

PROSPECTS FOR THE UK ECONOMY

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- The economic contraction resulting from Covid-19 and resultant public health measures has been unprecedented. The public sector has acted as a shock absorber to protect households and businesses, temporarily raising government debt levels, but the recovery has been hampered by uncertainty, repeated changes in policy, and now by the resurgence of the virus.
- We argued in August for an extension of the Coronavirus Job Retention Scheme beyond its scheduled end date. The latest version of the Job Support Scheme achieves many of the same ends, despite its reduced generosity, and as a result our unemployment forecast for October–December has been revised down to 7.1 per cent. With more certainty at an earlier date, this could have been lower.
- The end of the Brexit transition period and the prospect of a No Deal Brexit represent significant threats to the UK's economic recovery, whether in the middle of a 'second wave' or after the recovery is underway. The addition of this on top of Covid-19 is likely to broaden the shock to growth and employment in the first quarter of 2021, weakening the UK's recovery compared with other countries, and reducing productivity in the long run.

Section 1. A long and rocky road to recovery

The UK economy's recovery from the Covid-19 pandemic remains fragile and with significant risks to the downside: risks from the resurgence of the virus, from the negotiations over a trade deal with the European Union, and from the premature withdrawal of economic policy support. According to our GDP quarterly forecast, chances of a V-shaped recovery now look to be negligible (figure 1).

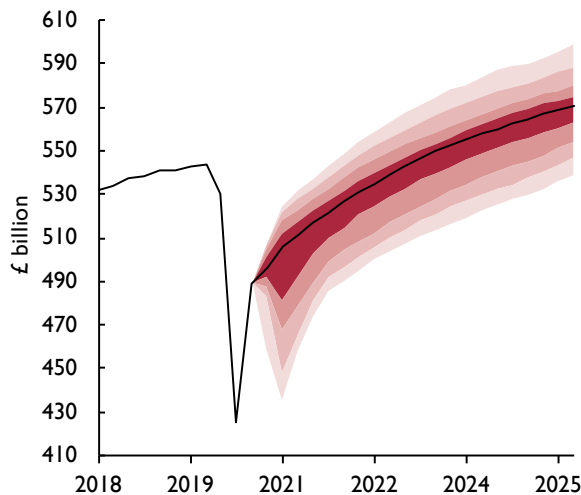
The recent rise in infections and the resultant increase in restrictions on activity have led us to revise down our estimates for growth in the fourth quarter. Retail consumption rebounded strongly as lockdown was partially lifted but business investment has been and is forecast to remain weak, hampering the medium-term

recovery. Even before the imposition of new restrictions, demand for many goods and services remained subdued as voluntary or mandatory social distancing prevented a return to pre-Covid behaviour in the arts, recreation and hospitality sectors in particular. The Covid-19 shock is likely to continue unfolding as a highly sectoral one (see figure 2).

Our main case forecast scenario for 2021 and beyond is conditional on no new national lockdowns on the scale of that seen in April being imposed, and a vaccine becoming available at some point around the middle of 2021. In this case we envisage growth of –10.5 per cent this year and 5.9 per cent in 2021, with the 2019 fourth-quarter peak reached again in 2023. We forecast

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Figure 1. GDP fan chart (quarterly, 2018 prices)



Source: NIESR forecast and judgement. In addition to usual uncertainty the fan chart incorporates a 20 per cent chance of a second wave leading to a lockdown of the intensity described in "Risk of a second national lockdown" in the first half of 2021.

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

unemployment to rise to above 7 per cent in the final quarter of 2020 and 8 per cent in the first half of 2021 as the Coronavirus Job Retention Scheme (CJRS) comes to an end. Unemployment remains above 5 per cent until 2024, with long-term persistent unemployment exacerbated by the prospect of a long and uncertain recovery. This would have been significantly higher had the government not largely extended its furlough scheme under a different name with reduced generosity.

The general downward revision to our growth forecasts also reflects the adoption of new assumptions about future trade with the European Union in our main-case forecast scenario. We have explicitly introduced the assumption of a trade agreement that involves significantly less integration with the EU than the current arrangements. We assume that this agreement is signed before the end of the year and 'No Deal' remains a downside risk rather than a central case.

We forecast inflation to remain weak initially, but rise gradually to 1.7 per cent at the end of next year and 2.1 per cent in 2022 as demand normalises while firms try to repair their balance sheets. We expect Bank Rate to

remain at 0.1 per cent until 2024 and do not forecast negative interest rates in the near future. An increase in the Asset Purchase Facility is likely to be announced following the November Monetary Policy Committee meeting, which is reflected in our forecasts for long-term interest rates.

In our main-case forecast scenario we forecast public sector net borrowing to be 17 per cent of GDP this year and 6 per cent in 2021. Public sector net debt rises to 104 per cent, peaks at slightly below 107 per cent next year (see figure 3) and falls back gradually. In the context of a slow recovery and the cancellation of the Budget – a decision which does not aid transparency, good policymaking or confidence in the future – we have removed the additional discretionary consolidation which we included in our previous *Review* for the end of the forecast period. We re-emphasise the need for a comprehensive fiscal policy plan with active fiscal policies designed towards well-defined social and economic objectives in order to mitigate policy uncertainty and help sustain the economic recovery from the pandemic (Chadha, 2020).

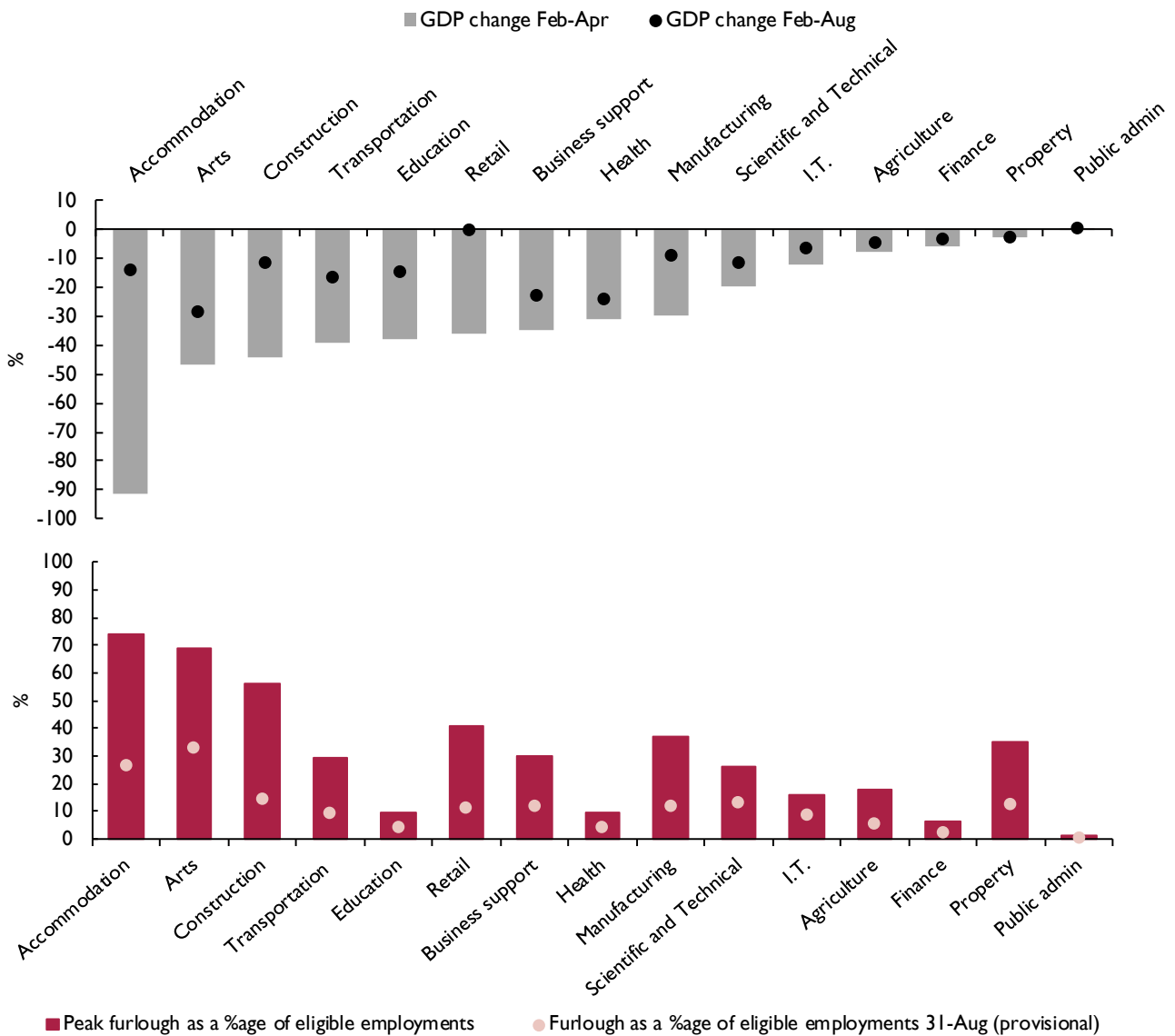
It is clear that the next few years will see substantial reorientation of the UK economy due to both Covid-19 and Brexit. This process which could expose regional, sectoral and income disparities as well as a lack of regional mechanisms either financial or administrative to deal with them (see Box C), and could leave deep and painful scars on the British economy.

Sectoral shifts will be taking place, whether through choice or necessity, as a result of social distancing, scarring in the labour market, disrupted education and reduced capital investment. Government policies will be critical in facilitating the reallocation of labour from contact intensive services sectors to sectors such as infrastructure, education, social and health care.

A slow recovery in the labour market

In the August *Review* we recommended that the government extend the CJRS until the middle of next year, estimating that this would reduce unemployment in the short and medium term, and pay for itself through decreased social security spending and increased tax receipts. Thanks to the various extensions of the Job Support Scheme (JSS), the government looks to have replicated much of the extent, if not the wage replacement generosity, of the original CJRS. As a result our forecast for unemployment in the fourth quarter of 2020 has been revised down, though if this support is not continued and matched by appropriate active labour

Figure 2. April and August levels of GDP and furlough use by sector



Source: ONS, HMRC.

market policies the peak of unemployment may just have been deferred.

The CJRS has been an undoubted success, ensuring that unemployment rates did not rise notably when lockdown conditions were at their strictest. The gradual partial re-opening of the UK economy reduced the number of furloughed employments from around 9 million at its peak to an estimated 3.7 million at the end of August, while expanding to include part-time ‘flexible furlough’. There has been concern expressed

about the preservation of non-viable ‘zombie jobs’, an inherent risk to any such scheme, but the gradual increase in employer contributions to 20 per cent of headline salaries plus on-costs is likely to have removed from the CJRS the majority of employments for which the employer perceived little future.

The distribution of those still furloughed in August across sectors is a function of both the size of the sectors and their exposure to Covid-19 and policy responses (figure 4). The ‘arts and recreation’ sector is

proportionally very badly hit, with 33 per cent of eligible employments furloughed at 31 August, but (due to the sectors' respective size) more than twice as many retail staff were still furloughed in August than in arts and recreation. Those described in figure 4 as 'Furloughed

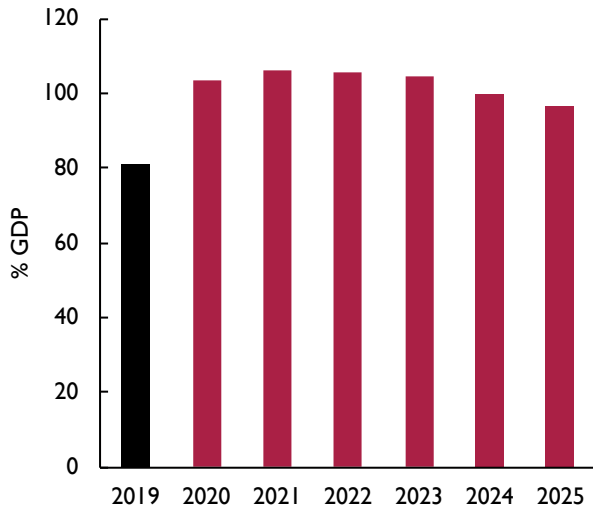
but returned' may be particularly at risk from further national lockdown restrictions if the government provides less support than it did previously.

Instead of announcing an extension to the CJRS the government chose instead on 24 September to introduce the JSS to encourage part-time work, but with higher employer contributions and lower wage replacement rates for employees than the part-time furlough scheme. With the extension announced on 22 October, the JSS now resembles the existing part-time CJRS but with stronger incentives for employers and lower wage replacement rates for employees.

Although employer contributions have been reduced to 5 per cent of paid non-worked hours, the JSS's effectiveness will still be somewhat hampered by requiring employer contributions for non-worked hours. Nonetheless, in conjunction with the Job Retention Bonus, it is likely to incentivise the retention of many previously furloughed workers, especially those towards the lower end of the salary distribution and those on partial furlough (disproportionately hospitality but not arts and recreation).

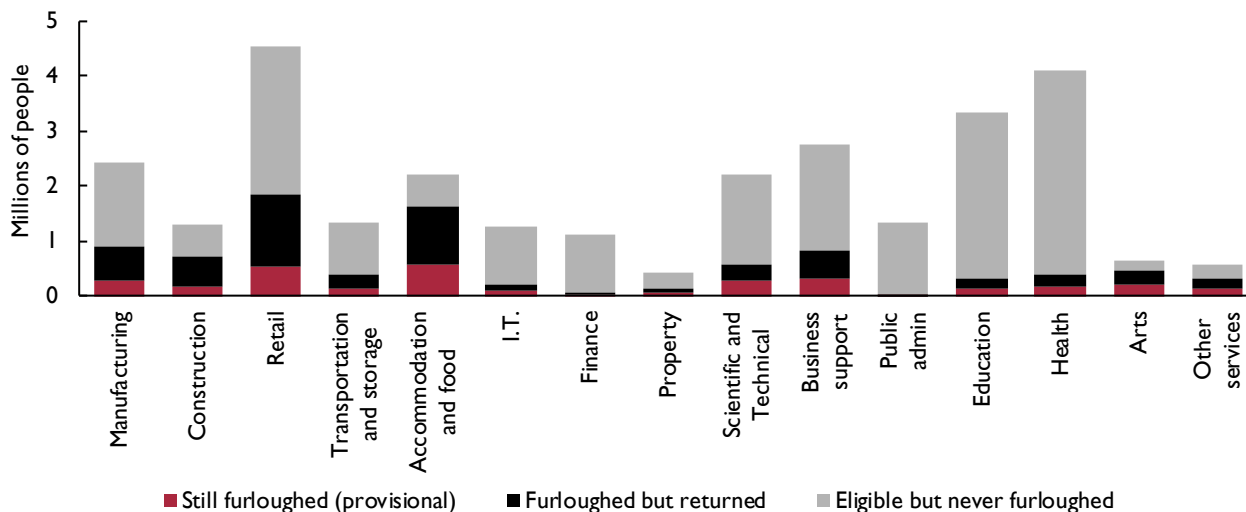
The extension to the JSS announced on 9 October also offers support to businesses unable to trade due to government restrictions, though not all non-trading businesses, in what resembles a less generous version of the original full-time CJRS. The take-up of this scheme

Figure 3. Public sector net debt to GDP^(a)



Source: NiGEM database and NIESR forecast.
 Note: (a) Public sector net debt and the GDP belong to the same year. 2020 data is for Q2. Seasonal adjustment applied in NiGEM results in differences between the figures here and official unadjusted PSF data.

