal policy is long overdue a serious rethink. Prior underinvestment in health and social care capacity had devastating consequences in 2020 and also contributed to the UK's relative economic underperformance during the pandemic. The long-term challenges of low wage growth, slow productivity and inequalities across regions and between groups of people have not been resolved by Covid-19; indeed, the risk is that they have been exacerbated.
- We forecast growth this year of 9 per cent in the non-traded services sector, which includes badly affected industries such as hospitality, but expect it to shed a further 190,000 jobs after the furlough scheme comes to an end later this year.

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

	2017	2018	2019	2020	*2021*	*2022*	*2023*	*2024*	*2025*
GDP	1.7	1.3	1.4	–9.8	*5.7*	*4.5*	*2.6*	*2.0*	*1.8*
Per capita GDP	1.1	0.7	0.9	–10.4	*5.3*	*4.0*	*2.1*	*1.6*	*1.3*
CPI Inflation	2.7	2.4	1.8	0.8	*1.3*	*1.7*	*1.6*	*1.8*	*2.0*
RPIX Inflation	3.8	3.3	2.5	1.7	*2.1*	*2.3*	*2.3*	*2.5*	*2.7*
RPDI	0.1	2.3	1.8	–0.6	*3.1*	*2.7*	*1.8*	*2.4*	*2.6*
Unemployment, %	4.4	4.1	3.8	4.5	*5.6*	*6.3*	*5.3*	*4.5*	*4.1*
Bank Rate, %	0.3	0.6	0.8	0.2	*0.1*	*0.1*	*0.1*	*0.3*	*0.5*
10-year Gilt yield, %	1.2	1.4	0.9	0.3	*0.8*	*0.9*	*1.0*	*1.1*	*1.2*
Effective exchange rate	–5.5	1.9	–0.3	0.5	*4.5*	*0.3*	*0.2*	*0.2*	*0.1*
Current account as % of GDP	–3.8	–3.7	–3.1	–3.5	*–5.4*	*–5.1*	*–4.5*	*–4.4*	*–4.4*
Net borrowing as % of GDP	2.7	1.8	2.5	15.3	*9.6*	*5.5*	*3.3*	*2.7*	*2.3*
Net debt as % of GDP	84.4	82.4	81.8	103.0	*105.7*	*105.7*	*103.9*	*97.8*	*95.3*

Note: Numbers reported are yearly averages except for net borrowing and net debt which are for the full fiscal year

1 UK economic outlook: Brisk but not better growth

by Hande Küçük, Cyrille Lenoël and Rory Macqueen[1]

Economic background and overview of the forecast

Recent developments

Getting on top of Covid-19 is key to UK recovery
After a year in which the UK suffered one of the worst Covid-19 death rates in the world, coupled with one of the deepest recessions, there are now grounds for some optimism about recovery in both respects. A successful lockdown and vaccination programme this year have seen numbers of deaths and hospitalisations fall to levels last seen in September 2020. The R-number, according to the NIESR Covid tracker based on data until 4th May, is stable around 0.85–1.00.

Adapting to lockdowns means that the economy is well-placed ahead of re-opening
Economic data, official and unofficial, have exceeded many expectations in the first few months of 2021. Despite the national lockdown that commenced in January, activity has not fallen to the same degree as in the first national lockdown, and high frequency indicators suggest strengthening throughout March and April (see Figure 1.2).

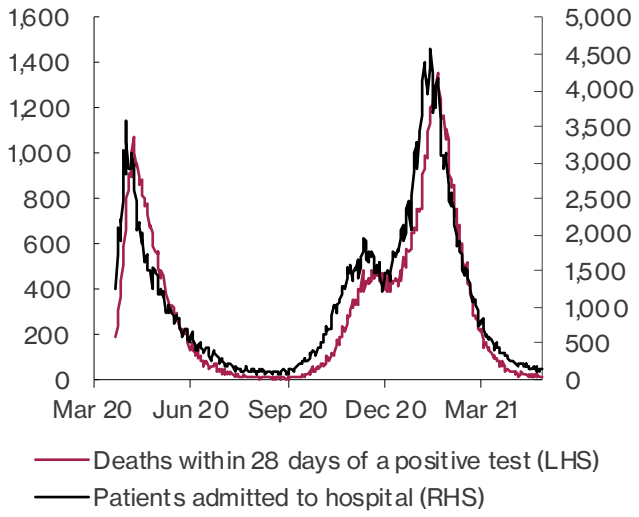
While the hospitality sector was smaller by over 50 per cent compared with a year earlier, and the arts by over a third, both manufacturing and construction output were only 4 per cent lower in February. Output in the public administration, health and energy sectors was higher than a year earlier.

Labour market indicators suggest rapid hiring in spring
Recent KPMG/REC job surveys show that we should expect further improvements in the labour market from March when lockdown restrictions began to be lifted. The April survey pointed to the fastest rise in permanent placements in over 23 years, while temporary hiring grew for the ninth month in a row.

High-frequency indicators also suggest return to pre-Covid levels
There has been a 'decoupling' of output from broad activity measures such as the Google Mobility data, shown in Figure 1.3. During the first lockdown, mobility data provided a useful indicator of the fall and recovery in GDP but, since January, the relationship has been less close. It is nonetheless possible to discern a return to something close to pre-pandemic mobility levels in April. Construction is one sector which was badly affected in Spring 2020 but which, as suggested by Figure 1.2, has been back to pre-Covid levels for some time.

Surveys have provided some evidence of resilience, especially towards the end of the first quarter, and April's IHS Markit Flash Composite PMI suggested the fastest private sector growth rate since late 2013.

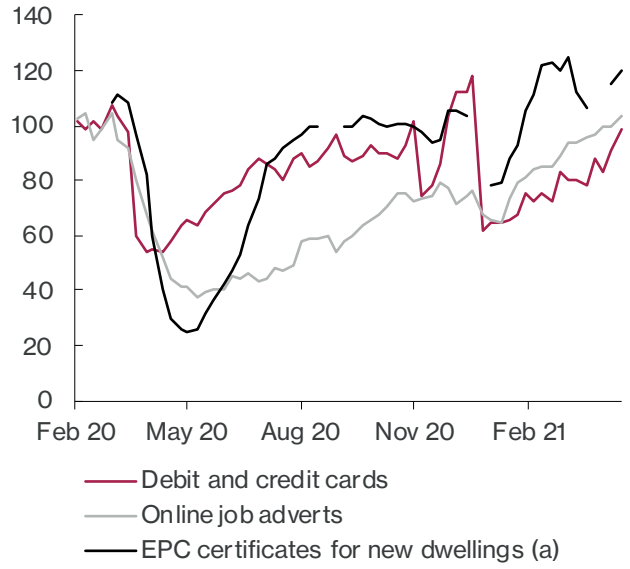
Figure 1.1 UK daily Covid-19 statistics



Source: Data.gov.uk. See coronavirus.data.gov.uk for further information.

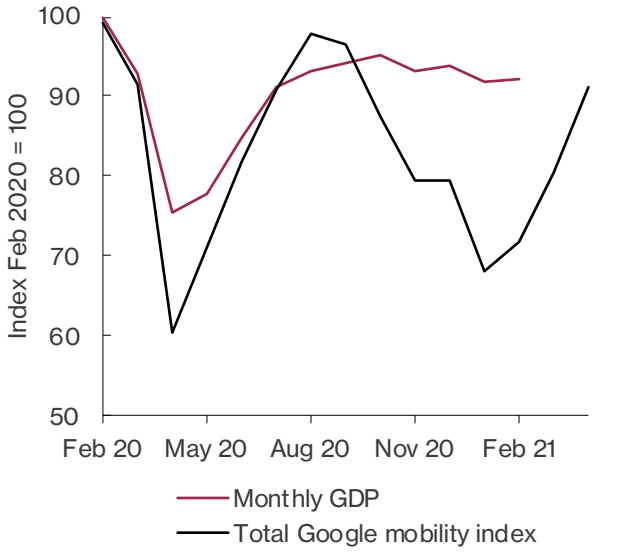
1 We would like to thank Richard Barwell, Rhys Bidder, Jagjit Chadha, Iana Liadze, Barry Naisbitt, Adrian Pabst and Kemar Whyte for helpful comments and Patricia Sanchez Juanino for preparing the charts and the database underlying the forecast. The forecast was completed on 26 April 2021, more recent 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 Cyrille Lenoël (c.lenoel@niesr.ac.uk).

Figure 1.2 Office for National Statistics (ONS) spending and hiring indicators



Notes: (a) England and Wales. Debit and credit cards (CHAPS-based): 100 = February 2020, percentage change on a backward looking seven-day rolling average, non-seasonally adjusted, nominal prices. Job adverts: change from the same week in 2019. EPC certificates: change from the same week in 2019/2020, four–week rolling average, adjusted for timing of holidays.
Source: ONS, BoE, Adzuna, MHCLG, NIESR.

Figure 1.3 GDP and Google Mobility data



Source: Google, ONS, NIESR.

January disruption to trade has not fed through to wider economy
The Brexit transition period came to an end at almost the same time as the current lockdown was imposed. As a result, early data record the combined effects of short-term disruption, long-term supply chain reallocation, reduced demand under lockdown and Brexit-related stockbuilding in December. It may be some time before we can isolate the distinct effects of each of these (see Box A on page 18) but we have previously estimated the long-run impact on UK GDP of a Free Trade Agreement at around 3½ per cent, of which about 2 per cent may have already taken place by year-end 2018 (Born et al, 2019).

These positive indications mean that our main case forecast scenario is conditioned on the lifting of remaining restrictions in line with the government's proposed timetable, ending domestic restrictions on 21st June. A further resurgence of the virus constitutes a significant downside risk to all aspects of our forecast.

The UK forecast

Growth forecasts are revised up for 2021…
Following the worst economic performance among G7 countries in 2020, optimism about the UK recovery is broad-based and well-founded. Our main case forecast scenario includes a significant upgrade to output growth in 2021, from 3.4 per cent to 5.7 per cent, with growth of 4.5 per cent forecast for 2022.

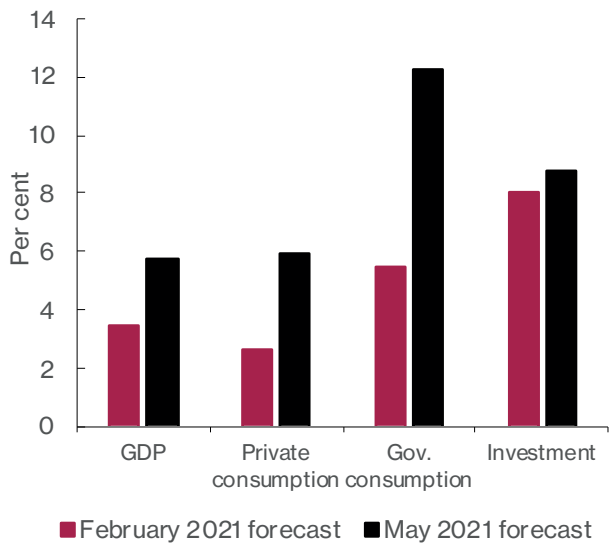
…driven by unlocking sectors…
Expectations for faster GDP growth prospects compared to our February forecast are driven by two major developments, both related to government policy. First, the lockdown imposed in January and one of the fastest vaccination programmes in the developed world have brought down new Covid-19 cases and deaths dramatically.

…and public spending
Secondly, the government has announced a large rise in Covid-related spending in the 2021-22 fiscal year. This spending contributes directly to GDP growth (see Figure 1.4) and the early confirmation of continuing support until September, in contrast with the last-minute U-turn over the Coronavirus Job Retention Scheme in October 2020, provides clarity and stability to households and businesses, allowing more confidence in forward planning. We project a lower forecast peak in the unemployment rate as a consequence.

Furlough is expected to limit the rise in job losses but unemployment will still rise
Our forecast is for unemployment to peak at 6.5 per cent at the end of 2021 (see Figure 1.12 on page 11), based on the announcements in the Budget. This represents a downward revision to our earlier forecasts in light of the extension of support.

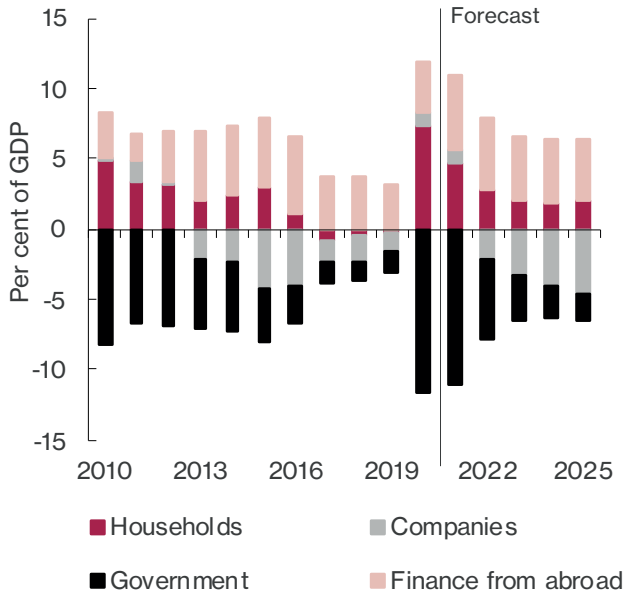
Inflation will rise but remain under control
Despite upward revisions GDP will remain below pre-Covid levels until the end of next year and we do not anticipate a sustained rise in inflation, with Bank Rate on hold until 2023. Headline rises in CPI inflation, which reaches 1.8 per cent at the end of 2021, initially reflect low base effects from the early months of the pandemic.

Figure 1.4 NIESR forecasts for growth in 2021



Source: NIESR forecast.

Figure 1.5 Sectoral balances (saving minus investment)



Source: NiGEM database and NIESR forecast.

Growth in total earnings is also forecast to accelerate, reaching 4.2 per cent in 2022.

Businesses and consumers will both reduce their saving while government borrowing falls back to pre-Covid levels after three years

The recovery is expected to see domestic savings of households gradually fall and the corporate sector returns to net borrowing as business investment picks up. A progressive reduction in government borrowing is therefore the counterpart to the current account balance remaining roughly constant (see Figure 1.5). Government borrowing rises temporarily but is forecast to fall again thanks to a faster recovery.

But the pandemic is not over and nor is Covid-related uncertainty

Risks to our main case scenario remain elevated but appear to be approximately symmetrical. Households' incomes may be protected if the government announces further labour market support, or they may exhibit less caution in returning to lower rates of saving, with consequences for the recovery in consumer spending.

Equally the continued spread of the virus in other parts of the world policy and missteps both constitute major downside risks. The restraint shown by consumers after the lifting of restrictions in 2020 exemplifies the centrality of confidence in public health to the recovery of the economy.

Economic activity

A better-than-expected first quarter provides a solid foundation for the rest of the year

Following a slightly stronger finish to 2020, based on surveys and high frequency indicators we anticipate a contraction of 1.6 per cent in the first quarter of the year (see Figure 1.6), which provides a stronger base for faster growth

GDP growth of 4.4 per cent in the second quarter is likely to be driven by the sectors most affected by continued restrictions: hospitality, retail, arts and recreation, followed by slower but still historically large growth in the third and fourth quarters.

This has consequences for subsequent growth, with GDP levels revised up throughout the forecast period

Upward revisions to the forecast level of GDP continue through the year, supported by further spending announced at the Budget; the faster return to some kind of normal means that our main case forecast scenario for the level of GDP is around 3 per cent higher in 2025 than we forecast in February, returning to its pre-pandemic peak in the last quarter of 2022 (see Figure 1.7). Compared with our November 2019 forecasts this nonetheless constitutes a cumulative loss of around £727 billion (in 2018 prices) over the five-year period from 2020.

Significant uncertainty about household confidence and global control of the virus

An unusually high number of risks lie on both sides of our main case forecast scenario. The household sector's net worth grew by 9 per cent in 2020 and newly acquired savings may be spent more or less quickly than we anticipate (see page 14 and Chadha, 2017, for context). Further mutations of the Covid-19 virus, or developing resistance to vaccines, could mean that 21st June is not the end of domestic restrictions. The worrying continued spread in other countries may have both public health and economic consequences for the UK, which remains an

open economy relatively exposed to events overseas. The extent of these risks will be closely related to the lifting of travel restrictions in the UK and the vaccine roll-out in both the UK and the rest of the world.

Covid has not materially weakened or strengthened the long-term annual growth potential of the UK…
Looking further ahead, we continue to assume that Covid-19 has caused a downward shift to the level of UK output, but not to its growth rate in the long run. On the other hand, nor do we forecast permanent economic benefits, for example via a productive reallocation of capital. In conditioning on both of these assumptions, our main case forecast scenario does not envisage the experiences of 2020-21 having materially strengthened or weakened the long-run annual growth potential of the UK economy, which is around 1.5 per cent (see Fuentes and Moder, 2020, and Ilzetzki, 2021).

…but a poor Covid-19 response has had a permanent cost to the UK relative to other major economies
The size of the economic fall does, however, mean that the level of GDP is around 4 per cent lower in 2025 than we had forecast it to be before the Covid-19 pandemic, equivalent to around £1,350 per person per year (2018 prices). While all countries have seen downgrades in their economic outlooks, those which have handled Covid-19 well are likely to find their long-term growth prospects downgraded by less.

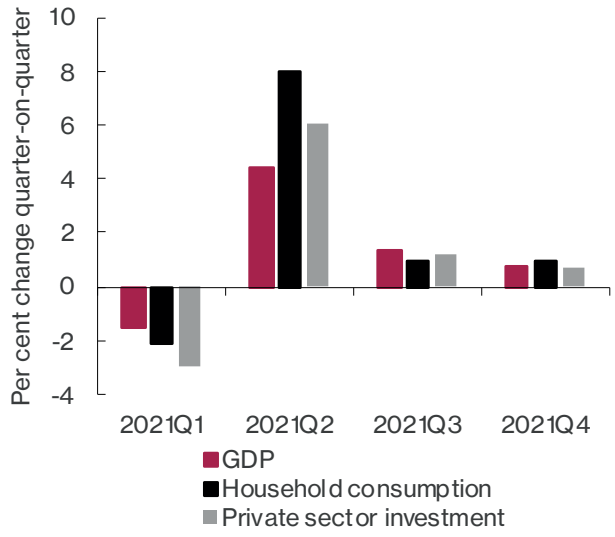
The UK's 9.8 per cent fall in GDP last year was the largest in the G7 and, while some of this is accounted for by different measurement of public sector output and a larger output share for social consumption, the majority is attributable to the greater prevalence of the pandemic in the UK, something partially driven in turn by the UK's relatively unprepared health system (see page 25).

In our last forecast before the pandemic began we expected that GDP per capita would be 14 per cent lower in the UK than in the US and Germany in 2025. According to our current forecasts the differences will now be 19 per cent and 16 per cent respectively. Clearly this divergence (see Figure 1.9) relates both to the depths of the 2020 recessions and to the forecast strength of the forecast post-Covid recoveries. Both the immediate handling of any future pandemic and decisions about how to respond afterwards will have major long-lasting consequences for living standards.

The post-pandemic economic landscape

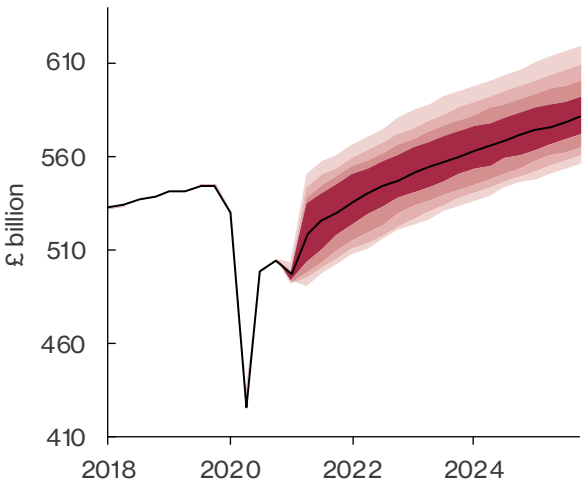
Long-term economic and social weaknesses have not disappeared…
Beyond short-term optimism the outlook for the UK economy is less certain. The challenges which faced the UK economy before the pandemic – low wages, low productivity, inequality and a reliance on consumer credit to drive expansion – look likely to characterise the recovery. In some cases there is a risk that, despite the

Figure 1.6 Projected quarterly growth in 2021



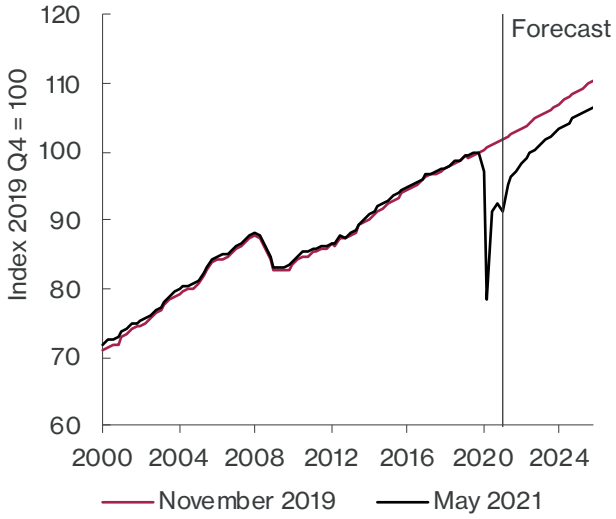
Note: Household consumption is household and NPISH final consumption expenditure (durable and non-durable).
Source: NiGEM database and NIESR forecast.

Figure 1.7 Quarterly GDP fan chart



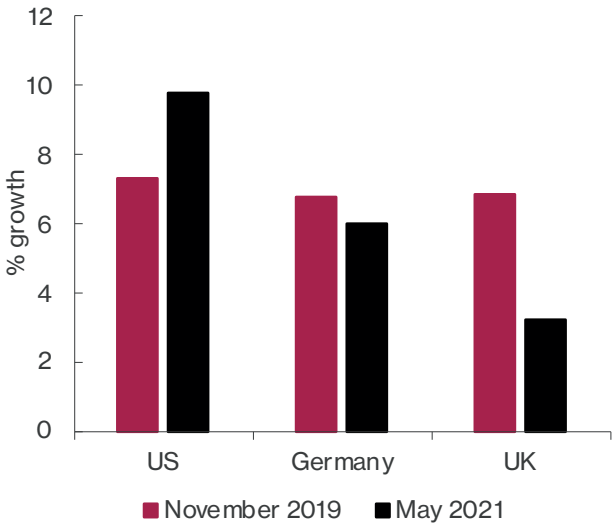
Note: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. There is a 10 per cent chance that GDP growth in any particular year will lie within any given shaded area in the chart. There is a 20 per cent chance that GDP growth will lie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

Figure 1.8 UK GDP pre-pandemic and latest forecasts



Source: NiGEM database and NIESR forecast.

Figure 1.9 Growth in GDP per capita (2019-2025) pre-pandemic and latest forecasts



Source: NiGEM database and NIESR forecasts.

rhetoric about 'building back better', existing inequalities could be cemented or exacerbated by Covid-19, and many of those who have in differing ways been at the forefront of the pandemic may now find themselves left behind by the recovery (see Hughson, 2021).

Young people who have missed out on education, and disproportionately contributed to rising unemployment figures so far, may have their employment and earnings prospects scarred (as we discussed in November[2]), while the continuing reliance on house price growth moves ownership further out of their reach. Businesses which have operated far below capacity over the past year are now those most likely to face hefty debts (see page 15). Many key workers who helped to deliver the government response to the pandemic will find their pay frozen while inflation rises and earnings elsewhere in the economy are forecast to grow healthily.

…and may have been made worse by the pandemic and uneven recovery

Without further policy intervention there are likely to be a substantial group of private sector workers, including many in retail, who have found, or will find as furlough ends, that their former jobs have disappeared, automated or moved online. There is likely to be dislocation, at least in the medium term, between the new jobs being created and those looking for work. The prospects for individual sectors are discussed in Chapter 2 and those for the regions and nations of the UK in Chapter 3.

A change to our approach to fiscal policy has never been more urgent

This uneven impact of Covid-19 partly reflects both the nature of a virus which thrives on social interaction and an understandable desire on the part of policymakers to 'freeze' the economy in its pre-Covid form pending the conclusion of what was hoped to be a short-term shock. Now, should the worst be behind us, there has never been a more appropriate time to review both the differential impacts of those decisions and the fiscal policy framework we will need to adopt to support the recovery.

A new NIESR Occasional Paper (Chadha et al, 2021) focuses on various elements of the current fiscal settlement in the UK, including the fiscal response to the pandemic, and lays out new policy proposals which are discussed further on page 26. One of the key issues with the current framework is the disconnect between the economic objective of fiscal policy, the social welfare function, and a concern with public debt as a share of national income. Fiscal rules have been frequently changed by governments and are sensitive to political rather than economic criteria, as they are tied to parliamentary timetables which do not really coincide with economic cycles, undermining their credibility. Hence, a robust fiscal framework should combine clear principles for spending and tax with state-contingent adjustments to support the ultimate objectives of fiscal policy - more robust and inclusive growth - with a medium-term perspective.

2 See Boshoff, J., Bowyer-Crane, C. and Stokes, L. (2020) 'Implications of school re-openings in the UK', NIER 254, F23

Households

Household consumption to drive strong recovery
After a first quarter of 2021 in which consumption held up better than expected there are widespread expectations for a consumer-led boom in the second quarter. Underlying these hopes lies an unprecedented degree of household savings which have accumulated during the pandemic, largely as a result of reduced opportunities for spending.

Household incomes were relatively well insulated in aggregate during 2020, though less so than in some countries. Employment figures have repeatedly outperformed expectations, largely due to repeated extensions to fiscal support in the form of the Coronavirus Job Retention Scheme (CJRS) and Self-employment Income Support Scheme, which are now forecast by the Office for Budget Responsibility (OBR) to take virus-related income support to slightly over £100 billion in total. A further extension of support to September was announced in March, with CJRS employer contributions being phased in from July.

Labour market

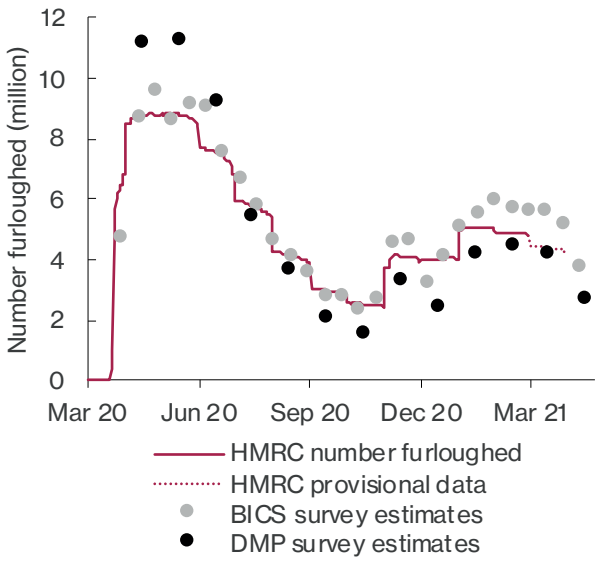
Unemployment has risen only modestly and has been concentrated among certain sectors and groups
The official unemployment measure fell to 4.9 per cent in December-February, though there were over 4 million people still on the furlough scheme at the end of March, according to provisional data (see Figure 1.10). Compared with a year earlier, employment according to the Labour Force Survey was 640,000 lower, with 310,000 of that accounted for by the rise in unemployment and 331,000 more economically inactive.

Both of these changes have been concentrated among young people. According to the Institute of Employment Studies, PAYE employment for the young has fallen by 12 per cent since the start of the pandemic, compared with 1.4 per cent for other age groups, and has recently begun falling while it rises for others.

