

National Institute UK Economic Outlook

Recovery: stalling not soaring

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Foreword: Rip it up and start again

The British economy's relative decline has been highlighted by a sequence of events that will be seen as historically important. The financial crisis laid to rest our notion that it was sufficient to build a national plan on a burgeoning City of London. The referendum on Brexit told us that openness to European trade and migration alone did not allow our economic structures to deliver sustained increases in prosperity across the country. Life under the pandemic has further exposed the need to redevelop our public provision of health, social care and transport infrastructure, as well as a reconsideration of the revenues to finance that. While it is not the duty of the state to replace private sector activity and impinge on its plans unduly with taxes, the state (local and national) does have the obligation to support and enable the private sector to generate jobs and prosperity across the nation, as well as provide public goods. In those obligations it has repeatedly failed.

As we reach the end of 2021, we are emerging from the Covid-19 cloud, albeit gingerly. However, it is by no means certain that we will avoid returning to some restrictions on our mobility; certainly, the threat that we might do so will continue to affect household and business confidence. Economic activity is facing a persistent negative supply shock, which means that we cannot produce all the goods and services we would want at prevailing prices. Alongside that, there is much pent-up demand as signalled by the stock of household savings. Two fundamental judgements in the short run are how quickly these disruptions to domestic and global supply sort themselves out and how quickly households return to their more normal propensities to save. If we think the disruptions will iron out by Christmas and consumers will quickly run down their savings, we might well think that our problems are behind us. However, if we think that disruptions will persist and firms and households will continue to act with caution, we may be faced with economic stagnation.

As this Outlook makes clear, we believe that short run supply problems faced by the UK will persist and are likely to be exacerbated by Brexit. This is because our exit from the European Union has acted to reduce the pool of labour, contributed to lower levels of firm investment than might otherwise have been the case, and led to some contraction in the size of our traded sector. Of course the squeeze on less well-off households is now well over a decade old long, predating Brexit, and has primarily resulted from an inability to address our productivity shortfall, which is our long term supply constraint. In this sense demand and supply are meet each other at the same point where low skills and low wages are associated with low levels of demand and constrained supply. Our problems are not insurmountable but prompt and consistent interventions by the state to support training, labour mobility, house building may act to alleviate some of the costs of adjustment to that high wage-high skill economy for which we yearn.

Structurally, we think there are large shortfalls in the capital stock – human, physical and otherwise – in many parts of Britain. The government needs to address these with a prolonged period of regional regeneration that asks hard questions of our local government system and domestic finance. The National Infrastructure Bank should help establish address these shortfalls and fill the gap left by the European Investment Bank. However, it is early days, and the scale of its ambition may not match that of the task in hand. The supply shortfalls can only be offset by years of investment in public services with a sustained fiscal intervention. However, when placed alongside negative real interest rates, there is at the same time now a serious inflation risk that requires tighter monetary policy. Inflation nearing 5 per cent will surely risk of escalating inflation and wage expectations, particularly as firms seek to mark-up after the Covid-19 crisis. Failure to act soon may lead market participants to conclude that the Bank of England's preferences for output growth have trumped those for price stability, which is its primary goal. Alternatively, to conclude that the Asset Purchase Facility's balance sheet may not be able to bear considerably higher policy rates. We have proposed a way of unwinding quantitative easing without exposing the facility to large losses and potentially dislocating gilt markets with large scale and lumpy redemptions. We hope that the Monetary Policy Committee will take note.

It is becoming clear that over the past ten years, we adopted the wrong mix of monetary and fiscal policies. The latter being too tight and the former too loose. It is time to rip up our sheet music. Fiscal policy should promote public investment and the build-up of national assets; monetary policy should concentrate on restoring interest rates that will provide more incentives for firms and banks to deploy their capital productivity. Start again.

Jagjit S. Chadha, Director, NIESR
November 2021

National Institute UK Economic Outlook – Autumn 2021

- The next few months are likely to bring **stuttering growth, rising inflation and widening income inequalities** to the UK economy. Household incomes will be painfully squeezed by a combination of **earnings growth lagging inflation, rising interest rates and tighter fiscal policy**. The effects will be felt unevenly, with **Universal Credit recipients the hardest hit** and those in receipt of significant non-labour income - not subject to the Health and Social Care Levy - relatively unaffected.
- The squeeze on household incomes from rising prices and withdrawal of the Universal Credit uplift will lead to a **doubling of destitution**: despite the reduced taper rate, neither the recovery nor the increase in the minimum wage will be enough to make up for this squeeze. Affected households are concentrated in certain regions and localities of the UK, especially in the **North of England** (notably the North West) and in **Northern Ireland**.
- With COP26 underway it remains to be seen whether political authorities will agree the coordinated political and fiscal action required to tackle climate change. While the additional green investment announced in the Budget is welcome, it does not yet go far enough. Our research shows that central banks can play their part in mitigating extreme weather events, but **the onus is on HM Treasury and other finance ministries to use the fiscal space they have** to invest in the green measures necessary.
- In our Autumn forecast for the UK economy, **GDP grows by 6.9 per cent in 2021 followed by 4.7 per cent in 2022**, with supply constraints assumed to continue until the middle of 2022 and rising prices weighing on consumer confidence. Supply disruptions have driven the autumn slowdown but consumer confidence is also contingent on controlling the further spread of Covid-19.
- **We do not expect unemployment to rise noticeably following the end of the Coronavirus Job Retention Scheme**, with those remaining on furlough largely returning to jobs or finding jobs thanks to the current record levels of advertised vacancies. Wage growth is being flattered at present by base effects but an unusual degree of pay drift suggests that starting salaries are outpacing settlements, while hours are also increasing.
- We forecast that **consumer price index inflation will peak at around 5 per cent** in the second quarter of 2022, falling thereafter but remaining above target until 2024. Above-target inflation is being driven by supply shortages, base effects and a global rise in energy prices. **The Bank of England must ensure that inflation expectations do not become de-anchored** but we do not foresee a wage-price spiral taking hold.
- After a 15 basis point rise in the final quarter of 2021 **we expect the Monetary Policy Committee to raise interest rates to 0.5 per cent in the second quarter of 2022**, thereafter tightening policy through the run-off of maturing QE holdings, with further rate rises in 2023.
- We expect the fiscal deficit to return to **close to 4 per cent of GDP next fiscal year** and public sector net debt to fall **below 90 per cent of GDP** by the end of the forecast period – around 10 percentage points higher than it was before the pandemic. This constitutes an unwelcome tightening of fiscal policy, which will not be significantly offset by the slight loosening announced at October's Budget.
- Brexit has **caused the UK to orientate its goods imports away from the European Union**, with a larger share now imported from the Rest of the World. The current account deficit is forecast to settle at around 3 per cent of GDP, partly driven by lower capital inflows from the EU.

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

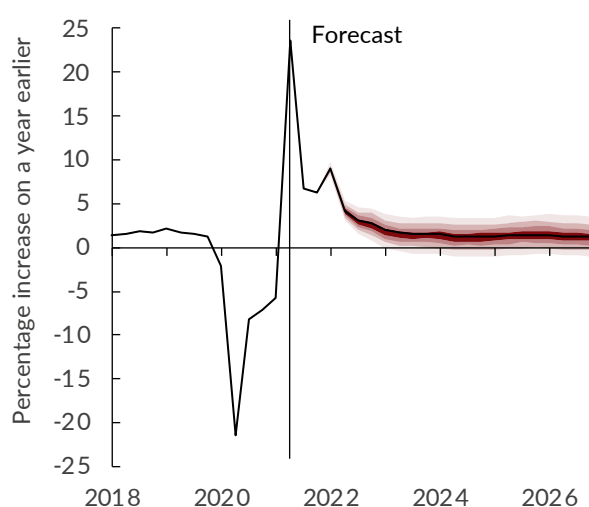
	2018	2019	2020	2021	2022	2023	2024	2025	2026
GDP	1.7	1.7	-9.7	6.9	4.7	1.7	1.3	1.4	1.3
Per capita GDP	1.1	1.1	-10.1	6.2	4.1	1.2	0.9	0.9	0.9
CPI Inflation	2.4	1.8	0.8	2.4	4.4	3.4	1.9	1.8	2.0
RPIX Inflation	3.3	2.5	1.7	3.7	5.2	4.1	2.5	2.5	2.7
RPDI	2.8	1.3	-1.2	1.2	2.3	2.8	1.7	1.7	1.4
Unemployment, %	4.1	3.8	4.6	4.7	4.4	4.5	4.3	4.2	4.2
Bank Rate, %	0.6	0.8	0.2	0.1	0.4	0.7	1.4	1.7	1.7
Long Rates, %	1.4	0.9	0.3	0.8	1.3	1.6	1.8	1.9	2.0
Effective exchange rate	1.9	-0.3	0.5	4.8	0.6	-0.1	-0.3	-0.6	-0.6
Current account as % of GDP	-3.9	-2.7	-2.6	-1.7	-2.5	-2.6	-3.2	-3.2	-2.9
Net borrowing as % of GDP	1.7	2.4	14.8	6.7	3.7	3.3	3.1	3.0	2.7
Net debt as % of GDP	79.3	83.6	94.6	94.2	93.6	94.0	90.4	90.0	89.3

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

Our central forecast is for GDP growth of 6.9 per cent in 2021 and 4.7 per cent in 2022, with risks balanced evenly on either side. See **Economic Activity**, page 8.

Annual inflation is forecast to rise to 5 per cent in the second quarter of 2022 and remain above the 2 per cent target until 2024. See **Inflation and monetary policy**, page 25.

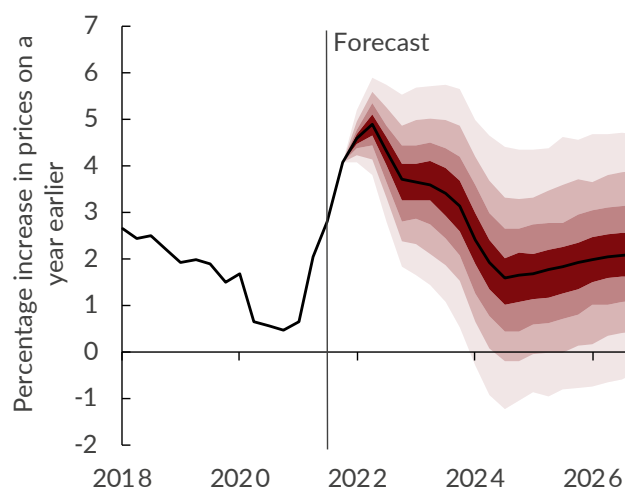
Annual GDP growth



Source: NiGEM database, NiGEM forecast, NiGEM stochastic simulation.

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

CPI inflation



Source: NiGEM database, NiGEM forecast, NiGEM stochastic simulation and judgement.

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.

1. UK Economic Outlook: Shortages and fiscal tightening threaten economic recovery from Covid-19

by Cyrille Lenoël, Rory Macqueen and Paul Mortimer-Lee¹

Economic background and overview of the forecast

Supply constraints replace deficient demand as prime source of economic concern

In our Summer Economic Outlook, the optimism of Spring's 'unlocking recovery' was giving way to concerns about the Delta variant and a loss of consumption momentum. The context for our Autumn Economic Outlook is a further slowing of growth, now resulting from a confluence of supply factors.

Covid-19 cases have remained at an elevated level since their rise in the summer, without so far threatening to break through past peaks, no doubt as a result of the high degree of antibodies among UK adults. Social consumption drove what growth there was in the summer.

A shortage of HGV drivers has a ripple effect well beyond the transport sector

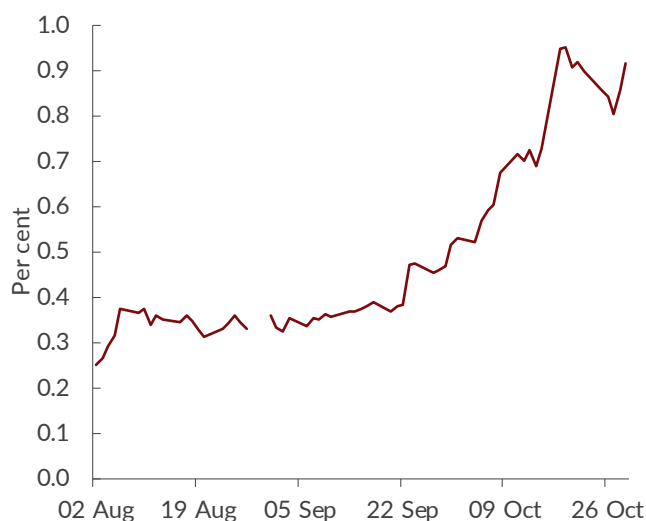
The 'pingdemic' has given way to more widespread reports of labour shortages, particularly in road transport, which in turn has led to shortages of consumption and investment goods. The rise in global gas prices has fed through to business costs and into consumer prices, damaging real incomes, confidence and economic optimism. GDP fell slightly in July before returning to growth in August, boosted by UK residents holidaying domestically.

Yields rise in anticipation of higher short-term rates

Bond yields, which surged in anticipation of rapid growth earlier in the year before easing, have resumed upward momentum, motivated more now by inflation concerns. 10-year gilts reached a two-year peak yield of 1.2 per cent on 21 October. We decompose the 10-year yield into an expectation of future short-term interest rates and a term premium and estimate that the interest rate component increased from 0.3-0.4 per cent in August and September to 0.9 per cent in the second half of October in anticipation of higher short-term interest rates (see Figure 1.1).

The term premium has been contracting since May and reached a nine-month low of 14 basis points on 29 October: this may be explained by reduced confidence in future growth prospects; term premia usually decline as policy rates rise. As discussed in the National Institute September Term Premium Tracker, the term premium also declined in the United States over this period.

Figure 1.1 Interest rate component of the 10-year gilt yield

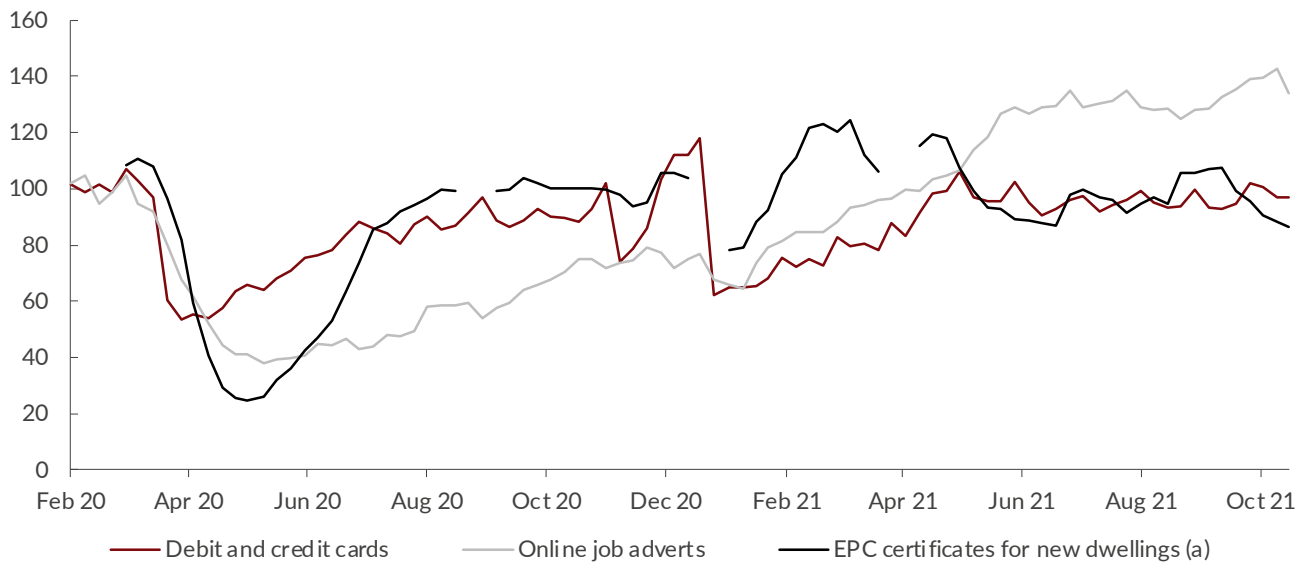


Source: NIESR Term Premium Tracker

High frequency data give a mixed picture

Indicators from the Office for National Statistics (ONS) and others continue to indicate a strong labour market, with record levels of job vacancies (see 'Households'). Spending on credit and debit cards has been largely flat since the start of the summer but, while work-related spending has continued to grow (with petrol buying contributing to a spike in late September), expenditure on delayables and staples has been flat or fallen slightly. Some of the slowing in growth represents the inevitable aftermath of an unsustainable rise when restrictions were lifted, but the return of above-target inflation together with falling economic confidence will now be joined by tighter fiscal policy.

¹ The authors are grateful to Janine Boshoff, Jagjit Chadha, Huw Dixon, Barry Naisbitt and Manuel Tong Koecklin for helpful comments and to Patricia Sanchez Juanino for preparing the charts and the database underlying the forecast. The forecast was completed on 25 October 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 (enquiries@niesr.ac.uk).

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

(a) England and Wales.

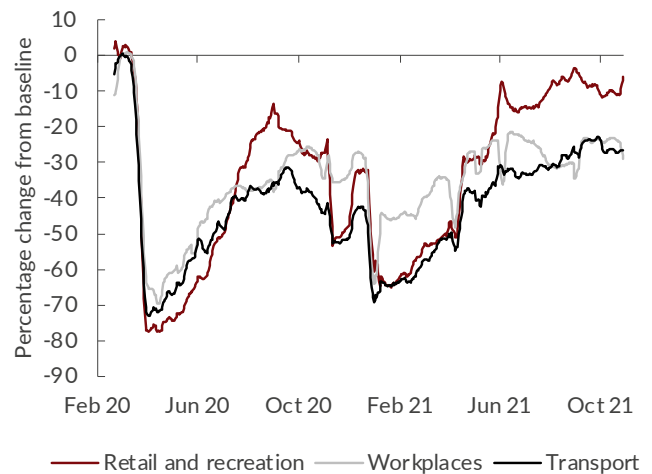
Debit and credit cards (CHAPS-based): 100 = February 2020, percentage change on a backward looking seven-day rolling average, non-seasonally adjusted, nominal prices. Job adverts: 100 = same week in 2019. EPC certificates: 100 = same week in 2019/2020, four-week rolling average, adjusted for timing of holidays.

Source: ONS, BoE, Adzuna, MHCLG, NIESR

We have also seen a slowdown in mobility which may – depending on progress in tackling the virus – be temporary. Springboard found that footfall in high streets fell by 3.6 per cent across the UK in the week beginning 17 October (the last before half term) and Figure 1.3 suggests a slight drop-off in retail and recreation activity over recent weeks.

Two out of three indicators are positive so far

In June this year NIESR's Director noted² three areas to watch in the second half of the year to monitor the recovery's progress. Firstly: the labour market does not show signs of struggling to accommodate those exiting furlough at the end of September, though it is too early to celebrate and the Office for Budget Responsibility (OBR) still forecast unemployment to peak at over 5 per cent. Secondly, we are yet to see any decline in business incorporations or rise in dissolution applications, which may support future employment and potentially productivity prospects. But thirdly, given that "this won't end for anyone until it ends for everyone", the lack of progress on vaccine waivers at the World Trade Organisation remains a major concern for the future of the UK economy.

Figure 1.3 Google Mobility

Source: Google Covid-19 Community Mobility Reports, NIESR calculations. Note: Baseline is median value for the day of the week Jan 3 - Feb 6 2020. Seven-day rolling average.

² Chadha, J., 'How will the UK economy emerge from the shadow of Covid-19?', The Guardian <https://www.theguardian.com/business/2021/jun/30/how-will-the-uk-economy-emerge-from-the-shadow-of-covid-19>

Overview of the forecast

The longer-term context is one of continuing stagnation and inequality...

We are hopefully emerging from the cloud of Covid-19 and are facing a persistent supply shock alongside potentially significant pent-up demand. It is also clear that there are large shortages of capital – human, physical and otherwise – in many parts of Britain that need to be addressed through regional regeneration.

There is still room for ‘catch-up’ growth in some sectors, when compared with their pre-Covid levels, but we are also likely to live with a degree of Covid-19 infections for some time and there will undoubtedly be people who cannot or choose not to return to all their previous economic habits.

...but with the addition of a risk to incomes from higher inflation

The persistence and size of the supply shock which is reverberating through global supply chains means that there is an inflation risk, which will need to be addressed with tighter monetary policy, alongside a need to offset years of under-investment in public services with a sustained fiscal intervention. We do not think there is an emerging dislocation in the labour market but do expect less well-off households to face the continuation of an incomes squeeze that is now over a decade long.

While the savings rate is forecast to return to normal levels relatively quickly, the balance of household savings has been boosted. This overhang of savings and disruption to supply resemble the economic aftermath of major events such as wars. In the wake of the virus and Brexit, confidence and uncertainty means that investment is likely to continue to drag, and consumers may continue to be cautious, retaining higher levels of accumulated savings, if not saving a higher share of income.

The UK’s low levels of unemployment are likely to continue...

Our outlook for employment is nonetheless optimistic: we do not see a sustained jobless rise to the level of even a year ago. Undoubtedly the Coronavirus Job Retention Scheme (CJRS) has been more effective in protecting jobs than many feared and we do not expect an increase in joblessness to have followed its withdrawal at the end of September. But despite approaching full employment, real wages will continue to stagnate unless productivity improves: something which will depend on trade, foreign investment and the development of high value firms.

...but this is likely to continue to coincide with a squeeze on real incomes for those in work

Real annual household income growth of 2.3 per cent in 2022 is flattered by the end of the CJRS: for many, especially those in work and reliant on Universal Credit, the return of above-target inflation could not be more unwelcome. People who receive income which is not subject to National Insurance contributions are among

those who will be least affected by the squeeze on real incomes in coming months.

Slower growth, higher inflation...

As a result of the persistent supply shock, the risks are that growth will be too low and inflation too high. Our forecast for GDP growth in 2021 is little changed at 6.9 per cent, but we have revised down the outlook for 2022 to 4.7 per cent. Inflation is now expected to reach 5 per cent in the second quarter of next year before falling back as large base effects drop out and the Bank of England raises interest rates to 0.5 per cent by the middle of 2022. Between 2020 and 2025 cumulative growth in our main case forecast scenario of 17 per cent undershoots that of the Office for Budget Responsibility (19 per cent) while our forecast for inflation (15 per cent) overshoots theirs (14 per cent).

...and fiscal policy providing little support

In our main case scenario fiscal policy injects little additional demand into the economy across the forecast period, with the deficit falling to below 3 per cent of GDP, the current budget approaching balance and public investment consistently slightly below 3 per cent – less than optimal at a time when even with a lower growth path there is fiscal space. Monetary policy is in a position where some stimulus can be removed and policy still remain broadly supportive. If the Monetary Policy Committee were now to begin the process of not reinvesting maturing QE debt without actively selling any, the £740 billion of current (face value) holdings would fall to £490 billion by the end of the forecast period in five years’ time (see Figure 1.26 on page 28).