Figure 4. CJRS use as of 31 August



Note: HMRC expects 'still furloughed' numbers to rise by 12 per cent due to late received applications.

depends on two highly uncertain variables: the extent of Covid-19 restrictions across the country and the degree of eligibility for employees within the areas affected. The latter appears to be significantly narrower than the eligibility criteria for the original furlough scheme, as well as the scheme being less generous (replacing 67 per cent of earnings rather than 80 per cent); both of these can and should be revisited as necessary in a state-contingent and timely manner.

Taken together, these extended schemes will succeed in reducing unemployment below the levels we forecast in August. Our main-case forecast scenario is compatible with around 2.5 million workers having been on part- or full-time furlough when the CJRS came to an end on 31 October; around 500,000 being furloughed under the new 'local and national restrictions' scheme during November and December, overwhelmingly in the hospitality sector (not all of whom have previously been furloughed); and 2 million or more employments benefitting from the part-time JSS, whether previously furloughed or not. If these estimates prove to be over-optimistic, unemployment in October–December will rise above 7.1 per cent in our main case forecast scenario.

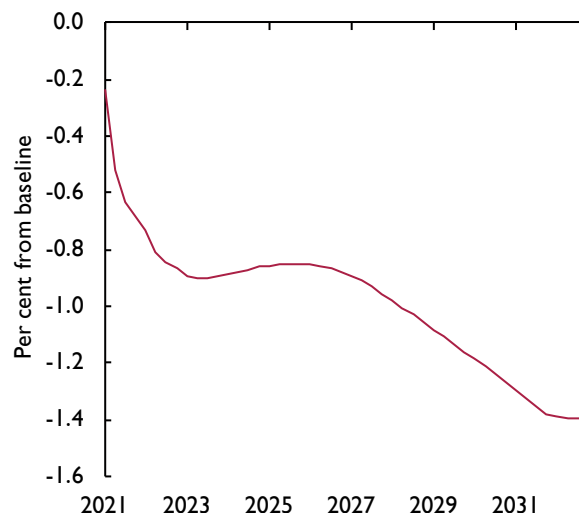
The need for government policies which both protect existing jobs and encourage transition to new ones is discussed in Box A. Especially in the context of low interest rates providing fiscal space, there is significant potential for government interventions to smooth this process and support the productive capacity of the economy.

Recovering from Covid-19 in a post-Brexit economy

At the same time as the risk of another major outbreak of Covid-19 the UK economy faces the prospect of adjusting to a new trading relationship with the European Union. If the UK and the EU fail to agree on an FTA by the end of the year, a No Deal Brexit would make the recovery from the pandemic even more precarious for the UK economy. In the event of a No Deal Brexit, the UK's trade with the EU will be on World Trade Organisation (WTO) terms, which would make trade with the EU more costly. Investment would also be weaker because of both lower business confidence and reduced foreign direct investment (FDI), which would ultimately result in lower long-term productivity growth compared to our baseline case.

To evaluate the cost of a No Deal Brexit, we run a simulation using the National Institute Global Econometric Model (NiGEM) including bilateral trade

Figure 5. GDP impact of No Deal Brexit compared with FTA baseline



Source: NiGEM simulation.

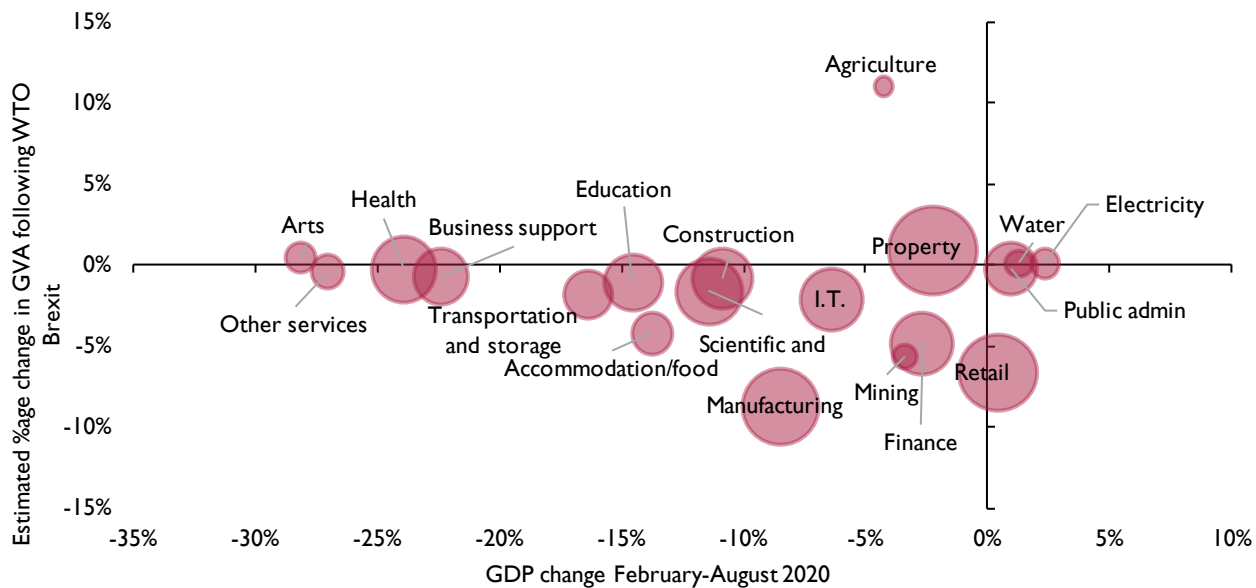
links between countries, which is suited for this having been used before to estimate the impact of Brexit (Kierzenkowski, *et al.*, 2016; HM Government, 2018, and Hantzsche *et al.*, 2018).

Using the assumptions described in Section 2 (table 2), we estimate that GDP would be 1½ per cent lower in the long run under a No Deal Brexit compared with an FTA baseline, and this adjustment would come relatively quickly: in a year's time GDP would already be ¾ per cent lower (figure 5). The relatively small difference highlights the fact that most of the adjustment to the exit from EU single market is already taking place under an FTA. Hantzsche and Young (2019) presented results of the same magnitude. The negative productivity shock resulting from lower trade and lower foreign direct investment with the EU would push down sterling and therefore push up prices so the Bank of England would increase interest rates earlier than in the baseline.

What does a No Deal Brexit imply for recovery from the pandemic? The sectors most affected by Covid-19 and associated restrictions seem to be very different from the sectors most affected by a No Deal Brexit (De Lyon and Dinghra, 2020), and both shocks could have significant spillover effects (as described in our May *Review* relating to Covid-19).

As illustrated by figure 6, there is no strong evidence of correlation between exposure to the pandemic and

Figure 6. Exposure to Covid-19 and Brexit shocks



Source: ONS and Levell and Keiller (2018).

Note: The size of a bubble is proportional to the size of the sector.

exposure to a WTO Brexit at sector level. While some sectors may not initially notice the effects of Brexit if their operations are already badly affected by Covid-19 (for example, much of the arts and transport), others which have been trading more normally may experience severe dislocation from either an FTA or a No Deal Brexit in the first quarter of 2021 (including manufacturing and finance). Retail recovered its Covid-19 GDP losses by August despite major initial impacts and is highly exposed to Brexit (as well as further lockdown measures).

The long-run effects of Brexit, either FTA or WTO, are also likely to reinforce the long-run effects of the pandemic. Covid-19 will lower potential output due to lower capital accumulation and hysteresis effects (long-term scarring). Brexit will weaken long-term productivity growth even further due to a reduction in trade and FDI flows, with a larger negative effect under No Deal.

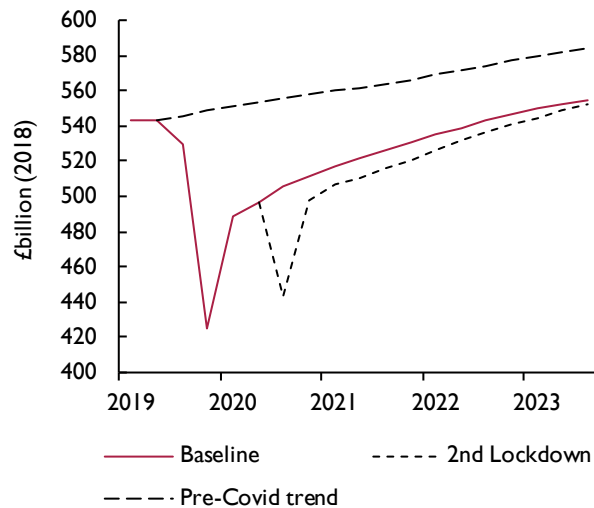
Risk of a second national lockdown

The second major risk to our baseline is that the current 'second wave' of Covid-19 may trigger new lockdowns that would push the economy back in recession, even before it has recovered from the first lockdown. To illustrate the potentially devastating impact, we assume an FTA Brexit as in our baseline and simulate in NiGEM a full second national lockdown, building on work by Hurst *et al.* (2020). We calibrate the shock based on the

experience in the second quarter of 2020, thus assuming a lockdown of similar length and stringency. A second lockdown would mainly reduce domestic demand also with effects on potential output stemming from lower capital accumulation and stagnant productivity (long-term scarring). Private and government consumption would show a sharp decline, labour productivity would fall and investment premiums would increase because of heightened uncertainty. While calibrating the shock to the first lockdown necessarily encompasses some degree of endogenous reaction from the government, we do not make any explicit assumption about extra spending related for example to a furlough scheme. These costs are relative to a baseline in which a second lockdown is not necessary, not against a situation in which a lockdown is necessary but not imposed. The negative economic impacts – aside from the health consequences – of not imposing a second lockdown when required would be very significant. There is also the possibility, not modelled explicitly, that instead of a single major second lockdown we see a sequence of shorter and/or less strict ones, expectation of which might imply larger adjustments in consumer and business confidence *ex ante*.

Figure 7 shows the result of the simulation. Under a second lockdown, GDP would decrease by 10 per cent in the first quarter of 2021. This is smaller than the 20 per cent decline experienced in the second quarter of 2020

Figure 7. GDP path in the case of a second lockdown



Source: ONS and NiGEM simulation.

because we assume that the lockdown is restricted to the UK. Despite the supply shock via lower productivity, the lockdown would be deflationary. Given that Bank of England policy rates are already at the zero lower bound, the Bank may try to mitigate this decline by using non-conventional monetary tools like quantitative easing or negative rates.

In the case where No Deal Brexit and a second lockdown coincide, the short-term would be dominated by the effect of a lockdown, but it would make the ensuing recovery much weaker and more uncertain. Because of the complementarity of the shocks, we estimate that leaving the EU single market on WTO terms would increase the permanent GDP loss because of Covid-19 by one third.

Covid, Brexit and long-term prospects

Looking beyond the immediate recovery period, Covid-19 and Brexit will profoundly alter the size and form of the UK economy. Social distancing, whether mandatory or voluntary, looks set to remain for some time. Some industries may not survive Covid-19 in a recognisable form and skills may be lost as workers retrain for careers in other sectors. Following Covid-19 and Brexit our long-term forecast is for annual GDP growth in the region of 1.3 to 1.4 per cent, with downside risks from a No Deal Brexit and sequence of new waves of infection,

compared to an average of 1.8 per cent in the ten years since the Global Financial Crisis and 2.9 per cent in the ten years preceding it.

As an illustration of potential internal re-allocation of capital and labour, the retail sector recovered its pre-Covid level of activity in August, despite record net chain store closures in the first half of the year, and with at least 12 per cent of the eligible retail workforce still furloughed at the end of the month. Taking these together implies potentially large numbers of redundancies to come but also potentially higher productivity and new job creation in online retail, with a range of potential directions for total retail employment. The online retail sector has seen company registrations rise by 67 per cent over 2019 values, while manufacturing company registration is up 13 per cent. This compares with falls in births of new arts and creative, accommodation and I.T. companies.¹

Weighing against new job creation, by this time next year debt will have risen to new highs. Firms have taken on nearly £60 billion of borrowing from public sector sources already to get through the pandemic, in addition to existing private facilities. This will either remain on corporate balance sheets, raising operating costs at a time when social distancing is also affecting profitability, or will be defaulted at cost to banks and to the public sector which has underwritten much of it; or – more likely – a combination of the two.

The international supply chain impacts of Covid-19 seem likely to be smaller than those attributable to any form of Brexit now likely. The combination of low underlying growth, elevated debt levels across the board and increased barriers to trade make the outlook for the UK economy an extremely uncertain one even before the likelihood of future pandemic or climate shocks are taken into consideration.

The adjustment that the UK economy has to go through amid prospects for weak recovery and higher unemployment will require continued support from fiscal policy, which needs to be designed in such a way to target growing inequalities at sectoral and regional level while supporting potential output growth within a comprehensive plan that includes structural policies. Monetary policy should continue to do what it can to provide and maintain fiscal space subject to a commitment to a credible exit strategy.

Section 2. Main-case forecast scenario in detail

The economic outlook for the UK depends on the outcome of the Covid-19 pandemic and the exit from the EU single market. In this section we describe our main-case forecast scenario and our assessment of the substantial economic risks around it. A different assessment of the risks to GDP growth and inflation is provided by the Warwick Business School Forecasting System described in Box D.

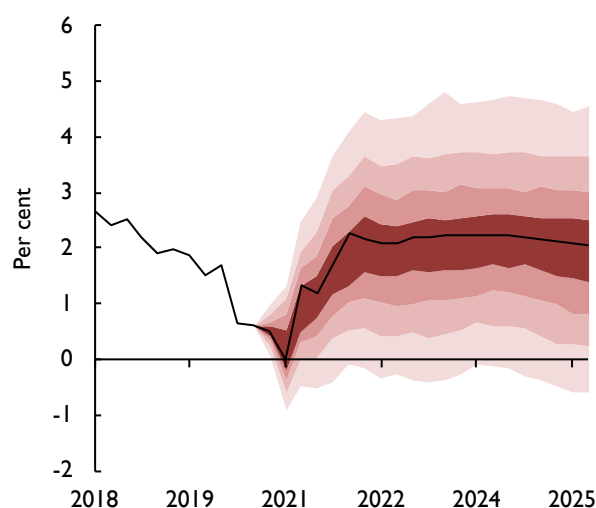
The combined effect of reduced household incomes for some and increased caution among others is likely to keep consumption below pre-Covid levels. We forecast it to decline by nearly 14 per cent in 2020, rebounding by 8 per cent in 2021.

The impact of the pandemic on households is likely to continue to be very uneven (Bhattacharjee and Lisauskaitė, 2020 and Box C). Like the medical impact, it has not been blind to ethnic and socioeconomic differences. Households which can afford to are saving more, partly involuntarily due to closures and social distancing, leading to a record rise in household saving rates in the second quarter of 2020. At the same time the incomes of others have fallen, with many unable to reduce outgoings: the Financial Conduct Authority has warned that 12 million people are likely to struggle with bills or loan repayments, with under-35s and Black, Asian and minority ethnic people the most likely to be affected.

Inflation has been weak in recent months, standing at 0.5 per cent in September. In a letter to the Chancellor,² Bank of England governor Andrew Bailey explained that “the Covid-19 shock has had varied impacts on demand

and supply in different sectors of the economy, but overall the effects appear to have reinforced the drag on CPI inflation from lower oil prices.” Figure 8 represents our fan chart of CPI inflation which we forecast will only reach 2 per cent at the beginning of 2022.

Figure 8. Inflation fan chart (per cent per annum)



Source: NIESR forecast and judgement. In addition to usual uncertainty the fan chart incorporates a downward adjustment to account for the risk of a second lockdown as depicted in figure 1.

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.