While the furlough scheme initially protected against job destruction…
To the surprise of most analysts, the economy has created more jobs than it lost during the winter lockdown. For the first time since the beginning of the pandemic, the number of people in employment in the UK expanded in February 2021, bringing the employment rate to 75.0 per cent, having steadily declined from 76.7 pre-Covid to 74.9 per cent. Labour market policies have once again proved effective at limiting the rise in unemployment that would have been expected from a contraction of GDP by 1.6 per cent in the three months to February.

…and continues to do so for around one-in-seven workers…
We forecast the number of furloughed workers to decline steadily from the end of March until September when the furlough scheme is planned to end. But the improved optimism that the worst of the pandemic may be over should be tempered by the fact if employers are waiting until the end of lockdown to reassess business plans.

Figure 1.10 Numbers and estimates of workers furloughed on Coronavirus Job Retention Scheme



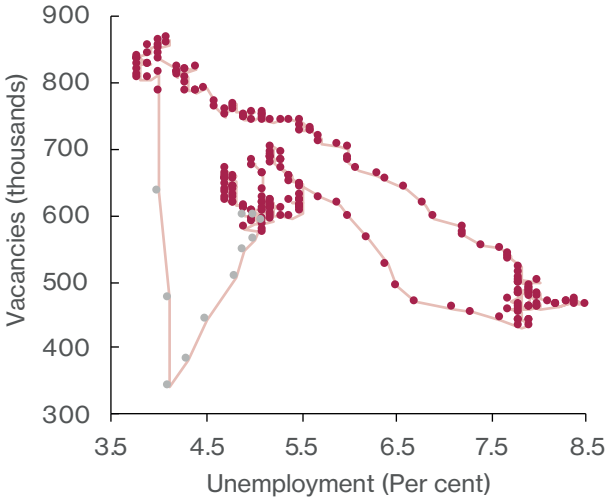
Source: Source: NIESR, HMRC, ONS Business Impact of Coronavirus Survey, Bank of England Decision Maker Panel survey. Survey estimates are not strictly comparable: see ONS 'Comparison of furloughed jobs data, UK: March 2020 to January 2021', 5 March.

Redundancies continued to decline from a peak of 14.6 per thousand in the three months to November 2020 to 7.3 per thousand in the three months to February 2021. We expect the rate of redundancies to continue to decline in the next few months given that the number of planned redundancies declined in February to a level lower than a year ago before the pandemic hit.

…job creation is now playing its part in keeping unemployment down
Figure 1.11 shows the Beveridge Curve for the UK over the past twenty years and indicates how the CJRS has led to a breakdown in the relationship between unemployment and vacancies (see Macqueen, 2020b). 600,000 vacancies, as in December 2020-February 2021, was associated with a headline unemployment rate of around 7 per cent during the recovery after the Global Financial Crisis.

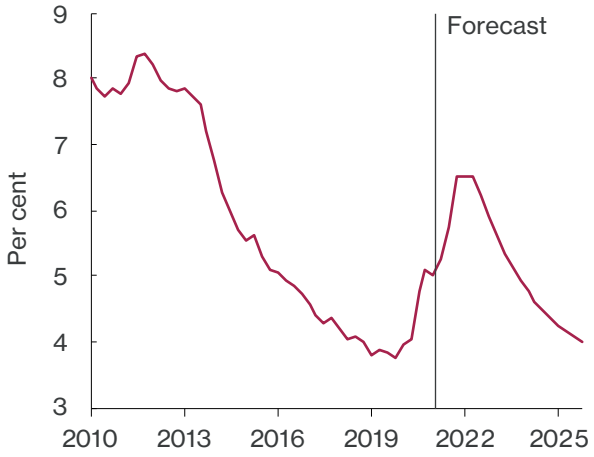
ONS estimates indicate a 16 per cent rise in vacancies in March compared with February, though this remained 18 per cent below the pre-Covid level. Latest data from Adzuna (see Figure 1.2 on page 6) suggest that hiring may have picked up further since then, with online vacancies on 16 April at 99 per cent of their February 2020 level. Some of this is likely to represent switching from offline

Figure 1.11 The UK Beveridge Curve 2001-2021



Note: Grey dots represent observations during the Coronavirus Job Retention Scheme's operation.
Source: ONS, NIESR calculations.

Figure 1.12 UK unemployment



Source: ONS, NIESR forecast.

advertising and a pent-up demand for hiring which will ease after the second quarter of the year.

Active labour market policies will be required to prevent a rise in unemployment later this year and smooth any Covid-driven sectoral reallocation

While protecting jobs was clearly and understandably the government's first priority, sustained job creation will be required to ensure that the end of fiscal support does not lead to a major rise in the unemployment rate given post-Covid labour market transitions due to a larger ecommerce sector, permanent remote working arrangements, more automation, increased emphasis on health, social care and education (Pissarides, 2020).

Unemployment is still expected to rise when furlough ends

Our forecast path for unemployment, which remains at 6.5 per cent into the first quarter of 2022, is compatible with an assumption that around 450,000 of those remaining on furlough in September will not be taken back after the scheme ends (see Figure 1.12).

Earnings growth slowed last year…

After falling in the first half of 2020, median monthly pay for payrolled employees increased sharply in the second half of 2020 and reached 5.4 per cent in March 2021 (HMRC's PAYE RTI database). Starting salaries rose in March for the first time in 2021 as temporary wages increased for the first time in three months.

…but is now firm, and not just due to compositional effects

Monthly pay growth data can mislead as it does not take into account any changes in the composition of the labour force. Looking at the distribution of pay growth between February 2020 and February 2021, when median pay growth was 4.5 per cent, Figure 1.13 shows that wage growth was apparently highest for the lowest earners, with the top percentile also enjoying strong wage growth. This apparently sharp rise for lower-paid workers arises from a shift in pay distribution, with a higher proportion of low-earners losing their jobs. Removing compositional effects, the ONS estimates that underlying earnings growth is around 2½ per cent for the economy as a whole, while the headline measure for average earnings growth is 4½ per cent.

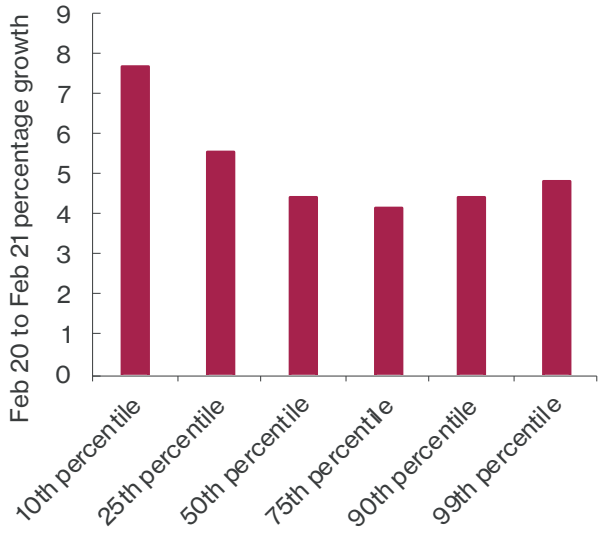
The KPMG/REC UK Report on Jobs indicates that an increase in demand for labour led to improvements in pay trends for March and April. Starting salaries rose for the first time in 2021, as temporary wages increased for the first time in three months. HMRC's PAYE RTI data of payrolled employees suggests that median monthly pay increased at a rate of 5.4 per cent in March.

We forecast earnings to strengthen this year and further next year, cementing a solid rise in household incomes

When the economy recovers from the pandemic, we expect earnings growth to accelerate to 2.2 per cent in 2021 and 4.2 per cent in 2022 (Figure 1.14), a similar rate as seen in 2019.

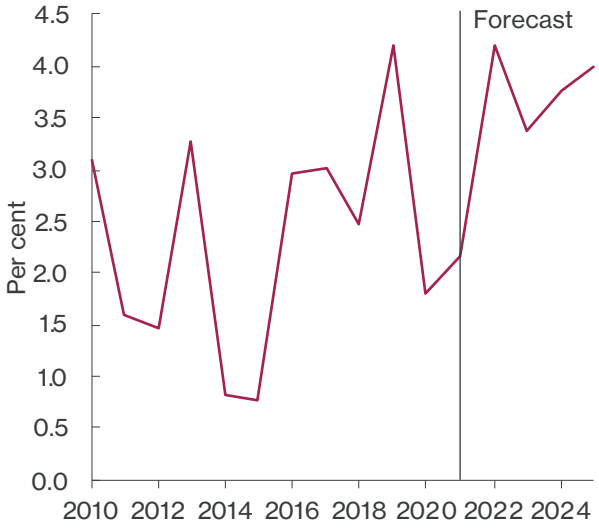
The proportion of employed people who worked from home increased in 2020 by 9.4 percentage points compared with 2019, with homeworking particularly widespread among the highest paid, the better qualified, the higher skilled and those living in London and the South East. The productivity effects of working from home and their reflections on the wage distribution will be important to monitor. Recent analysis by the ONS suggests that, prior to the pandemic, employees working mainly from home

Figure 1.13 Pay growth at different percentiles of the income distribution



Source: HMRC.

Figure 1.14 Growth rate of average earnings



Source: ONS, NIESR forecast.

had a lower salary, lower bonuses and were less likely to be promoted, after controlling for relevant factors, but that this negative relationship is not true for employees working occasionally from home.

Housing market

House price growth continues to outpace general price inflation, assisted by government policy
The housing market, an important component of household balance sheets, continues to outperform many other sectors. Property transactions in March were the highest level since comparable records began in 2005 and house prices rose by 8.6 per cent on a year earlier. According to Nationwide, strong growth continued with a month-on-month rise of 2.1 per cent in April. These data are likely to reflect the impact of the stamp duty holiday, which has been extended until the autumn (except in Scotland).

House prices are forecast to rise by 4 per cent in 2021, building on strong growth last year, though this is expected to slow in years to come.

Consumption and savings

Greater optimism about household consumption than in our February forecast…
Looking ahead our forecast for household consumption is for growth of 8 per cent in the second quarter of the year and 5.9 per cent in 2021 overall (see Figure 1.15).

Partly this comes from a slightly faster fall in the savings rate, which is forecast to fall to 13.1 per cent this year and 10.7 per cent in 2022, compared with 15.2 per cent then 11.0 per cent in our February forecast.

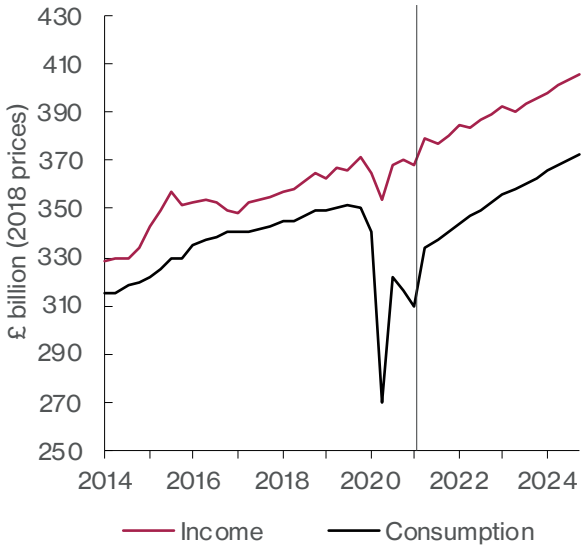
…reflects greater optimism about household incomes
Predominantly, however, our better expectations for consumption are driven by better prospects for disposable incomes, which are forecast to rise by 3.1 per cent in real terms in 2021 and 2.7 per cent in 2022.

In the absence of any dramatic revisions to wealth forecasts, 2.4 of the 3.2 percentage point upgrade to our 2021 consumption forecast since February can be attributed to stronger income forecasts, with the remainder attributable to a lower rate of saving.

After last year's peak, household saving rates return to settle at a higher level than in 2016-2019…
There are clearly significant upside and downside risks to our main case forecast scenario path for consumption. The savings rate rose during the Global Financial Crisis (GFC) from an average of 8.2 per cent in the period 1997-2008 to 11.4 per cent in 2009 and reached a peak of 11.9 per cent in 2010. It then did not return to below its pre-GFC average of 8.2 per cent until 2016. In our main case scenario (see Figure 1.16), savings return to a level at the high end of the 1997-2008 range after reaching a much higher peak of 16 per cent in 2020, possibly reflecting a combination of precautionary motives, expectations of higher taxes in the future and 'consumption scarring' (Malmendier and Shen, 2019).

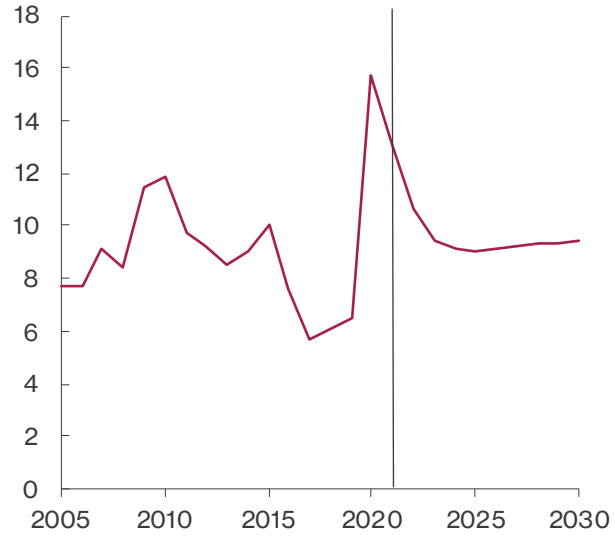
…which conceals diverging outcomes for households across the income distribution
A potential drag on spending comes from the fact that our aggregate forecasts for consumption and income are likely to conceal very different experiences, especially when differentiated by household income bracket. Furlough has been concentrated in low-wage sectors and so the same is likely to be true for the rise in unemployment which we

Figure 1.15 Income and consumption of households



Note: Household consumption is household and NPISH final consumption expenditure (durable and non-durable).
Source: ONS, NIESR forecast.

Figure 1.16 Gross savings ratio 2005-2030



Source: NiGEM database and NIESR forecast.

forecast to follow the end of the CJRS. This in turn may act as a drag on wage growth in those sectors. This year and next may see a rise in poverty and destitution juxtaposed with healthily growing income and outgoings for households financially untouched by Covid-19: a further example of a recovery that differs across regions and the income distribution. In this case above-average income growth would be enjoyed by higher-earning deciles, who are generally believed to have a lower propensity to spend.

Risks to main case consumption and savings path

Households may not be as cautious as we expect, which constitutes an upside risk to consumption and GDP

One upside risk is that previous experiences may not be repeated after the Covid-19 savings glut, which was largely driven by reduced opportunities to spend: aggregate income did not rise. One recent study by the Federal Reserve Bank of Cleveland (Knotek et al, 2021) found that households' intentions to spend money on face-to-face services after the pandemic has varied over the past year but that the typical consumer now expects to return to their previous level of spending on restaurants, bars, hotels and public transport.

Lockdowns have led to a large increase in household savings

However, the restrictions imposed on consumption over the past year mean that, not only have UK households amassed significant savings, but that the degree to which these savings will be subsequently run down is highly uncertain.

As seen in Figure 1.5 on page 7, these savings are the counterpart to government borrowing. Ricardian equivalence implies that a transfer from the government to households does not constitute an increase in their net wealth: they expect higher taxation in future and so save the windfall to pay this taxation.

These have largely been amassed by wealthier households, who saw consumption opportunities reduced

Strict Ricardian equivalence is rarely observed to hold, with some of all transfers always spent, but the windfall has clearly not been distributed evenly: higher-income households, who have a lower-than-average propensity to consume, saw their finances improve (see, for example, Bank of England, 2021b) far more than low-income households.

If taken at face value, the finding in the Bank of England February Monetary Policy Report that only 10 per cent of the households who increased their savings during the pandemic plan to spend at least part of them would strengthen the belief that the path of consumption is likely to be relatively unaffected by the build-up of savings. The degree of pent-up demand, while likely to support spending on delayable goods, will be constrained by natural limits to the number of haircuts and restaurant visits people can consume.

But they may be spent more quickly than wealth increases acquired from a conscious decision to save more

There are reasons to believe that the proportion of savings spent could be higher. Research around the Covid-19 stimulus cheques issued by the US government last year

– also windfall income for many – suggested that around one-third was spent, one-third used to pay down debt and one-third saved. Recent research has also suggested the existence of a 'wealth hand-to-mouth' cohort, whose wealth is illiquid and who consume most of their transitory income increases. Kaplan et al (2014) find that this group constitutes over 20 per cent of households in the UK, suggesting that wealthier households with new savings may be more likely to spend them.

Around £160 billion has been added to household balance sheets, with most of that left in bank accounts

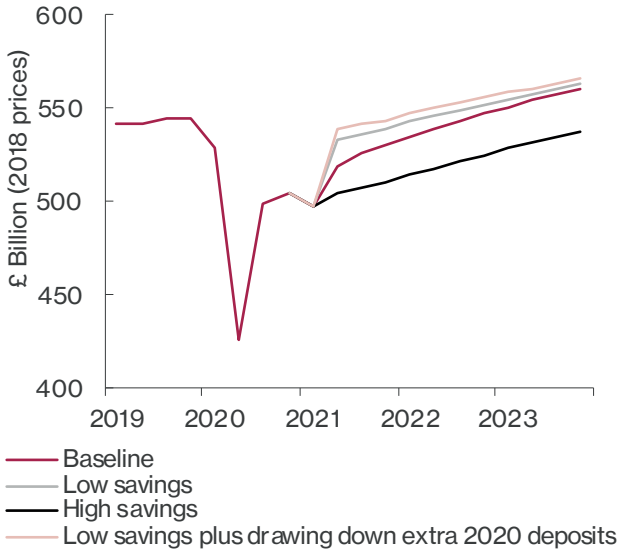
We anticipate some running down of savings over the coming year when Covid-19 restrictions are expected to have been lifted. Extrapolation of pre-Covid average growth rates for income and consumption between 2012 and 2019 suggests that in our main case forecast scenario additional savings may have totalled around £160 billion over the period April 2020 - March 2021, compared with a no-Covid counterfactual.[3] This is likely to be a conservative estimate as spending opportunities remained limited in the second quarter of this year.

To illustrate those two alternative scenarios, we run three simulations where the household savings rate (1) stays at the high level of the first quarter of 2021 (16 per cent) in the next three years, (2a) drops to its pre-Covid level of 6 per cent immediately, or (2b) temporarily drops to around 3 per cent to entertain the possibility that households may run down their accumulated savings in addition to reducing their savings to current income. In 2020, bank deposits owned by households increased by £145 billion, equivalent to 6.9 per cent of GDP. We therefore assume in this scenario that households spend all of the extra savings over the next three years.

Faster or slower falls in saving rates could translate into GDP being as much as 4 per cent lower or 3 per cent higher than forecast in Q4

The impacts on GDP of those three scenarios, simulated by NiGEM, are shown in Figure 1.17. In the downside scenario of higher savings GDP barely recovers from its level at the start of 2021 and would be around 4 per cent lower than the baseline after a year. In the scenario of lower savings, consumption quickly returns to its pre-Covid levels, but the increase in economic activity is more modest. GDP is 2.8 per cent higher in the first quarter, when the savings rate returns to 6 per cent, and 2 per cent higher in the fourth quarter. In the third scenario, where households also run down their accumulated savings, consumption increases quickly beyond the pre-Covid level; GDP is 3.9 per cent higher in the first quarter, 2.9 per cent in the fourth quarter, and would still be 1 per cent higher than baseline after three years.

Figure 1.17 GDP under alternative paths for household savings rates



Source: NiGEM.

Firms

Demand conditions are very supportive for business, especially for sectors exiting lockdown

Early indications are that the lifting of Covid-19 restrictions on the hospitality and retail sectors have contributed to rapid growth in those sectors during March and April. According to the ONS, the reopening of non-essential retail stores on 12 April saw a weekly rise in 'delayable spending' on credit and debit cards from 63 to 89 per cent of February 2020 levels, while data from Springboard suggest that retail parks led the footfall recovery, at 102 per cent of the corresponding 2019 level in the week to 24 April.

Surveys of business owners indicate a strong degree of optimism, especially in terms of demand for their goods and services. The British Chambers of Commerce's Quarterly Economic Survey, concentrated on small and medium-sized enterprises, suggested that the number of firms reporting decreased cashflow actually fell slightly in the first quarter of the year, while expectations for turnover growth returned to pre-pandemic levels. Deloitte's survey of chief financial officers reported optimism at a record high, anticipating a strong recovery in profits and the strongest hiring and investment intentions in nearly six years.

3 Bank of England (2021b) estimated the extra savings accumulated as a result at £125 billion between March and November 2020, while Morgan Stanley suggested it may be of the order of £170 billion up to the end of the first quarter of this year.

But a significant minority of firms has been devastated by the pandemic and may only continue under a weight of debt

While the CBI's industrial trends survey suggested manufacturing business sentiment grew at its quickest pace since April 1973 in recent months, corporate restructuring specialists Begbies Traynor reported a 15 per cent increase in businesses facing 'significant financial distress'.[4] This may reflect simply a backlog of firms which would normally have ceased to exist but have not done so due to government restrictions on winding-up petitions, and which are likely to when restrictions are lifted. But equally a large proportion of the corporate sector has taken on debt which it may be onerous to repay, even at generous interest rates, constituting a potentially long-lasting shock to debt service payments and thus overall costs.

Financial conditions remain supportive but reflect different outlooks for different sized firms and across sectors Corporate lending has also showed signs of divergence. The Bank of England's credit conditions survey reported that spreads on corporate lending to SMEs widened while those for large firms narrowed, with the same pattern expected to consolidate.

UK stocks also imply divergence in recovery prospects

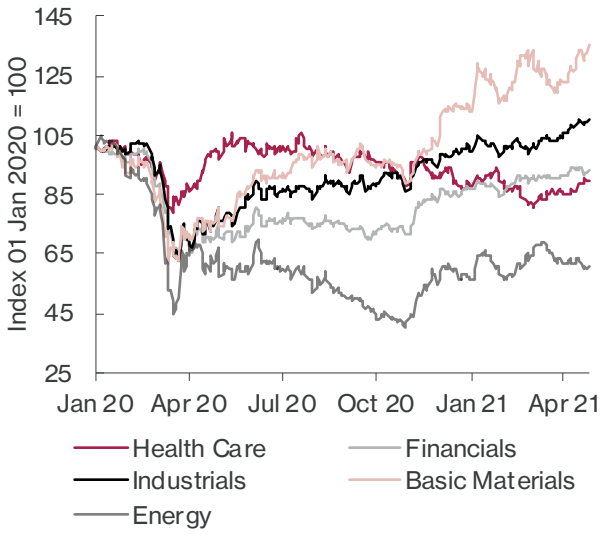
UK stocks have underperformed other international indices since Brexit but equity prices have been affected in different ways by the pandemic: basic materials companies' stocks are up by a third since the start of last year while energy companies are down by a third (see Figure 1.18).

Diverging stock market fortunes may reflect a further divergence in expected fortunes in the post-Covid era between those firms which had to take on new debt to survive and those which have ridden out the pandemic largely unscathed, perhaps even seeing a rise in demand for certain goods and services while taking advantage of government cheap finance schemes. Overall, the non-financial corporate sector's debt-to-GDP ratio, which stood at 72.2 per cent by the end of 2019, rose to 78.9 per cent by the end of 2020, according to the Institute for International Finance's Global Debt Database.

Supply issues may rise but with uncertain pass-through to inflation

The CBI survey also reported a rise in input costs linked to Covid-related supply chain disruption; Jaguar Land Rover reported halting production at two plants in late April due to chip shortages. These supply-side issues follow a rise in unit costs during Covid which the Bank of England estimates helped to offset the effect on inflation of falling demand on prices (Bank of England, 2021b). The extent to which future cost rises will feed through to inflation will depend on firms' pricing power in affected sectors.

Figure 1.18 FTSE all-share price index



Source: Datastream.

Capital reallocation has been taking place since the start of the pandemic

Box D in Chapter 2 describes a sharp post-lockdown rise in company registrations for online retailers, food and drink providers, sports equipment production and pet care businesses. This may suggest the green shoots of a new business sector dynamism, but may also more prosaically reflect a reallocation of capital between types of firm with as yet indeterminate consequences for productivity.

Investment and capital stock

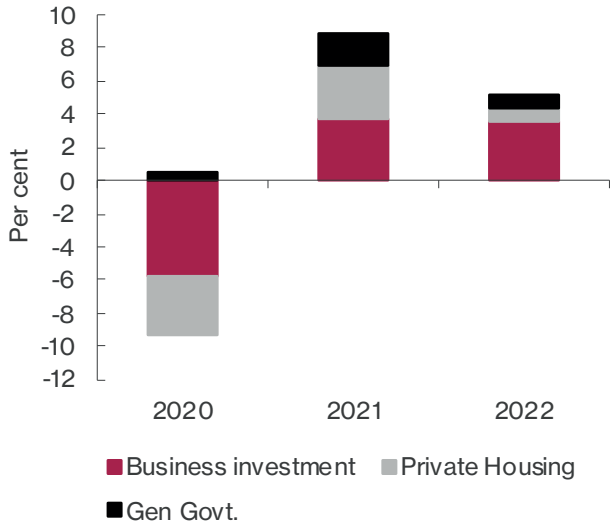
Tax policy acts to smooth investment in the short term and reduce it in long term

In March the government announced a rise in the main rate of corporation tax in 2023, from 19 per cent to 25 per cent, and a corporation tax 'superdeduction', which allows firms to offset 130 per cent of the cost of capital expenditure on plant and machinery without limit until then. The latter appears to be designed to reduce the incentive to delay investment which would otherwise arise: this investment can normally be 'written off' at 100 per cent up to an annual limit of £1 million, meaning a greater potential tax reduction after the corporation tax rise (see Smith, 2021).

The OBR estimates that the superdeduction will reduce corporate tax revenue by around £12 billion a year. We use this estimate to calibrate a reduction in effective corporate tax rate in the next two years. As a result firms bring forward investments, which accelerates the recovery in GDP. In the long run, the level of investment is lower than if corporate taxes were not increased in 2023 as planned.

4 'Red Flag alert Q1 2021', Begbies Traynor, 22 April

Figure 1.19 Forecast 2021 growth of investment components



Source: ONS, NIESR forecast.

We noted in our February forecast and Budget response, supported by NiGEM analysis, that rises in sales or income taxes would have had smaller negative multiplier effects on the economy than rises in corporation tax.

But a faster recovery means more investment generally
We forecast business investment to grow by 6.6 per cent this year and by 6.7 per cent in 2022: higher in level terms than our February forecast though apparently slower growth due to a smaller fall in 2020 than expected (see Figure 1.19).

In our main case forecast scenario private housing investment grows by 13 per cent in 2021 after falling 13 per cent in 2020. Total investment rises by nearly 9 per cent.

Over the course of the forecast period the private sector capital stock is forecast to grow by slightly over 1 per cent per year, reflecting weak pre-Covid trends and the effects of Brexit.

Productivity

Productivity increased in 2020 as low-productivity sectors disproportionately reduced their output
Despite the economic fallout from the pandemic, labour productivity measured as output per hour increased by 0.4 per cent in 2020, as the fall in GDP was slightly larger than the drop in hours worked. As a result, annual productivity growth came close to its post-GFC average (Office for National Statistics, 2021), despite substantial quarterly volatility, due to the lockdowns and furlough scheme. Productivity rose by 6.5 per cent in the third quarter of 2020 and declined by 4.3 per cent in the fourth quarter, as output recovery stalled and hours increased faster especially in sectors such as manufacturing and construction.