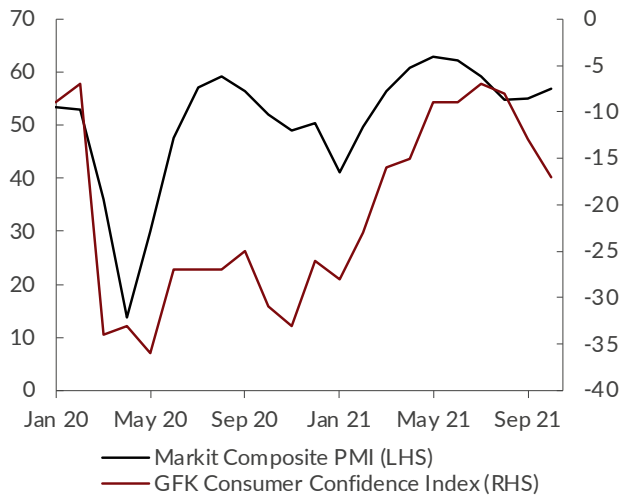
Economic activity

Growth revised up in the first half of 2021

Since the release of our Summer UK Economic Outlook, growth in the second quarter of the year was revised upwards to 5.5 per cent – something not reflected in the Office for Budget Responsibility’s forecasts published alongside last month’s Budget (see ‘Fiscal policy’, page 23). Though growth has continued well above average rates since then, it slowed notably in the third quarter, as the end of the ‘unlocking mini-boom’ coincided with the rise of the Delta variant and then was followed by increasing supply chain constraints.

But activity has weakened in the second half of the year

With winter approaching, the principal macroeconomic threats appear to be persistent supply chain disruptions and a rise in energy prices, both of which are global in origin. Added to this may be additional supply constraints arising from labour market disruption (see ‘Households’, page 13). The composite purchasing managers’ index declined from May until August (see Figure 1.4) while the GfK consumer confidence indicator fell in August, September and October; rising inflation is increasingly mentioned as a concern by business and consumer survey respondents.

Figure 1.4 Consumer and business surveys

Source: IHS Markit, GfK

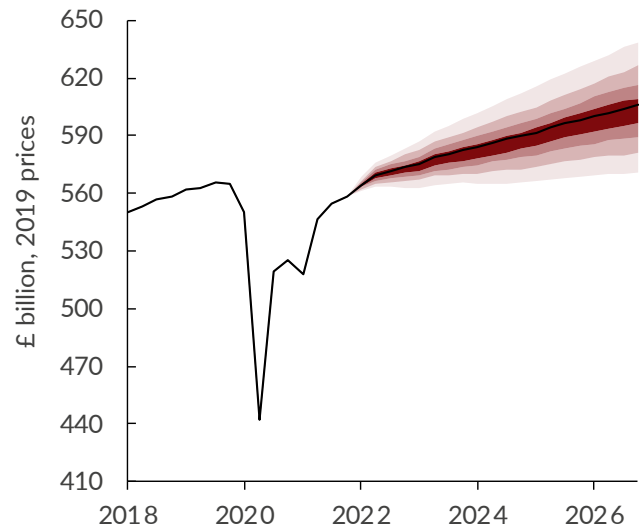
The UK remains below pre-Covid levels of monthly GDP despite a relatively strong August

Our monthly GDP Tracker has noted in recent months the remaining potential for ‘catch-up’ growth in consumer-facing sectors, where activity remains below pre-Covid peaks. Third quarter growth benefitted from stronger domestic tourism thanks to foreign travel bans. At the same time, industries with a high reliance on energy and road and sea transport are likely to see disruption continuing into 2022. With the caveat that there have been significant revisions to quarterly GDP data in recent months, we estimate growth of around 1.5 per cent per cent in the third quarter.

The weakening of the economy in the second half of 2021 combined with the stronger than previously thought second quarter means that our estimate for growth in 2021 is essentially unchanged at 6.9 per cent. We then forecast growth of 4.7 per cent in 2022 followed by 1.7 per cent in 2023 (see Figure 1.5). This means that UK GDP will exceed its pre-pandemic level, one quarter later than we forecast in August, in the second quarter of 2022.

Supply constraints and Covid-19 dominate upside and downside risks...

Upside risks to this central case forecast include the possibility of a more rapid easing of supply constraints, a global vaccine roll-out which enables international travel to normalise more quickly, and a more accommodative monetary policy stance than in our central forecast scenario (see ‘Inflation and monetary policy’, page 25). It is also possible that changes to our economic behaviour arising from Covid-19 will have an unanticipated upward influence on productivity, whether via greater adoption of new technologies or the replacement of inefficient business models with more streamlined ones.

Figure 1.5 Quarterly GDP fan chart

Source: NIGEM database, NIGEM forecast, NIGEM stochastic simulation.

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

...most of which are global in nature rather than UK-specific

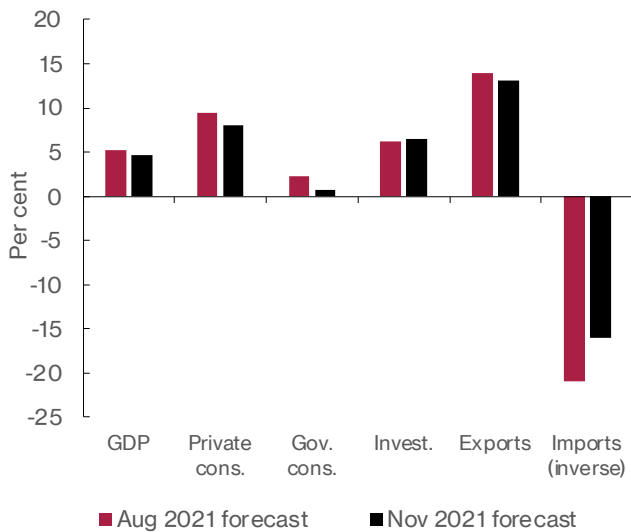
Downside risks include contagion from disruption to transport networks to the economy as a whole: a shortage of seasonal food is one potential problem. Disruptions to supplies of essential components or gas in winter would be more concerning. Some symptoms, including shortages of petrol caused by panic-buying, seem to have eased, but business leaders have warned of supply chain disruptions continuing until 2023. The largest downside risks are global in origin and include a further mutation of the coronavirus leading to renewed significant economic disruption, whether government-mandated or voluntary.

There are also domestic risks in the form of the continuing virus: if Covid-19 were to get to the point where households and businesses were choosing or having to limit their consumption, the consequences for consumer-facing services sectors would again be stark.

Household and government consumption weaken 2022 forecast

Compared with our Summer UK Economic Outlook forecast, we expect the recovery to be somewhat weaker, less supported by fiscal policy, and slightly more balanced towards investment and away from household consumption (see Figure 1.6).

Figure 1.6 Forecast growth in 2022

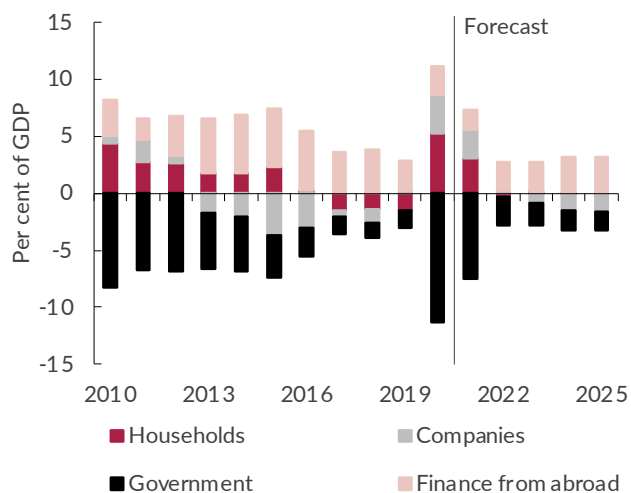


Source: NiGEM forecast

The ‘kindness of strangers’ returns, as business starts to invest again

Households’ net saving during the pandemic is forecast to come to an end, with the household sector returning to a small net investment position next year. Meanwhile we forecast businesses returning to net deficit with the foreign sector continuing to finance their borrowing and that of the Government (see Figure 1.7 and Table A9).

Figure 1.7 Sectoral balances (saving minus investment)



Source: NiGEM database and NIESR forecast

Headlines about a return to the 1970s are overstated...

In relative terms, the return of stagflation as a topic of debate seems well merited. Our long-term forecasts for the UK economy’s growth rate remain below historical trends below 1.5 per cent, while inflation looks to be more persistently above target than at any time since central bank independence a generation ago. However, the scale of the problem should not be exaggerated or inappropriately compared with the 1970s, when an energy crisis and a breakdown of the Bretton Woods international monetary system precipitated price rises across the oil-consuming economies. A wage-price spiral is significantly less likely following the reduction in trade unions’ ability to insulate real earnings from negative supply-side shocks.

...but Covid-19 and Brexit constitute a shock to the UK economy which will leave a lasting impact

The long-term consequences of Brexit and Covid-19 on the economy will not become clear for some time, but our medium-term forecast for GDP is on average around 4-5 per cent lower than that made in November 2019. It should be noted that there have been other changes to forecasts since, including from the increase in public sector investment announced at the Budget in March 2020, as well as historical data revisions. As discussed in previous Outlooks, Brexit and Covid-19 represent complementary shocks, threatening different sectors of the economy, with the potential to reinforce each others’ impacts.

All eyes are on COP26 to combat climate change

The greatest threat to global economic and financial stability at all but the shortest horizons remains catastrophic climate change. The Government last month announced additional spending towards meeting its target for net zero emissions, though this has been described as a “lack of serious new investment”³. With carbon taxation on the political agenda, Box A looks at the European Union’s proposed Carbon Border Adjustment Mechanism. In other NIESR research, Holland & Whyte (2021) show that the effects of a sudden and sharp rise in carbon price yields lower GDP and higher inflation, with countries that have a higher energy intensity of output and consume relatively more carbon intensive fuels being more vulnerable compared with countries that predominantly use gas or renewables. Holland et al (2021) find that a carbon price policy that channels carbon revenue into investment has the potential to offset the bulk of the transition costs at the global level.

NIESR research has also highlighted the role which central banks can play in mitigating the economic impact of extreme weather events; for example, through stress testing and collateral frameworks (Hurst et al, 2020), but the primary responsibility lies with finance ministries across the world and their powers to tax, price and spend.

Box A: The European Union’s Carbon Border Adjustment Mechanism: levelling the EU carbon playing field

by Alexandra Dumitru¹

On July 14, the European Commission presented 13 policy measures designed to put the EU on track to meet its ambitious greenhouse gas (GHG) emission reduction targets of 55 per cent in 2030 compared with 1990 levels. The most contentious proposal from an international standpoint is the Carbon Border Adjustment Mechanism (CBAM), which aims to create a level playing field between European Union (EU) producers subject to EU carbon pricing and their non-EU counterparts.

The EU proposal

The CBAM is not a stand-alone measure but an integral part of the revamped EU Emission Trading Scheme (EU ETS). Its primary purpose is to prevent carbon leakage – when EU firms relocate production to jurisdictions with lower emissions standards – and thereby create a level playing field between EU and non-EU producers. The proposed CBAM achieves this by imposing a levy on imports of products included in the EU ETS, starting with electricity, cement, aluminium fertiliser, and iron and steel products. The level of the import duty will reflect the EU ETS carbon prices, and will correct for any carbon price paid in the originating country, as well as emissions allowances given to EU producers for free. European Free Trade Agreement countries are excluded due to their participation or link to the EU ETS.

Interpretation

The CBAM is a welcome step towards creating the conditions for an effective carbon market and for a carbon level playing field in the EU. As an integral part of the EU ETS, the main purpose of the CBAM is to prevent carbon leakage and thereby replace current arrangements: mainly the free EU emission allowances. On the downside, its complexity will likely lead to high administrative costs while the set up could have adverse effects: the procedure around reporting on the actual emission content of imports is very complex and is likely to increase administrative burden at least as much as rules of origin do – which could increase the cost of trade by, on average, 4 to 15 per cent. These high costs could disincentivise declarants from choosing this approach given that, as an alternative, declarants can use default values provided by the EU, which are likely to underestimate emissions in some cases. Overall, the system could have the adverse effects of leaving some emissions out of the equation.

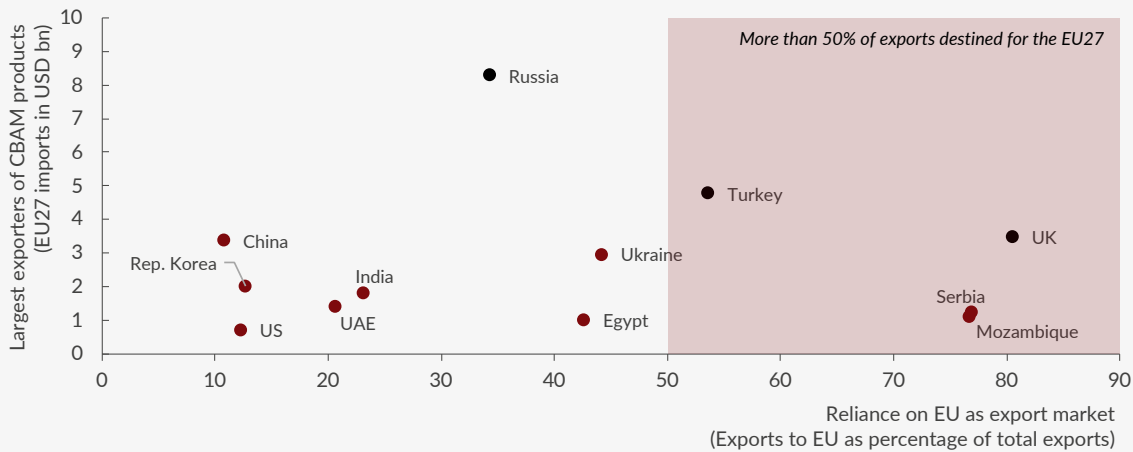
Economic impacts

Russia and Turkey seem to be the countries most affected by the CBAM proportionally, according to an analysis of trade flows and the existence of carbon pricing amongst exports of non-EU CBAM products. On the EU imports side the impact is modest on the back of an overall low share of CBAM products in GDP, with Bulgaria most exposed. Based on trade flows we would assess Russia, UK and Turkey as having the greatest potential to be impacted by the CBAM (Figure A1). Russia is the largest exporter of CBAM products to the EU; Turkey and the UK are both in the top five most significant exporters of CBAM-products to the EU and on top of that are highly reliant on the EU as an export market (their EU share in total exports of CBAM-products is higher than 50 per cent). The impact could be contained by carbon pricing in the exporting countries, as these can be discounted from the CBAM levy. In the absence of domestic carbon pricing Russia and Turkey cannot expect a reduction in the impact of the EU CBAM. The impact on the UK, however, is likely to be offset by the existence of an equivalent emissions trading scheme at home; indeed, the UK is likely to be exempted from the CBAM altogether.

EU Member States could also be affected by the introduction of the CBAM as they potentially face higher input costs. Our analysis of imports of CBAM products (Figure A2) reveals that Bulgaria is most vulnerable to the introduction of the CBAM given its significant reliance on imports from non-EU countries. The impact on these economies should nonetheless be modest, as these imports are a small share of GDP, which does not rule out the fact that the actual impact for individual companies could be significant. The economic impact analysis above is based on aggregated trade flows only. The actual effect will also be influenced by other factors, such as the emission intensity of imported products or importers’ ability to pass the costs either upstream or downstream in the supply chain. Also, it is important to note that the CBAM is a double-edged sword: as it facilitates the abolition of free allowances in the EU ETS it is expected to increase the costs of all CBAM products in the EU, irrespective of the place of production. *A more extensive analysis of CBAM is available at economics.rabobank.com*

1 Senior Economist Climate Change, RaboResearch

Figure A1 Largest exporters of CBAM products and their reliance on the EU27 market



Source: World Bank, Rabobank, RaboResearch

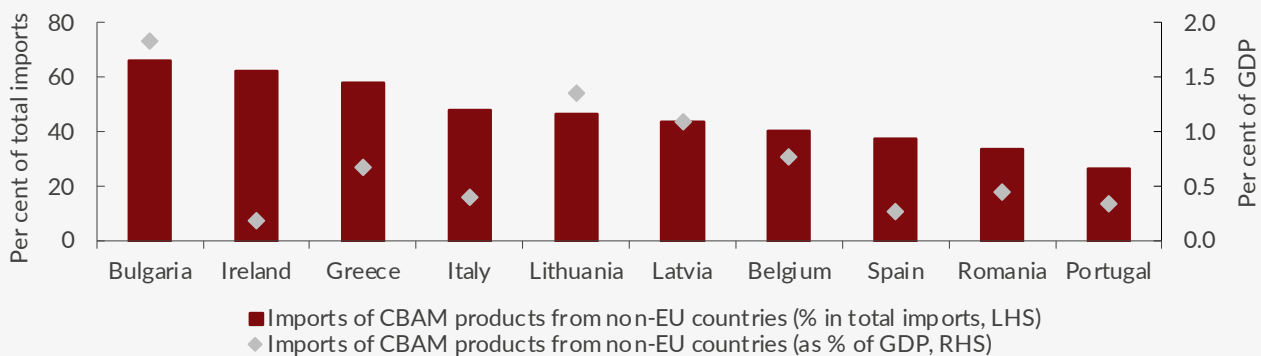
Table A1 Carbon pricing amongst large CBAM product exporters

	Carbon price/tax			OECD Effective Carbon Rate Score 2018 ²	
	Implemented	Planned	Considered	Electricity	Industry
China	YES			0.65	1.89
Egypt				n/a	n/a
India				5.10	4.68
Rep. Korea	YES			48.99	33.21
Mozambique				n/a	n/a
Russia				0.28	2.35
Serbia				n/a	n/a
Turkey		YES		0.00	2.22
UAE				n/a	n/a
UK ^(a)	YES			44.23	22.55
Ukraine		YES		n/a	n/a
US	Partially			0.78	0.47

Source: Source: OECD, World Bank Carbon Pricing Dashboard, RaboResearch.

Note: (a) The UK was still part of the EU ETS in 2018 so the Carbon Rate Score does not reflect the current situation. A higher ECRS represents a higher 'price' being put on carbon emissions.

Figure A2 Largest EU importers of non-EU CBAM products.



Source: World Bank, Rabobank, RaboResearch

2 See OECD, 'Effective Carbon Rates 2018: Pricing Carbon Emissions Through Taxes and Emissions Trading', <https://www.oecd.org/ctp/effective-carbon-rates-2018-9789264305304-en.htm>

Households

Government support helped to cushion the economic blow from Covid-19

Household incomes in aggregate fell by far less than economic activity in 2020, principally thanks to government intervention: directly, through an increase in Universal Credit and support for self-employment, and indirectly through business loans and the CJRS. Real incomes were supported by low inflation, with real personal disposable income falling by only around 1 per cent in aggregate. This conceals radically different outcomes for different groups of households: it is well established now that those who could save money working from home on full salaries – predominantly white-collar workers – were likely to emerge from Covid-19 with strengthened savings positions, in contrast to those who lost jobs or 20 per cent of their earnings on furlough. Box B on page 14 looks at incidence of financial hardship linked to the furlough scheme and whether, and how, it could be improved in future.

Higher unemployment levels threatened by an early end to the CJRS did not materialise

Since unemployment peaked in the final quarter of 2020, household incomes have been supported by moves into employment but also by millions of employed workers returning from furlough, where they had been receiving less than 100 per cent of their usual income.

Short-time working supported incomes for those in work

Average hours per employee remained well below their pre-Covid levels in the second quarter of 2021, reflecting the number of workers still on the CJRS. Short-time working may remain a reality for some workers in industries facing subdued demand. As illustrated by Figure 1.10 on page 16, an average hourly wage inflated by the CJRS was the corollary of a significant fall in hours worked per employee during 2020.

Annual pay growth reached over 8 per cent and has fallen back slightly since...

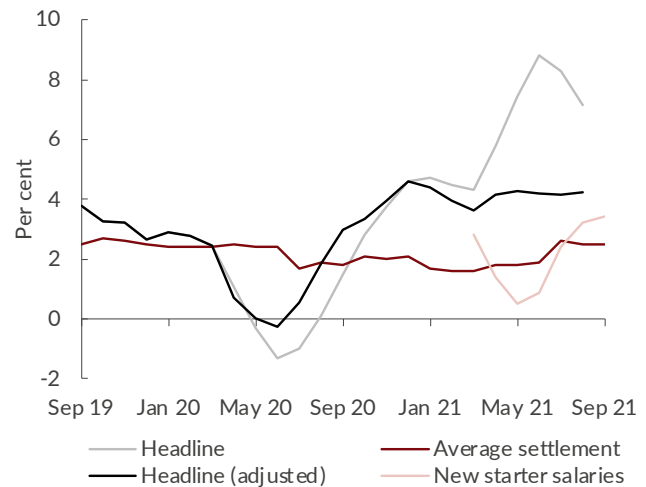
Headline growth in average earnings was 7.2 per cent in the three months to August, with regular pay rising by 6 per cent. Adjusted for base effects, which flatter these figures by comparison with a period when more people were furloughed on reduced wages, we estimate underlying total wage growth of 4.2 per cent compared with a year earlier.

...but even this is far above the average for pay settlements, suggesting greater pay drift than usual

However, over the past year, average pay settlements have continued to average around 2.0-2.5 per cent (see Figure 1.8): stubbornly consistent at a level below the headline earnings changes. Prior to the pandemic, settlements typically averaged 0.5-1.5 per cent below headline earnings growth, with the difference accounted for by elements of earnings drift, including compositional changes. Currently the gap is somewhat larger than usual which, according to Incomes Data Research (Hatchett,

2021), reflects both an increase in hours and measures taken by employers to deal with recruitment and retention, such as extra pay or bonuses.

Figure 1.8 Annual growth in earnings



Source: Incomes Data Research, Indeed, ONS, NIESR calculations. Headline series adjusted from February 2020.

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

The number of vacancies has risen to record highs in recent months and the Institute for Fiscal Studies (see Costa Dias et al, 2021) reported that, in June, vacancies for the lowest-paying third of occupations were 19 per cent higher than in June 2019, while vacancies for other occupations had only just returned to pre-pandemic levels: something which does not suggest that a large upward compositional shift is responsible for the increase in starting salaries. It may be that settlements lag changes in starting salaries: organisations collating information on settlements report a slight rise over the coming months, though with projections still at similar levels to the period before the pandemic.

...and the picture on labour shortages and wage increases is far from uniform

September's KPMG/REC survey showed a record balance of employers reporting higher starting salaries than a month earlier, but data from online job postings suggest that there is still significant variance in growth across industries and jobs. Box C on page 17 examines in more details the job market for certain in-demand industries, concluding that mismatches in demand for drivers and other specific roles are not so far driving rapid wage growth across the rest of the economy.