Table 1. Summary of the main-case forecast scenario

percentage change unless otherwise stated

	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	1.7	1.3	1.3	-10.5	5.9	3.7	2.8	2.0	1.6
Per capita GDP	1.1	0.7	0.7	-11.1	5.3	3.2	2.3	1.5	1.1
CPI Inflation	2.7	2.4	1.8	0.9	1.1	2.2	2.2	2.2	2.1
RPIX Inflation	3.8	3.3	2.5	1.6	1.8	3.0	3.0	2.9	2.8
RPDI	0.1	2.3	1.5	-1.9	4.0	2.1	2.5	2.3	2.1
Unemployment, %	4.4	4.1	3.8	5.0	7.6	6.5	5.4	4.9	4.7
Bank Rate, %	0.3	0.6	0.8	0.2	0.1	0.1	0.1	0.3	0.5
Long Rates, %	1.2	1.4	0.9	0.3	0.5	0.8	1.1	1.3	1.6
Effective exchange rate	-5.5	1.9	-0.3	0.2	-0.5	0.2	0.3	0.3	0.3
Current account as % of GDP	-3.8	-3.7	-4.3	-2.8	-5.4	-4.5	-3.6	-3.3	-3.4
Net borrowing as % of GDP	2.6	1.8	2.6	16.9	6.3	4.1	2.7	1.9	1.6
Net debt as % of GDP	83.8	82.4	80.8	103.9	106.6	105.7	105.0	101.9	96.8

Brexit: deal or no deal?

On 1 January 2021 the current trading arrangement between the UK and the EU is due to expire. If a Free Trade Agreement (FTA) is not agreed and implemented in the two months left before the deadline, the UK and the EU will trade on standard WTO terms.

We take as our starting point assumption an FTA that would provide a high level of access in the goods sector but a poor level of access in services (see for example Hantzsche and Young, 2019). In our baseline, we assume that such an FTA enters into force on 1 January 2021. This is the stated goal of the UK government and the EU institutions. The assumptions we have added in our forecast are:³

- (1) A reduction in international trade. Hantzsche *et al.* (2018) estimate that total trade between the EU and the UK would be reduced by 46 per cent compared with the scenario in which the UK stayed in the EU single market. This large fall was estimated by looking at how much trade has increased for countries that have joined the single market; there are a significant number of non-tariff barriers associated with trading outside the block.
- (2) A reduction in business investment of 3½ per cent coming from lower foreign direct investment. The same research from Hantzsche *et al.* (2018) finds that joining the single market compared to having just an FTA increases FDI by 21 per cent. While an FTA would arguably lift the uncertainty related to Brexit, some businesses may not be well prepared for the details of the new requirements and that may contribute to lower investment in the beginning of 2021.
- (3) A removal of budgetary contributions to the EU budget. The roughly £10 billion per year saved is assumed to be spent on government consumption rather than being used to reduce the deficit.
- (4) The reduction in trade would be associated with a 1 per cent reduction in labour productivity driven by the

fact that firms are assumed to compete less intensively because it would be more difficult to trade.

All the assumptions below are assumed to enter progressively over ten years starting in the first quarter of 2021, except for the budgetary contributions that would be in effect immediately in the first quarter.

Table 2 summarises the assumptions associated with an FTA and with a WTO Brexit. While ‘no deal’ would represent a bigger adjustment for the UK economy than an FTA, with for example trade with the EU decreasing by a further 10 per cent, the majority of the adjustment would already have to happen even in the more favourable scenario of an FTA. While the possibility that the UK signs FTAs with other countries (like Japan) may support trade, we estimate that the mitigating effect would be very small compared to the direct cost of leaving the EU single market.

Monetary and fiscal policy responses

To respond to the pandemic the Bank of England has reduced its policy rate to 0.1 per cent, has introduced a Term Funding scheme with additional incentives for Small and Medium-sized Enterprises and has announced a £300 billion increase in the stock of UK government bond and sterling non-financial investment-grade corporate bond purchases. The Bank has publicly discussed with banks and other financial institutions the possibility of introducing negative rates for the first time in its history while, in the US, the Federal Reserve has updated its framework to target average inflation and thus allow inflation to go temporarily above 2 per cent.

Weak recovery prospects due to the pandemic and the exit from the EU single market require the continuation of monetary and fiscal support. The discussion around fiscal consolidation looks different from a decade ago, with the International Monetary Fund among those arguing that spending cuts would not be an appropriate response in advanced economies. The increase in public debt resulting from the pandemic is not a cause for

Table 2. FTA and WTO assumptions

Scenario	Free Trade agreement	Additional assumption for no-deal
Trade between EU and UK	–46% by 2030	–10pp
FDI	Reduction in business investment of –3.5%	–1.5pp
Budgetary contribution	EU contributions spent for government consumption	None
Productivity	–1% by 2030	–0.6pp

concern but a smaller, or simply different, economy post-Covid may require a different tax system and we as yet have little idea about what magnitude of deficit in ‘normal times’ the government elected last year believes would be optimal.

With the three-year full spending review also being pared back, now would be an ideal time to undertake the first stages of a comprehensive tax review considering not just arguments around the size of the tax take but how that tax can be most effectively and equitably raised. Tax rises should wait until after the economic effects of the pandemic have largely dissipated and the shape of the post-Covid, post-Brexit economy has become clearer, but delaying consideration of the options will not help decision-making when that time comes.

There is no evidence that the unprecedented levels of new government borrowing so far this year have led to rises in borrowing costs or are likely to in the near future (see also Box B in ‘Prospects for the world economy’). Bond prices have also been supported by extensive Bank of England intervention in the secondary market: something which seems likely to continue for some time, with falling velocity offsetting the creation of new money and tools at the Bank’s disposal to reverse direction if it is concerned about overshooting its inflation target. But the Bank’s expanded balance sheet does raise questions about the future of counter-cyclical policy and QE as the marginal policy tool: Barwell, Chadha and Grady (2020) called in March for “whatever it takes” to be done in terms of unconventional monetary policy during the pandemic, but also for “an exit strategy from the ‘only game in town’ trap, in which the central bank and its balance sheet are the answers to every problem”.

While an expanded central bank holding of gilts exposes the government to rises in Bank Rate, we forecast Bank Rate to remain at its current low rate for three years. We expect the Monetary Policy Committee to expand QE purchasing at its November meeting but, if more firepower is deemed necessary, deem an expansion of the Term Funding Scheme with additional incentives for SMEs to be more likely than cutting Bank Rate into negative territory. Yield control remains a distant possibility but, if purchases of long-dated gilts are to be the go-to monetary policy, a clear operational framework may be required for it to be credible.

Financial conditions and housing (table A1)

The finance sector has been shielded from many of the worst effects of Covid-19 and financial conditions

have been supportive since the spring. Interventions by central banks globally have supported equity prices (see Avalos and Xia, 2020) and the FTSE350 index recovered half of its dramatic March losses by June but since then has traded sideways or slightly downwards.

UK gilts have benefited from increased demand across the board and yields along the curve have fallen by 30 to 50 basis points compared with a year ago, with the ten-year gilt recovering from August lows to around 0.25 per cent. The real forward curve is negative at all maturities.

Demand for credit from companies has showed variation across firm size. The Bank of England’s Credit Conditions survey for the third quarter of 2020 reported increased demand for lending from small businesses but significant decreases among medium and large non-financial corporations; they expect this weakness to continue for large businesses in particular into the fourth quarter. Wholly or partly government-backed loans totalled nearly £60 billion by 20 September but the National Audit Office estimated a potential £15 billion to £26 billion of losses on the fully-guaranteed Bounce Back Loan Scheme alone.

Potentially driven by wealthier households experiencing larger falls in spending than incomes, the Royal Institute of Chartered Surveyors’ September survey described house price growth as gaining momentum. This may also reflect the temporary cut in stamp duty, with longer-term expectations more subdued. Our forecast for house prices (see table A5) is for an increase of 0.5 per cent overall this year and 1.3 per cent in 2021.

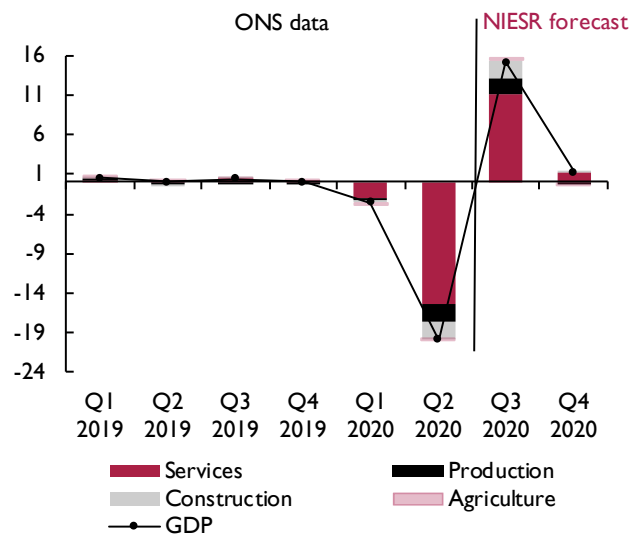
Aggregate demand

Output and components of demand (table A3)

All economic sectors have been hit by the pandemic, and most have not recovered at the end of September the level of activity they enjoyed before the pandemic. The ONS Business Impact of Covid-19 Survey (BICS) showed that in September around 15 per cent of businesses in all industries had paused or ceased trading, and nearly 20 per cent were reported to be at moderate or severe risk of insolvency. In hospitality and the arts, around one third of businesses reported that they were at moderate or severe risk of insolvency.

The recovery in the third quarter is believed to have been broad-based, with services, production, construction and agriculture all contributing to the 15 per cent increase in GDP (figure 9).

Figure 9. Contributions to growth in 2020Q3



Source: NIESR GDP tracker.

We forecast the recovery to lose much of its momentum in the fourth quarter due to a rise in Covid-19 infections that could trigger new restrictions, increased voluntary social distancing and a decline in confidence. IHS Markit 'flash' PMIs recorded a weakening of growth in October, especially in hospitality and transport.

Tracking economic developments during the pandemic

Faster indicators provided by the ONS, based on rapid response surveys, novel data sources and experimental methods, hint at the ongoing effects of Covid-19 and associated restrictions on economic activity. In the week ending 18 October 2020, overall footfall was below 70 per cent of its level in the same period of the previous year, while traffic activity was nearly flat, 11 percentage points below pre-lockdown levels. Alternative high-frequency indicators such as credit-card use, travel and location information also suggest a weakening in economic activity from the second half of September (Von Roye and Orlik, 2020). The fact that the slowdown in economic recovery started in August, before restrictions were tightened, supports recent research which suggests that much of the economic hit from coronavirus comes from voluntary social distancing related to fear of infection (IMF, 2020).

Households and NPISH (table A5)

In the first half of the year a large part of the workforce lost income due to working fewer hours, including on the CJRS. In the second half of the year, we expect household

incomes to be dented by a large rise in unemployment and by the decreased generosity of furlough-type schemes.

We forecast real personal disposable income (RPDI) to decrease in 2020 by 1.9 per cent as higher government transfers coming from the Covid-19 fiscal packages balance losses related to unemployment, nominal wages and inflation. It then makes up some of 2020's shortfall by growing by 4 per cent in 2021.

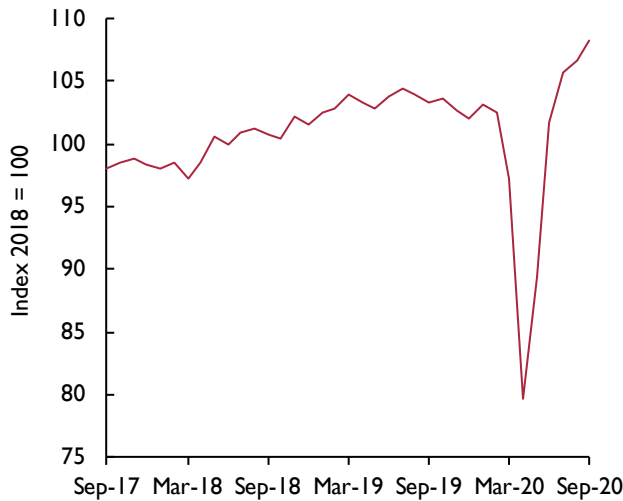
Household consumption has been severely curtailed by the lockdown and other restrictions on mobility necessary to fight Covid-19. The BRC-ShopperTrak footfall monitor showed that retail footfall decreased by 30 per cent in September compared with the same month last year and GfK's Consumer Confidence Index showed a modest recovery from a trough of -36 to -25 in September before falling back to -31 in October. Fable Data on bank transactions showed spending on pubs and restaurants contracting in mid-October. Increased infection risk and new restrictions imposed as a result of a second wave are likely to prevent a recovery in either retail footfall or consumer confidence by the end of the year.

However, a new composition of consumption seems to be emerging with fewer in-store shopping, more online shopping and fast food deliveries. Despite the fall in retail footfall, total retail sales recovered their pre-Covid level in July and in September were up by 4.6 per cent compared to the same month last year (figure 10). The new pattern in consumption towards online shopping is in line with Google mobility trends (figure 11), showing people spending more time at home or in parks rather than going to the office or shopping. Retail sales have also been boosted by substitution from hospitality spending.

Chief Financial Officers expect a slow recovery in sales as the effect of the pandemic lingers on. In the Bank of England Decision Maker Panel survey from September, chief financial officers were reported to expect sales in the third quarter to be 14 per cent lower than they would otherwise have been because of Covid-19.

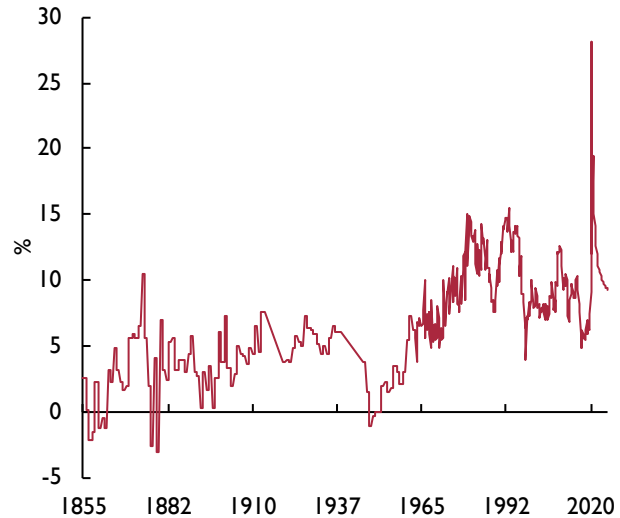
The outlook for consumption will depend on the impact of further lockdown measures and whether consumers will feel safe to go back to their 'normal life'. As consumption has reduced by much more than income, the household saving ratio rose from 6½ per cent in 2019 to a record high of 28 per cent in the second quarter of 2020, the highest since the start of the Bank of England's series in 1855 (see figure 12). We forecast it to average 12.7 per cent across 2020, decreasing to around 10 per cent

Figure 10. Retail sales in GB are above pre-Covid levels



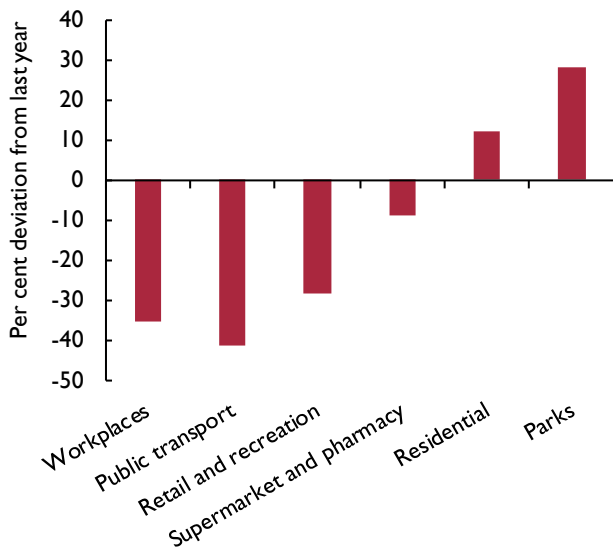
Source: ONS.