Rising unemployment during economic recovery leads to above-average productivity rises in the medium term
The quarterly volatility in labour productivity is expected to persist in the first half of 2021 as the economy displays a strong rebound in the second quarter. As lockdown restrictions are phased out and consumer-facing services industries resume their activities, low-productivity industries will increase their share in employment and hours worked and the reallocation effect, which has supported productivity in 2020, will be partially reversed in 2021 (Van Ark, 2021). We forecast output per hour to increase by 0.7 per cent in 2021, as we expect the recovery in output to be stronger than that in hours worked. While pent-up demand will lead to a strong recovery in consumption the adjustment in the labour market is likely to be slower due to post-pandemic transitions that will see unemployment rise.

In our main-case scenario, we forecast a higher rate of labour productivity growth from 2022, averaging 0.9 per cent a year for the period between 2022 and 2025, mainly driven by the economic recovery feeding through into higher growth in business investment (Figure 1.20). Despite this path, the level of productivity is still expected to be 2.6 per cent lower in 2025 than in our pre-Covid forecast; approximately two percentage points of this can be attributed to the change in assumption from a soft Brexit to an FTA and the remainder due to long-term scarring from Covid-19.

Long-term productivity shifts resulting from the pandemic remain largely uncertain
There are both upside and downside risks to our main case forecasts for productivity. Many firms have adjusted to the pandemic by accelerating their use of new technologies, including digitisation and automation, which might imply higher post-Covid productivity growth.

However, if productivity gains are concentrated in already high-performing businesses and are not reinvested to create employment and wage growth, economy-wide gains could be limited and short-lived. The recovery in business investment might also be weaker than expected if weak pre-pandemic trends continue due to the effects of Brexit (Crafts, 2019), deteriorated balance sheets or persistent demand deficiencies, which could exert downward pressure on productivity growth.

Trade

Despite a smooth exit, Brexit is still expected to have long-term negative impact on the UK economy
As in our February forecast, we expect the conclusion of the Trade and Co-Operation Agreement negotiations with the European Union to remove a major source of uncertainty for the UK economy, though at a loss to future

potential output. Hantzsche and Young (2019) estimated that in the long run the UK economy would be 3½ per cent smaller under an FTA deal compared to continued EU membership, mainly due to a reduction in trade and migration as well as weaker productivity growth.

Finance is likely to be among the worst affected sectors after having been relatively unscathed by Covid-19

Despite the significance of services trade for the UK, services provisions in the trade agreement are thin or even non-existent, as in the case of some financial services, implying a major change compared to the arrangements under the EU Single Market. This has potentially severe implications for air transportation, financial services and many professional and business services (Borchert and Morita-Jaeger, 2021). The lack of a trade agreement on services implies that the economic recovery cannot easily fall back on sectors like financial services which have been less exposed to the effects of Covid-19 (Ebell, 2017).

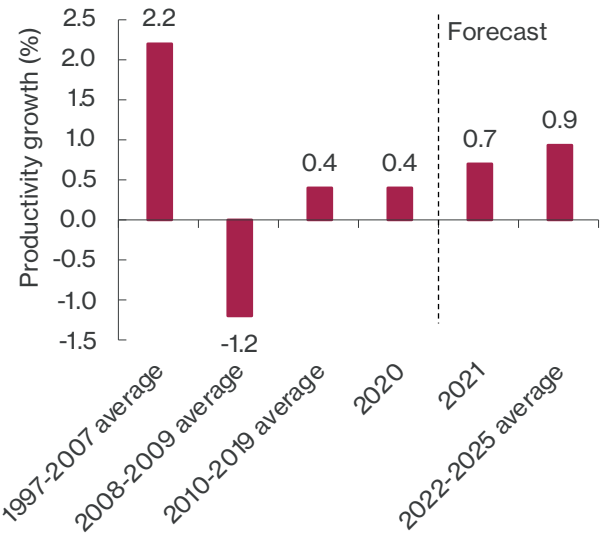
Brexit and Covid effects combined to create a dramatic fall in January goods trade

Some short-term impact of the Trade and Co-Operation Agreement was apparent in a reduction of trade of goods in January between the UK and the EU, after a period of stockpiling in the last quarter of 2020. Exports of goods to the EU fell by £5.7 billion (equivalent to a decrease of 42 per cent) in January, before partially recovering by increasing by £3.7 billion in February. Imports of goods from the EU dropped by £6.7 billion in January before partially recovering by increasing by £1.2 billion in February.

How much of this is permanent will become clear over the coming months as the economy fully re-opens

This did not constitute one-for-one trade diversion because trade with the rest of the world did not compensate for the fall in trade between the UK and the EU. Some of the reduction will have been caused by the new lockdown restrictions in January, though with GDP affected far less than last year this is unlikely to account for much of the reduction. Box A on page 18 considers the question of disentangling Brexit and Covid-19 effects from the point of view of firms' trading decisions.

Figure 1.20 Annual growth rates of UK labour productivity (GDP per hour worked)



Source: ONS.

The UK is expected to follow the trend of a recovery in world trade growth in 2021. The domestic demand-led recovery is expected to lead to an increase in imports of 17 and 10 per cent in 2021 and 2022 respectively, after having fallen by 18 per cent in 2020. Exports are expected to recover more gradually, by around 7½ per cent and 11½ percent in 2021 and 2022 respectively, due to the higher cost of trading with the EU.

The medium-term effect is forecast to be a slight widening of the current account deficit

As a result, the current account balance is expected to worsen from a deficit of 3½ per cent of GDP in 2020 to around 5 per cent in 2021 and 2022. There are significant risks to our forecasts of exports and imports, depending on the extent of disruptions from Brexit and the pace of recovery from the pandemic across the world.

Box A The effects of Covid-19 and Brexit on firms' trading decisions

Manuel Tong Koecklin

This box focuses on adjustments of firms' product trade portfolios, i.e. the number of products exported and inputs imported, and it looks at the literature on past crises and UK data to infer how UK businesses may be adjusting the range of products traded in response to the twin challenge of Covid-19 and Brexit. A key point is that this adjustment depends on firms' perception of the nature of these crises. Thus, firms tend to maintain their product portfolio when faced with temporary shocks and alter it when faced with permanent ones.

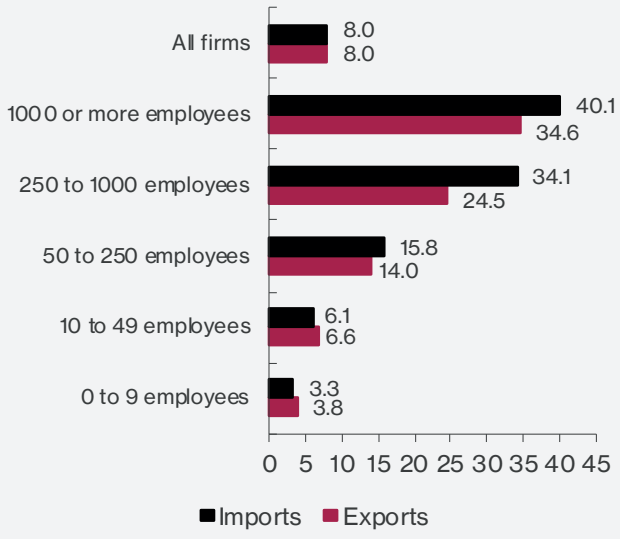
Naturally it is too early to draw solid conclusions with just two months of noisy data; there is a tendency to attribute this poor performance to the disruptions caused by the end of the transition period as the UK left the European Union (EU), preceded by the stockpiling of goods from some industries. However, this fall also coincided with the start of a national lockdown in January 2021 to contain the rise of Covid-19 infections. Hence, this panorama poses a huge challenge to researchers aiming to disentangle the effect of both shocks on UK trade.

First the facts: UK trade registered an unprecedented downturn in January 2021, with exports and imports of goods falling by 19.3 per cent and 21.6 per cent respectively compared with December 2020 (ONS, 2021a,b), although there was a slight recovery the following month. Most of this collapse has been driven by much lower trade with the EU (41 per cent and 28 per cent falls in exports and imports in January respectively).

A useful starting point is to understand the decision-making process at the firm level. Firms engaged in international trade decide on what to export, how much and where. Adjustments of these decisions in response to changes in the economic conditions shape the overall trade and output growth of a country. But these reactions depend on the perceived nature of these shocks, for instance, whether they are perceived as temporary or permanent.

Figure A.1 shows that in 2016 firms both exported and imported an average of eight goods. Clearly the larger the firm, the larger its product trade portfolio, with a sizeable gap between firms with over 250 employees and those below. Note though that these figures are average, which might conceal some skewness.

Figure A.1 UK Firms' Average Number of Goods Traded, 2016 (4-digit commodity codes)



Note: Excluding wholesale and retail industries
Source: HMRC, ONS, NIESR calculations..

Besides this, Figure A.2 indicates that firms' product mixes vary considerably across sectors, with manufacturing industries such as transport equipment, pharmaceuticals, chemicals and mining tending to trade more products than industries like agriculture, food, beverages and tobacco.

ONS-HMRC figures also show that in 2016 UK firms tended to trade fewer products with the EU than with the rest of the world, but data on EU trade is limited by a threshold which might conceal more products.[5]

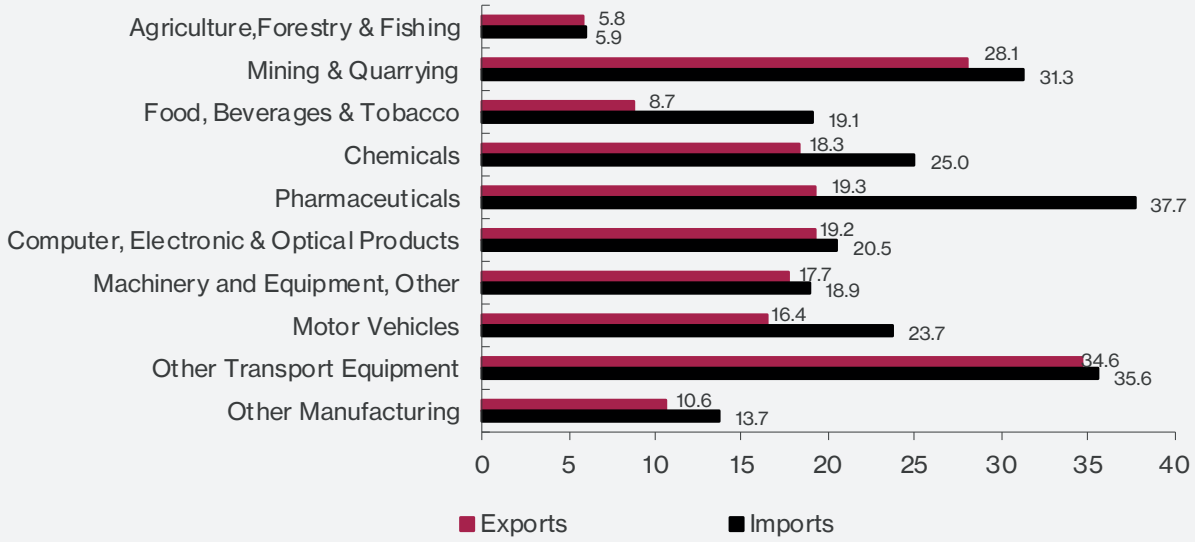
This was the picture in the year the UK decided to leave the EU.[6] How might these figures have changed due to the twin challenges of Covid-19 and Brexit? We should bear in mind the perceived nature of each.

An early study on the global effects of Covid-19 (Antràs, 2020) argues that there is not yet evidence of an era of 'de-globalisation', since firms view Covid-19 as a temporary shock, after which the 'global value chain' will gradually return to its usual form. As a result, firms are mainly responding by trading smaller volumes of their existing products, rather than adding or dropping products from the market. Nevertheless, the study warns it is not clear yet whether Covid-19 can be labelled as a

5 The figures do not consider UK firms with trade with the EU below a threshold from the Intrastat survey. In 2016, those thresholds were £1.5 million for arrivals and £250,000 for dispatches.
6 There have not been further reports on products traded per firm since the 2018 ONS report with 2016 data.

temporary shock due to continuous disruptions of business travel services and increasing income inequality from divergent abilities to work from home (see Chapter 2).

Figure A.2 UK Firms' Average Number of Goods Traded by Industry, 2016 (10+ employees, 4-digit commodity codes)



Note: A, Agriculture, Forestry & Fishing; B, Mining & Quarrying; C 10-12, Food, Beverages & Tobacco; C 20, Chemicals; C21, Pharmaceuticals; C 26, Computer, Electronic & Optical Products; C 28, Machinery and Equipment, Other; C 29, Motor Vehicles; C 30, Other Transport Equipment; C Other, Other Manufacturing
Source: NiGEM simulation.

These conclusions are in line with the literature on past crises, such as the Great Recession in 2008-09, for countries like Belgium (Behrens et al., 2013) and Denmark (Abreha et al., 2013). The reason is that it is very costly for firms to shut down links with existing partners and search for others. These rigid production networks make links react sluggishly to trade shocks, as occurred in Chile during the Great Recession in 2008-09 (Hunneus, 2018). Moreover, some products have higher partner search costs than others (Martin et al., 2020). Hence, links remain active, but with smaller volumes of the same products.

Conversely, Brexit is generally seen as a permanent shock since it constitutes a permanent rise in trading costs with the EU. The literature on permanent trade shocks converges around the argument that changes in firms' product mixes are pervasive. This has been found in the case of China in response to institutional reforms (Söderbom and Weng, 2012) and the reduction of tax rebates (Han et al., 2015). There is also theoretical support when analysing unexpected changes in input tariffs (Grossman and Helpman, 2020). Hence, it is reasonable to expect long-run adjustments in UK firms' product portfolio in the EU market, dropping the least competitive products in response to Brexit. For instance, firms might drop the costliest goods to produce and export from sectors like machinery, transport equipment and chemicals, which saw the largest falls in trade with the EU early this year (ONS, 2021a,b).

It is worth bearing in mind as well that the high degree of uncertainty caused by Brexit has been remarked on by studies of its short-run, post-referendum effect. Such uncertainty has led to delays in firms' investment decisions (Bloom et al., 2019) and some firms deciding against trading in the EU market, but without causing a huge aggregate effect (Crowley et al., 2018). The former study also remarks that UK firms reported reduced investment in machinery, equipment and buildings and, to a lesser extent, in training, software and R&D. Additionally, recent trade data shows that UK exports in agricultural products, chemicals and some manufacturing industries (rubber, leather, silk, among others) fell the most between 2016 and 2020.[7]

7 See coriolistechnologies.com

Considering the perceived natures of Covid-19 and Brexit, along with the experience from previous crises, it is arguably the case that the long-run Brexit effects will prevail in firms' product mix decisions, translating into fewer products being traded with the EU. However, much more information is required to disentangle the effects of both shocks and draw more evidence-based conclusions. And while it is not clear how trade in services with the EU will be affected in terms of number of services traded, the lack of a clear service sector deal raises questions for future research and policy-making.

In that sense, efforts to retrieve and analyse more real-time data are valuable. Research involving input from NIESR found a sustained drop in the number of UK exporters by May 2020 (around 2 per cent relative to May 2019) amid the first national lockdown, mostly accounted for by small and micro enterprises, which have less access to trade finance than larger firms.[8] Despite the recovery afterwards, figures have not returned to pre-Covid levels. According to the same data, one of the most up to date sources for trade activity, Northern Ireland is the worst hit among UK regions, despite remaining in the EU single market for goods. This is a useful reminder that differences across regions and sectors are also essential to depict a more complete picture of the effects of the twin challenges to UK trade.

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8 A project developed with funding from Innovate UK and led by Coriolis, see note 3.

Box B Interest rate rises and Covid-19 government debts

By Rory Macqueen[9]

The £300 billion deficit in 2020-21 did not seem to present a significant financing problem for the government.[10] Over the same period a further £440 billion of government debt purchases were authorised as part of the Bank of England's quantitative easing programme. This took the Monetary Policy Committee's (MPC) target for government debt purchases through the Asset Purchase Facility (APF) to £875 billion, or some 40 per cent of public sector net debt outstanding, though the face value of holdings is lower.[11]

The increase in government debt will translate into an increased sensitivity of any debt service costs to interest rate changes, thoug the level of service costs remains low (see Figure 1.23 on page 26). This March, the Office for Budget Responsibility (OBR) projected the annual direct cost of one percentage point higher interest rates was over £20 billion after five years (see Table B.3 below), something also alluded to by the Chancellor in his Budget speech,[12] and ten-year treasury yields rose by around 50 basis points in the first few months of 2021. But it is the cause of the increase in interest rates that matters when we consider the effect on the fiscal balance. Should any rises in gilt yields rises be driven by higher growth, tax receipts will increase, and the debt burden may fall despite rising borrowing costs. For example, as a rule of thumb, with a tax-GDP ratio in the region of 40 per cent, one per cent higher nominal GDP would equate to an increase in tax receipts in the region of £10 billion per year.

To place interest rate rises of the order cited by the Chancellor in their economic context, we used the Institute's NiGEM model to simulate two scenarios in which rate rises of one percentage point may take place: (1) a positive GDP shock and (ii) a negative term premia shock. No other variables are shocked, and we assume that in both cases the stock of QE each year is unchanged from the OBR baseline – a strong assumption, but one which also underpins the OBR estimates of rising interest rate costs so is preserved here to aid comparison.

These simulations and further NIESR analysis suggest that:

- A positive demand shock will benefit the public finances immediately, but that this benefit may be reduced by the large stock of quantitative easing, as higher interest rates will be paid on reserves.
- A shock to term premia will raise long-term interest rates and impair the public finances accordingly but gradually as new debt is issued or rolled over. If Bank Rate is unaffected, the stock of QE has no negative fiscal impact.
- What matters for the public finances is the nature of the shock, the stock of QE purchases and the fiscal framework. Given the low level of long-term funding costs, any negative impacts are likely to be a small proportion of GDP.
- Should HM Treasury remain concerned about fiscal risks from interest rate volatility there are steps they can take to limit this, which could involve draining reserves or swapping them for short term T-bills.

Two scenarios

In our first stylised scenario we use a baseline model without a quantitative easing channel to simulate a strong increase in consumption expenditure that leads to a persistent rise in inflation and an immediate and dramatic rise in Bank Rate which, in turn, feeds through immediately to long-term rates. This takes the form of a calibrated shock to household consumption of 4 per cent, falling gradually to 2 per cent over the forecast period, implying a household savings rate sharply lower but firmly within the range described in the discussion on page 14.

In the second scenario, instead of a demand-driven boom, there is a loss of confidence in the UK's monetary-fiscal framework such that investors demand increased compensation for holding UK gilts. This raises the term premia by a sufficient degree to match the rises in long-term rates in Scenario 1. This credibility shock has a negative impact

9 The author would like to thank Jagjit Chadha for helpful comments.
10 See Chadha et al (2021)
11 See, for example, Giles, C. and Stubbington, T. 'Investors sceptical over Bank of England's QE programme', Financial Times 5 January 2021, which reported that "investors believe the central bank's quantitative easing programme is a thinly veiled attempt to finance the government's deficit to keep its borrowing costs down".
12 OBR 'Economic and Fiscal Outlook', March 2021, supplementary fiscal table 3.23

on the UK economy and the Bank of England responds by slightly reducing short-term interest rates.[13] As in the first scenario we begin by assuming no quantitative easing effects.

Figure B.1 shows the resultant increases and decreases in public borrowing; Figure B.2 shows the effect on the government's interest payments as a share of GDP. Any additional interest costs in the first scenario are comfortably outweighed by the positive fiscal consequences of higher growth: public sector borrowing is £15 billion lower in the first year and £4 billion lower after five years. Rising interest rates tend to dampen expansion, but overall the public finances are better off as a result of the positive consumption shock and public sector debt is lower (see Table B.1).

The second scenario might be of greater concern, especially as it is associated with lower nominal GDP which effectively raises the level of debt relative to the economy. However, total interest payments are a small proportion of GDP under any scenario, and the size of the shock – at around an additional 0.3 percentage points of GDP – is even smaller.[14] Fiscal pressures may be greater in this situation, however, which relates to our discussion of the fiscal framework on pages 26–7.

Introducing the fiscal effects of quantitative easing

These results notably do not include the effects of the build-up of a large stock of government debt held by the Bank of England after four rounds of quantitative easing. Effectively this has led to around a third of UK government debt being re-financed at short term rates. This distorts the fiscal calculus because Asset Purchase Facility acquisitions are made in exchange for newly-created Bank of England reserves which, since 2008, pay interest at Bank Rate. The APF returns to the Treasury any profit it makes on the margin between that and the interest rates on its gilt holdings[15]. NIESR discussion of this issue can be found in Allen (2021), which seeks to address the resultant interest rate volatility of government debt. Any effect which QE has had on economic growth and government gilt rates over the past ten years – not modelled here – should also be factored into any estimates of its overall long-run fiscal impacts.[16]

We can add to the above 'No QE' results and the impact of the APF holding a proportion of debt which is remunerated at Bank Rate. By separating the debt stock into these two portions a 'QE effect' is calculated and added to the modelled scenarios' changes to the public finances.[17] Figures B.3 and B.4 show the fiscal consequences of the QE holdings compared with the previous scenarios, as well as the net impact on the public finances of the shock with QE effect overlaid.

In Scenario 1, the remuneration of reserves following a rise in Bank Rate would negate much or all of the fiscal benefit from the shock, though the net 'costs' would also still be, at around £2 billion annually after five years, an order of magnitude smaller than headline figures from the OBR projections of the direct costs of interest rate rises (see Table B.3).

Note though that in considering the impact of quantitative easing, any losses which did materialise now must be set against the significant savings which QE has already produced for the government. Its estimated fiscal benefit for 2021-22 has been forecast by the OBR at £17.8 billion and £110 billion of transfers have already been made from the APF to HM Treasury between 2013 and 2020. In a sense any future losses have been funded.

13 This makes little difference to the results in Figure B.3, where the 'QE effect' comes from the small but gradually increasing return to the APF from maturing gilts which are rolled over at higher interest rates. Tax rates and the real exchange rate are treated as exogenous for the forecast period in both cases.

14 Much of the early 2021 rise in yields is likely to have been driven by similar rises in US treasuries, so strictly speaking the pertinent question may be whether they will be *accompanied by* higher UK growth in future, rather than whether they are *driven by* expectations of it.

15 After reinvesting the proceeds of redeemed gilts and a 'redemption loss' which arises from gilts having been purchased above par. For more information see Office for Budget Responsibility, 'The direct fiscal consequences of unconventional monetary policies', March 2019, in particular footnotes 8 and 10, and Section 3.1 of the Independent Evaluation Office 'IEO evaluation of the Bank of England's approach to quantitative easing', January 2021.

16 See Chadha, J., Corrado, L., Meaning, J. and Schuler, T. (forthcoming) 'Monetary and fiscal complementarity in the Covid-19 pandemic', Centre for Macroeconomics working paper

17 Although interest rates may fall below zero, we do not assume that this is imposed on bank reserves: if it were the positive fiscal impact of QE in Scenario 2 would be slightly greater. We also assume that APF gilts are representative of the debt stock as a whole: in fact they exclude index-linked gilts but have longer-than-average maturity, which act as small biases in opposing directions.

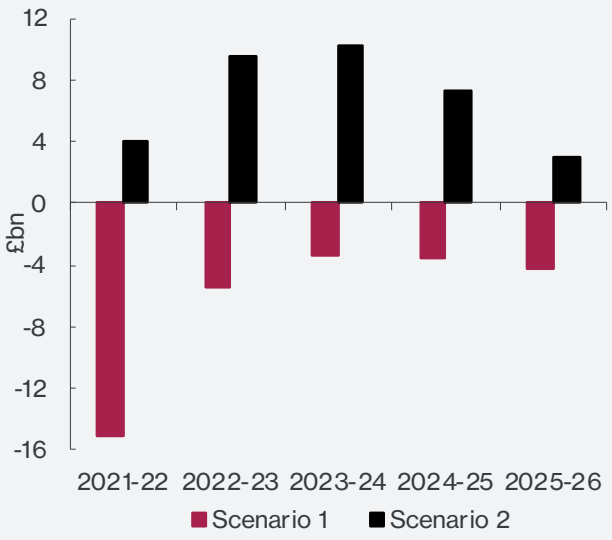
Table B.1 Scenario 1 - Demand recovery — percentage point difference from baseline

Fiscal year	Bank Rate	Long-term rate	CPI inflation	Government borrowing as a share of GDP	Government debt as a share of GDP	Government debt interest as a share of GDP
2021–22	0.8	0.9	0.2	–0.8	–2.1	0.0
2022–23	1.1	0.9	0.7	–0.3	–2.5	0.1
2023–24	1.0	0.9	0.6	–0.2	–3.2	0.1
2024–25	1.0	0.8	0.4	–0.2	–3.7	0.1
2025–26	0.9	0.8	0.3	–0.3	–4.0	0.2

Table B.2 Scenario 2 – Term Premia shock — percentage point difference from baseline

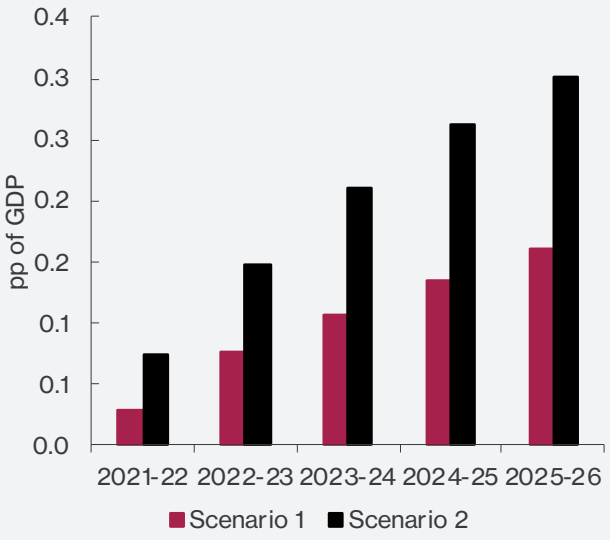
Fiscal year	Bank Rate	Long-term rate	CPI inflation	Government borrowing as a share of GDP	Government debt as a share of GDP	Government debt interest as a share of GDP
2021–22	–0.1	0.9	0.0	0.2	0.5	0.1
2022–23	–0.2	0.9	–0.2	0.5	1.6	0.1
2023–24	–0.2	0.9	–0.5	0.5	2.7	0.2
2024–25	–0.3	0.8	–0.6	0.4	3.5	0.3
2025–26	–0.4	0.8	–0.4	0.2	3.8	0.3

Figure B.1 Impact on public sector borrowing of shock scenarios 1 and 2



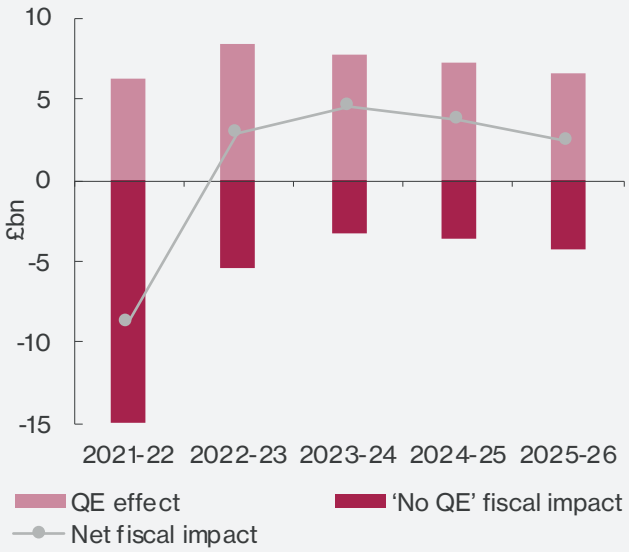
Source: NiGEM simulation.