In aggregate, while vacancies have surged, the number of people starting new jobs has also risen above pre-Covid levels, suggesting that some degree of increased vacancies reflects a temporary backlog resulting from job matches previously put on hold by employers and employees during the pandemic. The ratio of vacancies to inflows – a potential indicator for unfilled vacancies – rose

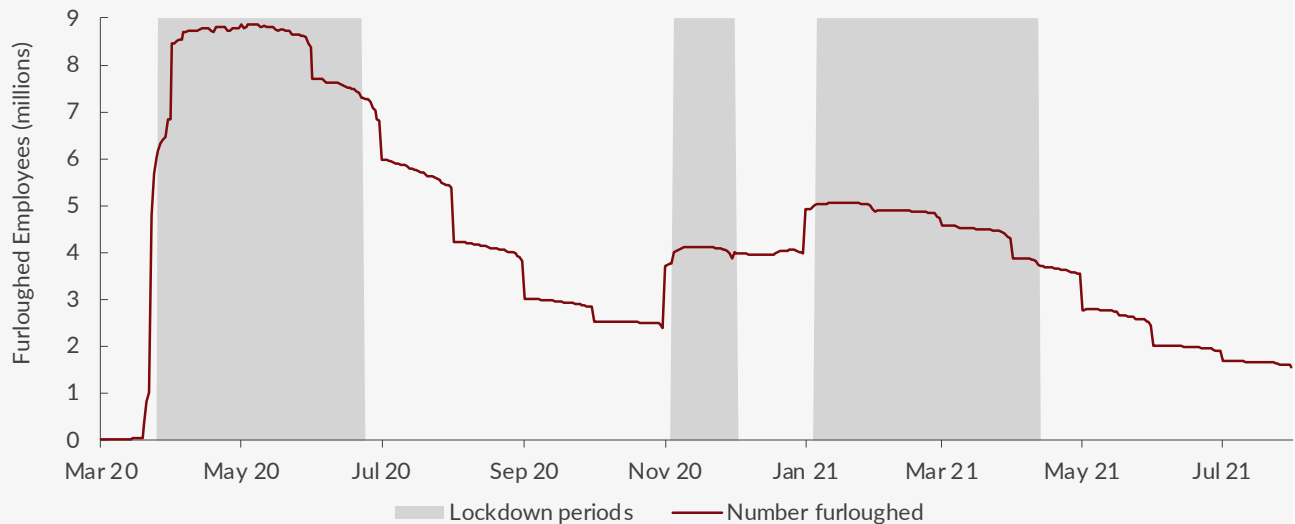
Box B: Furlough and household financial distress during the Covid-19 pandemic – insights for future lockdowns

by Christoph Görtz¹, Danny McGowan² and Mallory Yeromonahos³

The Coronavirus Job Retention Scheme (CJRS) was a key element of the government's economic response to the Covid-19 pandemic. Introduced in March 2020, the CJRS aimed to safeguard jobs and income by allowing employers to place workers on temporary leave rather than making them redundant. A benefit of the scheme to employers was that they could reduce their wage bill while they closed during national lockdowns or in the face of low demand, as the government paid 80 per cent of furloughed workers' wages, up to a maximum of £2,500 per month. When business conditions returned to normal, employers could draw upon their furloughed workforce to reactivate their businesses without incurring hiring costs and delays. Additionally, by maintaining links between employers and employees, the scheme avoided the loss of firm-specific skills.

Figure B1 shows that firms furloughed staff primarily at the beginning of national lockdowns, as these were times of acute uncertainty surrounding future business conditions and when the government required many businesses to shutter. During the pandemic, 25 per cent of UK employees are likely to have been on furlough for at least one month, with the scheme supporting 11.6 million jobs.

Figure B1 Number of furloughed employments



Source: HMRC coronavirus (Covid-19) statistics. Note: Grey shaded bars show the times of national lockdowns

For workers, the CJRS provided an income safety net by preventing a large fall in income that would have arisen in case of redundancy. However, most employers chose not to contribute to furloughed workers' wages, so that the average person on the CJRS experienced a 17 per cent contraction in monthly income.

A key question is whether CJRS-induced income reductions provoked financial distress among furloughed workers. Görtz et al. (2021) provide evidence on this question using data from the Understanding Society database that tracks a household's finances at eight points in time between April 2020 and April 2021. This household survey is representative of the UK population and covers almost the entire time during which employees could be newly registered on the CJRS. From 11 June 2021, it became impossible to furlough new workers and the CJRS was gradually scaled down before it was discontinued at the end of September 2021. The CJRS was vital during lockdowns and facilitated their implementation by preventing widespread household default, thereby increasing their acceptability amongst the public. It is likely that a kind of furlough scheme would need to be reinstated should national lockdowns be necessary in future. For this reason, it is now a good time to take stock of the effects of the CJRS on household finances.

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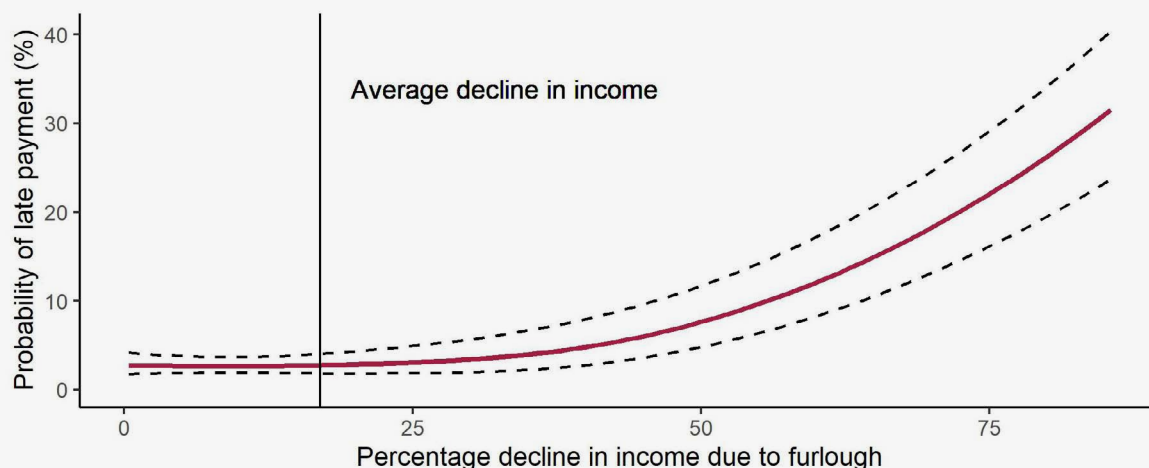
³ Lecturer in Economics, University of Westminster

Evidence shows that a furloughed worker was approximately 30 per cent more likely to be late on housing payments, and 9 per cent more likely to be late on bill payments, relative to a non-furloughed worker. Despite these seemingly large effects, the overall rise in the incidence of financial distress in the UK during the pandemic due to the CJRS was modest, equivalent to a 2 percentage point increase. A key question in light of the potential future need to reinstate a furlough scheme is whether increasing the generosity of government contributions to furloughed workers' wages would have alleviated financial distress. Figure B2 shows a similar probability of being late on either housing or bill payments between workers who experienced a furlough-induced income fall, for falls of up to 20 per cent. The rise in probability of financial distress was however increasing in the extent of income fall above 20 per cent, which only occurred for workers whose earnings fell foul of the CJRS' £2,500 monthly cap i.e. those towards the top of the earnings distribution.

Raising the government contribution above 80 per cent would therefore have a limited effect on mitigating financial distress. Raising the cap may have a larger effect, though a future government would need to consider the distributional consequences and policy desirability of such a move. In contrast, cutting the government contribution below 80 per cent would likely produce large increases in financial distress. Figure B2 shows that a 40 per cent furlough-induced income contraction increased the probability of financial distress by approximately 10 percentage points (30 per cent) whereas a 60 per cent cut to monthly income raised the likelihood by almost 70 per cent compared to non-furloughed workers. While lowering the government's contribution to wages would reduce pressure on public finances, this would likely contribute to a much higher incidence of financial hardship during the pandemic.

Internationally, there are vast differences in the design of furlough schemes, which partly result from the variety of different complementary social security mechanisms in place. Abstracting from details, in France the government wage contribution only accounted for 70 per cent of a worker's gross income; in Germany it was 60 per cent for workers with children and 67 per cent for those without. Evidence in Görtz et al. (2021) shows that the 80 per cent government contribution to furloughed workers' wages under the UK CJRS minimised the incidence of household financial distress at the lowest cost to the taxpayer.

Figure B2 Effects of decline in income due to furlough on probability of financial distress.



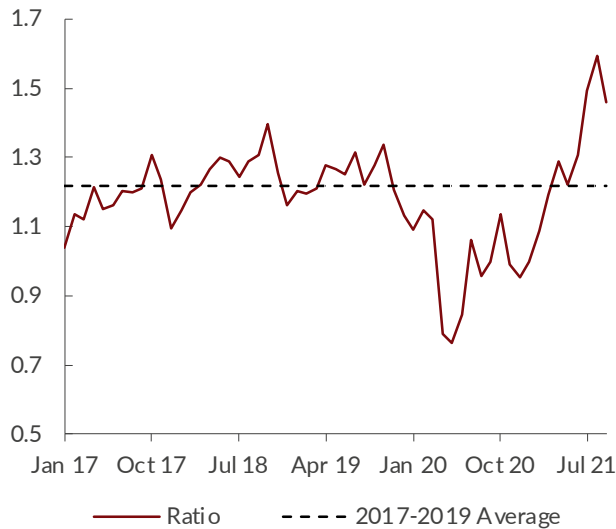
Source: Görtz et al. (2021) based on Understanding Society Data. The solid line denotes estimated probabilities. Dashed lines indicate 95 per cent confidence intervals.

References

Görtz, C., McGowan, D. and Yeromonahos, M. (2021) 'Furlough and Household Financial Distress during the Covid-19 Pandemic' (August 31, 2021). Available at SSRN: <https://ssrn.com/abstract=3914975> or <https://dx.doi.org/10.2139/ssrn.3914975>

to a five-year peak in August but declined in September (see Figure 1.9).

Figure 1.9 Ratio of vacancies to job inflows

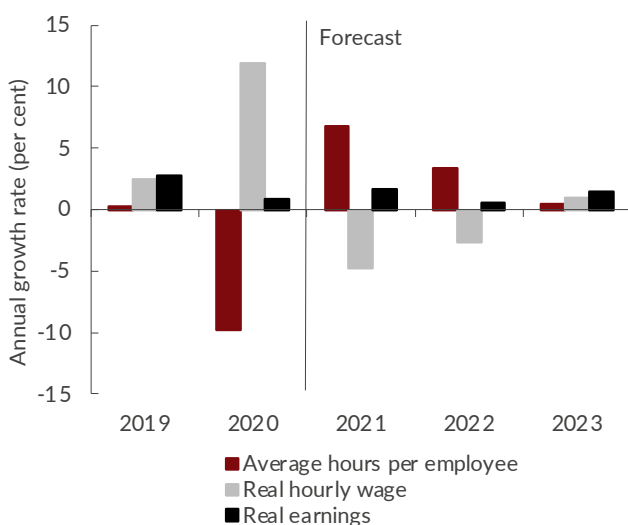


Source: ONS, NIESR calculations

Crunch time for household incomes over coming months...

Despite record headline wage growth rates, the outlook for household incomes is a major area for concern over the coming year (Table A5). In our central case forecast scenario average earnings rise by 4.5 per cent in 2022: the first full year without a furlough scheme. For some – notably in those sectors facing severe labour shortages – the near-term outlook is for nominal increases faster than for some time. The key questions for both incomes and macroeconomic stability are how sustained this relative recovery in wage growth is, how widespread it becomes, and how much of this growth is eroded by inflation.

Figure 1.10 Average earnings adjusted for inflation



Source: NiGEM database, NIESR forecast

...with earnings gains below inflation in 2022

Due to the CJRS continuing to depress average hours into 2021, we expect hours per worker to continue to grow relatively rapidly on an annual basis in 2022 (see Figure 1.10). However, despite strong headline growth in wages, with inflation forecast to be substantially above target, real earnings grow by only 0.6 per cent in 2022.

Lower-income households will also suffer from cut to social security...

The return to falling real wages is being compounded for many at the lower end of the income distribution – in and out of work – by the end of the Covid-related increase in Universal Credit. Its reduction at the end of September was the most significant overnight cut to the basic social security rate since World War II, according to the Joseph Rowntree Foundation (Costa Dias et al, 2021).

...while higher income taxation will affect all but the lowest paid and those reliant on non-labour income

Less painful for those affected, but broader in its base and therefore macroeconomic impact, is the increase in National Insurance contributions announced in September (see 'Fiscal policy' on page 23). As discussed in Box D, this will result in lower post-tax earnings when it comes into force from April 2022, but also thereafter, as it increases companies' overheads and may result in lower wages being offered. Higher corporate taxes in future, resulting from the March Budget, may also increase employer resistance to granting higher pay increases.

But the continuing recovery in employment – and income from property and investments – will support incomes for others

Helping to offset the bad news for some households, aggregate incomes will be supported by the continued movement of unemployed or inactive workers into jobs (Table A7), with unemployment forecast to average 4.4 per cent in 2022. Much of next year's projected real income growth of 2 per cent (Figure 1.11) is contributed by this return to pre-Covid unemployment levels and a forecast recovery in 'Other income', including rental and dividend income.

The employment recovery will be uneven, led by healthcare but lagging in hospitality and retail

Figure 1.12 shows the contribution of employment growth over the next five years for the eight sectors of NIESR's UK sectoral model, NiSEM (see Lenoël and Young, 2021, for a description of the model). The public sector – public administration and defence, education and healthcare (see Table 1.11) – acted as a shock absorber during the pandemic by increasing employment when nearly all other sectors were reducing headcounts, even with the CJRS in place. Employment increased by 110,000 in 2020 and we expect it to increase by 500,000 in 2021, driven by a surge in healthcare spending.

Box C: Wage pressures: a perspective from online job advertisements

by Jack Kennedy¹

Advertised pay in job postings on job listings website Indeed is rising fast in sectors where surging demand for new workers has outpaced supply. In rebounding sectors like food, distribution, construction and manufacturing, employers have been hiring at pace for months. However, the supply of jobseekers in those sectors has not kept up, leading to reports of labour shortages.

The result has been hefty increases in advertised pay for certain categories, adjusting for shifts in the mix of job titles within each occupation and the location of jobs over time. But across the economy more broadly, advertised pay has been rising at a much more modest pace.

Driving (+8.8 per cent) is the occupation with highest pay growth since the start of 2021. Interestingly, jobseeker interest in driving roles has been recovering (as measured by clicks per posting relative to the average job on Indeed). That may be related to some combination of intense recent media attention on driving shortages and jobseeker awareness of higher wages and generous signing bonuses for many of these roles. Consequently, clicks per posting for driving roles are now only 7 per cent down on their January level.

Table C1 Growth in posted wages, six occupations with highest growth

Occupation	Growth in posted wages, Jan-Oct 2021	Change in relative clicks per posting, Jan-Oct 2021
Driving	8.8%	-7.0%
Construction	8.0%	-11%
Production & Manufacturing	6.0%	-18%
Nursing	5.6%	45%
Loading & Stocking	5.6%	-46%
Food Preparation & Service	4.6%	-49%
All jobs	1.9%	-

Source: Indeed

Data from 1 Jan to 22 Oct 2021. Growth in posted wages is adjusted for shifts in mix of job titles and locations within occupations over time. Change in clicks per posting is relative to all jobs

As seen in Table C1, the other categories that have seen fast pay growth this year have generally experienced falling jobseeker interest, meaning employers hiring for these jobs are likely to face greater difficulties attracting candidates.

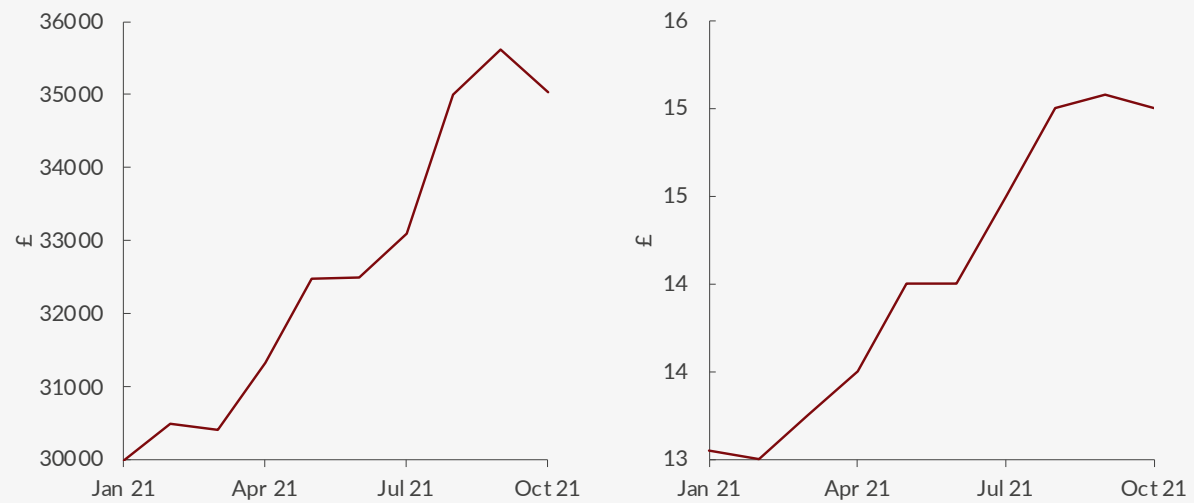
Construction has seen the second-highest rise in wages (+8.0 per cent), alongside an 11 per cent decline in relative clicks per posting. Manufacturing (+6.0 per cent), loading & stocking (+5.6 per cent) and food preparation & service (+4.6 per cent) have also seen advertised wages rise amid falling jobseeker interest.

One category where that is not the case is nursing, where wages have increased 5.6 per cent despite a 45 per cent increase in relative clicks per posting. This could reflect, in part, recently approved pay increases in the NHS. But nursing has long been one of the toughest roles for employers to fill, so any recent increase in jobseeker interest is unlikely to have materially changed the ease of hiring amid acute shortages of qualified nurses.

Within the driving category, advertised pay rates have risen most for HGV drivers. HGV driver job postings containing annual salaries are up 17 per cent since January, while those mentioning hourly wage rates are up 15 per cent. That said, the most recent data suggests pay pressures for HGV drivers may have peaked in September, with October showing a slight easing (Figure C1).

¹ UK economist, Indeed

Figure C1 Median annual salary and hourly wage in HGV driver job postings on Indeed UK

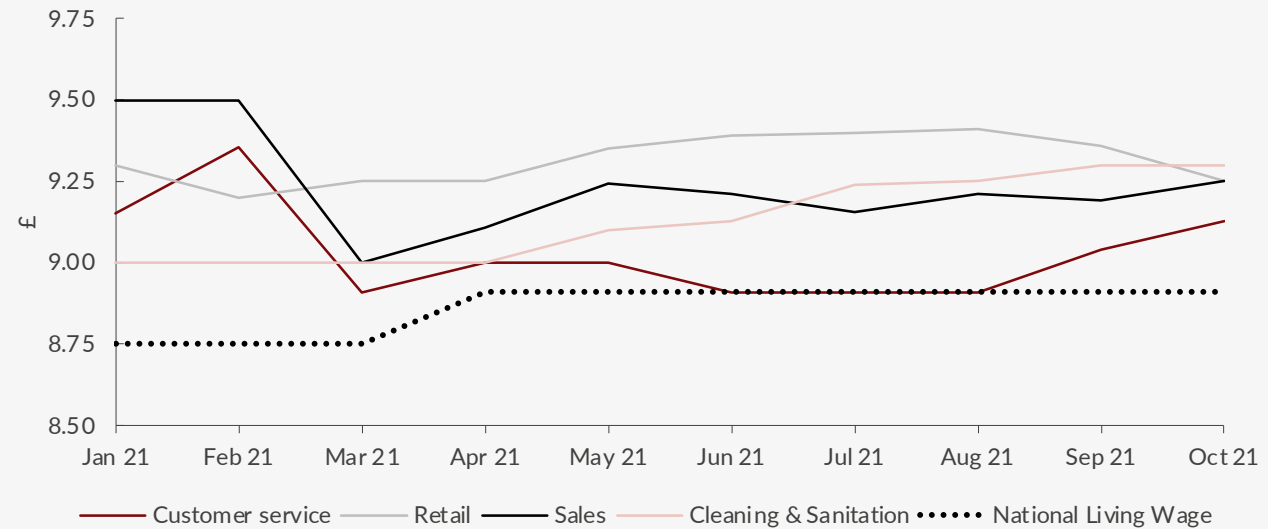


Source: Indeed
 Data from 1 Jan to 22 Oct 2021. Some postings list hourly wages while others list annual salaries.

HGV drivers are a special case, reflecting an ageing workforce and qualification requirements (in addition to the fast economic recovery and a Brexit-related drop in foreign candidates).

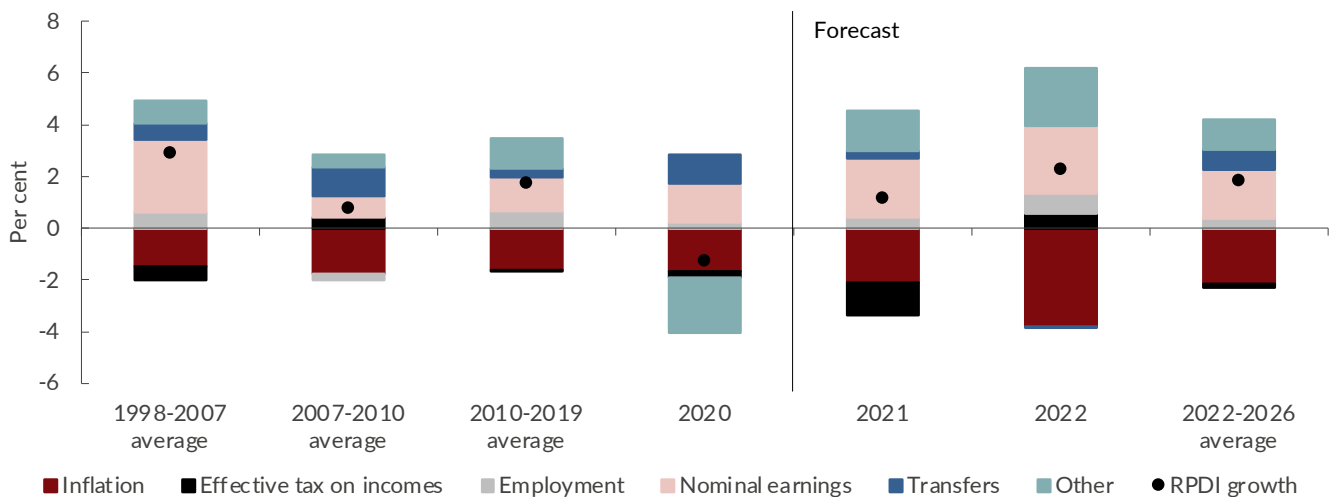
In contrast, pay for the average job title is up by an unremarkable 1.9 per cent since January (2.3 per cent annualised), adjusted for compositional changes. In the lowest-paid occupations, such as cleaning, customer service, retail and sales, advertised hourly pay rates are merely tracking the National Living Wage (though the 6.6 per cent increase announced for next year is good news for these workers).