Figure 12. Household saving ratio reaches a record high of 28 per cent



Source: Thomas and Dimsdale (2017), Sefton and Weale (1995), ONS and NIESR forecast.

Figure 11. Google Mobility trends (October 2020)



Source: Google.

next year as restrictions on mobility and consumption are lifted and consumer confidence recovers thanks to the arrival of a vaccine.

Risks to consumption are mainly on the downside; a further national lockdown or expectations of a series of lockdowns would lead to a dramatic fall in consumption.

Investment (table A6)

Fixed investment, which has already weakened since the Brexit referendum, is severely affected by the pandemic. In our main-case scenario business investment declines by 14 per cent in 2020, only increasing by 2.3 per cent in 2021 due to ongoing uncertainty regarding Brexit negotiations with the EU. Discussions at NIESR’s Business Conditions Forum in October indicated that even if a trade deal with the EU emerges, the next 6–7 months will be ‘chaotic’ as governments and businesses on both sides will have to adjust to the new arrangements. The outlook on the trade negotiations beyond the EU, the US in particular, also seem highly uncertain regardless of the outcome of the US presidential elections. Survey evidence suggests that 47 per cent of business respondents believe that the pandemic has had a negative impact on Brexit preparedness. According to the Decision Maker Panel of the Bank of England for September, business investment in the third quarter of 2020 is expected to be 21 per cent lower than it would otherwise have been because of Covid-19, and to recover gradually after that.

In our main-case forecast scenario, private housing investment declines by 14 per cent in 2020 but picks up by 6.6 per cent in 2021.

March’s Budget included plans to ramp up public investment but there is uncertainty regarding these plans due to difficulties associated with getting projects started during the pandemic and the autumn Budget being

cancelled. In the baseline scenario, public investment is expected to be significantly stronger than private investment, rising by 7.8 per cent and 6.7 per cent respectively in 2020 and 2021.

External sector (table A4) and sectoral balances (table A9)

As economies have gradually eased lockdown restrictions, the adverse impact of Covid-19 on trade has declined more quickly than expected with smaller than expected falls in export and import volumes in the second quarter of 2020. In our main-case forecast scenario, export and import volumes both fall by around 11 per cent in 2020. Exports are expected to recover only by around 5 per cent due to the exit from the EU Single Market at the end of the year. Imports are expected to recover much faster, driven by recovering consumer spending, leading to a rising current account deficit in 2021. There are significant downside risks to our forecasts of exports and imports, depending on the risks of a no deal and the pace of recovery from the pandemic across the world.

The principal source of increased government borrowing remains, and is expected to remain, the increased domestic saving of households (see figure 13).

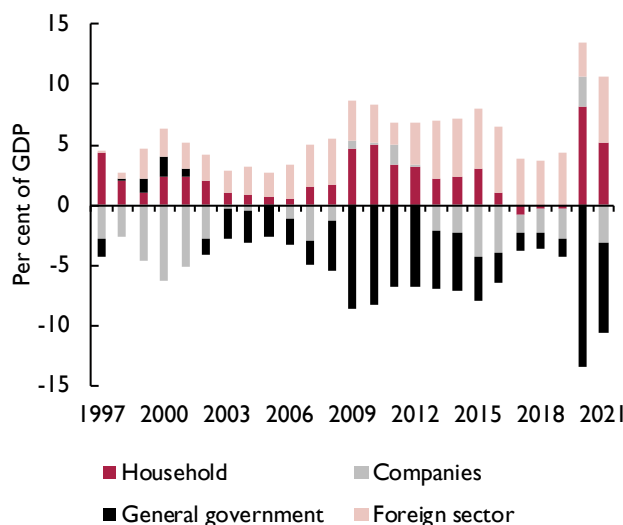
Supply conditions

Labour market (table A7)

Unemployment did not rise in the early months of the pandemic on the International Labour Organisation measure. This reflects the success of policy interventions in protecting jobs, as well as the fact that actively seeking work has been much more difficult during periods of restricted movement. Approximately 1 per cent of the workforce appears to have exited into inactivity: this may be due to additional temporary childcare responsibilities or it could relate to permanently discouraged workers, perhaps those nearing retirement age. In recent months unemployment has begun to rise, reaching close to 5 per cent in August, and other evidence suggests that it is likely to have risen further since then. Official vacancies data have started to show some signs of recovery, driven by small businesses and the construction sector in particular, but overall vacancies in July-September remained 40 per cent below a year ago.

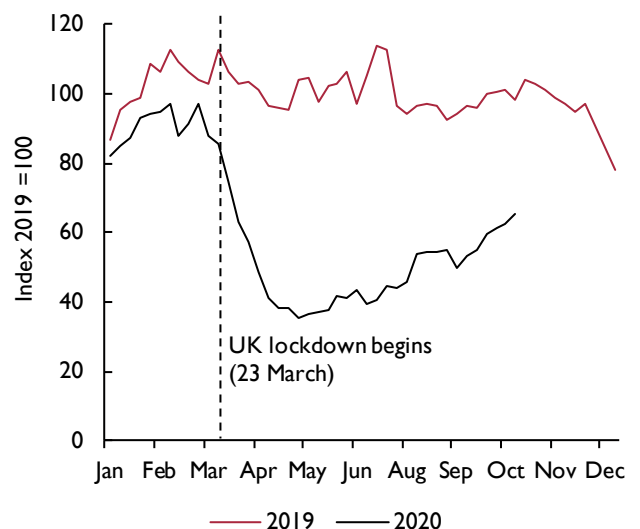
Online job adverts were also running nearly 40 per cent below their 2019 average in early October (see figure 14) and redundancies have begun to increase more rapidly: the three months to August saw 227 thousand redundancies, compared with 153 thousand in the three months to July. The Institute of Employment Studies (IES, 2020) has estimated there may be 450 thousand redundancies in the third quarter and a further 200 thousand in the final quarter of 2020.

Figure 13. Sectoral balances



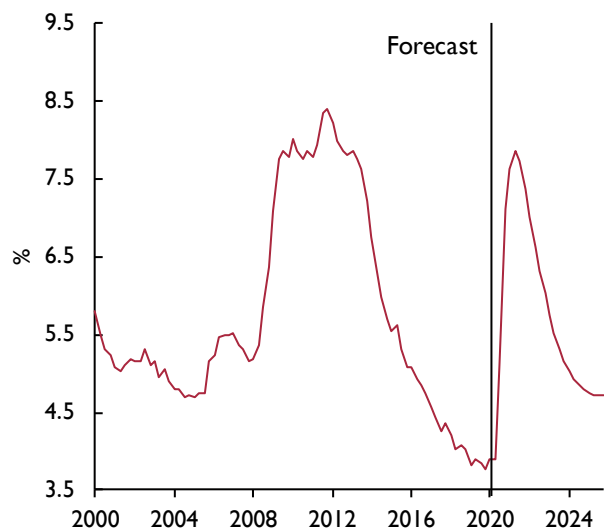
Source: NiGEM database and NIESR forecast.

Figure 14. Total weekly online job adverts (all industries)



Source: Adzuna, ONS.

Figure 15. Main-case forecast scenario for unemployment



Source: NiGEM database and NIESR forecast.

As discussed in Section 1, we expect the new government measures to help keep unemployment below the levels it would have reached otherwise, but to a lesser degree than extending the CJRS in its previous form would have done.

Productivity

Labour productivity growth was already lacklustre before Covid-19. It slowed significantly after the Global Financial Crisis and has been estimated to be 20 per cent lower than a continuation of the pre-financial crisis trend (see Crafts and Mills, 2020). Productivity growth is likely to be hit again by the pandemic and the UK's exit from the EU single market.

Productivity measured by output per hour has been hit by the lockdown in the second quarter. As output declined faster than the number of hours worked, productivity fell by 2½ per cent, the largest such fall since estimates began. The sectoral decomposition of productivity growth shows that all sectors experienced a fall. In the public sector, the fall in productivity was particularly remarkable. It decreased by a record 35.7 per cent on a year earlier, driven by a rise in inputs combined with a decline in output: particularly school closures (see Box B for discussion of the implications of school re-openings) and falls in non-essential healthcare services.

Average weekly hours worked by full-time workers declined from around 37 hours pre-Covid to a trough of

30.3 hours in April to June, when the lockdown had its maximal effect. Since then, weekly hours worked have recovered slightly to 31.9 hours in June to August; we forecast that they will only fully recover in 2021 when recovery takes hold.

We forecast productivity to decline by 1.1 per cent in 2020 and by 0.8 per cent in 2021 as the Covid-19 pandemic and the UK's exit from the EU single market take their toll. One upside risk to our forecast would be a return to pre-GFC technological progress growth rates driven, for example, by innovations in digitalisation, artificial intelligence and healthcare.

Capital stock (table A6)

Estimates of the capital stock are relatively unreliable, reflecting inherent difficulties in measurement and regular revisions. We estimate that capital stock growth was 1.7 per cent in 2019 in the private sector and 2.3 per cent in the public sector. With a background of high uncertainty related to the Covid-19 crisis, we forecast private capital stock to be stable this year, and to increase progressively to 1 per cent per annum until the end of the forecast horizon. Private sector capital growth will be limited by the increased cost of trading with the EU under an FTA compared to being part of the EU single market, which will reduce the attractiveness of investing in the UK.

By contrast, we forecast public capital to increase by 2.8 per cent this year on the back of promises by the government to increase investment in education, healthcare and transport. Public sector capital stock growth is set to reach more than 3 per cent per annum in the years ahead.

Wages and prices

Wages (table A5)

The Covid-19 pandemic initially saw a return to falls in real wages, last seen on a sustained basis between 2008 and 2014, driven principally by falling nominal wages. This trend has been reversed as the economy has partially re-opened with average weekly nominal earnings rising by 1.9 per cent in August. Public sector wages have held up more strongly, growing at 1.8 per cent between February and August, compared with 0.9 per cent in the private sector.

The variation across both time and sectors reflects the sectoral impact of Covid-19. With furloughed employees receiving 80 per cent of normal wages unless topped up by employers, the degree of furloughing correlates

highly (coefficient of 0.69) with the wage growth variation between sectors, as seen in figure 16. Other factors include the additional pro-cyclicality of private sector wage setting (see Dolton *et al.*, 2020).

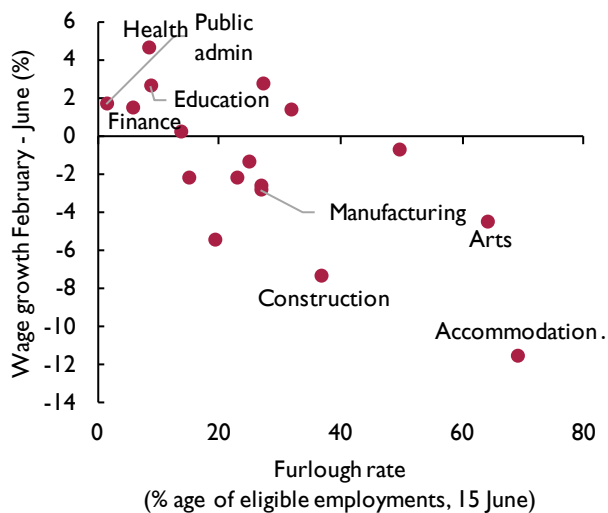
Compositional effects have played a small part in supporting wage growth with the Office for National Statistics estimating that the net reduction in lower-paid industries accounted for 0.1 percentage points of the growth in August.

In our main case forecast scenario average earnings fall by 2.6 per cent over 2020 as a whole, recovering to rise 5.1 per cent in 2021, settling to rise by around 3 per cent per year after the recovery from Covid-19.

Prices (table A2)

In the medium term it appears likely that nominal wage growth weakness may be compensated somewhat by more slowly rising prices. Inflation as measured by the consumer price index fell to 0.2 per cent in August, largely thanks to the 'Eat Out to Help Out' scheme, and rose to 0.5 per cent in September as the temporary effect on restaurant and hotels prices was removed and transport prices picked up. Any mismeasurement of experienced inflation due to the changing 'basket' during lockdown should be unwound as and when consumer behaviour returns to pre-Covid patterns, though permanent shifts

Figure 16. Degree of furloughing (mid-June) and wage growth between February and June by sector



Source: ONS.

in preferences may take some time to be reflected in the representative basket due to be revised early next year.

Bank of England analysis has suggested that the disproportionate impact of the pandemic on consumer services, whose prices are changed less frequently than those of goods, may mean that any spare capacity in those sectors may have a smaller, or more delayed, impact on inflation (Bank of England, 2020). Social distancing and hygiene requirements along with partial opening up of some businesses might also delay the downward adjustment in some services prices due to increased unit costs.

We expect inflation to remain subdued, averaging 0.5 per cent across the last quarter of 2020; our recent inflation trackers have shown a slowing in trimmed inflation, indicating a weakening of underlying inflation after volatile elements are stripped out. In our main case scenario we forecast CPI inflation to return gradually towards its 2 per cent target as demand normalises while firms try to repair their balance sheets, reaching 1.7 per cent at the end of 2021. Over the forecast period it stabilises around its target.

NOTES

- 1 Updated data from University of Kent: see Duncan *et al.* (2020).
- 2 <https://www.bankofengland.co.uk/-/media/boe/files/letter/2020/governor-cpi-letter-september-2020.pdf?la=en&hash=B48156B2E508089573F1F980612A4FFB9208614A>
- 3 The UK's migration policy is now defined independently of the EU, and we follow the Office for National Statistics principal projection. If and when the ONS reduces their projection, then we will adopt the new ONS projection. In Hantzsche *et al.* (2018), the reduction in net migration explained about one third of the GDP loss from leaving the EU to join an FTA.

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Box A. Labour market policies and productivity

by *Rory Macqueen**

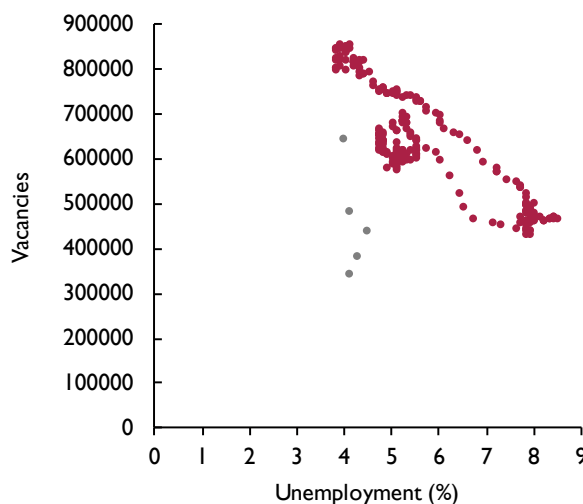
In our August Review we suggested that the government should extend the Coronavirus Job Retention Scheme (CJRS) in a state-contingent manner. We estimated, based on simulations in NiGEM, that to do so until the middle of 2021 would cost in the region of £10bn (around 0.5 per cent of annual GDP) but that this cost would likely be recouped through increased tax receipts and reduced social security expenditure. We also estimated that such an extension could reduce average unemployment from a projected 6.5 per cent to some 4.5 per cent in 2021, and by 0.5–1.3 percentage points in the following three years, by protecting skills, relationships and matches between employers and employees.