Figure B.2 Impact of government interest payments of shock scenarios 1 and 2



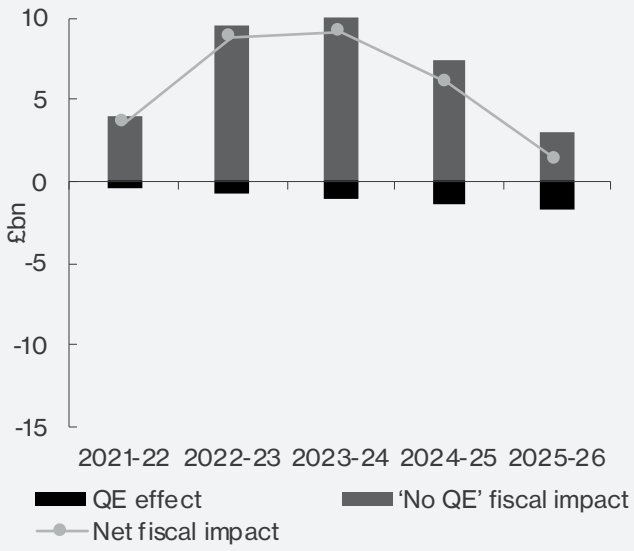
Source: NiGEM simulation.

Figure B.3 Impact on public borrowing under Scenario 1



Source: NiGEM simulation.

Figure B.4 Impact on public borrowing under Scenario 2



Source: NiGEM simulation.

Table B.3 Fiscal impacts of rises in short– and long–term interest rates £ billion

	2021–22	2022–23	2023–24	2024–25	2025–26
Direct fiscal impact (OBR)					
1 percentage point increase in gilt rates	–1.1	–3.2	–5.1	–7.0	–8.9
1 percentage point increase in short rates	–11.7	–11.8	–11.8	–11.9	–11.9
Net fiscal impact incorporating QE impact					
Scenario 1: demand shock to all interest rates	8.8	–2.9	–4.4	–3.6	–2.3
Scenario 2: confidence shock to gilt rates	–2.5	–7.1	–7.6	–3.3	2.6

A key assumption in these calculations is that of an APF stock unchanged from the baseline scenario. In reality, faced with a need to tighten policy, the MPC may decide to sell APF gilts back to the private sector; indeed it may seem counterintuitive that the MPC would raise Bank Rate by as much as one percentage point without allowing its APF holdings to fall. Formerly it was policy "not to reduce the stock of purchased assets until Bank Rate reaches around 1.5 per cent" (Carney, 2018) but, since then, rates have fallen further and the APF has expanded further; Governor Bailey suggested in summer 2020 that bond sales could precede rate rises[18] and the policy is currently under review, as discussed in Box C.

More importantly, were short-term rates to rise this far and fast, the current QE framework would likely be called into question. Allen (2021) proposes to reduce reserves at floating rates ahead of time by exchanging them for newly-issued short-term gilts. Other proposed alternatives include the tiered remuneration of reserves (Lord Turner, quoted in Giles, 2021), creation of new central bank reserves (Kyriakopoulou et al, 2020) and Special Deposits or money creation (Holtham, Chapter 6 in Chadha, et al (2021)).

In the second scenario where the rise in gilt yields is driven by a term premia shock, there would be little incentive to unwind or change the QE framework. As shown in Figure B.3, the fact that the rolling over of APF-held debt at higher rates makes the contribution of QE to the net fiscal impact of the shock a small but positive one, compared with a 'no QE' counterfactual.

18 The same questions have been discussed by the US Federal Reserve: see 'History of the FOMC's Policy Normalization Discussions and Communications', https://www.federalreserve.gov/monetarypolicy/policy-normalization-discussions-communications-history.htm

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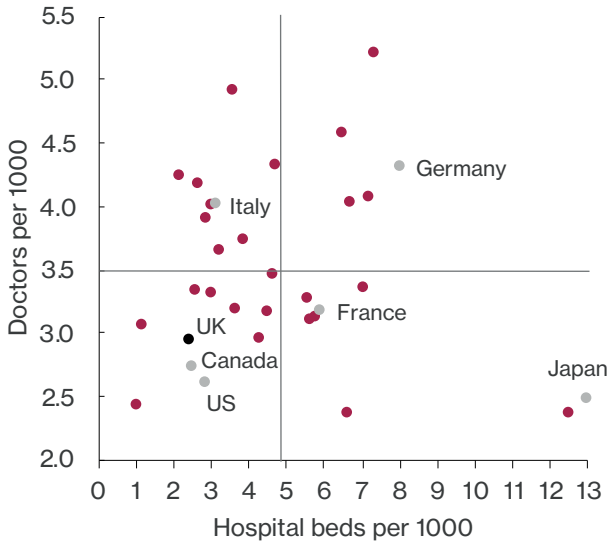
Fiscal policy

Government spending stepped in to protect the economy when the pandemic reached the UK…
The public sector has played a crucial role in tackling the Covid-19 pandemic though increased nominal spending was not reflected in output data last year. With the cancellation of routine appointments and other work, despite significant increases in spending, government consumption fell by 6.5 per cent in real terms in 2020. In contrast an expansion of testing and vaccination programmes is likely to have contributed to growth in the first quarter of 2021: output in the 'Human health and social work activities' sector (including both public and private) grew by 6 per cent month-on-month in January alone.

Figure 1.21 Cross-country comparison of health resources pre-Covid



Note: Horizontal and vertical lines indicate averages.
Source: OECD, Health Foundation.

…but too little spending previously is likely to have contributed to 2020's high Covid-19 mortality rates…
The weak state of the UK's health and social care sectors in the face of the Covid-19 pandemic is not unrelated to the decade of public spending restraint which preceded it. Though far from being the only factor, the Health Foundation (Idriss and Rocks, 2020, Figure 1.21) find links between hospital capacity and Covid-19 mortality rates; out of 33 countries studied only three had fewer hospital beds per person than the UK, which also performed poorly in measures of doctors per person and critical care beds per person.

…with economic and therefore fiscal consequences
Given that one of the main determinants of the UK's relatively large recession in 2020 was the high incidence of Covid-19, if the unprepared nature of the health and social care sectors exacerbated that, there is a clear economic and fiscal case for more investment in capacity to prepare the UK for any future public health shocks of the sort.

Peacetime records for borrowing were shattered as a result
The combination of the large fall in GDP and the rise in government spending contributed to public sector borrowing of £303 billion in 2020-21, an estimated 14.5 per cent of GDP, though with the write-offs of public loans to be accounted for these figures are subject to revision. Public sector net debt is estimated to have been £2,142 billion, just under 98 per cent of GDP, subject to similar revisions.

Tax rises have been announced for two years' time alongside immediate cuts to spending plans
The Budget on 3 March announced further Covid-related spending this year, most notably the extension of labour market support discussed earlier. This has contributed to our upward revisions to overall growth expectations this year. The government announced fiscal consolidation for future years: downward revisions to the departmental spending envelope ahead of the expected Spending Review were made at both of the last two fiscal events, while the headline rate of corporation tax will rise to 25 per cent in 2023.

But in the short term an investment superdeduction was announced alongside more Covid-19 related spending

As discussed on page 15, the corporation tax increase will follow a two-year 'superdeduction' of investment in plant and machinery from corporate tax liabilities. We estimate the fiscal consequences of this package to be relatively small in the short term, due to the smoothing of investment plans.

We forecast a return to pre-Covid borrowing levels in three years' time, driven by the economic recovery…

Our forecast incorporates the announced changes to effective tax rates and spending policy but tax receipts are sensitive also to GDP forecasts, which in our main case are stronger than both our February forecasts and those made by the OBR in March. As a result, in our main case forecast scenario public sector borrowing falls relatively quickly, reaching to 9.6 per cent of GDP this fiscal year and 5.5 per cent in 2022-23, returning close to its pre-Covid level in 2024-25.

…and opening up the possibility of further loosening at the end of this parliament

In this scenario the current budget deficit falls below 2 per cent in 2023-24, raising the possibility of fiscal loosening ahead of the next General Election, which is scheduled to take place in 2024. If the economic recovery follows this path we could see a higher path for government consumption, or the cancellation or reduction of the planned increase in corporation tax, but neither is assumed in our forecasts.

Debt remains around 104 per cent for the next two years…

The interaction of the paths for tax rates and spending with our main case forecast scenario for GDP means that debt is forecast to reach 104 per cent of GDP in 2022-23, falling after this, aided by the expected end of the Term Funding Scheme in 2024 (see Figure 1.22).

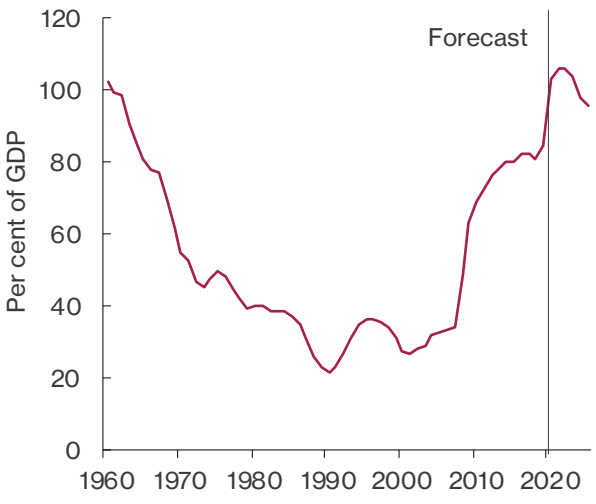
…with no negative consequences for fiscal sustainability in our main case scenario

Government debt interest payments continue to fall as a share of GDP, as seen from the narrowing of the wedge between the deficit and primary deficit in Figure 1.23, driven by continued low interest rates. The cost of government debt is reduced by the Bank of England's quantitative easing programme, which effectively refinances borrowing at short-term rates for as long as gilts are held by the Bank of England. Box B on page 21 examines some consequences of the increase in debt and its sustainability under different circumstances.

Fiscal rules should not be tied to parliamentary cycles or lead to sharp changes in taxes or spending…

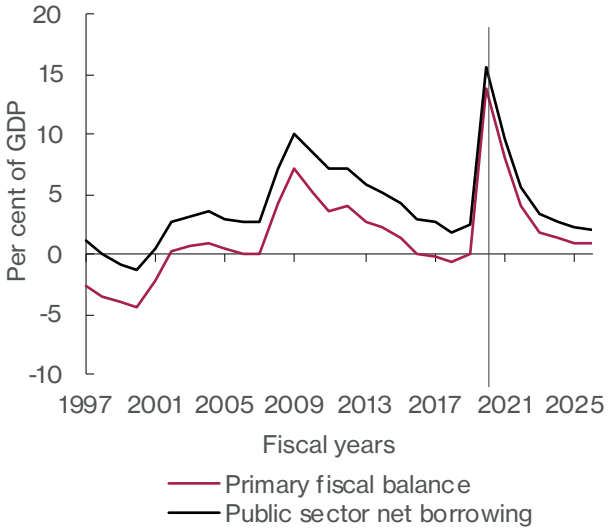
NIESR Occasional Paper 61 (Chadha et al, 2021) focuses on the appropriate design of a new fiscal framework for the UK. Finding a right balance between flexibility to respond to changing economic circumstances and the credibility to maintain control of debt is at the heart of any fiscal framework: rules-based policies impose both external and internal discipline for fiscal policy, and ensure that economic agents condition on the government's

Figure 1.22 Public sector net debt



Source: ONS, NIESR forecast.

Figure 1.23 Public sector borrowing and primary balance



Source: NiGEM database, NIESR forecast.

plans, but fiscal rules are presently tied excessively to parliamentary cycles.

The headline fiscal position, for which targets are set, depends heavily on a business cycle that is not fully known or understood in real time, implying that taxes and spending could be adjusted sharply in response to minor changes in forecast assumptions or in the face of small shocks, with adverse effects for the welfare of citizens and communities. Fiscal policy ought to be to be assessed in terms of a social welfare function not in terms of a deficit or debt position alone.

…but should incorporate wider considerations, including distributional effects, well-being and sustainability

Firstly, a new approach to fiscal events should follow a stricter timetable with greater parliamentary scrutiny, a clearer focus on the state of the economy and a more granular analysis of the socio-economic implications of policy choices. Secondly, we recommend that the OBR publish pre-fiscal event reports with key issues to which the Budget and the Autumn Statement should respond. Thirdly, in light of uncertain economic cycles, the Chancellor should outline government thinking about fundamental fiscal choices in different economic scenarios and the OBR should be encouraged to state whether these are reasonable and aligned with social welfare given the economic outlook. Fourthly, HM Treasury should create a new body of independent experts for ex ante advice and ex post evaluation of the key fiscal choices, moving from descriptive fiscal policy to a formal assessment of normative choices. And finally, fiscal strategy ought to be joined up across the UK and all its constituent parts, with particular attention paid to distributional effects, productivity, well-being and ecological sustainability.

Prices and monetary policy

Inflation is rising thanks to demand pressures and base effects

Annual headline inflation increased to 0.7 per cent in March, from 0.4 per cent in February, but largely unchanged from 0.6 per cent recorded in December 2020. Underlying inflation measured by the trimmed mean (which excludes 5 per cent of the highest and lowest price changes) increased to 0.6 per cent in March, recording its highest level since October (see National Institute Monthly CPI Tracker, April 2021). NIESR's lockdown-weighted CPI fell slightly to 0.8 per cent in March from 0.9 per cent in February.

It has been restrained by sterling rises but will pick up further later in the year as the economy recovers

Despite the sharp rise in the dollar price of international commodities in the first quarter of 2021, which is expected to continue to a lesser degree into the second quarter, the continued appreciation in the sterling exchange rate has limited the rise in import costs. As the consumption-driven recovery gains pace we expect a gradual rise in the capacity utilisation rate from the second quarter, leading to higher levels of inflation compared to recent quarters. Base effects will initially support a rise in annual inflation, as price increases during the first lockdown were lower than historical averages, but later in the year they will work in the opposite direction.

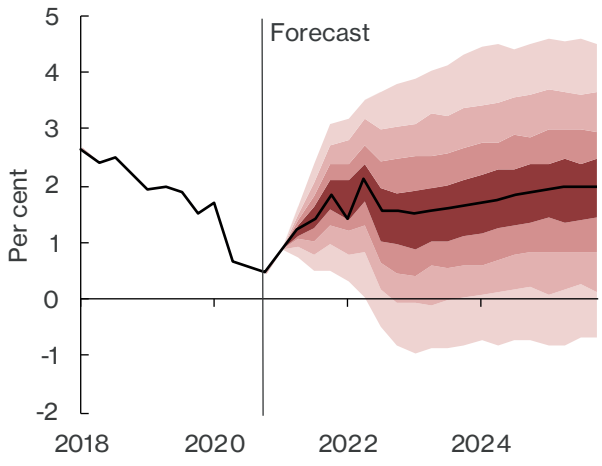
We expect CPI inflation to reach close to, but remain below, its 2 per cent target in each year of the forecast

In our main-case scenario, we forecast CPI inflation to rise to 1.8 per cent in the last quarter of 2021, rising briefly before falling back to 1.5 per cent by the end of 2022 as temporary factors dissipate (see Figure 1.24). Inflation then remains close to but below its 2 per cent target in each year between 2023 and 2025. These forecasts not only reflect our views on medium-term spare capacity but also indicate weak trends in underlying inflation despite the stronger wage growth and weaker productivity growth observed before the pandemic (Tenreyro, 2020).

Inflation risks exist, linked to upside risks to household consumption

However, the balance of risks around our main-case forecasts includes the possibility of higher inflation driven by a stronger than expected recovery in consumption possibly led by a faster unwinding of accumulated savings as we emerge from the pandemic on the back of a successful vaccination programme. Macqueen (2020a) presents an upside risk scenario assuming consumption recovers more quickly – 3 per cent above the baseline this year and next – and shows that inflation might increase more rapidly

Figure 1.24 Inflation fan chart



Note: 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 CPI inflation in any particular year will lie within any given shaded area in the chart. There is a 20 per cent chance that CPI inflation will lie outside the shaded area of the fan. The Bank of England's CPI inflation target is 2 per cent per annum.
Source: NIESR forecast and judgement.

and stay close to 5 per cent for a prolonged period if the Monetary Policy Committee delays its response due to concerns about higher unemployment and higher public and private debt post-pandemic.

Expectations for RPI inflation implied by forward interest rates for the coming years do not yet show a sign of material increase even though they were higher in March 2021 than in February 2020 (see Figure 1.25).

No rise in Bank Rate is forecast for over two years though its relationship with the unwinding of QE remains uncertain

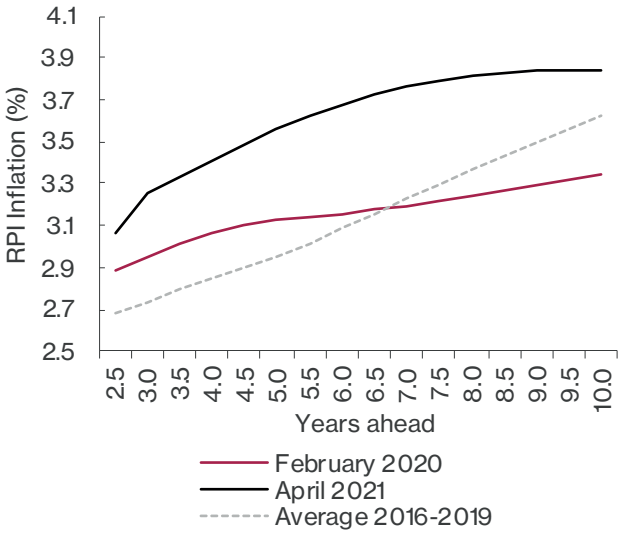
Policy interest rates have been maintained at 0.1 per cent and remain at that level in our main case forecast scenario until the second half of 2023 in line with the Bank of England's communication that the Monetary Policy Committee does not intend to tighten monetary policy at least until there is evidence that the 2 per cent inflation target can be sustainably met. The Bank of England is currently reviewing its policy of continuing to roll over maturing gilts until Bank Rate is at least 1.5 per cent.

Payment of interest on reserves may come under review if Bank Rate rises ahead of schedule

Given the higher share of government debt held by the Bank of England and increased sensitivity of government interest costs to the Bank Rate (see Box B on interest rate sensitivity of debt), there is uncertainty regarding which instrument will move first when the Bank decides to tighten its policy stance. In the Institute's recent publication on the subject Holtham (2021) suggests alternative ways to conduct reserves policy when the Bank starts raising interest rates.

The Bank of England has also been consulting on the introduction of negative interest rates to widen its policy toolkit to deliver further easing in monetary policy stance if required: see Section 2.3 of Barwell et al, 2020). As the uncertainty about both the direction and instruments of monetary policy continues, asset prices and financial conditions adjust to market participants' expectations which may not necessarily reflect Bank of England's intended policy stance going forward, as discussed in Box C).

Figure 1.25 UK instantaneous implied inflation forward curve



Note: RPI inflation rates derived from the gilt yield curve include an inflation risk premium related to liquidity. They also be affected by Asset Purchase Facilities expansion, involving the purchase of non-index-linked gilts.
Source: Bank of England and NIESR calculations.

Box C MPC communication: the case for taking back control of financial conditions

Richard Barwell[19]

Expectations about the decisions that central banks will take in the future matter. Any change in the level of the short-term policy rate or the stock of asset purchases will have a negligible impact on asset prices and ultimately inflation if investors expect that change to be soon reversed. Central bankers have become more comfortable talking about the future path of policy in order to anchor those expectations. Nonetheless, the current conversation about the future path of policy in the United Kingdom still falls a long way short of 'complete forward guidance' (Barwell and Chadha, 2013).

Complete forward guidance involves disclosure of all relevant aspects of the internal policy debate, simultaneously reducing uncertainty within financial markets and the accountability deficit with politicians and the general public (Giles (2019)), and includes the following seven key elements:

1 Publish 'optimal' modal paths for each of the policy instruments – that is, paths that are considered the most likely to deliver the best possible economic outcomes (according to central bank's mandate) given the central bank's (inevitably) uncertain understanding of the current state and structure of the economy;

2 Place those modal policy paths within probabilistic statements (such as a fan chart) that illustrate the range of possible outcomes for the policy instruments and are internally consistent with the probabilistic statements about macroeconomic variables that central banks currently publish;

3 Release a detailed exposition of the strategy debate that highlights key points of uncertainty and critical judgements and their quantitative importance on the policy decision, and then illustrates that uncertainty by describing the alternative scenarios that are discussed within the internal policy debate (including the corresponding shifts in the policy path);

4 At moments such as these, when the policy setting is far from "normal", publish an exit strategy that describes how the central bank expects to return the policy instruments to normal settings, including details on the pace and sequencing of exit and how that might depend on economic and perhaps calendar considerations, as well as estimates of what constitutes "normal" for the policy rate and the balance sheet;

5 Provide a regular quantitative update on the policy committee's evolving understanding of the structure of the economy – again, with an emphasis on probabilistic statements not point estimates – and with a particular focus on timeless issues in the strategy debate, such as the slope of the short-run Phillips Curve, the transmission mechanism of policy instruments and the location of constraints on those instruments;

6 Produce a detailed description of the loss function that ultimately guides the entire policy debate which can then be used to evaluate alternative policy paths in a given circumstance and explain how the 'optimal' path was selected.

7 Wherever disagreements exist within policy committees, those differences should be disclosed – for example, each committee member should publish his or her understanding of the optimal paths, consistent with his or her beliefs about the state and structure of the economy.

There is no disputing the claim that the Bank of England's current communication strategy falls short of this limiting case. The extent to which that matters depends on the uncertainty of the audience. If the audience is well informed and already knows what the Bank would say if it were to deliver complete forward guidance then the message would be redundant. Those circumstances might be a reasonable approximation to reality at certain points in a typical business cycle. Unfortunately, it is almost certainly not the case now. The direction of travel is particularly unclear – whether the next move in policy will be to tighten or loosen – and more unusually still, it is unclear *how* the Bank of England would tighten or loosen.

If the width of the MPC's inflation fan chart is anything to go by then there is always massive uncertainty about the future path of rates given the likely size of the interest rate multiplier. According to the Bank's own forecasting platform, a surprise 25 basis point increase in interest rates knocks around 10 basis points off inflation (Burgess et. al., 2013). If there is a roughly one in three chance of inflation being 100 basis points or move above or below

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the target two to three years from now as the fan charts imply then there is a distinct possibility that a very large correction in the policy stance might soon be warranted in either direction.

It seems reasonable to conclude that the uncertainty over the macro outlook is particularly elevated at this juncture as the economy unlocks after a year of social distancing restrictions. Indeed, there seems to be considerable disagreement within the Committee, particularly with regards to the medium-term trajectory of inflation. The external members have argued that: "we should not forget that disinflationary pressures predated Covid" (Tenreyro, 2021); it will probably "take longer to close the output gap than forecast in the February MPR" (Saunders, 2021)); and there is "relatively little risk of sustained above-target inflation" as demand recovers in 2022 (Haskel, 2021). Meanwhile, the Chief Economist has argued that "there is a tangible risk that inflation proves more difficult to tame, requiring monetary policymakers to act more assertively than is currently priced into financial markets" (Haldane, 2021). But as is almost always the case, that material dispersion of views is not reflected in a material dispersion of votes (Barwell, 2016 and 2019): all of these people voted for exactly the same stance in March.

There does not appear to be a consensus within the Committee on the marginal tool for easing the monetary stance. There is a consensus that QE is the answer in the event of stress in core wholesale financial markets. However, it is debatable whether emergency interventions of that kind should be considered conventional monetary operations and in any case, it would be surprising (and concerning) to learn that MPC members perceived that the probability of this stress arising was sufficiently high such that more QE was "the marginal tool" for this reason.

There does not appear to be a consensus that more QE is the answer when inflation is expected to under-shoot the target in the medium-term. Vlieghe (2021) observes that "when long term yields are already very low (close to the effective lower bound on the policy rate (ELB)) and there is ample liquidity in markets, there is little QE can do to add further stimulus to the economy". Indeed, there does not appear to be a consensus within the Committee about how QE works, even if there tends to be a consensus within the Committee on how much QE to do (Barwell, 2020). This is an example of where the Bank could benefit from a more sophisticated communication strategy, which links theory and evidence on QE to views and votes on the Committee (BoE IEO, 2020).

There also appears to be a disagreement over the obvious alternative to more QE: negative rates. The external members appear to see some merit in cutting below zero and Tenreyro and Vlieghe have helpfully provided some quantification on how far: both have suggested that Bank Rate could be cut to as low as -0.75 per cent. How low Bank Rate can ultimately go – or perhaps more precisely, how low for how long – will depend on the complimentary measures that the authorities are willing to take to mitigate the side effects, including some radical measures (see Grady (2019) for a detailed exposition) but it is unclear how far Bank thinking has progressed on these issues. Indeed, several members of the Committee were willing to delay the contingency planning that was announced in February and thereby forgo the option of being able to cut into negative territory in August just to avoid any risk of sending a signal that the MPC intended to cut below zero. Revealed preference suggests that those individuals may need a lot of persuading to vote for negative rates.

The debate over the marginal tool to tighten policy was settled under Governor Carney: raise Bank Rate until there is once again scope to materially cut rates and then, and only then, begin to reduce the balance sheet. However, this Governor has expressed the view that "it may be better to consider adjusting the level of reserves first without waiting to raise interest rates on a sustained basis" (Bailey (2020)). The February policy statement confirmed that the exit strategy is now officially under review although it is unclear whether this refers to the threshold for Bank Rate at which balance sheet run-off can begin or the entire sequencing of rate hikes and run-off.

In short, the interaction between the unprecedented macro back-drop and the Bank's communication strategy has resulted in considerable uncertainty about both the direction and instruments of policy. Indeed, there is a sense that as the toolkit expands, guidance retreats with the Governor insisting: "We have been quite clear these toolkit decisions should not be interpreted as a signal about the future path of monetary policy" (Bailey, 2021). Meanwhile, expectations about the future path of policy implicit in market prices have shifted: the expected path of Bank Rate has moved higher and other asset prices – notably the currency – have moved in sympathy.

There is no debate over whether that this adjustment in the expected rate path and the concomitant correction in financial conditions matters or not, irrespective of whether the Committee believes it is warranted or not. It is the expectations of market participants embedded in asset prices that drive activity and ultimately inflation, not the counterfactual constellation of asset prices that is consistent with the beliefs in policymakers' heads. Failure to communicate clearly in an environment of pervasive uncertainty delegates partial control of the monetary stance

to the collective beliefs of market participants. Those beliefs may not be anchored on reality. If the MPC will not talk then it will have to act – changing policy to change market prices – or face the consequences for activity and inflation. Concrete progress towards complete forward guidance seems a wiser course of action.

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2 UK sectoral outlook

By Hande Küçük, Cyrille Lenoël and Rory Macqueen[20]

- The Covid-19 pandemic has had an uneven impact on the sectors of the UK economy, resulting in a large fall in output from industries like hospitality and education, while agriculture and utilities seem to have been largely unscathed.
- While the first national lockdown hit the whole economy, subsequent lockdowns affected mainly the private non-traded sector, which remains some 20 per cent below its February 2020 level.
- As the economy re-opens and consumer confidence returns on the back of the successful vaccination programme, we expect a strong recovery in consumption expenditure starting from the second quarter, with positive spillovers to industries like manufacturing, private traded services and construction. The tourism and hospitality sectors may continue to suffer for as long as international travel remains subdued.
- We project that manufacturing output will rise by 3¾ per cent this year and by 4½ per cent next year. However, the private non-traded sector is likely to see its output increase by 9 per cent this year after its pandemic-induced 14¾ per cent fall last year.
- We forecast employment to decline by 190,000 in the private non-traded services sector and by 105,000 in the private traded services sector by the end of the year when the furlough scheme ends. In the longer run, we expect employment patterns to shift from private non-traded services sector to construction and the public sector.