Figure C2 Median advertised hourly wage in the four occupations with the lowest hourly rates 1 January to 22 October 2021



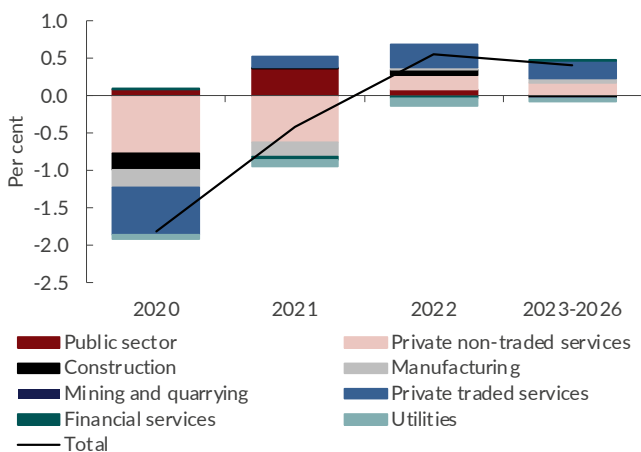
Source: Indeed
 Job postings advertising an hourly wage only.

The data on advertised wages suggest some employers are raising advertised pay to attract candidates. However, upward pressure on wages advertised in job postings appears limited to a few sectors where hiring bottlenecks are most severe. The labour market is still some way from a full recovery and this may be dampening wage growth in many sectors of the economy.

Figure 1.11 Contribution to annual growth in real personal disposable incomes

Source: ONS, NiGEM database, NIESR forecast and calculations.

The two other large sectors of the economy by employment are the internationally traded and non-traded services sectors, each accounting for about 9 million jobs. In 2020, employment fell in both, consistent with a generalized fall in economic activity: by 220,000 in traded services (transport, communications, professional activities and business support) and by 270,000 in non-traded services (hospitality, retail, arts and real estate).

Figure 1.12 Contribution of employment growth by sector over the next five years

Source: ONS, NiSEM forecast

However, in 2021, employment is expected to rebound only in traded services, increasing by 50,000 thanks to rising headcounts in professional scientific and technical activities and transport. In particular, the transport sector is trying to recruit at pace but is having difficulties attracting enough labour despite rising wages (see

Box C). In contrast, we forecast employment in non-traded services to decline by a further 215,000 this year, because of substantial scarring to industries like arts and entertainment, hospitality and retail. Next year, employment growth is set to be more even across sectors, with non-traded services finally contributing positively to employment growth.

Good news for drivers, landlords and those looking for work; bad news for workers and Universal Credit recipients

Clearly the outlook for income growth in 2022 will vary between households: better news for those finding work, those with skills that are currently in high demand, or those whose income is not subject to the new Health and Social Care Levy. The picture is worse for those in receipt of Universal Credit and those whose income derives from labour and who are receiving wage increases below the rate of inflation.

Little sign so far of the changes needed for a permanent transition to a high wage economy

In the short term, the Government can help to ease some supply shortages with temporary visas for workers in the affected sectors. In the long term, sustainable growth in earnings and the transition to a high-wage economy will require investment in skills and other productivity-enhancing areas. In the meantime, there may be relative gains for some sectors, trades and professions, but if inflation remains above target, real gains will continue to be limited.

We expect real incomes during the rest of the forecast period to grow at a similarly historically disappointing rate as during the 2010-2019 period: a failure to control inflation represents one major downside risk while faster productivity growth constitutes a major upside risk.

Household savings set to return to lower levels

Our forecast is for the household savings rate to fall relatively quickly from 11 per cent in 2021 to 6-7 per cent in 2022 and 2023. Household balance sheets will be supported by further growth in house prices, though this is forecast to slow from the recent rapid rate over the forecast period.

Taken together, these factors lead us to forecast growth in consumption of 8 per cent in 2022. There are clear downside risks to this, most notably that declining consumer confidence may lead to a higher savings rate, and potentially early warning signs in mobility data, (as seen in Figure 1.3 on page 7).

Firms

Production bottlenecks are slowing down the economic recovery

In response to a negative shock from supply chain issues an economy can increase capacity or reduce demand to close the gap between demand and supply. In practice, both are likely to happen. Faced with higher input costs, delivery delays and a lack of skilled labour in some sector, firms are not able to keep up with the recovery in demand and some plants must even run below capacity. This is likely to lead to a temporary reduction in labour productivity that will last for as long as the supply chain problems.

Production bottlenecks are limiting the ability of businesses to increase their production capacity to respond to higher demand

Thanks to the lifting of most Covid-19 restrictions in the summer, most businesses are now able to operate without government-imposed restrictions. But some businesses that had reduced their headcount and operations are now finding it difficult to scale up quickly to respond to the increase in final consumption. On the labour side, employers are reporting difficulties in increasing their headcounts (see 'Households', page 13). Supply-chain disruptions, meanwhile, make it a challenge to obtain the necessary intermediate products because of delivery delays, lack of availability of key input products and rising prices, which are global problems.

Shortages of intermediate goods force manufacturers to slow down production with ripple effects across the economy

For example, the current global microchip shortage has forced the automotive industry to reduce its production. The number of cars produced in the UK in August was 27 per cent lower than a year earlier (37,000 down from 51,000) according to Society of Motor Manufacturers and Traders. In turn, this means reduced business for the companies (domestic and overseas) that form part of the car production supply chain, as well as car dealers.

Supply chain issues are likely to last well into 2022

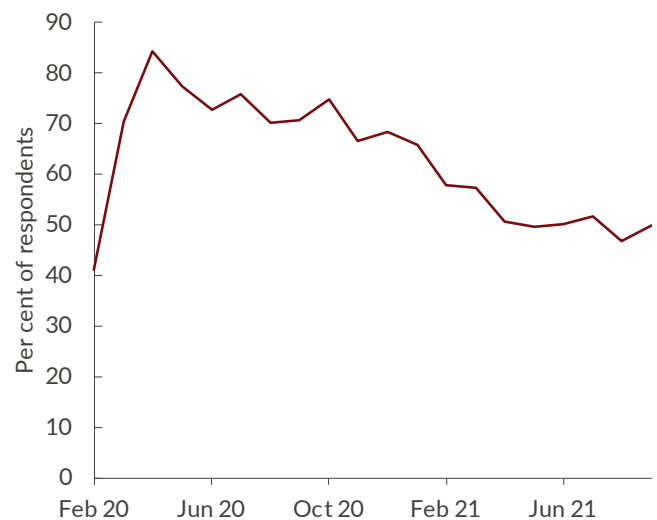
In the automotive industry, microchip shortages are

expected to last until the second half of 2022. The shortage of HGV drivers is particularly impacting the food and drink industry, creating wide-spread shortages that could last into 2023 and 2024. In our main-case scenario, we assume that trade (both imports and exports) is negatively impacted by supply-chain disruption until the middle of next year.

Elevated uncertainty weighs on investment intentions

According to the Bank of England's September Decision Maker Panel, 50 per cent of respondents estimate that uncertainty about future sales is currently high or very high. This is down from a peak of 84 per cent in April 2020, but still higher than the pre-pandemic level of 40 per cent in February 2020 (see Figure 1.13). While uncertainty related to Covid-19 seems to be decreasing, Brexit is still a significant source of uncertainty. The possibility of the Northern Ireland protocol being renegotiated (or scrapped) could have a significant impact on the EU-UK Trade and Cooperation Agreements as the European Union may ask for something in return. The Bank of England survey noted lower investment intentions in September compared to August, suggesting that investment will not return to its pre-pandemic level until 2022.

Figure 1.13 Business uncertainty index



Source: Bank of England Decision Maker Panel

Housing investment and government investment have both had a strong 2021

Private housing investment has recovered from the pandemic-induced lockdowns and in the second quarter of 2021 was already higher than in the fourth quarter of 2020. We forecast growth in private housing investment to moderate from 13 per cent in 2021 to less than 1 per cent in 2022 as the combined effects of higher house prices and higher interest rates make housing less affordable.

Overall, we forecast total gross fixed investment to rise by 5.4 per cent this year, supported by a 10.7 per cent rise in government investment.

We forecast business investment growth to be flat in 2021 after having dropped by 11 per cent in 2020

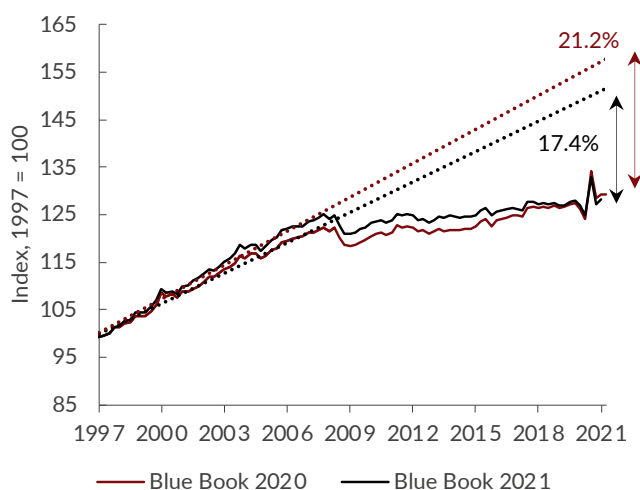
Our forecast for business investment growth in 2022 (Table A6) has been revised upwards from 9 to 11 per cent, driven by a reduction in uncertainty, improved business confidence on the back of an assumed easing of supply-chain issues globally, and positive spillovers from higher public investment.

After a year of no growth in 2020, the private capital stock is forecast to rise by 1.4 per cent on average annually between 2022 and 2025.

Lending to smaller corporations has declined while lending to larger corporations increased

Despite favourable financing conditions, demand for lending declined in the third quarter of this year for both small and medium sized businesses according to the latest Bank of England Credit Conditions Survey. It was the fourth quarter in a row that demand for lending by small businesses had declined. This is in stark contrast with large businesses, which increased their demand for lending every quarter over the same period. One explanation for this divergence is that large businesses tend to trade more internationally and therefore have benefitted from stronger demand abroad. Larger businesses may also be more diversified, making them intrinsically more resilient to idiosyncratic shocks like Covid-19.

Figure 1.14 Labour productivity per hour



Source: ONS, NIESR calculations

Productivity

The post-2008 productivity gap looks smaller as a result of data revisions

Following the introduction of double deflation in the ONS Blue Book 2021, the gap between the actual level of labour productivity in 2019 and the level implied by a continuation of the pre-2008 trend has been reduced from 21 per cent to 17 per cent (see Figure 1.14). This obviously does not explain fully the puzzle of why productivity growth slowed after 2008, but it shows that the difficulty in measuring prices in a changing economy can explain part of it. Other explanations generally given for the productivity puzzle are slow demand growth after the Global Financial Crisis (GFC), austerity policies and labour market factors (see a survey of economists' opinion in Ilzetzki, 2020).

Productivity has improved in manufacturing

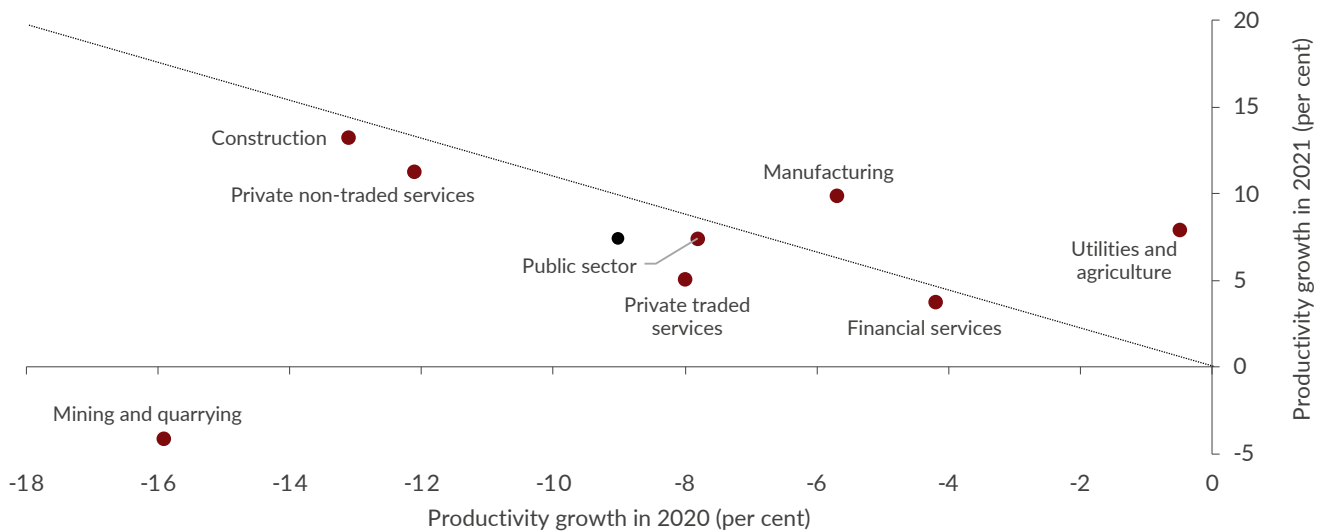
Labour productivity declined in 2020 in every sector of the economy, with the largest fall being a 16 per cent drop in output per worker in mining and quarrying, and the smallest drop being a half a per cent drop in utilities and agriculture. In 2021, we expect productivity to increase in nearly every sector; the sectors that should see the biggest productivity pick-up are those where productivity declined most last year (see Figure 1.15). One sector expected to make productivity gains is manufacturing. In the second quarter, employment in manufacturing was lower by 150,000 (or 5.7 per cent) compared with the average of 2019, whereas output was only down by 2.1 per cent over the same period.

Future trends in productivity growth will depend on whether favourable productivity gains (or smaller losses) in industries with above-average digital intensity outweigh negative effects from the pandemic, in particular scarring effects on labour markets and business dynamics (see de Vries et al, 2021).

Our main-case scenario envisages 0.5-1.0 per cent annual growth in labour productivity in the medium term

Labour productivity increased by only 0.1 per cent in the second quarter of 2021, as hours worked recovered at about the same rate as GDP after the winter lockdown. Our main-case scenario is for labour productivity to grow by 0.6 per cent in 2021 (Table A7), slowing to decline by 0.1 per cent per cent in 2022 as production bottlenecks temporarily reduce productivity, but hours worked per employee return to pre-pandemic levels. Productivity growth is then projected to increase at the end of the forecast horizon from 0.5 per cent a year to close to 1 per cent, driven by gains from digitalisation. This rate of productivity growth represents an acceleration compared to the post-GFC average of 0.5 per cent annually, but is still slower than the 1.9 per cent pre-GFC. There are significant downside risks; for example, productivity gains may be concentrated in already high performing businesses with limited spillover effects to the rest of the economy, and investment in R&D and new technologies may be weaker due to a deterioration in companies' balance sheets or persistent demand deficiencies.

Figure 1.15 Productivity (per job) growth rate



Source: ONS, NiSEM forecast

Given the uncertain productivity effect of Covid-19 and potential reorientation of trade post-Brexit), the launch of the Productivity Institute is a welcome initiative to resolve a decades-old political problem which has recently become even more stark⁴. The first evidence session, ‘Sizing the Productivity Problem’, will take place on 23 November.⁵

Trade

The pandemic has caused a shift towards increased spending on goods rather than services

Restrictions on mobility have caused a change in consumption patterns – specifically, consumers now spend relatively more on goods than they can order online than on services. This has large consequences for trade figures. Imports of services, including tourism, declined by over 30 per cent in the second quarter of 2021 compared to the average of 2019, while imports of goods declined by only around 10 per cent over the same period. The relative increase in goods versus services purchases has created supply-chain issues that are likely to last until 2022 because some shifts in consumption pattern are likely to be permanent, with Covid-19 virus and its mutations unlikely to disappear any time soon according to scientists.

Global supply-chain problems have led to delays and higher shipping costs

The sooner-than-expected strong recovery in world trade has exhausted global shipping capacity as there are insufficient container ships to respond to higher demand

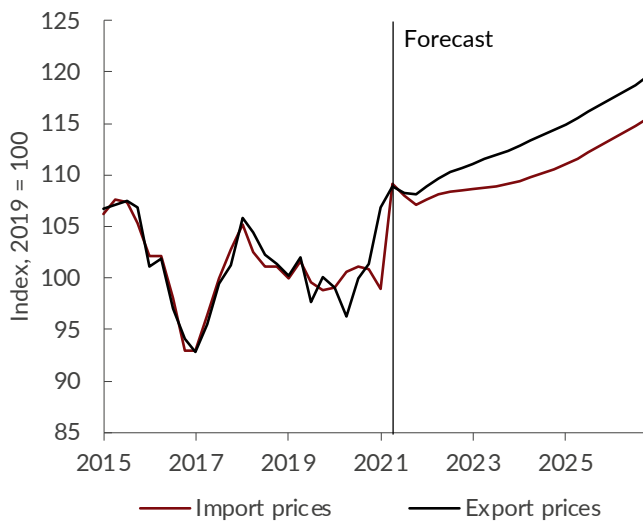
for international goods trade and Covid-19 restrictions have extended port stay times. As a result, transportation costs have increased dramatically: the cost of shipping from Asia to North Europe, for example, has increased by more than 600 per cent in a year according to the Freightos Baltic Index. Disruptions related to Covid-19 are also creating congestion and delays. In August, the world’s third largest container shipping port – Ningbo in mainland China – suspended operations for two weeks after a worker tested positive for Covid-19. The average transit time for China-US sea freight has increased by 70 per cent during the pandemic, from 43 days in December 2019 to 73 days in September 2021 according to Freightos.

Import and export prices are increasing as a result of the higher shipping costs

Shipping costs are a component in import and export prices, and such additional costs are reflected in higher prices for intermediate and final goods. Figure 1.16 shows the increase in average prices for goods and services imports and exports in US dollars since the beginning of the pandemic. Because supply-chain issues increase both import and export prices by a similar amount, there is no net impact on the terms of trade, but the increase in the sterling effective exchange rate since last year has led to an increase in the terms of trade of 2 per cent in 2021 (see Table A4). We would expect shipping capacity to catch up to demand, but this will be a gradual process because building new cargo ships or increasing loading capacity in ports takes time.

4 See Chadha, J., ‘Why has UK productivity fallen short?’, Prospect, September 2021 <https://www.prospectmagazine.co.uk/economics-and-finance/why-has-uk-productivity-fallen-short>

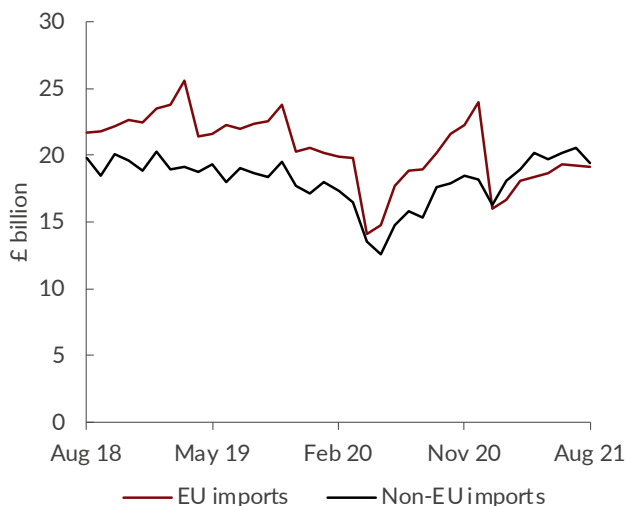
5 See <https://www.niesr.ac.uk/events/sizing-productivity-problem-evidence-session-productivity-commission>

Figure 1.16 UK import and export prices (in US dollars)

Source: NiGEM database, NIESR forecast

Brexit has caused a diversion of trade away from the European Union

Before Brexit, the UK imported most of its goods from the EU market but, since the end of the Brexit transition period, has imported more goods from the rest of the world than from the EU (see Figure 1.17).

Figure 1.17 UK goods imports

Source: ONS

This is to a large extent because the new border controls created by the EU-UK Trade and Cooperation Agreement (TCA) will increase the relative cost of importing goods from the EU compared with the rest of the world, and importers have anticipated the enforcement of those rules planned for January 2022. The impact of Brexit on exports is more ambiguous: there was a sharp drop in

exports to the EU in January when the transition period ended, but exports to the EU have since recovered, and are now on a par with non-EU exports.

We forecast UK trade to grow more slowly than GDP in 2021 because of supply chain issues, but to accelerate next year as production bottlenecks ease

In our main-case scenario, exports grow by 0.5 per cent and 13 per cent in 2021 and 2022 respectively, after having dropped by 15 per cent in 2020. Following a broadly similar pattern, we project imports growing by 3 per cent and 16 per cent in 2021 and 2022 respectively, after having dropped by 17 per cent in 2020. There is a clear downside risk that supply-chain issues could last longer than our forecast, negatively affecting trade and also consumption as production difficulties reduce the availability of goods.

The current account deficit settles at around 3 per cent of GDP

We expect the current account deficit to shrink this year to about 1.7 per cent of GDP (see Table A4), but quickly return to around 3 per cent from 2022. This is slightly lower than the 3.8 per cent average between 2009 and 2019 driven by two assumptions: firstly, that households' additional spending on housing has a lower import content than other type of expenditure and, secondly, that we expect lower capital inflows from the EU following the Brexit transition period, leading to a softer than otherwise exchange rate.

Fiscal policy

Supportive fiscal policy gives way to tightening

Unprecedented fiscal support for business and household incomes since the beginning of the Covid-19 pandemic will soon be replaced by a return to somewhat more orthodox and restrictive policy. Despite the headlines about fiscal loosening, and the Chancellor choosing to spend some of the gains from faster growth, the overall stance of fiscal policy in the next three years was characterised by the Office for Budget Responsibility (OBR) as a "sharp tightening" while the Resolution Foundation estimate that the additional spending will mean only a third of the cuts to unprotected departments' spending power since 2009-10 being reversed.

Borrowing close to 7 per cent of GDP this year is likely

Government borrowing surprised on the downside for the first few months of the fiscal year, with both spending lower and receipts higher than in the OBR's February forecast. As a result the fiscal arithmetic at the Budget was easier than anticipated at the start of the year, with a fiscal 'windfall' of around £38 billion reported by the OBR.

Higher interest rates offset some of the good news for the Chancellor

In the fiscal year to date, borrowing has undershot projections, largely thanks to lower than expected costs for welfare payments and Covid-19 related spending

including the CJRS. Working to offset this has been higher than expected interest payments due to the rise in inflation and, therefore, interest on RPI-linked gilts. As we highlighted in our Spring UK Economic Outlook (Macqueen, 2021) higher interest rates resulting from stronger demand constitute a risk to the public finances only insofar as they reduce some of the fiscal windfall from higher GDP. In keeping with this analysis the OBR revised up estimated annual interest payments by £10 billion on average (including the effect of additional spending) across the forecast period: far less than the average £48 billion upward revision to forecast receipts resulting from the same changes to the underlying forecast.

However, as we also highlighted at the time, interest rate rises not driven by higher growth expectations – potentially including those that have occurred since the summer – may be more problematic and, given the expansion of the Bank of England’s quantitative easing programme, merit a clear strategy for tightening unconventional monetary policy in such a way that neither exposes the government to unacceptable interest rate risk nor creates perverse policy incentives. NIESR has recently put forward suggestions for reducing the risk of fiscal encroachment by exchanging bank reserves for newly-issued short-dated government debt (see Allen et al, 2021).