There are macroeconomic implications from higher medium-term unemployment on both demand and supply sides of the economy. We may expect demand to be suppressed by a period of reduced income for a substantial number of people (as well as additional precautionary saving by those worried about losing their jobs and weaker wage growth in a slacker labour market) but we may also expect to see reduced labour productivity as a result of reduced investment and the re-emergence of long-term unemployment: see research by Rothstein (2019) and Tumino (2015) on employment prospect scarring, and Crafts (1985) on the permanent unemployment effects resulting from the loss of skills during 1930s unemployment. Recent research from the US National Bureau of Economic Research (Dinerstein, Megalokonomou and Yannelis, 2020) has estimated a ‘skill depreciation rate’ of 4.3 per cent a year. Minimising these effects should be a central part of government policy in the recovery from the Covid-19 pandemic.

Beveridge Curve analysis – the empirical relationship between vacancies and unemployment – suggests that in April the CJRS prevented 1.4 million job losses (equivalent to a headline unemployment rate of around 8 per cent), rising to 2.1 million in May, by subsidising a shift ‘inwards’ of the curve (see figure A1, taken from Benito, 2020). The most recent vacancies figures imply an unemployment rate of 7.5–8.0 per cent in the absence of government interventions which have moved the curve inwards.

Benito (2020) uses this approach in a ‘search and matching’ framework to describe how increased supply costs associated with social distancing may result in lower productivity, leading businesses to shed marginal jobs to restore profitability and raising unemployment for a given level of job creation. Using this framework, illustrated in figure A2, we can consider proposed or potential employment schemes in two regards: whether they help keep the Beveridge curve to the left (maintaining unemployment below its ‘usual’ level for the current number of vacancies) and whether they help raise the job creation curve.

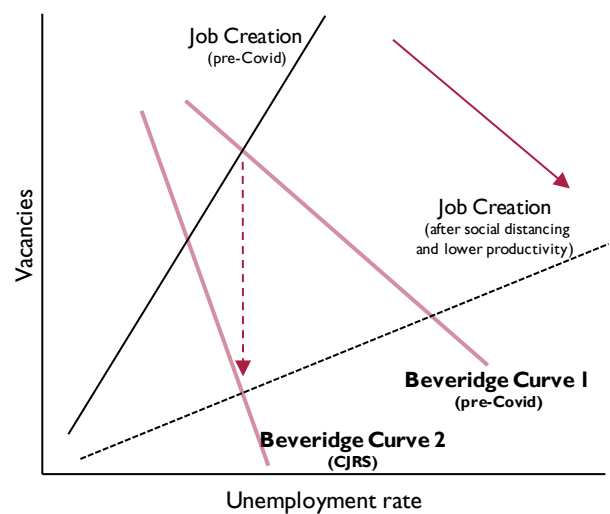
Figure A1. UK Beveridge curve 2000–2020(a)



Source: ONS.

Note: (a) Grey dots represent Covid-19 period.

Figure A2. Search-and-matching framework as represented with Beveridge curve and job creation curve



Source: Benito, 2020.

Box A. (continued)

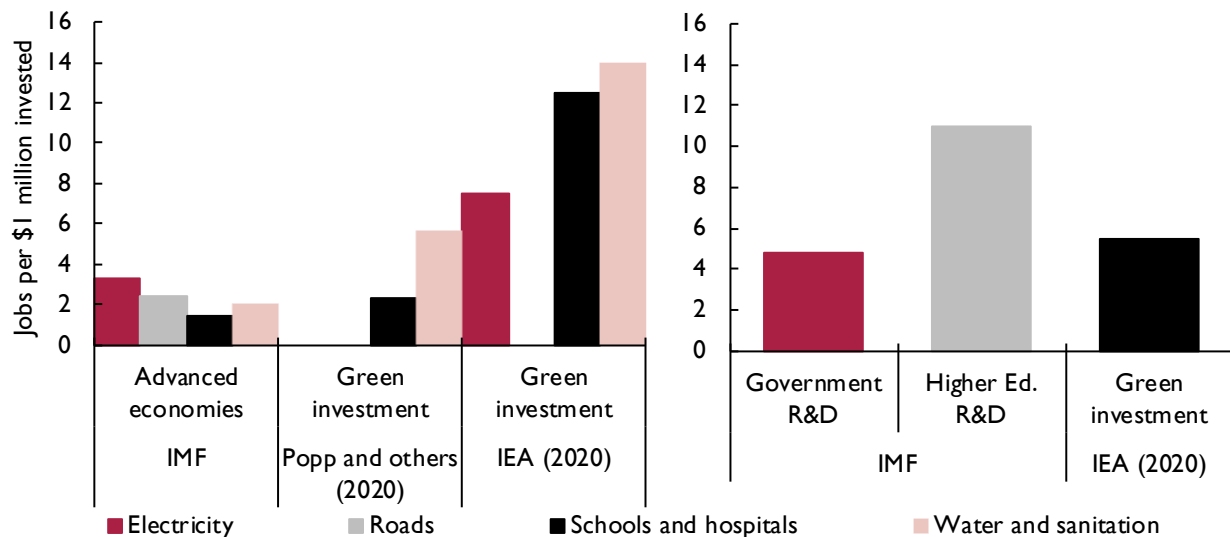
The stated purpose of the CJRS was to protect job relationships and its initial replacement with the Job Support Scheme (JSS) was motivated by a belief that ‘non-viable’ employments (never explicitly defined) should no longer be supported by government. This would risk unnecessary job losses in sectors which may be viable post-pandemic but cannot survive intact until then. While the new and amended schemes are estimated to support a significant number of jobs (see analysis in the main chapter text), this will be fewer than could have been maintained by an extended furlough scheme. In that sense, JSS can be thought as generating a smaller inward shift of the Beveridge Curve compared to the CJRS, implying higher unemployment for a given level of vacancies.

The challenge for the government is that, to the extent that prolonged high unemployment and associated weak recovery hamper productivity, reducing the generosity of support schemes may hold the job creation curve down by reducing productivity as described above, at the same time as the Beveridge Curve is moving back outwards. In support of the argument for ending the CJRS is the belief that it may reduce overall productivity by protecting less productive jobs at the expense of new matches, but it is hard to credit that this effect dominates at a time when so few matches are available.¹

Job subsidies as an attempt to raise the job creation curve are not new to British policy: active labour market policies (ALMPs) such as wage subsidies, training programmes, and job search assistance, have a long history. The House of Commons Select Committee on Education and Employment’s second report (1997) detailed four such subsidy schemes from the preceding twenty years. They found that all such schemes were successful in increasing job creation but with significant deadweight costs – according to one study, 80 per cent of subsidised jobs would have been created anyway – and sometimes to the detriment of non-targeted groups, e.g. substituting young workers for older workers rather than creating new positions. This last could prove problematic at a time when unemployment is rising for both old and young workers alongside longer-term rises in the state pension age.

The Government’s Kickstart scheme, modelled on 2009–11’s Future Jobs Fund (found to have been relatively successful) can be seen in this historical context: it pays employers for the costs at the relevant minimum wage of employing a 16–24 year old on

Figure A3. Job content per \$1 million of additional investment



Sources: ORBIS; Compustat; and IMF staff estimates.

Note: The figure shows, for different sectors, types of investment, and country groups, the estimates of the job content of \$1 million of investment. Based on regressions of employment on revenues over 1999–2017, covering 47,580 observations for 5,679 privately owned and state-owned enterprises. The estimates for low-income countries are extrapolated from the other estimates. For R&D spending, the figure is based on cross-country panel regressions based on OECD data. Green estimates are available in the literature, but only for a few sectors. AE: advanced economies; R&D: research and development.

Box A. (continued)

Universal Credit for 25 hours per week for six months. At the time of its announcement the government estimated its cost at around £2 billion to create “hundreds of thousands” of new jobs.

In the past these initiatives have sometimes combined with training programmes, such as the Youth Training Scheme for 16–17 year olds in the 1980s, which Dolton *et al.* (1994) found had a negative effect on post-YTS employment probability for men, but not for women. The Prime Minister recently announced a Lifetime Skills Guarantee beginning in April 2021. Retraining and reallocation of labour will be increasingly important to decrease the duration of unemployment as the economy adjusts to a new sectoral allocation following the pandemic. Although research on the effects of retraining is limited, there is some evidence on its favourable impacts on the labour market. Card *et al.* (2017) found that the effects are heterogenous across groups and particularly beneficial for women, and that training programmes have smaller short-term impacts than ‘work first’ programmes, but greater effects after 2–3 years.

A further option is for the government to engage in public sector (or public sector-led) job creation itself. The job creation prospects of the regional ‘levelling-up’ agenda may be substantial. In its recent *Fiscal Monitor* the International Monetary Fund argued that public investment projects would have a more powerful macroeconomic impact at a time of ample under-used resources, as well as reducing inequality and transitioning to a greener economy (see figure A3). The Women’s Budget Group (2020) has estimated that 6.3 times as many jobs can be created by government spending on the care sector compared with in construction.

Finally, as government moves towards incentivising labour market transition rather than job preservation, the role of the social security system must be considered. The Institute of Employment Studies (Wilson, 2020) has highlighted the role of tax credits during the last recession and raised concerns that “Universal Credit just will not be able to do the same”, because of the cumulative effects of a decade of cuts to social security. The temporary Covid-19 increase in Universal Credit is scheduled to end in March.

The success or otherwise of these initiatives will be weighed by policymakers against their fiscal impact but, as our scenario analysis of the furlough extension in the August Review illustrated, the fiscal costs of a policy intervention – even one which protects a million jobs and costs £10 billion up-front – may be significantly smaller or even zero once second-round and economy-wide effects are taken into account. A transparent, state-contingent fiscal policy framework will help decrease policy uncertainty and increase confidence, indirectly supporting investment and job creation prospects. At a time when the medium-term impact of Covid-19 remains uncertain, labour market policies which preserve existing employment relationships and those which support new job creation and matching will both be required; neither one can fully substitute for the other.

NOTE: *With thanks to Andrew Benito and colleagues for comments.

† If the CJRS prevents firm bankruptcies this could theoretically also reduce productivity by creating more ‘zombie’ firms, though a far bigger influence on this channel is likely to be the Covid-19 business loans programme.

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Box B. Implications of school re-openings in the UK

by Janine Boshoff, Claudine Bowyer-Crane and Lucy Stokes*

The unprecedented closure of schools and early years settings due to the Covid-19 pandemic deprived most children of school education for many months. In this Box we explore evidence on the impact of school closures to date, and the benefits and risks associated with the recent reopening of schools.

There are significant concerns about the impact of school closures, particularly for children from disadvantaged backgrounds, which extend beyond effects on educational attainment to broader concerns for wellbeing as well as long-term consequences. There are also inevitably effects on parents as a result of the need to spend more time providing education and care. Re-opening schools should therefore bring benefits but it raises questions about the impact on infection rates. All these factors have implications for both health and the economy.

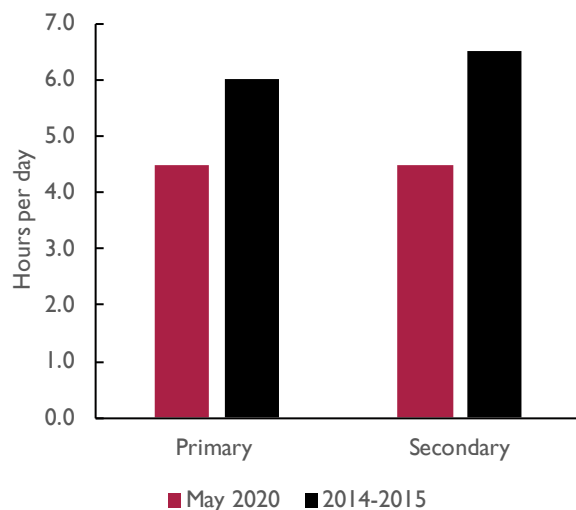
Impact on education

It is likely that school closures in the early months of the pandemic have halted and possibly even reversed recent progress towards reducing the disadvantage gap (EEF, 2020). A switch to remote learning will have contributed to this, as the 'digital divide' represents a major obstacle for many children. Approximately 60,000 students aged 11–18 have no internet access at home (ONS, 2020), with between 1.1 and 1.8 million children in the UK having no access to a laptop, desktop or tablet (Ofcom, 2020). Based on interviews with around 5,500 parents of school-age children, Andrew *et al.* (2020a) find that children spent an average of 4.5 hours a day on home learning; representing a 25 per cent and 30 per cent reduction in pre-pandemic learning time among primary and secondary school children respectively (figure B1).

While it is difficult to quantify the attainment loss due to reduced learning hours, Burgess and Siervertsen (2020) estimate that the loss of three to four hours tuition in maths for twelve weeks could result in an attainment loss of approximately 6 per cent of a standard deviation. Evidence suggests the impact will be largest for children from disadvantaged backgrounds. At primary level, children from the richest families spent an extra 4.5 hours per week on learning compared to children from the poorest families; at secondary level, the gap is measured as one hour (Andrew *et al.*, 2020a) (figure B2). Moreover, the negative impact may be particularly large for younger children given the importance of early years education for the development and improvement of cognitive and non-cognitive skills (Burgess and Vignoles, 2020).

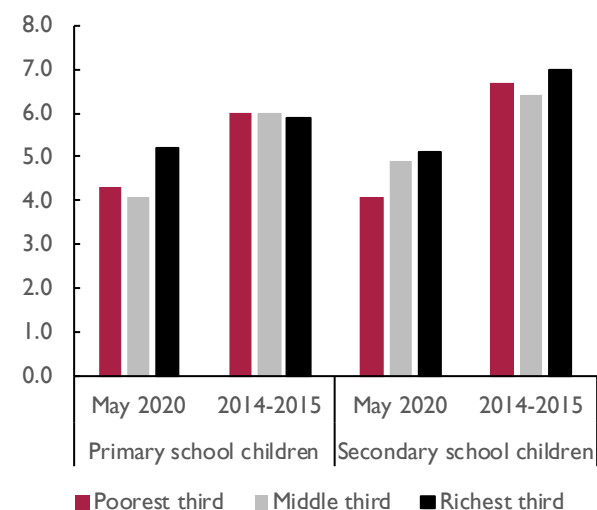
Effects extend beyond those on attainment. Around two in five parents felt homeschooling negatively affected their child's wellbeing (ONS, 2020b), while the Children's Commissioner (2020) suggests wellbeing has been particularly negatively affected in specific cohorts e.g. children with Special Educational Needs and Disability (SEND). Furthermore, some 2.2 million children are living in households

Figure B1. Total number of hours spent per weekday on educational activities, before and during lockdown



Source: Andrew *et al.* (2020a).

Figure B2. Differences in average, daily time spent on educational activities, before and during lockdown



Source: Andrew *et al.* (2020a).

Box B (continued)

affected by family issues linked to domestic abuse, severe parental mental health issues, and parental drug and/or alcohol dependency. For these children, school closures can have a particularly negative impact on mental and physical wellbeing.

In the longer term, OECD (2020) suggests the possibility of a 'hysteresis' in education with students struggling to maintain their learning pace, the erosion of their academic skills during the lockdown, and difficulty in re-engaging with education activities. Simulations by the World Bank suggest that in the absence of effective government action, each student whose primary or secondary education has been disrupted by school closures could face an average reduction in yearly earnings of \$872, equivalent to \$16,000 in lifetime earnings at present value (Azevedo *et al.*, 2020).