Sectoral trends in output and employment

The Covid-19 shock has had an unequal impact on the sectors of the economy (see Lenoël and Young, 2021). While the initial Covid-19 shock hit the whole UK economy, albeit to different degrees, the latest lockdown period has had more concentrated effects. Output was 13 per cent lower in February 2021 than December 2020 in hospitality, and 14 per cent lower in education, while other sectors which were hit badly during Spring 2020 were barely affected (manufacturing, down 1 per cent) or even grew (construction, up 2 per cent, and health, up 3 per cent).

Whole economy gross value added (GVA) in February remained 7.9 per cent below its February 2020 level. While a few sectors like health, administration, electricity and water supply have recovered to pre-pandemic levels of activity, those directly affected by lockdown restrictions such as hospitality (58 per cent down), other private non-traded services (37 per cent down) and education (23.3 per cent down), were still at distressed levels in the first quarter of 2021 (Table 2.1). Output in sectors not directly impacted by social distancing were also subdued during the winter lockdown as they faced lower demand for their intermediate outputs from more directly impacted sectors. For example, private traded services and manufacturing in February were 8 per cent and 4 per cent below their pre-pandemic levels, respectively.

Improvements in public health prospects, the rapid roll-out of vaccines and the lifting of lockdown restrictions will support consumer confidence and lead to a strong rebound in output from the second quarter onwards.

The National Institute Monthly GDP Tracker (April 2021) forecasts a recovery for hospitality output from around 40 per cent of its pre-Covid level to just under 90 per cent in June. The re-opening of non-essential retail is expected to see activity in the sector return to above its pre-Covid level by May and the education sector is forecast to show quarter-on-quarter growth of 17 per cent after the reopening of schools in March.

However, output in the arts and recreation sector, the last to have restrictions lifted, remains 30 per cent below its pre-pandemic level in June.

Our main-case forecast scenario for the whole economy (Chapter 1) is for GDP to grow by 5.7 per cent in 2021 and 4.5 per cent in 2022, returning to its pre-pandemic peak in the last quarter of 2022. Sectors which saw the

20 We would like to thank Jagjit Chadha, Barry Naisbitt and Garry Young for helpful comments and Patricia Sanchez Juanino for preparing the charts and the database underlying the forecast. The forecast was completed on 26 April 2021, 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 Cyrille Lenoël (c.lenoel@niesr.ac.uk).

largest declines in their activity in 2020 are likely to record higher growth rates in 2021 as a result of pent-up demand and a return towards normality (Table 2.1). Construction, agriculture and utilities, private non-traded services (including retail and hospitality) as well as public services will show a stronger recovery compared to other sectors (or the whole economy) and exceed their pre-pandemic levels of activity by the end of 2022. Recovery in private traded services (including transport and communication) and finance is expected to be weaker.

Table 2.1 summarises our forecast for GVA in nine sectors. The majority will have robust growth both this year and the next and the largest contributor this year will be private non-traded services (see Figure 2.1 for the contributions of each sector to total GVA). The lifting of restrictions is expected to induce a surge in social consumption that will be initially concentrated in private non-traded services like food, accommodation and arts, but which will then have positive spillover effects to other sectors.

Thanks to the furlough scheme, employment did not decline as much as we would have expected in its absence. With nearly five million people on furlough in February companies do not need to hire to respond to the robust recovery in activity, but can just reduce their number of furloughed employees. Figure 2.3 presents employment in a selection of sectors (red line), and employment minus furloughed employees (black line). The larger the area between the black and red lines, the higher the proportion of employees on furlough. One can see that the proportion of furlough was highest in private non-traded services and lowest in finance and insurance.

Until activity returns to pre-pandemic level, we expect employment to decline further as the scheme expires, and the unemployment rate to reach 6½ per cent early next year, though with markedly different patterns across sectors. Figure 2.2 decomposes employment growth into the contribution of each sector. It shows that, perhaps unsurprisingly, we expect the largest share of employment losses in 2021 to be in the private non-traded sector (including hospitality and arts). Next year, all but one sector will still lose jobs, reflecting the lasting effects of the recession and the labour market transitions due to Covid-19. The only exception is construction, where the robust demand will require firms to increase employment starting from next year.

Manufacturing

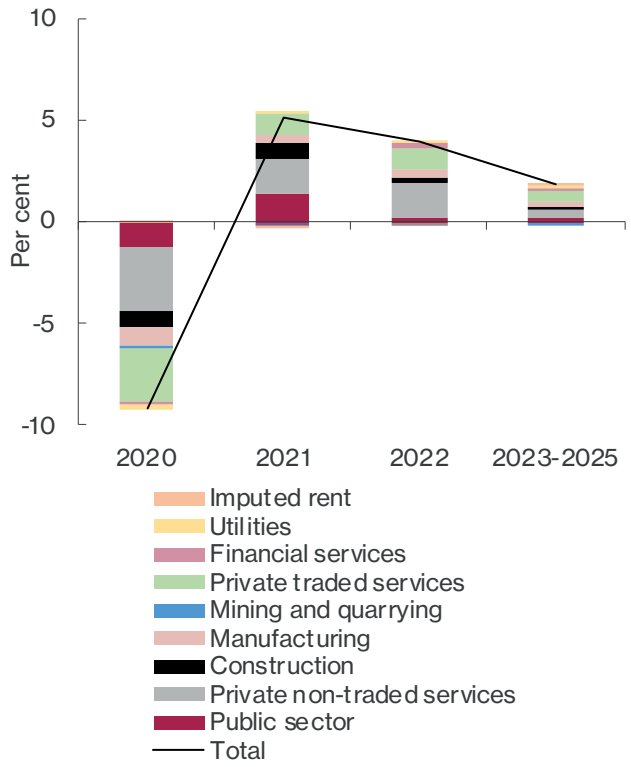
Output in the manufacturing sector declined by 0.5 per cent in the three months to February and our forecast is for it to decline by 0.9 per cent in the first quarter, followed by growth of 4.8 per cent in the second quarter. The prospect for a robust rebound in manufacturing supported by both domestic and international demand is evidenced by the reading of the latest manufacturing

Table 2.1 Sectoral GVA trends

Sector and industry	Weight per 1000	% change Feb-20 to Apr-20	% change Feb-20 to Feb-21	% change 2020	Forecast % change 2021	Forecast % change 2022
Public	**181**	**–23.7**	**–5.9**	**–6.7**	**7.0**	**1.4**
Health	75	–26.0	2.3			
Education	57	–41.3	–23.3			
Administration	49	0.5	1.8			
Private non-traded services	**211**	**–47.3**	**–20.1**	**–14.8**	**9.1**	**8.0**
Wholesale and retail	104	–35.3	–6.7			
Accomodation and food	29	–90.7	–58.0			
Other services	18	–46.4	–36.5			
Imputed rent	**95**	**–2.4**	**–1.5**	**0.5**	**–1.2**	**–0.5**
Construction	**64**	**–43.6**	**–4.3**	**–12.5**	**11.8**	**3.6**
Manufacturing	**101**	**–30.2**	**–4.2**	**–9.9**	**3.8**	**4.6**
Mining and quarrying	**11**	**–8.2**	**–11.2**	**–9.5**	**–2.7**	**–5.2**
Private traded services	**236**	**–22.2**	**–8.0**	**–10.7**	**4.6**	**4.5**
Transport and storage	40	–35.3	–13.2			
Information and communication	66	–11.5	–4.1			
Professional, scientific	77	–17.4	–3.3			
Administration & support	53	–33.8	–16.3			
Financial services	**68**	**–4.7**	**–2.3**	**–3.4**	**–1.7**	**3.2**
Utilities	**33**	**–9.2**	**–0.6**	**–4.4**	**1.9**	**4.0**
Agriculture	6	–14.9	–12.7			
Electricity	14	–8.6	1.8			
Water supply	13	–7.0	2.7			

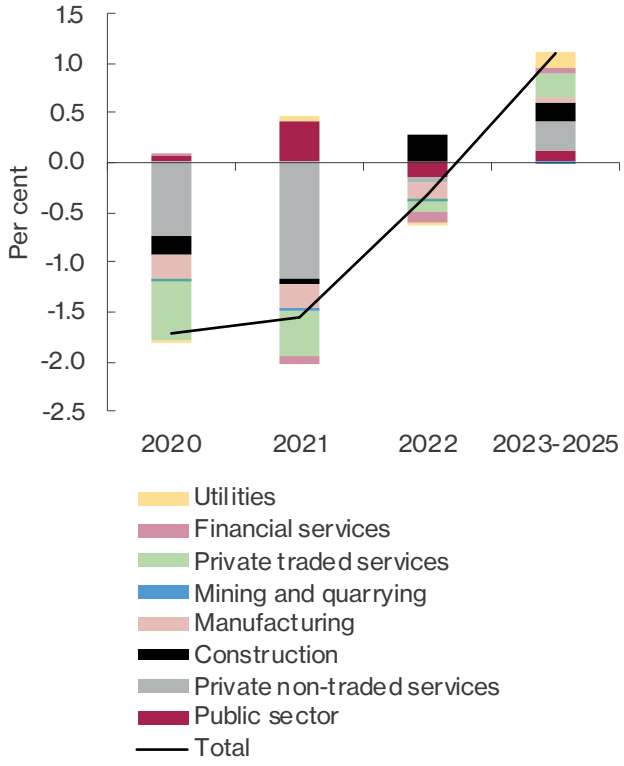
Source: ONS, NIESR calculations.

Figure 2.1 Contribution of GVA growth by sector over the next 5 years



Source: ONS, NIESR forecast.

Figure 2.2 Contribution of employment growth by sector over the next 5 years



Source: ONS, NIESR forecast.

PMI (60.9 in April, a 27-year high) and JPMorgan Global Manufacturing Output (55.8, an eleven-year high). We forecast GVA to increase by 3.8 per cent and 4.6 per cent in 2021 and 2022 respectively.

Employment in manufacturing declined by 3.1 per cent in 2020 and we forecast that most of the jobs lost during the pandemic will not be recovered in the short-term despite a recovery in output. In our main-case scenario, employment in manufacturing declines by 77,000 and 8,000 per cent in 2021 and 2022 respectively.

Construction

The construction sector has recovered more quickly than the economy as a whole but in February output was still 4.2 per cent below the level of February 2020 before the pandemic hit. The construction PMI increased sharply in March to 61.7 from 53.3 in February, suggesting optimism for construction output growth in 2021. The recovery that has so far centred on house building seems to be expanding to commercial work and civil engineering. The government plan for infrastructure projects should provide a temporary boost to the sector.

Output in the construction sector fell by 1.0 per cent in the three months to February. The main contributors to this were reductions in new work in private commercial, private new housing and private industrial construction. We expect output to grow by 0.6 per cent in the first quarter of 2021 and by 2.8 per cent in the second quarter, increasing by 11.7 and 3.6 per cent in 2021 and 2022 respectively.

Employment in construction bottomed out in the third quarter of 2020 and has recovered since then. High frequency indicators suggest that the sector is creating jobs at a fast pace to keep up with the recovery in demand. We forecast employment to increase by 50,000 and 120,000 in 2021 and 2022 respectively.

Finance and insurance

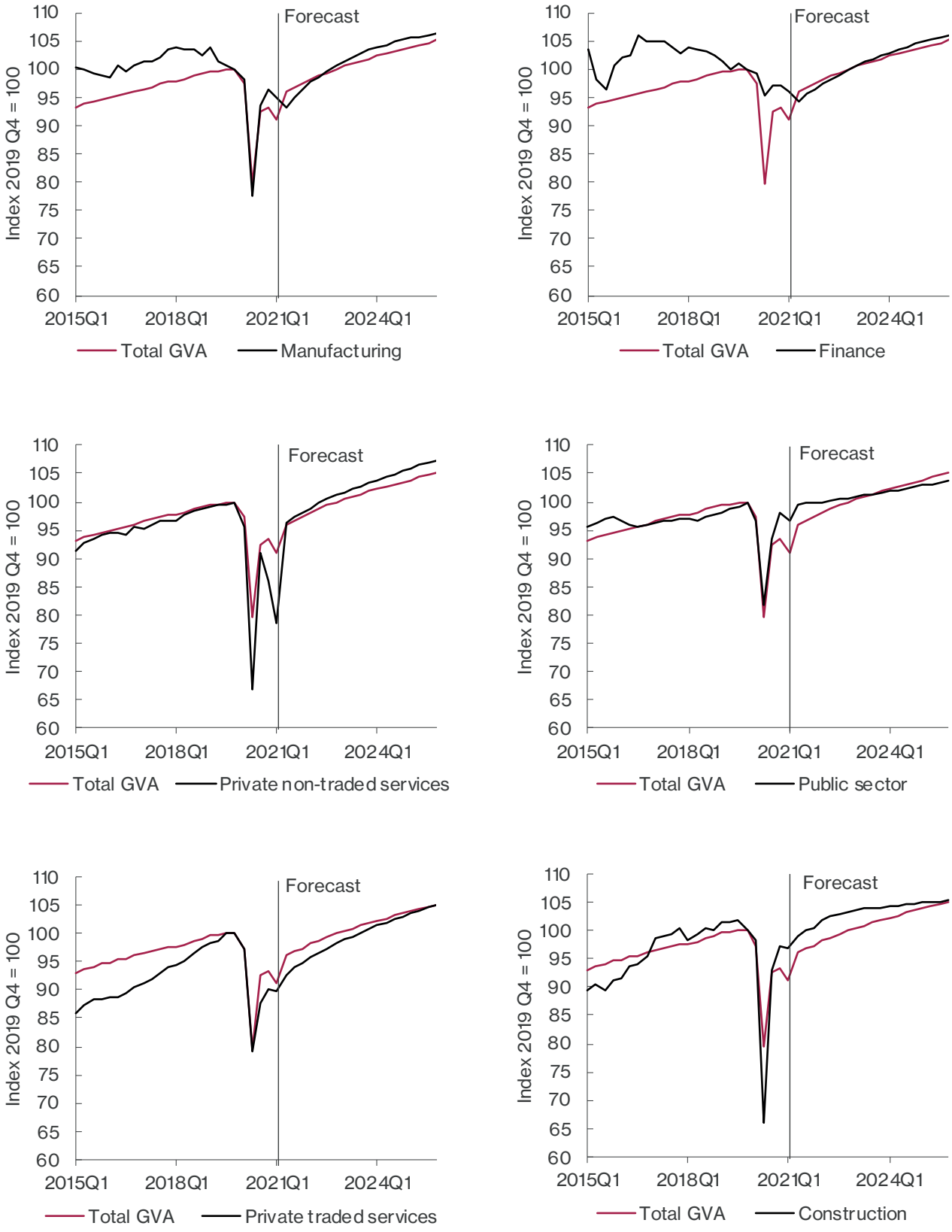
The finance and insurance sector represents about 6 per cent of total output and 3½ per cent of jobs. Output in the sector has been on a declining trend since the Global Financial Crisis and GVA declined by 2½ per cent in 2019. The effect of the shock from the pandemic on the sector was relatively modest because finance and insurance are considered as essential activities and most bank branches were kept open, even during lockdowns. GVA declined by 3.4 per cent in 2020. We forecast that it will fall by a further 3.2 per cent in 2021 and grow by 3.2 per cent in 2022.

One of the risks to the sector is the loss of passporting opportunities with the European Union because of Brexit. While the number of jobs that may be lost by the City of

Figure 2.3 Sectoral employment and furlough forecasts

Note: the red line is employment in the sector. The black line is employment minus the number of people on furlough in the sector.
Source: ONS, HMRC and NIESR forecast.

Figure 2.4 Sectoral GVA and forecasts



Source: ONS and NIESR forecast.

London is limited, they may bring with them significant activity loss. Another risk is the closure of bank branches because of more transactions being done online. We forecast employment in finance and insurance to decline by 50,000 and 10,000 in 2021 and 2022 respectively, after having increased by 5,000 in 2020.

Private traded services

The private traded services sector includes professional, scientific and technical activities, transportation and storage, information and communication, and administrative and support service activities: an increasingly large part of the economy with a share of total jobs that increased from 20 per cent in 1997 to 27 per cent in 2021. We expect the latest lockdown to have temporarily stalled the recovery in the sector in the first quarter of 2021 but for output to increase by 4½ per cent in both 2021 and 2022.

There is significant heterogeneity among the performance of the sub-sectors, with information and communication and professional and scientific sub-sectors recovering the fastest and transport and administration sub-sectors being laggards.

The sector lost 334 thousand jobs in the last quarter of 2020 compared to a year earlier, and 1.1 million if one removes the workers on furlough from the employment series (see employment excluding furloughed workers in Figure 2.3). The recovery in output starting from the second quarter will allow some of the furloughed workers to return to their jobs, but won't be enough to prevent a decline in total employment until the end of the year. Employment is set to decline by 105,000 per cent this year in private traded services, and to increase by 70,000 next year.

Private non-traded services

The private non-traded services (PNTS) sector includes the industries most negatively impacted by the pandemic: accommodation and food, retail and arts and entertainment. GVA in the sector declined in three of the four quarters of 2020 and we forecast another output fall, of 8½ per cent, in the first quarter of 2021 because of the latest national lockdown. But we expect the sector to rebound strongly in the rest of this year as restrictions are progressively lifted: output is forecast to grow in 2021 and 2022 by 9 and 8 per cent respectively, after having declined by nearly 15 per cent in 2020. The sector will be the largest driver of the recovery of the UK economy, accounting for 1.8 percentage points of the growth in total GVA in 2021 (see Figure 2.2).

The sector lost 638 thousand jobs in the last quarter of 2020 compared to a year ago and we expect employment to continue to decrease until the end of the year, shedding a further 190 thousand jobs.

Spillover effects of a social consumption shock

The first national lockdown that started in March 2020 was an unprecedented large shock to the economy because it led to the partial or total shutdown of large parts of the economy. As we have learned more about how to reduce the spread of the virus and to treat people in critical conditions, it became possible to have a more targeted approach at controlling the pandemic. While further lockdowns were still necessary, the next two lockdowns that started in November 2020 and January 2021 led to much smaller reductions in economic activity as activities like production or construction were able to carry on with minimal disruption. Even service sector activities that involve human interactions like property viewings were able to take place either with the use of technology (virtual viewings) or with extra precautions.

Modelling the sectoral spillovers in NiSEM

To analyse how the Covid-19 shock spread through sectors, we present a simulation of a social consumption shock and explain how different it is from a standard consumption shock of the same magnitude. By social consumption, we mean activities related to social life: eating at a restaurant, going to a movie or staying at a hotel. Most of those activities are classified in the private non-traded services sector and we therefore make the simplifying assumption that a social consumption shock is a shock to the demand for private non-traded services. The assumption is supported by the fact that this sector has been the hardest hit sector from the pandemic and the associated lockdowns. It is also the sector that is expected to drive the recovery when the economy reopens. The simulations are done using the National Institute Sectoral Econometric Model (NiSEM).

We run two simulations:

- Simulation 1: Exogenous shock to household consumption, equivalent to 1 per cent of GDP
- Simulation 2: Exogenous shock to final and intermediary demand in the private non-traded services sector equivalent to 1 per cent of GDP

A key relationship in NiSEM is the supply and use table presented in Table 2.2. The table shows how the demand for intermediate and final and goods and services (shown by the rows) flows across different products (shown by the columns). For example, final household consumption is composed of 33 per cent of manufacturing products and 22 per cent of private non-traded services. Each row adds to 100 per cent by construction. We assume that these shares are invariant in time for the purpose of our forecast. A comparison of these shares over time suggests that it is a reasonable simplifying assumption that the shares are

Table 2.2 Domestic final and intermediary demand for products (shares)

			Products								
			A	B	C	F	G	I	K	L	P
Intermediate consumption	Agriculture and utilities	A	50	20	14	2		2	4		8
	Mining and quarrying	B	5	33	33	7		2	11		23
	Manufacturing	C	10	6	64	1		1	5		11
	Construction	F	1	2	28	43	1	3	3		18
	Public	G	5		32	4	16	11	3		30
	Private non-traded services	I	3		29	12	2	13	8		37
	Finance	K	1		5	4	2	9	21		58
	Imputed rent	L	3		1	26		1	63		7
	Private traded services	P	2		22	2	4	6	6		66
Final consumption	Household (and NPISH)		6		33		6	22	6	14	10
	General government		1		2		91	5			2
	Gross Capital formation				27	46	1	4			25

Source: NiSEM Estimated Supply and Use Table.

fixed in normal times. But one of the consequences of the Covid-19 shock is that the shares did change significantly in 2020 as the share of household consumption spent on private non-traded services fell sharply. The sensitivity of the results to a change in the shares will be the subject of future research.

All the shocks are assumed to occur in the first quarter, and then to decay at a rate of 50 per cent every quarter, to model social contact restrictions being imposed suddenly but lifted more gradually during the pandemic.

Simulation results

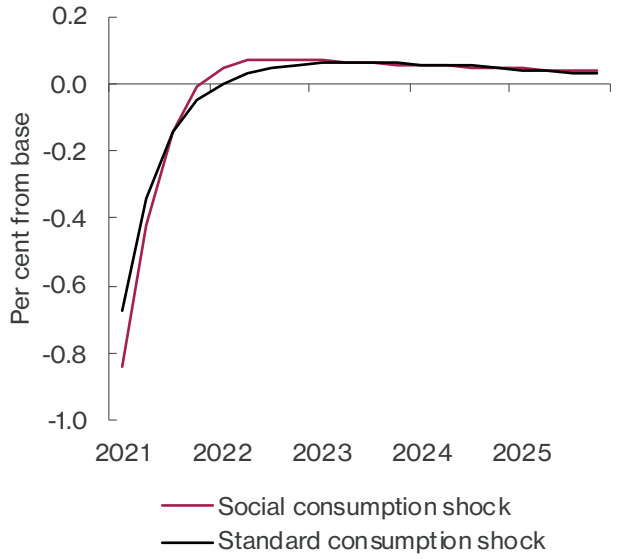
Figure 2.5 presents the results of the simulation on GDP. Because of the spillovers between PTNS and non-PNTS sectors, GDP declines initially more in the social consumption case than in the aggregate consumption case: -0.85 per cent versus -0.7 per cent. Spillover effects happen immediately because the relationship between inputs and outputs across sectors is instantaneous: a decline in output in sector A directly translates into a reduction in inputs for sector B which uses A as an input and therefore the output of B is also instantaneously reduced.

According to the shares in Table 2.2, the direct spillover effects from a reduction in PNTS products were expected to be most acute in private traded services (share of 37 per cent), manufacturing (share of 29 per cent) and construction (share of 12 per cent). But our second simulation suggests that when the indirect effects of all sectors feeding into each other are included, the sectors most affected by a 1 per cent of GDP social consumption shock were imputed rent (decline in GVA of 0.4 percent), manufacturing (-0.36 percent), private traded sector (-0.25 percent), construction (-0.25 percent) and agriculture and utilities (-0.25 percent) – see figure 2.6.

After a few quarters, the negative demand shock leads to a reduction in wages and unit total costs because of the opening of an output gap compared to the baseline. Inflation is reduced and supportive monetary policy leads to a reduction in real interest rates that supports investment in all sectors except in PNTS. Construction is particularly sensitive to the reduction in the user cost of capital, and this explains why the construction sector then benefits from an increase in GVA of about 0.5 per cent compared to baseline after a year. GVA in sectors other than PNTS and construction is at or close to the baseline as soon as the 4th quarter.

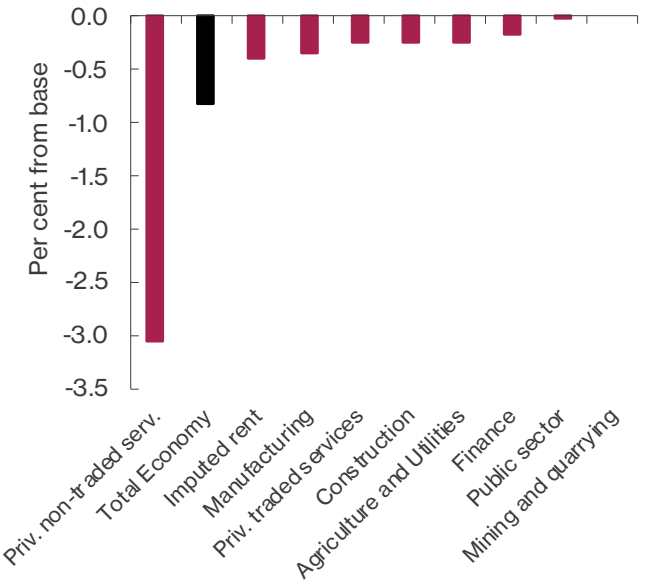
Private non-traded services is one the biggest UK sectors by employment, accounting for 28 per cent of jobs. The negative shock to this sector in the social consumption shock scenario reduces employment by up to a third of a percent in that sector (see Figure 2.7), around 31,000 jobs. After initially declining, employment increases in the other sectors that benefit from a reallocation of labour, leaving total employment unchanged after 3 years. The only exception is mining and quarrying where both employment and output are unaffected by the social consumption shock. The aggregate consumption shock also leads to a reallocation of labour away from PNTS, but of a smaller magnitude: employment is lower by 14,000

Figure 2.5 GDP response to social consumption shock and a standard consumption shock



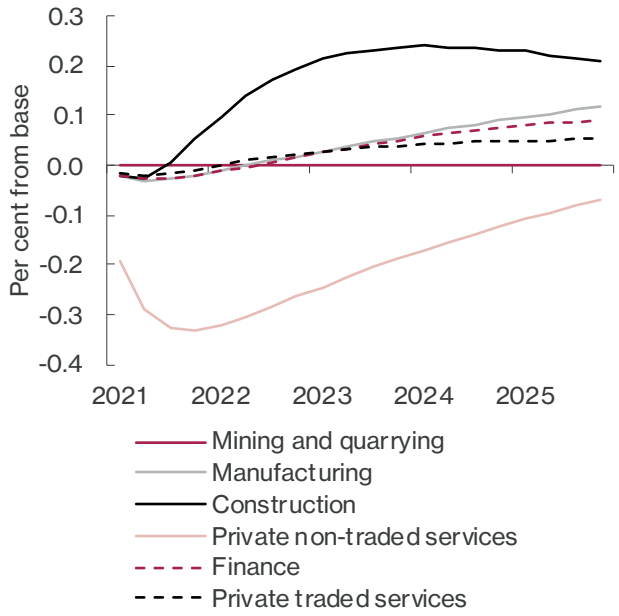
Source: NiGEM and NiSEM simulation.

Figure 2.6 Spillover to other sectors from a social consumption shock (GVA in first quarter)



Source: NiSEM simulation.

Figure 2.7 Employment spillovers from a social consumption shock



Source: NiSEM simulation.

in PNTS in the social consumption shock, compared to 5,000 in the aggregate consumption shock.

These simulations show how a social consumption shock induced by lockdown restrictions can spillover to the rest of the economy. As the economy opens up and consumer confidence returns on the back of improving health prospects and a successful vaccination programme, pent-up demand will imply a positive shock to social consumption output from the second quarter, with significant positive spillovers to manufacturing, private traded services, construction and agriculture and utilities. But the spillovers in terms of employment are likely to be more muted, which supports our view of a rise in unemployment.

Annex: Model and forecast assumptions

Our sectoral forecast is based on a new model developed at NIESR called the National Institute Sectoral Econometric Model. This disaggregates the UK NiGEM forecast into nine industrial sectors (as listed in Table 2.1) linked via input-output and output-expenditure relationships. Gross output in each sector is equal to domestic final and intermediate demand plus exports net of imports less a residual term that in aggregate is equal to taxes less subsidies on products. Value added output in each sector is assumed to be given by a Cobb-Douglas production function, which is then used to compute the implied level of employment in the sector given production, capital and productivity assumptions. The choice of the sectors is particularly appropriate to study the impact of shocks like Brexit or Covid. This model has been used to show spillovers from sectors during a lockdown (see Lenoël and Young, 2021).