Using out-of-date data has been of net benefit to the Chancellor in his negotiations with colleagues

The Government’s decision to close the forecast early for the OBR’s October projections reduced the upward effects of recent further increases in inflation and market interest rates on government interest payments. This would, however, have only partially offset a further improvement in the public finances from stronger underlying economic data released in late September: something which defers the additional fiscal windfall to a fiscal event not aligned with a Spending Review.

October’s Budget loosened policy slightly compared with March

At the Budget on 27 October the Chancellor of the Exchequer announced policy decisions estimated to add some £13 billion on average to public borrowing over the next five years, incorporating but unaffected by the fiscally neutral tax-and-spending package for health and social care announced in September and included in our forecast baseline. This constitutes a relatively small change to our forecast path for fiscal policy. The Chancellor included in the Budget a welcome cut to the taper rate of Universal Credit, which will go some of the way to offsetting the effect of the earlier reduction in UC generosity, which we advised against in our Summer UK Economic Outlook (see Bhattacharjee et al, 2021). The rise in National Insurance contributions discussed in Box D is fiscally neutral but does help to raise our forecast for government receipts to around 38 per cent of GDP over the forecast period (Table A8).

Our forecast was finalised before the Budget and

Spending Review were published but did incorporate the Quarterly National Accounts published in September which revised GDP estimates upwards. Simulating the measures announced at the Budget using NIESR’s macroeconomic model, NiGEM, we estimate that the small fiscal expansion announced would raise GDP by 0.5 per cent next year, with supply constraints meaning that part of its effect is to raise inflation and reduce net trade.

The timing of the Chancellor’s fiscal consolidation is risky...

The result of the decisions announced in late October is an effective fiscal tightening; this will happen which is now likely to coincide with a monetary tightening at around the same time as the economy regains its pre-Covid level, but remaining well below previous trend. While Covid-specific measures such as the CJRS have hopefully run their course, there is little macroeconomic justification for the continuation of tight public spending settlements.

...and cannot be coherently justified on the basis of a far from optimal approach to fiscal targets

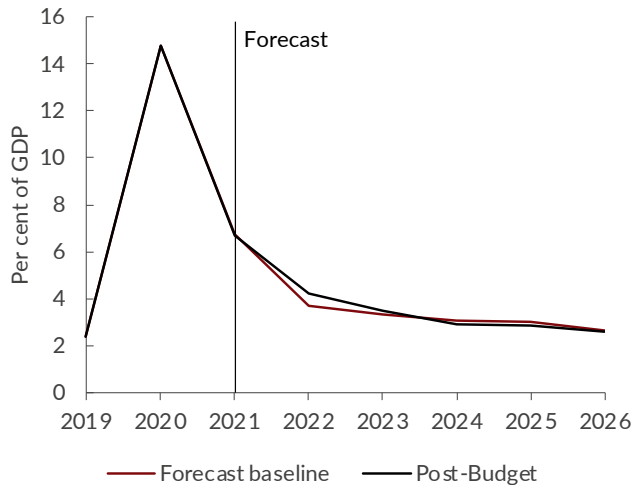
The latest set of fiscal rules provides a post factum justification for the fiscal stance announced at Budget but suffers from many of the same problems as previous fiscal rules, mistakenly placing the focus of fiscal policy on the tools rather than targets of economic policy. We welcome progress towards a whole balance sheet approach at HM Treasury but believe a new approach to fiscal events ought to incorporate a stricter timetable, 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 (see Chadha et al, 2021, in particular Chapter 1).

Especially with the early close to the forecast, the suspicion remains that the Chancellor has reverse engineered fiscal rules which will justify loosening fiscal policy in 2023 or 2024: something which may be popular and indeed better policy, but the timing of which undermines the supposed purpose of having such rules.

Deficit expected to fall rapidly back to pre-Covid levels

In our central case forecast scenario, finalised before the Budget, the deficit falls to 3.7 per cent of GDP next year and below 3 per cent by the end of the forecast period. Incorporating the measures announced at the Budget into our underlying forecast we estimate the public sector deficit would be 4.2 per cent of GDP next year (see Figure 1.18), 3.5 per cent in 2023-24, and almost unchanged in subsequent years.

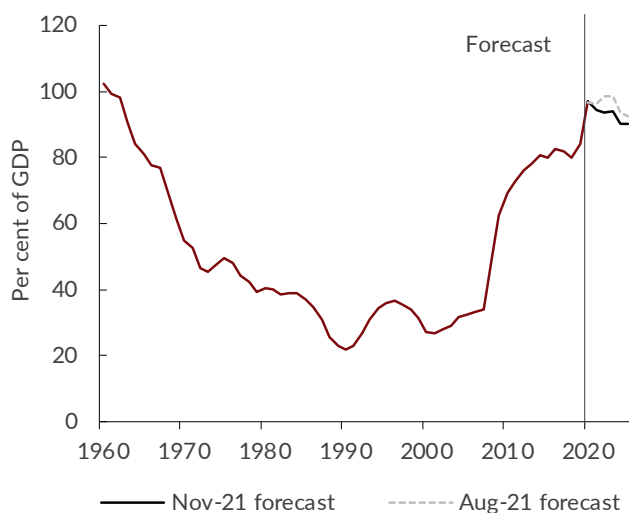
In our baseline forecast scenario the Government does not meet its new fiscal target of balancing current expenditure and taxes by 2024-25: we forecast the surplus on current spending not arriving until 2026-27, though at a five-year horizon forecast errors are likely to dwarf any forecast surplus or deficit.

Figure 1.18 Government deficit: baseline and incorporating Budget measures

Source: NiGEM database, NIESR forecast and calculations, HM Treasury

Government debt is no longer expected to approach 100 per cent of GDP

The debt ratio, which rose significantly in response to the pandemic, is forecast to fall from 94.2 per cent this year to 93.6 per cent next year (Figure 1.19), returning below 90 per cent of GDP at the end of the forecast period. The small fiscal expansion announced at the Budget will have a marginal effect on the level of public debt as a share of GDP over the forecast period.

Figure 1.19 Public sector net debt

Source: ONS, NIESR forecast. Note: Forecast completed before Budget and Spending Review

The modern trend for pre-Budget leaks undermines the setting of fiscal policy

We share the disappointment of the Speaker of the House of Commons that elements of Budgets are repeatedly placed into the public domain in advance of their announcement to the House. HM Treasury's attention to controlling the news flow undermines their credibility in managing structural reform in the economy and the Budget as economic plan, does not as a result get the scrutiny it ought to. We call on the Government to end this practice and on Opposition parties to commit to do so should they form a future Government.

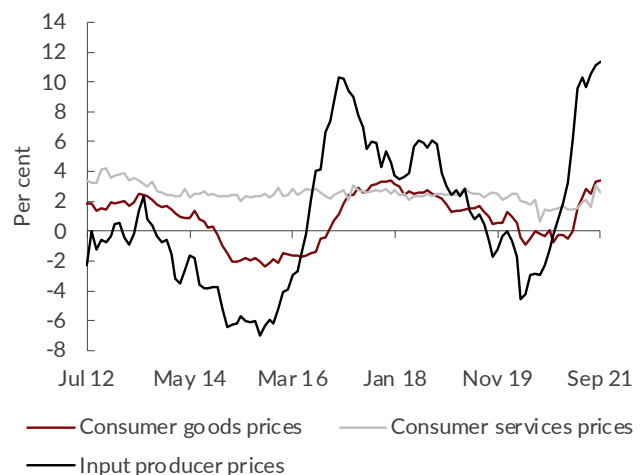
There is adequate fiscal space for the investment needed to meet our climate goals

As COP26 takes place there is no justification for the Treasury not to borrow for the investment required for a green future. The argument that to make future generations pay by taking on debt now is a specious one.⁶ Future generations will start life with higher incomes, partly as a result of carbon emissions, and will be those with most to gain from a sustainable planet. The UK's ability to issue debt offers a degree of freedom in the trade-offs between efficiency and equity in raising revenues.

Inflation and monetary policy

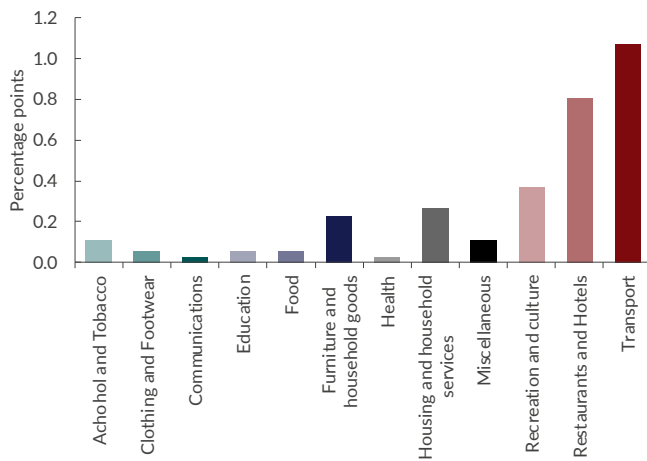
Consumer price index inflation to peak early next year

Year-on-year consumer price index inflation has continued to rise, with the peak not likely until the second quarter of next year. From 0.7 per cent in March, CPI inflation rose to 2.5 per cent in June and to 3.1 per cent in September (Figure 1.20).

Figure 1.20 UK annual inflation

Source: ONS

⁶ See Chadha, J. 'Think of investment in net zero as the planet's running costs', Letter to Financial Times, 22nd October 2021

Figure 1.21 Contributions to September CPI inflation

Source: ONS, NIESR calculations

Much of the acceleration during the third quarter was due to base effects; for example, café and restaurant prices fell last year due to the Eat Out to Help Out scheme, which did not repeat in 2021. There were also substantial contributions to September's inflation from transport, recreation and culture (Figure 1.21). While some prominent outliers in inflation distort the average upwards, about a quarter of the 720 categories have rates above 4.8 per cent year-on-year (Figure 1.22).

More adverse price shocks are on the way

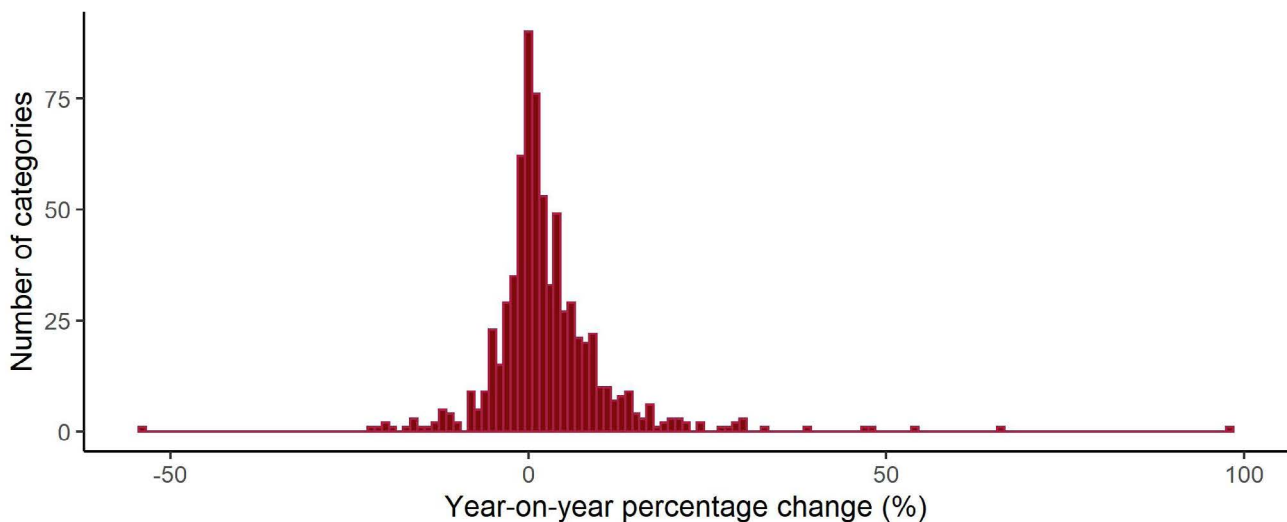
Significant contributions to inflation will come in November due to higher energy prices (limited to 12 per cent by Ofgem's price cap). There will be another, probably more significant, addition to prices next April when the energy price cap will again be due for review. In October 2021 and February next year, the cut in VAT on restaurants and hotels will reverse: this and assumed energy cap rises are modelled in Figure 1.23 which shows the evolution of annual inflation under four illustrative scenarios (not forecasts) for inflation, ranging between a future month-on-month rate consistent with 1 per cent annual inflation and one consistent with 6 per cent.⁷

Inflation is forecast to peak around 5 per cent

Together with an above-target rate of underlying price increase of, we estimate, a little under 0.3 per cent per month, we expect inflation to be over 4 per cent at the end of this year, rising to average 4.9 per cent in the second quarter of next year, and likely rising above 5 per cent in the process (Table A2).

Input costs are picking up

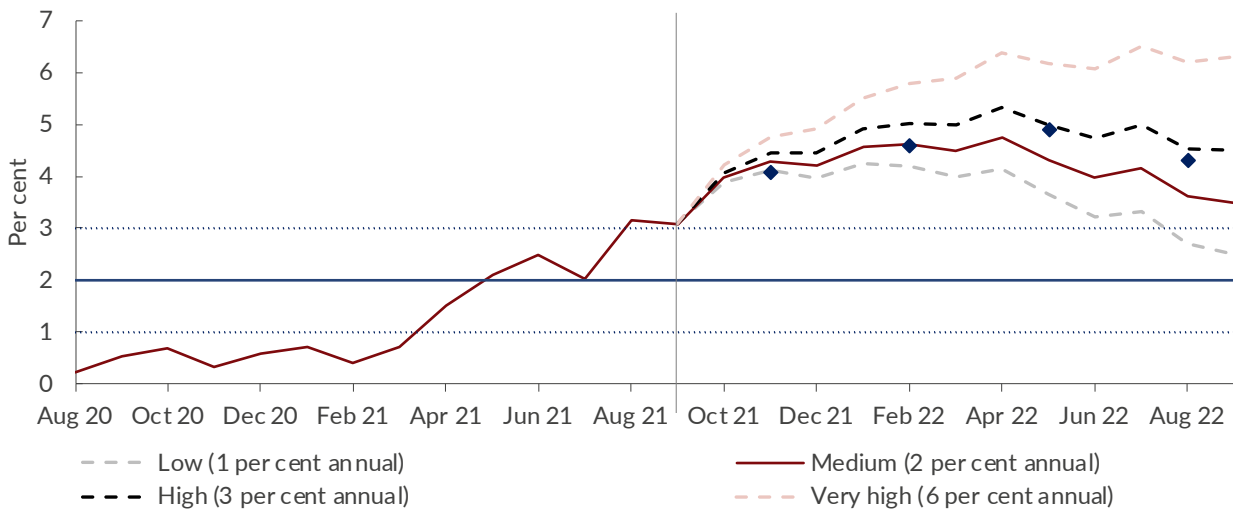
Widespread supply shortages and high transport costs are pushing up input prices. Allowing for a modest increase in productivity growth, underlying increases in unit labour costs in 2022 would contribute over 2 percentage points to inflation.

Figure 1.22 Distribution of year-on-year changes across CPI basket categories (September 2021)

Source: ONS

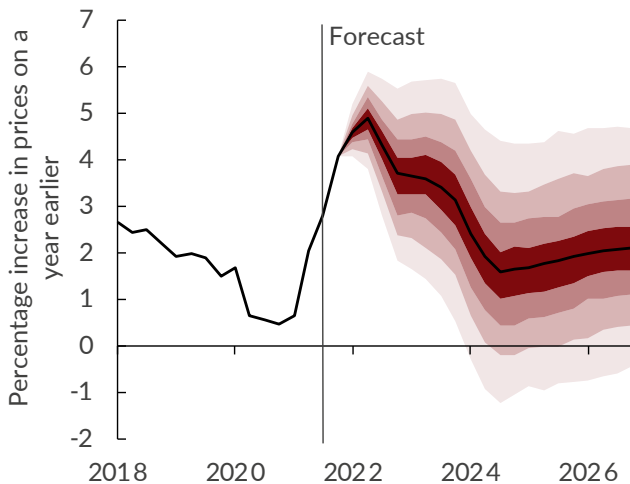
⁷ For more details, see Dixon, H. 'CPI Inflation, September 2021', NIESR Blog, 20 October

Figure 1.23 Illustrative paths for inflation



Source: NIESR calculations and forecast

Figure 1.24 Inflation fan chart



Source: NIGEM database, NIGEM forecast, NIGEM stochastic simulation

Notes: The fan chart is intended to represent the uncertainty around the main-case forecast scenario shown by the black line. There is a 10 per cent chance that 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.

Inflation expectations risk de-anchoring

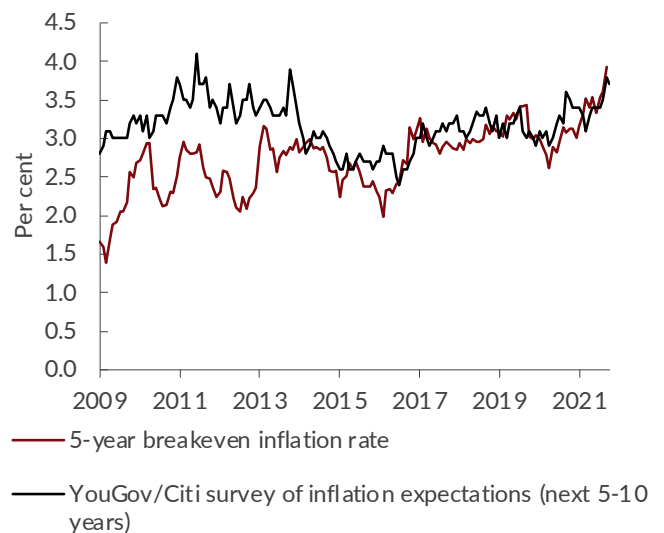
There is a danger that sustained, substantial price increases and reports of high pay settlements raise inflation expectations and fuel further increases via nominal wage growth and input costs. The break-even rate of inflation on government bonds has risen by about ¼ percentage points since the pandemic started, to 3.7 per cent. The Citi/YouGov poll of household one-year inflation expectations jumped to 4.1 per cent in September and 4.4 per cent in October, from

3.1 per cent in August, while five-to-ten year expectations rose to 3.8 per cent in September (see Figure 1.25).

The Bank of England now risks facing an uncomfortable trap of its own making

If it does not act soon to dampen inflation expectations, the Bank of England will face a policy dilemma of having to react to a persistent inflation overshoot at a time when economic growth is slowing.

Figure 1.25 Expectations of annual inflation



Source: Bank of England, YouGov/Citi, NIESR calculations. financial market expectations are based on 5-year break even inflation rates.

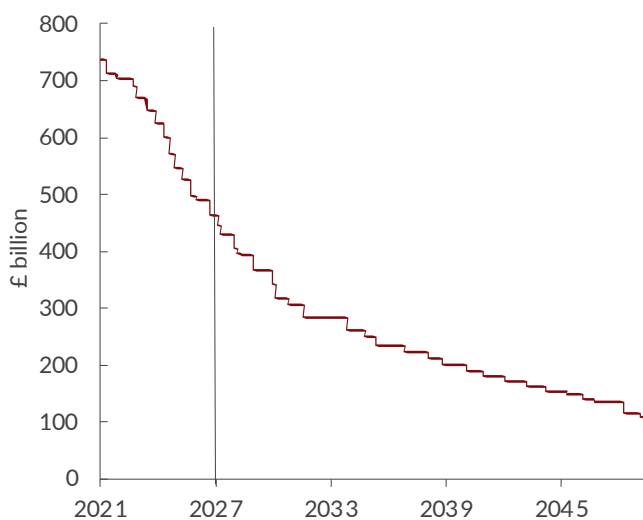
We expect that the Monetary Policy Committee (MPC) will act soon to minimise this risk, by raising interest

rates in the current quarter, by 15 basis points to 0.25 per cent, and delivering another quarter-point rate hike in the second quarter of 2022. Given slowing growth and an inflation decline after the peak in April next year, we expect the MPC to then pause the rate hike cycle, relying instead on reducing the Bank's balance sheet to signal its inflation-fighting credentials and influence expectations at a low cost to growth.

Inflation is expected to decline next year

After next spring, inflation should fall, due to this year's post-lockdown re-opening price increases dropping out of the twelve-month comparison, and, from mid-year, we expect supply shortages to begin to ease. One lesson of the inflation overshoot in 2011 is that getting back to 2 per cent after a spike can take a long time and it may be more difficult now than a decade ago, given that there is less unemployment, more excess liquidity, growth in foreign markets is better (in particular the Eurozone), the banking system is not damaged, and fiscal and monetary policy have thus far been more accommodative. Additionally, globalisation forces have waned, and Brexit means a more limited labour supply.

Figure 1.26 Size of Asset Purchase Facility holding of gilts if no further active acquisitions or sales



Source: Bank of England, NIESR calculations

Reducing the Bank of England balance sheet will be done passively to begin with

In late October, the Asset Purchase Facility had assets of some £870 billion against an ultimate target of £895 billion, implying purchases continuing for a few months more. The MPC announced in August that it would begin to not reinvest maturing bond proceeds after rates reach 0.5 per cent. Reducing the balance sheet in this way is a much milder form of tightening monetary conditions than raising rates; it may be an effective signalling mechanism but the quantitative effects are uncertain and it will be a long and possibly not straightforward process (see Lenoël, 2021). Figure 1.26 shows that, if holdings were allowed to reduce only through maturing rather than selling (and QE was not expanded) face value gilt holdings would fall from £740 billion today to £490 billion in 2026-2027.

Further interest rate increases forecast for 2023

Rate rises are then expected to resume in 2023, reaching 1.6 per cent by the last quarter of 2024 (Table A1). Inflation will remain above target until 2024 because we expect that the MPC will judge the output cost of faster disinflation to be excessive. Our assessment is that there are balanced risks around our rate profile.

Even with an early tightening of policy by the Bank of England inflation only returns to 2 per cent in 2024

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

Box D: The new employment tax¹

by Paul Mortimer-Lee

Background

In September, the government announced a new Health and Social Care Levy: initially a surcharge on existing National Insurance contributions, but with an extension to dividends. The levy will be 1.25 per cent on employee NICs and 1.25 per cent on employers, in total it is expected to raise some £14 billion per year, though there will be a refund of around £2 billion to public sector employers to compensate them for their higher costs. The net increase in revenues, £12 billion, is equivalent to about 0.6 per cent of Gross Domestic Product (GDP).

Analysis

Historically, public resistance to paying higher National Insurance contributions is lower than to paying higher income taxes. The public may also be more willing to pay hypothecated taxes (see Doetinchem, 2010), suggesting that taxpayers seeing what they (think they) get for their money makes them more willing to contemplate higher spending. However, others favouring hypothecation have argued that voters better understanding the tax implications of spending will oppose increased outlays (Teja and Bracewell-Milnes, 1991; Wilkinson, 1994).

The levy will apply to dividends as well as employment incomes, but not to pensions or other forms of non-work income. It increases the tax burden on workers relative to the retired, with the latter group also set to benefit most from increased health and social care spending. Since taxes on self-employment incomes will rise by 1.25 percentage points, instead of 2.5 percentage points in total on employment incomes, the incentive to be self-employed increases.