The reopening of schools would therefore seem a positive step, but teachers face an ever-increasing workload in helping children adapt to new routines (Roberts, 2020; Speck, 2020). Survey information and research on teacher wellbeing indicates much higher anxiety levels which could have an uncertain long-term effect (TES, 2020, Allen *et al.*, see figure B3). The continued pressure could decrease teaching quality and lead to teachers leaving the profession exacerbating existing teacher shortages. However, in times of economic uncertainty, teaching can also prove to be a more attractive career option, given fewer other opportunities (Fullard, 2020).

Impact on labour supply

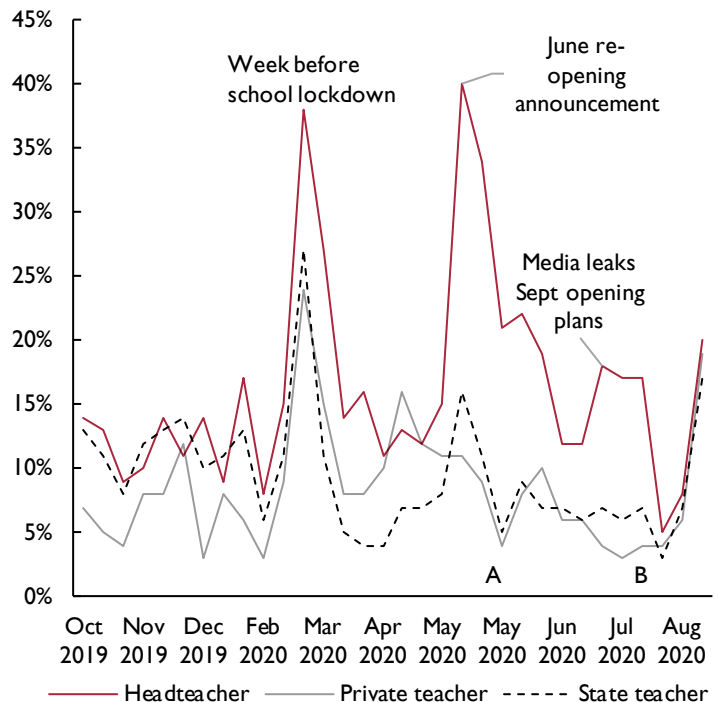
A significant part of the effect of the pandemic and the lockdown on labour supply and productivity has been associated with school closures. For parents with children usually in educational settings, the lockdown imposed additional duties related to both education and childcare. Between April and mid-May parents spent on average 3 hours of their day engaged in paid work compared to the 6.5 hours reported in the 2014/15 UK Time Use Survey (Andrew *et al.*, 2020b). Among parents in work, 30 per cent stated that homeschooling was negatively affecting their job (ONS, 2020b), while many adapted their working patterns to provide additional childcare (ONS, 2020c).

DfE figures for 1 October 2020 show that almost all (99.8 per cent) of state-funded schools in England were open, with 92 per cent "fully open" i.e. able to provide face-to-face teaching for all pupils for the full school day, with no groups of pupils asked to self-isolate. Attendance rates stood at around 90 per cent of pupils in state-funded schools (DfE, 2020). With most schools open, this should help parents to return to work, or enable greater time for seeking work among those unemployed.¹

There is mixed evidence regarding the effects of school re-opening on infection rates. Studies suggest low transmission rates in school settings (Macarthy *et al.*, 2020; Heavey *et al.*, 2020), particularly in children under ten years (Park *et al.*, 2020). Epidemiological evidence suggests children do not generally suffer from severe symptoms. However, in a modelling exercise studying the optimal strategy for re-opening schools, Panovska-Griffiths *et al.* (2020) found that even a partial re-opening of schools in September would lead to increased work-related and other contacts in adults that could result in a second wave of infections. In contrast, recent evidence from *Insights for Education* suggest no correlation between school reopening and either a rise or fall in infection rates (Crowder *et al.*, 2020).

Potential economic benefits from re-opening schools extend beyond those on education and the labour supply; for example, higher retail sales associated with demand for goods purchased in relation to school re-opening and increased footfall as parents

Figure B3. Work-related anxiety experienced by teachers during the 2019/20 academic year



Source: Allen, Jerrim and Sims (2020). Notes: A: Some primaries re-open to years 1 and 6. B: Some secondaries open to years 10 and 12.

Box B (continued)

and children resume school journeys. Impacts on labour supply will also affect family finances and thus their spending power. But if labour demand is also affected, particularly with further rises in infections, as well as from actions to suppress the virus, the balance of such effects is not clear.

Overall, there remains considerable uncertainty about the longer-term implications – the pandemic is still unfolding, and the eventual effects will depend in part on actions undertaken in response. Research is already underway to understand more about the effects of school closures and how these may be mitigated, but there is clearly much still to be learnt.

NOTES

* Thanks to Jagjit Chadha and Adrian Pabst for their comments.

1 Differences in impacts vary by gender: mothers undertook more hours of childcare during lockdown than fathers (ONS, 2020c). Women were also more likely to lose or leave their job, or to be furloughed (Andrew *et al.*, 2020a). Re-opening schools could reduce gender inequalities within the labour force that developed as a result of Covid-19 and lockdown.

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Box B (continued)

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Box C. The regional distribution of destitution from the Covid-19 crisis

by Arnab Bhattacharjee and Elena Lisauskaite

There is a growing awareness that big shocks such as Covid-19 and Brexit amplify existing inequalities. A plea for engaged research-driven policy debate directed at the 'levelling-up' agenda was the focus of the previous Review (Bhattacharjee, Nguyen and Venables, 2020) together with impacts of the Covid-19 shock upon UK population in destitution (Bhattacharjee and Lisauskaite, 2020).

Following Bhattacharjee and Lisauskaite (2020), we use NIESR's microsimulation model LINDA (NIESR, 2016), together with the quarter's updated projections from NIESR's global macroeconomic model NiGEM (NIESR, 2018), to obtain destitution projections at the national and regional level to the year 2022. Our model incorporates the impact of the UK government's job support scheme in all its current varieties and the impact of an FTA Brexit. Here, destitution is defined as extreme poverty, that is, income so low that a household is likely to lack the provision of essentials such as shelter, food, heating, lighting, clothing/footwear and basic toiletries in the immediate future. Specifically, we use the income component of the Joseph Rowntree Foundation's definition and consider a single person household as being destitute when their income falls below £70 per week, with any additional adult requiring another £30 per week and an additional child needing £20 per week. The impacts from Covid-19 and Brexit on destitution are modelled as arising from three sources: (a) persons losing their livelihood (unemployment), where this impact is moderated by the government's job support schemes; (b) persons employed in jobs suffering reduced income and thereby pushed into destitution; and (c) self-employed persons moved to extreme poverty either because of income loss or because their businesses are not being sufficiently supported by the government's small business schemes.

Table CI. Projections of the increase in destitution levels in the UK (18+ population)

	Non-Covid projections	Covid-19 + Brexit: Channels of impact upon destitution			Covid-19+ Brexit (FTA):
		Unemployed	Lower income in jobs	Self-employed	Total
2020	2,048,395	792,976	95,180	210,243	3,146,795
2021	1,789,588	2,495,928	90,839	20,316	4,396,671
2022	1,519,607	1,630,494	93,477	5,541	3,249,120

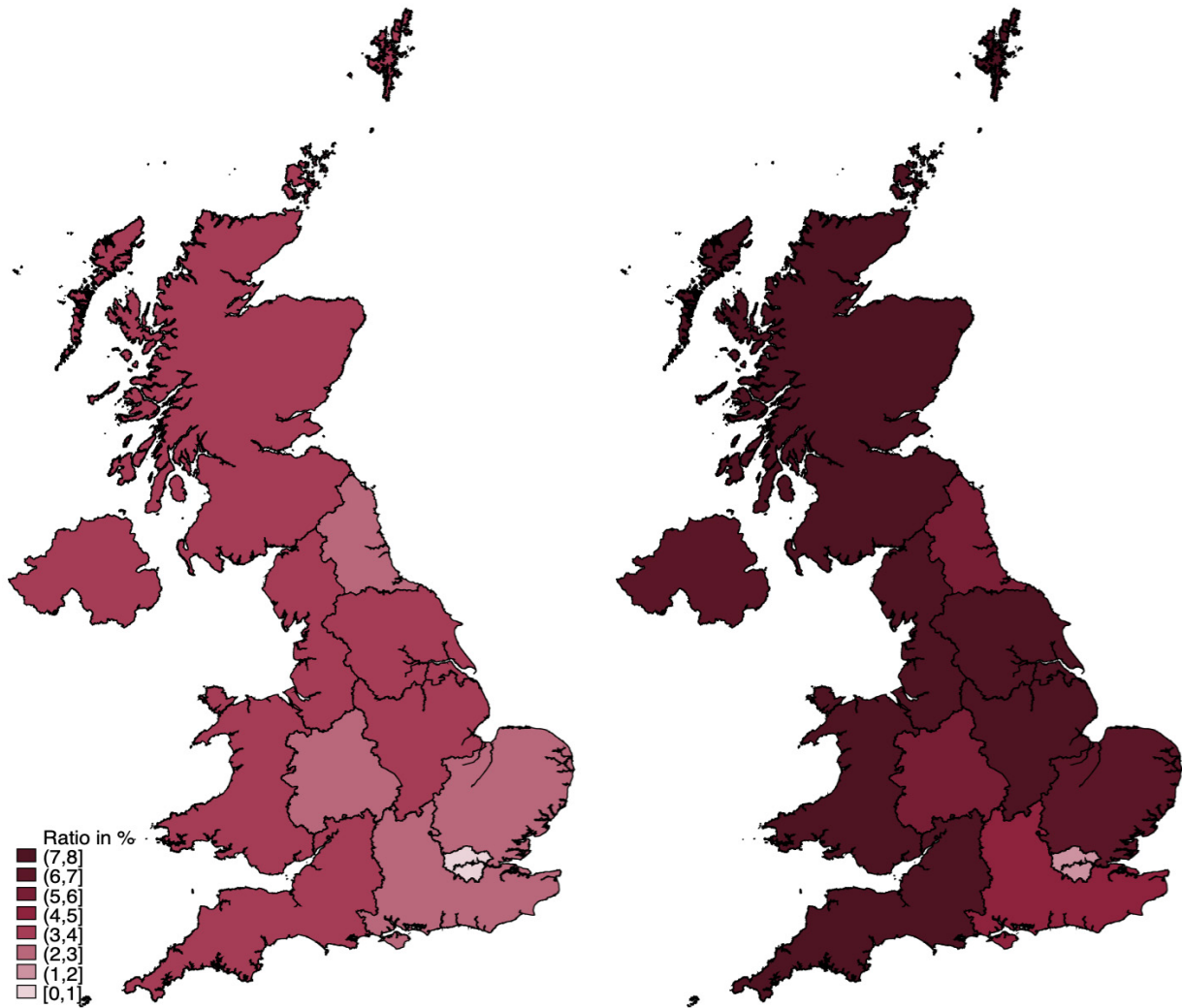
Source: Authors' calculations based on (a) NiGEM output from November 2020, and (b) our Covid-19+Brexit model based on LINDA.

Table CI presents the projections as arising from the above three sources. A large proportion of the Covid-19 impacts in 2020 arise from unemployment, but lack of adequate support for the self-employed is also a major cause for rise in destitution. However, the impact on the unemployed is partly mitigated by the UK government's job retention schemes. As these schemes are withdrawn, unemployment becomes a much greater issue in 2021, reducing somewhat but still quite prominent in 2022. On average over 2020–22 we expect Covid-19 to double the numbers, from 1.8 million to 3.6 million, of those facing destitution, in the absence of further policy interventions.

The impacts are unevenly distributed across the regions. Figure CI presents the regional distribution of destitution prior to accounting for the Covid-19 and Brexit impact (left hand panel) and then accounting for it (right hand panel). It shows the ratio between destitution in a particular region and the total adult population in that region. For the country as a whole, the rate of destitution rises from 3.6% to 7.6%, with seven of the twelve regions facing destitution rates of over 7%. It is also clear that the population in destitution was almost twice as high or more in all regions, stressing the hardship that the poorest population is experiencing. London has the lowest proportion in destitution in both cases: (a) without Covid-19; and (b) Covid-19 together with Brexit. The highest impact is upon the South West and the North West, reaching 8% of the population. However, the regions with the highest increase in the number of destitute are: South East (150%), Wales (129%), West Midlands (127%) and Scotland (124%). Overall, the impacts are highly asymmetric and sustained mitigation policy is required.

Box C. (continued)

Figure C1. Regional distribution of Covid-19 and Brexit impacts on destitution in 2022



Notes: Shaded areas represent the ratio between the destitute population in the region (at NUTS1 level) and the total adult population (18+) in that region. Source: Microsimulation (LINDA) modelling based on 2017 nationally representative UK Wealth and Assets Survey data, and our microsimulation mode of Covid-19 impacts.

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Box D. The Warwick Business School forecasting system probabilistic forecasts for UK growth and inflation

by Ana Galvão, Anthony Garratt and James Mitchell

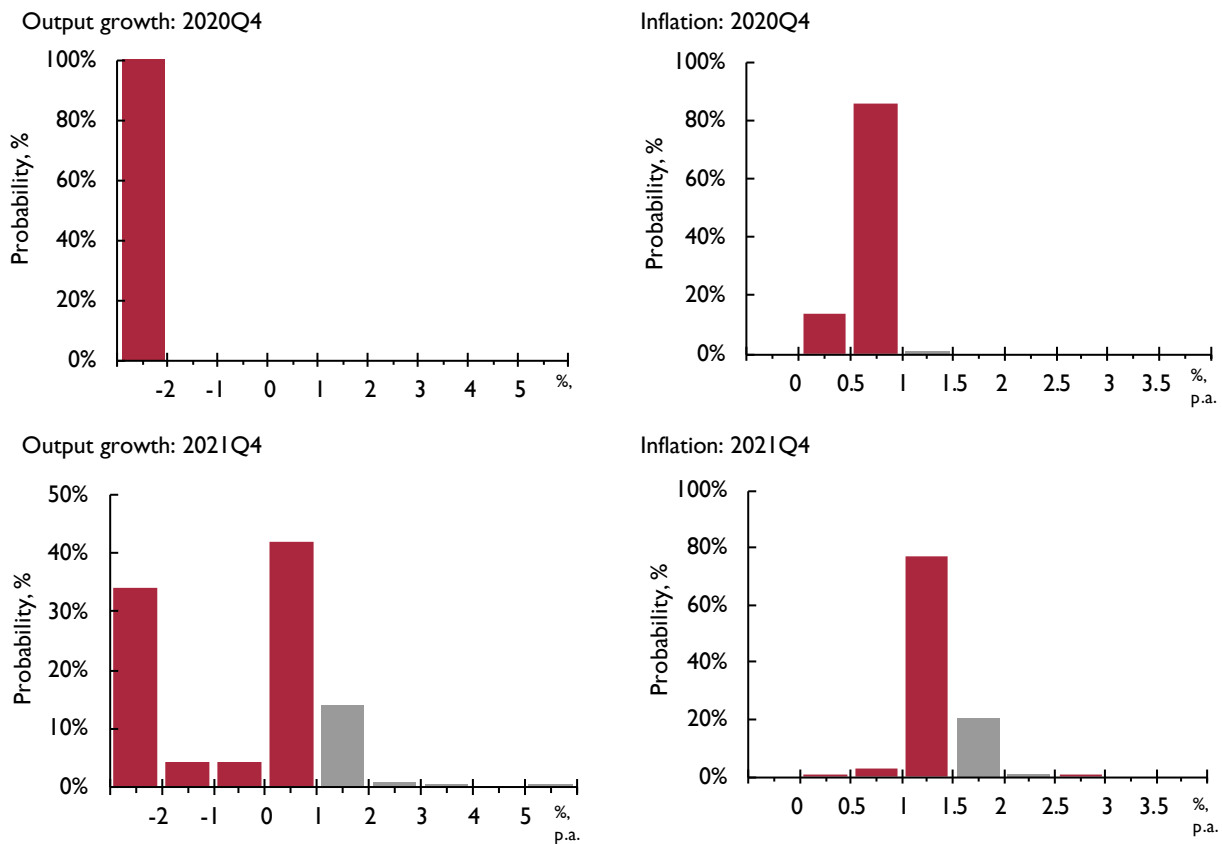
We provide benchmark forecasts to help understand and contextualise the forecasts presented in this Review. The box presents density forecasts for UK GDP annual growth and inflation, and reports the probabilities of a range of output and inflation events occurring, as calculated using the Warwick Business School Forecasting System (WBSFS).¹

The figure below presents WBSFS's latest (as of 15 October 2020) probabilistic forecasts for real GDP growth and inflation – defined as year-on-year growth rates for 2020Q4 and 2021Q4 – as histograms. The information set used to produce these forecasts includes information on GDP growth up to 2020Q2 and data on CPI inflation up to August 2020.