Our main forecast assumption is the lifting of remaining restrictions in line with the government's proposed timetable (see Table 2.3), with a rapid recovery in the second quarter likely in the sectors most affected by them:

Table 2.3 Roadmap for lifiting of restrictions

Step 1 : 08 March
Schools and colleges open
Care home residents allowed one regular visitor
Two people allowed to leave home for recreation and exercise outdoors
Step 1 : 29 March
Outdoor gatherings of six people are allowed
Outdoor sports facilities open and organised outdoor sports allowed
The 'stay at home' rule end but many restrictions remain in place
Step 2: 12 April
Opening of non-essential retail and personal care business.
Hospitality outdors open
Indoor leisure facilities open
Step 3: not before 17 May
Most legal restrictions on meeting others outdoors will be lifted
Other indoor locations to open, eg cinemas
Indoor hospitality will reopen
Step 4: not before 21 June
All legal limits on social contact removed
Reopen remaining premises

Source: COVID-19 Response - Spring 2021 (Summary) - GOV.UK (www.gov.uk).

hospitality, retail, arts and recreation, followed by slower but still historically strong growth in the third and fourth quarters.

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3 UK regional outlook

Arnab Bhattacharjee, Elena Lisauskaite and Adrian Pabst[21]

Headlines

- The effects of Covid-19, together with Brexit, continue to exacerbate socio-economic disparities across the UK's nations and regions, including severe effects on the most vulnerable in society – especially in the devolved nations and the North of England.

- The third lockdown resulted in a fall of economic output as measured by Gross Value Added (GVA) in all parts of the UK. The total drop was 2.4 percent in 2021Q1 compared with 2020Q4, but GVA is still projected to remain 9 percent below the pre-Covid-19 level. The economy is estimated to recover by 2023Q2 with the North, Wales and Northern Ireland still 2 percent below their 2019Q4 level.

- As Covid-19 hit the economy, all nations and regions suffered a sharp decline in GVA by 2020Q2. London and Northern Ireland suffered a particularly high fall, reaching up to 25 percent in comparison to the levels of 2019Q4. After a short-term recovery over the second half of 2020, GVA in these regions plummeted by 10 percent compared with the last quarter of 2019 as Brexit hit in 2021Q1.

- Following the Covid-19 lockdowns, overall employment levels continue to fall and are projected to reach a pandemic low in 2021Q4 of 2.5 percent below 2019Q4 levels. Positive growth is expected to resume in all regions in 2022Q2. The employment level in the aggregate economy is expected to recover by the end of 2023.

- London is projected to do much better than the rest of the UK in terms of its employment levels. Northern Ireland, however, is behind the rest of the nations and regions not only by its output but also by the sharp short-term decrease in employment, expected to reach almost 5 percent below 2019Q4 by 2021Q4. These regional patterns and trends are also reflected in our sectoral projections and outlook on firm creation (Duncan et al., 2021; Küçük et al., 2021).

- Although employment in the economy as a whole is expected to reach pre-pandemic levels by 2023Q4, the North West, the East Midlands and the South West are projected to remain below the 2019Q4 level of employment by the end of 2025. This is levelled out by a strong recovery of the North East, Yorkshire and the Humber, as well as London. By 2025Q4, employment in London is projected to be 7 percent above its 2019Q4 level.

- Hourly labour productivity fell by nearly 20 percent in the UK in 2020Q4 relative to 2019Q4. The biggest decrease, about 25 percent, is observed in London. Pre-pandemic levels are expected to be reached by 2022Q1. However, regional variation is still high, with the North East, Yorkshire and the Humber, London, Wales and Northern Ireland remaining below 2019Q4 levels by the end of 2025.

- As the higher and rising participation rate is not matched by job creation and vacancy fillings, the unemployment rate in London is projected to be the highest in the UK and to decrease slowly. Elsewhere, there is a lower rise in unemployment, but the pace of the recovery is almost equally slow.

- The rise in youth unemployment (18-24 year-olds) is particularly alarming, while the number of unemployed persons in the 25-49 year age groups were relatively moderate but increasing.

- The rise in destitution is projected to be particularly acute in Scotland, the North West, Yorkshire and Humberside and the South East.[22] Equally alarming is the projected incidence of food poverty among children.

21 We are grateful for comments and input from Jagjit S. Chadha, Hande Küçük, Cyrille Lenoël, Rory Macqueen and Tibor Szendrei.

22 Destitution is defined as extreme poverty, that is, income so low that a household is likely to lack the provision of essentials such as shelter, food, heating, lighting, clothing/footwear and basic toiletries in the immediate future. Here we model destitution using both the income and wealth components of the Joseph Rowntree Foundation's definition.

Over a year into the Covid-19 pandemic, and more than a quarter since post-transition Brexit, the UK continues to experience economic and social scarring, with unequal effects across the devolved nations and regions and especially difficult conditions for the poorest in society. Both Covid-19 and Brexit have brought about distortions to many businesses and disrupted the lives of employees and households. Since the publication of the previous Outlook in February 2021 and following the March Budget, the plans and processes of the government regarding regional levelling-up and infrastructure development are becoming somewhat clearer. Government support programmes have mitigated partly against the adverse impacts of the shocks. However, the end of the Coronavirus Job Retention Scheme (CJRS), or furlough scheme, and the phasing out of higher Universal Credit allocations, are a reality now.[23]

On current trends, existing inequalities within and between nations and regions will increase. Northern Ireland has continued on an uneven path after Brexit, as highlighted by social unrest and political instability. Parliamentary elections in Scotland and Wales, and council and mayoral elections in many parts of England, including London, raise issues of deep national and regional disparities of wealth and power, which played into political polarisation. The application and efficiency of the use of devolved fiscal powers in the nations of the UK and allocation of levelling-up funds have come under greater public scrutiny. These have important ramifications for the trajectory of regional economies and will no doubt be affected by the outcomes of these elections.

Against this backdrop, we provide a snapshot of socio-economic profiles of the short to medium-run future projections, both for regions of the UK and categories by household demographics. This is based on an ambitious new regional model, NiReMS (National Institute Regional Modelling System), launched in February 2021 (see also Box E and NIESR, 2021). It draws upon the NIESR's global macroeconomic model NiGEM (National Institute Global Econometric Model) (NIESR, 2018), dynamic microsimulation model LINDA (Lifetime Income Distributional Analysis) (NIESR, 2016) and NiSEM (National Institute Sectoral Economic Model) (Lenoël and Young, 2020, 2021; Küçük et al., 2021). NiREMS is a unique regional model for the UK in that it is structural and enables modelling spatial spillovers of global and local shocks (for further details, see Box E). Based on this model, we provide in this chapter forward-looking economic outlooks by broad regions of England and the nations of the UK.

Regional Gross Value Added (GVA)

Since the beginning of the Covid-19 pandemic, the entire economy of the UK saw a substantial decrease in its output as measured by GVA. Some regions, such as Northern Ireland and London, experienced a 25% lower GVA than in the last quarter of 2019 (see Figure 3.1). The first lockdown resulted in GVA falling by around 18% between 2020Q1 and 2020Q2, whereas the final lockdown was much more forgiving, reducing GVA by 2.4% in 2021Q1 compared with 2019Q1. That said, the aggregate GVA is predicted to return to 2019Q4 levels only in 2023Q2.

Output in all nations and regions of the UK in 2021Q1 was still below the levels of 2019Q4. Looking at the third, and, so far, final national lockdown (5 January to 12 April with a phasing out until 21 June), the economic downturn was around 8 percent. London and Northern Ireland were still further behind with GVA 10% lower than in 2019Q4. Regional variation in our model NiREMS arises from a combination of varying responses to aggregate economic trends (global shocks) as well as direct and indirect effects of spillovers from these regional variations (local shocks).

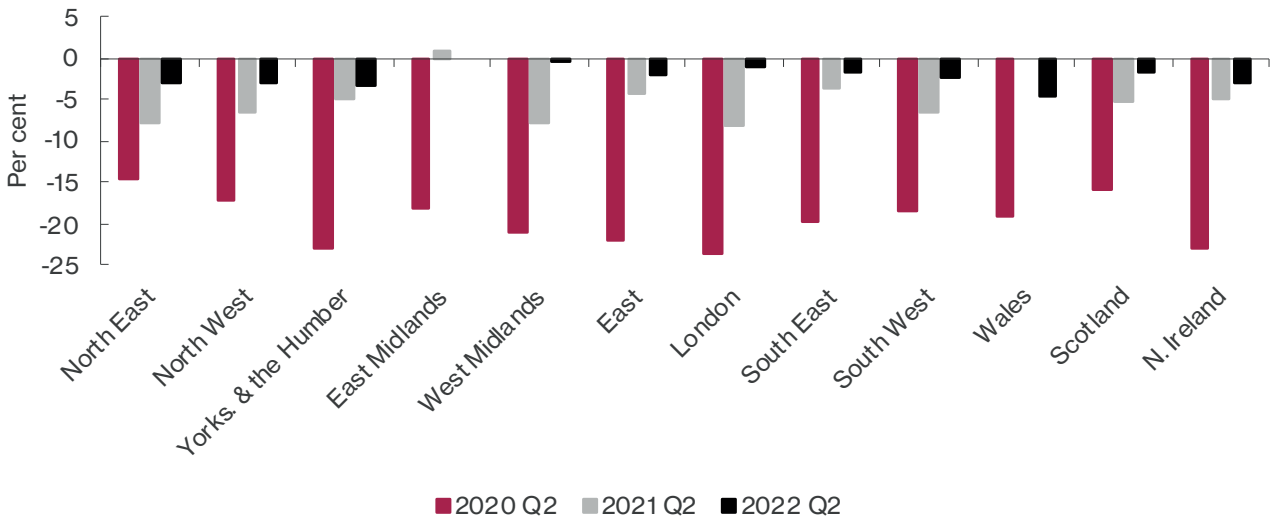
Table 3.1 Regional GVA (percent growth relative to 2019Q4)

	North East	North West	Yorkshire and the Humber	East Midlands	West Midlands	East	London	South East	South West	Wales	Scotland	N Ireland	UK
2020q4	–5.4%	–5.3%	–8.0%	–4.5%	–6.5%	–7.5%	–8.3%	–6.5%	–5.6%	–6.4%	–5.2%	–8.0%	–6.6%
2021q4	–3.5%	–2.3%	–4.7%	0.8%	–2.2%	–3.6%	–3.3%	–3.3%	–2.1%	–4.2%	–2.8%	–4.5%	–2.7%
2022q4	–3.3%	–0.6%	–2.5%	0.7%	0.3%	–0.8%	–0.4%	–0.8%	0.1%	–2.6%	–1.5%	–2.0%	–0.2%
2023q4	–3.6%	2.0%	–2.0%	1.9%	2.3%	0.4%	1.5%	0.0%	3.0%	–1.2%	–0.9%	–1.3%	1.5%
2024q4	–3.1%	1.9%	–1.2%	2.0%	4.9%	2.0%	3.7%	1.2%	3.5%	–1.0%	0.3%	–0.3%	3.0%

Source: ONS and NiReMS.

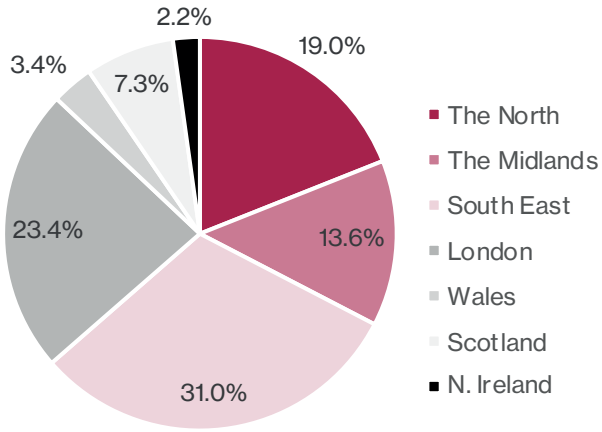
23 The end of CJRS is announced to take effect from 30 September 2021. At the same time, the Covid-19 relief of enhanced Universal Credit allowance will also be stopped. The standard Minimum Income Floor will be reintroduced in July 2021. We have explicitly modelled the substantial impacts of these measures upon very poor households.

Figure 3.1 Regional GVA (relative to 2019Q4)



Source: ONS and NiReMS

Figure 3.2 Projected regional share of GVA in 2021Q4



Source: ONS and NiReMS.

Table 3.1 suggests that by the end of 2024, all regions are expected to have recovered to 2019Q4 levels, except the North East, Yorkshire and the Humber, Wales, and Northern Ireland.

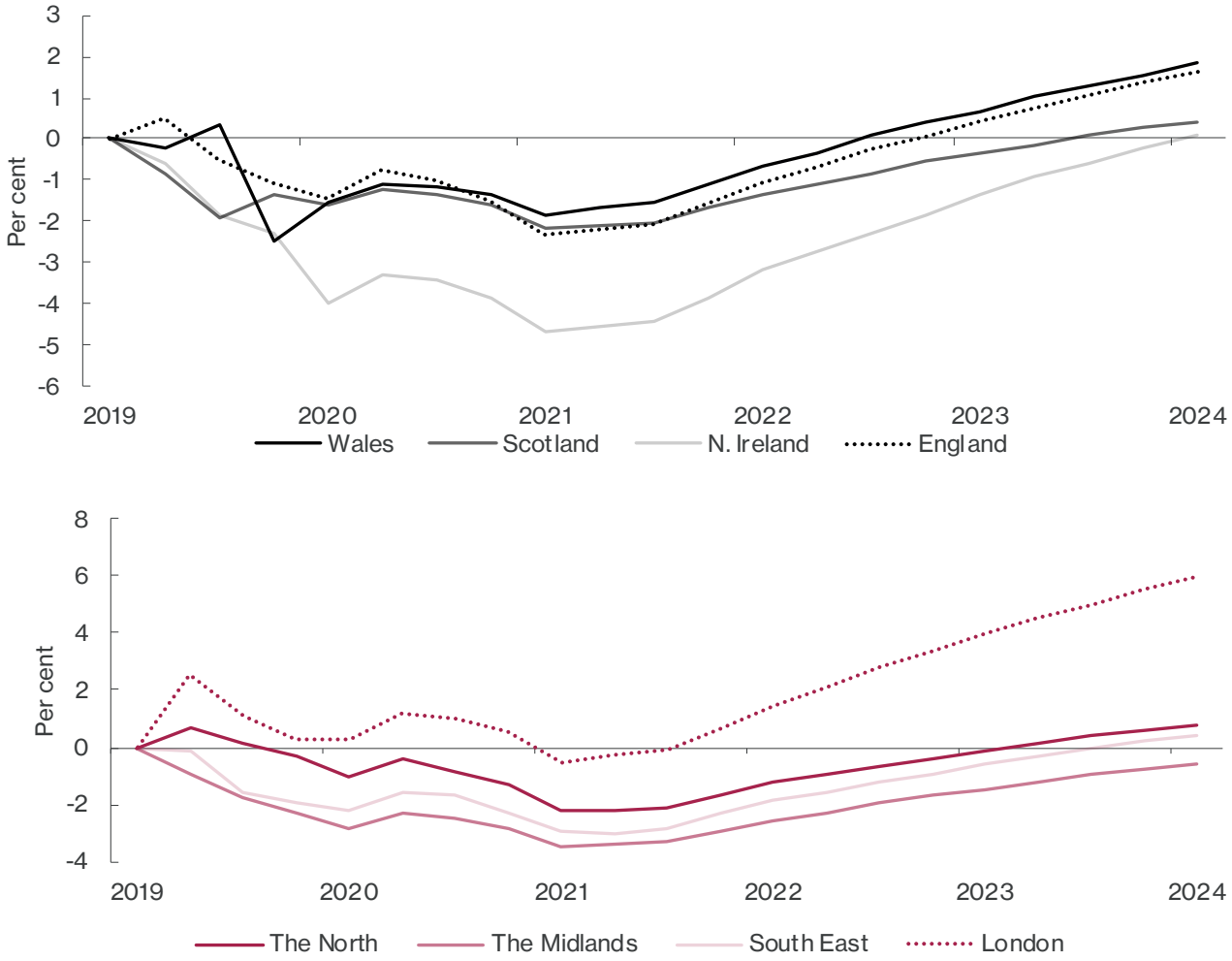
Figure 3.2 shows pre-Covid-19 and projected shares of regional GVA in the medium-run, 2024Q4. The North is estimated to contract from 19.3% of total UK GVA to 19.0% as a result of the pandemic, Scotland from 7.5% to 7.3%. However, London and the Midlands are projected to expand their share in total UK GVA, from 23.0% to 23.4% and from 13.4% to 13.6%, respectively.

Regional employment

In this section, we provide an overview of the current employment situation in the UK including the new short- to medium-run projections. The overall employment levels continue to fall and are expected to reach a pandemic low in 2021Q4, which is 2.5% below 2019Q4 levels. Positive growth is expected to resume in all regions in 2022Q2. The aggregate economy is expected to recover to pre-pandemic levels by the end of 2023.

Looking at the significant variation across regions, London is projected to do much better than the rest of the UK in terms of its employment levels. This reflects higher resilience (Sensier and Devine, 2020), which is captured in NiREMS by stronger responses to the aggregate recovery trends as estimated by NiGEM (NIESR, 2018). Northern Ireland, however, is behind the rest of the regions not only by its output, but also by the sharp short-term decrease in employment, which is expected to reach almost 5 percent below 2019Q4 by 2021Q4. Although the economy as a whole is expected to reach pre-pandemic levels by 2023Q4, the North West, the East Midlands and the South West are projected to remain below the 2019Q4 level of employment by the end of 2025. This is levelled out by a high recovery in the North East, Yorkshire and the Humber and London. By 2025Q4, the latter is projected to be 7.5% above its 2019Q4 level of employment.

Figure 3.3 Regional GVA (relative to 2019Q4)



Source: ONS and NiReMS

Labour productivity

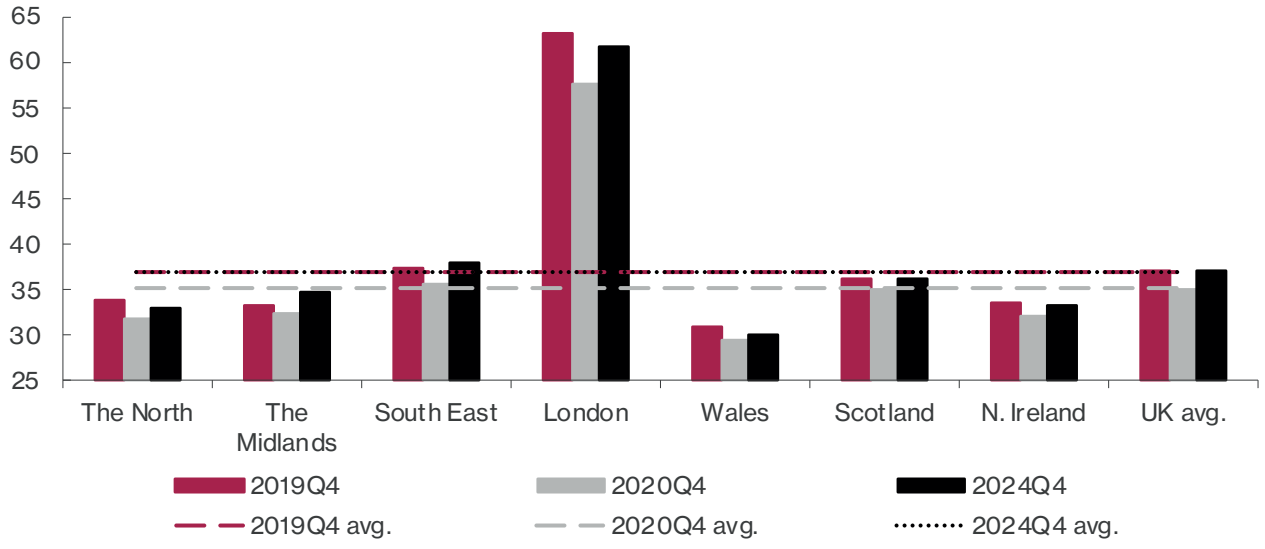
Trends in productivity in the UK and its nations and regions, together with the impact of Covid-19 and Brexit, are issues of great importance for growth, prosperity and ultimately wellbeing. NIESR has, through its research and commentaries focussed great attention to this topic; see, for example, Ali-Yrkkö and Kuusi (2020), Crafts and Mills (2020) and van Ark and Venables (2020). Here, we measure labour productivity per hour as the ratio of regional GVA to regional employment, adjusting suitably for units. It is important to identify the consequences that Covid-19 and Brexit have had for productivity levels as GVA and employment were affected differently in different parts of the UK.

Figure 3.4 shows hourly productivity levels in the UK's nations and regions in three periods: pre-pandemic (2019Q4), during the pandemic (2020Q4) and in the medium run (2024Q4). The aggregate levels are projected to return to pre-pandemic levels by 2024Q4, but it is apparent that this is not because all of the regions bounce back equally. Some, such as the Midlands and the South and East, are expected to have higher productivity in 2024Q4 than they had in 2019Q4. Others, however, will not recover until later. These regions include the North, London, Wales and Northern Ireland.

Figure 3.5 presents hourly labour productivity relative to 2019Q4. The Midlands are expected to reach pre-Covid-19 productivity in 2021Q2 and rise to almost 5% above the 2019Q4 levels by 2024Q4. London, on the other hand, is seen to have the highest downturn and seems to struggle even at the end of our analysed period. It is estimated that hourly productivity in London will be around 10% below 2019Q4 levels until 2021Q2 but will not fully recover and stays around 2% below 2019Q4 levels. This is also true for the North, Wales and Northers Ireland. This is a consequence of higher expected employment levels and a very slow growth of GVA.

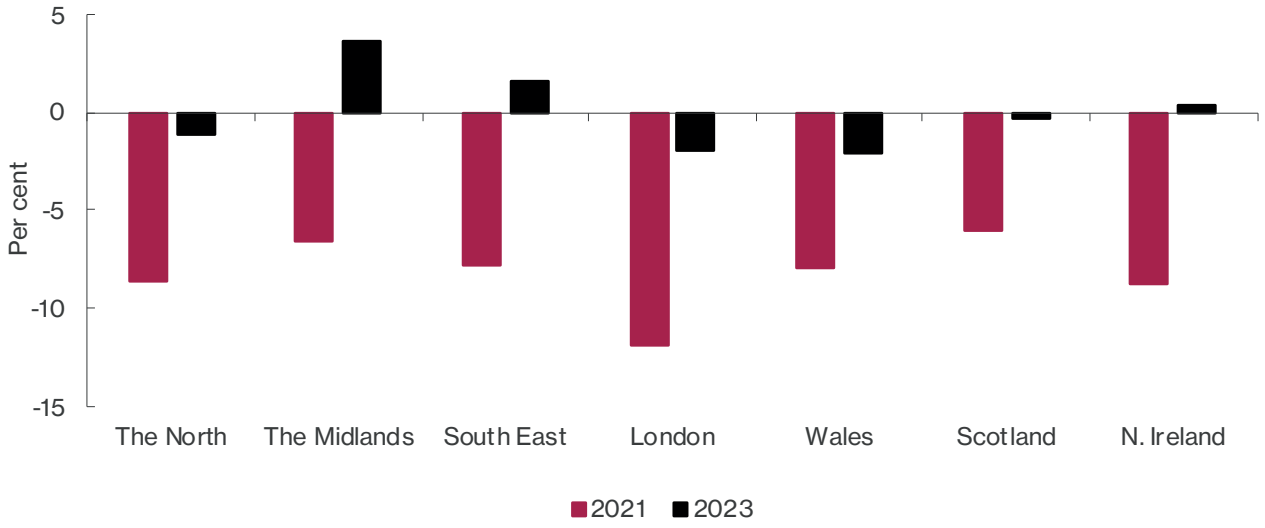
In the main, low productivity and high employment conforms to recent aggregate UK experience (Haldane, 2018; Crafts and Mills, 2020; van Ark and Venables,

Figure 3.4 Labour productivity in the short and medium run (real GVA per hour worked, 2018 prices)



Source: ONS and NiReMS

Figure 3.5 Labour Productivity relative to 2019Q4 (real GVA per hour worked, 2018 prices)



Source: ONS and NiReMS

2020). Regional policy focusing on better evidence-based alignment of jobs to skills and levelling-up of transport connectivity and infrastructure can be potent policy tools (Pabst, 2021; Chadha et al., 2021). In this context, the recent launch of the Productivity Institute's 8 Regional Productivity Fora is particularly promising, as is the creation of a Productivity Commission that will join up UK-wide policy ideas with the specific needs of the UK's nations and regions.

Labour force decomposition

Aggregate regional distributions and trends in output, employment and productivity do not necessarily reveal the implications of such large shocks upon the most vulnerable parts of the population. NIESR has consistently highlighted the adverse consequences of the Covid-19 and Brexit shocks for the poorest in society (Bhattacharjee and Lisauskaite, 2020a,b, 2021; Chadha, 2020; NIESR, 2020a). Severe adverse effects have been projected for sections of society and the economy where multiple impacts are coincident, such as poorer regions and sectors

that are lower paid or heavily affected by lockdowns and trade disruptions.

We explore distributional impacts in two ways. First, we develop projections of the inactivity rate (economically inactive as a percentage of population of 16 years and over) and the unemployment rate (unemployed as a percentage of the economically active) by regions. Together we use dynamic microsimulation to study the distribution of the unemployed by age-groups. Second, we use dynamic microsimulation to project the impact of Covid-19 and Brexit shocks upon the distribution of income, particularly upon the incidence of destitution. The latest rounds of the UK Wealth and Assets Survey data (WAS6) are on a financial year basis (rather than a calendar year basis) and our microsimulation exercise using LINDA is therefore conducted by financial years.

Before we turn our analysis to the poorest in the society and the evolution of destitution across the country, it is important to look at the distribution of the unemployed and inactive in the UK since destitution is closely correlated to those unemployed and out of the labour force. Table 3.2 presents regional unemployment relative to 2019Q4 levels. Overall, the unemployment rate is predicted to increase from 4.7 percent in 2020-21 to 6 percent in 2021-22 and increase even further to 6.1 percent in 2022-23. Relative to 2019Q4, aggregate levels are expected to rise by 53.8

Table 3.2 Unemployed persons by region, relative to 2019-20 financial year

	2019-20 levels	2020-21	2021-22	2022-23
The North	**313,500**	**5.8%**	**43.8%**	**49.3%**
North East	54,730	8.4%	32.2%	38.9%
North West	146,176	4.5%	45.6%	51.9%
Yorkshire & Humber	112,594	5.8%	48.6%	52.4%
The Midlands	**215,093**	**20.6%**	**50.8%**	**47.2%**
East Midlands	102,339	24.6%	44.1%	41.0%
West Midlands	112,754	17.6%	55.8%	51.8%
South and East	**415,998**	**26.3%**	**51.2%**	**52.6%**
East	129,651	26.1%	49.6%	50.9%
South East	173,594	19.1%	45.2%	49.1%
South West	112,754	39.5%	64.0%	61.2%
London	**175,082**	**37.0%**	**74.5%**	**75.8%**
Devolved nations				
Wales	63,656	14.8%	72.0%	79.8%
Scotland	113,710	16.0%	45.2%	63.4%
Northern Ireland	37,620	20.9%	68.2%	86.7%
UK aggregate	**1,334,658**	**20.3%**	**53.8%**	**57.3%**
Unemp. rate	3.9%	4.7%	6.0%	6.1%

Source: ONS and NiReMS.