Who will bear the tax burden? Economic theory says that it does not matter to which side of the labour market a tax applies - the ultimate incidence of the tax depends not on who first pays the tax but on the demand and supply conditions in the labour market. Thus, splitting a tax rise between employers and employees, as with the levy, is economically unnecessary and merely obscures the size of the tax increase. The standard economic wisdom is that since the demand for labour is far more elastic than the supply, employees bear all of the burden of payroll taxes, whoever pays the initial tax (see, for example, Brittain, 1971). However, this may not apply fully in the short run (see Alvaredo et al., 2017; Beach and Balfour, 1983).

Table D1 Labour shares by sector (per cent)

Compensation of employees as a share of...	Value Added	Gross Output
Agriculture	37.7	14.0
Production	53.6	19.1
Construction	44.0	17.2
Distribution, transport, hotels and restaurants	68.0	35.9
Information and Communication	60.5	34.3
Financial and insurance	55.0	25.1
Real estate ²	6.3	5.1
Professional and support	62.4	35.8
Government health and education	76.4	47.5
Other services	54.6	36.0

Source: ONS

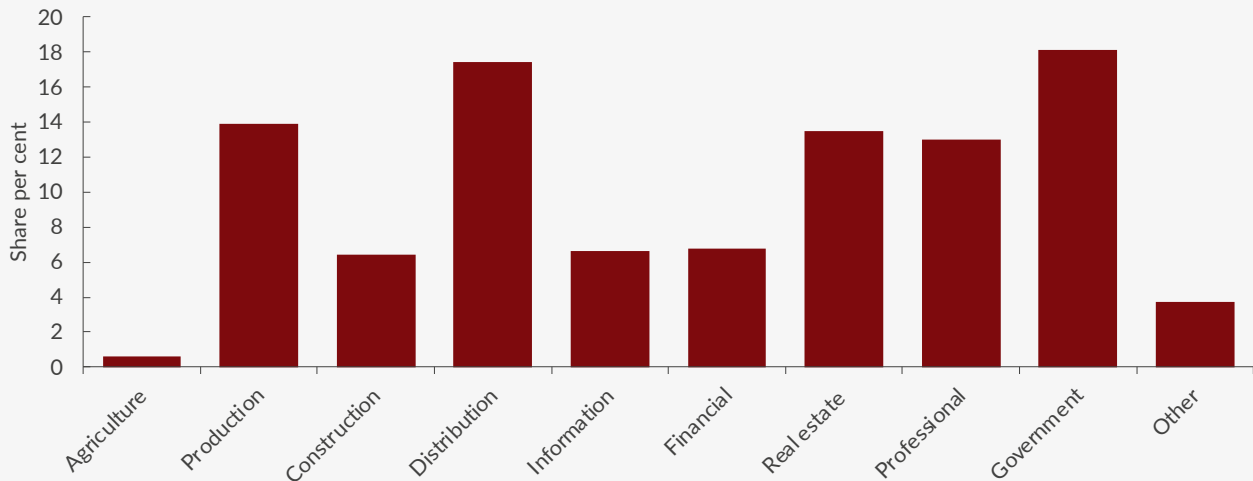
One of the chief criticisms of the levy is that the same tax revenue could have been raised more efficiently and equitably, for example, by raising income tax, which is levied on a wider range of income than National Insurance, which is payable only on labour income (extended here to include dividend income)..

1 The author would like to thank Jagjit Chadha, Rory Macqueen, Neil Lakeland and Barry Naisbitt for helpful comments, Cyrille Lenoël for NiGEM simulations and Patricia Sanchez Juanino for research assistance. The views expressed are his own, as is the responsibility for any errors.

2 Mostly imputed rent of owner-occupiers.

Just under 1 million businesses not eligible for the Employment Allowance will suffer from the tax. Firms with the most significant hit will be larger employers in industries with labour costs making up a large fraction of total costs. Table D1 shows that the sector with the highest share of labour costs is distribution, transport, hotels, and restaurants. This includes many businesses that were among the worst affected by Covid-19.

Figure D1 UK sector shares



Source: ONS, NIESR

Macro effects

Using NIESR's macroeconomic model, NiGEM, to simulate the increase in NICs, we find that the increase in the household tax burden will reduce real personal disposable incomes. A reduction in the savings rate means that consumption falls by less. Lower consumption and lower corporate profits will be a slight dampener on investment. Exports will be marginally weaker due to poorer competitiveness, but lower domestic demand means softer imports also. In total, we estimate that the tax increase would reduce consumption by about ¼ per cent after a year but by about ¾ per cent in the long-run.

However, the levy is fully allocated to finance increased public spending. Public spending has a lower import content than consumption, so switching resources from households to government increases the share of total spending going on UK-produced goods and services. If increased spending coincides with increased taxes, simulations suggest that GDP initially could be higher by about ¼ per cent.

The longer-run effect of increasing taxes and spending would be less favourable for GDP, with NiGEM suggesting a slight decline relative to the base. The clawback of the initial gain arises because part of the resources relinquished by the private sector would have gone on investment. Lowering investment will lower the future growth rate slightly. The main effects are to redistribute resources between sectors - making more resources available for public consumption by reducing the resources available for the private sector, mainly household consumption.

For a more in-depth discussion of this topic, see NIESR Policy Paper 030, 'The New Employment Tax', P. Mortimer-Lee, October 2021.

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2 UK Regional Outlook: Autumn 2021

by Arnab Bhattacharjee, Adrian Pabst and Tibor Szendrei (with contributions from Andrew Aitken, Larissa Marioni, Ana Rincon Aznar and Manuel Tong)

- We forecast a widening of regional disparities between the metropolitan South East and other UK regions, and a squeeze on the income of the poorest households resulting in a doubling of destitution.
- A marked slowdown in economic growth to less than 1.5 per cent on average per year in 2023-26, combined with continued supply chain disruptions and uncertainty over the Brexit deal, will exacerbate interregional inequalities, notably in Northern Ireland and parts of the South East (e.g. Dover port) and the Midlands (e.g. haulage and warehouses).
- The sharp rise in prices (food, petrol and energy) will disproportionately affect low-income households concentrated in some of the most deprived parts of the country, such as the North West and Northern Ireland. Relative to a counterfactual economy without Covid-19 and Brexit, household incomes in the lowest decile in 2022-23 would be about 23 per cent lower, while supported by welfare, the consumption of these poor households would be 11 per cent lower.
- Withdrawing the Universal Credit (UC) uplift worth £20 per week at the end of October 2021 will leave the poorest households worse off, in particular those close to the destitution margin which are concentrated in the North (especially the North West), in Northern Ireland as well as in parts of London and the South East. Since the UC uplift accounted for less than only 5 per cent of the welfare budget, we think that the withdrawal was both untimely and unnecessary. The uplift should either be reinstated or higher destitution should be mitigated by a new policy.
- Box E shows that the UC uplift, while small compared to the large impact of the Covid-19 shock, provided some respite to the poorest households – supporting consumption particularly in the bottom decile. It also brought some spill-over benefits to the households not in destitution but still very poor. Reducing the UC taper rate from 63 per cent to 55 per cent benefits a different cohort and is not a substitute for this policy.
- However, higher welfare payments are not a long-term solution to poverty. There needs to be better policy to support local firms in creating better jobs and providing the skills that are needed. These are some of the biggest tasks in relation to regional regeneration.

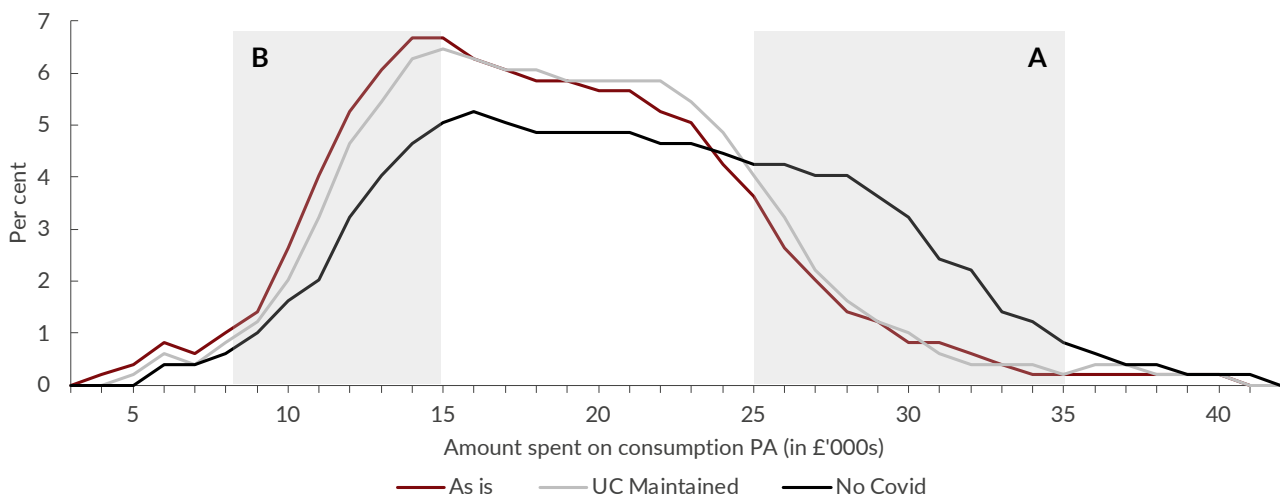
Regional Outlook

Following the Autumn Budget and Spending Review, the government's principal priority is to deliver on its 'levelling up' agenda. While the relevant White Paper is now expected to be published by the end of 2021, the Chancellor has already earmarked several policy areas that will receive extra funding – notably skills, housing, R&D, and transport (NIESR, 2021b). As the focus shifts from spending pledges to policy implementation, two key questions are about institutions – which level of decision-making will be involved (predominantly central government or also, and to what extent, city regions and local authorities?) and how to coordinate policies across departments? The danger is that continuous policy churn (e.g. Higher Education/Further Education), combined with departmental silos and central diktat, will likely limit the impact of higher spending and fail to address the deep-seated reasons for regional disparities (Pabst and Westwood, 2021).

Our central forecast is a widening of regional disparities and a squeeze on the income of the poorest households. Figure 2.1 shows the distribution of projected household consumption in 2022-23 under three cases. The red line

shows the fraction of households at each consumption level that we project for next financial year in the absence of any further changes in policy. The black line shows the level of consumption we project had the global pandemic not occurred. So, at the mode, some 8 per cent of households will have consumption of £13,000 per year or 32 per cent of households will have consumption in the range of £10-15,000. The mode would then have been £14,000 with some 6 per cent of households and there would have only been some 21 per cent of households consuming in the range of £10-15,000 per year. Indeed, in this case nearly a quarter of households would have consumed in the range of £15-30,000. We can begin to think of this change in the proportion of households consuming at lower levels as a measure of the short-term scarring produced by the pandemic. The area labelled A helps us see part of the scarring at this point in the distribution. We can also assess the impact of removing the Universal Credit uplift as it would reduce the fraction of households at the lowest levels of consumption. The grey line is at point B to the right of the blue line, indicating that fewer households are at lower levels of income. Thus, the UC uplift of £20 per week substantially cushioned the shock, particularly in the lowest decile.

Figure 2.1 Impact of Covid-19 and Universal Credit uplift on distribution of household consumption in 2022/3



Source: NiGEM, NiReMS and LINDA

Turning now to regional variation, and in line with the previous Outlook in August 2021, we forecast a widening of regional disparities in the main economic indicators – including Gross Value Added (GVA), employment, unemployment, labour productivity, skills, firm births, and innovation. We also forecast a squeeze on the income of the poorest households in some of the most economically deprived parts of the country (e.g. North West and Northern Ireland), which will result in higher levels of destitution. However, our analysis suggests that the lifting of travel restrictions and the COP26 summit in Glasgow will provide some relief from destitution to parts of the UK in 2021Q4, most notably Scotland and London.

However, a slowdown in economic growth from 2023 onwards partly driven by rising prices will further delay the return to pre-pandemic levels of output and employment for parts of the country, particularly the North, the Midlands and Wales. Without a coherent set of regional and industrial policies and concomitant institutional reform that will help achieve convergence in productivity and living standards, interregional inequality in England and in the three devolved nations will not significantly fall and may even increase.

Table 2.1 Regional GVA (Gross Value Added) relative to pre-pandemic level in 2019Q4

	UK	The North	The Midlands	South & East	London	Wales	Scotland	N Ireland
2020q4	-6.2%	-5.9%	-6.1%	-6.2%	-6.5%	-5.3%	-6.0%	-8.4%
2021q4	-2.2%	-2.5%	-2.9%	-2.9%	-2.3%	-2.5%	2.8%	-2.5%
2022q4	1.1%	0.1%	1.0%	0.6%	1.5%	0.1%	1.4%	1.7%
2023q4	2.9%	2.1%	2.8%	2.4%	3.3%	2.0%	1.9%	2.1%
2024q4	4.2%	3.4%	4.2%	3.8%	4.6%	3.2%	2.8%	2.3%

Source: NiReMS, NiGEM and NiSEM

Against this backdrop, we provide an overview of socio-economic profiles of the short-to medium-run future projections, both for regions of the UK and categories by household demographics. We base these projections on our regional model NiReMS (National Institute Regional Modelling System), launched in February 2021 (see also NIESR, 2021a). 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 and 2021).

Based on this model, we provide in this chapter forward-looking economic outlooks by broad regions of England and the devolved nations of the UK. Besides GVA, regional employment and productivity, we base our discussion on an analysis of labour force composition, including inactivity and unemployment rates across regions and demographic features, and some findings on income, consumption and savings. The picture that emerges is that the recovery continues to be very uneven, with deep disparities between income groups, parts of the country, age and gender. Only an overarching strategy with tailored, targeted policy interventions combined with institution-building can bring about sustained regional regeneration.

GVA, (un)employment and labour productivity

Compared with the Summer 2021 Outlook, faster than predicted economic growth in 2021 and 2022 will bring forward the return to pre-pandemic levels of output for many regions of the UK such as London and Scotland. However, with growth slowing down to approximately 1.5 per cent in 2023-26 (lower than during the decade prior to the Coronavirus crisis), there is permanent scarring with no region recovering to pre-pandemic growth trends by 2025. However, almost all regions return to the level of output in 2019Q4 by 2022Q4. Though they are now forecast by the OBR to be lesser (OBR 2021), the scarring effects of the pandemic will contribute to widening regional disparities as London and parts of the South-East

grow faster than the rest of the country after the initial rebound (Table 2.1).

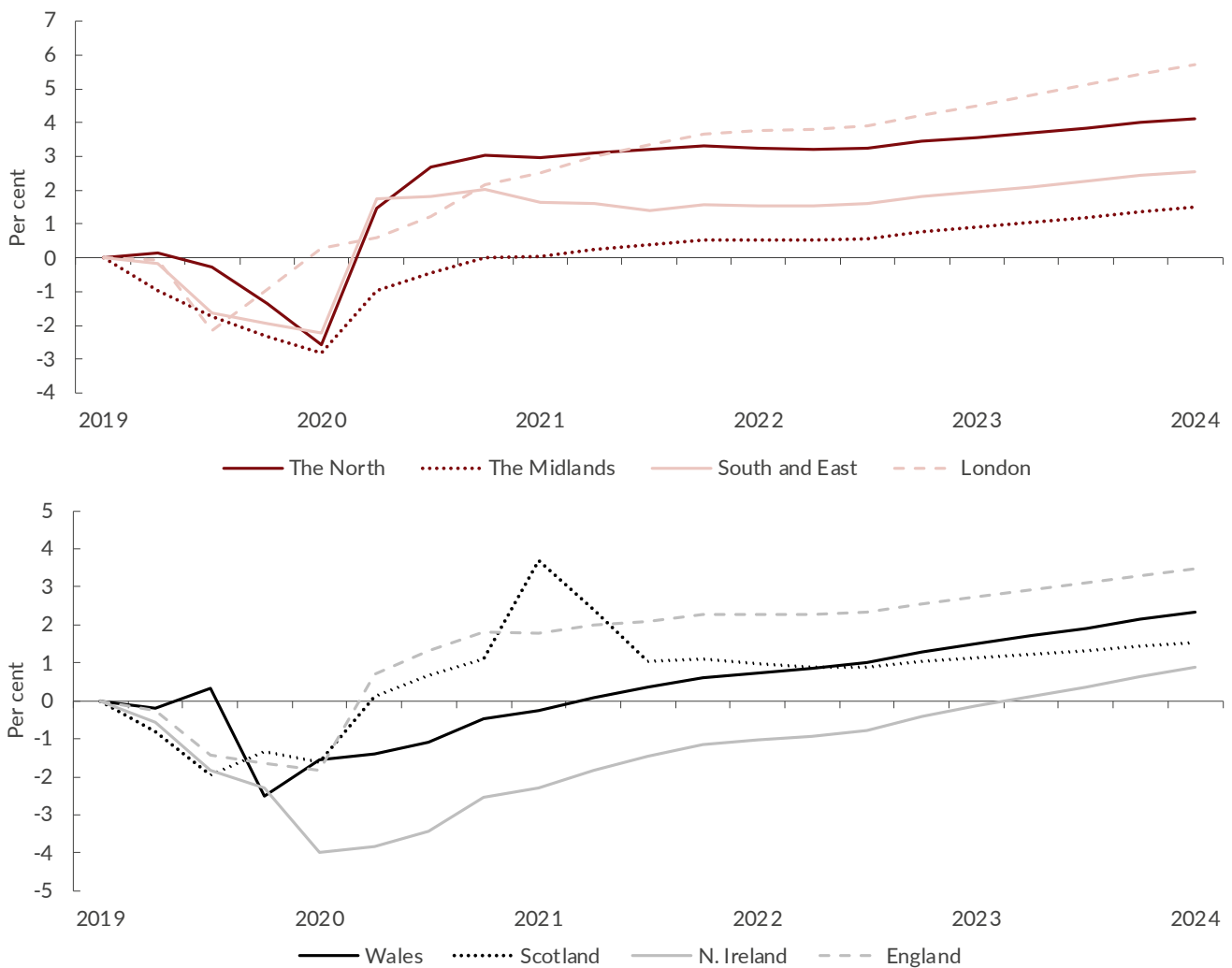
Backed by a boost to travel and hospitality, including the COP26 event, all nations of the UK and English regions are expected to return to pre-pandemic employment levels by the end of 2021 or the beginning of 2022 (Figure 2.2). The only exception is Northern Ireland, subject as it were to uneven progress on the Brexit deal, which will return to 2019Q4 employment levels only in 2023. Labour productivity per hour in some regions will remain below pre-Covid levels for longer than we previously expected. We forecast that unemployment will grow in London and Northern Ireland and inactivity will increase in Wales and Northern Ireland.

With the end of the furlough scheme, unemployment will rise in 2021-22 across all nations and regions of the UK, except London. However, despite the small decrease, the unemployment rate in London remains very high. Further more, the disaffected workforce is expanding with projected inactivity rates rising sharply to about 35-40 per cent or above in the North, the Midlands, Wales and Northern Ireland, while they fall to below 30 per cent in London (Figure 2.3).

Regional productivity levels continue to evidence strong performance of London, with output per hour projected at about twice anywhere else in the UK (Figure 2.4).

Skills and labour-market interventions

A skills mismatch and differences in educational attainment are key drivers of the UK's higher interregional inequalities. Variations in the share of high-skilled workers correlate very highly with local and regional disparities in wages (correlation coefficient above 0.90). Whereas London has 58.7 per cent of working-age people at the highest level of National Vocational Qualifications (NVQ4+), the corresponding figure for the North-East is 34.4 per cent.

Figure 2.2 Regional employment levels relative to 2019Q4

Source: NiReMS

New funding for skills

In the Autumn 2021 Budget and the Spending Review, the government announced a £3.8bn increase in skills spending by 2024-25 to boost growth and productivity by increasing post-16 education and creating opportunities for people wishing to acquire technical qualifications. This increased spending includes an extra £1.6bn for 16-19-year olds' education in England, and provides for up to 100,000 Technical or T level students by 2024-25.

There is also extra funding for adult training, including more access to level 3 courses in areas such as engineering and digital skills as well as a scaling up of 'Skills Bootcamps'. Added to this is £560m for the Multiply programme to develop adult numeracy skills. Once implemented, these measures will likely reduce the productivity differentials between and within regions.

However, it needs to be recognised that the increase in skills spending will not make up for a significant fall in

skills spending since 2010. To a large extent, the Autumn 2021 budget is seeking to reverse the cuts made by the Conservative-Liberal Democrat coalition government (2010-15). Yet, while new funding is vital for people who want to pursue vocational or technical training, the extra spending is far too little to address the skills mismatch, which both Brexit and Covid-19 have exposed and exacerbated.

Skills shortages and inadequate policy responses

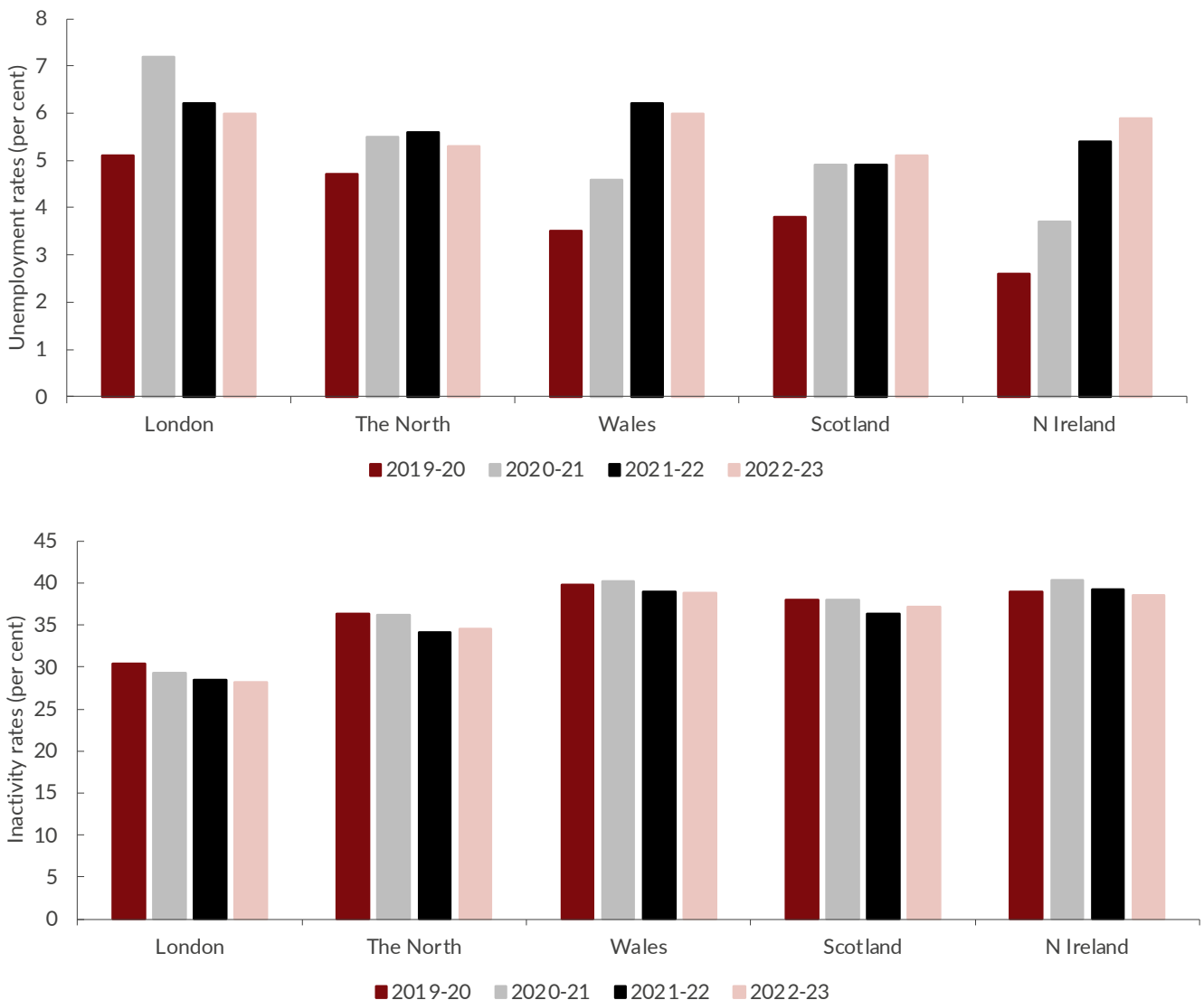
There are long-term structural shortages in many key areas such as health and social care, not to mention shortages in transport, which particularly affect East Midlands and Yorkshire & The Humber (Midlands Connect, 2020). It will also be essential for the government properly to evaluate new skills programmes and modify them as required. Nor does the Budget say anything about creating more synergies between Higher Education (HE) and Further Education (FE). A 'skills revolution' will not happen with

about £1 billion per year over three years. What is needed is a comprehensive system of HE and FE partnerships, combined with public and private sector collaboration to provide lifelong learning and a substantial increase in apprenticeships and other vocational entry levels into the labour market.