To aid visualisation, output growth forecast outcomes greater than 1 per cent are coloured grey, red otherwise. For inflation, grey outcomes are defined as inflation within the Bank of England's target range of 1–3 per cent, such that the Governor does not have to write a letter of explanation to the Chancellor; forecast outcomes outside the target range are coloured red.

Table D1 extracts from these histogram forecasts the probabilities of specific output growth and inflation events. The events considered are the probability of output growth being less than 0 per cent, 1 per cent and 2 per cent, and of inflation lying outside the 1–3 per cent target range (i.e., the probability of the Bank of England's Governor having to write a letter explaining how and why inflation has breached its target range). Also reported are the individual probabilities of inflation being less than 1 per cent and greater than 3 per cent, to indicate which side of the target range is most likely to be breached.

Figure D1. WBSFS forecast probabilities for real GDP growth and inflation, year-on-year



Note: To aid visualisation, output growth forecast outcomes greater than 1 per cent are coloured grey, red otherwise. For inflation, grey outcomes are defined as inflation within the Bank of England's target range of 1–3 per cent, such that the Governor does not have to write a letter of explanation to the Chancellor, forecast outcomes outside that are coloured red.

Box D. (continued)**Table D1. Probability event forecasts for 2020Q4 and 2021Q4 annualised % real GDP growth and CPI inflation (extracted from the WBSFS forecast histograms)**

Year	Real GDP growth (% p.a.)			CPI inflation (% p.a.)		
	Pr(growth<0%)	Pr(growth<1%)	Pr(growth<2%)	Pr(letter)	Pr(CPI<1%)	Pr(CPI>3%)
Updated forecasts (October 2020)						
2020Q4	100%	100%	100%	28%	100%	0%
2021Q4	43%	85%	99%	3%	3%	0%
Previous forecasts (July 2020)						
2020Q4	100%	100%	100%	28%	25%	4%
2021Q4	22%	44%	69%	44%	29%	14%

We emphasise once again in this Box that our forecasts are produced mechanically from statistical models, without any correction or judgement imposed. The models largely rely on what McCracken (2020) refers to as “slow moving” publicly available and aggregated economic data. The WBSFS forecasts represent these economic data’s best probabilistic view of what will happen to the macroeconomy, taking into account historical patterns and known uncertainties in past economic data. The WBSFS forecasts, therefore, neither capture nor make any judgement about the heightened ‘unknown unknowns’ reflecting continuing uncertainties about the duration and magnitude of the economic disruption due to Covid-19 and the shutdowns designed to contain its spread. The WBSFS forecasts provide a benchmark against which the forecasts of others can be compared.

Unsurprisingly, given the dramatic fall in GDP observed in 2020Q2, table D1 and the forecast histogram for GDP show the WBSFS forecasting that the UK economy will contract in 2020. Rather than focus-in on forecasting the magnitude of what will be a large fall in GDP by historical standards, we prefer to use the WBSFS to look beyond 2020. Statistical models and data of the sort we are employing in the WBSFS are better placed to inform on these dynamics, rather than monitor the depth of a contraction best understood by consulting ‘fast moving’ high-frequency economic data, as discussed in this Box previously.

So looking ahead in table D1 to 2021Q4, we see that the WBSFS is forecasting a bounce-back in economic activity. There is forecast to be a 57 per cent chance of the UK economy returning to growth. But this assessment is less optimistic than our forecast made one quarter previously, which is understood by noting that our model now conditions on the collapse of UK GDP seen in 2020Q2.

The GDP growth forecast histogram for 2021Q4 tells us more about the underlying balance of risks. It shows that the forecast histogram for 2021Q4 is ‘twin peaked’, with a pessimistic scenario of the economy continuing to contract contrasting the more optimistic scenario that the UK economy does bounce back, to some extent. Forecast risks and uncertainties remain extremely large.

Turning to inflation, we see from table D1 that relative to one quarter ago there is now a higher chance that inflation remains low in 2020, specifically that inflation is less than 1 per cent in 2020Q4. This is consistent with recent falls in actual inflation observed in the aftermath of the pandemic. Looking ahead to 2021Q4 we see that, relative to one quarter ago, the forecast histogram for inflation has narrowed and shifted slightly to the left. There is now forecast to be an increased chance that inflation falls within its target range, with a lower probability attached to inflation rising above 3 per cent as the economy is forecast to pull out of recession. In summary our forecast is for a recovery in economic activity by 2021Q4, with low positive economic growth the most likely outcome, but where the downside risks remain large. Turning to inflation, there is high chance that inflation remains less than 1 per cent in 2020Q4 but falls within its target range in 2021Q4.

NOTE

1 WBSFS forecasts for UK output growth and inflation have been released every quarter since November 2014. Details of the releases are available at <https://www2.warwick.ac.uk/fac/soc/wbs/subjects/emf/forecasting/> and a description of the models in the system and of the indicators employed is available at https://www2.warwick.ac.uk/fac/soc/wbs/subjects/emf/forecasting/summary_of_wbs_forecastng_system.pdf.

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Appendix – Details of main-case forecast scenario

Table A1. Exchange rates and interest rates

	UK exchange rates			FTSE All-share index	Interest rates			
	Effective 2011 = 100	Dollar	Euro		3-month rates	10-year gilts	World ^(a)	Bank Rate ^(b)
2015	117.5	1.53	1.38	3566	0.60	1.80	0.80	0.50
2016	105.8	1.35	1.22	3512	0.50	1.30	0.90	0.25
2017	100.0	1.29	1.14	4011	0.40	1.20	1.20	0.41
2018	101.9	1.34	1.13	4021	0.70	1.40	1.90	0.75
2019	101.6	1.28	1.14	3967	0.80	0.90	2.10	0.75
2020	101.8	1.28	1.12	3431	0.30	0.30	0.90	0.10
2021	101.3	1.29	1.10	3489	0.20	0.50	0.70	0.10
2022	101.5	1.29	1.10	3719	0.20	0.80	0.70	0.10
2023	101.8	1.30	1.10	3722	0.20	1.10	0.70	0.10
2024	102.1	1.30	1.10	3625	0.30	1.30	0.90	0.35
2025	102.4	1.30	1.10	3601	0.60	1.60	1.10	0.59
2020 Q1	103.2	1.28	1.16	3787	0.70	0.50	1.40	0.61
2020 Q2	101.4	1.24	1.13	3279	0.40	0.20	0.70	0.10
2020 Q3	101.3	1.29	1.10	3350	0.10	0.20	0.70	0.10
2020 Q4	101.3	1.29	1.10	3308	0.10	0.30	0.70	0.10
2021 Q1	101.3	1.29	1.10	3280	0.20	0.40	0.70	0.10
2021 Q2	101.3	1.29	1.10	3418	0.20	0.50	0.70	0.10
2021 Q3	101.3	1.29	1.10	3549	0.20	0.50	0.70	0.10
2021 Q4	101.4	1.29	1.10	3707	0.20	0.60	0.70	0.10
2022 Q1	101.5	1.29	1.10	3692	0.20	0.70	0.70	0.10
2022 Q2	101.5	1.29	1.10	3707	0.20	0.80	0.70	0.10
2022 Q3	101.6	1.29	1.10	3729	0.20	0.80	0.70	0.10
2022 Q4	101.6	1.30	1.10	3751	0.20	0.90	0.70	0.10
<i>Percentage changes</i>								
2015/2014	6.1	-7.2	11.1	0.4				
2016/2015	-9.9	-11.4	-11.2	-1.5				
2017/2016	-5.5	-4.9	-6.7	14.2				
2018/2017	1.9	3.6	-1.0	0.3				
2019/2018	-0.3	-4.4	0.9	-1.3				
2020/2019	0.2	-0.1	-1.4	-13.5				
2021/2020	-0.5	1.3	-1.9	1.7				
2022/2021	0.2	0.1	-0.1	6.6				
2023/2022	0.3	0.1	-0.1	0.1				
2024/2023	0.3	0.1	-0.1	-2.6				
2025/2024	0.3	0.2	-0.1	-0.6				
2020Q4/19Q4	-1.9	0.3	-5.2	-17.8				
2021Q4/20Q4	0.1	0.1	0.0	12.1				
2022Q4/21Q4	0.2	0.1	-0.1	1.2				

Notes: We assume that bilateral exchange rates for the third quarter of this year are the average of data available to 23 October 2020. (a) Weighted average of central bank intervention rates in OECD economies. (b) End of period.

Table A2. Price indices

2018=100

	Unit labour costs	Imports deflator	Exports deflator	World oil price (\$) ^(a)	Consump- tion deflator	GDP deflator (market prices)	RPI ^(b)	Consumer prices CPI ^(c) CPIH ^(d)	
2015	92.9	88.0	88.3	52.1	94.4	93.9	98.3	94.4	94.4
2016	95.0	91.9	92.4	42.9	95.7	95.9	100.0	95.0	95.3
2017	97.3	97.6	97.0	54.0	97.7	97.8	103.6	97.6	97.8
2018	100.0	100.0	100.0	70.4	100.0	100.0	107.0	100.0	100.0
2019	103.3	101.7	101.6	63.7	101.4	102.1	109.8	101.8	101.7
2020	113.4	100.7	100.8	41.9	102.6	106.9	111.6	102.7	102.4
2021	109.3	101.9	101.4	44.9	103.8	106.0	114.2	103.8	103.2
2022	110.4	102.7	103.2	47.0	106.3	109.0	118.1	106.0	105.7
2023	112.9	103.3	104.9	47.8	108.9	112.3	121.8	108.4	108.2
2024	115.9	104.7	106.9	48.7	111.5	115.5	125.6	110.8	110.9
2025	118.8	106.5	108.9	49.6	114.1	118.4	129.4	113.1	113.4
<i>Percentage changes</i>									
2015/2014	0.5	-5.6	-3.1	-47.0	0.0	0.7	1.0	0.1	0.4
2016/2015	2.2	4.5	4.7	-17.7	1.4	2.1	1.7	0.7	1.0
2017/2016	2.4	6.2	5.0	25.8	2.1	1.9	3.6	2.7	2.6
2018/2017	2.8	2.5	3.1	30.5	2.4	2.2	3.3	2.4	2.3
2019/2018	3.3	1.7	1.6	-9.6	1.4	2.1	2.6	1.8	1.7
2020/2019	9.8	-1.0	-0.8	-34.1	1.3	4.7	1.7	0.9	0.6
2021/2020	-3.6	1.3	0.6	7.0	1.1	-0.9	2.3	1.1	0.9
2022/2021	1.0	0.8	1.7	4.7	2.4	2.9	3.4	2.2	2.4
2023/2022	2.3	0.6	1.7	1.9	2.4	3.0	3.1	2.2	2.4
2024/2023	2.7	1.3	1.9	1.8	2.5	2.8	3.1	2.2	2.4
2025/2024	2.6	1.7	1.9	1.8	2.3	2.6	3.0	2.1	2.3
2020Q4/19Q4	5.4	-0.5	-2.0	-34.1	1.0	2.2	1.6	0.5	0.0
2021Q4/20Q4	-1.0	1.9	1.8	13.5	2.0	2.0	2.9	1.7	1.9
2022Q4/21Q4	1.7	0.3	1.5	2.0	2.3	2.9	3.3	2.1	2.3

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

Table A3. Gross domestic product and components of expenditure

£ billion, 2018 prices

	Final consumption expenditure		Gross capital formation		Domestic demand	Total exports ^(c)	Total final expenditure	Total imports ^(c)	Net trade	GDP at market prices ^(d)
	Households & NPISH ^(a)	General govt.	Gross fixed in-vestment	Changes in inventories ^(b)						
2015	1306	389	354	12	2078	593	2672	627	-34	2044
2016	1351	393	370	10	2121	609	2731	652	-42	2079
2017	1366	396	380	15	2142	642	2784	669	-27	2115
2018	1386	398	381	2	2167	662	2829	687	-26	2142
2019	1398	415	387	-1	2199	680	2879	710	-30	2169
2020	1206	403	347	-12	1944	598	2541	602	-4	1940
2021	1304	450	361	6	2121	625	2746	692	-67	2055
2022	1367	435	379	6	2187	666	2853	722	-56	2132
2023	1418	429	385	6	2238	705	2943	752	-47	2191
2024	1458	427	389	6	2280	732	3011	777	-45	2235
2025	1493	428	391	6	2317	752	3069	799	-47	2271
<i>Percentage changes</i>										
2015/2014	3.0	1.8	5.3		3.1	2.8	3.1	5.4		2.4
2016/2015	3.4	1.0	4.4		2.1	2.7	2.2	3.9		1.7
2017/2016	1.1	0.7	2.8		1.0	5.4	1.9	2.6		1.7
2018/2017	1.4	0.6	0.4		1.2	3.0	1.6	2.7		1.3
2019/2018	0.9	4.1	1.5		1.5	2.8	1.8	3.3		1.3
2020/2019	-13.7	-2.8	-10.5		-11.6	-12.1	-11.7	-15.2		-10.5
2021/2020	8.1	11.6	4.3		9.1	4.5	8.1	14.9		5.9
2022/2021	4.8	-3.2	4.8		3.1	6.6	3.9	4.4		3.7
2023/2022	3.7	-1.5	1.7		2.3	5.9	3.2	4.2		2.8
2024/2023	2.8	-0.5	0.9		1.9	3.8	2.3	3.3		2.0
2025/2024	2.4	0.2	0.5		1.6	2.7	1.9	2.8		1.6
<i>Decomposition of growth in GDP (percentage points)</i>										
2015	1.9	0.3	0.9	-0.2	3.2	0.8	4.0	-1.6	-0.8	2.4
2016	2.2	0.2	0.8	-0.1	2.1	0.8	2.9	-1.2	-0.4	1.7
2017	0.7	0.1	0.5	0.3	1.0	1.6	2.6	-0.8	0.8	1.7
2018	0.9	0.1	0.1	-0.6	1.2	0.9	2.1	-0.9	0.1	1.3
2019	0.6	0.8	0.3	-0.1	1.5	0.9	2.3	-1.1	-0.2	1.3
2020	-8.8	-0.5	-1.9	-0.5	-11.8	-3.8	-15.6	5.0	1.2	-10.5
2021	5.0	2.4	0.8	0.9	9.2	1.4	10.5	-4.6	-3.2	5.9
2022	3.0	-0.7	0.8	0.0	3.2	2.0	5.2	-1.5	0.5	3.7
2023	2.4	-0.3	0.3	0.0	2.4	1.8	4.2	-1.4	0.4	2.8
2024	1.8	-0.1	0.2	0.0	1.9	1.2	3.1	-1.1	0.1	2.0
2025	1.5	0.0	0.1	0.0	1.7	0.9	2.6	-1.0	-0.1	1.6