Table 3.3 Unemployed persons by age-group, relative to 2019-20 financial year

	2019-20 levels	2020-21	2021-22	2022-23
18-24 years	442,350	13.6%	73.2%	54.8%
25-49 years	582,554	25.5%	37.6%	55.0%
50+ years	309,754	20.2%	56.6%	65.2%
UK aggregate	1,334,658	20.3%	53.8%	57.3%
Unemp. rate	3.90%	4.70%	6.00%	6.10%

Source: ONS, WAS6, NiReMS, LINDA..

Table 3.4 Inactivity rates in the UK

	2019-20	2020-21	2021-22	2022-23
		Inactivity rate		
The North	**38.1%**	**38.3%**	**38.4%**	**38.6%**
North East	40.3%	40.0%	40.6%	40.7%
North West	37.0%	37.7%	38.1%	38.3%
Yorkshire & Humber	38.4%	38.2%	37.8%	37.9%
The Midlands	**36.5%**	**37.2%**	**37.1%**	**37.2%**
East Midlands	35.8%	36.9%	36.8%	36.6%
West Midlands	37.0%	37.4%	37.4%	37.6%
South and East	**35.0%**	**36.0%**	**35.8%**	**35.4%**
East	35.2%	36.0%	35.7%	35.2%
South East	34.2%	35.0%	34.9%	34.5%
South West	36.2%	37.7%	37.3%	36.9%
London	**30.4%**	**29.2%**	**29.2%**	**29.1%**
Devolved nations				
Wales	39.8%	40.4%	40.4%	40.8%
Scotland	38.0%	38.4%	38.3%	37.9%
Northern Ireland	38.9%	40.4%	40.6%	40.0%
UK average	**35.9%**	**36.3%**	**36.7%**	**36.7%**

Source: ONS and NiReMS.

Table 3.5 Unemployment rates in the UK

	2019-20	2020-21	2021-22	2022-23
		Unemployment rate		
The North	**4.5%**	**4.9%**	**6.5%**	**7.0%**
North East	5.7%	6.2%	7.5%	8.1%
North West	4.2%	4.5%	6.2%	6.7%
Yorkshire & Humber	4.4%	4.7%	6.5%	6.8%
The Midlands	**4.3%**	**5.3%**	**6.5%**	**6.5%**
East Midlands	4.0%	5.2%	5.9%	5.9%
West Midlands	4.5%	5.4%	7.1%	7.1%
South and East	**3.1%**	**4.0%**	**4.6%**	**4.8%**
East	3.3%	4.3%	4.9%	5.1%
South East	3.0%	3.7%	4.4%	4.6%
South West	2.8%	4.1%	4.7%	4.7%
London	**4.5%**	**6.2%**	**7.7%**	**7.9%**
Devolved nations				
Wales	3.5%	4.1%	6.0%	6.5%
Scotland	3.8%	4.5%	5.5%	6.3%
Northern Ireland	2.6%	3.3%	4.5%	5.0%
UK average	**3.9%**	**4.7%**	**6.0%**	**6.1%**

Source: ONS and NiReMS.

percent in 2021-22, with even more devastating increases in London (74.5 percent), Wales (72 percent) and Northern Ireland (68.2 percent). The levels are expected to increase even further in all regions in 2022-23, except the Midlands and the South West.

Table 3.3 presents the unemployment relative to 2019Q4 by major age groups, revealing that in 2021-22, the young (18-24 year-olds) are to suffer from 73.2 percent higher unemployment level than it was in 2019-20. In 2022-23, it is expected to be particularly hard on older unemployed workers (50+), with unemployment levels projected to be 65.2 percent above 2019-20 levels.

Tables 3.4 and 3.5 shows the unemployment and inactivity rates in all NUTS1 regions. Unemployment in 2022-23 is projected to soar and reach 8.1 percent in the North East and 7.9 percent in London. Other regions experiencing unemployment between 6.5 percent and 7.1 percent are the rest of the North, the West Midlands and Wales, with the South and the East doing much better, with the average unemployment rate of 4.8 percent.

Inactivity rates are projected to increase from 35.9 percent in 2019-20 to 36.7 percent in 2021-22 and are expected to remain unchanged at least until 2023. The North, Wales and Northern Ireland are estimated to have even higher inactivity rates, between 38.3 percent and 40.8 percent in 2022-23. London, on the other hand, shows smaller inactivity rates for all observed periods, reaching 29.1 percent in 2022-23.

Extreme poverty and destitution

We employ dynamic microsimulation modelling, using the LINDA model (NIESR, 2016), based on a representative population from the 6th Round of the UK Wealth and Assets survey in order to explore impacts on destitution. Destitution is a measure of extreme poverty, that is, income so low that a household is likely to lack the provision of essentials such as shelter, food, heating, lighting, clothing/footwear and basic toiletries in the immediate future.[24] The Joseph Rowntree Foundation estimates that 0.7% of households were destitute in 2019 (Bramley et al., 2020; Fitzpatrick et al, 2020). In addition to a destitution definition based purely on household income as in Bhattacharjee and Lisauskaite (2020a,b, 2021), we now also take account of wealth profiles. This is modelled by allowing households to liquidate a small proportion of

Table 3.6 Population (18+) in destitution

	Persons in destitution, Adults (18+)				Growth over pre-Covid (2019-20)		
	2019-20	2020-21	2021-22	2022-23	2020-21	2021-22	2022-23
The North					**106%**	**157%**	**271%**
North East	18,200	21,400	24,000	35,300	18%	32%	94%
North West	26,800	56,200	79,200	119,200	110%	195%	344%
Yorkshire & Humber	18,200	52,700	59,300	80,300	189%	225%	340.9%
The Midlands					**31%**	**82%**	**202%**
East Midlands	19,700	28,600	42,400	73,100	45%	115%	271%
West Midlands	43,000	53,700	71,600	116,700	25%	66%	171%
South and East					**98%**	**184%**	**288%**
East	25,800	47,500	66,500	91,600	84%	157%	255%
South East	27,300	55,800	97,600	129,000	104%	257%	372%
South West	23,800	49,000	54,200	77,800	106%	128%	227%
London	**56,200**	**89,000**	**123,200**	**169,700**	**59%**	**119%**	**202%**
Devolved nations							
Wales	9,600	16,900	26,600	45,500	75%	177%	374%
Scotland	11,600	51,100	55,200	95,200	339%	374%	718%
Northern Ireland	4,000	11,200	9,700	20,500	178%	140%	405%
UK average (% of adult pop.)	284,400 (0.53%)	533,200 (0.99%)	709,600 (1.31%)	1,054,000 (1.94%)	**88%**	**149%**	**271%**

Source: ONS, WAS6, NiReMS, LINDA.

24 The income component of Joseph Rowntree Foundation's definition considers a single person household as being destitute when their income falls below £70 per week, with any additional adult requiring another £30 per week and an additional child needing £20 per week. To this, we also add a wealth component by allowing households facing severe income shocks to liquidate up to 0.3% of their assets.

their assets, particularly liquid assets, when they are hit by excess income shocks. Together we continue to model benefit systems, including the enhanced contributions through Universal Credit.

The above approach follows from the previous analysis, taking the regional and distributional impacts forward into wages and unemployment, using a methodology similar to that of the ONS (2020). Some key and somewhat surprising findings emerge. In addition to distribution of the destitute by regions, we also explore impacts by age-groups and by different household composition (see also Bhattacharjee and Lisauskaite, 2020a).

Our projections indicate continuously rising destitution at least till 2022-23 across all regions and nations of the UK, as the combined effects of Covid-19 and Brexit ravage the poor segments of society (Table 3.6). The extreme poor in the devolved nations are affected most acutely, as well as the North (North West and Yorkshire & the Humber) and the South East. These patterns are associated with continued high unemployment projected for the UK, and nations and regions thereof. This is partly due to permanent loss of low-wage jobs. We assume that the announcement of terminating enhanced Universal Credit allocations in 2021Q4 will not be reversed, even though the continuation of welfare support for a longer period would help to alleviate destitution levels.

In terms of age-composition (Table 3.7), the most shocking finding is very high child food poverty in 2020-21 as a result of the Covid-19 impact. In the long run, the elderly population are most severely affected. The impact on the young (18-24 years old) is no less painful, significantly impacted as they were by both unemployment and destitution. Mirroring child food poverty, distribution

Table 3.7 Destitute population by age-group

	Persons in destitution, Adults (18+)				Growth over pre-Covid (2019-20)		
	2019-20	2020-21	2021-22	2022-23	2020-21	2021-22	2022-23
< 18 years	22,800	58,800	35,200	25,600	158%	55%	12%
18-24 years	165,500	250,000	377,300	587,300	51%	128%	255%
25-49 years	88,600	213,700	221,900	285,000	141%	150%	222%
50-74 years	22,300	54,700	97,100	162,200	146%	336%	628%
75 & more years	7,600	8,700	8,700	10,700	14%	15%	42%
Whole of UK	306,700	585,900	740,300	1,070,900	**91%**	**141%**	**249%**

Source: ONS, WAS6, NiReMS, LINDA.

Table 3.8 Destitution by household composition

	Persons in destitution, Adults (18+)				Growth over pre-Covid (2019-20)		
	2019-20	2020-21	2021-22	2022-23	2020-21	2021-22	2022-23
Single adult households							
No children	238,400	417,300	616,400	946,600	75%	159%	297%
1 child	13,200	24,400	30,400	18,400	85%	131%	40%
2 or more children	3,000	6,600	7,600	3,500	119%	150%	16%
Couple households					**31%**	**82%**	**202%**
No children	12,100	26,600	21,500	37,900	118%	77%	212%
1 child	1,500	5,100	3,600	2,500	237%	138%	65%
2 or more children	1,000	7,700	3,000	2,000	658%	199%	100%
Other households	500	3,600	500	500	607%	1%	1%
UK average (percent of households)	269,700 (0.74%)	491,200 (1.33%)	683,000 (1.82%)	1,011,500 (2.66%)	**82%**	**153%**	**275%**

Source: ONS, WAS6, NiReMS, LINDA.

by household composition (Table 3.8) also shows higher destitution in families with more children. But the most affected are single adult households, highlighting the importance of intra-household risk sharing in mitigating the impact of Covid-19.

Overall, our regional projections highlighting devasting and long-lasting impacts of the Covid-19 and Brexit shocks upon all regions in the UK. In terms of aggregate regional performance as measured by Gross Value Added (GVA), employment and labour productivity, the impacts are moderated in regions with higher resilience in London and the South and East (Sensier and Devine, 2020). The effects are particularly severe upon regions with pre-existing historical deprivation and where low productivity economic activities are concentrated. These vulnerabilities are also exacerbated by Covid-19-induced lockdowns and Brexit-related adverse impacts upon trade. The extreme poor in the devolved nations are affected very severely, as well as part of the North and the South East which have seen large Covid-19 disruptions. The effects of reduced trade following Brexit appear to be having devastating consequences upon the extreme poor in Northern Ireland and the South East.

It is likely that market- and policy-led reallocations will continue to mitigate against some of these large and persistently negative effects. Evidence-based allocation of levelling-up funds to leverage inter-regional direct and indirect effects and inter-regional variation in skills and employment creation opportunities are particularly moot in this context. Together, welfare measures like Universal Credit must continue to support the most vulnerable segments of society as highlighted in our findings.

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Box D Trough to boom: UK firm creation during the COVID-19 pandemic

Alfred Duncan, Yannis Galanakis, Miguel León-Ledesma, Anthony Savagar[25]

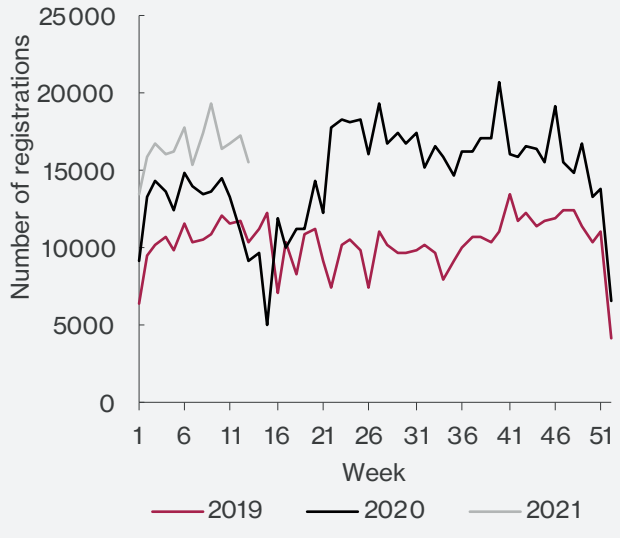
Business creation is an important indicator to monitor especially in the face of large shocks such as Covid-19. In this analysis, we use data from Companies House to calculate new company registrations by sector and geographical area on a daily basis. We use data up to 30 March 2021, to infer how one measure of the supply side of the economy has evolved since the start of the pandemic. All our data and further interactive analysis can be accessed on the project website (www.ukfirmcreation.com).

Following a sharp drop during the initial national lockdown, business registration has strengthened in most sectors even during the second and third lockdown periods. New registrations were particularly strong for online retailers, food and drink providers, sports equipment production and pet care businesses. During the third lockdown, real estate activities recovered significantly relative to their 2019 levels. Our findings are consistent with firm creation activity in the U.S. (Buffington et. al, 2021) and European countries, such as France and Germany (Sneader and Singhal, 2021).

Aggregate company registrations

Figure D.1 plots the aggregate number of new registrations by week in 2019, 2020 and 2021. Firm creation displays a sharp decline during the initial national lockdown (23.03.2020-04.07.2020) compared to 2019 levels but recovers strongly afterwards. Firm creation has kept increasing throughout 2020 and 2021 despite the second and the third national lockdowns and other local restrictions that affected certain areas.

Figure D.1 Total number of registrations by week



Note: We exclude last week of the year (see here for details)
Source: www.ukfirmcreation.com.

Sectoral changes in company registrations

Figure D.2 shows the effect of the pandemic and associated lockdowns on business creation across selected sectors. The figure presents the cumulative change between March 23, 2020 and March 15, 2021 relative to the cumulative change between March 16, 2019 and March 15, 2020.

In the first few weeks after the onset of the initial lockdown in March 2020, cumulative firm creation was lower than cumulative firm creation over the same period in 2019 for all sectors. Cumulative business registrations were lower by 40-60 per cent relative to 2019 levels. The speed of recovery in firm creation varied significantly across industries. Wholesale and retail trade, followed by manufacturing, showed rapid recoveries. In wholesale and retail trade cumulative company registrations in the last year were 120 per cent above their 2019 levels. In the manufacturing sector the figure was 60 percent. Within the broadly defined

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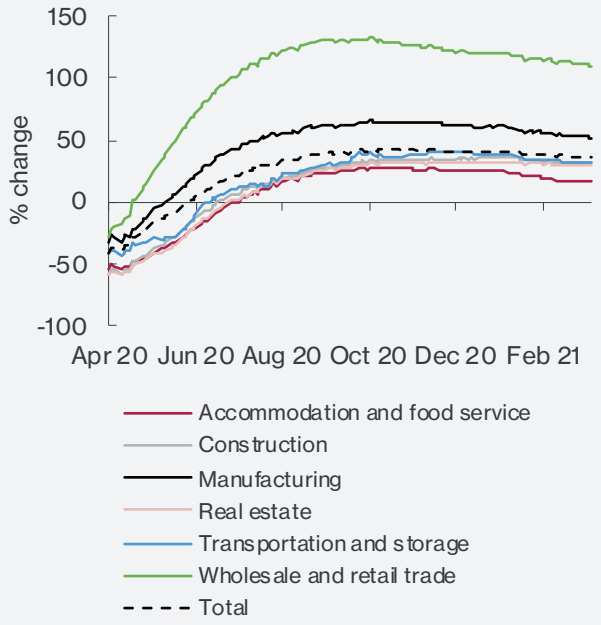
sectors, there has been a shift in the type of businesses setup. There were particularly strong increases in online retail businesses,[26] food and drink wholesale providers, sports equipment production and pet care businesses. During the third lockdown, which started in January 2021, real estate activities showed a noticeable increase in new business registrations.

Regional changes in company registrations

Figure D.3 shows the change in the cumulative company registrations by UK nations between March 23, 2020 and March 15, 2021 relative to the cumulative change between March 16, 2019 and March 15, 2020. In the first few weeks after the first lockdown began, cumulative firm creation was significantly lower than cumulative firm creation over the same period in 2019 for all countries. However, countries did not recover at the same pace. Cumulative business registrations in London recovered to the 2019 levels by May. It took until June for England and Wales to recover; until July for Scotland to recover; and until August for Northern Ireland to recover. From November 2020 to March 2021 there was a flattening, and weak decline, in cumulative firm creation relative to November 2019 to March 2020. This weakening coincided with the second and third national lockdowns and a large fraction of the population being under Tier 4 restrictions. However, despite this 'cooling off', cumulative firm creation was over 20 per cent higher in all countries by the final period, and 50 per cent higher in London, suggesting some centralisation of economic activity in the aftermath of the first national lockdown.

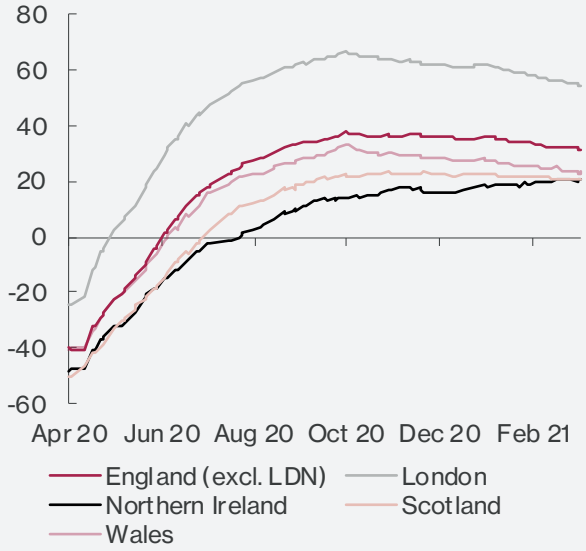
Overall our results show that firm creation in the UK fell sharply during the initial lockdown last year and rebounded sharply during the summer until late autumn. Subsequently the sharp rebounding has tapered off, but one year on the total number of firms created in the UK remains significantly higher than in thes non-Covid period. Typically, firm creation is an indicator of future employment trends (see Duncan, León-Ledesma, Savagar, Sedláček, Sterk,

Figure D.2 Change in new company registrations by sector



Note: Cumulative company registrations by country, 23 March .2020– 15 Mar 2021 (percentage difference from cumulative change in 16 March 2019 – 15 March 2020)
Source: www.ukfirmcreation.com.

Figure D.3 Change in new company registrations by country



Note: Cumulative company registrations by country, 23 March 2020– 15 Mar 2021 (percentage difference from cumulative change in 16 March 2019 – 15 March 2020)
Source: www.ukfirmcreation.com.

26 For instance, registrations in 'Retail sale via mail order houses or via Internet' increase 365 per cent in March 2021 relative to March 2019.

2020) and can improve future productivity. However, our research shows that the COVID-19 pandemic is unusual in that it has shifted firm creation to specific COVID-compliant sectors such as online retailers. Therefore, the productivity and future employment potential of these firms may differ from firms created during normal economic times. Our findings also highlight unequal economic effects of the pandemic across different regions of the UK in terms of firm creation.

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Box E: Methodology for the National Institute Regional Modelling System (NiReMS)

Arnab Bhattacharjee and Elena Lisauskaite

The UK has since long lacked an extensive information system to provide timely data and projections to support regional policy and governance. Nowcasting models and methodologies recently developed (Koop et al., 2020a,b) and implemented in ESCOE (2021) have been useful. However, these approaches lack sufficient modelling of temporal and spatial dynamics to develop projections into the future. NIESR has recently highlighted regional and sectoral impacts of the Covid-19 and Brexit shocks (Aitken et al., 2019; Bhattacharjee and Lisauskaite, 2020a; Chadha, 2020; Verikios et al., 2020), especially as compared against a levelling-up agenda (Bhattacharjee et al., 2020; Gathergood et al., 2020; NIESR, 2020b; UK 2070 Commission, 2020). At the same time, lockdown-driven disruptions to supply chains and mobility have changed the nature of inter-regional spillovers. Spurred by the need to understand these effects, the National Institute of Economic and Social Research has been developing an ambitious and innovative regional model – NiReMS (National Institute Regional Modelling System).

The development of NiReMS is in progress, currently producing projections for the 12 NUTS1 Government Office Regions in the UK, and planned to be extended to major city-regions. Our discussion is organised by four major region-clusters of England, together with the devolved nations: Wales, Scotland and Northern Ireland. England is divided into the following four region-blocks: 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. NIESR has previously argued that "COVID-19 was never the best leveller" (NIESR, 2020a), essentially exacerbating entrenched inequalities and vulnerabilities already existing within the UK society, sectors and regions (Carrascal-Incera et al., 2020). In order to provide a historio-geographic context to these regional variations, a brief economic snapshot of the 12 Government Office Regions for 2015 is provided in Table E.1 together with a map showing the locations, boundaries and populations (Figure E.1). On most economic indicators, London and "South and East" dominate, and there is large regional variation.

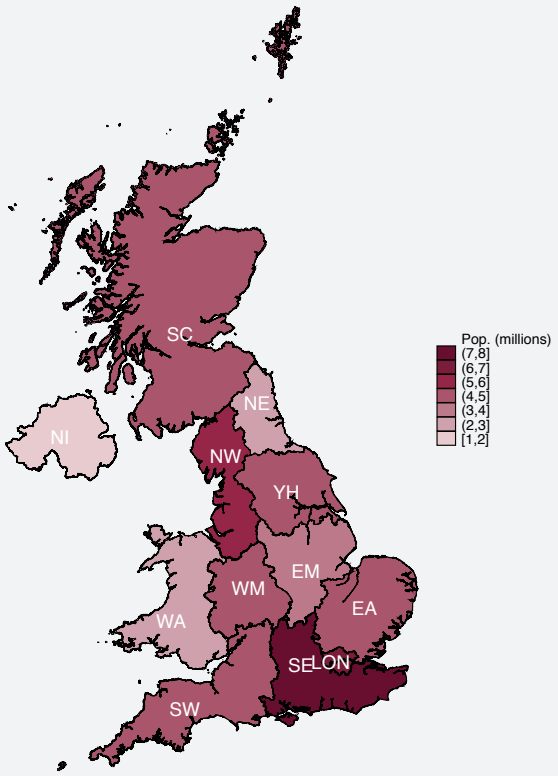
Our projection employs a combination of three approaches. The first is a new generation econometric spatial panel data model, accommodating spatial (regional) heterogeneity together with the effects of global shocks (factor structure) and local shocks (inter-regional spillovers); see also NIESR (2021). We model regional impacts of the combination of Covid-19 and Brexit shocks using an estimated model with global shocks. Past data reflect that the regions have varying responses to these aggregate shocks, which then result in different trajectories for regional GVA (output) and employment. The impact of local shocks, or inter-regional spillovers, is modelled using a combination of approaches from Bhattacharjee and Holly (2013), Chung and Hewings (2015), and Bailey et al. (2016). This interplay between global and local shocks is an important feature of the model. Global shocks, like Covid-19 and Brexit, affect all or most of the regions of the UK. However, they have differential impacts leading to regional variation. These global effects, together with local shocks, then permeate to other regions producing spillovers,

Table E.1 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	100.0	100	100.0

Notes: 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.
Source: ONS, 2015.

Figure E.1 Regional population in 2015

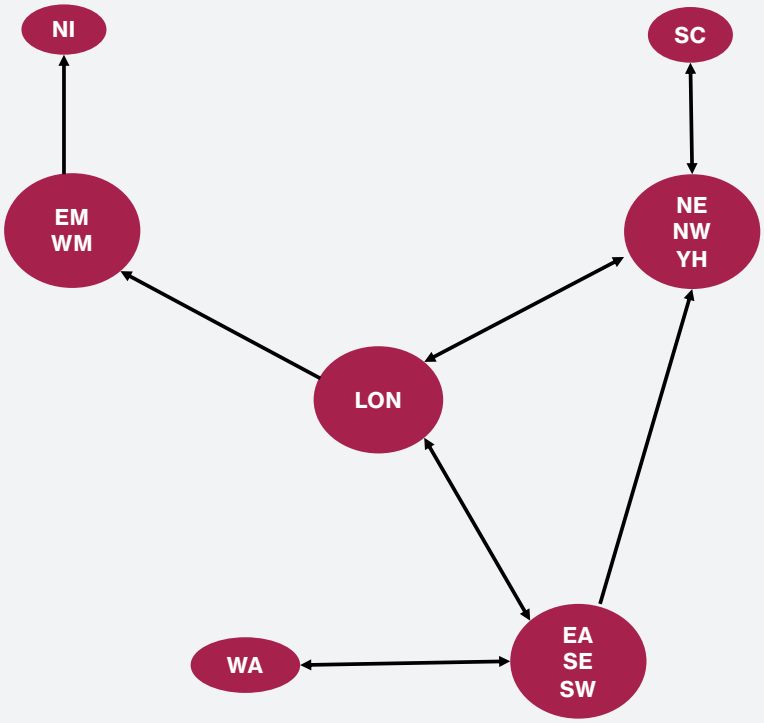


sometimes reinforcing the effects and in other cases mitigating against the impacts. These spillovers are driven by an inter-regional network, which we estimate from the data, using recent methods on latent network architectures.

The resulting network connections map (Figure E.2) support the aggregation of the Government Office Regions in England into 4 region-blocks: London; the South and East; the Midlands; and the North. Statistically significant interactions between the region-blocks are shown with arrows, in some cases directed 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.

Secondly, we combine the above econometric model with a growth accounting approach exploiting regional variations in sectoral composition as evident from current ONS data and latest data (for the financial year 2017-18) from Round 6 of the UK Wealth and Assets Survey (WAS6, 2019). This approach builds upon the 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 reported in Küçük et al. (2021), and we use past data on differences in sectoral profiles across regions to obtain a second set of estimates for regional GVA and employment. This exercise is founded upon the well-established structural macroeconomic model NiGEM (NIESR 2018) as well as input-output tables (Lenoël and Young, 2020). The above estimates of regional output, employment and productivity are then used to obtain projections of wages and unemployment at the regional level.

Figure E.2 Connections between the regions



Note: NE (North East); NW (North West); YH (Yorkshire and the Humber); EM (East Midlands); WM (West Midlands); EA (East of England); LON (London); SE (South East); SW (South West); WA (Wales); SC (Scotland) and NI (Northern Ireland).

The third approach is based on dynamic microsimulation using the NIESR's microsimulation model LINDA (Lifetime Income Distributional Analysis) (NIESR, 2016; van de Ven, 2017). This approach is closely related to ONS (2020), who 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. Finally, projections from the three approaches are combined and calibrated against aggregate projections from the latest NiGEM (NIESR, 2018) data projections; see Lenoël et al. (2021). Further details are available in NIESR (2021).