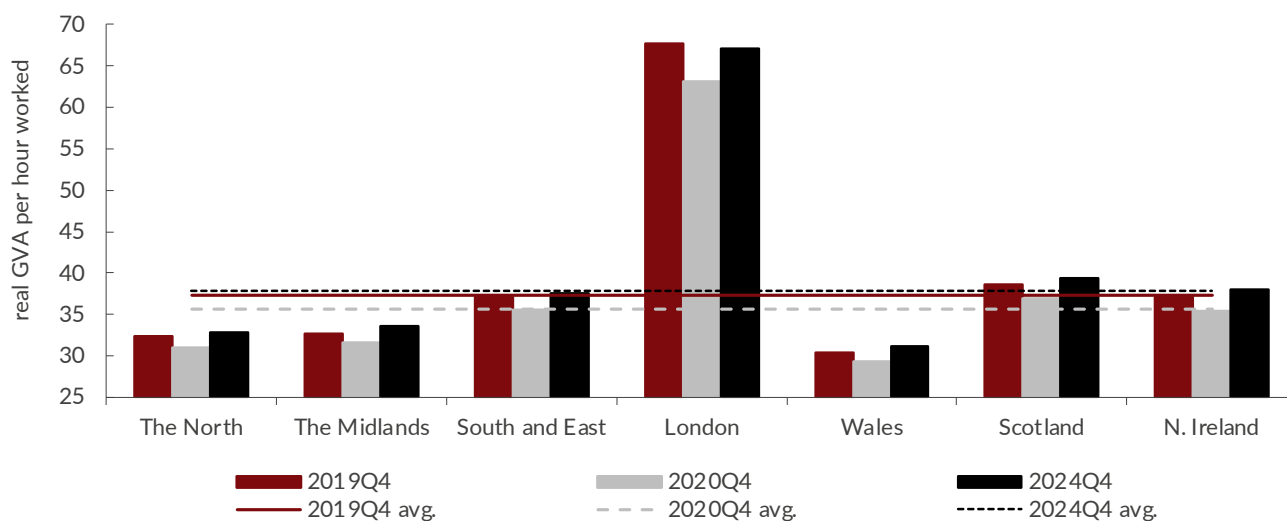
There are also questions about longer-term unemployment for particular groups of people who may find it harder to find re-employment, for example those aged 50 or over (Stockland, 2021), those without a degree, and other vulnerable groups with weaker labour market links.

The government introduced the Kickstart scheme in September 2020 to help support youth employment, but the government schedules this scheme to end in December 2021. Our regional analysis highlights the severity of both youth unemployment and of a disaffected workforce among older persons (Bhattacharjee et al., 2021). The government should undertake a robust evaluation of the Kickstart scheme, but it seems likely that there is a need to extend the scheme beyond December with an enhanced focus on targeting young people who are most disconnected from the labour market.

Figure 2.3 Regional unemployment and inactivity rates



Source: ONS and NiReMS

Figure 2.4 Regional labour productivity, in Gross Value Added per hour (£)

Source: NiReMS and NiGEM

Reducing regional disparities

Besides skills, the Budget and the Spending Review contain several spending commitments to fund the government's 'levelling up' agenda, including investment in R&D and transport. If the government implements its spending promises, the disparities between wealthier and poorer regions and localities in the UK are likely to decline but not to a significant extent because of insufficient funding and a lack of local delivery. The decade of cuts may be over, but the damage is yet to be undone.

R&D

Starting with R&D, the government is increasing public investment in research and development to £20 billion a year by 2024-25. The goal is to spend £22 billion on R&D by 2026-27, moving towards the economy-wide target of 2.4 per cent of GDP in R&D in 2027. The government is also reforming R&D tax reliefs to refocus government support towards innovation in the UK.

Investing in R&D is critical to the innovation process and the increase in productivity in disadvantaged regions by creating high-value added industries and well-paid jobs. However, R&D spending remains largely concentrated in certain areas of the UK (London and the South East) and in larger firms. Addressing this concentration is a critical element to reduce spatial inequalities and making progress on regional regeneration.

Connected with this is the need to design and deliver R&D spending locally and regionally. The Build Back Better Plan for Growth published in March 2021 by HMT set out the importance of innovation to UK prosperity, highlighting the importance of achieving a regional balance of R&D and innovation activity. However, so far, greater local and regional decision-making does not seem to be part of the government's plans.

Transport

On transport, the Budget and the Spending Review contained a series of substantial spending promises to reduce regional inequalities: (1) over £35 billion of rail investment until 2025/26; (2) a 5-year £24 billion investment in quality upgrading strategic roads; (3) more than £5 billion over three years for bus services and cycling lanes; (4) £5.7 billion of investment until 2027/28 in City Regions (West Yorkshire, Greater Manchester, Liverpool City Region and the Tees Valley).

These announcements should help improve the connectivity of the country, as well as to facilitate the functioning of supply chains. However, digital connectivity is of growing importance in pursuit of building a stronger and more competitive economy and should have a more prominent role. The government's main approach to improve digital connectivity is tackling rural isolation, continuing the support of the Project Gigabit (£5 billion), which seeks to provide broadband in remote areas of the UK, and by expanding investment in the Shared Rural Network (£180 million over the next three years) to provide 4G mobile coverage to most of the UK. But absent is a strategy to invest in 5G technology, which is essential to boost digital infrastructure if the UK aims to become a global leader in terms of innovation and technology.

Local delivery and accountability

Two further omissions from the Budget and the Spending Review are striking. First, concrete measures to support increased funding with institution building over the medium-term. Second, local delivery: local and regional government, including city regions and mayoralities, need not just more funds but also greater decision-making powers combined with greater accountability for their decisions.

Sources of finance

Second, the UK would benefit from having a national investment bank on the model of the German Kreditanstalt für Wiederaufbau (KfW), which has assets totalling EUR472.3 billion – compared with a meagre £1.4 billion for the British Business Bank and £14 billion for the UK Infrastructure Bank (located in Leeds), which the government expects will “unlock more than £40 billion of infrastructure investment”.

Moreover, given the uneven pattern of firm births, which heavily concentrate in London and parts of the South East, Britain also needs a new institutional ecology of regional and sectoral finance for SMEs.

Household incomes across the UK’s devolved nations and England’s regions

With consumer price inflation forecast to peak at around 5 per cent in early 2022, rising prices will have different distributional effects for households across the country. Higher inflation will hit the poorest families hardest but also squeeze the living standards of middle-income households. While freezing fuel duty will avoid worsening inflation, fast-growing energy bills will make households, worse off over the winter months, particularly on incomes of up to £30,000,

We analyse the impact of a triple squeeze on household incomes: (1) the withdrawal of the Universal Credit (UC) uplift worth £20 per week; (2) inflationary pressures that outstrip wage growth; and (3) a rise in unemployment following the end of the furlough scheme together with slower economic growth. Rising prices of food, energy and other necessities are particularly critical, while housing costs are partly covered by welfare.

Low-paid workers

Low-paid workers have been hit hardest by the combined effects of Covid-19 and rising prices, and they will bear the brunt of stuttering growth when it sets in from 2023 onwards. Against this backdrop and following the recommendation of the Low Pay Commission (LPC), the government announced in the Autumn 2021 budget that the National Living Wage will increase by 6.6 per cent, from £8.91 to £9.50 per hour for those aged over 23.

In addition, the National Minimum Wage for people aged 21-22 will rise by 9.8 per cent, from £8.36 to £9.18 per hour, for people aged 18-20 and 16-17 it will increase by 4.1 per cent, from £6.56 to £6.83 per hour and from £4.62 to £4.81 per hour, respectively; the Apprentice Rate will increase by 11.9 per cent, from £4.30 to £4.81 per hour.

Destitution

These changes, while helping many individuals and working families, are unlikely to be sufficient to support low-income households, particularly those in destitution and those saved from destitution by the temporary £20 a week uplift to Universal Credit. Withdrawing this uplift will leave the poorest households worse off. This is particularly true for the extremely poor households close to the destitution margin who are concentrated in the North (especially the North-West), in Northern Ireland as well as in pockets of London and the South-East. Our work suggests a doubling of destitution over the next two years (Bhattacharjee and Lissauskaite, 2020).

The Joseph Rowntree Foundation (JRF) defines destitution in terms of weekly income at £70 for a single adult, an additional £30 for another adult and £20 for every child in the household. Below this benchmark income level, a household is likely to be in destitution, lacking resources to support basic necessities. Destitution, and particularly food poverty, has shot through the roof post-pandemic, even if the Universal Credit uplift of £20 per week mitigated some of the shock.

The rise in the National Living Wage is likely to be consumed by continued increases in the cost of living, in particular soaring petrol prices and energy bills during the winter months. Families on low income will also be hit by the already announced increases in taxes, starting with the Health and Social Care Levy that will be added to National Insurance Contributions, which is also set to take effect in April next year.

With the withdrawal of the £20-a-week Universal Credit boost, introduced as a response to the pandemic to help those at low pay, there has been increasing pressure on the Chancellor to raise benefits for those at the bottom of the income distribution. However, the minimum wage should not be regarded by government or others as repayment for welfare benefits as not everyone receiving them is employed. Additionally, for low-income individuals who are employed, a pay rise may dampen their benefits.

The effects of reducing the UC taper rate

The Chancellor announced that the government will reduce the taper rate that applies to Universal Credit from 63 per cent to 55 per cent. That change, together with the minimum wage increase, may compensate for the loss of the £20-a-week boost for some workers, but will not make any difference for those claimants who are unemployed or too ill to work, as well as the very poorest households who are on the brink of destitution.

As an early analysis by the Joseph Rowntree Foundation shows, only about 1.7 million of those nearly 6 million people who benefitted from the UC uplift will stand to gain some benefits from this taper rate cut. On average, they will gain about £5.60 per week, substantially below

the UC uplift worth £20 per week. Furthermore, only about 100,000 will fully recover what they lost when the uplift disappeared.

Covid-19 and reduced consumption

We report a counterfactual policy evaluation exercise in Box E, which shows the huge magnitude of Covid-19 effects in reducing consumption of UK households. About half of the shortfall would have been mitigated by the continuation of the Universal Credit uplift, which was withdrawn in the Budget. This withdrawal is untimely and unnecessary. Our calculations show that the uplift cost the Exchequer less than 5 per cent of the total benefits outlay and supports the extremely poor in our society.

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Box E: Distributional impacts of Covid-19 and potential for policy intervention

by Arnab Bhattacharjee¹ and Tibor Szendrei²

“Covid-19 was never the great leveller” (Pabst, 2020). Understanding how it exacerbated economic inequalities in the UK, and how welfare policy can counter its effects, requires a focus beyond aggregate outcomes, and on the distributional consequences, both of the shock and of policy responses to it. This Box considers a novel way to analyse the impact of Covid-19 on the consumption distribution of households. It is able clearly to outline the distributional consequences of economic shocks (like Covid-19 and Brexit) and welfare policy, specifically the Universal Credit (UC) uplift of £20 per week. The proposed method is a two-step procedure where we use microsimulation in the first step to impute and simulate consumption at the household level. In the second step, we use high dimensional quantile regression to analyse the determinants of the consumption distribution. The value added of the second step is that we can compute consumption distributions for households subject to (or conditional on) living in different locations, possessing different endowments and having different demographic features (number of adults and children, ages, gender and ethnicity). This way we can analyse distributional impacts for household groups, even those for which we have only limited data. In addition, we can report estimates of uncertainty for the projected consumption quantiles.

Our central finding is that Covid-19 led to reduced consumption of at least £1,000 in 2022-2023, equivalent to 10 per cent-20 per cent lower consumption, across the entire distribution by quantiles. Further more, and as expected, this change is not constant across quantiles, and the shape of the consumption distribution has changed exacerbating the disadvantage to poor households. Specifically, the Covid-19 shock has reduced negative skewness in the consumption distribution leaving the poorest households with much less consumption. The temporary Universal Credit (UC) uplift of £20 per week for the poorest households made up for some of the lost consumption and we suggest it should have continued for a year or two longer. However, this would not be enough fully to counteract the loss in consumption due to Covid-19. Importantly, the UC uplift had a proportionally larger impact on the lower quantiles of consumption. These lower quantiles refer to the poorest households, highlighting that extending enhanced UC payments would have been able to help many of these households escape destitution.

Technical details (or, how we obtain the results)

The microsimulation model used here forms part of NIESR’s NiReMS (National Institute Regional Modelling System) (Bhattacharjee and Lisauskaitė, 2021). It explicitly accounts for the fact that different households have different endowments and opportunities and therefore widely different life consequences. The importance of using a heterogeneous agents’ framework has become clear in recent times. Particularly following the Global Financial Crisis of 2008-09, conventional economic models and analyses have been criticised for their strong focus on a representative agent framework (Kaplan et al., 2018; Challe, 2020; Bunn et al., 2021; Moll et al., 2021; Golosov et al., 2021). We simulate behaviours and life outcomes for a representative sample of households and constituent individuals over a period of time moving into the future (Bourguignon and Spadaro, 2006; Van De Ven, 2011; Figari et al., 2015). Our microsimulation model is a life-cycle model with stochastic income and pensions based on past wage incomes. This model is dynamic in the sense that some aspects of household decisions are based on utility-maximising behaviour using dynamic optimisation over a long time horizon. Specifically, the model considers consumption and savings decisions in a structural way. Using the life-cycle model, we generate a consumption function for each age group. Importantly, in addition to age, consumption also depends on retirement age, discount factor and current disposable income (including liquid assets), and this yields heterogeneous consumption levels for households.

To ensure that the microsimulation results are in line with the aggregate macroeconomic projections in the short- to medium-run, they are aligned with two other models: first, a structural macro-econometric model (the National Institute Global Econometric Model - NiGEM) (NIESR, 2018) and, second, sectoral growth rates from input-output analyses (the National Institute Sectoral Economic Model - NiSEM) (Lenoel and Young, 2020). Thus, we link our microsimulation model and its outcomes explicitly to short and medium-run macroeconomic

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dynamics by using the economy (and sectoral) growth rates which NiGEM and NiSEM forecast. This way our dynamic microsimulation model yields aggregate dynamics identical to NiGEM, while allowing a granular description of how this growth rate translates to heterogeneous life consequences across the households.

We allow for several life events to influence the dynamics over time. Some of these features, like change in household composition through births and deaths, and household formation and dissolution, are based on transition probabilities calculated from UK Wealth and Asset Survey (WAS) data. Importantly, we model excess mortality due to Covid-19 explicitly for the year 2020-21. We also model transitions to the sector the household head works in. In our model, this is determined in two steps. First, an individual working in a specific sector each year has a probability of moving to a different sector the following year, where these transition probabilities are computed from WAS data. The second step is to determine which sector the agent will go to. Here, we use sectoral growth rates incorporated into a reduced form discrete choice model of sectoral choice, subject to education, household characteristics, age, location, and other determinants. We also include similar modelling for migration (across the nations of the UK and English regions) as well as immigration.

With the pseudo life-course data in place, we use quantile regression to understand consumption inequality. Quantile regression is a statistical method to draw inference on conditional distributions. An estimated quantile regression model provides consumption distribution for a household with a specific selection of characteristics. This also allows us to understand the consumption distribution of households which are otherwise less represented in surveys. Similar microsimulation exercise can be conducted on counterfactual scenarios as well. Using quantile regression on the counterfactuals allows us to understand how the consumption distribution changes across the counterfactuals for the different households. This way we can study consumption outcomes under alternate policy or shock scenarios. Our microsimulation model not only imputes consumption, but also tracks a plethora of individual and household circumstances. This gives the possibility to utilise high dimensional variable selection methods for quantile regression with the parameter of shrinkage determined as described in Belloni and Chernozhukov (2011).

Findings and policy implications

We apply the above microsimulation and high dimensional quantile regression methods to representative data for households and individuals from the UK Wealth and Asset Survey (WAS). We find that selected variables affect different consumption quantiles, influencing the shape of the consumption distribution and hence both inequality and uncertainty. In particular, wealth, wage income, and employment status (full time or part time) all increase the scale of the conditional consumption distribution. The number of dependent children increases the scale of the distribution proportionally. As these variables increase, the uncertainty of consumption increases as well.

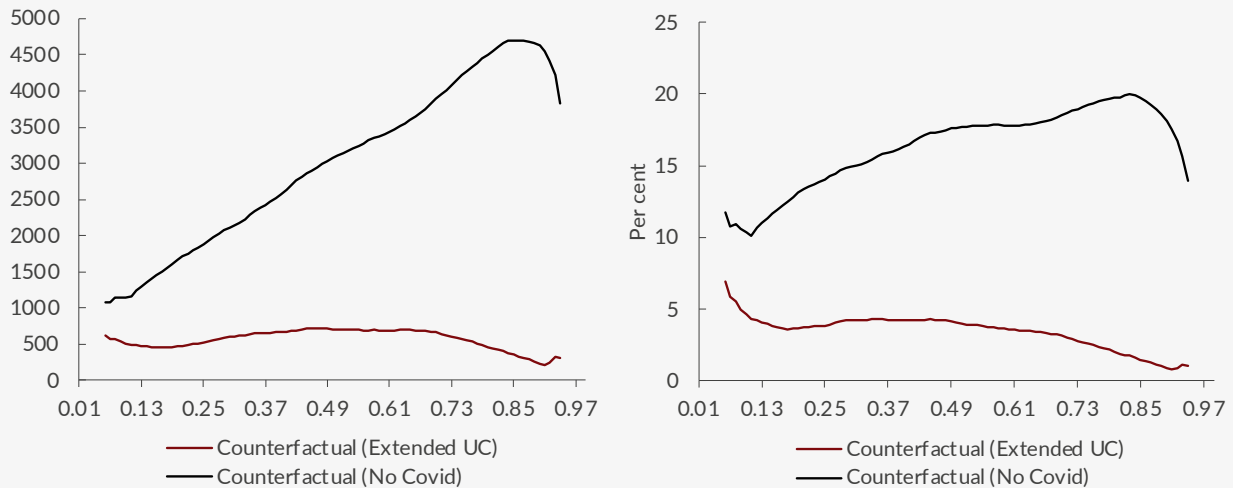
In addition, higher age (and being retired), being in a marital relationship, being full time or self-employed, and having children, are associated with the conditional distribution being more negatively skewed. This means that such individuals tend to have consumption concentrated at the lower end of the distribution. In turn, this implies potentially more precautionary savings for the employed persons, except the richest (in the highest quantiles) for whom employment status does not affect consumption. Overall, the combination of location, scale and skewness effects imply that educational qualification and employment (full time and part time) are associated with higher inequality in consumption.

To explore the impact of welfare policy and the Covid-19 shock, we consider three scenarios: a Covid-19 “factual” (with furlough and UC uplift withdrawn in Q3/Q4 2021) and two alternate counterfactuals (one where there was “no Covid-19” and a regime where enhanced UC payments are continued into the medium-run). Analysing how the counterfactuals change the distributions provides some interesting policy insights. For the non-Covid-19 counterfactual, the main features that increase consumption inequality are wage income and being full time employed. The impact of these variables on consumption is intuitive: conditional on all other covariates, having more wages, of which full time employed household heads earn the highest, implies higher consumption. However, the rate at which households increase their consumption is not equal across the conditional quantiles: the positive “in sync” effects mean that these variables make the consumption distribution more positively skewed.

Finally, we also compare the consumption profile at each quantile across counterfactuals for the year 2022-23. Note that this exercise is based on conditional quantiles rather than unconditional quantiles. This means that the lowest quantile will be the lowest consumption for the specific household, rather than the lowest quantile of consumption overall. Having created counterfactual consumption distributions for all households for the year

2022-2023, we then compare the average of each quantile to deduce how much more consumption was there across the counterfactuals. This is reported in two ways in the plots below: (a) by percentage higher consumption at each quantile relative to the “factual”; and (b) by increased annual consumption (in £ sterling).

Figure E1 Additional household consumption across the quantiles: in £ Sterling (left panel) and in percentage terms (right panel)



Source: LINDA, NiReMS and NiGEM

We can see that, if the Covid-19 shock were not there, there would be additional consumption of at least £1,000 (10-20 per cent higher consumption) during the year 2022-23 for every quantile. As expected, this increase is not constant across the quantiles, and higher quantiles would have experienced additional consumption increases. This corroborates the previous discussion, namely that the non-Covid-19 counterfactual is not just a simple location shift, but a shape change of the consumption distribution as well. It is important to note that this increase is not linear, and after the 80th quantile, the increase in consumption is (on average) lower. As such, in the no-Covid counterfactual we have consumption distribution that is more negatively skewed. This means it is very difficult for targeted welfare policy to address the adverse effects of the Covid-19 shock.

Against that backdrop, and the context that enhanced UC payments account for less than 5 per cent of aggregate benefit payments (Bhattacharjee et al., 2021), we can now analyse the potential benefits of continuing the enhanced UC payments for another couple of years. We find that the extended UC counterfactual sees additional consumption as well, but not to the extent that the non-Covid-19 counterfactual would have done. This highlights that while government policy could help alleviate some of the ails of Covid-19, it cannot completely counteract its impacts. Importantly, the bottom of the distribution sees a 5 per cent increase in consumption, which is more than half of the loss of consumption. At the same time, the increased consumption disappears at the higher quantiles, which is in the nature of welfare policy.