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, 2018 prices ^(b)						2018=100	% of GDP		
2015	329	456	-127	265	171	94	105.1	88.9	100.3	-5.0
2016	329	476	-147	281	176	104	100.0	92.0	100.5	-5.4
2017	350	487	-137	293	183	110	96.9	96.6	99.4	-3.8
2018	351	488	-137	311	199	111	100.0	100.0	100.0	-3.7
2019	367	499	-132	313	211	102	98.6	104.1	99.9	-4.3
2020	326	436	-111	272	166	107	99.0	93.4	100.2	-2.8
2021	342	517	-175	283	175	108	98.7	102.6	99.5	-5.4
2022	362	542	-180	304	180	124	99.2	109.3	100.4	-4.5
2023	382	566	-184	323	186	136	99.7	115.8	101.5	-3.6
2024	396	586	-190	336	192	145	99.9	120.7	102.1	-3.3
2025	406	602	-197	346	196	150	100.0	124.5	102.3	-3.4
<i>Percentage changes</i>										
2015/2014	3.6	4.0		1.8	9.6		-0.5	5.4	2.7	
2016/2015	-0.1	4.3		6.0	3.1		-4.9	3.4	0.2	
2017/2016	6.4	2.3		4.3	3.6		-3.1	5.0	-1.1	
2018/2017	0.4	0.3		6.1	9.1		3.2	3.5	0.6	
2019/2018	4.5	2.2		0.9	5.9		-1.4	4.1	-0.1	
2020/2019	-11.2	-12.5		-13.1	-21.4		0.4	-10.3	0.3	
2021/2020	5.0	18.5		3.9	5.3		-0.2	9.9	-0.7	
2022/2021	5.9	4.8		7.3	3.0		0.4	6.5	0.9	
2023/2022	5.6	4.4		6.2	3.4		0.5	6.0	1.1	
2024/2023	3.6	3.5		4.2	2.9		0.3	4.2	0.6	
2025/2024	2.5	2.8		3.0	2.5		0.0	3.1	0.2	

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

Table A5. Household sector

	Average ^(a) earnings	Compen- sation of employees	Total personal income	Gross disposable income	Real disposable income ^(b)	Final consumption expenditure	Saving ratio ^(c)	House prices ^(d)	Net worth to income ratio ^(e)
	2018=100	£ billion, current prices			£ billion, 2018 prices		per cent		
2015	92.0	930	1674	1322	1400	1306	10.1	102.9	6.5
2016	94.7	967	1717	1348	1408	1351	7.6	110.1	7.0
2017	97.6	1007	1766	1376	1409	1366	5.7	115.1	7.1
2018	100.0	1048	1846	1441	1441	1386	6.1	118.8	6.7
2019	104.0	1096	1912	1483	1463	1398	6.5	120.0	6.9
2020	101.2	1070	1904	1473	1435	1206	17.2	120.6	7.2
2021	106.6	1099	1998	1550	1493	1304	13.7	122.2	7.2
2022	109.6	1151	2090	1621	1525	1367	11.4	129.4	7.1
2023	113.2	1210	2195	1703	1564	1418	10.3	134.3	6.9
2024	117.3	1268	2300	1784	1600	1458	9.7	137.4	6.6
2025	121.4	1321	2403	1864	1633	1493	9.4	139.4	6.4
<i>Percentage changes</i>									
2015/2014	0.8	2.9	5.7	6.0	6.0	3.0		6.0	
2016/2015	3.0	4.0	2.6	1.9	0.6	3.4		7.0	
2017/2016	3.0	4.2	2.8	2.1	0.1	1.1		4.5	
2018/2017	2.5	4.1	4.5	4.7	2.3	1.4		3.3	
2019/2018	4.0	4.6	3.6	2.9	1.5	0.9		1.0	
2020/2019	-2.6	-2.4	-0.4	-0.7	-1.9	-13.7		0.5	
2021/2020	5.3	2.7	4.9	5.2	4.0	8.1		1.3	
2022/2021	2.8	4.7	4.6	4.6	2.1	4.8		5.9	
2023/2022	3.3	5.1	5.1	5.1	2.5	3.7		3.7	
2024/2023	3.6	4.7	4.8	4.8	2.3	2.8		2.3	
2025/2024	3.6	4.2	4.4	4.5	2.1	2.4		1.5	

Notes: The Office for National Statistics will record the Coronavirus Job Retention Scheme as a subsidy to business which is then included in wages while we have modelled it as a direct transfer to households from Government. Total personal income is unaffected by this different treatment. As a consequence the 'Average earnings' and 'Total compensation' figures for 2020 will not be directly comparable to those in the National Accounts. If an estimate for the cost of the CJRS is included in earnings, 'Average earnings' fall by 2.3 per cent in 2020 (rather than 7.7 per cent) and grow by 5.7 (11.9) per cent in 2021. Total compensation falls by 3.9 (9.4) per cent in 2020 and grows by 4.9 (11.3) per cent in 2021.

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

Table A6. Fixed investment and capital £ billion, 2018 prices

	Gross fixed investment				User cost of capital (%)	Corporate profit share of GDP (%)	Capital stock	
	Business investment	Private housing ^(a)	General government	Total			Private	Public ^(b)
2015	206	85	63	354	14.1	24.5	3142	674
2016	217	89	64	370	13.7	24.3	3264	704
2017	220	94	66	380	13.9	24.4	3352	636
2018	215	104	63	381	14.0	24.1	3406	651
2019	217	105	65	387	14.1	23.6	3463	666
2020	187	90	70	347	11.4	23.7	3472	685
2021	190	97	74	361	10.9	22.6	3492	707
2022	203	98	78	379	10.7	24.3	3524	731
2023	208	98	79	385	11.0	25.1	3560	754
2024	211	98	80	389	11.3	25.4	3596	777
2025	213	97	81	391	11.6	25.5	3631	798
<i>Percentage changes</i>								
2015/2014	7.7	5.1	-1.5	5.3			0.1	0.0
2016/2015	5.5	4.7	0.7	4.4			3.9	4.5
2017/2016	1.5	5.6	3.1	2.8			2.7	-9.6
2018/2017	-2.5	11.0	-5.0	0.4			1.6	2.4
2019/2018	1.1	1.2	3.5	1.5			1.7	2.3
2020/2019	-14.2	-14.2	7.8	-10.5			0.3	2.8
2021/2020	2.0	7.1	6.7	4.3			0.6	3.2
2022/2021	6.5	1.3	5.1	4.8			0.9	3.4
2023/2022	2.7	0.1	1.0	1.7			1.0	3.2
2024/2023	1.5	-0.4	1.0	0.9			1.0	2.9
2025/2024	0.8	-0.6	1.2	0.5			1.0	2.8

Notes: (a) Includes private sector transfer costs of non-produced assets. (b) Including public sector non-financial corporations.

Table A7. Productivity and the labour market

Thousands unless otherwise stated

	Employment		ILO unemployment	Labour force ^(b)	Population of working age ^(c)	Productivity (2018=100) Per hour	ILO unemployment rate %
	Employees	Total ^(a)					
2015	26504	31285	1781	33066	40879	98.6	5.4
2016	26771	31744	1633	33377	41062	98.8	4.9
2017	27065	32057	1476	33533	41169	99.5	4.4
2018	27494	32439	1380	33819	41260	100.0	4.1
2019	27652	32799	1306	34105	41344	100.0	3.8
2020	27713	32638	1719	34357	41442	98.9	5.0
2021	27049	31820	2631	34451	41529	98.1	7.6
2022	27560	32352	2245	34597	41602	99.9	6.5
2023	28045	32856	1886	34742	41668	101.0	5.4
2024	28349	33181	1709	34890	41734	101.9	4.9
2025	28531	33384	1658	35042	41802	102.9	4.7
<i>Percentage changes</i>							
2015/2014	2.1	1.7	-12.1	0.9	0.5	0.7	
2016/2015	1.0	1.5	-8.3	0.9	0.4	0.3	
2017/2016	1.1	1.0	-9.6	0.5	0.3	0.7	
2018/2017	1.6	1.2	-6.5	0.9	0.2	0.5	
2019/2018	0.6	1.1	-5.4	0.8	0.2	0.0	
2020/2019	0.2	-0.5	31.6	0.7	0.2	-1.1	
2021/2020	-2.4	-2.5	53.1	0.3	0.2	-0.8	
2022/2021	1.9	1.7	-14.7	0.4	0.2	1.8	
2023/2022	1.8	1.6	-16.0	0.4	0.2	1.1	
2024/2023	1.1	1.0	-9.4	0.4	0.2	0.9	
2025/2024	0.6	0.6	-3.0	0.4	0.2	0.9	

Notes: (a) Includes self-employed, government-supported trainees and unpaid family members. (b) Employment plus ILO unemployment. (c) Population projections are based on annual rates of growth from 2018-based population projections by the ONS.

Table A8. Public sector financial balance and borrowing requirement £ billion, fiscal years

		2018–19	2019–20	2020–21	2021–22	2022–23	2023–24	2024–25	2025–26
Current receipts:	Taxes on income	470.5	485.0	442.2	514.0	539.6	571.7	601.2	627.8
	Taxes on expenditure	274.4	274.1	211.2	272.9	292.1	309.6	325.7	340.8
	Other current receipts	69.6	69.3	105.2	80.7	85.9	90.8	95.0	98.9
	Total	814.6	828.4	758.6	867.6	917.6	972.0	1021.9	1067.5
	(as a % of GDP)	37.7	37.3	37.1	39.1	38.9	39.0	39.2	39.3
Current expenditure:	Goods and services	402.7	428.3	491.2	497.7	500.0	510.4	525.6	543.8
	Net social benefits paid	242.4	242.0	281.5	289.2	286.8	291.8	301.9	314.7
	Debt interest	54.9	54.8	41.5	41.5	41.3	41.2	41.5	41.5
	Other current expenditure	61.2	65.6	179.3	68.1	70.7	74.4	77.6	80.5
	Total	761.2	790.8	993.4	896.5	898.8	917.7	946.5	980.5
	(as a % of GDP)	35.2	35.6	48.8	40.5	38.1	36.8	36.3	36.1
Depreciation		49.8	51.4	53.1	56.5	60.2	63.5	66.5	69.2
Surplus on public sector current budget(a)		3.6	-13.8	-287.9	-85.4	-41.4	-9.2	8.9	17.8
(as a % of GDP)		0.2	-0.6	-14.2	-3.9	-1.8	-0.4	0.3	0.7
Gross investment		92.7	94.7	107.9	109.7	116.3	121.4	126.2	130.9
Net investment		42.9	43.3	54.8	53.2	56.1	57.8	59.7	61.7
(as a % of GDP)		2.0	1.9	2.7	2.4	2.4	2.3	2.3	2.3
Total managed expenditure		853.9	885.5	1101.3	1006.2	1015.1	1039.1	1072.7	1111.4
(as a % of GDP)		39.5	39.9	54.1	45.4	43.0	41.7	41.1	40.9
Public sector net borrowing		39.3	342.7	138.6	97.5	67.0	50.8	43.9	44.3
(as a % of GDP)		1.8	2.6	16.9	6.3	4.1	2.7	1.9	1.6
Public sector net debt (% of GDP)(b)		82.4	80.8	103.9	106.6	105.7	105.0	101.9	96.8
GDP deflator at market prices (2018=100)		100.5	103.0	106.9	106.8	109.9	113.1	116.2	119.1
Money GDP (£ billion)		2162	2222	2045	2217	2360	2492	2609	2715
Financial balance under Maastricht [©]		-2.3	-2.3	-14.7	-8.1	-4.7	-3.0	-2.1	-1.7
Gross debt under Maastricht [©]		85.0	84.6	107.1	109.6	107.1	104.0	101.1	98.6

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. (b) Data for Q2. Seasonal adjustment applied in NiGEM results in differences between the figures here and official unadjusted PSF data. (c) Calendar year.

Table A9. Saving and investment

As a percentage of GDP

	Households		Companies		General government		Whole economy		Finance from abroad ^(a)		Net national saving
	Saving	Investment	Saving	Investment	Saving	Investment	Saving	Investment	Total	Net factor income	
2015	7.2	4.2	6.7	11.0	-1.2	2.5	12.7	17.7	5.0	2.2	-1.6
2016	5.4	4.3	7.1	11.1	-0.1	2.5	12.4	17.9	5.4	2.4	-2.0
2017	3.9	4.7	9.5	11.0	1.0	2.6	14.5	18.2	3.8	1.2	-0.2
2018	4.2	4.6	8.8	10.7	1.2	2.6	14.2	17.9	3.7	1.2	-0.5
2019	4.5	4.7	8.3	10.9	1.2	2.7	14.0	18.3	4.3	1.6	-0.8
2020	12.7	4.5	11.9	9.4	-10.1	3.4	14.5	17.3	2.8	1.3	-2.6
2021	9.9	4.7	6.8	10.0	-3.8	3.5	12.8	18.2	5.4	0.6	-4.9
2022	8.0	4.6	6.1	10.2	-0.3	3.5	13.8	18.3	4.5	0.6	-4.0
2023	7.2	4.5	6.1	10.2	1.3	3.5	14.5	18.1	3.6	0.5	-3.2
2024	6.7	4.3	5.7	10.1	2.1	3.4	14.5	17.9	3.3	0.7	-3.2
2025	6.5	4.2	5.1	10.0	2.5	3.4	14.2	17.6	3.4	0.8	-3.6

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

All figures percentage change unless otherwise stated

	2019	2020	2021	2022	2023	2024	2025	2026–30
GDP (market prices)	1.3	-10.5	5.9	3.7	2.8	2.0	1.6	1.4
Average earnings	4.0	-2.6	5.3	2.8	3.3	3.6	3.6	3.2
GDP deflator (market prices)	2.1	4.7	-0.9	2.9	3.0	2.8	2.6	2.0
Consumer Prices Index	1.8	0.9	1.1	2.2	2.2	2.2	2.1	1.7
Per capita GDP	0.7	-11.1	5.3	3.2	2.3	1.5	1.1	1.0
Whole economy productivity ^(a)	0.0	-1.1	-0.8	1.8	1.1	0.9	0.9	1.2
Labour input ^(b)	1.4	-9.4	6.7	1.8	1.6	1.0	0.6	0.2
ILO Unemployment rate (%)	3.8	5.0	7.6	6.5	5.4	4.9	4.7	5.0
Current account (% of GDP)	-4.3	-2.8	-5.4	-4.5	-3.6	-3.3	-3.4	-3.3
Total managed expenditure (% of GDP)	39.6	51.8	46.7	43.5	41.9	41.2	41.0	41.3
Public sector net borrowing (% of GDP)	2.1	14.5	8.1	4.6	3.0	2.1	1.7	1.7
Public sector net debt (% of GDP)	80.8	103.9	106.6	105.7	105.0	101.9	96.8	92.5
Effective exchange rate (2011=100)	101.6	101.8	101.3	101.5	101.8	102.1	102.4	103.3
Bank Rate (%)	0.8	0.2	0.1	0.1	0.1	0.3	0.5	1.2
3 month interest rates (%)	0.8	0.3	0.2	0.2	0.2	0.3	0.6	1.3
10 year interest rates (%)	0.9	0.3	0.5	0.8	1.1	1.3	1.6	2.4

Notes: (a) Per hour. (b) Total hours worked.