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Appendix

Table A1 Exchange rates and interest rates

	UK exchange rates			FTSE All-share index	Interest rates			
	Effective 2017=100	Dollar	Euro		3-month rates	10-year gilts	World[a]	Bank Rate[b]
2015	117.3	1.53	1.38	2605	0.60	1.80	0.80	0.50
2016	105.8	1.35	1.22	2565	0.50	1.30	0.90	0.25
2017	100.0	1.29	1.14	2930	0.40	1.20	1.20	0.41
2018	101.9	1.34	1.13	2937	0.70	1.40	1.90	0.75
2019	101.6	1.28	1.14	2898	0.80	0.90	2.10	0.75
2020	102.1	1.28	1.13	2537	0.30	0.30	0.90	0.10
2021	*106.6*	*1.38*	*1.15*	*2858*	*0.10*	*0.80*	*1.10*	*0.10*
2022	*106.9*	*1.38*	*1.15*	*3035*	*0.20*	*0.90*	*1.00*	*0.10*
2023	*107.2*	*1.38*	*1.15*	*3156*	*0.20*	*1.00*	*0.90*	*0.25*
2024	*107.3*	*1.38*	*1.15*	*3322*	*0.40*	*1.10*	*0.80*	*0.40*
2025	*107.5*	*1.39*	*1.15*	*3513*	*0.60*	*1.20*	*0.90*	*0.53*
2020Q1	103.2	1.28	1.16	2766	0.70	0.50	1.40	0.61
2020Q2	101.4	1.24	1.13	2395	0.40	0.20	0.70	0.10
2020Q3	101.4	1.29	1.11	2447	0.10	0.10	0.70	0.10
2020Q4	102.2	1.32	1.11	2538	0.00	0.30	0.90	0.10
2021Q1	*106.0*	*1.38*	*1.14*	*2749*	*0.10*	*0.60*	*1.00*	*0.10*
2021Q2	*106.8*	*1.38*	*1.15*	*2848*	*0.10*	*0.80*	*1.10*	*0.10*
2021Q3	*106.8*	*1.38*	*1.15*	*2896*	*0.20*	*0.80*	*1.10*	*0.10*
2021Q4	*106.8*	*1.38*	*1.15*	*2938*	*0.20*	*0.80*	*1.10*	*0.10*
2022Q1	*106.9*	*1.38*	*1.15*	*2977*	*0.20*	*0.90*	*1.00*	*0.10*
2022Q2	*106.9*	*1.38*	*1.15*	*3016*	*0.20*	*0.90*	*1.00*	*0.10*
2022Q3	*107.0*	*1.38*	*1.15*	*3060*	*0.20*	*0.90*	*1.00*	*0.10*
2022Q4	*107.0*	*1.38*	*1.15*	*3088*	*0.20*	*0.90*	*0.90*	*0.10*
Percentage changes								
2015/2014	6.3	–7.2	11.1	0.4				
2016/2015	–9.8	–11.4	–11.2	–1.5				
2017/2016	–5.5	–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	*4.5*	*7.4*	*2.3*	*12.7*				
2022/2021	*0.3*	*0.1*	*0.1*	*6.2*				
2023/2022	*0.2*	*0.1*	*–0.1*	*4.0*				
2024/2023	*0.2*	*0.1*	*–0.2*	*5.3*				
2025/2024	*0.1*	*0.2*	*–0.3*	*5.7*				
2020Q4/2019Q1	*–1.0*	*2.6*	*–4.8*	*–13.6*				
2021Q4/2020Q1	*4.5*	*4.4*	*4.1*	*15.8*				
2022Q4/2021Q1	*0.2*	*0.1*	*–0.1*	*5.1*				

Notes: [a] Weighted average of central bank intervention rates in OECD economies. [b] End of period.

Table A2 Price indices (2018=100)

	Unit labour costs	Imports deflator	Exports deflator	World Oil Price ($)[a]	Consumption deflator	GDP deflator (market prices)	Consumer prices RPI[b]	CPI[c]	CPIH[d]
2015	92.9	88.0	88.3	52.1	94.4	93.9	98.3	94.4	94.4
2016	95.0	91.9	92.4	42.9	95.7	95.9	100.0	95.0	95.3
2017	97.3	97.6	97.0	54.0	97.7	97.8	103.6	97.6	97.8
2018	100.0	100.0	100.0	70.4	100.0	100.0	107.0	100.0	100.0
2019	103.3	101.6	101.5	63.7	101.4	102.1	109.8	101.8	101.7
2020	118.2	100.3	100.0	43.0	102.9	108.0	111.4	102.7	102.8
2021	*113.7*	*101.3*	*100.2*	*61.1*	*104.4*	*108.0*	*114.7*	*104.0*	*104.6*
2022	*112.8*	*101.9*	*102.9*	*58.7*	*106.4*	*109.9*	*118.4*	*105.8*	*106.6*
2023	*115.6*	*102.0*	*104.3*	*59.7*	*108.3*	*112.5*	*121.5*	*107.4*	*108.5*
2024	*119.1*	*102.9*	*105.8*	*60.8*	*110.5*	*115.2*	*124.9*	*109.3*	*110.7*
2025	*122.8*	*104.4*	*107.6*	*61.9*	*113.0*	*118.0*	*128.4*	*111.5*	*113.1*
Percentage changes									
2015/2014	0.5	–5.6	–3.1	–47.0	0.0	0.7	1.0	0.1	0.4
2016/2015	2.2	4.5	4.7	–17.7	1.4	2.1	1.7	0.7	1.0
2017/2016	2.4	6.2	5.0	25.8	2.1	1.9	3.6	2.7	2.6
2018/2017	2.8	2.5	3.1	30.5	2.4	2.2	3.3	2.4	2.3
2019/2018	3.3	1.6	1.5	–9.6	1.4	2.1	2.6	1.8	1.7
2020/2019	*14.4*	*–1.3*	*–1.5*	*–32.5*	*1.5*	*5.8*	*1.5*	*0.8*	*1.0*
2021/2020	*–3.8*	*1.0*	*0.2*	*42.2*	*1.5*	*0.0*	*3.0*	*1.3*	*1.8*
2022/2021	*–0.8*	*0.6*	*2.7*	*–3.9*	*1.9*	*1.7*	*3.2*	*1.7*	*1.9*
2023/2022	*2.4*	*0.2*	*1.4*	*1.7*	*1.8*	*2.4*	*2.6*	*1.6*	*1.8*
2024/2023	*3.0*	*0.8*	*1.4*	*1.8*	*2.0*	*2.4*	*2.8*	*1.8*	*2.0*
2025/2024	*3.1*	*1.5*	*1.7*	*1.8*	*2.2*	*2.4*	*2.8*	*2.0*	*2.2*
2020Q4/2019Q1	*12.0*	*–1.5*	*–6.5*	*–27.4*	*1.0*	*4.9*	*1.1*	*0.5*	*0.8*
2021Q4/2020Q1	*–5.2*	*2.4*	*6.3*	*30.0*	*2.3*	*0.4*	*3.9*	*1.8*	*2.3*
2022Q4/2021Q1	*2.2*	*0.3*	*1.9*	*0.9*	*1.8*	*2.5*	*2.9*	*1.5*	*1.8*

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

Table A3 Gross domestic product and components of expenditure (£ billion, 2018 prices)

	Final consumption expenditure		Gross capital formation		Domestic demand	Total exports[c]	Total final expenditure	Total imports[c]	Net trade	GDP at market prices[d]
	H-Holds & NPISH[a]	General govt.	Gross fixed investment	Changes in inventories[b]						
2015	1306	389	354	12	2078	593	2672	627	–34	2044
2016	1351	393	370	10	2121	609	2731	652	–42	2079
2017	1366	396	380	15	2142	642	2784	669	–27	2115
2018	1386	398	381	2	2167	662	2829	687	–26	2142
2019	1401	414	387	1	2203	679	2882	706	–27	2173
2020	1248	388	353	–17	1972	572	2544	580	–8	1959
2021	*1322*	*435*	*384*	*0*	*2141*	*614*	*2755*	*680*	*–66*	*2071*
2022	*1394*	*436*	*404*	*0*	*2233*	*685*	*2918*	*747*	*–63*	*2165*
2023	*1437*	*438*	*409*	*0*	*2284*	*725*	*3009*	*782*	*–57*	*2222*
2024	*1477*	*440*	*411*	*0*	*2327*	*758*	*3086*	*813*	*–55*	*2268*
2025	*1515*	*443*	*412*	*0*	*2370*	*785*	*3155*	*842*	*–57*	*2308*
Percentage changes										
2015/2014	3.0	1.8	5.3		3.1	2.8	3.1	5.4		2.4
2016/2015	3.4	1.0	4.4		2.1	2.7	2.2	3.9		1.7
2017/2016	1.1	0.7	2.8		1.0	5.4	1.9	2.6		1.7
2018/2017	1.4	0.6	0.4		1.2	3.0	1.6	2.7		1.3
2019/2018	1.1	4.0	1.5		1.6	2.7	1.9	2.7		1.4
2020/2019	*–10.9*	*–6.5*	*–8.8*		*–10.5*	*–15.8*	*–11.8*	*–17.8*		*–9.8*
2021/2020	*5.9*	*12.3*	*8.8*		*8.6*	*7.3*	*8.3*	*17.1*		*5.7*
2022/2021	*5.4*	*0.2*	*5.1*		*4.3*	*11.5*	*5.9*	*9.9*		*4.5*
2023/2022	*3.1*	*0.4*	*1.4*		*2.3*	*5.9*	*3.1*	*4.7*		*2.6*
2024/2023	*2.7*	*0.5*	*0.4*		*1.9*	*4.6*	*2.5*	*4.0*		*2.0*
2025/2024	*2.6*	*0.7*	*0.3*		*1.8*	*3.5*	*2.3*	*3.6*		*1.8*
Decomposition of growth in GDP (percentage points)										
2015	1.9	0.3	0.9	–0.2	3.2	0.8	4.0	–1.6	–0.8	2.4
2016	2.2	0.2	0.8	–0.1	2.1	0.8	2.9	–1.2	–0.4	1.7
2017	0.7	0.1	0.5	0.3	1.0	1.6	2.6	–0.8	0.8	1.7
2018	0.9	0.1	0.1	–0.6	1.2	0.9	2.1	–0.9	0.1	1.3
2019	0.7	0.7	0.3	–0.1	1.7	0.8	2.5	–0.9	–0.1	1.4
2020	–7.0	–1.2	–1.6	–0.8	–10.6	–4.8	–15.6	5.7	0.8	–9.8
2021	*3.8*	*2.4*	*1.6*	*0.9*	*8.6*	*2.2*	*10.8*	*–5.1*	*–2.9*	*5.7*
2022	*3.5*	*0.0*	*0.9*	*0.0*	*4.5*	*3.4*	*7.9*	*–3.3*	*0.2*	*4.5*
2023	*2.0*	*0.1*	*0.3*	*0.0*	*2.4*	*1.9*	*4.2*	*–1.6*	*0.3*	*2.6*
2024	*1.8*	*0.1*	*0.1*	*0.0*	*1.9*	*1.5*	*3.4*	*–1.4*	*0.1*	*2.0*
2025	*1.7*	*0.1*	*0.1*	*0.0*	*1.9*	*1.2*	*3.1*	*–1.3*	*–0.1*	*1.8*

Notes: [a] Non–profit institutions serving households. [b] Including acquisitions less disposals of valuables and quarterly alignment adjustment. [c] Includes Missing Trader Intra–Community Fraud. [d] 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[a]	Imports of goods[a]	Net trade in goods[a]	Exports of services	Imports of services	Net trade in services	Export price competiveness[c]	World trade[d]	Terms of trade[e]	Current balance
	£ billion, 2018 prices[b]						2018=100			% of GDP
2015	329	456	–127	265	171	94	103.5	88.8	100.3	–5.0
2016	329	476	–147	281	176	104	98.0	92.0	100.5	–5.4
2017	350	487	–137	293	183	110	95.9	96.6	99.4	–3.8
2018	351	488	–137	311	199	111	100.0	100.0	100.0	–3.7
2019	367	499	–131	312	207	104	98.0	103.9	99.9	–3.1
2020	*317*	*425*	*–108*	*255*	*156*	*99*	*95.9*	*94.5*	*99.7*	*–3.5*
2021	*342*	*523*	*–181*	*272*	*157*	*115*	*100.5*	*102.6*	*98.9*	*–5.4*
2022	*375*	*574*	*–198*	*309*	*174*	*136*	*102.6*	*111.8*	*101.0*	*–5.1*
2023	*393*	*597*	*–204*	*332*	*185*	*147*	*102.9*	*118.4*	*102.2*	*–4.5*
2024	*409*	*619*	*–210*	*349*	*194*	*155*	*103.1*	*123.8*	*102.8*	*–4.4*
2025	*422*	*639*	*–217*	*363*	*203*	*160*	*103.3*	*128.1*	*103.1*	*–4.4*
Percentage changes										
2015/2014	3.6	4.0		1.8	9.6		–3.6	5.5	2.7	
2016/2015	–0.1	4.3		6.0	3.1		–5.3	3.6	0.2	
2017/2016	6.4	2.3		4.3	3.6		–2.2	5.0	–1.1	
2018/2017	0.4	0.3		6.1	9.1		4.2	3.5	0.6	
2019/2018	4.6	2.1		0.4	4.2		–2.0	3.9	–0.1	
2020/2019	*–13.8*	*–14.8*		*–18.2*	*–25.0*		*–2.2*	*–9.1*	*–0.2*	
2021/2020	*7.9*	*23.2*		*6.6*	*0.6*		*4.8*	*8.6*	*–0.8*	
2022/2021	*9.7*	*9.6*		*13.8*	*10.9*		*2.1*	*8.9*	*2.1*	
2023/2022	*4.8*	*4.1*		*7.3*	*6.4*		*0.3*	*5.9*	*1.2*	
2024/2023	*4.0*	*3.6*		*5.2*	*5.2*		*0.1*	*4.6*	*0.6*	
2025/2024	*3.2*	*3.3*		*3.9*	*4.4*		*0.2*	*3.5*	*0.2*	

Notes: [a] Includes Missing Trader Intra–Community Fraud. [b] Balance of payments basis. [c] A rise denotes a loss in UK competitiveness. [d] Weighted by import shares in UK export markets. [e] Ratio of average value of exports to imports

Table A5 Household sector

	Average[a] earnings	Employee compensation	Total personal income	Gross disposable income	Real disposable income	Final consumption expenditure	Saving ratio[c]	House prices[d]	Net worth to income ratio[e]
		£ billion, current prices			£ billion, 2018 prices			Per cent	
2015	92.0	930	1674	1322	1400	1306	10.1	102.9	6.5
2016	94.7	967	1717	1348	1408	1351	7.6	110.1	7.0
2017	97.6	1007	1766	1376	1409	1366	5.7	115.1	7.0
2018	100.0	1048	1846	1441	1441	1386	6.1	118.8	6.7
2019	104.2	1099	1915	1487	1466	1401	6.5	120.0	6.8
2020	106.1	1127	1936	1500	1457	1248	15.8	123.8	7.4
2021	*108.4*	*1152*	*1996*	*1570*	*1503*	*1322*	*13.1*	*128.8*	*7.4*
2022	*112.9*	*1196*	*2086*	*1643*	*1544*	*1394*	*10.7*	*129.4*	*7.3*
2023	*116.8*	*1257*	*2184*	*1702*	*1571*	*1437*	*9.4*	*130.2*	*7.3*
2024	*121.2*	*1321*	*2289*	*1779*	*1609*	*1477*	*9.1*	*131.2*	*7.1*
2025	*126.0*	*1387*	*2400*	*1865*	*1651*	*1515*	*9.1*	*132.7*	*6.9*
Percentage changes									
2015/2014	0.8	2.9	5.7	6.0	6.0	3.0		6.0	
2016/2015	3.0	4.0	2.6	1.9	0.6	3.4		7.0	
2017/2016	3.0	4.2	2.8	2.1	0.1	1.1		4.5	
2018/2017	2.5	4.1	4.5	4.7	2.3	1.4		3.3	
2019/2018	4.2	4.8	3.8	3.2	1.8	1.1		0.9	
2020/2019	*1.8*	*2.6*	*1.1*	*0.9*	*–0.6*	*–10.9*		*3.2*	
2021/2020	*2.2*	*2.2*	*3.1*	*4.6*	*3.1*	*5.9*		*4.1*	
2022/2021	*4.2*	*3.8*	*4.5*	*4.7*	*2.7*	*5.4*		*0.4*	
2023/2022	*3.4*	*5.1*	*4.7*	*3.6*	*1.8*	*3.1*		*0.6*	
2024/2023	*3.8*	*5.1*	*4.8*	*4.5*	*2.4*	*2.7*		*0.8*	
2025/2024	*4.0*	*5.0*	*4.9*	*4.9*	*2.6*	*2.6*		*1.1*	

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

Table A6 Fixed investment and capital (£ billion, 2018 prices)

	Gross fixed investment				User cost of capital (%)	Corporate profit share of GDP (%)	Capital stock	
	Business investment	Private housing[a]	General government	Total			Private	Public[b]
2015	206	85	63	354	13.7	24.5	3437	728
2016	217	89	64	370	13.3	24.3	3548	755
2017	220	94	66	380	13.2	24.4	3685	705
2018	215	104	63	381	12.9	24.1	3732	719
2019	217	105	65	387	12.8	23.6	3783	737
2020	195	91	67	353	11.9	22.7	3789	752
2021	*208*	*103*	*73*	*384*	*11.1*	*24.1*	*3820*	*772*
2022	*222*	*106*	*76*	*404*	*11.2*	*24.6*	*3865*	*794*
2023	*226*	*106*	*78*	*409*	*11.7*	*24.7*	*3912*	*816*
2024	*228*	*105*	*78*	*411*	*11.9*	*24.5*	*3957*	*837*
2025	*230*	*104*	*79*	*412*	*12.0*	*24.2*	*4000*	*858*
Percentage changes								
2015/2014	7.7	5.1	–1.5	5.3			0.1	1.1
2016/2015	5.5	4.7	0.7	4.4			3.2	3.7
2017/2016	1.5	5.6	3.1	2.8			3.9	–6.6
2018/2017	–2.5	11.0	–5.0	0.4			1.3	2.0
2019/2018	1.1	1.2	3.5	1.5			1.4	2.5
2020/2019	*–10.2*	*–13.1*	*3.1*	*–8.8*			*0.2*	*2.0*
2021/2020	*6.6*	*12.7*	*9.7*	*8.8*			*0.8*	*2.7*
2022/2021	*6.7*	*2.6*	*4.2*	*5.1*			*1.2*	*2.8*
2023/2022	*1.9*	*–0.1*	*1.9*	*1.4*			*1.2*	*2.8*
2024/2023	*0.8*	*–0.8*	*0.8*	*0.4*			*1.1*	*2.6*
2025/2024	*0.7*	*–0.8*	*0.9*	*0.3*			*1.1*	*2.4*

Notes: [a] Includes private sector transfer costs of non–produced assets. [b] Including public sector non–financial corporations.

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

	Employment		ILO unemployment	Labour force[b]	Population of working age[c]	Productivity (2018=100) per hour	ILO unemployment rate
	Employees	Total[a]					
2015	26504	31285	1781	33066	40879	98.6	5.4
2016	26771	31744	1633	33377	41062	98.8	4.9
2017	27065	32057	1476	33533	41169	99.5	4.4
2018	27494	32439	1380	33819	41260	100.0	4.1
2019	27652	32799	1306	34105	41344	100.2	3.8
2020	27862	32644	1529	34173	41436	100.6	4.5
2021	*27877*	*32407*	*1935*	*34343*	*41515*	*101.1*	*5.6*
2022	*27768*	*32317*	*2169*	*34486*	*41587*	*101.9*	*6.3*
2023	*28238*	*32806*	*1823*	*34628*	*41653*	*103.0*	*5.3*
2024	*28606*	*33193*	*1580*	*34773*	*41719*	*103.8*	*4.5*
2025	*28874*	*33481*	*1441*	*34922*	*41787*	*104.7*	*4.1*
Percentage changes							
2015/2014	2.1	1.7	–12.1	0.9	0.5	0.7	
2016/2015	1.0	1.5	–8.3	0.9	0.4	0.3	
2017/2016	1.1	1.0	–9.6	0.5	0.3	0.7	
2018/2017	1.6	1.2	–6.5	0.9	0.2	0.5	
2019/2018	0.6	1.1	–5.4	0.8	0.2	0.2	
2020/2019	*0.8*	*–0.5*	*17.1*	*0.2*	*0.2*	*0.4*	
2021/2020	*0.1*	*–0.7*	*26.6*	*0.5*	*0.2*	*0.5*	
2022/2021	*–0.4*	*–0.3*	*12.1*	*0.4*	*0.2*	*0.8*	
2023/2022	*1.7*	*1.5*	*–16.0*	*0.4*	*0.2*	*1.0*	
2024/2023	*1.3*	*1.2*	*–13.3*	*0.4*	*0.2*	*0.8*	
2025/2024	*0.9*	*0.9*	*–8.8*	*0.4*	*0.2*	*0.9*	

Notes: [a] Includes self–employed, government–supported trainees and unpaid family members. [b] Employment plus ILO unemployment. [c] 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)

		2018–19	2019–20	*2020–21*	*2021–22*	*2022–23*	*2023–24*	*2024–25*	*2025–26*
Current receipts:	Taxes on income	470.3	483.3	*491.5*	*459.9*	*495.1*	*552.5*	*579.3*	*606.3*
	Taxes on expenditure	274.0	276.0	*146.6*	*274.1*	*289.3*	*303.4*	*318.2*	*333.6*
	Other current receipts	70.4	69.4	*148.3*	*85.7*	*90.6*	*95.1*	*99.3*	*103.5*
	Total	814.8	828.7	*786.4*	*819.7*	*875.1*	*951.0*	*996.8*	*1043.4*
	(as a % of GDP)	37.7	37.3	*37.4*	*36.0*	*36.3*	*37.6*	*37.8*	*37.9*
Current expenditure:	Goods and services	402.8	428.3	*513.3*	*491.3*	*498.9*	*514.4*	*532.3*	*552.4*
	Net social benefits paid	242.4	242.1	*263.4*	*280.2*	*286.5*	*290.6*	*299.7*	*311.8*
	Debt interest	54.8	54.6	*38.7*	*35.0*	*35.5*	*35.4*	*35.5*	*35.3*
	Other current expenditure	61.3	67.0	*185.9*	*122.0*	*71.9*	*74.6*	*77.6*	*80.6*
	Total	761.3	792.0	*1001.2*	*928.5*	*892.8*	*915.0*	*945.0*	*980.1*
	(as a % of GDP)	35.2	35.7	*47.6*	*40.8*	*37.0*	*36.2*	*35.8*	*35.6*
Depreciation		49.8	51.3	*52.2*	*55.0*	*58.2*	*61.0*	*63.7*	*66.4*
Surplus on public sector current budget[a]		3.6	–14.6	*–267.0*	*–163.8*	*–75.8*	*–25.0*	*–12.0*	*–3.2*
(as a % of GDP)		0.2	–0.7	*–12.9*	*–7.2*	*–3.2*	*–1.0*	*–0.5*	*–0.1*
Gross investment		92.3	92.7	*107.7*	*109.7*	*114.2*	*118.4*	*122.3*	*126.4*
Net investment		42.5	41.4	*55.6*	*54.7*	*56.0*	*57.4*	*58.6*	*60.0*
(as a % of GDP)		2.0	1.9	*2.6*	*2.4*	*2.3*	*2.3*	*2.2*	*2.2*
Total managed expenditure		853.6	884.7	*1109.0*	*1038.2*	*1007.0*	*1033.4*	*1067.4*	*1106.5*
(as a % of GDP)		39.5	39.8	*52.8*	*45.6*	*41.8*	*40.9*	*40.4*	*40.2*
Public sector net borrowing		38.8	56.0	*322.6*	*218.5*	*131.9*	*82.4*	*70.6*	*63.2*
(as a % of GDP)		1.8	2.5	*15.3*	*9.6*	*5.5*	*3.3*	*2.7*	*2.3*
Public sector net debt (% of GDP)		82.4	81.8	*103.0*	*105.7*	*105.7*	*103.9*	*97.8*	*95.3*
GDP deflator at market prices (2018=100)		100.5	102.8	*109.2*	*108.0*	*110.5*	*113.1*	*115.9*	*118.7*
Money GDP (£ billion)		2163	2221	*2102*	*2278*	*2410*	*2528*	*2640*	*2752*

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. [a] Public sector current budget surplus is total current receipts less total current expenditure and depreciation.

Table A9 Saving and investment (as a percentage of GDP)

	Households		Companies		General government		Whole economy		Finance from abroad[a]		Net national saving
	Saving	Investment	Saving	Investment	Saving	Investment	Saving	Investment	Total	Net factor income	
2015	7.2	4.2	6.7	11.0	–1.2	2.5	12.7	17.7	5.0	2.2	–1.6
2016	5.4	4.3	7.1	11.1	–0.1	2.5	12.4	17.9	5.4	2.4	–2.0
2017	3.9	4.7	9.5	11.0	1.0	2.6	14.5	18.2	3.8	1.2	–0.2
2018	4.2	4.6	8.8	10.7	1.2	2.6	14.2	17.9	3.7	1.2	–0.5
2019	4.5	4.7	9.6	10.9	1.2	2.7	15.2	18.3	3.1	0.6	0.5
2020	11.6	4.2	10.5	9.6	–8.7	3.0	13.4	16.9	3.5	1.7	–2.5
2021	*9.3*	*4.7*	*12.0*	*11.0*	*–7.8*	*3.2*	*13.5*	*18.8*	*5.4*	*0.8*	*–2.0*
2022	*7.4*	*4.6*	*9.0*	*11.2*	*–2.5*	*3.2*	*13.9*	*19.0*	*5.1*	*1.4*	*–1.6*
2023	*6.5*	*4.5*	*7.8*	*11.1*	*–0.1*	*3.1*	*14.2*	*18.7*	*4.5*	*1.6*	*–1.3*
2024	*6.3*	*4.4*	*7.0*	*11.0*	*0.8*	*3.1*	*14.0*	*18.5*	*4.4*	*1.8*	*–1.5*
2025	*6.3*	*4.3*	*6.3*	*10.9*	*1.2*	*3.1*	*13.8*	*18.2*	*4.4*	*1.9*	*–1.7*

Notes: Saving and investment data are gross of depreciation unless otherwise stated. [a] Negative sign indicates a surplus for the UK.

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

	2019	2020	*2021*	*2022*	*2023*	*2024*	*2025*	*2026–30*
GDP (market prices)	1.4	–9.8	*5.7*	*4.5*	*2.6*	*2.0*	*1.8*	*1.5*
Average earnings	4.2	1.8	*2.2*	*4.2*	*3.4*	*3.8*	*4.0*	*3.6*
GDP deflator (market prices)	2.1	5.8	*0.0*	*1.7*	*2.4*	*2.4*	*2.4*	*2.2*
Consumer Prices Index	1.8	0.8	*1.3*	*1.7*	*1.6*	*1.8*	*2.0*	*1.7*
Per capita GDP	0.9	–10.4	*5.3*	*4.0*	*2.1*	*1.6*	*1.3*	*1.1*
Whole economy productivity[a]	0.2	0.4	*0.5*	*0.8*	*1.0*	*0.8*	*0.9*	*1.1*
Labour input[b]	1.4	–10.3	*5.1*	*3.6*	*1.6*	*1.2*	*0.9*	*0.3*
ILO Unemployment rate (%)	3.8	4.5	*5.6*	*6.3*	*5.3*	*4.5*	*4.1*	*4.0*
Current account (% of GDP)	–3.1	–3.5	*–5.4*	*–5.1*	*–4.5*	*–4.4*	*–4.4*	*–4.5*
Total managed expenditure (% of GDP)	39.8	52.8	*45.6*	*41.8*	*40.9*	*40.4*	*40.2*	*40.5*
Public sector net borrowing (% of GDP)	2.5	15.3	*9.6*	*5.5*	*3.3*	*2.7*	*2.3*	*2.0*
Public sector net debt (% GDP)	81.8	103.0	*105.7*	*105.7*	*103.9*	*97.8*	*95.3*	*89.3*
Effective exchange rate (2017=100)	101.6	102.0	*106.6*	*106.9*	*107.2*	*107.3*	*107.5*	*107.9*
Bank Rate (%)	0.8	0.2	*0.1*	*0.1*	*0.1*	*0.3*	*0.5*	*0.9*
3 month interest rates (%)	0.8	0.3	*0.1*	*0.2*	*0.2*	*0.4*	*0.6*	*1.0*
10 year interest rates (%)	0.9	0.3	*0.8*	*0.9*	*1.0*	*1.1*	*1.2*	*1.6*

Notes: [a] Per hour. [b] Total hours worked.

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