A reduction in the UC taper rate from 63 per cent to 55 per cent has been announced in the Budget, at the same time as the temporary enhancement to UC credit payments were withdrawn. Replacing enhanced UC payments with a taper rate cut benefits poor households, but not the poorest, and hence leads to a flatter response across the quantiles. This highlights again the shape changes across the counterfactuals. The reason that extending UC has a positive impact across the quantiles is that we are modelling conditional quantiles, and not unconditional ones. One way to interpret this impact is that households which receive the enhanced UC payments will see their consumption distribution increase and as such not just the lowest quantiles see an increase in consumption.

Note that as the average consumption is higher as we go up the consumption quantile (by definition), this additional consumption from the extended UC is proportionally less. As such, the extension of UC only has a sizeable effect on the lowest quantiles of consumption. Hence, we argue that the policy is a relatively inexpensive way to help the households who would otherwise have been in destitution. In summary, this Box highlights our analysis of welfare policy through a combination of microsimulation and quantile regression. Further details can be found in Bhattacharjee and Szendrei (2021).

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Appendix:

Table A1 Exchange rates and interest rates

	UK exchange rates			FTSE All-share index	10-year gilts	World ^a	Bank Rate ^b
	Effective 2017=100	Dollar	Euro				
2016	105.9	1.35	1.22	2565	1.30	0.90	0.25
2017	100.0	1.29	1.14	2930	1.20	1.20	0.41
2018	101.9	1.34	1.13	2937	1.40	1.90	0.75
2019	101.6	1.28	1.14	2898	0.90	2.10	0.75
2020	102.1	1.28	1.13	2537	0.30	0.90	0.10
2021	107.0	1.38	1.16	2884	0.80	1.10	0.15
2022	107.6	1.37	1.18	2994	1.30	1.10	0.50
2023	107.5	1.36	1.17	3173	1.60	1.20	0.89
2024	107.1	1.36	1.16	3341	1.80	1.40	1.64
2025	106.5	1.36	1.15	3550	1.90	1.50	1.70
2026	105.8	1.36	1.13	3699	2.00	1.50	1.76
2021Q1	105.6	1.38	1.14	2749	0.60	1.10	0.10
2021Q2	107.3	1.40	1.16	2903	0.80	1.10	0.10
2021Q3	107.5	1.38	1.17	2952	0.70	1.10	0.10
2021Q4	107.6	1.37	1.18	2934	1.10	1.10	0.15
2022Q1	107.7	1.37	1.18	2961	1.20	1.10	0.25
2022Q2	107.7	1.37	1.18	2963	1.30	1.10	0.50
2022Q3	107.6	1.37	1.18	2995	1.40	1.10	0.50
2022Q4	107.6	1.36	1.18	3056	1.40	1.10	0.50
2023Q1	107.5	1.36	1.17	3114	1.50	1.10	0.50
2023Q2	107.5	1.36	1.17	3168	1.50	1.10	0.59
2023Q3	107.5	1.36	1.17	3193	1.60	1.20	0.74
2023Q4	107.4	1.36	1.17	3218	1.70	1.20	0.89
Percentage changes							
2016/2015	-9.8	-11.4	-11.2	-1.5			
2017/2016	-5.6	-4.9	-6.7	14.2			
2018/2017	1.9	3.6	-1.0	0.3			
2019/2018	-0.3	-4.4	0.9	-1.3			
2020/2019	0.5	0.5	-1.3	-12.5			
2021/2020	4.8	7.5	3.3	13.7			
2022/2021	0.6	-1.1	1.3	3.8			
2023/2022	-0.1	-0.1	-0.5	6.0			
2024/2023	-0.3	0.0	-0.9	5.3			
2025/2024	-0.6	0.0	-1.3	6.2			
2026/2025	-0.6	0.0	-1.3	4.2			
2021Q4/2020Q4	5.2	3.4	6.4	15.6			
2022Q4/2021Q4	0.0	-0.1	-0.2	4.2			
2023Q4/2022Q4	-0.2	0.0	-0.6	5.3			

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

Table A2 Price indices (2019=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
2016	92.9	91.2	91.7	42.9	95.1	94.4	91.1	93.3	93.7
2017	94.8	96.6	96.0	54.0	96.8	96.1	94.4	95.9	96.1
2018	97.1	98.6	99.2	70.4	98.7	98.0	97.4	98.2	98.3
2019	100.0	100.0	100.0	63.7	100.0	100.0	100.0	100.0	100.0
2020	114.3	98.1	97.5	43.0	101.7	106.1	101.5	100.8	101.0
2021	111.6	100.0	101.3	70.6	103.8	107.0	105.5	103.2	103.1
2022	112.8	101.2	103.9	71.3	107.8	111.3	112.8	107.7	107.7
2023	116.0	100.3	104.8	66.5	110.6	114.8	118.6	111.5	110.5
2024	118.5	100.9	106.3	67.6	112.6	117.2	122.8	113.6	112.5
2025	121.2	102.6	108.2	68.7	114.9	119.7	126.2	115.6	114.8
2026	124.1	104.8	110.5	69.8	117.5	122.4	129.4	118.0	117.4
Percentage changes									
2016/2015	1.8	4.9	4.1	-17.7	1.1	1.9	1.7	0.7	1.0
2017/2016	2.0	5.9	4.7	25.8	1.8	1.8	3.6	2.7	2.6
2018/2017	2.4	2.1	3.3	30.5	2.0	2.0	3.3	2.4	2.3
2019/2018	3.0	1.4	0.8	-9.6	1.3	2.0	2.6	1.8	1.7
2020/2019	14.3	-1.9	-2.5	-32.5	1.7	6.1	1.5	0.8	1.0
2021/2020	-2.3	1.9	3.9	64.2	2.1	0.9	3.9	2.4	2.1
2022/2021	1.1	1.2	2.5	0.9	3.9	4.0	7.0	4.4	4.4
2023/2022	2.8	-0.9	0.9	-6.7	2.6	3.2	5.0	3.4	2.6
2024/2023	2.2	0.6	1.4	1.6	1.8	2.1	3.5	1.9	1.8
2025/2024	2.3	1.7	1.8	1.6	2.0	2.1	2.8	1.8	2.0
2026/2025	2.4	2.2	2.1	1.6	2.3	2.3	2.6	2.0	2.3
2021Q4/2020Q4	-2.6	5.0	6.0	80.9	3.4	2.0	6.4	4.1	3.4
2022Q4/2021Q4	3.6	-1.5	0.9	-19.2	3.9	4.8	6.0	3.7	4.2
2023Q4/2022Q4	2.0	-0.3	1.1	1.6	2.0	2.5	4.7	3.1	2.0

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, 2019 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						
2016	1376	403	385	10	2172	623	2796	659	-36	2137
2017	1398	405	398	13	2202	658	2861	679	-20	2182
2018	1431	407	397	5	2241	677	2918	700	-23	2218
2019	1449	424	400	3	2276	699	2975	720	-21	2255
2020	1292	397	363	-11	2042	597	2639	599	-3	2037
2021	1353	443	383	16	2196	600	2795	618	-19	2177
2022	1462	447	408	0	2317	679	2996	717	-38	2279
2023	1498	456	416	0	2370	724	3095	778	-53	2318
2024	1531	461	418	0	2410	764	3173	825	-62	2349
2025	1560	467	419	0	2446	796	3241	861	-66	2381
2026	1586	469	421	0	2476	822	3297	886	-64	2412
Percentage changes										
2016/2015	3.7	0.5	4.7		2.3	3.3	2.5	3.5		2.3
2017/2016	1.6	0.6	3.3		1.4	5.7	2.3	2.9		2.1
2018/2017	2.4	0.4	-0.1		1.8	2.8	2.0	3.1		1.7
2019/2018	1.3	4.2	0.5		1.6	3.4	2.0	2.9		1.7
2020/2019	-10.8	-6.3	-9.1		-10.3	-14.7	-11.3	-16.8		-9.7
2021/2020	4.7	11.6	5.4		7.5	0.5	5.9	3.2		6.9
2022/2021	8.1	0.8	6.5		5.5	13.2	7.2	15.9		4.7
2023/2022	2.5	2.0	2.0		2.3	6.7	3.3	8.4		1.7
2024/2023	2.2	1.1	0.5		1.7	5.4	2.5	6.1		1.3
2025/2024	1.9	1.3	0.2		1.5	4.2	2.1	4.4		1.4
2026/2025	1.7	0.4	0.4		1.2	3.3	1.7	2.9		1.3
Decomposition of growth in GDP (percentage points)										
2016	2.3	0.1	0.8	-0.1	2.4	1.0	3.3	-1.1	-0.1	2.3
2017	1.0	0.1	0.6	0.2	1.4	1.6	3.0	-0.9	0.7	2.1
2018	1.5	0.1	0.0	-0.4	1.8	0.8	2.6	-1.0	-0.1	1.7
2019	0.8	0.8	0.1	-0.1	1.6	1.0	2.6	-0.9	0.1	1.7
2020	-7.0	-1.2	-1.6	-0.6	-10.4	-4.5	-14.9	5.3	0.8	-9.7
2021	3.0	2.3	1.0	1.3	7.5	0.2	7.7	-0.9	-0.8	6.9
2022	5.0	0.2	1.2	-0.7	5.6	3.6	9.2	-4.5	-0.9	4.7
2023	1.6	0.4	0.4	0.0	2.4	2.0	4.4	-2.7	-0.7	1.7
2024	1.4	0.2	0.1	0.0	1.7	1.7	3.4	-2.1	-0.4	1.3
2025	1.2	0.3	0.0	0.0	1.5	1.4	2.9	-1.5	-0.2	1.4
2026	1.1	0.1	0.1	0.0	1.3	1.1	2.4	-1.0	0.1	1.3

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 competitiveness ^c	World trade ^d	Terms of trade ^e	Current balance
	£ billion, 2019 prices ^b						2019=100			% of GDP
2016	334	485	-150	289	175	114	100.5	87.6	100.5	-5.3
2017	357	497	-139	301	182	119	97.9	92.0	99.4	-3.6
2018	358	498	-140	319	202	117	102.5	95.2	100.6	-3.9
2019	372	510	-138	327	210	118	100.0	100.0	100.0	-2.7
2020	319	441	-122	278	158	120	95.9	91.6	99.3	-2.6
2021	331	472	-141	269	147	122	103.0	97.7	101.3	-1.7
2022	373	549	-176	306	168	138	103.8	105.2	102.7	-2.5
2023	393	594	-201	331	184	148	103.6	112.5	104.5	-2.6
2024	412	629	-217	352	196	156	103.4	118.9	105.3	-3.2
2025	428	656	-228	368	206	162	103.2	124.4	105.5	-3.2
2026	441	673	-232	381	213	168	103.1	129.1	105.4	-2.9
Percentage changes										
2016/2015	0.7	3.6		6.3	3.3		-5.6	3.5	-0.8	
2017/2016	6.8	2.4		4.4	4.2		-2.6	5.0	-1.1	
2018/2017	0.2	0.2		5.8	10.7		4.7	3.5	1.2	
2019/2018	3.9	2.5		2.7	4.0		-2.4	5.0	-0.6	
2020/2019	-14.3	-13.5		-15.2	-24.7		-4.1	-8.4	-0.7	
2021/2020	3.9	6.9		-3.3	-7.2		7.4	6.7	2.0	
2022/2021	12.6	16.4		13.9	14.5		0.8	7.7	1.3	
2023/2022	5.3	8.2		8.4	9.3		-0.2	7.0	1.8	
2024/2023	4.8	5.9		6.1	6.8		-0.2	5.7	0.8	
2025/2024	3.9	4.2		4.6	5.1		-0.2	4.6	0.1	
2026/2025	3.1	2.7		3.5	3.6		-0.1	3.7	-0.1	

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 com- pensation	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, 2019 prices		Per cent		
2016	90.9	966	1715	1345	1415	1376	6.4	91.8	7.0
2017	93.7	1007	1771	1381	1427	1398	4.8	95.9	7.0
2018	96.0	1048	1853	1448	1467	1431	4.8	99.0	6.7
2019	100.0	1097	1916	1487	1487	1449	4.6	100.0	6.8
2020	102.2	1126	1929	1493	1469	1292	13.4	102.9	7.4
2021	106.5	1182	2019	1544	1487	1353	11.3	111.5	7.3
2022	111.3	1251	2133	1641	1522	1462	6.2	113.8	7.1
2023	115.8	1308	2245	1731	1565	1498	6.5	115.3	7.0
2024	119.0	1354	2332	1793	1592	1531	6.0	115.6	6.9
2025	122.6	1404	2423	1860	1618	1560	5.8	116.1	6.8
2026	126.5	1456	2522	1930	1642	1586	5.5	117.3	6.7
Percentage changes									
2016/2015	3.1	4.1	2.3	1.6	0.5	3.7		7.0	
2017/2016	3.1	4.2	3.3	2.7	0.9	1.6		4.5	
2018/2017	2.4	4.1	4.7	4.9	2.8	2.4		3.3	
2019/2018	4.2	4.8	3.4	2.7	1.3	1.3		0.9	
2020/2019	2.2	2.6	0.7	0.4	-1.2	-10.8		3.0	
2021/2020	4.2	4.9	4.7	3.4	1.2	4.7		8.3	
2022/2021	4.5	5.8	5.7	6.3	2.3	8.1		2.1	
2023/2022	4.0	4.6	5.3	5.5	2.8	2.5		1.3	
2024/2023	2.8	3.6	3.9	3.6	1.7	2.2		0.3	
2025/2024	3.0	3.6	3.9	3.7	1.7	1.9		0.4	
2026/2025	3.2	3.7	4.1	3.7	1.4	1.7		1.0	

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, 2019 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
2016	227	93	66	385	13.2	25.4	3548	755
2017	228	102	68	398	13.0	25.3	3685	705
2018	224	109	65	397	12.7	25.0	3732	719
2019	226	106	67	400	12.5	24.8	3783	737
2020	201	94	69	363	11.6	24.2	3789	756
2021	201	106	76	383	11.3	24.2	3821	781
2022	223	107	78	408	11.6	24.8	3877	806
2023	226	106	84	416	12.2	25.4	3932	836
2024	228	105	86	418	12.7	25.7	3984	866
2025	229	103	87	419	12.8	25.9	4033	894
2026	232	102	88	421	12.9	26.1	4079	922
Percentage changes								
2016/2015	5.5	6.0	0.6	4.7			3.2	3.7
2017/2016	0.8	9.6	3.0	3.3			3.9	-6.6
2018/2017	-2.0	7.6	-5.0	-0.1			1.3	2.0
2019/2018	0.9	-2.6	4.5	0.5			1.4	2.5
2020/2019	-11.1	-11.6	1.9	-9.1			0.2	2.6
2021/2020	0.0	13.1	10.7	5.4			0.8	3.3
2022/2021	10.9	0.7	3.1	6.5			1.5	3.3
2023/2022	1.5	-0.9	7.6	2.0			1.4	3.7
2024/2023	0.7	-1.6	2.4	0.5			1.3	3.6
2025/2024	0.8	-1.5	0.9	0.2			1.2	3.3
2026/2025	1.0	-1.3	1.0	0.4			1.2	3.1

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 (2019=100) per hour	ILO unemployment rate
	Employees	Total ^a					
2016	26771	31744	1633	33377	41062	97.8	4.9
2017	27065	32057	1476	33533	41169	98.9	4.4
2018	27494	32439	1380	33819	41260	99.6	4.1
2019	27652	32799	1306	34105	41344	100.0	3.8
2020	27770	32529	1550	34079	41351	100.8	4.6
2021	27967	32383	1582	33965	41302	101.4	4.7
2022	28319	32781	1518	34299	41399	101.3	4.4
2023	28461	32950	1560	34510	41514	101.9	4.5
2024	28675	33188	1502	34690	41629	102.4	4.3
2025	28864	33401	1472	34873	41745	103.0	4.2
2026	29012	33570	1466	35036	41831	103.8	4.2
Percentage changes							
2016/2015	1.0	1.5	-8.3	0.9	0.4	1.0	
2017/2016	1.1	1.0	-9.6	0.5	0.3	1.1	
2018/2017	1.6	1.2	-6.5	0.9	0.2	0.7	
2019/2018	0.6	1.1	-5.4	0.8	0.2	0.4	
2020/2019	0.4	-0.8	18.7	-0.1	0.0	0.8	
2021/2020	0.7	-0.4	2.1	-0.3	-0.1	0.6	
2022/2021	1.3	1.2	-4.1	1.0	0.2	-0.1	
2023/2022	0.5	0.5	2.7	0.6	0.3	0.6	
2024/2023	0.8	0.7	-3.7	0.5	0.3	0.5	
2025/2024	0.7	0.6	-2.0	0.5	0.3	0.6	
2026/2025	0.5	0.5	-0.4	0.5	0.2	0.8	

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)

		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Current receipts:	Taxes on income	484.3	496.7	524.4	541.1	586.7	618.1	645.5	677.6
	Taxes on expenditure	275.8	148.6	247.9	286.5	300.1	311.9	324.3	337.3
	Other current receipts	67.3	148.5	96.1	103.6	108.2	111.8	115.8	119.9
	Total	827.4	793.8	868.4	931.2	994.9	1041.8	1085.6	1134.8
	(as a % of GDP)	36.6	36.9	36.4	36.2	37.0	37.5	37.8	38.1
Current expenditure:	Goods and services	429.3	503.3	484.5	508.4	532.0	551.8	575.7	594.8
	Net social benefits paid	241.9	262.6	258.9	265.3	285.3	299.6	312.2	325.5
	Debt interest	52.9	46.0	52.8	48.5	48.9	49.7	50.7	51.7
	Other current expenditure	66.1	182.7	115.9	74.9	77.6	80.1	82.6	85.3
	Total	790.2	994.6	912.0	897.1	943.8	981.1	1021.1	1057.2
	(as a % of GDP)	34.9	46.2	38.2	34.9	35.1	35.3	35.5	35.5
Depreciation		52.4	53.5	55.8	60.2	62.8	64.9	67.2	69.6
Surplus on public sector current budget ^a		-15.2	-254.3	-99.4	-26.1	-11.7	-4.3	-2.8	7.9
(as a % of GDP)		-0.7	-12.1	-4.2	-1.0	-0.4	-0.2	-0.1	0.3
Gross investment		90.9	116.9	117.2	129.6	140.1	145.5	151.0	156.8
Net investment		38.5	63.4	61.4	69.5	77.3	80.6	83.8	87.2
(as a % of GDP)		1.7	2.9	2.6	2.7	2.9	2.9	2.9	2.9
Total managed expenditure		881.1	1111.5	1029.2	1026.8	1083.9	1126.6	1172.1	1214.0
(as a % of GDP)		39.0	51.6	43.1	39.9	40.4	40.6	40.8	40.8
Public sector net borrowing		53.7	317.7	160.8	95.6	89.0	84.8	86.6	79.2
(as a % of GDP)		2.4	14.8	6.7	3.7	3.3	3.1	3.0	2.7
Public sector net debt (% of GDP)		83.6	94.6	94.2	93.6	94.0	90.4	90.0	89.3
GDP deflator at market prices (2019=100)		100.8	107.5	107.3	112.4	115.5	117.8	120.3	123.1
Money GDP (£ billion)		2261	2153	2387	2573	2686	2777	2875	2978

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 Accumulation (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	
2016	4.5	4.3	8.1	11.1	-0.1	2.4	12.5	17.8	5.3	2.5	-2.1
2017	3.3	4.8	10.4	11.0	1.0	2.5	14.7	18.3	3.6	1.2	-0.2
2018	3.2	4.6	9.7	10.9	1.2	2.5	14.2	18.1	3.9	1.3	-0.8
2019	3.1	4.6	10.9	10.7	1.2	2.7	15.3	17.9	2.7	0.5	0.3
2020	9.6	4.3	12.8	9.5	-8.3	3.0	14.2	16.7	2.6	1.4	-1.9
2021	7.7	4.6	13.4	10.9	-4.4	3.1	16.8	18.5	1.7	0.4	1.4
2022	4.1	4.4	10.8	10.6	0.5	3.0	15.5	17.9	2.5	0.6	0.2
2023	4.3	4.2	9.7	10.5	1.2	3.2	15.2	17.9	2.6	0.7	0.0
2024	4.0	4.1	9.1	10.5	1.5	3.2	14.6	17.8	3.2	1.3	-0.6
2025	3.9	4.0	9.0	10.5	1.6	3.2	14.5	17.7	3.2	1.3	-0.8
2026	3.7	3.9	9.1	10.5	2.0	3.2	14.7	17.6	2.9	1.1	-0.5

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)

	2020	2021	2022	2023	2024	2025	2026	2027-31
GDP (market prices)	-9.7	6.9	4.7	1.7	1.3	1.4	1.3	1.1
Average earnings	2.2	4.2	4.5	4.0	2.8	3.0	3.2	3.1
GDP deflator (market prices)	6.1	0.9	4.0	3.2	2.1	2.1	2.3	2.2
Consumer Prices Index	0.8	2.4	4.4	3.4	1.9	1.8	2.0	2.0
Per capita GDP	-10.1	6.2	4.1	1.2	0.9	0.9	0.9	0.7
Whole economy productivity ^a	0.8	0.6	-0.1	0.6	0.5	0.6	0.8	1.0
Labour input ^b	-10.6	6.3	4.6	1.0	0.7	0.7	0.5	0.1
ILO Unemployment rate (%)	4.6	4.7	4.4	4.5	4.3	4.2	4.2	4.7
Current account (% of GDP)	-2.6	-1.7	-2.5	-2.6	-3.2	-3.2	-2.9	-2.3
Total managed expenditure (% of GDP)	51.6	43.1	39.9	40.4	40.6	40.8	40.8	41.5
Public sector net borrowing (% of GDP)	14.8	6.7	3.7	3.3	3.1	3.0	2.7	2.4
Public sector net debt (% GDP)	94.6	94.2	93.6	94.0	90.4	90.0	89.3	87.5
Effective exchange rate (2017=100)	102.1	107.0	107.6	107.5	107.1	106.5	105.8	104.2
Bank Rate (%)	0.2	0.1	0.4	0.7	1.4	1.7	1.7	1.9
10 year interest rates (%)	0.3	0.8	1.3	1.6	1.8	1.9	2.0	2.2

Notes: ^a Per hour. ^b Total hours worked.

Table A11 Gross Value Added by sector percentage change

	2018	2019	2020	2021	2022	2023	2024	2025	2026
Utilities and agriculture	-1.3	8.3	-3.4	4.0	-1.8	3.1	2.4	2.0	1.7
Mining and quarrying	5.0	1.3	-19.5	-4.0	5.9	-7.8	-7.8	-7.8	-7.8
Manufacturing	3.9	3.1	-8.8	7.2	3.4	2.8	1.4	1.0	0.8
Construction	-2.0	-0.1	-16.1	13.9	4.2	1.7	0.5	0.4	0.5
Public sector	1.3	2.9	-7.5	8.9	0.0	2.1	1.3	1.3	0.6
Private non-traded services	0.4	1.3	-14.5	9.1	6.6	2.2	1.6	1.4	1.2
Financial services	-0.5	-1.6	-3.6	2.3	1.2	1.5	1.1	0.8	0.6
Imputed rent	2.3	0.3	0.4	1.8	2.0	-0.2	0.6	1.3	1.7
Private traded services	3.8	2.4	-10.1	5.6	5.8	2.9	2.2	2.0	1.7

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



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